*California Environmental Quality Act*

# INITIAL STUDY/
# MITIGATED NEGATIVE DECLARATION

**MARCH 26, 2021**

# Gateway Center North.
# 950 E. 33rd St. & 3177 California Ave.

*Lead Agency:*

*City of Signal Hill*
*2175 Cherry Avenue*
*Signal Hill, CA 90755*
*Contact: Colleen Doan*
*Community Development Director*
*Office: 562.989.7344*
*CDoan@cityofsignalhill.org*

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# SECTION A. ENVIRONMENTAL CHECKLIST FORM

| | | |
|---|---|---|
| 1. | **Project Title:** | Gateway Center North. |
| 2. | **Lead Agency Name and Address:** | City of Signal Hill<br>2175 Cherry Avenue<br>Signal Hill, CA 90755 |
| 3. | **Contact Person and Phone Number:** | Colleen Doan<br>Community Development Director<br>(562) 989-7344<br>CDoan@cityofsignalhill.org |
| 4. | **Project Location:** | The site is located on the south side of 33rd Street and west side of California Avenue. The site is bound on the south side by I-405 and Atlantic Avenue on the west side. For reference purposes, the site addresses are: 950 E. 33rd Street and 3177 California Avenue. The 33rd Street parcel will be referred to as "Site 1" and the California Avenue parcel will be referred to as "Site 2".<br>A regional location map and a vicinity map are provided in *Figures 1 and 2.* |
| 5. | **Project Sponsor's Name and Address:** | John Clement<br>VenturePoint Development<br>4685 MacArthur, Suite 375<br>Newport Beach, CA 92660 |
| 6. | **General Plan Designation:** | The entire site is designated Commercial General. |
| 7. | **Zoning:** | Site 1 is zoned Commercial General (CG). Site 2 parcel is zoned Freeway Self-Storage Specific Plan (SP-12) |

8. **Description of Project:**

The project is a 13.63-acre site located on the south side of E. 33rd Street between Atlantic and California Avenues in the North End neighborhood. The project site, which consists of 2 parcels of land designated by Los Angeles County Assessor's Parcel Numbers 7148-005-028 and 7148-005-030, contains an existing Target store, surface parking and vacant land. The Project consists of the following components to be built in phases:

- Renovation of the existing Target store with new exterior features but no increase in floor area;
- Construction of a new three-story, 177,345 square-foot self-storage facility on the southern vacant parcel;
- Construction of a new commercial space adjacent to the existing Target and totaling 18,500 square feet (to be built as tenants are secured); and
- Construction of a new 5,000 square-foot drive-thru restaurant (to be built as a tenant is secured).

The Project also includes a variety of site improvements including surface parking for 493 vehicles. Vehicular access would be via two driveways on 33rd Street for Site 1 and one driveway on California Avenue for Site 2.

The proposed self-storage facility leasing office is expected to operate Monday-Friday from 9:30 am-6:00 pm, Saturday from 9:00 am-5:30 pm, and Sunday between 10:00 am-4:00 pm; access to the storage units will be available to customers/tenants Monday-Sunday, between 6:00 am-10:00 pm. Access to the gated yard for employees and tenants will be provided via gate access, Monday-Sunday, between 6:00 am-10:00 pm. The proposed self-storage facility also includes the provision of up to 24 RV covered storage spaces and 11 automobile spaces located within the gated storage yard.

## Construction Program and Projected Full Occupancy Year

The improvements to the Target store would be completed during 2021. The Storage facility is expected to be built during 2022. The proposed retail pads would be developed in future years as tenants are identified.

## Required City Approvals

The proposed project will require approval of the following discretionary actions by the City of Signal Hill:

- The Official Zoning Map will be amended to rename the existing SP-12 specific plan from Freeway Self-Storage to Gateway Center North, and to remove the existing CG zoning and replace the approximate 13.635 acre area with the new and expanded Gateway Center North (SP-12) zoning designation;
- Chapter 20.32 of the Signal Hill Municipal Code (SHMC) will be repealed and replaced to establish a new Gateway Center Specific Plan (SP-12) to:
    - Establish a list of permitted and conditionally permitted commercial uses, including self-storage;
    - Establish appropriate development standards, including parking and building height.
    - Establish a SPDR review standard for the phased future construction of the commercial pads, including compliance with the approved conceptual and conceptual design elements.
- A Conditional Use Permit is being sought by Target for the sale of alcoholic beverages for off-site consumption. The interior layout shows that 900 sq. ft. will be dedicated for adult beverages.
- The Gateway Center North (SP-12) Specific Plan would conditionally allow self-storage facilities with approval of a CUP. This will ensure maintenance and operational items that tend to be problematic for self-storage facilities will be included as conditions of approval and will be reviewed annually for compliance under the City's annual CUP review.
- As part of the self-storage project, the property owner (SHP) is entering into a Development Agreement (DA) with the City. This Agreement will benefit the City and SHP. The purpose of the DA is to build a public, private partnership (P3) that provides benefit to both parties.

- Site Plan and Design Review would be necessary for each development within the Project.
- The Applicant has proposed a Lot Line Adjustment to create appropriate parcel areas and shapes for the proposed uses.

**9. Surrounding Land Uses and Setting:**

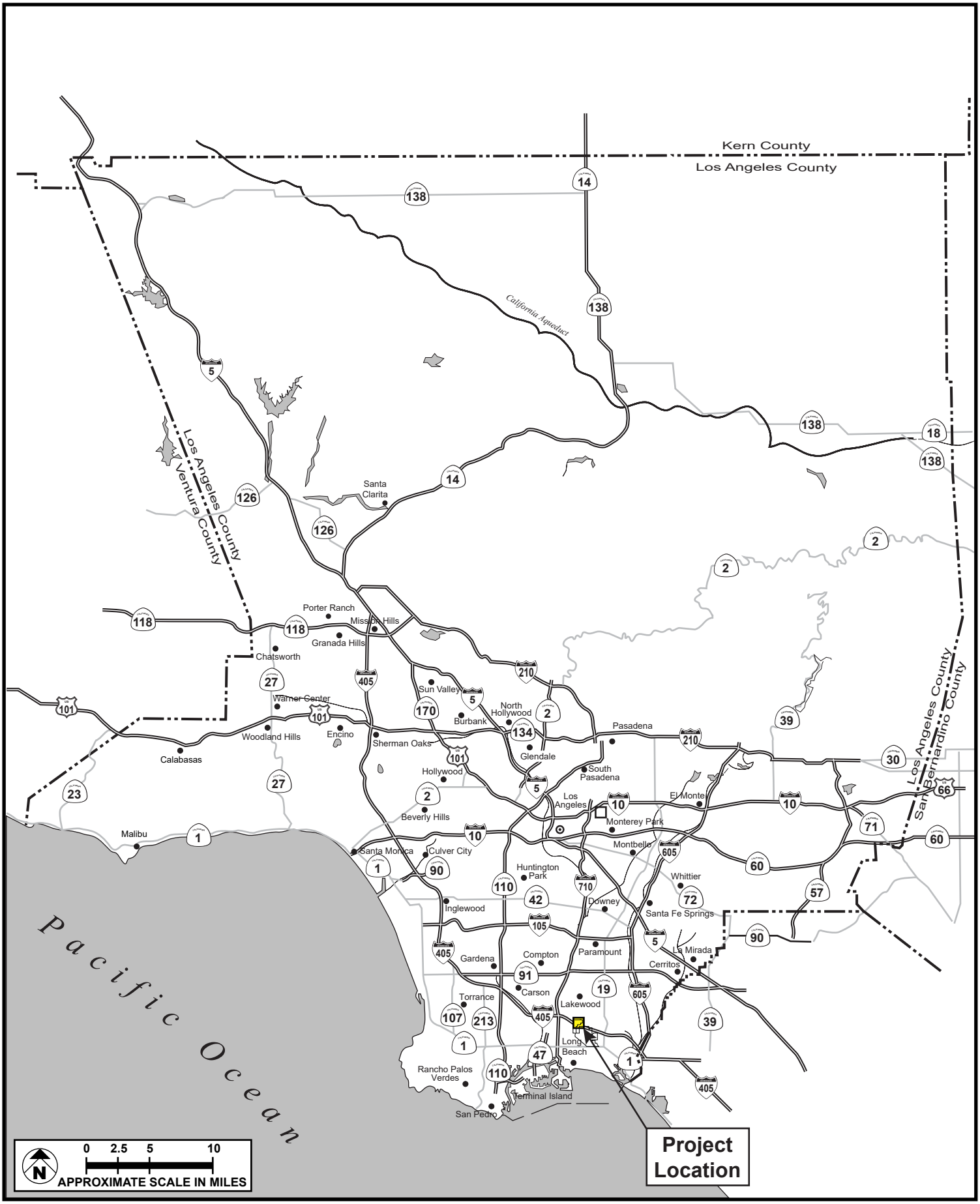
Surrounding land uses include commercial and retail properties to the north, residences to the north and east, the 405 Freeway to the south and Atlantic Avenue to the west.

**10. Other Public Agencies Whose Approval is Required:**

None

**11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?**

The City consulted with the Gabrieleño Band of Mission Indians. Further information concerning the consultation is provided in Section D.XVIII, Tribal Cultural Resources.



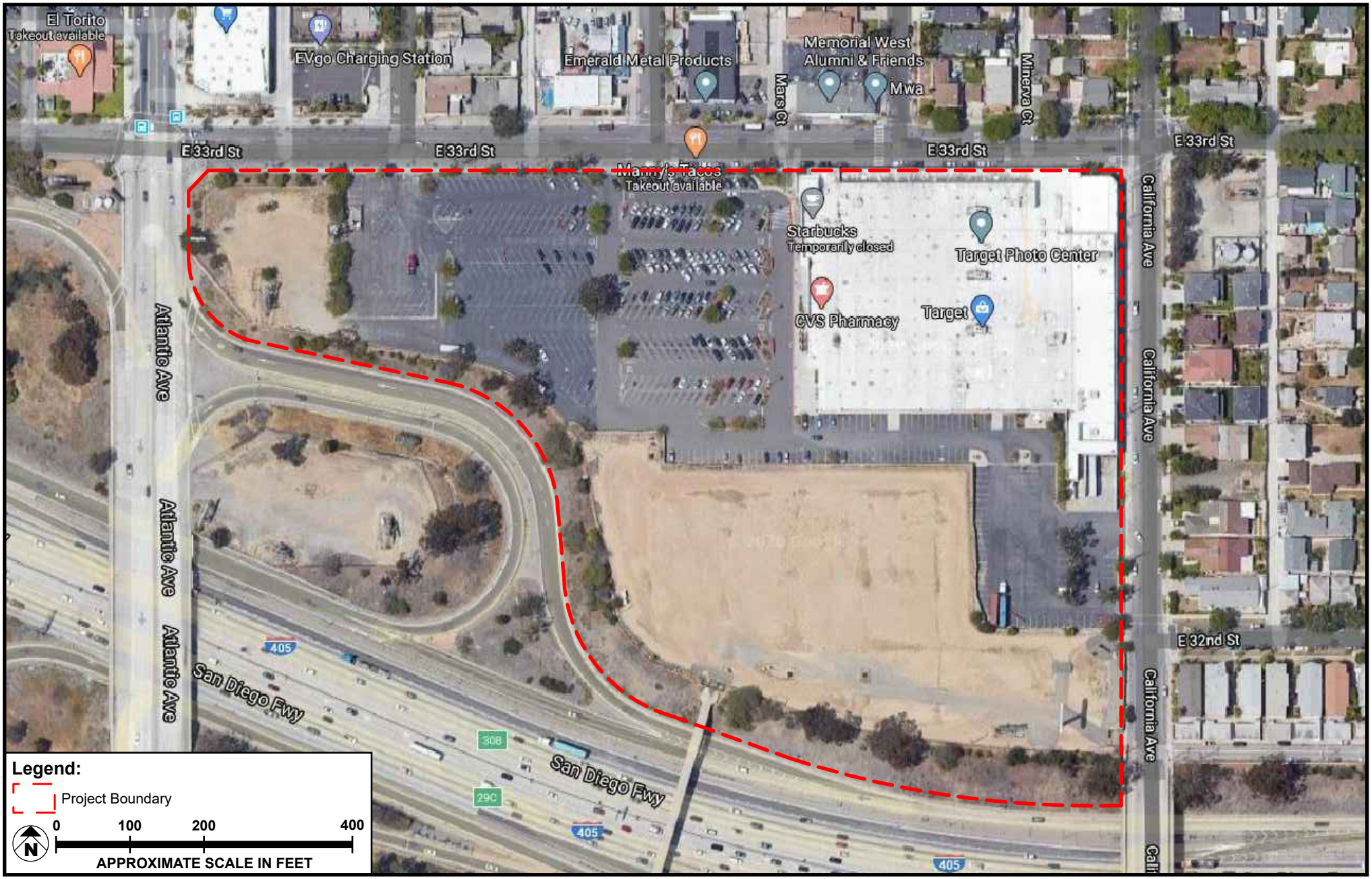

**SOURCE:** Meridian Consultants, LLC - 2021

FIGURE **1**

Meridian Consultants

# Regional Location Map

306-001-20



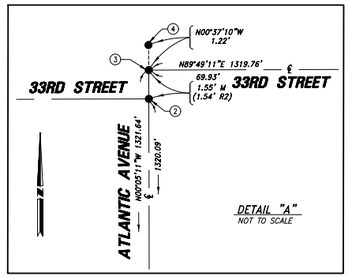

**SOURCE:** Google Earth - 2021

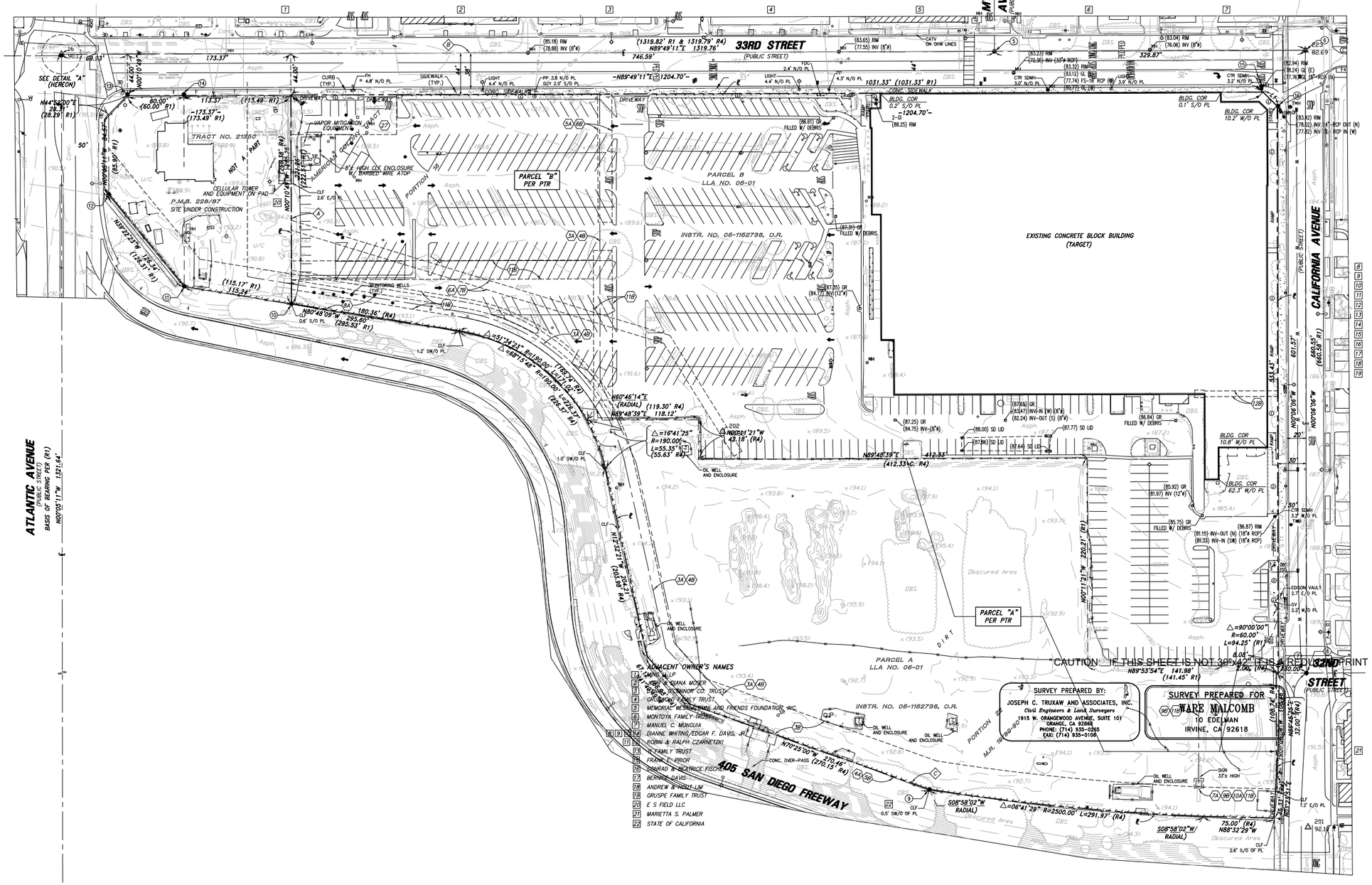
FIGURE **2**

Meridian Consultants

# Existing Site Aerial

306-001-20




**MONUMENT NOTES:**

1. FOUND BRASS CAP MONUMENT IN WELL PER "C.L.B. 568", DOWN 1.1' PER (R3).
2. FOUND BRASS CAP MONUMENT IN WELL PER "C.L.B. 569", DOWN 1.5'. S01°24'35"W 1.55' FROM WESTERLY CENTERLINE INTERSECTION OF 33rd STREET AND ATLANTIC AVENUE PER (R1).
3. FOUND SPIKE AND WASHER, STAMPED "LS 2996". ACCEPTED AS 33rd STREET EASTERLY CENTERLINE INTERSECTION PER (R2).
4. FOUND NAIL SHAFT. NO REFERENCE.
5. FOUND RAILROAD SPIKE, NO PUNCH PER (R2), DOWN 0.7'. S00°10'49"E 0.04' FROM CENTERLINE INTERSECTION OF MYRTLE AVENUE AND 33rd STREET.
6. FOUND SPIKE, NO TAG, DOWN 0.1'. ACCEPTED AS CENTERLINE INTERSECTION OF 33rd STREET AND CALIFORNIA AVENUE PER (R1) AND (R2). POINT OF BEGINNING FOR PARCELS A AND B.
7. FOUND LEAD, TACK AND TAG, "LS 2988", FLUSH. S26°13'16"E 0.07' FROM PROPERTY LINE.
8. FOUND SPIKE AND WASHER, STAMPED "LS 4970", FLUSH. NO REFERENCE. ACCE TED AS CENTERLINE INTERSECTION OF CALIFORNIA AVENUE AND 32nd STREET.
9. FOUND SPIKE AND WASHER, ILLEGIBLE. DOWN 1.0' IN DIRT. ACCEPTED AS POINT ON FREEWAY RIGHT-OF-WAY.
10. FOUND 2" IRON PIPE, CLEMENT PLUG AND TAG, "RCE 5448 PER (R1) ON PROPERTY CORNER.
11. FOUND 2" IRON PIPE, CONCRETE PLUG AND TAG, "RCE 8448" PER (R1). S80°48'09"E 0.10' FROM PROPERTY CORNER.
12. FOUND 2" IRON PIPE, CONCRETE PLUG AND TAG, "RCE 8448" PER (R1). S39°22'23"E 0.16' FROM PROPERTY CORNER.
13. FOUND NAIL AND TAG, "RCE 8448" PER (R1). N02°28'16"W 1.23' FROM PROPERTY CORNER.
14. FOUND NAIL AND TAG, "RCE 8448" PER (R1). N00°05'41"E 1.21' OF PROPERTY CORNER.
15. FOUND LEAD, TACK AND TAG, "LS 4025". NO REFERENCE.
16. FOUND LEAD, TACK AND TAG, "LS 4787". N89°53'54"E 1.04' FROM CORNER CUT-OFF. NO REFERENCE.

**NOTICE TO CONTRACTOR**

THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ALL UTILITIES, PIPES, AND/OR STRUCTURES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

**IMPORTANT NOTICE**

Section 4216 of the Government Code requires a Dig Alert Identification Number be issued before a "Permit to Excavate" will be valid. For your Dig Alert I.D. Number call Underground Service Alert CALL 811 Two working days before you dig.

**BOUNDARY NOTES:**

A. EASTERLY LINE OF (R1) AND LEASE LINE TO H.E. RIDINGS JR., RECORDED JANUARY 27, 1970 AS INSTRUMENT NO. 201, OFFICIAL RECORDS.

B. NORTHERLY LINE OF LOT 15 PER (R1).

C. NORTHERLY LINE OF THE LAND CONVEYED TO THE STATE OF CALIFORNIA FOR FREEWAY PURPOSES PER DEED RECORDED NOVEMBER 29, 1961 AS INSTRUMENT NO. 1761 IN BOOK D1434, PAGE 16, OFFICIAL RECORDS.

**ADJACENT OWNER'S NAMES**

1. SMNC, LLP
2. TOM & DIANA MOSER
3. TAINER, BOSHNOR CO. TRUST
4. GRUBICH FAMILY TRUST
5. MEMORIAL HEIGHTS CHURCH AND FRIENDS FOUNDATION, INC.
6. MONTOYA FAMILY TRUST
7. MANUEL C. MUNGUIA
8. DIANNE WHITING, EDGAR F. DAVIS, JR.
9. ROBIN & RALPH CZARNETZKI
10. H FAMILY TRUST
11. FRANK F. PRIOR
12. CONRAD & BEATRICE FISCHER
13. BERNICE DAVIS
14. ANDREW & ROZIT LIM
15. GRUSPE FAMILY TRUST
16. E S FIELD LLC
17. MARIETTA S. PALMER
18. STATE OF CALIFORNIA

**LINE DATA TABLE**

| LINE | BEARING | DISTANCE |
|---|---|---|
| L1 | N45°14'44"W | 21.26' |

0 50 100 200

**APPROXIMATE SCALE IN FEET**

CAUTION: IF THIS SHEET IS NOT 30"x42" IT IS A REDUCED PRINT

SURVEY PREPARED BY:
JOSEPH C. TRUXAW AND ASSOCIATES, INC.
Civil Engineers & Land Surveyors
1915 W. ORANGEWOOD AVENUE, SUITE 101
ORANGE, CA 92868
PHONE: (714) 935-0265
FAX: (714) 935-0106

SURVEY PREPARED FOR
WARE MALCOMB
10 EDELMAN
IRVINE, CA 92618

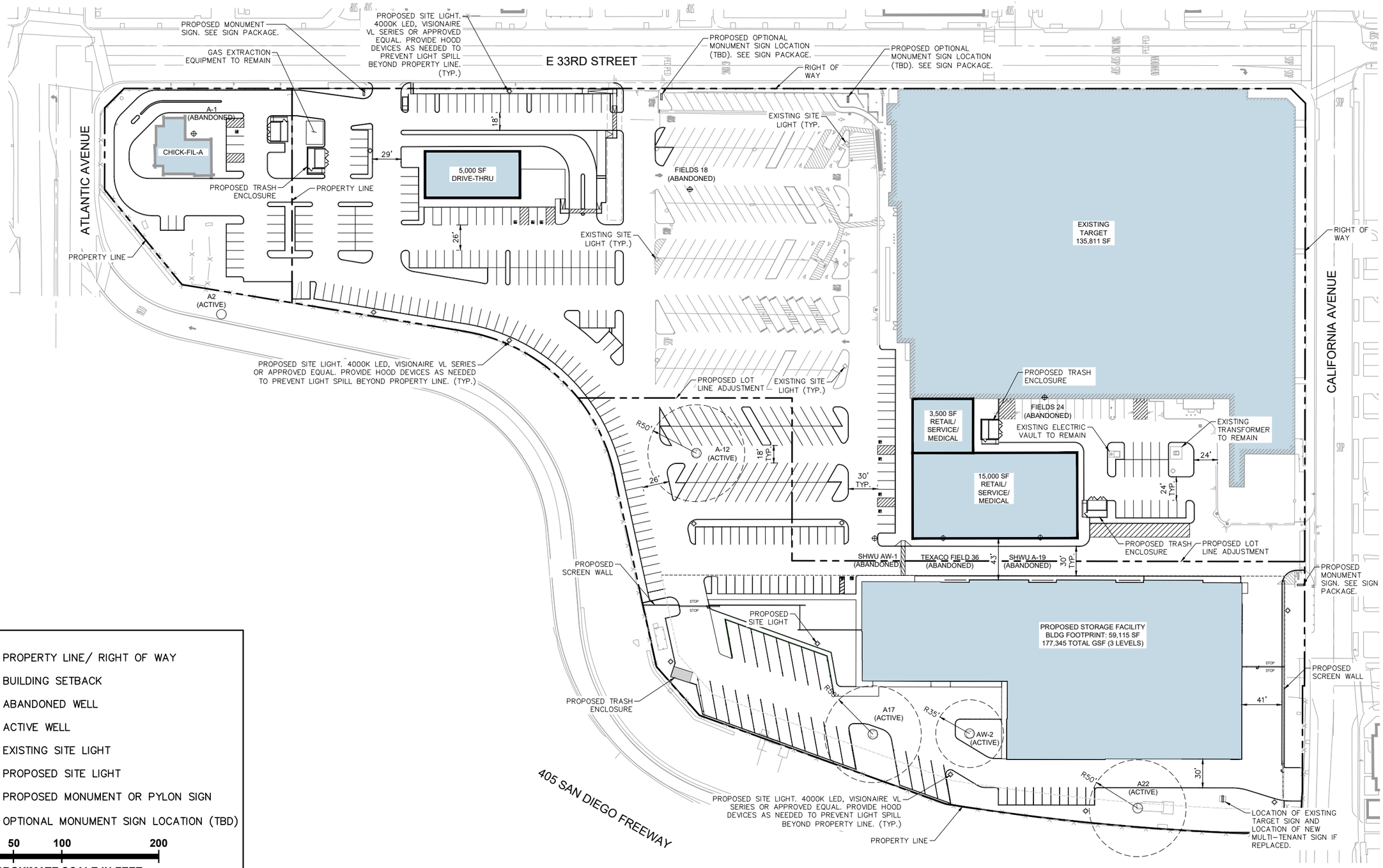
**SOURCE:** Ware Malcomb Civil Engeneering - March 2, 2021

FIGURE **3**

Meridian Consultants

# Existing Site Plan

306-001-20




**Legend**

- PROPERTY LINE/ RIGHT OF WAY
- BUILDING SETBACK
- ABANDONED WELL
- ACTIVE WELL
- EXISTING SITE LIGHT
- PROPOSED SITE LIGHT
- PROPOSED MONUMENT OR PYLON SIGN
- OPTIONAL MONUMENT SIGN LOCATION (TBD)

0 50 100 200

APPROXIMATE SCALE IN FEET

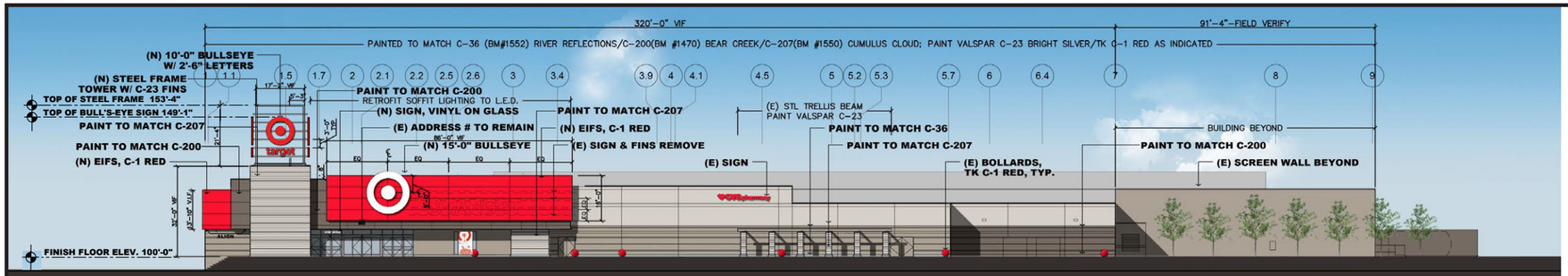
**SOURCE:** Kimley-Horn and Associates, Inc. - February 2021

FIGURE **4**

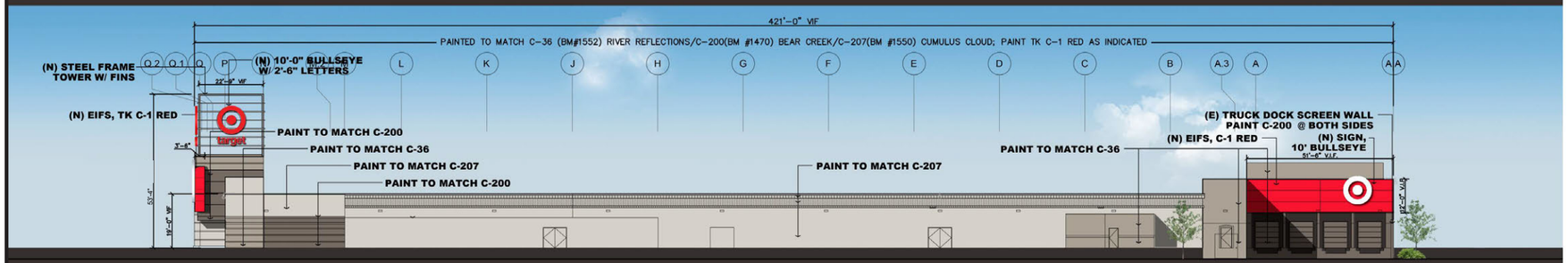
Meridian Consultants

# Proposed Site Plan

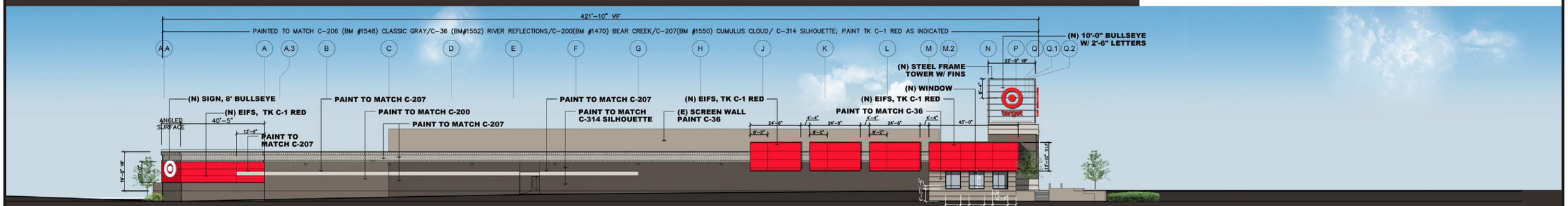
306-001-20



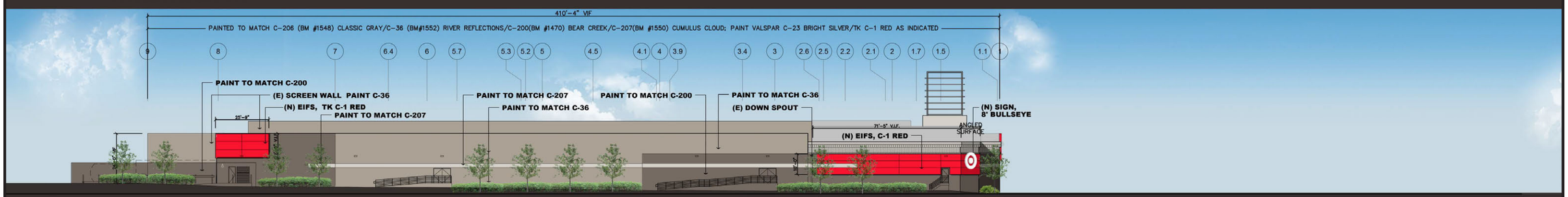

West Elevation




South Elevation




North Elevation




East Elevation

- C--207 (BM #1550) CUMULUS CLOUD
- C-36 (BM #1552) RIVER REFLECTION
- C-200 (BM #1470) BEAR CREEK
- C-314 BM #AF-655 SILHOUETTE
- C-1 (TK #8010-1) RED
- C-23 (VS #439ZZ089M) BRIGHT SILVER

*BEN-2 : MODERN, COLOR.....SILVER

*STORE EXTERIOR WALLS ARE PRIMARILY : CMU

(N) STEEL TOWER W/ ALUMINUM FINS.
FINISH C-23 BRIGHT SILVER

**SOURCE:** Target - August 21, 2020

FIGURE **5**

Meridian Consultants

# Target Retail Center Elevations

306-001-20




**SOURCE:** City of Signal Hill - 2021

FIGURE **6a**

Meridian Consultants

Self-Storage Facility North Elevations

306-001-20




**SOURCE:** City of Signal Hill - 2021

FIGURE **6b**

Meridian Consultants

Self-Storage Facility South Elevations

306-001-20

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## SECTION B. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

| | | |
|---|---|---|
| ☐ Aesthetics | ☐ Agriculture & Forestry Resources | ☐ Air Quality |
| ☐ Biological Resources | ☒ Cultural Resources | ☐ Energy |
| ☐ Geology/Soils | ☐ Greenhouse Gas Emissions | ☒ Hazards & Hazardous Materials |
| ☐ Hydrology/Water Quality | ☐ Land Use/Planning | ☐ Mineral Resources |
| ☐ Noise | ☐ Population/Housing | ☐ Public Services |
| ☐ Recreation | ☒ Transportation/Traffic | ☒ Tribal Cultural Resources |
| ☐ Utilities/Service Systems | ☐ Wildfire | ☐ Mandatory Findings of Significance |

For the evaluation of potential impacts, the questions in the Initial Study Checklist are stated and an answer is provided according to the analysis undertaken as part of the Initial Study. The analysis considers the long-term, direct, indirect, and cumulative impacts of the project. To each question, there are four possible responses:

- **No Impact**. The project would not have any measurable environmental impact on the environment.
- **Less Than Significant Impact**. The project would have the potential for impacting the environment, although this impact would be below established thresholds that are considered to be significant.
- **Less Than Significant Impact With Measures Incorporated**. The project would have the potential to generate impacts which may be considered a significant effect on the environment, although measures or changes to the development's physical or operational characteristics can reduce these impacts to levels that are less than significant.
- **Potentially Significant Impact**. The project would have impacts which are considered significant, and additional analysis is required to identify measures that could reduce these impacts to less than significant levels.

## SECTION C. DETERMINATION

(To be completed by the Lead Agency)

On the basis of this initial evaluation:

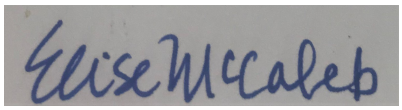
☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



Signature

3/26/2021

Date

# SECTION D. EVALUATION OF ENVIRONMENTAL IMPACTS

## I. Aesthetics

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **AESTHETICS:** *Except as provided in Public Resources Code Section 21099, would the project:* | | | | |
| a) Have a substantial adverse effect on a scenic vista? | ☐ | ☐ | ☒ | ☐ |
| b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? | ☐ | ☐ | ☐ | ☒ |
| c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? | ☐ | ☐ | ☒ | ☐ |
| d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? | ☐ | ☐ | ☒ | ☐ |

### Discussion

#### *a) Except as provided in Public Resources Code Section 21099, would the project have a substantial adverse effect on a scenic vista?*

**Less Than Significant Impact.** For purposes of determining significance under CEQA, a scenic vista is considered a publicly accessible, prominent vantage point that provides expansive views of highly valued landscapes or prominent visual elements comprising man-made or natural features. The General Plan Land Use Element states that views from the Hilltop Park "must be preserved for the benefit of the community and the general public" (Signal Hill 2001, pg. 50). Further, the Environmental Resources Element includes Policy 1.1, which states that the City will "protect views both to and from the Hill and other scenic features" (Signal Hill 1986, pg. 37). The City's View Protection Policy also identifies other unique visual landmarks such as the ocean, Long Beach skyline, the Queen Mary, the Palos Verdes peninsula, Los Angeles, and the San Gabriel/Santa Ana mountains.

The Project would redevelop an existing commercial plaza with new uses and improvements to existing uses. The scale and mass of the proposed structures would be comparable to existing commercial structures in the surrounding area. As such, the Project would not have an adverse effect on views from the top of Signal Hill or from other vantage points toward the identified visual landmarks. Impacts to scenic vistas would be a less than significant.

***b) Except as provided in Public Resources Code Section 21099, would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?***

**No Impact.** The closest officially designated state scenic highway is part of the Angeles Crest State Scenic Highway, State Route (SR) 2, from near La Cañada-Flintridge north to the San Bernardino County line. This state scenic highway is approximately 27 miles north of the project site. SR 110, Arroyo Seco Historic Parkway, between mileposts 25.7 and 31.9 in Los Angeles, is approximately 20 miles north of the project site (Caltrans 2011). The distance between the project site and these officially designated scenic highways indicate that the proposed project would not be visible from a state scenic highway. As such, the proposed project would not adversely affect the viewshed from a state scenic highway.

The project site is currently characterized by existing commercial properties, surface parking and vacant land. No historic buildings, rock outcroppings or other scenic resources, such as hilltops, streams, or slopes, currently exist on the project site. Because of the lack of scenic resources on the project site, the proposed project would have no impact on scenic resources.

***c) Except as provided in Public Resources Code Section 21099, would the project, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?***

**Less Than Significant Impact.** The proposed project would be located in an urbanized area, where there is a variety of nonresidential and residential land uses and extensive urban infrastructure improvements. For purposes of determining impact significance for projects within urbanized areas, a project is evaluated for whether it would conflict with applicable zoning or other regulations governing "scenic quality." The term "scenic quality" is not specifically defined in the threshold language of Appendix G of the CEQA Guidelines; however, for assessment of impacts involving changes in visual character and quality, this is interpreted as pertaining to zoning standards involving building height and bulk, design character, landscape elements, and consistency with scale, massing and character of surrounding development. There are no applicable federal or state regulations that pertain to aesthetic impact; however, the proposed project would need to comply with the City of Signal Hill municipal code regulations governing aesthetic character for areas zoned as Commercial General and Storage Specific Plan.

The Project would be developed consistent with the City's existing zoning regulations and the improvements to the Target store are intended to enhance its visual character. Therefore, given that the proposed project would not conflict with the applicable zoning and other regulations governing scenic quality, and would be consistent with the massing, scale, and visual character of the surrounding area, the project would have a less than significant impact in this regard.

***d) Except as provided in Public Resources Code Section 21099, would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?***

**Less Than Significant Impact.** The proposed project has an existing Target retail center in Site 1 and Site 2 is currently vacant. Therefore, there is already existing outdoor lighting in Site 1. The area is highly urbanized and therefore already impacted by night lighting from streetlights along 33rd Street and California Avenue; exterior security lights within existing uses to the northeastern portion of the Project site, single family and multi-family uses to the north and east of the project vicinity, freeway and vehicle lighting to the south; vehicle headlights on surrounding streets; traffic lights at the intersection of 33rd Street and California Avenue.

The proposed project would include wall-mounted security lighting angled downward, as well as upward-and downward-facing accent lighting within the interior of the site, such as downward lighting under the canopies at the building entrances and upward-facing, wall-mounted, decorative lighting on building exteriors. In short, the proposed project would provide illumination for safe usage and night lighting accents, which would not spill across the site boundaries, as is required by the Cal Green Building Standards Code 5.106.8, Light Pollution Reduction (incorporated into the Signal Hill Municipal Code, as described in Chapter 15.10). Further, vehicles entering and exiting the proposed project would do so at locations where there are no residential uses directly across the street; thus, headlights would not shine onto any homes when exiting site driveways on California Avenue. Regarding glare, the proposed building elevations would be constructed of concrete, with some non-reflecting glazing and metal finishes at building entrances on the building corners and unit entrances; therefore, there would be little to no light reflection from building surfaces onto surrounding uses. As such, the proposed project would not result in a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

## II. Agriculture and Forestry Resources

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **AGRICULTURE AND FORESTRY RESOURCES:** *In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:* | | | | |
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | ☐ | ☐ | ☐ | ☒ |
| b) Conflict with existing zoning for agricultural use, or a Williamson Act contract? | ☐ | ☐ | ☐ | ☒ |
| c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? | ☐ | ☐ | ☐ | ☒ |
| d) Result in the loss of forest land or conversion of forest land to non-forest use? | ☐ | ☐ | ☐ | ☒ |
| e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? | ☐ | ☐ | ☐ | ☒ |

### Discussion

***a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?***

**No Impact.** The proposed project site is not in an area of Prime Farmland, Unique Farmland, Farmland of Statewide Importance, Farmland of Local Importance, Farmland of Local Potential, or Grazing Land as identified by the California Department of Conservation's (2016) California Important Farmland Finder. The site is classified as Other land type, which is described on the Important Farmland Finder as land that is not included in any of the other mapping categories. Since the project site is not designated farmland and would not convert designated farmland to

nonagricultural uses, the proposed project would have no impact on Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.

### *b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?*

**No Impact.** The project site is not encumbered by a Williamson Act contract and the Northeast parcel is zoned Commercial General (CG). The Southeast parcel is zoned Freeway Self-Storage Specific Plan (SP-12). Therefore, since the project site is not subject to the provisions of a Williamson Act contract and is not zoned for agricultural use, no impact would occur.

### *c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?*

**No Impact.** As discussed under response to threshold b) above, the project site is zoned CG and SP-12. Therefore, implementation of the proposed project would not conflict with the existing zoning for, or cause rezoning of, forestland, timberland, or timberland zoned Timberland Production. No impact would occur.

### *d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?*

**No Impact.** The site formerly supported an oil refinery and is currently zoned as CG and SP, within a fully urbanized area where there is no forest land. A few scattered trees primarily line the perimeter of the site. However, there is no substantial concentration of trees that would constitute a forest. The site has not been managed as timberland or managed to produce forest products. There would be no loss of forestland or conversion of forestland; therefore, no impact would occur.

### *e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?*

**No Impact.** The site has an existing Target retail store and site for the proposed storage facility is currently vacant. Surrounding land uses include a combination of educational, commercial, industrial, multifamily and single-family residential, and park land uses. There are currently no agricultural operations being conducted on or surrounding the project site, and the site and surrounding areas are not zoned for agricultural uses. In addition, no forestland is located on the proposed project site or in the vicinity. Thus, no farmland or forestland would be converted to other uses under the proposed project, and no impact would occur.

## III. Air Quality

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **AIR QUALITY:** *Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:* | | | | |
| a) Conflict with or obstruct implementation of the applicable air quality plan? | ☐ | ☐ | ☒ | ☐ |
| b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard? | ☐ | ☐ | ☒ | ☐ |
| c) Expose sensitive receptors to substantial pollutant concentrations? | ☐ | ☐ | ☒ | ☐ |
| d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? | ☐ | ☐ | ☒ | ☐ |

### Discussion

#### *a) Would the project conflict with or obstruct implementation of the applicable air quality plan?*

**Less than Significant Impact.** The project is located within the South Coast Air Basin (Basin), which is governed by the South Coast Air Quality Management District (SCAQMD). Consistency with the SCAQMD 2016 Air Quality Management Plan for the South Coast Air Basin (2016 AQMP) means that a project is consistent with the goals, objectives, and assumptions set forth in the 2016 AQMP that are designed to achieve federal and state air quality standards. According to the SCAQMD CEQA Air Quality Handbook (SCAQMD 1993) in order to determine consistency with the 2016 AQMP, two main criteria must be addressed:

#### Criterion 1:

With respect to the first criterion, SCAQMD methodologies require that an air quality analysis for a project include forecasts of project emissions in relation to contributing to air quality violations and delay of attainment of federal and/or state air quality standards.

a) *Would the project result in an increase in the frequency or severity of existing air quality violations?*

Since the consistency criteria identified under the first criterion pertains to pollutant concentrations, rather than total regional emissions, an analysis of the project's pollutant emissions relative to localized pollutant concentrations is used as the basis for evaluating project consistency. As discussed in Response III(c) below, localized concentrations of carbon monoxide (CO), nitrogen oxides ($NO_X$), particulate matter less than 10 microns in diameter ($PM_{10}$), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) would be less than

significant during project construction and operations. Therefore, the proposed project would not result in an increase in the frequency or severity of existing air quality violations.[1]

b) *Would the project cause or contribute to new air quality violations?*

As discussed in Response III(b), the proposed project would result in emissions that are below the SCAQMD regional thresholds, with Mitigation Measure III-1 to reduce NOx emissions during grading. Therefore, the project would not have the potential to cause a violation of the ambient air quality standards.

c) *Would the project delay timely attainment of air quality standards or the interim emissions reductions specified in the AQMP?*

As discussed in Response III(b), the proposed project would result in less than significant impacts with regard to short-term construction and long-term operational emissions. As such, the project would not delay the timely attainment of air quality standards or 2016 AQMP emissions reductions.

### Criterion 2:

With respect to the second criterion for determining consistency with SCAQMD and Southern California Association of Governments (SCAG) air quality policies, it is important to recognize that air quality planning within the Basin focuses on attainment of ambient air quality standards at the earliest feasible date. Projections for achieving air quality goals are based on assumptions regarding population, housing, and growth trends. Thus, the SCAQMD's second criterion for determining project consistency focuses on whether or not the proposed project exceeds the assumptions utilized in preparing the forecasts presented in the 2016 AQMP. Determining whether or not a project exceeds these assumptions involves the evaluation of the three criteria outlined below. The following discussion analyzes each of these criteria.

a) *Would the project be consistent with the population, housing, and employment growth projections utilized in the preparation of the AQMP?*

In the case of the 2016 AQMP, three sources of data form the basis for the projections of air pollutant emissions: the Signal Hill General Plan (General Plan), SCAG's regional growth forecast, and SCAG's 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). The population, housing, and employment forecasts in the 2016 RTP/SCS, developed by SCAG, are based on local general plans as well as input from local governments. The SCAQMD has incorporated these same demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment) into the 2016 AQMP. Though the Project would increase commercial activity on the site, it would not cause the City's General Plan buildout employment levels to be exceeded. As the SCAQMD has incorporated these same projections into the 2016 AQMP, it can be concluded that the project would be consistent with the projections.

[1] Because reactive organic gases (ROGs) are not a criteria pollutant, there is no ambient standard or localized threshold for ROGs. Due to the role ROG plays in ozone formation, it is classified as a precursor pollutant and only a regional emissions threshold has been established.

b) *Would the project implement all feasible air quality mitigation measures?*

Compliance with all applicable SCAQMD rules for emission reduction measures would be required as identified in Response III(b) and III(c) and Mitigation Measure III-1 would also be implemented to reduce NOx emissions during grading. As such, the proposed project meets this 2016 AQMP consistency criterion.

c) *Would the project be consistent with the land use planning strategies set forth in the AQMP?*

The AQMP contains air pollutant reduction strategies and demonstrates that the applicable ambient air quality standards can be achieved within the time frames required under federal law. Growth projections from local general plans adopted by cities in the SCAQMD are provided to SCAG, which develops regional growth forecasts that are used to develop future air quality forecasts for the AQMP. Development consistent with the growth projections in the General Plan is considered to be consistent with the AQMP. The proposed project is consistent with the land use designation and development density presented in the General Plan. Therefore, the proposed project meets this AQMP consistency criterion.

### *b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?*

**Less than Significant Impact.**

#### Criteria Pollutants

Criteria pollutants are pollutants regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. The Basin is currently in state nonattainment status for ozone ($O_3$), $PM_{2.5}$, and $PM_{10}$, as well as federal nonattainment status for $O_3$ and $PM_{2.5}$. Criteria pollutants, their typical sources, and effects are identified below.

Carbon Monoxide (CO). CO is an odorless, colorless toxic gas that is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. CO replaces oxygen in the body's red blood cells. Individuals with a deficient blood supply to the heart, patients with diseases involving heart and blood vessels, fetuses (unborn babies), and patients with chronic hypoxemia (oxygen deficiency) as seen in high altitudes are most susceptible to the adverse effects of CO exposure. People with heart disease are also more susceptible to developing chest pains when exposed to low levels of carbon monoxide.

Ozone ($O_3$). $O_3$ occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. The troposphere extends approximately 10 miles above ground level, where it meets the second layer, the stratosphere. The stratospheric (the "good" ozone layer) extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays. "Bad" $O_3$ is a photochemical pollutant, and needs volatile organic compounds (VOCs), $NO_X$, and sunlight to form; therefore, VOCs and $NO_X$ are $O_3$ precursors. To reduce $O_3$ concentrations, it is necessary to control the emissions of these ozone precursors. Significant $O_3$ formation generally requires an adequate amount of precursors in the atmosphere and a period of several hours in a stable atmosphere with strong sunlight. High $O_3$ concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

While $O_3$ in the upper atmosphere (stratosphere) protects the earth from harmful ultraviolet radiation, high concentrations of ground-level $O_3$ (in the troposphere) can adversely affect the human respiratory system and other tissues. $O_3$ is a strong irritant that can constrict the airways, forcing the respiratory system to work hard to deliver oxygen. Individuals exercising outdoors, children, and people with preexisting lung disease such as asthma and chronic pulmonary lung disease are considered to be the most susceptible to the health effects of $O_3$. Short-term exposure (lasting for a few hours) to $O_3$ at elevated levels can result in aggravated respiratory diseases such as emphysema, bronchitis and asthma, shortness of breath, increased susceptibility to infections, inflammation of the lung tissue, and increased fatigue, as well as chest pain, dry throat, headache, and nausea.

Nitrogen Dioxide ($NO_2$). $NO_X$ are a family of highly reactive gases that are a primary precursor to the formation of ground-level ozone and react in the atmosphere to form acid rain. $NO_2$ (often used interchangeably with $NO_X$) is a reddish-brown gas that can cause breathing difficulties at elevated levels. Peak readings of $NO_2$ occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries, and other industrial operations). $NO_2$ can irritate and damage the lungs and lower resistance to respiratory infections such as influenza. The health effects of short-term exposure are still unclear. However, continued or frequent exposure to $NO_2$ concentrations that are typically much higher than those normally found in the ambient air may increase acute respiratory illnesses in children and increase the incidence of chronic bronchitis and lung irritation. Chronic exposure to $NO_2$ may aggravate eyes and mucus membranes and cause pulmonary dysfunction.

Coarse Particulate Matter ($PM_{10}$). $PM_{10}$ refers to suspended particulate matter, which is smaller than 10 microns or ten one-millionths of a meter. $PM_{10}$ arises from sources such as road dust, diesel soot, combustion products, construction operations, and dust storms. $PM_{10}$ scatters light and significantly reduces visibility. In addition, these particulates penetrate into lungs and can potentially damage the respiratory tract. On June 19, 2003, the California Air Resources Board (CARB) adopted amendments to the statewide 24-hour particulate matter standards based upon requirements set forth in the Children's Environmental Health Protection Act (Senate Bill 25).

Fine Particulate Matter ($PM_{2.5}$). Due to recent increased concerns over health impacts related to fine particulate matter (particulate matter 2.5 microns in diameter or less), both state and federal $PM_{2.5}$ standards have been created. Particulate matter impacts primarily affect infants, children, the elderly, and those with preexisting cardiopulmonary disease. In 1997, the U.S. Environmental Protection Agency (EPA) announced new $PM_{2.5}$ standards. Industry groups challenged the new standard in court and the implementation of the standard was blocked. However, upon appeal by the EPA, the U.S. Supreme Court reversed this decision and upheld the EPA's new standards. On January 5, 2005, the EPA published a Final Rule in the Federal Register that designates the Basin as a nonattainment area for federal $PM_{2.5}$ standards. On June 20, 2002, CARB adopted amendments for statewide annual ambient particulate matter air quality standards. These standards were revised/established due to increasing concerns by CARB that previous standards were inadequate, as almost everyone in California is exposed to levels at or above the current state standards during some parts of the year, and the statewide potential for significant health impacts associated with particulate matter exposure was determined to be large and wide-ranging.

Sulfur Dioxide ($SO_2$).

$SO_2$ is a colorless, irritating gas with a rotten egg smell; it is formed primarily by the combustion of sulfur-containing fossil fuels. Sulfur dioxide is often used interchangeably with sulfur oxides ($SO_X$)

and lead. Exposure of a few minutes to low levels of $SO_2$ can result in airway constriction in some asthmatics.

Volatile Organic Compounds (VOC). VOCs are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form ozone to the same extent when exposed to photochemical processes. VOCs often have an odor; some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to $O_3$, which is a criteria pollutant. The SCAQMD uses the terms VOC and ROG (see below) interchangeably.

Reactive Organic Gases (ROG). Similar to VOC, ROG are also precursors in forming ozone and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight. ROGs are a criteria pollutant since they are a precursor to $O_3$, which is a criteria pollutant. The SCAQMD uses the terms ROG and VOC interchangeably.

## Short-Term Construction Emissions

The project involves construction activities associated with paving, construction, and architectural coating applications. Exhaust emission factors for typical diesel-powered heavy equipment are based on the California Emissions Estimator Model version 2016.3.2 (CalEEMod) program defaults. Variables factored into estimating the total construction emissions include the level of activity, length of construction period, number of pieces and types of equipment in use, site characteristics, weather conditions, number of construction personnel, and the amount of materials to be transported on- or off-site. The analysis of daily construction emissions has been prepared utilizing CalEEMod. Refer to Appendix A, *Air Quality Worksheets*, for the CalEEMod outputs and results. *Table III-1, Construction-Related Emissions*, presents the anticipated daily short-term construction emissions.

**Table III-1 Construction-Related Emissions**

| Emissions Source | Pollutant (pounds/day)[1,2] | | | | | |
|---|---|---|---|---|---|---|
| | ROG | $NO_X$ | CO | $SO_2$ | $PM_{10}$ | $PM_{2.5}$ |
| **Emissions Without Mitigation[2]** | 50 | 19 | 20 | 0.04 | 2 | 1 |
| *SCAQMD Thresholds* | *75* | *100* | *550* | *150* | *150* | *55* |
| ***Threshold Exceeded?*** | ***No*** | ***No*** | ***No*** | ***No*** | ***No*** | ***No*** |
| | | | | | | |
| **Emissions With Mitigation[2,3]** | 50 | 19 | 20 | 0.04 | 2 | 1 |
| *Volume Reduced* | *0* | *0* | *0* | *0* | *0* | *0* |

Notes:
1. Emissions were calculated using CalEEMod version 2016.3.2, as recommended by the SCAQMD.
2. Totals shown are for highest intensity construction activities that generate these pollutants. The emissions in this table include reduction/credits based on compliance with SCAQMD Rules that are included in CalEEMod. The emission reduction measures applied in CalEEMod includes the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas

| |
|---|
| quickly; water exposed surfaces three times daily; cover stock piles with tarps; water all haul roads three times daily; and limit speeds on unpaved roads to 15 miles per hour. |
| Refer to Appendix A, *Air Pollutant Worksheets*, for assumptions used in this analysis. |

## Fugitive Dust Emissions

Construction activities are a source of fugitive dust emissions that may have a substantial, temporary impact on local air quality. In addition, fugitive dust may be a nuisance to those living and working in the project area. Fugitive dust emissions are associated with land clearing, ground excavation, cut and fill, and truck travel on unpaved roadways (including demolition as well as construction activities). Fugitive dust emissions vary substantially from day to day, depending on the level of activity, specific operations, and weather conditions. Fugitive dust from grading, excavation, and construction is expected to be short term and would cease upon project completion. Most of this material is inert silicates, rather than the complex organic particulates released from combustion sources, which are more harmful to health.

Dust (larger than 10 microns) generated by such activities usually becomes more of a local nuisance than a serious health problem. Of particular health concern is the amount of $PM_{10}$ generated as a part of fugitive dust emissions. $PM_{10}$ poses a serious health hazard alone or in combination with other pollutants. $PM_{2.5}$ is mostly produced by mechanical processes. These include automobile tire wear, industrial processes such as cutting and grinding, and resuspension of particles from the ground or road surfaces by wind and human activities such as construction or agriculture. $PM_{2.5}$ is mostly derived from combustion sources, such as automobiles, trucks, and other vehicle exhaust, as well as from stationary sources. These particles are either directly emitted or are formed in the atmosphere from the combustion of gases such as $NO_X$ and $SO_X$ combining with ammonia. $PM_{2.5}$ components from material in the earth's crust, such as dust, are also present, with the amount varying in different locations.

The project would implement all required SCAQMD dust control techniques (i.e., daily watering), limitations on construction hours, and adhere to SCAQMD Rules 402 and 403 (which require watering of inactive and perimeter areas, track out requirements, etc.), to reduce $PM_{10}$ and $PM_{2.5}$ concentrations. As depicted in *Table III-1*, total $PM_{10}$ and $PM_{2.5}$ emissions would not exceed the SCAQMD thresholds during construction. Thus, construction air quality impacts would be less than significant.

## Construction Equipment and Worker Vehicle Exhaust

Exhaust emissions from construction activities include emissions associated with the transport of machinery and supplies/materials to and from the project site, transport of soil materials off- and on-site, employee commutes to/from the project site, and emissions produced on-site as the equipment is used. As shown in *Table III-1*, the calculated level of NOx emissions produced by diesel-fueled on-site machinery and trucks that haul machinery, supplies and soils off or to the project site would be approximately 19 pounds/day, which is below the 100 pounds/day threshold. As such, the level of NOx emissions associated with the proposed construction plan is considered to be less than significant.

## ROG Emissions

In addition to gaseous and particulate emissions, the application of asphalt and surface coatings creates ROG emissions, which are $O_3$ precursors. In accordance with the methodology prescribed by the SCAQMD, the ROG emissions associated with paving and architectural coating have been quantified with the CalEEMod model. As required by SCAQMD Regulation XI, Rule 1113 – *Architectural Coating*,

all architectural coatings for the proposed structures would comply with specifications on painting practices as well as regulation on the ROG content of paint (SCAQMD 2016b). ROG emissions associated with the proposed project would be less than significant; refer to *Table III-1*.

## Long-Term (Operational) Emissions

Long-term air quality impacts would consist of mobile source emissions generated from project-related traffic and emissions from stationary area and energy sources. Emissions associated with each of these sources were calculated and are discussed below.

### Mobile Source

Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions. Depending upon the pollutant, the potential air quality impact may be of either regional or local concern. For example, ROG, $NO_X$, $SO_X$, $PM_{10}$, and $PM_{2.5}$ are all pollutants of regional concern ($NO_X$ and ROG react with sunlight to form $O_3$ [photochemical smog], and wind currents readily transport $SO_X$, $PM_{10}$, and $PM_{2.5}$). However, CO tends to be a localized pollutant, dispersing rapidly at the source.

Project-generated vehicle emissions have been estimated using CalEEMod. According to the Target Center Retail Expansion and Self-Storage Facility Traffic Study (Traffic Impact Analysis) prepared by Linscott Law & Greenspan (dated February 26, 2021), the proposed project would generate approximately a maximum 2,033 total daily passenger car equivalent trips.[2]. *Table III-2 Long-Term Air Emissions*, presents the anticipated mobile source emissions.

**Table III-2 Long-Term Air Emissions**

| Emissions Source | Pollutant (pounds/day)[1] | | | | | |
|---|---|---|---|---|---|---|
| | ROG | $NO_X$ | CO | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| Area | 5 | <1 | <1 | 0 | <1 | <1 |
| Energy | <1 | <1 | <1 | <1 | <1 | <1 |
| Mobile | 5 | 24 | 48 | <1 | 15 | 4 |
| ***Total Winter Emissions***[3] | 10 | 24 | 49 | <1 | 15 | 4 |
| *SCAQMD Threshold* | *55* | *55* | *550* | *150* | *150* | *55* |
| ***Is Threshold Exceeded? (Significant Impact?)*** | ***No*** | ***No*** | ***No*** | ***No*** | ***No*** | ***No*** |

Notes:
1. Emissions were calculated using CalEEMod version 2016.3.2, as recommended by the SCAQMD.
2. The numbers may be slightly off due to rounding.

Refer to Appendix A, *Air Quality Worksheets*, for assumptions used in this analysis.

### Area Source Emissions

Area source emissions would be generated from consumer products, architectural coating, and landscaping maintenance. This would result in minor levels of reactive organic gases and minute levels of CO, as shown in *Table III-2*.

[2] One car is one "passenger car equivalent." A truck is equal to two or three passenger car equivalents in that a truck requires longer to start, goes slower, and accelerates slower. Loaded trucks have a higher passenger car equivalent than empty trucks.

### Energy Source Emissions

Energy source emissions would be generated as a result of electricity and natural gas usage associated with the proposed project; refer to *Table III-2*. The primary use of electricity and natural gas by the project would be for space heating and cooling, water heating, ventilation, lighting, appliances, and electronics. Note that the proposed project would not include installation of natural gas lines to serve any buildings. Some future building occupants may, however, elect to install their own gas systems and the energy emissions totals shown in *Table III-2* account for that.

### Total Operational Emissions

As shown in *Table III-2*, the total operational emissions would not exceed established SCAQMD thresholds. Therefore, impacts in this regard would be less than significant.

## Cumulative Construction Impacts

With respect to the proposed project's construction-period air quality emissions and cumulative Basin-wide conditions, the SCAQMD has developed strategies to reduce criteria pollutant emissions, which are outlined in the 2016 AQMP pursuant to Federal Clean Air Act mandates. As such, the proposed project would comply with SCAQMD Rule 403 requirements and implement all feasible SCAQMD rules to reduce construction air emissions to the extent feasible. Rule 403 requires that fugitive dust be controlled and reduced with the best available control measures so that it does not remain visible in the atmosphere beyond the property line of the proposed project. In addition, the proposed project would comply with adopted 2016 AQMP emissions control measures. Pursuant to SCAQMD rules and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements would also be imposed on construction projects throughout the Basin.

According to the CEQA Air Quality Handbook, project-related emissions that fall below the recommended construction thresholds are considered less than significant on a project level or with respect to cumulative impacts. As discussed above, the project's short-term construction emissions would be below the SCAQMD thresholds and would result in a less than significant impact, with Mitigation Measure III-1 to reduce NOx emissions during grading. Thus, it can be reasonably inferred that the project's construction emissions would not contribute to a cumulatively considerable air quality impact for nonattainment criteria pollutants in the Basin. Thus, a less than significant impact would occur in this regard.

## Air Quality Health Impacts

Adverse health effects induced by criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, and the number and character of exposed individual [e.g., age, gender]). In particular, ozone precursors VOCs and $NO_X$ affect air quality on a regional scale. Health effects related to ozone are therefore the product of emissions generated by numerous sources throughout a region. Existing models have limited sensitivity to small changes in criteria pollutant concentrations, and, as such, translating project-generated criteria pollutants to specific health effects or additional days of nonattainment would produce meaningless results. In other words, the project's less than significant increases in regional air pollution from criteria air pollutants would have nominal or negligible impacts on human health.

As noted in the Brief of Amicus Curiae by the SCAQMD (April 6, 2015), the SCAQMD acknowledged it would be extremely difficult, if not impossible, to quantify health impacts of criteria pollutants for various reasons including modeling limitations as well as where in the atmosphere air pollutants interact and form. Furthermore, as noted in the Brief of Amicus Curiae by the San Joaquin Valley Air Pollution Control District (April 13, 2015), the district acknowledged that currently available modeling tools are not equipped to provide a meaningful analysis of the correlation between an individual development project's air emissions and specific human health impacts.

The SCAQMD acknowledges that health effects quantification from ozone, as an example, is correlated with the increases in the ambient level of ozone in the air (concentration) that an individual person breathes. SCAQMD's Brief of Amicus Curiae states that it would take a large amount of additional emissions to cause a modeled increase in ambient ozone levels over the entire region. The SCAQMD states that based on its own modeling in the 2012 Air Quality Management Plan, a reduction of 432 tons (864,000 pounds) per day of $NO_X$ and a reduction of 187 tons (374,000 pounds) per day of VOCs would reduce ozone levels at the highest monitored site by only nine parts per billion. As such, the SCAQMD concludes that it is not currently possible to accurately quantify ozone-related health impacts caused by $NO_X$ or VOC emissions from relatively small projects (defined as projects with regional scope) due to photochemistry and regional model limitations. Thus, as the project would not exceed SCAQMD thresholds for construction and operational air emissions, the project would have a less than significant impact for air quality health impacts.

### Cumulative Long-Term Impacts

As discussed previously, the proposed project would not result in significant long-term air quality impacts, as emissions would not exceed SCAQMD adopted operational thresholds. As a result, the proposed project would not contribute a cumulatively considerable net increase of any criteria pollutant. Additionally, adherence to SCAQMD rules and regulations would alleviate potential impacts related to cumulative conditions on a project-by-project basis. Emission reduction technology, strategies, and plans are constantly being developed and applied throughout the Basin. Therefore, cumulative operational impacts associated with implementation of the proposed project would be less than significant.

## *c) Would the project expose sensitive receptors to substantial pollutant concentrations?*

**Less Than Significant Impact.** Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.

Sensitive receptors near the project site include surrounding residences to the north, east, and south. The nearest sensitive receptors are residents to the north and east.

### Localized Significance Thresholds

Localized significance thresholds (LSTs) were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized*

*Significance Threshold Methodology* (dated June 2003 [revised 2008]) for guidance. The LST methodology assists lead agencies in analyzing localized air quality impacts. The SCAQMD provides the LST lookup tables for 1-, 2-, and 5-acre projects emitting CO, $NO_X$, $PM_{2.5}$, or $PM_{10}$. The LST methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources traveling over the roadways. The project is located within Source Receptor Area (SRA) 4, South Coastal LA County.

## Construction LST

The SCAQMD guidance on applying CalEEMod to LSTs specifies the number of acres a particular piece of equipment would likely disturb per day. The Project Based on the SCAQMD guidance, the project would disturb approximately 5 acres of land per day during the building construction, paving, and architectural coating phase. Therefore, the LST thresholds for 5 acres were utilized for the construction LST analysis. The closest sensitive receptors are residential uses approximately 40 feet north of the project site. These sensitive land uses may be potentially affected by air pollutant emissions generated during on-site construction activities. LST thresholds are provided for distances to sensitive receptors of 25, 50, 100, 200, and 500 meters. As the nearest sensitive uses are approximately 40 feet north of the project site, the lowest available LST values for 25 meters were used.

*Table III-3, Localized Significance of Construction Emissions*, shows the localized unmitigated and mitigated construction-related emissions for $NO_X$, CO, $PM_{10}$, and $PM_{2.5}$ compared to the LSTs for SRA 4, South Coastal LA County. It is noted that the localized emissions presented in *Table III-3* are less than those in *Table III-1* because localized emissions include only on-site emissions (i.e., from construction equipment and fugitive dust), and do not include off-site emissions (i.e., from hauling activities). As shown in *Table III-3*, the project's localized construction emissions would not exceed the LSTs for SRA 4. Therefore, localized significance impacts from construction would be less than significant.

**Table III-3 Localized Significance of Construction Emissions**

| Source | Pollutant (pounds/day)[3] | | | |
|---|---|---|---|---|
| | $NO_X$ | CO | $PM_{10}$ | $PM_{2.5}$ |
| **Construction (Grading Phase)** | | | | |
| On-Site Emissions [1,2] | 16 | 16 | 1 | 1 |
| Localized Significance Threshold[3] | 123 | 1,530 | 14 | 8 |
| ***Thresholds Exceeded?*** | ***No*** | ***No*** | ***No*** | ***No*** |

Notes:

1. The grading phase emissions are presented as the worst-case scenario for NOx, CO, $PM_{10}$, and $PM_{2.5}$.
2. The construction emissions in this table include reduction/credits based on the application of dust control techniques as required by SCAQMD Rule 403. The dust control techniques include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces twice daily; cover stock piles with tarps; water all haul roads three times daily; and limit speeds on unpaved roads to 15 miles per hour.
3. The Localized Significance Threshold was determined using Appendix C of the SCAQMD Final Localized Significant Threshold Methodology guidance document for pollutants $NO_X$, CO, $PM_{10}$, and $PM_{2.5}$. The Localized Significance Threshold was based on the anticipated daily acreage disturbance for construction (approximately 5 acres; therefore the 5-acre threshold was used) and the source receptor area (SRA 4).

Refer to Appendix A, *Air Pollutant Worksheets*, for assumptions used in this analysis.

Operational LST

As seen in *Table III-4, Localized Significance of Operational Emissions*, project-related operational area source emissions would be negligible and would be below the LSTs. Therefore, operational LST impacts would be less than significant in this regard.

**Table III-4 Localized Significance of Operational Emissions**

| Source | Pollutant (pounds/day) | | | |
|---|---|---|---|---|
| | $NO_X$ | CO | $PM_{10}$ | $PM_{2.5}$ |
| **Operational** | | | | |
| Area Source Emissions | <1 | <1 | <1 | <1 |
| *Localized Significance Threshold*[1] | 123 | 1,530 | 4 | 2 |
| ***Thresholds Exceeded?*** | ***No*** | ***No*** | ***No*** | ***No*** |

Notes:
1. The Localized Significance Threshold was determined using Appendix C of the SCAQMD *Final Localized Significant Threshold Methodology* guidance document for pollutants $NO_X$, CO, $PM_{10}$, and $PM_{2.5}$. The Localized Significance Threshold was based on the total acreage for operations (the 5-acre threshold was used), the distance to sensitive receptors, and the source receptor area (SRA 4).

Based on the above, air quality health impacts would be less than significant.

### *d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?*

**Less Than Significant Impact.** According to the SCAQMD CEQA Air Quality Handbook, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed project does not include any uses identified by the SCAQMD as being associated with odors and would not generate heavy truck trips with high concentrations of diesel exhaust or other emissions leading to odors. In addition, California Health & Safety Code, Division 26, Part 4, Chapter 3, Section 41700 prohibits the emission of any material which causes nuisance to a considerable number of persons or endangers the comfort, health, or safety of the public. Projects required to obtain permits from SCAQMD, typically industrial and some commercial projects, are evaluated by SCAQMD staff for potential odor nuisance and conditions may be applied (or control equipment required) where necessary to prevent occurrence of public nuisance.

Construction activities associated with the project may generate detectable odors from heavy-duty equipment exhaust. Construction-related odors would be short term in nature and cease upon project completion. Additionally, the proposed uses are not within the categories of odor emitting uses. Therefore, the project would not emit other types of emissions, including emissions leading to odors, adversely affecting a substantial number of people. Impacts would be less than significant.

## IV. Biological Resources

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **BIOLOGICAL RESOURCES:**<br>*Would the project:* | | | | |
| a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | ☐ | ☐ | ☒ | ☐ |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service? | ☐ | ☐ | ☐ | ☒ |
| c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? | ☐ | ☐ | ☐ | ☒ |
| d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? | ☐ | ☐ | ☒ | ☐ |
| e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? | ☐ | ☐ | ☐ | ☒ |
| f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? | ☐ | ☐ | ☐ | ☒ |

### Discussion

***a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?***

**Less than Significant Impact.** The entire project site has been fully disturbed by past oil refinery activities. Moreover, there are still active oil wells present. Most of the site is devoid of any surface vegetation, apart from scattered ruderal vegetation and ornamental trees. There are no native plant

communities or any natural or man-made water features within or near the project site. The lands surrounding the site are developed with streets, light industrial, educational, residential, and commercial uses, which have disturbed and replaced natural habitat.

The City of Signal Hill's General Plan Environmental Resources Element (1986) states that no species of plant or wildlife currently designated as rare or threatened has been located or is expected to occur within the city. While the Environmental Resources Element was published in 1986, this statement is still relevant, as no known habitat has been disturbed or removed in the last 30 years by the conversion of undeveloped land and oil fields and associated oil refinery and production land uses to urban development. Therefore, since the proposed project would not eliminate any native wildlife habitat or sensitive plant communities and would not affect any important habitat linkages that could support sensitive species, the project would not result in a substantial adverse effect on any candidate, sensitive, or special-status species. As such, the impact would be less than significant.

### *b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?*

**No Impact.** There are no rivers or streams and no riparian habitat or any other kind of sensitive natural community in or within the immediate vicinity of the fully disturbed project site. The General Plan Environmental Resources Element (1986) has not identified any sensitive natural communities on or within the area of the project site. The project site is characterized by barren ground surfaces, pipelines, and related devices associated with a soil vapor removal system, scattered ruderal vegetation, and a few ornamental trees that primarily line the perimeter of the project site. As such, the proposed development would have no impact on riparian habitat or sensitive natural habitat.

### *c) Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

**No Impact.** Wetlands are defined by Section 404 of the federal Clean Water Act as land that is flooded or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that normally does support, a prevalence of vegetation adapted to life in saturated soils. Wetlands include areas such as swamps, marshes, and bogs. There is no wetland habitat on the project site or in the immediate area, which is fully urbanized. The US Fish and Wildlife Service's (2018) National Wetland Inventory shows that the nearest wetland habitat occurs along the Los Angeles River, approximately 2 miles west of the project site. As a result, the proposed project would have no impact on wetlands.

### *d) Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

**Less than Significant.** The project site has been heavily disturbed by past oil refinery facilities, and the surrounding area is fully urbanized, dominated by buildings and other structures, pavement, and ornamental vegetation such as turf grass, trees, and shrubs. There are no forms of natural wildlife habitat, no rivers, lakes or streams, and no native wildlife nursery sites in this area. The highly disturbed

local landscape does not provide suitable habitat to support native resident or migratory fish or wildlife movement. While there are ornamental trees within the existing parking lot, those trees would be replaced by additional trees as part of the proposed landscape plan. As such, the Project would not remove any valuable biological habitat that currently supports movement of fish or wildlife, nor would it inhibit, disturb, or alter the existing patterns of wildlife movement that occur elsewhere. Therefore, the project would have a less than significant impact on movement wildlife species.

### *e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

**No Impact.** The City of Signal Hill does not have any policies or ordinances specifically protecting biological resources. The project site is not within a habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. Therefore, the proposed project would not conflict with any City of Signal Hill regulations protecting biological resources, nor would the project conflict with any adopted habitat conservation plans. As such, the proposed project would have no impact.

### *f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

**No Impact.** The City of Signal Hill does not have any policies or ordinances specifically protecting biological resources. The project site is not within a habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. Therefore, the proposed project would not conflict with any City of Signal Hill regulations protecting biological resources, nor would the project conflict with any adopted habitat conservation plans. As such, the proposed project would have no impact.

## V. Cultural Resources

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **CULTURAL RESOURCES:**<br>*Would the project:* | | | | |
| a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5? | ☐ | ☐ | ☒ | ☐ |
| b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5? | ☐ | ☒ | ☐ | ☐ |
| c) Disturb any human remains, including those interred outside of dedicated cemeteries? | ☐ | ☒ | ☐ | ☐ |

### Discussion

#### *a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?*

**Less than Significant Impact.** Section 15064.5 of the CEQA Guidelines generally defines a historic resource as a resource that is: (1) listed in, or determined to be eligible for listing in the California Register of Historical Resources (California Register); (2) included in a local register of historical resources (pursuant to Section 5020.1(k) of the Public Resources Code); or (3) identified as significant in an historical resources survey (meeting the criteria in Section 5024.1(g) of the Public Resources Code). Additionally, any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register, which automatically includes all properties listed in the National Register of Historic Places and those formally determined to be eligible for listing in the National Register.

The Project site is currently developed with a commercial building, surface parking, and vacant land used for oil extraction. The Project would improve the site with additional commercial structures. The site is not designated or eligible for listing on the National Register of Historic Places or the California Register of Historic Places. In its General Plan, the City has identified the historic character of downtown Signal Hill and the Crescent Heights neighborhood, both distant from the Project site. Construction and operation of the Project would not alter any of the physical characteristics or context of any nearby historic resources. Therefore, impacts would be less than significant.

#### *b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?*

**Less Than Significant Impact with Mitigation Incorporated.** The Project Site is located within an urbanized area that has been subject to grading and development in the past. There are no known archaeological sites or archaeological survey areas on or adjacent to the site. Nonetheless, unknown

archaeological resources could exist at the Project Site and could be encountered during grading and excavation activities as there are recorded cultural resource sites within the City of Signal Hill and nearby portions of Long Beach. Mitigation Measure MM CUL-1 will be implemented to avoid significant impacts in the event that potentially significant archaeological resources are unearthed:

**Mitigation Measures**

**MM V-1** **Treatment of previously unidentified archaeological deposits.** If suspected prehistoric or historical archaeological deposits are discovered during construction, all work within 25 feet of the discovery shall be redirected and a Secretary of the Interior Professional Qualified and/or Registered Professional Archaeologist shall assess the situation and make recommendations regarding the treatment of the discovery. Impacts to significant archaeological deposits should be avoided if feasible, but if such impacts cannot be avoided, the deposits should be evaluated for their eligibility for the California Register. If the deposit is not California Register eligible, no further protection of the find is necessary. If the deposits are California Register eligible, impacts shall be avoided or mitigated. Acceptable mitigation may consist of but is not necessarily limited to systematic recovery and analysis of archaeological deposits, recording the resource, preparation of a report of findings, and accessioning recovered archaeological materials at an appropriate curation facility.

### *c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?*

**Less Than Significant Impact with Mitigation Incorporated.** The Project is located in an urbanized area and has been subject to grading and development in the past. No known burial sites are located on or adjacent to the site. It is unlikely that intact human remains exist on the site. Nonetheless, as the site is considered to have the potential for archaeological resources and Tribal Cultural resources, MM V-1, discussed above, shall mitigate any potential impact relating to these resources and to subsurface human remains to a level of less than significant.

# VI. Energy

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **ENERGY:**<br>*Would the project:* | | | | |
| a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? | ☐ | ☐ | ☒ | ☐ |
| b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? | ☐ | ☐ | ☐ | ☒ |

## Discussion

### *a) Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?*

**Less Than Significant Impact.**

The 2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6), commonly referred to as Title 24, became effective on January 1, 2017. In general, Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The 2016 Title 24 standards are 5 percent more efficient than previous standards for nonresidential development (CEC 2016). The standards offer developers better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses. Additionally, the 2019 Title 24 standards took effect on January 1, 2020. Under 2019 Title 24 standards, nonresidential buildings will use about 30 percent less energy, mainly due to lighting upgrades, when compared to 2016 Title 24 standards (CEC 2019).

The 2016 California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as CALGreen, is the first-in-the-nation mandatory green buildings standards code. The California Building Standards Commission developed the green building standards in an effort to meet the goals of California's landmark initiative Assembly Bill (AB) 32, which established a comprehensive program of cost-effective reductions of greenhouse gas (GHGs) emissions to 1990 levels by 2020. CALGreen was developed to (1) reduce GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the environmental directives of the state administration. CALgreen, which went into effect on January 1, 2017, requires that new buildings employ water efficiency and conservation, increase building system efficiencies (e.g., lighting, heating/ventilation and air conditioning [HVAC], and plumbing fixtures), divert construction waste from landfills, and incorporate electric vehicles charging infrastructure.

The Project would be designed and operated in compliance with both the 2016 Building Energy Efficiency Standards and the California Green Building Standards Code. Construction would comply

with the applicable USEPA and CARB engine emissions standards. Therefore, the project would not result in the inefficient, wasteful, or unnecessary consumption of energy. Additionally, the project would not result in a substantial increase in demand that would require substantially new or expanded sources of energy supply or new or expanded energy delivery systems or infrastructure. As such, a less than significant impact would occur.

### *b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?*

**No Impact.** The primary statewide plan for renewable energy and energy efficiency is the California Public Utilities Commission (CPUC) Energy Efficiency Strategic Plan, which is implemented chiefly through Title 24 and the CALGreen code (Title 24, Part 11). The project would be required to comply with Title 24 and CALGreen standards. Mandatory compliance with Title 24 and CALGreen standards would ensure the project incorporates energy-efficient windows, insulation, lighting, and ventilation systems, as well as water-efficient fixtures and electric vehicles charging infrastructure. The 2019 Title 24 standards are 30 percent more energy efficient than previous standards for nonresidential development (CEC 2019). Adherence to the CPUC's energy requirements and Title 24 and CALGreen standards will ensure conformance with the state's goal of promoting energy and lighting efficiency. Therefore, the proposed project would not conflict with or obstruct renewable energy or energy efficiency plans.

## VII. Geology and Soils

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **GEOLOGY AND SOILS:**<br>*Would the project:* | | | | |
| a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: | | | | |
| i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. | ☐ | ☐ | ☐ | ☒ |
| ii) Strong seismic ground shaking? | ☐ | ☐ | ☒ | ☐ |
| iii) Seismic-related ground failure, including liquefaction? | ☐ | ☐ | ☒ | ☐ |
| iv) Landslides? | ☐ | ☐ | ☐ | ☒ |
| b) Result in substantial soil erosion or the loss of topsoil? | ☐ | ☐ | ☒ | ☐ |
| c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? | ☐ | ☐ | ☒ | ☐ |
| d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property? | ☐ | ☐ | ☐ | ☒ |
| e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? | ☐ | ☐ | ☐ | ☒ |
| f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | ☐ | ☒ | ☐ | ☐ |

Responses to the following are based, in part, on a preliminary geotechnical investigation of the project site conducted by Albus-Keefe & Associates, Inc. and documented in a report dated March 10, 2020, provided in Appendix B of this Initial Study.

## Discussion

### *a)i) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.*

i) **No Impact.** The State Mining and Geology Board defines an active fault as one that has had surface displacement within the Holocene Epoch (roughly the last 11,000 years) and defines a potentially active fault as any fault that has been active during the Quaternary Period (approximately the last 1,600,000 years). These definitions are used in delineating Earthquake Fault Zones as mandated by the Alquist-Priolo Geologic Hazard Zones Act of 1972 and as subsequently revised in 1994 as the Alquist-Priolo Geologic Hazard Zoning Act and Earthquake Fault Zones Act.

The project area is located approximately 1.5 miles northwest of elevated ridge known as Signal Hill, which is one of a series of uplifted anticlinal hills and mesas positioned within and/or adjacent the Newport-Inglewood structural zone. Bedrock encountered beneath the site to the depths explored consists of non-marine and marine sediments of the upper Pleistocene-age Lakewood Formation (Qlw). Marine sediments of the lower Pleistocene-age San Pedro Formation (Qsp) underlie the Lakewood Formation at depth. The bedrock is generally covered by artificial fill (Qaf) associated with existing and previous site uses.

According to the geological study, the site does not lie within an "Earthquake Fault Zone" as defined by the State of California in the Alquist-Priolo Earthquake Fault Zoning Act. The nearest fault is the Cherry Hill segment of the Newport-Inglewood Fault System, approximately one-quarter mile northeast of the project site (City of Signal Hill 2016).

Although the proposed Project is located near the Newport-Inglewood Fault System, it would be designed in accordance with all regulations and requirements as detailed in the California Building Code to ensure building safety. As such, the Project would not result in an increased risk of adverse effects associated with fault rupture.

### *a)ii) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?*

ii) **Less than Significant Impact.** As noted in the discussion under threshold i), the Newport-Inglewood Fault System, which cuts diagonally across Signal Hill, is the most significant seismic feature in the area. This fault is considered seismically active. Within the Newport-Inglewood Fault System, five faults have been identified in the immediate vicinity of Signal Hill, including the Cherry Hill Fault, located approximately one-quarter mile northeast of the project site. It is likely that a seismic event on the Cherry Hill Fault or along the greater Newport-Inglewood Fault System would result in strong seismic ground shaking.

The proposed development would be required to comply with the City's Building Code (Signal Hill Municipal Code Title 15), which requires future developments to submit an engineering geology report and soils engineering report (Signal Hill Municipal Code

Section 15.04) to identify and detail construction requirements that account for geologic conditions and seismic hazards. Design and construction in accordance with the current California Building Code (CBC) requirements is anticipated to address the issues related to potential ground shaking. Thus, with the required adherence to the City of Signal Hill Building Code, potential impacts from strong seismic ground shaking would be less than significant.

### *a)iii) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?*

iii) **Less than Significant Impact.** Liquefaction is a seismic phenomenon in which loose, saturated, fine-grained granular soils behave similarly to fluid when subjected to high-intensity ground shaking. Liquefaction occurs when there is the presence of shallow groundwater, low-density fine, clean, sandy soils, and high-intensity ground motion. Effects of liquefaction can include sand boils, settlement, and load-bearing capacity failures below foundations.

According to the geological report, the site is underlain by very dense bedrock materials of the Lakewood and San Pedro Formations and the depth to historic high and current groundwater is not present within the upper 50 feet of the site. As such, the potential for liquefaction at the site is considered to be low. Furthermore, the site is not located within a mapped California Geologic Survey liquefaction hazard zone.

As is required by the City of Signal Hill Building Code (Signal Hill Municipal Code Section 15.04), prior to the issuance of a grading permit, the project applicant shall submit to the City Engineer for review and approval final plans and specifications that outline the construction methods to be employed to provide stable soil conditions to support all proposed structures. These specifications will identify the applicable seismic safety design standards based on the project site location, soils conditions, and proximity to regional faults. Thus, with the required adherence to the City of Signal Hill Building Code, potential impacts from seismic-related ground failure would be less than significant.

### *a)iv) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?*

iv) **No Impact.** Figure 5 of the City of Signal Hill General Plan Safety Element (2016) does not identify the project site as being within an area known to be susceptible to landslides. Further, the site is not located within an area identified by the California Geologic Survey (CGS) as having potential for seismic slope instability. In addition, review of referenced publications and geotechnical reports have indicated that geologic hazards associated with landsliding are not anticipated at the sites. There are no existing or proposed steep slopes that could be susceptible to landslide hazards. Thus, since the project site is not in an area subject to landslides, no impact would occur.

### *b) Would the project result in substantial soil erosion or the loss of topsoil?*

**Less than Significant Impact.** Given the extensive history of ground disturbance across the site from past oil refinery activities and subsequent earthwork associated with site remediation, it is unlikely

that any natural topsoil remains in the upper soil layers. The proposed development would include grading activities that would remove any existing ground cover and disturb exposed soils. These soils could be exposed to wind and rain, thus potentially resulting in soil erosion.

The Signal Hill Municipal Code Chapter 12.16 establishes the framework for the City to control erosion through the management of stormwater and urban runoff. In part, this chapter requires that prior to the issuance of a building or grading permit for a new development or redevelopment project, the City must evaluate the proposed project's erosion and grading requirements, including the appropriate wet weather erosion control plan, stormwater pollution prevention plan, or other plans consistent with countywide development construction guidance provisions to control erosion. These plans are required to demonstrate that stormwater runoff containing sediment is reduced to the maximum extent practicable and that best management practices apply and are required from the time of commencement of construction until receipt of a certificate of occupancy.

In addition, construction activities are required to comply with existing erosion control requirements, including the South Coast Air Quality Management District's (SCAQMD) Rule 403, which would reduce the potential for wind erosion through a variety of dust control measures such as covering soil stockpiles, watering exposed soils several times a day, ceasing grading during high winds, and providing temporary soil binders. The project must also comply with the conditions of a General Construction Permit, administered by the Los Angeles Regional Water Quality Control Board, pursuant to the National Pollutant Discharge Elimination System, which would reduce water erosion by requiring best management water quality control practices during construction (e.g., using berms or drainage ditches to divert water around the site; preventing sediment from migrating off the site by using temporary swales, silt fences, or gravel rolls). Compliance with these existing regulatory standards would generally avoid or reduce potential erosion impacts during construction to less than significant.

Once completed, the currently exposed soils across the project site would be replaced with impervious and landscaped surfaces, which would substantially reduce and, to a large extent, eliminate erosion potential as compared with existing site conditions.

With adherence to the mandatory regulations to reduce and control erosion during construction and project design, which reduces the amount of exposed soils subject to erosion, impacts in relation to substantial soil erosion or the loss of topsoil would be less than significant.

### *c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?*

**Less than Significant Impact.** Based on field exploration, laboratory testing, and engineering analyses, the geological report did not identify any other unstable conditions, such as liquefaction, landslide, laterals spread, collapse, expansive soils, or subsidence that would become unstable. Compliance with applicable sections of the California Building Code and the City of Signal Hill municipal code, including the applicable plan review and approval would ensure that any potentially unstable conditions affecting site design and construction would be addressed and remediated through a review of additional soil investigations and monitoring during site grading; thus, impacts would be less than significant.

### *d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?*

**Less than Significant Impact.** The geological report performed expansion index testing as part of the Preliminary Geotechnical Investigation prepared for the proposed project. The tests indicated that the site soils have a low expansion potential. Therefore, the project would not create substantial direct or indirect risks to life or property because of expansive soils and would have a less than significant impact.

### *e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?*

**No Impact.** All wastewater generated by the proposed project would be discharged into the City's municipal sewer system. No septic systems or other soil-based wastewater disposal systems would be part of the proposed project. Therefore, the proposed project would have no impact related to soils incapable of supporting the use of septic tanks or alternative wastewater disposal systems.

### *f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

**Less Than Significant With Mitigation Incorporated.** The geotechnical investigations conducted did not identify any unique geologic features on the project site. While no unique paleontological resource or unique geologic features are known to be present, the area is considered to have sensitivity for subsurface paleontological artifacts. To avoid significant impacts, Mitigation Measure VII-1 will be implemented, as follows:

**Mitigation Measures**

**MM VII-1** **Treatment of Fossil Discoveries.** Excavations into native Quaternary materials shall be monitored by a qualified professional paleontologist, including collection and processing of soil samples in those areas to determine the fossil potential of the site. Any fossils recovered during mitigation shall be deposited to an accredited and permanent scientific institution. A qualified professional paleontologist is a professional with a graduate degree in paleontology, geology, or related field, with demonstrated experience in the vertebrate, invertebrate, or botanical paleontology of California, as well as at least one year full time professional experience, or equivalent specialized training in paleontological research (i.e., the identification of fossil deposits, application of paleontological field and laboratory procedures and techniques, and curation of fossil specimens), and at least four months of supervised field and analytic experience in general North American paleontology.

## VIII. Greenhouse Gas Emissions

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **GREENHOUSE GAS EMISSIONS:**<br>*Would the project:* | | | | |
| a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? | ☐ | ☐ | ☒ | ☐ |
| b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | ☐ | ☐ | ☒ | ☐ |

### *a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

**Less than Significant Impact.** A significant impact could occur if a project would generate greenhouse gas (GHG) emissions, either directly or indirectly, that may have a significant impact on the environment. GHG emissions refer to a group of emissions that are believed to affect global climate conditions. These gases trap heat in the atmosphere, and the major concern is that increases in GHG emissions are causing global climate change. Global climate change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation, and temperature.

The City has not adopted a numerical significance threshold for assessing impacts related to GHG emissions. In 2008, a SCAQMD staff working group discussed interim CEQA GHG significance thresholds. The SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for stationary source/industrial projects where the SCAQMD is the lead agency. However, the SCAQMD has yet to adopt a GHG significance threshold for land use development projects such the proposed Project. When no quantitative significance thresholds have been formally adopted by a lead agency, the California Air Pollution Control Officers Association (CAPCOA) suggests making significance determinations on a case-by-case basis. In the absence of any adopted, numeric threshold, the City evaluates the significance of a project by considering whether the project conflicts with applicable regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction of mitigation of greenhouse gas emissions. This approach is consistent with CEQA Guidelines Section 15064, which provides that a determination that an impact is not cumulatively considerable may rest on compliance with previously adopted plans or regulations, including plans or regulations for the reduction of GHG emissions. As discussed under threshold b, below, the Project would not result in significant impacts when considered against this threshold.

### *b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

**Less than Significant Impact.**

SB 375, signed into law in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocations. This act requires metropolitan planning organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) that prescribes land use allocation in that MPO's regional transportation plan (RTP).

The California Air Resources Baird (CARB), in consultation with MPOs, provided regional reduction targets for GHGs for the years 2020 and 2035. The Project is a commercial infill within a high-quality transit corridor that would be within the employment and population forecasts used by SCAG in developing the Sustainable Communities Strategy for the region. As such, the Project would not conflict with SB 375.

In September 2020, SCAG's adopted Connect SoCal as its 2020-2045 RTP/SCS. Connect SoCal includes population, housing and employment projections that form the basis for SCAG's analysis of future land use patterns, mobility, and thus GHG emissions. Connect SoCal includes strategies that identify how the SCAG region can implement Connect SoCal and achieve related GHG reductions. Though some of the strategies can be implemented by local jurisdictions as part of land use decisions, not all of these strategies are applicable to the Project. The strategies of Connect SoCal promote land use patterns that connect with transit; provide and promote redevelopment of underperforming retail developments and other outmoded nonresidential uses; prioritize infill and redevelopment of underutilized land to accommodate new growth, increase amenities and connectivity in existing neighborhoods. The Project advances these strategies.

Accordingly, the project would not conflict with applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions. Impacts would be less than significant.

## IX. Hazards and Hazardous Materials

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **HAZARDS AND HAZARDOUS MATERIALS:** *Would the project:* | | | | |
| a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? | ☐ | ☐ | ☒ | ☐ |
| b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? | ☐ | ☐ | ☒ | ☐ |
| c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? | ☐ | ☐ | ☒ | ☐ |
| d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | ☐ | ☒ | ☐ | ☐ |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area? | ☐ | ☐ | ☒ | ☐ |
| f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | ☐ | ☐ | ☒ | ☐ |
| g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? | ☐ | ☐ | ☐ | ☒ |

### Discussion

#### *a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

**Less than Significant Impact.** Materials are generally considered hazardous if they are poisonous (toxicity), can be ignited by open flame (ignitability), corrode other materials (corrosivity), or react violently, explode, or generate vapors when mixed with water (reactivity). The term "hazardous material" is defined in California Health and Safety Code Section 25501 as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment. The code additionally states that a hazardous material becomes a hazardous waste once it is abandoned, discarded, or recycled. The transportation, use, and disposal of hazardous materials,

as well as the potential releases of hazardous materials to the environment, are closely regulated through many state and federal laws.

The Project includes two sites, Site 1 is the Target retail center and Site 2 is the storage facility, once operational, it is anticipated that there would likely be some routine transport, storage, handling, and disposal of small quantities of hazardous substances that are typically associated with these types of uses. This could include common solid and liquid materials and substances such as toners, paints, lubricants, cleaning agents, glues and other adhesives. No above ground or underground storage tanks of any type are proposed, and no fuel storage or dispensing is proposed. No industrial process equipment requiring use of volatile and hazardous substances in the form of liquids, solids or gases are proposed or would be allowed under the restrictions of the zoning district, as set forth in the Signal Hill Municipal Code. All business activities would be conducted inside the buildings, except for arrival and departure of automobiles and trucks and routine site maintenance and trash removal.

Additionally, any business that handles hazardous materials and/or hazardous waste of quantities at any one time during a year equal to, or greater than a total volume of 55 gallons, a total weight of 500 pounds, or 200 cubic feet of a compressed gas is a "hazardous materials handler" and must report Owner/Operator, Business Activities, Inventory, Site Map, and Emergency Response and Contingency Plan and Employee Training Plan information in the California Environmental Reporting System (CERS). In addition, all hazardous materials handlers are inspected every three years by the Los Angeles County Fire Department Health Hazardous Materials Division.

Future businesses on-site can dispose of "household hazardous materials" for free at any of the Los Angeles County Sanitation District's permanent disposal centers, and electronics can be disposed of at several private locations or electronic recycling events. The Los Angeles County Sanitation District and the Los Angeles County Department of Public Works sponsor household hazardous waste roundups, which are one-day events hosted on Saturdays at various locations around the county. Also, household hazardous wastes can be disposed of at the EDCO Recycling and Transfer Center at 2755 California Avenue in Signal Hill on the second and fourth Saturdays of each month.

In general, the proposed project would have a typical level of usage, storage, and disposal of hazardous materials as similar light industrial land uses in and near Signal Hill. All tenants would be obligated to comply with the City's existing municipal code restrictions for operations in the Light Industrial zoning district, plus compliance, as warranted, with the above-noted countywide regulations governing hazardous waste handlers. As such, the project would have a less than significant impact involving the routine transport, use, or disposal of hazardous materials.

### *b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

**Less than Significant Impact.** Construction would likely involve the use of hazardous materials, substances, or chemicals such as fuels, oils, lubricants, paints, solvents, glues and miscellaneous liquid and solid wastes, and as with any construction, there is the potential for an accidental release of such materials or wastes. As discussed in Section VIII, Hydrology and

Water Quality of this Initial Study, the National Pollution Discharge Elimination System (NPDES) General Construction Permit issued by the Los Angeles Regional Water Quality Control Board (LARWQCB) required for the project includes a variety of construction control measures and best management practices to prevent pollution of surface or groundwaters from construction activities. Such measures will be defined in a Stormwater Pollution Prevention Plan and will include provisions to prevent or contain accidental spills and regular monitoring and reporting of construction water quality control practices conducted by the contractor. All construction control measures would comply with the waste discharge standards established for the NPDES General Construction permit that would be reviewed and approved by the LARWQCB and the City of Signal Hill prior to issuance of a grading permit. Adherence to existing mandatory regulatory standards requiring a variety of best management practices to prevent water pollution and accidental spills of hazardous substances during the construction phases would prevent a significant impact due to a release of hazardous substances into surface or ground waters, in the normal course of construction activities.

Please refer to the response to threshold d) for a discussion of potential short-term and long-term impacts and mitigation measures to prevent harmful releases of hazardous substances associated with soil and groundwater contamination from the past oil refinery activities.

### *c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

**Less Than Significant Impact.** There are no schools within one-quarter of a mile of the Project site. Impacts would be less than significant.

### *d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

**Less than Significant Impact with Mitigation Incorporated.** A review of the databases to be consulted in accordance with Government Code 65962.5 identified that the project site is listed in the Geotracker database maintained by the State Water Resources Control Board (SWRCB) due to a remediation action for a leaking underground storage tank associated with a former service station that existed in the northwest corner of the site in the 1970s. Three underground gasoline storage tanks and one waste oil tank were removed in 1991. Subsequent investigation detected gasoline impacts soil on the site. Under the oversight of the Los Angeles Regional Water Quality Control Board, a Remedial Acton Plan continues to be implemented involving monitoring wells and soil vapor extraction.

Site assessments determined that it is unlikely that the site would be redeveloped for residential occupancy as it is zoned commercial/industrial and its current use is commercial. The estimated risks and hazards due to exposure to constituents detected in the soil matrix and soil vapor underlying the site for commercial and construction workers indicate the site can be safely redeveloped for commercial use.

The applicant completed a Phase I Environmental Site Assessment (ESA), a Phase II ESA with soil borings, a methane assessment, and a Human Health Risk Assessment (HHRA)[3]. Methane gas leak tests were completed on three of the abandoned wells, and all three were found not to be leaking. Methane gas leak tests were not required for the two abandoned oil wells on the Target portion of the property at 950 E. 33rd Street as they were not determined by the applicant to be within the "area of development" as defined in the City of Signal Hill Oil and Gas Code §16.24.010(B). The HHRA was reviewed by the State's Office of Environmental Health Hazard Assessment (OEHHA). A OEHHA memo was received noting their agreement with the conclusions that the site would be safe for residential, and commercial occupancies and construction. Due to the presence of oil wells on the site, a Methane Assessment was performed in March 2020. Due to the conclusions of the Methane Assessment and Phase II ESA, the following mitigation shall be incorporated into the Project.

**Mitigation Measures**

**MM IX-1** **AQMD Rule 1166 permit/compliance.** Monitoring under the AQMD Rule 1166 permit/compliance is required for any grading activities that would occur under this project.

**MM IX-2** **Passive Methane Mitigation System.** A passive methane mitigation system is required that would consist of a sub-slab impervious membrane placed in between geotextile or geocloth to protect it from sand above and the minimum 2" thick gravel blanket below. Methane mitigation is also required underneath paved areas greater than 5,000 square feet within 15 feet of the proposed buildings and shall consist of a minimum 12-inch square vents with ¾-inch rock placed on the exposed soil at a minimum depth of 1 foot and protected by traffic rated grates.

**MM IX-3** **Soil Management Plan.** A soil management plan shall be prepared prior to grading activities. The Soil Management plan shall be reviewed and approved by the City and shall provide instructions to the contractor for actions to implement in the event discolored or odiferous soils are discovered during grading operations.

### *e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?*

**Less than Significant Impact.** The nearest public use airport is Long Beach Municipal Airport, located approximately one mile to the east. The Los Angeles County Airport Land Use Commission establishes Airport Influence Areas (AIA) to identify areas likely to be impacted by noise and flight activity created by aircraft operations at and airport. The project site is not within the AIA for Long Beach Municipal Airport (Los Angeles County Airport Land Use Commission 2003). Thus, people working on the project site would not be exposed to any safety hazards or excessive noise associated with the operation of the airport. The impact due to proximity to the airport would be less than significant.

[3] See Appendix C of this Initial Study

### *f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

**Less Than Significant Impact.** The Signal Hill Hazard Mitigation Plan (2018) documents strategies and approaches designed to reduce loss of life and property in the event of a disaster or emergency. Key action items in the plan include improving communication and strengthening emergency operations by increasing collaboration and coordination among the various agencies and organizations involved in emergency planning, identifying funding to implement prevention plans and programs, and continuing the education and outreach efforts. The proposed project would have no effect on the communications and operational elements of the Plan, which are implemented by public safety personnel. Project implementation would not interfere with the implementation of the plan because the proposed development does not introduce any new land uses not considered in the implementation of the plan, it does not place the proposed land uses in an area that would require any specialized response, nor does it place new land uses in an area that is subject to potential threats from a natural or man-made disaster, such as wildland fires , flooding, earthquake fault rupture, etc.

As identified in the Signal Hill General Plan Safety Element (2016), existing evacuation routes are adequate to serve the city's population, and no major improvements are considered necessary to maintain emergency access. Several of the local arterial roadways and Interstate 405 (I-405) are major evacuation routes. As shown on Figure 2 of the General Plan Safety Element (2016), two arterial roadways are designated as major evacuation routes in the immediate vicinity of the project site: California Street to the East and I-405 Freeway to the South. Given the site location, the project would have no direct physical impact to California Street. Based on the assessment of peak hour traffic conditions in the Traffic Impact Analysis prepared for this project (see Appendix D), project-generated traffic would not result in significant congestion impacts during either peak period. Project-related impacts to the evacuation route functions of California Avenue and the I-405 Freeway would be less than significant.

### *g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?*

**No Impact.** The California Department of Forestry and Fire Protection (Cal Fire) has mapped fire hazard severity zones throughout the state. Designations include Unzoned (the lowest wildland fire risk), Moderate, High, and Very High. Property within the Signal Hill city boundaries is Unzoned, indicating a low potential for wildland fire; there are no Moderate, High, or Very High fire hazard zones in the city. Thus, the project would not expose people or structures either directly or indirectly to significant loss, injury, or death involving wildland fires. There would be no impact.

## X. Hydrology and Water Quality

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **HYDROLOGY AND WATER QUALITY:** *Would the project:* | | | | |
| a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? | ☐ | ☐ | ☒ | ☐ |
| b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? | ☐ | ☐ | ☒ | ☐ |
| c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: | | | | |
| i) result in substantial erosion or siltation on- or off-site? | ☐ | ☐ | ☐ | ☒ |
| ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? | ☐ | ☐ | ☐ | ☒ |
| iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? | ☐ | ☐ | ☐ | ☒ |
| iv) impede or redirect flood flows? | ☐ | ☐ | ☒ | ☐ |
| d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? | ☐ | ☐ | ☐ | ☒ |
| e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? | ☐ | ☐ | ☐ | ☒ |

## Discussion

### *a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?*

**Less than Significant Impact.** The project site is located within the jurisdiction of the Los Angeles Regional Water Quality Control Board (LARWQCB), which prepares and maintains a basin plan that identifies narrative and numerical water quality objectives to protect all beneficial uses of the waters of that region. The basin plan is intended to achieve the identified water quality objectives through implementation of Waste Discharge Requirements (WDRs) and by employing three strategies for addressing water quality issues: control of point source pollutants, control of nonpoint source pollutants, and remediation of existing contamination.

Point sources of pollutants are well-defined locations at which pollutants flow into water bodies (discharges from wastewater treatment plants and industrial sources, for example). These sources are controlled through regulatory systems including permitting under California's WDRs and the National Pollutant Discharge Elimination System (NPDES) program; permits are issued by the appropriate RWQCB and may set discharge limitation or other discharge provisions.

According to the Basin Plan, nonpoint sources of pollutants are typically derived from project site runoff caused by rain or irrigation and have been classified by the USEPA into one of the following categories: agriculture, urban runoff, construction, hydromodification, resource extraction, silviculture, and land disposal. This type of pollution is not ideally suited to be addressed by the same regulatory mechanisms used to control point sources. Instead, California's Nonpoint Source Management Plan describes a three-tiered approach, including the voluntary use of best management practices (BMPs), the regulatory enforcement of the use of BMPs, and effluent limitations. Generally speaking, each RWQCB implements the least restrictive tier until more stringent enforcement is necessary.

The LARWQCB addresses on-site drainage through its construction, industrial, and municipal permit programs. These permits require measures to minimize or prevent erosion and reduce the volume of sediments and pollutants in a project's runoff and discharges based upon the size of the project site.

During the construction phase of a proposed project, the pollutants of greatest concern are sediment, which may run off the project site due to site grading or other site preparation activities, and hydrocarbon or fossil fuel remnants from the construction equipment. In addition, on-site watering activities to reduce airborne dust could contribute to pollutant loading in surface runoff. Accordingly, project construction activities could have the potential to result in adverse effects on water quality. However, construction runoff is regulated by the NPDES Construction General Permit, which requires identification of a variety of water quality control BMPs to be specified on construction plans and implemented throughout construction. Measures are required to keep stormwater out of construction zones, to conduct regular site maintenance and "good housekeeping practices" to prevent, minimize and dispose of solid and liquid wastes, to capture and control any site runoff so that water pollutants don't enter storm drains, and to have response procedures in place in the event of accidental spills of water contaminants. This permit applies to all construction which disturbs an area of at least one acre and is administered by the RWQCB. Through this existing, mandatory regulatory compliance measure, potential water quality impacts during construction would be avoided or reduced to less than significant levels and would avoid conflicts with water quality standards established by the RWQCB.

The Los Angeles County Low Impact Development (LID) Ordinance is designed to promote sustainability and improve the County's watersheds by preserving drainage paths and natural water supplies in order to "retain, detain, store, change the timing of, or filter stormwater or runoff." The City of Signal Hill implements the provisions of the County's ordinance for all new development projects and provides the City of Signal Hill's LID Guidance Manual to inform applicants. The implementation of an LID Plan as part of the Project would ensure that impacts related to water quality standards or waste discharge requirements would be less than significant.

***b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?***

**Less than Significant Impact.** The project site has not been part of any groundwater recharge or management resources or programs and with a history of soil contamination associated with past oil refinery activities, it is not a good candidate to support groundwater resource management. There are no groundwater extraction wells at present, and none are proposed as part of this project. All water demands would be served through connections to the City's water transmission network. The site development, as proposed, would establish impervious surfaces over most of the project site, reducing potential infiltration compared to the existing undeveloped condition with mostly bare soils that allow for extensive infiltration during rainstorms. Because the site is not part of any groundwater recharge or management efforts, the reduction in infiltration capacity due to site development would result in less than significant impacts on groundwater resources.

***c)i) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site?***

**No Impact.** The surrounding area does not include streams or rivers or any kind of surface drainage courses. The Project would improve the site to include LID measures that would ensure there would not be substantial erosion or siltation. As such, no impacts would occur.

***c)ii) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?***

**No Impact.** The Project would improve the site to include LID measures that would ensure there would not be substantial increase in the rate of runoff. As such, no impacts would occur.

***c)iii) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?***

**Less than Significant Impact.** The proposed drainage improvements would follow existing drainage patterns on site along with the implementation of drainage features to meet regulatory requirements such as the County LID ordinance. This would ensure that runoff would not exceed existing system. The Project's impact would be less than significant.

***c)iv) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows?***

**Less than Significant Impact.** The proposed drainage improvements would follow existing drainage patterns on site along with the implementation of drainage features to meet regulatory requirements such as the County LID ordinance. Since the project site is not within a flood hazard zone, the occasional onsite ponding and overflows into the street drainage systems would not affect flood flows. Impacts would be less than significant.

***d) Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?***

**No Impact.** The project site is within a Zone "X" designation depicted on FEMA Map 06037C1970F, dated September 26, 2008, which indicates an area of minimal flood hazard. The site is not near any water bodies that could inundate the site during a major seismic ground shaking event. Since the site is located several miles inland from the Pacific Ocean, it is not exposed to the threat of a tsunami. Give these circumstances, there would be no impacts involving a release of pollutants into water bodies during one of these events.

***e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?***

**No Impact.** The Project would be required to comply with existing regulations including the County LID ordinance, which is structured to address and achieve water quality objectives set forth in the LARWQCB Basin Plan. Further, there is no sustainable groundwater management plan in place for the project area. As such, the project would not conflict with or obstruct implementation of the regional Basin Plan and would not conflict with or obstruct implementation of a sustainable groundwater management plan.

## XI. Land Use and Planning

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **LAND USE AND PLANNING:**<br>*Would the project:* | | | | |
| a) Physically divide an established community? | ☐ | ☐ | ☒ | ☐ |
| b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? | ☐ | ☐ | ☐ | ☒ |

### Discussion

#### *a) Would the project physically divide an established community?*

**Less than Significant Impact.** The physical division of an established community is typically associated with the construction of a linear feature, such as a major highway, regional flood control channel, or railroad tracks, or the removal of a means of access, such as a local road or bridge, which would impair mobility within an existing community or between a community and an outlying area. No other modifications to existing off-site infrastructure facilities or the removal of any such facilities would be required, and there would be no infrastructure-related improvements or removals that could result in a physical disruption to an established land use or the local pattern of development.

The Northeastern portion of the project has an existing Target retail center and the Southeastern portion is currently vacant. Surrounding land uses include single and multi-family residential and commercial buildings to the north and east, the 405 Freeway to the south commercial properties to the west. The proposed project would result in modernization of an existing commercial area and storage facility that would not intrude into the established neighborhoods that surround the project site. No features of the proposed project would disrupt the existing surrounding land uses from continuing to operate as-is. As such, the development of the proposed project would not result in an impact involving the physical division of an established community.

#### *b) Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?*

**No Impact.** The project site is not subject to a local coastal program and is not within a habitat conservation plan, natural community conservation plan, or other approved environmental resource plan. The Signal Hill General Plan Land Use Element and the City's Zoning Map designate and zone the northeastern portion of the project site as Commercial General and the southeastern portion of the project site as Storage Specific Plan. The Project includes replacement of the existing zoning over the entire site with a new specific plan. The specific plan would establish a list of permitted and conditionally permitted uses, appropriate development standards and a review standard for the phased future construction. This specific plan would be consistent with the General Plan and would ensure that the Project would not conflict with other land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, no impacts would occur.

## XII. Mineral Resources

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **MINERAL RESOURCES:**<br>*Would the project:* | | | | |
| a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? | ☐ | ☐ | ☒ | ☐ |
| b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? | ☐ | ☐ | ☒ | ☐ |

### Discussion

#### *a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*

**Less than Significant Impact.** Mineral resources are commonly defined as a concentration or occurrence of natural, solid, inorganic, or fossilized organic material in or on the earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. Mineral resources can be categorized into three classes: fuel, metallic, and non-metallic. Fuel resources include coal, oil, and natural gas. Metals include such resources as gold, silver, iron, and copper. Lastly, non-metal resources include industrial minerals and construction aggregate. Industrial minerals include boron compounds, rare-earth elements, clays, limestone, gypsum, salt, and dimension stone. Construction aggregate includes sand and gravel, and crushed stone.

Signal Hill lies within the Long Beach Oil Field, where oil production dates to 1919 when oil was first discovered in the area. The Long Beach Oil Field is termed a "mega giant" field, which is a field that produces over 1 million barrels a day. Currently, the Long Beach Oil Field is considered moderately productive as oil wells are gradually being converted to urban development.

The project proposes to build over the abandoned wells on site. The Applicant has prepared a Well Abandonment Report (WAR) for each well which determined that the well abandonment meets the City's standard to be built over. These wells are not of substantial value to the region or the state and their abandonment would not result in the substantial loss of a mineral resource. As such, impacts would be less than significance.

#### *b) Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*

**Less than Significant Impact.** The Surface Mining and Reclamation Act of 1975 (SMARA) is the primary regulator for surface mining in the state. The act requires the State Geologist (California Geological Survey) to identify all mineral deposits in the state and to classify them based on their significance. SMARA defines a mineral deposit as a naturally occurring concentration of minerals in amounts or arrangement that under certain conditions may constitute a mineral resource. The concentration may be of value for its chemical or physical characteristics. The classification of these

mineral resources is a joint effort of the state and local governments. It is based on geologic factors and requires that the State Geologist classify the mineral resources area as a Mineral Resource Zone (MRZ), Scientific Resource Zone (SZ), or Identified Resource Area (IRA), described below:

- MRZ-1: A Mineral Resource Zone where adequate information indicates that no significant mineral deposits are present or likely to be present.
- MRZ-2: A Mineral Resource Zone where adequate information indicates than significant mineral deposits are present, or a likelihood of their presence and development should be controlled.
- MRZ-3: A Mineral Resource Zone where mineral resource significance is undetermined.
- MRZ-4: A Mineral Resource Zone where there is insufficient data to assign any other MRZ designation.
- SZ Areas: Containing unique or rare occurrences of rocks, minerals, or fossils that are of outstanding scientific significance shall be classified in this zone.
- IRA Areas: County or State Division of Mines and Geology Identified Areas where adequate production and information indicate that significant minerals are present.

As shown on the Mineral Classification Map prepared by the California Division of Mines and Geology (1982), the project site is classified as MRZ-4, an area of insufficient data to assign to any other category. A review of the City's General Plan did not identify this area as having significant mineral deposits of any kind, or in an area that is delineated as a mineral resource recovery site, pursuant to SMARA. Therefore, since there are no known significant mineral resources and the project site is not a designated mineral resource recovery site as identified by SMARA or in the City's General Plan, the project would have no impact upon the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

## XIII. Noise

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **NOISE:**<br>*Would the project result in:* | | | | |
| a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? | ☐ | ☐ | ☒ | ☐ |
| b) Generation of excessive groundborne vibration or groundborne noise levels? | ☐ | ☐ | ☒ | ☐ |
| c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? | ☐ | ☐ | ☒ | ☐ |

### Discussion

***a) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?***

**Less than Significant Impact.**

Construction activities would generate perceptible noise levels during the grading, paving, and building construction phases. Construction noise levels in the project vicinity would fluctuate depending on the particular type, number, and duration of usage for the varying equipment. The effects of construction noise largely depend on the type of construction activities occurring on any given day, noise levels generated by those activities, distances to noise-sensitive receptors, and the existing ambient noise environment in the receptor's vicinity. Construction generally occurs in several discrete phases, with each phase requiring different equipment with varying noise characteristics. These phases alter the characteristics of the noise environment generated on the proposed project site and in the surrounding community for the duration of the construction process.

The City of Signal Hill has established noise standards for construction activity in Chapter 9.16 of the Municipal Code. Pursuant to Chapter 9.16, construction noise is prohibited between the hours of 6:00 p.m. and 7:00 a.m. on weekdays, and/or any time on Saturday, Sunday, or a holiday.[4] The project would be required to comply with these allowable hours for construction. Construction noise is

[4] "Holidays" is defined to include the following seven days: Christmas, Thanksgiving, New Year's, July 4th, Memorial Day, Labor Day, and Veterans Day.

allowed during the City's allowable construction hours and is not considered to be a significant impact during those hours.

High construction noise levels as associated with equipment such as heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, scrapers, and other heavy-duty construction equipment. Graders typically generate the highest noise levels, emitting approximately 85 dBA at a distance of 50 feet from the equipment. Point sources of noise emissions are atmospherically attenuated by a factor of 6 dBA per doubling of distance. This assumes a clear line-of-sight and no other machinery or equipment noise that would mask project construction noise. Buildings and other barriers that interrupt line-of-sight conditions further reduce noise levels from point sources. As such, the existing Target building would act as a noise barrier between residences to the northeast and construction activity. In addition, the surrounding roadways create separation between the site and the surrounding neighborhood. As such, noise levels experienced at the nearby residential neighborhoods would not be excess.

The operation of the Project would not include any noise generating activities differing substantially from existing activity at the site. Additionally, traffic volume on any given roadway segment would need to double in order for a noticeable increase in ambient noise to occur. The Project would not generate sufficient traffic to result in a doubling of traffic volumes. As such, the Project's operation noise impacts would be less than significant.

### *b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?*

**Less Than Significant Impact.** Project construction can generate varying degrees of groundborne vibration, depending on the construction procedure and the construction equipment used. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Groundborne vibrations from construction activities rarely reach levels that damage structures.

Significance thresholds concerning construction vibration levels have not been adopted by the City of Signal Hill; therefore, this analysis relies on Federal Transit Administration (FTA) guidance regarding vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.20 inch-per-second) appears to be conservative. The types of construction vibration impact include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time.

The nearest vibration sensitive uses would be the residential uses located to the north and east across 33rd Street and California Avenue. The highest degree of groundborne vibration would be generated during the grading and paving construction phases due to the operation of a vibratory roller. Vibration velocities from typical heavy construction equipment range from 0.001 to 0.104 in/sec peak particle velocity (PPV) at 40 feet from the source of activity, with additional attenuation as the distance increases. As such, any vibration experienced at locations across the street from the site would be less than significant.

The fully developed, occupied, and operational project would not include any interior or exterior activities involving sources of high groundborne vibration. Occasional delivery truck movements that may occur in or out of the site would generate minor levels of vibration, for very short time periods, which would not result in significant impacts on- or off-site.

### *c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*

**Less than Significant.** The nearest airport to the project site is the Long Beach Airport, located approximately 1 mile to the east. According to the General Plan, the 65 dBA noise contours from the Long Beach Airport do not extend into the City of Signal Hill. Additionally, the project site is not located within the vicinity of a private airstrip or related facilities. Therefore, project implementation would not expose people residing or working in the project area to excessive noise levels associated with aircraft. Impacts would be less than significant.

## XIV. Population and Housing

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **POPULATION AND HOUSING:**<br>*Would the project:* | | | | |
| a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | ☐ | ☐ | ☐ | ☒ |
| b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? | ☐ | ☐ | ☐ | ☒ |

### Discussion

***a) Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?***

**No Impact.** A significant impact could occur if a project would locate new development, such as homes, businesses, or infrastructure, with the effect of substantially inducing growth that would otherwise not have occurred as rapidly or in as great a magnitude. While the project would create new employment, it would not be to the scale that would attract a large employment generator and draw new population from outside of the area. Furthermore, the Project would not introduce unplanned infrastructure or residences. As such the Project would not conflict with growth projections for the City. Given that the proposed project would not directly or indirectly induce substantial unplanned population growth in the area, no impact would occur.

***b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?***

**No Impact.** There is no housing on the project site; therefore the project would not displace any people or housing. No impact would occur.

## XV. Public Services

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **PUBLIC SERVICES:** | | | | |
| a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: | ☐ | ☐ | ☒ | ☐ |
| i) Fire protection? | ☐ | ☐ | ☒ | ☐ |
| ii) Police protection? | ☐ | ☐ | ☒ | ☐ |
| iii) Schools? | ☐ | ☐ | ☒ | ☐ |
| iv) Parks? | ☐ | ☐ | ☐ | ☒ |
| v) Other public facilities? | ☐ | ☐ | ☐ | ☒ |

### Discussion

***a)i) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection?***

i) **Less than Significant Impact.** The City of Signal Hill contracts with the Los Angeles County Fire Department (LACoFD) for fire protection services in the city. Primary response to incidents in Signal Hill is provided by Fire Station No. 60, located at 2300 E. 27th Street, which is approximately 2 miles southeast of the project site. Station No. 60 houses one Type I engine and is manned by four firefighters, including a captain, an engineer and two firefighter/paramedics. The estimated response time for this station is up to 3 to 4 minutes to any location in Signal Hill (Signal Hill 2016). In the event of fires or emergency medical incidents, the entire resources of the LACoFD are available to provide responses throughout Signal Hill. In addition, the LACoFD maintains mutual aid agreements with other regional fire agencies, including the Long Beach Fire Department.

The project would increase activity on the site, resulting in some demand for fire protection services. However, the project does not represent a unique land use or type of construction that would require additional fire department facilities, nor would it cause any change in response times. As such, no new facilities would be needed to serve the Project and impacts would be less than significant.

***a)ii) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection?***

ii) **Less than Significant Impact.** Police protection in Signal Hill is provided by the Signal Hill Police Department (SHPD), which operates from one station located at 2745 Walnut Avenue, approximately 1 mile southeast of the project site (Signal Hill 2016). Mutual aid agreements are in place with the Long Beach Police Department, Los Angeles County Sheriff's Department, and other regional law enforcement agencies.

The project would increase activity on the site, resulting some demand for police protection services. However, the project does not represent a unique land use or type of construction nor would it change the response distance from the existing station. As such, no new facilities would be needed to serve the Project and impacts would be less than significant.

***a)iii) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for schools?***

iii) **Less than Significant Impact.** The Project would increase commercial square footage and thereby increase employment at the site. However, the Project is not expected to draw new population into the area as a result. Therefore, the impact on school population would be insignificant. In addition, as with most development in Signal Hill, the proposed project would be subject to the provisions set forth in the California Code of Regulations Section 65995 and California Education Code Section 17620. These codes allow school districts the authority to collect statutory school fees from commercial and industrial development if a justification study is prepared and certain nexus findings are made. California Government Code Section 65995 states that payment of these fees would fully address any potential impact on schools. Impacts would be less than significant

***a)iv) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for parks?***

iv) **No Impact.** Demand for parks is determined mostly by the residential population within a given area and the project would not add dwelling units or cause a noticeable increase in the residential population of the surrounding community. As such, the Project would have no noticeable effect on the demand for existing or new parks. No impact would occur.

***a)v) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for other public facilities?***

v) **No Impact.** As mentioned above, the proposed project would not increase residential population in the project area and would therefore not require the use or maintenance of other public facilities that are provided to benefit residents. Therefore, no impact to other public facilities would occur.

## XVI. Recreation

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **RECREATION:** | | | | |
| a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | ☐ | ☐ | ☐ | ☒ |
| b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? | ☐ | ☐ | ☐ | ☒ |

### Discussion

***a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?***

**No Impact.** As discussed in Section XIV, Population and Housing of this IS/MND, the project would not result in noticeable population growth. Thus, the project would not introduce a residential population into the area that would increase the use of existing parks or recreational facilities. The nearest recreational area is Reservoir Park which is approximately a half a mile from the Project Site. There could be occasional and limited visits to local parks by on-site employees, but that would involve small numbers of people for short periods of time, with minimal effect on the parks. Given these circumstances, the project would not have a noticeable contribution to the physical deterioration of any parks or recreational facilities in the area. No impact would occur.

***b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?***

**No Impact.** The proposed project does not include the construction or expansion of recreational facilities and thus it would not have an adverse effect on the environment in relation to the construction or expansion of recreational facilities. No impact would occur.

## XVII. Transportation/Traffic

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **TRANSPORTATION:**<br>*Would the project:* | | | | |
| a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? | ☐ | ☐ | ☒ | ☐ |
| b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)? | ☐ | ☒ | ☐ | ☐ |
| c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | ☐ | ☐ | ☒ | ☐ |
| d) Result in inadequate emergency access? | ☐ | ☐ | ☒ | ☐ |

### Discussion

***a) Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, taking into account all modes of transportation including transit, roadways, bicycle and pedestrian facilities??***

**Less than Significant Impact.**

The City of Signal Hill General Plan Circulation Element includes policies addressing new development to "Ensure that new development results in the preservation and enhancement of the city's circulation system". These include:

- Ensure that necessary circulation system enhancements and expansions occur concurrently with new development and are consistent with the Los Angeles County CMP.
- Require that new development include circulation and utility system improvements, including dedication of land for widening of roadways and pedestrian and bicycle facilities, where appropriate, and construction of new public works facilities reasonably related to the impacts of the development and intended use on the existing systems.
- Develop and improve the circulation and utility systems by identifying and establishing a range of funding sources.
- Limit growth and development when the impacts of growth cannot be mitigated or will overtax the existing systems.
- Strengthen the framework for effective regional and local circulation system planning efforts.

- Ensure that new development provides adequate parking for anticipated uses; however, reductions in parking requirements should be considered where alternative modes of transportation or shared parking opportunities exist.

- Examine shared parking strategies for developments in mixed-use areas.

- Implement a parking management program for existing and new developments considering parking reductions or shared use parking strategies

The Project would develop underutilized property that is already served by the circulation system. The Project would include shared parking amongst the retail uses. Analysis of the traffic associated with the Project shows that no circulation system enhancements and expansions would be necessary (see Appendix D). As such, the Project would not conflict with a program, plan, ordinance or policy addressing the circulation system. Impacts would be less than significant.

### *b) Would the project conflict with CEQA Guidelines Section 15064.3, subdivision (b)?*

**Less than Significant Impact**.

CEQA Guidelines section 15064.3, subdivision (b)(1) states that land use projects that result in vehicle miles traveled (VMT) exceeding an applicable threshold of significance may indicate a significant impact. Section 15064.3, subdivision (b)(4) states that a lead agency had the discretion to choose the most appropriate methodology and subdivision (b)(3) states that qualitative analysis may be appropriate.

The City of Signal Hill has not officially adopted a threshold of significance but allows for the application of the City of Long Beach's Traffic Impact Analysis Guidelines adopted June 2020.

The City of Long Beach guidelines state that retail development that is 50,000 square feet (sf) or less is likely to be local-serving and tends to shorten trips. Furthermore, Section 15064.3, subdivision (b)(1) also states that "Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact". The additional retail space added by the Project would be less than 50,000 square feet and would be configured as local-serving uses. The intent of the uses proposed is not to draw regionally, but to meet the needs of the surrounding community. In addition, these uses would be added to an existing plaza, expanding the range of retail within one site, thereby allowing for a reduction in miles travelled by residents with multiple stops.

Self-storage facilities are also generally meant to serve the local community and therefore can be assumed to be a local-serving development which will reduce VMT. Therefore, the self-storage component of the Project can also be presumed to not conflict with CEQA Guidelines section 15064.3.

In addition, Section 15064.3, subdivision (b)(1) states that "generally, land use projects within one half mile of either an existing major transit stop or an existing high quality transit corridor should be presumed to cause a less than significant transportation impact." Due to the Long Beach bus services along Atlantic Avenue, the Project is within one half mile of an existing high quality transit corridor.

Therefore, impacts would be less than significant.

### *c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

**Less than Significant Impact.** Project development includes site improvements to the existing Target retail center and the construction of a storage facility. Surrounding land uses, which are urban in nature (commercial office, mixture of residential, educational, and a park), do not involve incompatible uses that would include farm equipment or other slow-moving vehicles that may be traveling along project area roadways.

Access points would be designed in accordance with City standards. The Project would support multiple uses with differing queuing patterns within a unified parking area. In addition, the location of the potential drive-through restaurant close to an access point creates the potential for vehicle queuing spilling into the public right of way. As such, in order to ensure that the Project would not result in an increase in hazards due to the design of the parking and circulation within the site, the mitigation identified below shall be incorporated into the Project.

**Mitigation Measures**

**MM XVII-1: Parking Management Plan**

- Prior to the issuance of occupancy permits for any new use within the Project site, the Applicant shall submit to the City for review and approval a Parking Management Plan (PMP) which shall outline the proposed allocation of parking supply and key parking management strategies to maximize the availability of parking for customers and employees of the Project. The PMP should identify, at a minimum, where the retail/commercial employees park within the site, evaluate queuing for drive-through operations, and identify the location of short-term parking spaces for service retail uses and/or food uses including take-out/curb side service.

### *d) Would the project result in inadequate emergency access?*

**Less than Significant Impact.** The project's ingress/egress and circulation are required to meet the Los Angeles County Fire Department's standards, which ensure that new developments provide adequate access and circulation for fire engines and other emergency vehicles and provide adequate space for appropriate positioning of emergency response crews during emergencies. Therefore, since the proposed site plan is subject to review and approval by the Los Angeles County Fire Department and required to demonstrate compliance with standards pertaining to emergency access, prior to the issuance of a construction permit, the project would have a less than significant impact in relation to inadequate emergency access.

## XVIII. Tribal Cultural Resources

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **TRIBAL CULTURAL RESOURCES:** | | | | |
| a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: | | | | |
| i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or | ☐ | ☐ | ☒ | ☐ |
| ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | ☐ | ☒ | ☐ | ☐ |

### Discussion

***a)i) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?***

**Less than Significant Impact.** As described in Section V, Cultural Resources, there are no known cultural resources, including tribal cultural resources, on the Project site that are listed or eligible for listing in the California Register of Historical Resources. Further, the Project would not adversely affect any nearby resources that are listed or eligible for listing. Therefore, potential impacts would be less than significant.

***a)ii) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.***

**Less than Significant Impact with Mitigation Incorporated.** In accordance with AB 52 (Public Resources Code Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, and 21084.2), the City of Signal Hill initiated communication with the Gabrieleño Band of Mission Indians Kizh -Nation to determine if the project site is within their ancestral tribal settlements and/or trade routes or otherwise of importance to Native Americans, which indicate a potential for encountering tribal cultural resources within the project site. Through communication with the Tribe, it was concluded that the area has the likely presence of subsurface cultural resources. As such, impacts are potentially significant. As a result of consultation with the Tribe, the Project shall incorporate the mitigation measures listed below, which would reduce Project's impacts to less than significant.

**Mitigation Measures**

**MM XVIII-1:** Retain a Native American Monitor Prior to Commencement of Ground-Disturbing Activities:

- The project applicant/lead agency shall retain a Native American monitor from (or approved by) the Gabrieleño Band of Mission Indians – Kizh Nation (the "Kizh" or the "Tribe") - the direct lineal descendants of the project location. The monitor shall be retained prior to the commencement of any "ground-disturbing activity" for the subject project, at all project locations (i.e., both on-site and any off-site locations that are included in the project description/definition and/or required in connection with the project, such as public improvement work). "Ground-disturbing activity" includes, but is not limited to, pavement removal, potholing, auguring, grubbing, tree removal, boring, grading, excavation, drilling, and trenching.

- A copy of the executed monitoring agreement shall be provided to the lead agency prior to the earlier of the commencement of any ground-disturbing activity for the project, or the issuance of any permit necessary to commence a ground-disturbing activity.

- The project applicant/developer shall provide the Tribe with a minimum of 30 days advance written notice of the commencement of any project ground-disturbing activity so that the Tribe has sufficient time to secure and schedule a monitor for the project.

- The project applicant/developer shall hold at least one (1) pre-construction sensitivity/educational meeting prior to the commencement of any ground-disturbing activities, where at a senior member of the Tribe will inform and educate the project's

construction and managerial crew and staff members (including any project subcontractors and consultants) about the TCR mitigation measures and compliance obligations, as well as places of significance located on the project site (if any), the appearance of potential TCRs, and other informational and operational guidance to aid in the project's compliance with the TCR mitigation measures.

- The monitor will complete daily monitoring logs that will provide descriptions of the relevant ground disturbing activities, the type of construction activities performed, locations of ground-disturbing activities, soil types, cultural-related materials, and any other facts, conditions, materials, or discoveries of significance to the Tribe. Monitor logs will identify and describe any discovered TCRs, including but not limited to, Native American cultural and historical artifacts, remains, places of significance, etc., (collectively, tribal cultural resources, or "TCR"), as well as any discovered Native American (ancestral) human remains and burial goods. Copies of monitor logs will be provided to the project applicant/lead agency upon written request.

- Native American monitoring for the project shall conclude upon the latter of the following: (1) written confirmation from a designated project point of contact to the Tribe that all ground-disturbing activities and all phases that may involve ground-disturbing activities on the project site and at any off-site project location are complete; or (2) written notice by the Tribe to the project applicant/lead agency that no future, planned construction activity and/or development/construction phase (known by the Tribe at that time) at the project site and at any off-site project location possesses the potential to impact TCRs.

**MM XVIII-2:** Discovery of TCRs, Human Remains, and/or Grave Goods:

- Upon the discovery of a TCR, all construction activities in the immediate vicinity of the discovery (i.e., not less than the surrounding 50 feet) shall cease. The Tribe shall be immediately informed of the discovery, and a Kizh monitor and/or Kizh archaeologist will promptly report to the location of the discovery to evaluate the TCR and advise the project manager regarding the matter, protocol, and any mitigating requirements. No project construction activities shall resume in the surrounding 50 feet of the discovered TCR unless and until the Tribe has completed its assessment/evaluation/recovery of the discovered TCR and surveyed the surrounding area.

- The Tribe will recover and retain all discovered TCRs in the form and/or manner the Tribe deems appropriate in its sole discretion, and for any purpose the Tribe deems appropriate, including but not limited to, educational, cultural and/or historic purposes.

- If Native American human remains and/or grave goods are discovered or recognized on the project site or at any off-site project location, then all construction activities shall immediately cease. Native American "human remains" are defined to include "an inhumation or cremation, and in any state of decomposition or skeletal completeness." (Pub. Res. Code § 5097.98 (d)(1).) Funerary objects, referred to as "associated grave goods," shall be treated in the same manner and with the same dignity and respect as human remains. (Pub. Res. Code § 5097.98 (a), d)(1) and (2).)

- Any discoveries of human skeletal material or human remains shall be immediately reported to the County Coroner (Health & Safety Code § 7050.5(c); 14 Cal. Code Regs. §

15064.5(e)(1)(B)), and all ground-disturbing project ground-disturbing activities on site and in any other area where the presence of human remains and/or grave goods are suspected to be present, shall immediately halt and remain halted until the coroner has determined the nature of the remains. (14 Cal. Code Regs. § 15064.5(e).) If the coroner recognizes the human remains to be those of a Native American or has reason to believe they are Native American, he or she shall contact, within 24 hours, the Native American Heritage Commission, and Public Resources Code Section 5097.98 shall be followed.

- Thereafter, construction activities may resume in other parts of the project site at a minimum of 200 feet away from discovered human remains and/or grave goods, if the Tribe determines in its sole discretion that resuming construction activities at that distance is acceptable and provides the project manager express consent of that determination (along with any other mitigation measures the Tribal monitor and/or archaeologist deems necessary). (14 Cal. Code Regs. § 15064.5(f).)

- Preservation in place (i.e., avoidance) is the preferred manner of treatment for discovered human remains and/or grave goods.

- Any historic archaeological material that is not Native American in origin (non-TCRs) shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes.

- Any discovery of human remains and/or grave goods discovered and/or recovered shall be kept confidential to prevent further disturbance.

**MM XVIII-3:** Procedures for Burials, Funerary Remains, and Grave Goods:

- As the Most Likely Descendant ("MLD"), the Koo-nas-gna Burial Policy shall be implemented for all discovered Native American human remains and/or grave goods. Tribal Traditions include, but are not limited to, the preparation of the soil for burial, the burial of funerary objects and/or the deceased, and the ceremonial burning of human remains.

- If the discovery of human remains includes four (4) or more burials, the discovery location shall be treated as a cemetery and a separate treatment plan shall be created.

- The prepared soil and cremation soils are to be treated in the same manner as bone fragments that remain intact. Associated "grave goods" (aka, burial goods or funerary objects) are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later, as well as other items made exclusively for burial purposes or to contain human remains. Cremations will either be removed in bulk or by means necessary to ensure complete recovery of all sacred materials.

- In the case where discovered human remains cannot be fully recovered (and documented) on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of

steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to divert the project while keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed.

- In the event preservation in place is not possible despite good faith efforts by the project applicant/developer and/or landowner, before ground-disturbing activities may resume on the project site, the landowner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects. The site of reburial/repatriation shall be agreed upon by the Tribe and the landowner, and shall be protected in perpetuity.

- Each occurrence of human remains and associated grave goods will be stored using opaque cloth bags. All human remains, grave goods, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items will be retained and shall be reburied within six months of recovery.

- The Tribe will work closely with the project's qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be prepared and shall include (at a minimum) detailed descriptive notes and sketches. All data recovery data recovery-related forms of documentation shall be approved in advance by the Tribe. If any data recovery is performed, once complete, a final report shall be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive and/or destructive diagnostics on human remains.

## XIX. Utilities and Service Systems

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **UTILITIES AND SERVICE SYSTEMS:** *Would the project:* | | | | |
| a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? | ☐ | ☐ | ☒ | ☐ |
| b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? | ☐ | ☐ | ☒ | ☐ |
| c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments? | ☐ | ☐ | ☒ | ☐ |
| d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? | ☐ | ☐ | ☒ | ☐ |
| e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste? | ☐ | ☐ | ☒ | ☐ |

### Discussion

***a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?***

**Less than Significant Impact.** On-site, the project would require the replacement of old and the installation of new utility infrastructure to serve the proposed new uses. The installation of infrastructure would occur during site construction and the depths and locations would be considered in the grading plan. Impacts related to construction of on-site utilities infrastructure would not result in any unique or more intensive types of impacts than general earthwork for the construction of the Project.

Off-site, the proposed project would require localized connections to the existing municipal storm drain, water, and wastewater facilities, as well as electricity lines and natural gas mains within the

surrounding roadways. No other modifications to existing off-site infrastructure facilities would be required. The construction associated with the utility service extensions and connections would likely result in generating dust, noise, or and/or circulation impacts. These impacts would be temporary and short-term, occurring only for portions of a normal construction workday and only in those areas where utility improvements are being constructed. Impacts related to construction of off-site utilities connections would not result in any unique or more intensive types of impacts than general earthwork for the construction of the Project.

Since the proposed project would not require the relocation or upgrade of utility services off-site and the impacts associated with the installation and extension of infrastructure on-site as well at the off-site connections would be temporary and conducted in accordance with the routine construction control methods noted above, the project would have a less than significant impact in relation to this issue.

### *b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?*

**Less than Significant Impact**. Water demand for the proposed project would consist of interior plumbing devices, such as toilets, urinals, and sinks, and also outdoor irrigation of landscape areas. Consumption rates would depend on the individual tenant composition and the number of plumbing fixtures installed in each of the buildings.

The City is in the process of preparing an Urban Water Management Plan, pursuant to California Water Code Sections 10610–10656, since it now provides water service to more than 3,000 service connections. To forecast water supply needs over time, it will incorporate land use assumptions in the City's General Plan, along with regional growth forecasts and current development trends. The Project is consistent with the City's General Plan land use policies and with the SCAG growth projections for the City. As such, the Project is considered within the projections used to forecast water demand. The City's water supplies are considered to be stable and sufficient to support expected growth that could occur over the next several years. As such, the Project would not have a significant impact on water supplies.

### *c) Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*

**Less than Significant Impact.** Signal Hill sanitary sewers connect to the City of Long Beach sewer line, which flows into regional wastewater facilities maintained by the Los Angeles County Sanitation District 29. Since the Project is consistent with the growth projections for the City, it is expected that the additional wastewater flow associated with the Project can be accommodated within existing and already planned facilities. The project's impact would be less than significant.

### *d) Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?*

**Less than Significant Impact.** In relation to solid waste standards, the California Department of Resources Recycling and Recovery (CalRecycle) reports target per capita disposal goals which are

expressed in pounds per day (ppd) per employee to track the solid waste generation of nonresidential land uses, such as the proposed light industrial project. As of 2016, the most recent reporting year, CalRecycle reported that Signal Hill had an average waste disposal rate of 4.3 ppd per employee, surpassing the City's per capita disposal target of 8.2 ppd per employee. The proposed project would generate additional solid waste; however, there are no unique characteristics of the proposed land use which would result in a higher than normal level of waste generation and disposal, compared to other similar land uses in the city.

The County of Los Angeles, Department of Public Works is responsible for continuing to ensure there is adequate landfill capacity for disposal of municipal wastes generated throughout the region. Through its Countywide Integrated Waste Management Plan (IWMP), the County regularly conducts needs assessments, forecasts of future waste generation and disposal patterns, and projections of landfill disposal capacities. Analysis prepared for the County's IWMP most recent 2016 annual report determined that there are at least 15 years of remaining landfill capacity on a countywide basis.

Because there are no unique solid waste generation characteristics of the proposed project, it would not impair the City's continuing efforts to achieve and surpass its target rate for rates of waste generation for nonresidential land uses. As such, the project would not significantly affect the capacity of the landfills serving this area, and the proposed project would not generate solid waste in excess of the capacity of local infrastructure or otherwise impair the attainment of solid waste goals.

### *e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?*

**Less than Significant Impact.** In the short term, the project would generate construction-related waste. Section 8.08.55 of the City's Municipal Code requires construction and demolition debris generated in Signal Hill to be recycled to the greatest extent feasible to comply with state-mandated waste diversion requirements. Pursuant to Section 5.408 of the 2016 California Green Building Standards Code, at least 65 percent of all nonhazardous construction and demolition waste must be recycled or salvaged to avoid landfill disposal. A construction waste management plan must be submitted and implemented, with verification by the City's Building Official, to comply with this requirement.

Operation of the proposed project would comply with the City's solid waste reduction programs, which are designed to comply with federal, state, and local statutes and regulations related to solid waste. These statutes and regulations include the California Integrated Solid Waste Management Act, the California Beverage Container Recycling and Litter Reduction Act, and the City's solid waste disposal policies and practices. The California Integrated Solid Waste Management Act requires that jurisdictions maintain a 50 percent or better diversion rate for solid waste. EDCO offers recycling programs to Signal Hill businesses that allow employees and/or tenants to collect a variety of recyclable materials. Interested businesses would contract directly with EDCO to devise a recycling program tailored to the business and/or tenant (EDCO 2019).

The proposed project is required to comply with the current solid waste franchise's recycling system; therefore, it would comply with the City's and California's solid waste disposal regulations. As such, the proposed project would not result in a significant impact involving compliance with solid waste regulatory standards.

## XX. Wildfire

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| *If located in or near state responsibility areas or lands classified as very high fire hazard zones, would the project:* | | | | |
| a) Substantially impair an adopted emergency response plan or emergency evacuation plan? | ☐ | ☐ | ☐ | ☒ |
| b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire? | ☐ | ☐ | ☐ | ☒ |
| c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment? | ☐ | ☐ | ☐ | ☒ |
| d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes? | ☐ | ☐ | ☐ | ☒ |

### Discussion

***a) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?***

***b) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?***

***c) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?***

***d) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?***

**No Impact.** Since the four thresholds apply if a project site is located in a designated wildland fire hazard area and this site is not in such a place, the project would have no impacts concerning wildfire hazards.

## XXI. Mandatory Findings of Significance

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **MANDATORY FINDINGS OF SIGNIFICANCE:** | | | | |
| a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | ☐ | ☒ | ☒ | ☐ |
| b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? | ☐ | ☐ | ☒ | ☐ |
| c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? | ☐ | ☒ | ☐ | ☐ |

### Discussion

***a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?***

**Less Than Significant Impact with Mitigation Incorporated.** The Project is located in a developed urban area. As indicated by the analysis in this Initial Study, the Project would not substantially reduce the habitat of fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or reduce the number or restrict the range of a rare or endangered plant or animal. Mitigation described previously in this Initial Study would ensure that impacts to prehistoric resources would be reduced to a less than significant level. As such impacts would be less than significant, and no mitigation is required.

***b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?***

**Less than Significant Impact.** There are numerous applications under review by the City of Signal Hill, regarding a range of new construction proposals. Most are considered very minor, such as building additions, remodels, modifications to existing site layouts, or additions of accessory dwelling units to an existing single-family residential property. Since those represent limited changes to the environment with minor impacts, they are not further considered with respect to cumulative impacts associated with the proposed project. In addition, a number of projects have been identified within the surrounding area.

The Project is an urban infill development that is consistent with the growth projections of the City and SCAG . As such, the Project would not have a considerable contribution to impact categories for which planned facilities are based on community growth projections. Additionally, for some impact categories, the absence of a Project-specific impact is considered indicative of a less than significant contribution to cumulative effects. For example, SCAQMD recommends that a project be considered to result in a cumulatively considerable impact to air quality if the emissions from the project exceed the mass daily emissions thresholds. The impact of Greenhouse gas emissions is cumulative by definition and therefore a less than significant project impact is considered to indicate that the project would not have a considerable contribution to the cumulative impact. Likewise, a less than significant VMT impact would also indicate a less than significant cumulative VMT impact.

For impact categories that are locational in nature (such as Aesthetics, Agriculture and Forestry Resources, Biological Resources, Mineral Resources, Wildfire) the Project would not contribute to cumulative effects due to its location. Through regulatory compliance and mitigation, the Project would have less than significant impacts on Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, and Tribal Cultural Resources. None of these other pending projects are close enough to the project site to cumulatively interact with regard to these topics and other projects in the community would be required to meet the same regulatory standards.

For the above reasons, the Project would not have a considerable contribution to cumulative impacts.

***c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?***

**Less than Significant with Mitigation Incorporated.** Based on the analysis contained in this Initial Study, the Project with the mitigation included in this Initial Study was found to have a less than significant effects on human beings, either directly or indirectly.

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# APPENDIX A:

## Air Quality Worksheets


Summer (Proposed)

# Signal Hill Target Retail Center & Self Stroage (Proposed)

**South Coast AQMD Air District, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Regional Shopping Center | 15.00 | 1000sqft | 0.34 | 15,000.00 | 0 |
| Fast Food Restaurant with Drive Thru | 5.60 | 1000sqft | 0.13 | 5,600.00 | 0 |
| Medical Office Building | 3.50 | 1000sqft | 0.08 | 3,500.00 | 0 |
| Refrigerated Warehouse-No Rail | 177.35 | 1000sqft | 4.07 | 177,345.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 31 |
| **Climate Zone** | 9 | | | **Operational Year** | 2024 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 702.44 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Proposed Uses, Option 3

Construction Phase - Includes construction of shopping center, fast-food restaurant and medical dental office

Vehicle Trips - Based on worst-case assumption for Option 3

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 Minimum Measures

Area Mitigation -

Water Mitigation -

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaMitigation | UseLowVOCPaintParkingCheck | False | True |
| tblConstDustMitigation | WaterUnpavedRoadVehicleSpeed | 0 | 15 |
| tblConstructionPhase | NumDays | 18.00 | 38.00 |
| tblConstructionPhase | PhaseEndDate | 5/10/2023 | 5/14/2023 |
| tblConstructionPhase | PhaseStartDate | 4/15/2023 | 3/22/2023 |
| tblVehicleTrips | ST_TR | 722.03 | 685.32 |
| tblVehicleTrips | ST_TR | 8.96 | 8.64 |
| tblVehicleTrips | ST_TR | 1.68 | 1.51 |
| tblVehicleTrips | ST_TR | 49.97 | 44.16 |
| tblVehicleTrips | SU_TR | 542.72 | 515.12 |
| tblVehicleTrips | SU_TR | 1.55 | 1.50 |
| tblVehicleTrips | SU_TR | 1.68 | 1.51 |
| tblVehicleTrips | SU_TR | 25.24 | 22.30 |
| tblVehicleTrips | WD_TR | 496.12 | 470.89 |
| tblVehicleTrips | WD_TR | 36.13 | 34.86 |
| tblVehicleTrips | WD_TR | 1.68 | 1.51 |
| tblVehicleTrips | WD_TR | 42.70 | 37.73 |

## 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

### Unmitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 2.1210 | 18.8085 | 19.9606 | 0.0442 | 1.1389 | 0.8211 | 1.9601 | 0.3068 | 0.7725 | 1.0794 | 0.0000 | 4,331.7396 | 4,331.7396 | 0.6867 | 0.0000 | 4,348.9055 |
| 2023 | 50.3896 | 16.8293 | 19.5501 | 0.0436 | 1.1389 | 0.7087 | 1.8477 | 0.3068 | 0.6668 | 0.9736 | 0.0000 | 4,272.5554 | 4,272.5554 | 0.6737 | 0.0000 | 4,289.3966 |
| **Maximum** | **50.3896** | **18.8085** | **19.9606** | **0.0442** | **1.1389** | **0.8211** | **1.9601** | **0.3068** | **0.7725** | **1.0794** | **0.0000** | **4,331.7396** | **4,331.7396** | **0.6867** | **0.0000** | **4,348.9055** |

### Mitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 2.1210 | 18.8085 | 19.9606 | 0.0442 | 1.1389 | 0.8211 | 1.9601 | 0.3068 | 0.7725 | 1.0794 | 0.0000 | 4,331.7396 | 4,331.7396 | 0.6867 | 0.0000 | 4,348.9055 |
| 2023 | 50.3896 | 16.8293 | 19.5501 | 0.0436 | 1.1389 | 0.7087 | 1.8477 | 0.3068 | 0.6668 | 0.9736 | 0.0000 | 4,272.5554 | 4,272.5554 | 0.6737 | 0.0000 | 4,289.3966 |
| **Maximum** | **50.3896** | **18.8085** | **19.9606** | **0.0442** | **1.1389** | **0.8211** | **1.9601** | **0.3068** | **0.7725** | **1.0794** | **0.0000** | **4,331.7396** | **4,331.7396** | **0.6867** | **0.0000** | **4,348.9055** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 4.5021 | 1.9000e-004 | 0.0205 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | | 0.0441 | 0.0441 | 1.2000e-004 | | 0.0470 |
| Energy | 0.0454 | 0.4126 | 0.3466 | 2.4800e-003 | | 0.0314 | 0.0314 | | 0.0314 | 0.0314 | | 495.0705 | 495.0705 | 9.4900e-003 | 9.0800e-003 | 498.0125 |
| Mobile | 5.5611 | 23.8090 | 49.4550 | 0.1834 | 14.7482 | 0.1313 | 14.8795 | 3.9456 | 0.1219 | 4.0676 | | 18,748.5329 | 18,748.5329 | 0.9073 | | 18,771.2145 |
| **Total** | **10.1086** | **24.2217** | **49.8221** | **0.1859** | **14.7482** | **0.1627** | **14.9109** | **3.9456** | **0.1534** | **4.0990** | | **19,243.6475** | **19,243.6475** | **0.9169** | **9.0800e-003** | **19,269.2740** |

### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 4.5021 | 1.9000e-004 | 0.0205 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | | 0.0441 | 0.0441 | 1.2000e-004 | | 0.0470 |
| Energy | 0.0454 | 0.4126 | 0.3466 | 2.4800e-003 | | 0.0314 | 0.0314 | | 0.0314 | 0.0314 | | 495.0705 | 495.0705 | 9.4900e-003 | 9.0800e-003 | 498.0125 |
| Mobile | 5.5611 | 23.8090 | 49.4550 | 0.1834 | 14.7482 | 0.1313 | 14.8795 | 3.9456 | 0.1219 | 4.0676 | | 18,748.5329 | 18,748.5329 | 0.9073 | | 18,771.2145 |
| **Total** | **10.1086** | **24.2217** | **49.8221** | **0.1859** | **14.7482** | **0.1627** | **14.9109** | **3.9456** | **0.1534** | **4.0990** | | **19,243.6475** | **19,243.6475** | **0.9169** | **9.0800e-003** | **19,269.2740** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent Reduction | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Building Construction | Building Construction | 5/4/2022 | 3/21/2023 | 5 | 230 | |
| 2 | Paving | Paving | 3/22/2023 | 4/14/2023 | 5 | 18 | |
| 3 | Architectural Coating | Architectural Coating | 3/22/2023 | 5/14/2023 | 5 | 38 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 302,168; Non-Residential Outdoor: 100,723; Striped Parking Area: 0 (Architectural Coating – sqft)**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |
| Paving | Cement and Mortar Mixers | 2 | 6.00 | 9 | 0.56 |
| Building Construction | Cranes | 1 | 7.00 | 231 | 0.29 |
| Building Construction | Forklifts | 3 | 8.00 | 89 | 0.20 |
| Paving | Pavers | 1 | 8.00 | 130 | 0.42 |
| Paving | Rollers | 2 | 6.00 | 80 | 0.38 |
| Building Construction | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Paving | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Paving | Paving Equipment | 2 | 6.00 | 132 | 0.36 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Building Construction | 9 | 83.00 | 33.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 8 | 20.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 17.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

## 3.2 Building Construction - 2022

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7062 | 15.6156 | 16.3634 | 0.0269 | | 0.8090 | 0.8090 | | 0.7612 | 0.7612 | | 2,554.3336 | 2,554.3336 | 0.6120 | | 2,569.6322 |
| **Total** | **1.7062** | **15.6156** | **16.3634** | **0.0269** | | **0.8090** | **0.8090** | | **0.7612** | **0.7612** | | **2,554.3336** | **2,554.3336** | **0.6120** | | **2,569.6322** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0861 | 2.9876 | 0.7059 | 8.3400e-003 | 0.2112 | 5.4900e-003 | 0.2167 | 0.0608 | 5.2500e-003 | 0.0661 | | 891.1951 | 891.1951 | 0.0524 | | 892.5040 |
| Worker | 0.3286 | 0.2053 | 2.8913 | 8.8900e-003 | 0.9277 | 6.6300e-003 | 0.9344 | 0.2460 | 6.1100e-003 | 0.2522 | | 886.2109 | 886.2109 | 0.0223 | | 886.7693 |
| **Total** | **0.4148** | **3.1929** | **3.5972** | **0.0172** | **1.1389** | **0.0121** | **1.1511** | **0.3068** | **0.0114** | **0.3182** | | **1,777.4060** | **1,777.4060** | **0.0747** | | **1,779.2733** |

## 3.2 Building Construction - 2022

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7062 | 15.6156 | 16.3634 | 0.0269 | | 0.8090 | 0.8090 | | 0.7612 | 0.7612 | 0.0000 | 2,554.3336 | 2,554.3336 | 0.6120 | | 2,569.6322 |
| **Total** | **1.7062** | **15.6156** | **16.3634** | **0.0269** | | **0.8090** | **0.8090** | | **0.7612** | **0.7612** | **0.0000** | **2,554.3336** | **2,554.3336** | **0.6120** | | **2,569.6322** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0861 | 2.9876 | 0.7059 | 8.3400e-003 | 0.2112 | 5.4900e-003 | 0.2167 | 0.0608 | 5.2500e-003 | 0.0661 | | 891.1951 | 891.1951 | 0.0524 | | 892.5040 |
| Worker | 0.3286 | 0.2053 | 2.8913 | 8.8900e-003 | 0.9277 | 6.6300e-003 | 0.9344 | 0.2460 | 6.1100e-003 | 0.2522 | | 886.2109 | 886.2109 | 0.0223 | | 886.7693 |
| **Total** | **0.4148** | **3.1929** | **3.5972** | **0.0172** | **1.1389** | **0.0121** | **1.1511** | **0.3068** | **0.0114** | **0.3182** | | **1,777.4060** | **1,777.4060** | **0.0747** | | **1,779.2733** |

## 3.2 Building Construction - 2023

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5728 | 14.3849 | 16.2440 | 0.0269 | | 0.6997 | 0.6997 | | 0.6584 | 0.6584 | | 2,555.2099 | 2,555.2099 | 0.6079 | | 2,570.4061 |
| **Total** | **1.5728** | **14.3849** | **16.2440** | **0.0269** | | **0.6997** | **0.6997** | | **0.6584** | **0.6584** | | **2,555.2099** | **2,555.2099** | **0.6079** | | **2,570.4061** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0642 | 2.2586 | 0.6360 | 8.0800e-003 | 0.2112 | 2.5400e-003 | 0.2137 | 0.0608 | 2.4300e-003 | 0.0632 | | 864.1635 | 864.1635 | 0.0457 | | 865.3048 |
| Worker | 0.3090 | 0.1857 | 2.6701 | 8.5600e-003 | 0.9277 | 6.4600e-003 | 0.9342 | 0.2460 | 5.9500e-003 | 0.2520 | | 853.1820 | 853.1820 | 0.0202 | | 853.6857 |
| **Total** | **0.3732** | **2.4444** | **3.3061** | **0.0166** | **1.1389** | **9.0000e-003** | **1.1480** | **0.3068** | **8.3800e-003** | **0.3152** | | **1,717.3455** | **1,717.3455** | **0.0658** | | **1,718.9905** |

## 3.2 Building Construction - 2023

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5728 | 14.3849 | 16.2440 | 0.0269 | | 0.6997 | 0.6997 | | 0.6584 | 0.6584 | 0.0000 | 2,555.2099 | 2,555.2099 | 0.6079 | | 2,570.4061 |
| **Total** | **1.5728** | **14.3849** | **16.2440** | **0.0269** | | **0.6997** | **0.6997** | | **0.6584** | **0.6584** | **0.0000** | **2,555.2099** | **2,555.2099** | **0.6079** | | **2,570.4061** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0642 | 2.2586 | 0.6360 | 8.0800e-003 | 0.2112 | 2.5400e-003 | 0.2137 | 0.0608 | 2.4300e-003 | 0.0632 | | 864.1635 | 864.1635 | 0.0457 | | 865.3048 |
| Worker | 0.3090 | 0.1857 | 2.6701 | 8.5600e-003 | 0.9277 | 6.4600e-003 | 0.9342 | 0.2460 | 5.9500e-003 | 0.2520 | | 853.1820 | 853.1820 | 0.0202 | | 853.6857 |
| **Total** | **0.3732** | **2.4444** | **3.3061** | **0.0166** | **1.1389** | **9.0000e-003** | **1.1480** | **0.3068** | **8.3800e-003** | **0.3152** | | **1,717.3455** | **1,717.3455** | **0.0658** | | **1,718.9905** |

## 3.3 Paving - 2023

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9181 | 8.7903 | 12.1905 | 0.0189 | | 0.4357 | 0.4357 | | 0.4025 | 0.4025 | | 1,805.4304 | 1,805.4304 | 0.5673 | | 1,819.6122 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9181** | **8.7903** | **12.1905** | **0.0189** | | **0.4357** | **0.4357** | | **0.4025** | **0.4025** | | **1,805.4304** | **1,805.4304** | **0.5673** | | **1,819.6122** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0745 | 0.0448 | 0.6434 | 2.0600e-003 | 0.2236 | 1.5600e-003 | 0.2251 | 0.0593 | 1.4300e-003 | 0.0607 | | 205.5860 | 205.5860 | 4.8500e-003 | | 205.7074 |
| **Total** | **0.0745** | **0.0448** | **0.6434** | **2.0600e-003** | **0.2236** | **1.5600e-003** | **0.2251** | **0.0593** | **1.4300e-003** | **0.0607** | | **205.5860** | **205.5860** | **4.8500e-003** | | **205.7074** |

## 3.3 Paving - 2023

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9181 | 8.7903 | 12.1905 | 0.0189 | | 0.4357 | 0.4357 | | 0.4025 | 0.4025 | 0.0000 | 1,805.4304 | 1,805.4304 | 0.5673 | | 1,819.6122 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9181** | **8.7903** | **12.1905** | **0.0189** | | **0.4357** | **0.4357** | | **0.4025** | **0.4025** | **0.0000** | **1,805.4304** | **1,805.4304** | **0.5673** | | **1,819.6122** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0745 | 0.0448 | 0.6434 | 2.0600e-003 | 0.2236 | 1.5600e-003 | 0.2251 | 0.0593 | 1.4300e-003 | 0.0607 | | 205.5860 | 205.5860 | 4.8500e-003 | | 205.7074 |
| **Total** | **0.0745** | **0.0448** | **0.6434** | **2.0600e-003** | **0.2236** | **1.5600e-003** | **0.2251** | **0.0593** | **1.4300e-003** | **0.0607** | | **205.5860** | **205.5860** | **4.8500e-003** | | **205.7074** |

## 3.4 Architectural Coating - 2023

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 49.1421 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1917 | 1.3030 | 1.8111 | 2.9700e-003 | | 0.0708 | 0.0708 | | 0.0708 | 0.0708 | | 281.4481 | 281.4481 | 0.0168 | | 281.8690 |
| **Total** | **49.3338** | **1.3030** | **1.8111** | **2.9700e-003** | | **0.0708** | **0.0708** | | **0.0708** | **0.0708** | | **281.4481** | **281.4481** | **0.0168** | | **281.8690** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0633 | 0.0380 | 0.5469 | 1.7500e-003 | 0.1900 | 1.3200e-003 | 0.1913 | 0.0504 | 1.2200e-003 | 0.0516 | | 174.7481 | 174.7481 | 4.1300e-003 | | 174.8513 |
| **Total** | **0.0633** | **0.0380** | **0.5469** | **1.7500e-003** | **0.1900** | **1.3200e-003** | **0.1913** | **0.0504** | **1.2200e-003** | **0.0516** | | **174.7481** | **174.7481** | **4.1300e-003** | | **174.8513** |

## 3.4 Architectural Coating - 2023

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 49.1421 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1917 | 1.3030 | 1.8111 | 2.9700e-003 | | 0.0708 | 0.0708 | | 0.0708 | 0.0708 | 0.0000 | 281.4481 | 281.4481 | 0.0168 | | 281.8690 |
| **Total** | **49.3338** | **1.3030** | **1.8111** | **2.9700e-003** | | **0.0708** | **0.0708** | | **0.0708** | **0.0708** | **0.0000** | **281.4481** | **281.4481** | **0.0168** | | **281.8690** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0633 | 0.0380 | 0.5469 | 1.7500e-003 | 0.1900 | 1.3200e-003 | 0.1913 | 0.0504 | 1.2200e-003 | 0.0516 | | 174.7481 | 174.7481 | 4.1300e-003 | | 174.8513 |
| **Total** | **0.0633** | **0.0380** | **0.5469** | **1.7500e-003** | **0.1900** | **1.3200e-003** | **0.1913** | **0.0504** | **1.2200e-003** | **0.0516** | | **174.7481** | **174.7481** | **4.1300e-003** | | **174.8513** |

## 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 5.5611 | 23.8090 | 49.4550 | 0.1834 | 14.7482 | 0.1313 | 14.8795 | 3.9456 | 0.1219 | 4.0676 | | 18,748.5329 | 18,748.5329 | 0.9073 | | 18,771.2145 |
| Unmitigated | 5.5611 | 23.8090 | 49.4550 | 0.1834 | 14.7482 | 0.1313 | 14.8795 | 3.9456 | 0.1219 | 4.0676 | | 18,748.5329 | 18,748.5329 | 0.9073 | | 18,771.2145 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Fast Food Restaurant with Drive Thru | 2,637.00 | 3,837.77 | 2884.69 | 2,992,909 | 2,992,909 |
| Medical Office Building | 122.00 | 30.26 | 5.23 | 239,187 | 239,187 |
| Refrigerated Warehouse-No Rail | 268.00 | 268.00 | 268.00 | 1,148,572 | 1,148,572 |
| Regional Shopping Center | 566.00 | 662.37 | 334.56 | 1,182,436 | 1,182,436 |
| Total | 3,593.00 | 4,798.39 | 3,492.49 | 5,563,103 | 5,563,103 |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Fast Food Restaurant with Drive | 16.60 | 8.40 | 6.90 | 2.20 | 78.80 | 19.00 | 29 | 21 | 50 |
| Medical Office Building | 16.60 | 8.40 | 6.90 | 29.60 | 51.40 | 19.00 | 60 | 30 | 10 |
| Refrigerated Warehouse-No | 16.60 | 8.40 | 6.90 | 59.00 | 0.00 | 41.00 | 92 | 5 | 3 |
| Regional Shopping Center | 16.60 | 8.40 | 6.90 | 16.30 | 64.70 | 19.00 | 54 | 35 | 11 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fast Food Restaurant with Drive Thru | 0.550809 | 0.042355 | 0.203399 | 0.115606 | 0.014562 | 0.005806 | 0.021810 | 0.035336 | 0.002134 | 0.001736 | 0.004891 | 0.000712 | 0.000845 |
| Medical Office Building | 0.550809 | 0.042355 | 0.203399 | 0.115606 | 0.014562 | 0.005806 | 0.021810 | 0.035336 | 0.002134 | 0.001736 | 0.004891 | 0.000712 | 0.000845 |
| Refrigerated Warehouse-No Rail | 0.550809 | 0.042355 | 0.203399 | 0.115606 | 0.014562 | 0.005806 | 0.021810 | 0.035336 | 0.002134 | 0.001736 | 0.004891 | 0.000712 | 0.000845 |
| Regional Shopping Center | 0.550809 | 0.042355 | 0.203399 | 0.115606 | 0.014562 | 0.005806 | 0.021810 | 0.035336 | 0.002134 | 0.001736 | 0.004891 | 0.000712 | 0.000845 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0454 | 0.4126 | 0.3466 | 2.4800e-003 | | 0.0314 | 0.0314 | | 0.0314 | 0.0314 | | 495.0705 | 495.0705 | 9.4900e-003 | 9.0800e-003 | 498.0125 |
| NaturalGas Unmitigated | 0.0454 | 0.4126 | 0.3466 | 2.4800e-003 | | 0.0314 | 0.0314 | | 0.0314 | 0.0314 | | 495.0705 | 495.0705 | 9.4900e-003 | 9.0800e-003 | 498.0125 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Fast Food Restaurant with Drive Thru | 3540.43 | 0.0382 | 0.3471 | 0.2916 | 2.0800e-003 | | 0.0264 | 0.0264 | | 0.0264 | 0.0264 | | 416.5209 | 416.5209 | 7.9800e-003 | 7.6400e-003 | 418.9961 |
| Medical Office Building | 99.8219 | 1.0800e-003 | 9.7900e-003 | 8.2200e-003 | 6.0000e-005 | | 7.4000e-004 | 7.4000e-004 | | 7.4000e-004 | 7.4000e-004 | | 11.7438 | 11.7438 | 2.3000e-004 | 2.2000e-004 | 11.8135 |
| Refrigerated Warehouse-No Rail | 500.453 | 5.4000e-003 | 0.0491 | 0.0412 | 2.9000e-004 | | 3.7300e-003 | 3.7300e-003 | | 3.7300e-003 | 3.7300e-003 | | 58.8768 | 58.8768 | 1.1300e-003 | 1.0800e-003 | 59.2267 |
| Regional Shopping Center | 67.3973 | 7.3000e-004 | 6.6100e-003 | 5.5500e-003 | 4.0000e-005 | | 5.0000e-004 | 5.0000e-004 | | 5.0000e-004 | 5.0000e-004 | | 7.9291 | 7.9291 | 1.5000e-004 | 1.5000e-004 | 7.9762 |
| **Total** | | **0.0454** | **0.4126** | **0.3465** | **2.4700e-003** | | **0.0314** | **0.0314** | | **0.0314** | **0.0314** | | **495.0706** | **495.0706** | **9.4900e-003** | **9.0900e-003** | **498.0125** |

### 5.2 Energy by Land Use - NaturalGas

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Fast Food Restaurant with Drive Thru | 3.54043 | 0.0382 | 0.3471 | 0.2916 | 2.0800e-003 | | 0.0264 | 0.0264 | | 0.0264 | 0.0264 | | 416.5209 | 416.5209 | 7.9800e-003 | 7.6400e-003 | 418.9961 |
| Medical Office Building | 0.0998219 | 1.0800e-003 | 9.7900e-003 | 8.2200e-003 | 6.0000e-005 | | 7.4000e-004 | 7.4000e-004 | | 7.4000e-004 | 7.4000e-004 | | 11.7438 | 11.7438 | 2.3000e-004 | 2.2000e-004 | 11.8135 |
| Refrigerated Warehouse-No Rail | 0.500453 | 5.4000e-003 | 0.0491 | 0.0412 | 2.9000e-004 | | 3.7300e-003 | 3.7300e-003 | | 3.7300e-003 | 3.7300e-003 | | 58.8768 | 58.8768 | 1.1300e-003 | 1.0800e-003 | 59.2267 |
| Regional Shopping Center | 0.0673973 | 7.3000e-004 | 6.6100e-003 | 5.5500e-003 | 4.0000e-005 | | 5.0000e-004 | 5.0000e-004 | | 5.0000e-004 | 5.0000e-004 | | 7.9291 | 7.9291 | 1.5000e-004 | 1.5000e-004 | 7.9762 |
| **Total** | | **0.0454** | **0.4126** | **0.3465** | **2.4700e-003** | | **0.0314** | **0.0314** | | **0.0314** | **0.0314** | | **495.0706** | **495.0706** | **9.4900e-003** | **9.0900e-003** | **498.0125** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 4.5021 | 1.9000e-004 | 0.0205 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | | 0.0441 | 0.0441 | 1.2000e-004 | | 0.0470 |
| Unmitigated | 4.5021 | 1.9000e-004 | 0.0205 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | | 0.0441 | 0.0441 | 1.2000e-004 | | 0.0470 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.5116 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 3.9886 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.9000e-003 | 1.9000e-004 | 0.0205 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | | 0.0441 | 0.0441 | 1.2000e-004 | | 0.0470 |
| **Total** | **4.5021** | **1.9000e-004** | **0.0205** | **0.0000** | | **7.0000e-005** | **7.0000e-005** | | **7.0000e-005** | **7.0000e-005** | | **0.0441** | **0.0441** | **1.2000e-004** | | **0.0470** |

### 6.2 Area by SubCategory

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.5116 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 3.9886 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.9000e-003 | 1.9000e-004 | 0.0205 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | | 0.0441 | 0.0441 | 1.2000e-004 | | 0.0470 |
| **Total** | **4.5021** | **1.9000e-004** | **0.0205** | **0.0000** | | **7.0000e-005** | **7.0000e-005** | | **7.0000e-005** | **7.0000e-005** | | **0.0441** | **0.0441** | **1.2000e-004** | | **0.0470** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation


Winter (Proposed)

# Signal Hill Target Retail Center & Self Stroage (Proposed)

**South Coast AQMD Air District, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Regional Shopping Center | 15.00 | 1000sqft | 0.34 | 15,000.00 | 0 |
| Fast Food Restaurant with Drive Thru | 5.60 | 1000sqft | 0.13 | 5,600.00 | 0 |
| Medical Office Building | 3.50 | 1000sqft | 0.08 | 3,500.00 | 0 |
| Refrigerated Warehouse-No Rail | 177.35 | 1000sqft | 4.07 | 177,345.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 31 |
| **Climate Zone** | 9 | | | **Operational Year** | 2024 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 702.44 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Proposed Uses, Option 3

Construction Phase - Includes construction of shopping center, fast-food restaurant and medical dental office

Vehicle Trips - Based on worst-case assumption for Option 3

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 Minimum Measures

Area Mitigation -

Water Mitigation -

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaMitigation | UseLowVOCPaintParkingCheck | False | True |
| tblConstDustMitigation | WaterUnpavedRoadVehicleSpeed | 0 | 15 |
| tblConstructionPhase | NumDays | 18.00 | 38.00 |
| tblConstructionPhase | PhaseEndDate | 5/10/2023 | 5/14/2023 |
| tblConstructionPhase | PhaseStartDate | 4/15/2023 | 3/22/2023 |
| tblVehicleTrips | ST_TR | 722.03 | 685.32 |
| tblVehicleTrips | ST_TR | 8.96 | 8.64 |
| tblVehicleTrips | ST_TR | 1.68 | 1.51 |
| tblVehicleTrips | ST_TR | 49.97 | 44.16 |
| tblVehicleTrips | SU_TR | 542.72 | 515.12 |
| tblVehicleTrips | SU_TR | 1.55 | 1.50 |
| tblVehicleTrips | SU_TR | 1.68 | 1.51 |
| tblVehicleTrips | SU_TR | 25.24 | 22.30 |
| tblVehicleTrips | WD_TR | 496.12 | 470.89 |
| tblVehicleTrips | WD_TR | 36.13 | 34.86 |
| tblVehicleTrips | WD_TR | 1.68 | 1.51 |
| tblVehicleTrips | WD_TR | 42.70 | 37.73 |

## 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

### Unmitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 2.1569 | 18.8159 | 19.7473 | 0.0433 | 1.1389 | 0.8213 | 1.9603 | 0.3068 | 0.7727 | 1.0795 | 0.0000 | 4,248.3598 | 4,248.3598 | 0.6889 | 0.0000 | 4,265.5834 |
| 2023 | 50.4032 | 16.8322 | 19.3332 | 0.0428 | 1.1389 | 0.7089 | 1.8478 | 0.3068 | 0.6669 | 0.9738 | 0.0000 | 4,192.4794 | 4,192.4794 | 0.6752 | 0.0000 | 4,209.3604 |
| **Maximum** | **50.4032** | **18.8159** | **19.7473** | **0.0433** | **1.1389** | **0.8213** | **1.9603** | **0.3068** | **0.7727** | **1.0795** | **0.0000** | **4,248.3598** | **4,248.3598** | **0.6889** | **0.0000** | **4,265.5834** |

### Mitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 2.1569 | 18.8159 | 19.7473 | 0.0433 | 1.1389 | 0.8213 | 1.9603 | 0.3068 | 0.7727 | 1.0795 | 0.0000 | 4,248.3598 | 4,248.3598 | 0.6889 | 0.0000 | 4,265.5834 |
| 2023 | 50.4032 | 16.8322 | 19.3332 | 0.0428 | 1.1389 | 0.7089 | 1.8478 | 0.3068 | 0.6669 | 0.9738 | 0.0000 | 4,192.4794 | 4,192.4794 | 0.6752 | 0.0000 | 4,209.3604 |
| **Maximum** | **50.4032** | **18.8159** | **19.7473** | **0.0433** | **1.1389** | **0.8213** | **1.9603** | **0.3068** | **0.7727** | **1.0795** | **0.0000** | **4,248.3598** | **4,248.3598** | **0.6889** | **0.0000** | **4,265.5834** |

Signal Hill Target Retail Center & Self Stroage (Proposed) - South Coast AQMD Air District, Winter

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 4.5021 | 1.9000e-004 | 0.0205 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | | 0.0441 | 0.0441 | 1.2000e-004 | | 0.0470 |
| Energy | 0.0454 | 0.4126 | 0.3466 | 2.4800e-003 | | 0.0314 | 0.0314 | | 0.0314 | 0.0314 | | 495.0705 | 495.0705 | 9.4900e-003 | 9.0800e-003 | 498.0125 |
| Mobile | 5.2217 | 23.8642 | 48.1415 | 0.1731 | 14.7482 | 0.1325 | 14.8807 | 3.9456 | 0.1231 | 4.0687 | | 17,697.5314 | 17,697.5314 | 0.9284 | | 17,720.7422 |
| **Total** | **9.7692** | **24.2770** | **48.5085** | **0.1756** | **14.7482** | **0.1639** | **14.9121** | **3.9456** | **0.1545** | **4.1001** | | **18,192.6460** | **18,192.6460** | **0.9380** | **9.0800e-003** | **18,218.8017** |

### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 4.5021 | 1.9000e-004 | 0.0205 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | | 0.0441 | 0.0441 | 1.2000e-004 | | 0.0470 |
| Energy | 0.0454 | 0.4126 | 0.3466 | 2.4800e-003 | | 0.0314 | 0.0314 | | 0.0314 | 0.0314 | | 495.0705 | 495.0705 | 9.4900e-003 | 9.0800e-003 | 498.0125 |
| Mobile | 5.2217 | 23.8642 | 48.1415 | 0.1731 | 14.7482 | 0.1325 | 14.8807 | 3.9456 | 0.1231 | 4.0687 | | 17,697.5314 | 17,697.5314 | 0.9284 | | 17,720.7422 |
| **Total** | **9.7692** | **24.2770** | **48.5085** | **0.1756** | **14.7482** | **0.1639** | **14.9121** | **3.9456** | **0.1545** | **4.1001** | | **18,192.6460** | **18,192.6460** | **0.9380** | **9.0800e-003** | **18,218.8017** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent Reduction | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Building Construction | Building Construction | 5/4/2022 | 3/21/2023 | 5 | 230 | |
| 2 | Paving | Paving | 3/22/2023 | 4/14/2023 | 5 | 18 | |
| 3 | Architectural Coating | Architectural Coating | 3/22/2023 | 5/14/2023 | 5 | 38 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 302,168; Non-Residential Outdoor: 100,723; Striped Parking Area: 0 (Architectural Coating – sqft)**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |
| Paving | Cement and Mortar Mixers | 2 | 6.00 | 9 | 0.56 |
| Building Construction | Cranes | 1 | 7.00 | 231 | 0.29 |
| Building Construction | Forklifts | 3 | 8.00 | 89 | 0.20 |
| Paving | Pavers | 1 | 8.00 | 130 | 0.42 |
| Paving | Rollers | 2 | 6.00 | 80 | 0.38 |
| Building Construction | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Paving | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Paving | Paving Equipment | 2 | 6.00 | 132 | 0.36 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Building Construction | 9 | 83.00 | 33.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 8 | 20.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 17.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

## 3.2 Building Construction - 2022

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7062 | 15.6156 | 16.3634 | 0.0269 | | 0.8090 | 0.8090 | | 0.7612 | 0.7612 | | 2,554.3336 | 2,554.3336 | 0.6120 | | 2,569.6322 |
| **Total** | **1.7062** | **15.6156** | **16.3634** | **0.0269** | | **0.8090** | **0.8090** | | **0.7612** | **0.7612** | | **2,554.3336** | **2,554.3336** | **0.6120** | | **2,569.6322** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0907 | 2.9757 | 0.7903 | 8.1000e-003 | 0.2112 | 5.6700e-003 | 0.2169 | 0.0608 | 5.4200e-003 | 0.0662 | | 865.2409 | 865.2409 | 0.0562 | | 866.6458 |
| Worker | 0.3600 | 0.2246 | 2.5935 | 8.3100e-003 | 0.9277 | 6.6300e-003 | 0.9344 | 0.2460 | 6.1100e-003 | 0.2522 | | 828.7853 | 828.7853 | 0.0208 | | 829.3054 |
| **Total** | **0.4507** | **3.2003** | **3.3839** | **0.0164** | **1.1389** | **0.0123** | **1.1513** | **0.3068** | **0.0115** | **0.3184** | | **1,694.0263** | **1,694.0263** | **0.0770** | | **1,695.9512** |

## 3.2 Building Construction - 2022

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7062 | 15.6156 | 16.3634 | 0.0269 | | 0.8090 | 0.8090 | | 0.7612 | 0.7612 | 0.0000 | 2,554.3336 | 2,554.3336 | 0.6120 | | 2,569.6322 |
| **Total** | **1.7062** | **15.6156** | **16.3634** | **0.0269** | | **0.8090** | **0.8090** | | **0.7612** | **0.7612** | **0.0000** | **2,554.3336** | **2,554.3336** | **0.6120** | | **2,569.6322** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0907 | 2.9757 | 0.7903 | 8.1000e-003 | 0.2112 | 5.6700e-003 | 0.2169 | 0.0608 | 5.4200e-003 | 0.0662 | | 865.2409 | 865.2409 | 0.0562 | | 866.6458 |
| Worker | 0.3600 | 0.2246 | 2.5935 | 8.3100e-003 | 0.9277 | 6.6300e-003 | 0.9344 | 0.2460 | 6.1100e-003 | 0.2522 | | 828.7853 | 828.7853 | 0.0208 | | 829.3054 |
| **Total** | **0.4507** | **3.2003** | **3.3839** | **0.0164** | **1.1389** | **0.0123** | **1.1513** | **0.3068** | **0.0115** | **0.3184** | | **1,694.0263** | **1,694.0263** | **0.0770** | | **1,695.9512** |

## 3.2 Building Construction - 2023

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5728 | 14.3849 | 16.2440 | 0.0269 | | 0.6997 | 0.6997 | | 0.6584 | 0.6584 | | 2,555.2099 | 2,555.2099 | 0.6079 | | 2,570.4061 |
| **Total** | **1.5728** | **14.3849** | **16.2440** | **0.0269** | | **0.6997** | **0.6997** | | **0.6584** | **0.6584** | | **2,555.2099** | **2,555.2099** | **0.6079** | | **2,570.4061** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0677 | 2.2442 | 0.6988 | 7.8500e-003 | 0.2112 | 2.6600e-003 | 0.2139 | 0.0608 | 2.5500e-003 | 0.0634 | | 839.3935 | 839.3935 | 0.0487 | | 840.6097 |
| Worker | 0.3395 | 0.2032 | 2.3904 | 8.0000e-003 | 0.9277 | 6.4600e-003 | 0.9342 | 0.2460 | 5.9500e-003 | 0.2520 | | 797.8760 | 797.8760 | 0.0187 | | 798.3446 |
| **Total** | **0.4072** | **2.4473** | **3.0892** | **0.0159** | **1.1389** | **9.1200e-003** | **1.1481** | **0.3068** | **8.5000e-003** | **0.3153** | | **1,637.2695** | **1,637.2695** | **0.0674** | | **1,638.9544** |

## 3.2 Building Construction - 2023

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5728 | 14.3849 | 16.2440 | 0.0269 | | 0.6997 | 0.6997 | | 0.6584 | 0.6584 | 0.0000 | 2,555.2099 | 2,555.2099 | 0.6079 | | 2,570.4061 |
| **Total** | **1.5728** | **14.3849** | **16.2440** | **0.0269** | | **0.6997** | **0.6997** | | **0.6584** | **0.6584** | **0.0000** | **2,555.2099** | **2,555.2099** | **0.6079** | | **2,570.4061** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0677 | 2.2442 | 0.6988 | 7.8500e-003 | 0.2112 | 2.6600e-003 | 0.2139 | 0.0608 | 2.5500e-003 | 0.0634 | | 839.3935 | 839.3935 | 0.0487 | | 840.6097 |
| Worker | 0.3395 | 0.2032 | 2.3904 | 8.0000e-003 | 0.9277 | 6.4600e-003 | 0.9342 | 0.2460 | 5.9500e-003 | 0.2520 | | 797.8760 | 797.8760 | 0.0187 | | 798.3446 |
| **Total** | **0.4072** | **2.4473** | **3.0892** | **0.0159** | **1.1389** | **9.1200e-003** | **1.1481** | **0.3068** | **8.5000e-003** | **0.3153** | | **1,637.2695** | **1,637.2695** | **0.0674** | | **1,638.9544** |

## 3.3 Paving - 2023

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9181 | 8.7903 | 12.1905 | 0.0189 | | 0.4357 | 0.4357 | | 0.4025 | 0.4025 | | 1,805.4304 | 1,805.4304 | 0.5673 | | 1,819.6122 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9181** | **8.7903** | **12.1905** | **0.0189** | | **0.4357** | **0.4357** | | **0.4025** | **0.4025** | | **1,805.4304** | **1,805.4304** | **0.5673** | | **1,819.6122** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0818 | 0.0490 | 0.5760 | 1.9300e-003 | 0.2236 | 1.5600e-003 | 0.2251 | 0.0593 | 1.4300e-003 | 0.0607 | | 192.2593 | 192.2593 | 4.5200e-003 | | 192.3722 |
| **Total** | **0.0818** | **0.0490** | **0.5760** | **1.9300e-003** | **0.2236** | **1.5600e-003** | **0.2251** | **0.0593** | **1.4300e-003** | **0.0607** | | **192.2593** | **192.2593** | **4.5200e-003** | | **192.3722** |

## 3.3 Paving - 2023

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9181 | 8.7903 | 12.1905 | 0.0189 | | 0.4357 | 0.4357 | | 0.4025 | 0.4025 | 0.0000 | 1,805.4304 | 1,805.4304 | 0.5673 | | 1,819.6122 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9181** | **8.7903** | **12.1905** | **0.0189** | | **0.4357** | **0.4357** | | **0.4025** | **0.4025** | **0.0000** | **1,805.4304** | **1,805.4304** | **0.5673** | | **1,819.6122** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0818 | 0.0490 | 0.5760 | 1.9300e-003 | 0.2236 | 1.5600e-003 | 0.2251 | 0.0593 | 1.4300e-003 | 0.0607 | | 192.2593 | 192.2593 | 4.5200e-003 | | 192.3722 |
| **Total** | **0.0818** | **0.0490** | **0.5760** | **1.9300e-003** | **0.2236** | **1.5600e-003** | **0.2251** | **0.0593** | **1.4300e-003** | **0.0607** | | **192.2593** | **192.2593** | **4.5200e-003** | | **192.3722** |

## 3.4 Architectural Coating - 2023

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 49.1421 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1917 | 1.3030 | 1.8111 | 2.9700e-003 | | 0.0708 | 0.0708 | | 0.0708 | 0.0708 | | 281.4481 | 281.4481 | 0.0168 | | 281.8690 |
| **Total** | **49.3338** | **1.3030** | **1.8111** | **2.9700e-003** | | **0.0708** | **0.0708** | | **0.0708** | **0.0708** | | **281.4481** | **281.4481** | **0.0168** | | **281.8690** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0695 | 0.0416 | 0.4896 | 1.6400e-003 | 0.1900 | 1.3200e-003 | 0.1913 | 0.0504 | 1.2200e-003 | 0.0516 | | 163.4204 | 163.4204 | 3.8400e-003 | | 163.5164 |
| **Total** | **0.0695** | **0.0416** | **0.4896** | **1.6400e-003** | **0.1900** | **1.3200e-003** | **0.1913** | **0.0504** | **1.2200e-003** | **0.0516** | | **163.4204** | **163.4204** | **3.8400e-003** | | **163.5164** |

## 3.4 Architectural Coating - 2023

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 49.1421 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1917 | 1.3030 | 1.8111 | 2.9700e-003 | | 0.0708 | 0.0708 | | 0.0708 | 0.0708 | 0.0000 | 281.4481 | 281.4481 | 0.0168 | | 281.8690 |
| **Total** | **49.3338** | **1.3030** | **1.8111** | **2.9700e-003** | | **0.0708** | **0.0708** | | **0.0708** | **0.0708** | **0.0000** | **281.4481** | **281.4481** | **0.0168** | | **281.8690** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0695 | 0.0416 | 0.4896 | 1.6400e-003 | 0.1900 | 1.3200e-003 | 0.1913 | 0.0504 | 1.2200e-003 | 0.0516 | | 163.4204 | 163.4204 | 3.8400e-003 | | 163.5164 |
| **Total** | **0.0695** | **0.0416** | **0.4896** | **1.6400e-003** | **0.1900** | **1.3200e-003** | **0.1913** | **0.0504** | **1.2200e-003** | **0.0516** | | **163.4204** | **163.4204** | **3.8400e-003** | | **163.5164** |

## 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 5.2217 | 23.8642 | 48.1415 | 0.1731 | 14.7482 | 0.1325 | 14.8807 | 3.9456 | 0.1231 | 4.0687 | | 17,697.5314 | 17,697.5314 | 0.9284 | | 17,720.7422 |
| Unmitigated | 5.2217 | 23.8642 | 48.1415 | 0.1731 | 14.7482 | 0.1325 | 14.8807 | 3.9456 | 0.1231 | 4.0687 | | 17,697.5314 | 17,697.5314 | 0.9284 | | 17,720.7422 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Fast Food Restaurant with Drive Thru | 2,637.00 | 3,837.77 | 2884.69 | 2,992,909 | 2,992,909 |
| Medical Office Building | 122.00 | 30.26 | 5.23 | 239,187 | 239,187 |
| Refrigerated Warehouse-No Rail | 268.00 | 268.00 | 268.00 | 1,148,572 | 1,148,572 |
| Regional Shopping Center | 566.00 | 662.37 | 334.56 | 1,182,436 | 1,182,436 |
| Total | 3,593.00 | 4,798.39 | 3,492.49 | 5,563,103 | 5,563,103 |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Fast Food Restaurant with Drive | 16.60 | 8.40 | 6.90 | 2.20 | 78.80 | 19.00 | 29 | 21 | 50 |
| Medical Office Building | 16.60 | 8.40 | 6.90 | 29.60 | 51.40 | 19.00 | 60 | 30 | 10 |
| Refrigerated Warehouse-No | 16.60 | 8.40 | 6.90 | 59.00 | 0.00 | 41.00 | 92 | 5 | 3 |
| Regional Shopping Center | 16.60 | 8.40 | 6.90 | 16.30 | 64.70 | 19.00 | 54 | 35 | 11 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fast Food Restaurant with Drive Thru | 0.550809 | 0.042355 | 0.203399 | 0.115606 | 0.014562 | 0.005806 | 0.021810 | 0.035336 | 0.002134 | 0.001736 | 0.004891 | 0.000712 | 0.000845 |
| Medical Office Building | 0.550809 | 0.042355 | 0.203399 | 0.115606 | 0.014562 | 0.005806 | 0.021810 | 0.035336 | 0.002134 | 0.001736 | 0.004891 | 0.000712 | 0.000845 |
| Refrigerated Warehouse-No Rail | 0.550809 | 0.042355 | 0.203399 | 0.115606 | 0.014562 | 0.005806 | 0.021810 | 0.035336 | 0.002134 | 0.001736 | 0.004891 | 0.000712 | 0.000845 |
| Regional Shopping Center | 0.550809 | 0.042355 | 0.203399 | 0.115606 | 0.014562 | 0.005806 | 0.021810 | 0.035336 | 0.002134 | 0.001736 | 0.004891 | 0.000712 | 0.000845 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0454 | 0.4126 | 0.3466 | 2.4800e-003 | | 0.0314 | 0.0314 | | 0.0314 | 0.0314 | | 495.0705 | 495.0705 | 9.4900e-003 | 9.0800e-003 | 498.0125 |
| NaturalGas Unmitigated | 0.0454 | 0.4126 | 0.3466 | 2.4800e-003 | | 0.0314 | 0.0314 | | 0.0314 | 0.0314 | | 495.0705 | 495.0705 | 9.4900e-003 | 9.0800e-003 | 498.0125 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Fast Food Restaurant with Drive Thru | 3540.43 | 0.0382 | 0.3471 | 0.2916 | 2.0800e-003 | | 0.0264 | 0.0264 | | 0.0264 | 0.0264 | | 416.5209 | 416.5209 | 7.9800e-003 | 7.6400e-003 | 418.9961 |
| Medical Office Building | 99.8219 | 1.0800e-003 | 9.7900e-003 | 8.2200e-003 | 6.0000e-005 | | 7.4000e-004 | 7.4000e-004 | | 7.4000e-004 | 7.4000e-004 | | 11.7438 | 11.7438 | 2.3000e-004 | 2.2000e-004 | 11.8135 |
| Refrigerated Warehouse-No Rail | 500.453 | 5.4000e-003 | 0.0491 | 0.0412 | 2.9000e-004 | | 3.7300e-003 | 3.7300e-003 | | 3.7300e-003 | 3.7300e-003 | | 58.8768 | 58.8768 | 1.1300e-003 | 1.0800e-003 | 59.2267 |
| Regional Shopping Center | 67.3973 | 7.3000e-004 | 6.6100e-003 | 5.5500e-003 | 4.0000e-005 | | 5.0000e-004 | 5.0000e-004 | | 5.0000e-004 | 5.0000e-004 | | 7.9291 | 7.9291 | 1.5000e-004 | 1.5000e-004 | 7.9762 |
| **Total** | | **0.0454** | **0.4126** | **0.3465** | **2.4700e-003** | | **0.0314** | **0.0314** | | **0.0314** | **0.0314** | | **495.0706** | **495.0706** | **9.4900e-003** | **9.0900e-003** | **498.0125** |

### 5.2 Energy by Land Use - NaturalGas

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Fast Food Restaurant with Drive Thru | 3.54043 | 0.0382 | 0.3471 | 0.2916 | 2.0800e-003 | | 0.0264 | 0.0264 | | 0.0264 | 0.0264 | | 416.5209 | 416.5209 | 7.9800e-003 | 7.6400e-003 | 418.9961 |
| Medical Office Building | 0.0998219 | 1.0800e-003 | 9.7900e-003 | 8.2200e-003 | 6.0000e-005 | | 7.4000e-004 | 7.4000e-004 | | 7.4000e-004 | 7.4000e-004 | | 11.7438 | 11.7438 | 2.3000e-004 | 2.2000e-004 | 11.8135 |
| Refrigerated Warehouse-No Rail | 0.500453 | 5.4000e-003 | 0.0491 | 0.0412 | 2.9000e-004 | | 3.7300e-003 | 3.7300e-003 | | 3.7300e-003 | 3.7300e-003 | | 58.8768 | 58.8768 | 1.1300e-003 | 1.0800e-003 | 59.2267 |
| Regional Shopping Center | 0.0673973 | 7.3000e-004 | 6.6100e-003 | 5.5500e-003 | 4.0000e-005 | | 5.0000e-004 | 5.0000e-004 | | 5.0000e-004 | 5.0000e-004 | | 7.9291 | 7.9291 | 1.5000e-004 | 1.5000e-004 | 7.9762 |
| **Total** | | **0.0454** | **0.4126** | **0.3465** | **2.4700e-003** | | **0.0314** | **0.0314** | | **0.0314** | **0.0314** | | **495.0706** | **495.0706** | **9.4900e-003** | **9.0900e-003** | **498.0125** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 4.5021 | 1.9000e-004 | 0.0205 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | | 0.0441 | 0.0441 | 1.2000e-004 | | 0.0470 |
| Unmitigated | 4.5021 | 1.9000e-004 | 0.0205 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | | 0.0441 | 0.0441 | 1.2000e-004 | | 0.0470 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.5116 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 3.9886 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.9000e-003 | 1.9000e-004 | 0.0205 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | | 0.0441 | 0.0441 | 1.2000e-004 | | 0.0470 |
| **Total** | **4.5021** | **1.9000e-004** | **0.0205** | **0.0000** | | **7.0000e-005** | **7.0000e-005** | | **7.0000e-005** | **7.0000e-005** | | **0.0441** | **0.0441** | **1.2000e-004** | | **0.0470** |

### 6.2 Area by SubCategory

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.5116 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 3.9886 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.9000e-003 | 1.9000e-004 | 0.0205 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | | 0.0441 | 0.0441 | 1.2000e-004 | | 0.0470 |
| **Total** | **4.5021** | **1.9000e-004** | **0.0205** | **0.0000** | | **7.0000e-005** | **7.0000e-005** | | **7.0000e-005** | **7.0000e-005** | | **0.0441** | **0.0441** | **1.2000e-004** | | **0.0470** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# APPENDIX B:

## Geotechnical Investigations

**ALBUS-KEEFE & ASSOCIATES, INC.**
GEOTECHNICAL CONSULTANTS

March 10, 2020
J.N.: 2871.00

Mr. Tom Lee
VenturePoint Inc.
4685 MacArthur Court, Suite 375
Newport Beach, California 92660

**Subject:** **Preliminary Geotechnical Investigation, Proposed Retail and Self-Storage Facility, 950 E. 33rd Street, City of Signal Hill, California.**

Dear Mr. Lee,

***Albus-Keefe & Associates, Inc***. is pleased to present to you our preliminary geotechnical investigation report for the proposed development at the subject site. This report presents the results of our literature review, subsurface exploration, laboratory testing, and engineering analyses. Conclusions relevant to the feasibility of the proposed site development are also presented herein based on the findings of our work.

We appreciate this opportunity to be of service to you. If you have any questions regarding the contents of this report, please do not hesitate to call.

Sincerely,

***ALBUS-KEEFE & ASSOCIATES, INC.***

Michael O. Spira
Principal Engineering Geologist

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# 1.0 INTRODUCTION

## 1.1 PURPOSE AND SCOPE

The purpose of our proposed geotechnical investigation is to evaluate the subsurface conditions beneath the site to assess the feasibility of site development and to develop preliminary geotechnical recommendations for the proposed development. The scope of our work included:

- Review of published geologic maps, reports, and seismic data of the general vicinity
- Review of the referenced Preliminary Grading and Utility Plan
- Exploratory drilling and soil sampling
- Laboratory testing of selected soil samples
- Engineering and geologic analyses
- Development of recommendations for site construction
- Preparation of this report

## 1.2 SITE LOCATION AND DESCRIPTION

The subject site is located southwest of the intersection of California Avenue and East 33$^{nd}$ Street, in the city of Signal Hill, California. The subject site encompasses both the Target property and the Fields North Trust Property to the south. The site is generally bounded by East 33nd Street to the north, California Avenue to the east, an offramp of the 405 Freeway to the south, and the Chick-fil-A restaurant property to the west. The location of the site and its relationship to the surrounding areas are shown on Figure 1, Site Location Map.

The Target property is relatively level property that is very gently inclined to the north and east. Surface elevations within the site vary from approximately 92 above Mean Sea Level (MSL) to roughly 84 feet MSL. The Fields North Trust Property is also a relatively level property that is very gently inclined to the south. Surface elevations within the site vary from approximately 94 above Mean Sea Level (MSL) to 92 feet MSL. Along the northerly margin of the Fields North Trust Property is a slope up to 6.5 feet in maximum height that descends to the Target property.

The Target property is currently being utilized for retail purposes and includes a large retail building and an associated asphalt covered parking lot with underground utility lines and overhead lighting. The Field's North Trust Property is currently being utilized for the extraction of oil and gas and is generally a dirt covered lot with existing oil wells (4 operating wells and 3 abandoned wells) and associated above and below ground oil field improvements, and various storm drain improvements. A large sign supported by a steel column is also located in the southeasterly corner of the Fields North Trust Property. A utility bridge, that crosses the 405 Freeway, also extends to the Fields




N

## SITE LOCATION MAP

**Proposed Retail and Self-Storage Facility**
**VenturePoint Project**
**950 E. 33rd Street,**
**Signal Hill, California**

**NOT TO SCALE**

**FIGURE 1**

Trust Property. South of the two properties, within the adjoining 405 San Diego Freeway easement, is a vegetated 10 foot to 20 foot wide level berm and a descending 2:1 (H:V) graded slope up to roughly 25 feet in height.

### 1.3 PROPOSED DEVELOPMENT

The Preliminary Grading and Utility Plan by Ware Malcomb indicates that the existing parking lot for the Target property and the Fields North Trust Property will be redeveloped to accommodate the construction of three one-story retail buildings and the construction of a three-story storage facility with an associated RV storage area within the southern portion of the site. Solar shade structures are proposed for the RV parking stalls. One of the retail buildings is to extend off the southwest corner of the existing retail building. Other site development will include a new parking lot, driveways, perimeter walls, underground utilities and a storm water infiltration system.

Based on our review of the referenced Preliminary Grading and Utility Plan, the proposed grading will generally involve minor cut-and-fill grading. Proposed maximum fills and cuts are approximately 3 feet and 7 feet, respectively. The cuts are generally limited to the Field North Trust Property. No fill or cut slopes are currently proposed.

No structural plans were available in preparing of this report. However, we anticipate that buildings will either use masonry block or concrete tilt-up walls and concrete slabs on grade. Foundations will likely utilize both continuous and spread footings. Structural loads on foundations are anticipated to be light to moderate.

### 1.4 PREVIOUS GEOTECHNICAL STUDIES

A previous geotechnical investigation report was prepared by this firm for the Fields North Trust Property on September 18, 2001. Our investigation involved the excavating of 3 exploratory borings up to 20 feet in depth and 10 exploratory trenches up to 4 feet in depth. The exploratory borings were excavated in August 2001 utilizing a 24-inch-diameter bucket auger drill rig. The exploratory trenches were also excavated in August 2001 utilizing a rubber-tire backhoe. Selected samples obtained from the boring excavations were also tested in our soil laboratory. Our testing consisted of soil classification, in-situ moisture and dry density, maximum dry density and optimum moisture, expansion index, sulfate content, consolidation, and direct shear. The approximate locations of the exploratory excavations completed by this firm are shown on the enclosed Geotechnical Map, Plate 1. Our exploration Logs are presented in Appendix C. A description of laboratory test criteria and test results are also presented in Appendix C.

## 2.0 INVESTIGATION

### 2.1 RESEARCH

We reviewed our previous geotechnical investigation for the Fields North Trust Property as well as previous geotechnical and environmental investigation reports prepared by this firm and others in the site vicinity. We also reviewed geologic publications, maps, and historic aerial photographs for the

site and surrounding areas. See the reference section of the report for a complete listing of the referenced documents. Data from these sources were utilized to develop some of the findings and conclusions presented herein.

## 2.2 SUBSURFACE EXPLORATION

Subsurface exploration for this investigation was completed on January 22, 2020. Our subsurface investigation involved the excavation and logging of 4 exploratory borings. The borings were drilled to depths of approximately 26.5 to 51.5 feet below the existing ground surface utilizing a truck-mounted, hollow-stem-auger drill rig. A representative of *Albus-Keefe & Associates, Inc*. logged the exploratory excavation. Visual and tactile identifications were made of the materials encountered, and their descriptions are presented on the Exploration Log in Appendix A. The approximate locations of the exploratory excavations completed by this firm are shown on the enclosed Geotechnical Map, Plate 1.

Bulk and relatively undisturbed samples were obtained at selected depths within the exploratory borings for subsequent laboratory testing. Relatively undisturbed samples were obtained using a 3-inch O.D., 2.5-inch I.D., California split-spoon soil sampler lined with brass rings. During each sampling interval, the sampler was driven 12 inches with successive drops of a 140-pound automatic hammer free falling approximately 30 inches. The number of blows required to advance the split-spoon sampler was recorded for each six inches of advancement. A representative "blow count" for each sample is recorded on the boring logs. Samples were placed in sealed containers or plastic bags and transported to our laboratory for analyses. The borings were backfilled with auger cuttings upon completion of sampling.

Upon completion of drilling, three additional borings were drilled adjacent to borings B-4 (P-3), B-6 (P-1), and B-7 (P-2). 3-inch-diameter casings were installed for subsequent percolation testing as part of our infiltration study for proposed water quality improvements. The location of the percolation wells is also depicted the enclosed Geotechnical Map, Plate 1. The findings from our percolation testing are presented under separate cover in our referenced Infiltration Study for the site.

## 2.3 LABORATORY TESTING

Selected soil samples of representative earth materials were tested to assist in the formulation of conclusions and recommendations presented in this report. Tests consisted of in-situ moisture content and dry density, expansion potential, soluble sulfate analysis, direct shear, maximum dry density, and grain-size analysis. Descriptions of laboratory testing and a summary of the test results are presented in Appendix B.

# 3.0 GEOLOGIC CONDITIONS

## 3.1 SETTING

The project area is located approximately 1.5 miles northwest of elevated ridge known as Signal Hill, which is one of a series of uplifted anticlinal hills and mesas positioned within and/or adjacent

the Newport-Inglewood structural zone. Bedrock encountered beneath the site to the depths explored consists of non-marine and marine sediments of the upper Pleistocene-age Lakewood Formation (Qlw). Marine sediments of the lower Pleistocene-age San Pedro Formation (Qsp) underlie the Lakewood Formation at depth. The bedrock is generally covered by artificial fill (Qaf) associated with existing and previous site uses. Detailed descriptions of each of the units are provided in the following section.

## 3.2 GEOLOGIC UNITS

### 3.2.1 Artificial Fill (Qaf)

Artificial fill materials were generally encountered in the Fields North Trust portion of the site. Where encountered during this investigation and as previously reported, these fills generally consist of fine-grained silty sands that are various shades of gray and brown. The fill materials are generally dry to moist with some localized wet areas and medium dense. The artificial fills generally ranged in thickness from approximately 1 to 2 feet. However, deeper fills associated with previous development of the Target property, previous oil field operations, previous demolition operations, and previous environmental operation are likely present within portions the subject site. These fills can easily extend up to 10 feet or more in depths.

### 3.2.2 Lakewood Formation (Qlw)

Upper Pleistocene-age non-marine and marine sedimentary bedrock materials of the Lakewood Formation underlie the entire site. The upper portion of the Lakewood Formation encountered consists primarily of fine-grained, brown to red-brown, silty/clayey sandstone that is damp, moderately hard, massive, and locally porous (pinhole pores) particularly within the weathered upper 1 to 2 feet. At depth, this unit grades to a fine-grained, tan to light gray sandstone, that is slightly micaceous and friable.

### 3.2.3 San Pedro Formation (Qsp)

Marine sediments of the lower Pleistocene-age San Pedro Formation (Qsp) underlie the Lakewood Formation at depth. Where encountered in our exploratory boring B-6 at a depth of approximately 32 feet, respectively, this unit is generally comprised of fine to coarse grained sandstone. This unit is typically mottled with reddish brown oxidation staining, damp, and very dense.

## 3.3 GROUNDWATER

Groundwater was not encountered within our exploratory excavations to the maximum depths explored (51.5 feet below the existing ground surface). A review of the referenced Seismic Hazard Zone Report 28 indicates that historical high groundwater levels are not available for this area. Our review of the referenced literature for the site and surrounding area do not indicate the presence of shallow ground water (less than 50 feet) beneath the site.

## 3.4 FAULTING

Geologic literature and field exploration do not indicate the presence of active faulting within the site. The site does not lie within an "Earthquake Fault Zone" as defined by the State of California in

the Alquist-Priolo Earthquake Fault Zoning Act. Table 3.1 presents a summary of all the known seismically active faults within 10 miles of the site based on the 2008 National Seismic Hazards Maps.

**TABLE 3.1**
**SUMMARY OF SEISMICALLY ACTIVE FAULTS**

| Name | Distance (miles) | Slip Rate (mm/yr.) | Preferred Dip (degrees) | Slip Sense | Rupture Top (km) | Fault Length (km) |
|---|---|---|---|---|---|---|
| Newport Inglewood Connected alt 2 | 0.24 | 1.3 | 90 | strike slip | 0 | 208 |
| Newport Inglewood Connected alt 1 | 0.3 | 1.3 | 89 | strike slip | 0 | 208 |
| Newport-Inglewood, alt 1 | 0.3 | 1 | 88 | strike slip | 0 | 65 |
| Palos Verdes Connected | 6.3 | 3 | 90 | strike slip | 0 | 285 |
| Palos Verdes | 6.3 | 3 | 90 | strike slip | 0 | 99 |
| Puente Hills (Santa Fe Springs) | 6.77 | 0.7 | 29 | thrust | 2.8 | 11 |
| Puente Hills (Coyote Hills) | 9.55 | 0.7 | 26 | thrust | 2.8 | 17 |
| Puente Hills (LA) | 9.86 | 0.7 | 27 | thrust | 2.1 | 22 |

## 4.0 ANALYSES

### 4.1 SEISMICITY AND SEISMIC DESIGN PARAMETERS

2019 CBC requires seismic parameters in accordance with ASCE7-16. As such, we have performed probabilistic seismic analyses per ASCE7-16 utilizing the U.S. Seismic Design Maps accessed through the Applied Technical Council (ATC) web application. From our analyses, we obtain a PGA of 0.725g. The site coefficient, $F_{PGA}$, for this range of PGA and site class C is 1.2. Therefore, the site modified peak ground acceleration is $PGA_M = 1.2 \times 0.725 = 0.87g$. The mean event associated with a probability of exceedance equal to 2% over 50 years has a moment magnitude of 6.97 with a mean distance to the seismic source of 4.1 miles.

### 4.2 STATIC SETTLEMENT

Based on our review of laboratory test data, blow count data obtained during this investigation, and from the referenced geotechnical reports, the weathered bedrock are prone to a slight collapse upon wetting (hydrocollapse). Settlement from these materials would likely exceed 1 inch, of which significant portions of settlement could occur after construction of proposed structures.

The unweathered bedrock materials beneath the site have a low compressibility and are generally not subject to hydro-collapse. Settlement of these materials due to the weight of the proposed structures or introduction of water is not anticipated to exceed approximately 1-inch.

# 5.0 CONCLUSIONS

## 5.1 FEASIBILITY OF PROPOSED DEVELOPMENT

From a geotechnical point of view, the proposed site development is considered feasible. Furthermore, it is also our opinion that the proposed development will not adversely impact the stability of adjoining properties. Key geotechnical issues that could have significant fiscal impacts on development of proposed site improvements are discussed further in later sections of this report.

## 5.2 GEOLOGIC HAZARDS

### 5.2.1 Ground Rupture

No active faults are known to project through the site nor does the site lie within the bounds of an "Earthquake Fault Zone" as defined by the State of California in the Alquist-Priolo Earthquake Fault Zoning Act. The closest known active fault is the Newport-Inglewood fault located about 0.24 mile from the site. As such, the potential for ground rupture due to a fault displacement beneath the site is considered very low.

### 5.2.2 Ground Shaking

The site is in a seismically active area that has historically been affected by generally moderate to occasionally high levels of ground motion. The site lies in relative close proximity to several seismically active faults; therefore, during the life of the proposed structures, the property will probably experience similar moderate to occasionally high ground shaking from these fault zones, as well as some background shaking from other seismically active areas of the Southern California region. Design and construction in accordance with the current California Building Code (CBC) requirements is anticipated to address the issues related to potential ground shaking.

### 5.2.3 Landsliding

The site is not located within an area identified by the California Geologic Survey (CGS) as having potential for seismic slope instability. In addition, review of referenced publications and geotechnical reports have indicated that geologic hazards associated with landsliding are not anticipated at the sites.

### 5.2.4 Liquefaction

Engineering research of soil liquefaction potential (Youd, et al., 2001) indicates that generally three basic factors must exist concurrently in order for liquefaction to occur. These factors include:

- A source of ground shaking, such as an earthquake, capable of generating soil mass distortions.

- A relatively loose silty and/or sandy soil.
- A relative shallow groundwater table (within approximately 50 feet below ground surface) or completely saturated soil conditions that will allow positive pore pressure generation.

The liquefaction susceptibility of the onsite soils was evaluated by analyzing the potential concurrent occurrence of the above-mentioned three basic factors. The liquefaction evaluation for the site was completed under the guidance of Special Publication 117A: Guidelines for Evaluating and Mitigating Seismic Hazards in California (CDMG, 2008).

The site is underlain by very dense bedrock materials of the Lakewood and San Pedro Formations and the depth to historic high and current groundwater is not present within the upper 50 feet of the site. As such the potential for liquefaction at the site is considered to be low. Furthermore, the site is not located within a mapped California Geologic Survey liquefaction hazard zone.

## 5.3 GROUNDWATER

As previously discussed in Section 3.3, groundwater is likely well below the existing ground surface. However, groundwater conditions in the future may vary substantially as a result of seasonal variations of rainfall and future site development. Provided the recommendations concerning surface and subsurface drainage improvements, and other pertinent recommendations contained in this report are incorporated into the construction of the project, adverse effects from future groundwater conditions are not anticipated at the site.

## 5.4 STATIC SETTLEMENT

The information obtained from our exploration and laboratory testing indicate that the weathered bedrock is porous and prone to hydrocollapse. In its current state, this material is likely to cause settlements beyond the tolerances of proposed site development. Provided the grading is performed in accordance with the recommendations provided herein, total and differential settlement is not anticipated to exceed 1 inch and 1/2 inch over 30 feet, respectively. The estimated magnitudes of settlement are considered within tolerable limits for the proposed structures.

## 5.5 EXCAVATION AND MATERIAL CHARACTERISTICS

The onsite earth materials are anticipated to be easily excavated with conventional heavy earthmoving equipment. The site earth materials are generally considered suitable for reuse as fill materials provided they are cleared of deleterious debris and satisfy the requirements of the environmental consultant. Most of the onsite earth materials are at or below the optimum moisture content. As such, some water will generally be required to prepare these materials for use as compacted fill.

Cuts in the fills and the bedrock are not anticipated to generate oversized materials.

Demolition of the existing site improvements will generate a considerable amount of concrete and asphaltic concrete debris. Significant portions of concrete and asphaltic concrete debris can likely be reduced in size to less than 4 inches and incorporated within fill soils during earthwork operations.

### 5.6 SHRINKAGE AND SUBSIDENCE

Volumetric changes in earth quantities will occur when excavated onsite soil materials are replaced as engineered compacted fill. Our estimates of shrinkage and bulking, based on laboratory test data from nearby sites and our experience with similar projects, are summarized in Table 5.1 below.

**TABLE 5.1**
**Estimates of Shrinkage and Bulking**

| MATERIAL | VOLUME CHANGE | SHRINKAGE/BULKING |
|---|---|---|
| Artificial Fill (Qaf) | 5% to 15% | Shrinkage |
| Bedrock upper 5 ft | 3% to 7% | Shrinkage |
| Bedrock below 5 ft | 2% to 4% | Bulking |

Subsidence as a result of scarification and re-compaction of exposed surfaces is expected to be negligible.

The above estimates of shrinkage and subsidence are intended as an aid for project engineers in determining earthwork quantities. However, these estimates should be used with some caution since they are not absolute values. Contingencies should be made for balancing earthwork quantities based on actual shrinkage and subsidence that occurs during the grading.

### 5.7 SOIL EXPANSION

Based on our laboratory test results and the USCS visual manual classification, the near-surface soils within the site are generally anticipated to possess a **Very Low to Low** expansion potential. Additional testing for soil expansion may be required subsequent to rough grading and prior to construction of foundations and other concrete work to confirm these conditions.

## 6.0 RECOMMENDATIONS

### 6.1 EARTHWORK

#### 6.1.1 General Earthwork and Grading Specifications

All earth earthwork and grading should be performed in accordance with applicable requirements of Cal/OSHA, applicable specifications of the Grading Codes of the City of Signal Hill, California in addition to the recommendations presented herein.

### 6.1.2 Pre-Grade Meeting and Geotechnical Observation

Prior to commencement of grading, we recommend a meeting be held between the developer, City Inspector, grading contractor, civil engineer, and geotechnical consultant to discuss the proposed grading and construction logistics. We also recommend that a geotechnical consultant be retained to provide soil engineering and engineering geologic services during site grading and foundation construction. This is to observe compliance with the design specifications and recommendations, and to allow design changes in the event that subsurface conditions differ from those anticipated. If conditions are encountered that appear to be different than those indicated in this report, the project geotechnical consultant should be notified immediately. Design and construction revisions may be required.

### 6.1.3 Site Clearing

All existing site improvements, oversized materials, vegetation and other deleterious materials should be removed from the areas to be developed. Existing underground improvements such as onsite disposal systems, utility lines, abandoned pipelines, previous oil field improvements, etc. are also anticipated at the site. If encountered during site development, these improvements will require proper abandonment or be completely removed from the site.

The project geotechnical consultant should be notified at the appropriate times to provide observation services during clearing operations to verify compliance with the above recommendations. Voids created by clearing and excavation should be left open for observation by the geotechnical consultant. Should any unusual soil conditions or subsurface structures be encountered during site clearing or grading that are not described or anticipated herein, these conditions should be brought to the immediate attention of the project geotechnical consultant for corrective recommendations as needed.

### 6.1.4 Oil Well Abandonment

Any oil wells to be abandoned should be brought to the attention of the project geotechnical consultant for specific geotechnical layback and backfill recommendations.

### 6.1.5 Ground Preparation

All existing artificial fill (Qaf) and the weathered portion (upper 1 to 2 feet) of the bedrock are considered unsuitable for support of proposed fills and site development. These materials should be removed to expose competent bedrock (Qlw) and replaced as engineered compacted fill. In addition, there are numerous exploratory trenches excavated by this firm as well as other various excavations that were backfilled without compaction. These backfills will also require removal and replacement with compacted fill. Removal depths are anticipated to vary from 2 to 4 feet below existing ground surface and are shown on the Geotechnical Map, Plate 1.

In areas of the proposed screen walls and pavement, the removals may be limited to within the existing artificial soils with an estimated thickness of approximately 1 to 2.5 feet and with a moisture content at or above the optimum moisture content and a dry density of at least 90 percent of the laboratory determined maximum dry density. Moisture and density testing should be performed to confirm the competency of the fill materials to be left in-place.

Removals should extend laterally beyond the limits of the proposed buildings a distance equal to the depth of removal (i.e. 1:1 projection) but not less than 5 feet. For screen walls and roadways, the removals should be extend laterally to at least the edge of the structure or pavement.

The grading contractor should take appropriate measures when excavating adjacent any existing onsite and offsite improvements to remain in-place to avoid disturbing or compromising support of existing structures. Where removals are limited by the existing onsite and offsite improvements and/or property lines, specific recommendations should be provided by this firm. Special considerations may also be required in the construction of proposed improvements affected by the limited removals.

**Building Pad Overexcavations:** In addition to general removal of unsuitable soils, the building pads should be over-excavated at least 3 feet below bottom of footings. This overexcavation should extend at least 5 feet beyond the outer edge/foundations of the buildings. If the depth of fill will vary by more than 12 feet below a building due to well abandonment and/or removal of existing loose backfills, backcuts within the building limits should be laid back to 2:1 (H:V) or flatter and evaluated by the geotechnical consultant. Prior to fill placement, the geotechnical consultant should determine if deeper overexcavation is also necessary around the deepened well excavation.

**Parking Areas and Driveways:** Existing soils within driveway and parking areas should be removed to at least 12 inches below the proposed pavement subgrade and replaced with engineered compacted fill.

All removal and overexcavation bottoms excavations should be evaluated by the geotechnical consultant during grading to confirm the exposed conditions are as anticipated and to provide supplemental recommendations if required.

### 6.1.6 Scarification

Following removals, the exposed grade should first be scarified to a depth of 6 inches; moisture conditioned to above the optimum moisture content, and then compacted to at least 90 percent of the laboratory determined maximum dry density.

### 6.1.7 Temporary Excavations

Temporary construction slopes and trench excavations in the surficial units may be cut vertically up to a height of 5 feet provided that no surcharging of the excavations is present. Temporary excavations greater than 5 feet in height but no more than 10 feet should be laid back to a 1:1 (H:V) or flatter or shored to mitigate the potential for instability. Where temporary excavations expose granular soils, laybacks should be limited gradients of 1½ :1 (H:V) or flatter with no allowances of a vertical height.

Excavations should not be left open for prolonged periods of time. The project geotechnical consultant should observe all temporary cuts to confirm anticipated conditions and to provide alternate recommendations if conditions dictate. All excavations should conform to the requirements of Cal/OSHA.

The grading contractor should take appropriate measures when excavating adjacent existing improvements to avoid disturbing or compromising support of existing structures.

### 6.1.8 Fill Placement

In general, materials excavated from the site may be used as fill provided they are free of deleterious materials, do not contain rocks greater than 6 inches in maximum dimension within 3 feet of finished pad grade and do not contain rocks greater than 12 inches in maximum dimension below 3 feet from finish pad grade. Rocks greater than 12 inches in diameter that cannot be reduced in size should be removed from the site. Asphaltic concrete debris generated by site demolition can be reduced to no more than 4 inches in maximum dimension and incorporated with fill soils during earthwork operations. All fills should be sufficiently well graded to prevent nesting of larger particles. Fill should be placed in lifts no greater than 8 inches in loose thickness, moisture-conditioned to above the optimum moisture content, and then compacted in place to at least 90 percent of the maximum dry density determined in accordance with ASTM D 1557. Each lift should be treated in a similar manner. Subsequent lifts should not be placed until the project geotechnical consultants have approved the preceding lift.

To mitigate the potential for creating building pads with variable expansion potentials, we recommend that fill materials in the upper 3 feet of the building pads be placed in lifts across the entire building pad with soils that possess uniform expansion potentials.

### 6.1.9 Import Materials

If import materials are required to achieve the proposed finish grades, the import soils should have an Expansion Index (EI) less than 25 (ASTM D 4829) and negligible soluble sulfate content. Import sources should be indicated to the geotechnical consultant at least 3 days prior to hauling the materials to the site so that appropriate testing and evaluation of the fill materials can be performed in advance.

## 6.2 SEISMIC DESIGN PARAMETERS

For design of the project in accordance with Chapter 16 of the 2019 CBC, the following table presents the seismic design factors:

**TABLE 6.1**
**2019 CBC Seismic Design Parameters**

| Parameter | Value |
|---|---|
| Site Class | C |
| Mapped $MCE_R$ Spectral Response Acceleration, short periods, $S_S$ | 1.658 |
| Mapped $MCE_R$ Spectral Response Acceleration, at 1-sec. period, $S_1$ | 0.597 |
| Site Coefficient, Fa | 1.0 |
| Site Coefficient, Fv | 1.403 |
| Adjusted $MCE_R$ Spectral Response Acceleration, short periods, $S_{MS}$ | 1.990 |
| Adjusted $MCE_R$ Spectral Response Acceleration, at 1-sec. period, $S_{M1}$ | 0.838 |
| Design Spectral Response Acceleration, short periods, $S_{DS}$ | 1.326 |
| Design Spectral Response Acceleration, at 1-sec. period, $S_{D1}$ | 0.558 |
| Seismic Design Category (SDC) | D |

MCE = Maximum Considered Earthquake

## 6.3 CONVENTIONAL FOUNDATION DESIGN

### 6.3.1 General

The following design parameters are provided to assist the project structural engineer to design foundation systems to support the proposed structures at the site. Recommendations for design of other foundation systems will be provided upon request. These design parameters are based on typical site materials encountered during subsurface exploration and are provided for preliminary design and estimating purposes. Depending on actual materials encountered during site grading and actual foundation loads, the design parameters presented herein may require modification.

### 6.3.2 Soil Expansion

The recommendations presented herein are based on soils with a **Low** expansion potential (EI<51). Following site grading, additional testing of site soils should be performed by the project geotechnical consultant to confirm the basis of these recommendations. If site soils with higher expansion potentials are encountered or imported to the site, the recommendations contained herein may require modification.

### 6.3.3 Settlement

Foundations should be designed for total and differential settlement up to 1 inch and ½-inch over 30 feet, respectively. These estimated magnitudes of settlement should be considered by the structural engineer in design of the proposed structures at the site.

### 6.3.4 Allowable Bearing Value

Provided site grading is performed as recommended herein, a bearing value of 2,000 pounds per square foot (psf) may be used for continuous beams or isolated spread footings. The bearing value is based on beams having a minimum width of 12 inches and founded at a minimum of 12 inches below the lowest adjacent grade. The bearing value for isolated footings is based on a minimum

width of 24 inches and founded a minimum of 12 inches. The above value may be increased by 250 psf and 700 psf for each additional foot in width and depth, respectively, up to a maximum value of 4,000 psf. Recommended allowable bearing values include both dead and live loads and may be increased by one-third for wind and seismic forces.

### 6.3.5 Lateral Resistance

Provided site grading is performed in accordance with the recommendations provided by the project geotechnical consultant, a passive earth pressure of 300 pounds per square foot per foot of depth up to a maximum value of 1,500 pounds per square foot may be used to determine lateral bearing for beams. This value may be increased by one-third when designing for wind and seismic forces. For footings facing descending slopes, 50% of this capacity should be used. A coefficient of friction of 0.33 times the dead load forces may also be used between concrete and the supporting soils to determine lateral sliding resistance. No increase in the coefficient of friction should be used when designing for wind and seismic forces. Where lateral removals cannot be performed, the above-noted values should be decreased by 50%.

The above values are based on foundations placed directly against compacted fill. In the case where footing sides are formed, all backfill against the foundations should be compacted to at least 90 percent of the laboratory standard.

### 6.3.6 Footings and Slabs on Grade

All exterior and interior continuous footings should have a minimum width of 12 inches and minimum embedment of 12 inches below lowest adjacent grade. All continuous footings for structures should be reinforced with a minimum of one No. 4 bar on top and one No. 4 bar on the bottom

All spread footings used to support columns should have a minimum width of 24 inches and minimum embedment of 12 inches below lowest adjacent grade. All spread footings should be tied in both directions with a grade beam having a minimum depth and width of 12 inches. The grade beams should be reinforced with a minimum of one No. 4 bar on top and one No. 4 bar on the bottom. Reinforcing of the grade beams should hook into the footings.

Slabs on grade should have a minimum thickness of 4 inches and be reinforced with a minimum of No. 3 bars spaced at 18 inches center to center. Slabs on grade in habitable structures should be hooked to the underlying grade beams on a minimum spacing of 24 inches or poured monolithically with the grade beams.

Interior grade beams as required by the WRI method should be provided in both directions at a maximum spacing of 22 feet. Design of the slab in accordance with the WRI method may use an effective PI of 20. This value already accounts for the factors for ground slope and over-consolidation.

All slabs on grade that may have moisture sensitive coverings should be underlain with a minimum of 10-mil moisture vapor retarder conforming to ASTM E 1745, Class A. A minimum of two (2) inches of clean sand having a sand equivalent (SE) of at least 30 should be placed under the membrane. One inch of this sand may be placed over the vapor barrier to aid in the uniform curing

of the slab if preferred. This vapor barrier system is anticipated to be suitable for most flooring finishes that can accommodate some vapor emissions. However, this system may emit more than 4 pounds of water per 1000 sq. ft. and therefore, may not be suitable for all flooring finishes. Additional steps should be taken if such vapor emission levels are too high for anticipated flooring finishes.

Prior to placing concrete, the subgrade below all floor slab areas should be moisture-conditioned to achieve a moisture content that is at least 110 percent of the optimum moisture content. This moisture content should be maintained a minimum depth of 12 inches below the bottoms of the slabs.

### 6.3.7 Foundation Observations

Foundation excavations should be observed by the project geotechnical consultant to verify that they have been excavated into competent bearing soils and to the minimum embedment recommended above. These observations should be performed prior to placement of forms or reinforcement. The excavations should be trimmed neat, level and square. Loose, sloughed or moisture-softened materials and debris should be removed prior to placing concrete.

## 6.4 RETAINING AND SCREENING WALLS

### 6.4.1 General

The following preliminary design and construction recommendations are provided for general retaining and screen walls. Final wall designs specific to the site development should be provided to project geotechnical consultant for review once completed. The structural engineer and architect should provide appropriate recommendations for sealing at all joints and applying moisture-proofing material on the back of the walls.

### 6.4.2 Allowable Bearing Value and Lateral Resistance

Provided site grading is performed as recommended herein, the values for bearing and lateral resistance provided in Sections 6.3.4 and 6.3.5 may be utilized in design of retaining and screen walls. The coefficient of friction should not be applied to portions of the footing in front of keyways used for passive resistance.

The above values are based on footings placed directly against properly compacted fill. In the case where footing sides are formed, all backfill against the footings should be compacted to at least 90 percent of the laboratory standard. The passive pressure used for lateral bearing should be reduced by 50% for walls along the property lines where lateral removals cannot be performed.

### 6.4.3 Earth Pressures

Static and seismic earth pressures for level and 2:1 (H:V) backfill conditions are provided in Table 6.2. Seismic earth pressures provided herein are based on the method provided by Seed & Whitman (1970) using a peak ground acceleration (PGA) of 0.43g for 10% probability of exceedance in 50 years. As indicated in Section 1803.5.12 of the 2019 CBC, retaining walls supporting 6 feet of backfill or less are not required to be designed for seismic earth pressures. The values provided in the following table do not consider hydrostatic pressure. Retaining walls should also be designed to

support adjacent surcharge loads imposed by other nearby footings or traffic loads in addition to the earth pressure.

### 6.4.4 Drainage and Moisture-Proofing

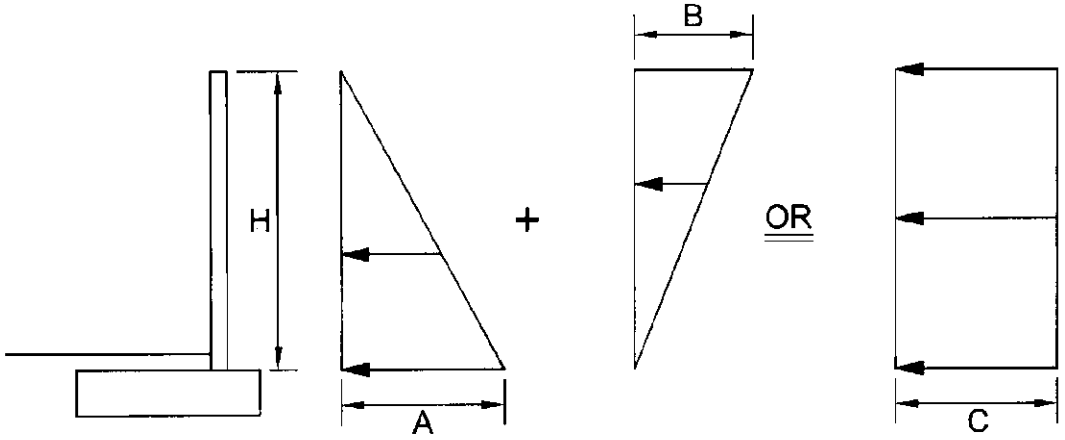
Retaining walls should be constructed with a perforated pipe and gravel subdrain to prevent entrapment of water in the backfill. The perforated pipe should consist of 4-inch-diameter, ABS SDR-35 or PVC Schedule 40 with the perforations laid down. The pipe should be embedded in ¾- to 1½-inch open-graded gravel wrapped in filter fabric. The gravel should be at least one foot wide and extend at least one foot up the wall above the footing and drainage outlet. Drainage gravel and piping should not be placed below outlets and weepholes. Filter fabric should consist of Mirafi 140N, or equal. Outlet pipes should be directed to positive drainage devices.

The use of weepholes may be considered in locations where aesthetic issues from potential nuisance water are not a concern. Weepholes should be 2 inches in diameter and provided at least every 6 feet on center. Where weepholes are used, perforated pipe may be omitted from the gravel subdrain.

Retaining walls supporting backfill should also be coated with a moisture-proofing compound or covered with such material to inhibit infiltration of moisture through the walls. Moisture-proofing material should cover any portion of the back of wall that will be in contact with soil and should lap over and onto the top of footing. A drainage panel should be provided between the soil backfill and water proofing. The panel should extend from the top of the backdrain gravel up to within 12 inches of finish grade. The top of footing should be finished smooth with a trowel to inhibit the infiltration of water through the wall. The project structural engineer should provide specific recommendations for moisture-proofing, water stops, and joint details.

**TABLE 6.2**

**SEISMIC EARTH PRESSURES**
**Pressure Diagram**



**Earth Pressure Values**
**Walls Up to 10 Feet in Height**

| Value | Backfill Condition | |
|---|---|---|
| | Level | 2H:1V Slope |
| **A** | 42H | 68H |
| **B** | 13H | 13H |
| **C** | 28H | 41H |

Note:
H is in feet and resulting pressure is in psf. Design may utilize either the sum of the static component and the seismic component force diagrams or the total force diagram above. SEAOSC has suggested using a load factor of 1.7 for the static component and 1.0 for the seismic component. The actual load factors should be determined by the structural engineer.

### 6.4.5 Footing Reinforcement and Wall Jointing

All continuous footings should be reinforced with a minimum of two No. 4 bars, one top and one bottom. The structural engineer may require different reinforcement and should dictate if greater than the recommendations provided herein.

All free-standing, exterior site walls should be provided with cold joints through the masonry block section at horizontal spacing generally not exceeding 20 feet. The joints should not extend through the footing. Retaining walls that are integral to the building should be provided joints based on recommendations by the structural engineer.

### 6.4.6 Footing Observations

Footing excavations should be observed by the project geotechnical consultant to verify that they have been excavated into competent bearing soils and to the minimum embedment recommended herein. These observations should be performed prior to placement of forms or reinforcement. The excavations should be trimmed neat, level, and square. Loose, sloughed or moisture-softened materials and debris should be removed prior to placing concrete.

### 6.4.7 Wall Backfill

Onsite soils may be used for backfill behind retaining walls. The project geotechnical consultant should approve the backfill used for retaining walls. Wall backfill should be thoroughly moistened to provide moisture contents slightly over optimum moisture content; placed in lifts no greater than 12 inches in thickness, and then mechanically compacted with appropriate equipment to at least 90 percent of the laboratory standard. Hand-operated compaction equipment should be used to compact the backfill placed immediately adjacent the wall to avoid damage to the wall.

## 6.5 EXTERIOR FLATWORK

Concrete sidewalks, patios, and similar flatwork should be a nominal 4 inches thick and provided with saw cuts or expansion joints at spacing no greater than 10 feet in each direction. Special jointing details should be provided in areas of block-outs, notches, or other irregularities to avoid cracking at points of high stress.

Drainage from flatwork areas should be directed to local area drains and/or other appropriate collection devices designed to carry runoff water to the street or other approved drainage structures. The concrete flatwork should also be sloped at a minimum gradient of 2% away from building foundations and masonry walls.

Subgrade soils below flatwork areas should be thoroughly moistened prior to placing concrete. The moisture content of the soils should be at least 110 percent of the optimum moisture content and penetrate to a depth of approximately 12 inches into the subgrade. Flooding or ponding of the subgrade is not recommended. Moisture conditioning should be achieved by a light application of water to the subgrade just prior to pouring concrete.

## 6.6 CONCRETE MIX DESIGN AND CORROSION

Laboratory testing of existing near-surface soils for soluble sulfate content indicates soluble sulfate concentration at 0.03% or smaller. We recommend following the procedures provided in ACI 318, Section 4.3, Table 4.3.1 for Class S0 sulfate exposure. Upon completion of rough grading, an evaluation of as-graded conditions and further laboratory testing should be completed for the site to confirm or modify the recommendations provided in this section.

## 6.7 CORROSION

Results of preliminary testing of soils for pH, chloride, and minimum resistivity indicate the site is potentially **Corrosive** to metals that are in contact or close proximity to onsite soils. As such, specific recommendations should be obtained from a corrosion specialist if construction will include metals that will be near or in direct contact with site soils.

## 6.8 POST GRADING CONSIDERATIONS

### 6.8.1 Site Drainage and Irrigation

Positive drainage devices, such as sloping concrete flatwork, graded swales or area drains, should be provided around the new construction to collect and direct all surface water to suitable discharge areas. In general, the site should be graded to conform to the requirements of Section 1804.3 of the 2019 California Building Code. No rain or excess water should be directed toward or allowed to pond against structures such as walls, foundations, flatwork, etc.

Excessive irrigation water can be detrimental to the performance of the proposed site development. Water applied in excess of the needs of vegetation will tend to percolate into the ground. Such percolation can lead to nuisance seepage and shallow perched groundwater. Seepage can form on slope faces, on the faces of retaining walls, in streets, or other low-lying areas. These conditions

could lead to adverse effects such as the formation of stagnant water that breeds insects, distress or damage of trees, surface erosion, slope instability, discoloration and salt buildup on wall faces, and premature failure of pavement. Excessive watering can also lead to elevated vapor emissions within buildings that can damage flooring finishes or lead to mold growth inside the home.

Key factors that can help mitigate the potential for adverse effects of overwatering include the judicious use of water for irrigation, use of irrigation systems that are appropriate for the type of vegetation and geometric configuration of the planted area, the use of soil amendments to enhance moisture retention, use of low-water demand vegetation, regular use of appropriate fertilizers, and seasonal adjustments of irrigation systems to match the water requirements of vegetation. Specific recommendations should be provided by a landscape architect or other knowledgeable professional.

### 6.8.2 Utility Trenches

Trench excavations should be constructed in accordance with the recommendations contained in Section 6.1.7 of this report. Trench excavations must also conform to the requirements of Cal/OSHA.

Trench backfill materials and compaction criteria should conform to the requirements of the local municipalities. As a minimum, utility trench backfill should be compacted to at least 90 percent of the laboratory standard. Trench backfill should be brought to moisture content slightly over optimum, placed in lifts no greater than 12 inches in thickness, and then mechanically compacted with appropriate equipment to at least 90 percent of the laboratory standard. The project geotechnical consultant should perform density testing, along with probing, to test compaction. Jetting should not be completed without prior approval from the project geotechnical consultant.

Within shallow trenches (less than 18 inches deep) where pipes may be damaged by heavy compaction equipment, imported clean sand having a SE of 30 or greater may be utilized. The sand should be placed in the trench, thoroughly watered, and then compacted with a vibratory compactor. For utility trenches located below a 1:1 (H:V) plane projecting downward from the outside edge of the adjacent footing base or crossing footing trenches, concrete or slurry should be used as trench backfill.

## 6.9 PRELIMINARY PAVEMENT DESIGN

### 6.9.1 Preliminary Structural Sections

Based on the soil conditions present at the site and estimated traffic indices, preliminary pavement sections are provided in Table 6.3 below. An assumed "R-value" of 25 was used for the near-surface soil in this preliminary pavement design. The sections provided below are for planning purposes only and should be re-evaluated subsequent to site grading. Final pavement sections should be based on actual R-value testing of in-place soils and analysis of anticipated traffic.

**TABLE 6.3**
**PRELIMINARY PAVEMENT STRUCTURAL SECTIONS**

| Location | Traffic Index | AC (inches) | Paver Thickness (mm) | Portland Cement Concrete (inches) | AB (inches) |
|---|---|---|---|---|---|
| Drive Aisles | 6.5 | 3.0<br>4.0 | -- | -- | 11<br>9.0 |
| | | -- | 80 | -- | 14.0 |
| | | --- | -- | 8.0 | --- |
| Parking Stalls | -- | 3.0 | | --- | 5.0 |

### 6.9.2 Subgrade Preparation

Prior to placement of pavement elements, subgrade soils should be moisture-conditioned to at least 110 percent of the optimum moisture content then compacted to at least 90 percent of the laboratory determined maximum dry density. Areas observed to pump or yield under vehicle traffic should be removed and replaced with firm and unyielding compacted soil or aggregate base materials.

### 6.9.3 Aggregate Base

Aggregate base should be moisture conditioned to slightly over the optimum moisture content, placed in lifts no greater than 6 inches in thickness, then compacted to at least 95 percent of the laboratory standard (ASTM D 1557). Aggregate base materials should be Class 2 Aggregate Base conforming to Section 26-1 of the latest edition of the Caltrans Standard Specifications, Crushed Aggregate Base conforming to Section 200-2.2 of the latest edition of the Standard Specifications for Public Works Construction (Greenbook) or Crushed Miscellaneous Base conforming to Section 200-2.4 of the Greenbook.

### 6.9.4 Asphaltic Concrete

Paving asphalt should be PG 64-10. Asphaltic concrete materials should conform to Section 203-6 of the Greenbook and construction should conform to Section 302 of the Greenbook. Where traffic will traverse over cold joints in asphaltic concrete such as against concrete ribbon gutters and concrete paver sections, the asphaltic concrete section should be thickened by 1 additional inch from the values indicated in the above Table 6.3 within 2 feet of cold joints.

### 6.9.5 Concrete Pavers

Concrete pavers should conform to the requirements of ASTM C 936. Construction of the pavers, including bedding sand, should follow manufacturer's specifications. Typical thickness of bedding sand is about 1 inch. The gradation of bedding sand should meet the requirement in Table 6.4.

**TABLE 6.4**
**Gradation for Sand Bedding**

| Sieve Size | Percent Passing |
|---|---|
| ⅜" | 100 |
| **No. 4** | 95 - 100 |
| **No. 8** | 80 - 100 |
| **No. 16** | 50 - 85 |
| **No. 30** | 25 - 60 |
| **No. 50** | 5 - 30 |
| **No. 100** | 0 - 10 |
| **No. 200** | 0 - 1 |

Construction of edge restraints should also follow manufacturer's specifications. As a minimum, restraints should be provided along the perimeter of concrete pavers and where there is a change in the paving materials. The proposed concrete bands should extend to the bottom of the base course underlying the concrete pavers. Portland cement concrete used to construct concrete bands should conform to Section 201 of the Greenbook and should have a minimum compressive strength of 2500 pounds per square inch (psi) at 28 days. Reinforcement and jointing of concrete pavement sections should be designed according to the minimum recommendations provided by the Portland Cement Association (PCA). For rigid pavement, transverse and longitudinal contraction joints should be provided at spacing no greater than 15 feet. Score joints may be constructed by saw cutting to a depth of ¼ of the slab thickness. Expansion/cold joints may be used in lieu of score joints. However, cold joints should be provided with dowels or keyways are recommended by PCA.

### 6.9.6 Portland Cement Concrete (PCC)

Portland cement concrete used to construct concrete paving should conform to Section 201 of the Greenbook and should have a minimum compressive strength of 3,500 pounds per square inch (psi) at 28 days. Reinforcement and jointing of concrete pavement sections should be designed according to the minimum recommendations provided by the Portland Cement Association (PCA). For rigid pavement, transverse and longitudinal contraction joints should be provided at spacing no greater than 15 feet. Score joints may be constructed by saw cutting to a depth of ¼ of the slab thickness. Expansion/cold joints may be used in lieu of score joints. Such joints should be properly sealed. Where traffic will traverse over cold joints or edges of concrete paving, the edges should be thickened by 20% of the design thickness toward the edge over a horizontal distance of 5 feet.

Trash pickup areas should be provided with a concrete slab where the bins will be picked up and extend at least 3 feet past the front wheel landing areas. The slab should be at least 8 inches thick and be reinforced with No. 4 bars spaced at 24 inches on centers, both ways. The slabs should be provided transverse and longitudinal joints spacing as specified above. Dowels or a keyway should be provided at all cold joints.

### 6.10 PLAN REVIEW AND CONSTRUCTION SERVICES

We recommend *Albus-Keefe & Associates, Inc*. be engaged to review any future development plans, including revisions to the grading plans, foundation plans and proposed structural loads, prior to construction. This is to verify that the assumptions of this report are valid and that the preliminary conclusions and recommendations contained in this report have been properly interpreted and are incorporated into the project plans and specifications. If we are not provided the opportunity to review these documents, we take no responsibility for misinterpretation of our preliminary conclusions and recommendations.

We recommend that a geotechnical consultant be retained to provide soil engineering services during construction of the project. These services are to observe compliance with the design, specifications or recommendations, and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

If the project plans change significantly from the assumed development described herein, the project geotechnical consultant should review our preliminary design recommendations and their applicability to the revised construction. If conditions are encountered during construction that appear to be different than those indicated in this report or subsequent design reports, the project geotechnical consultant should be notified immediately. Design and construction revisions may be required.

## 7.0 LIMITATIONS

This report is based on the proposed development and geotechnical data as described herein. The materials described herein and in other literature are believed representative of the total project area, and the conclusions contained in this report are presented on that basis. However, soil materials can vary in characteristics between points of exploration, both laterally and vertically, and those variations could affect the conclusions and recommendations contained herein. As such, observation and testing by a geotechnical consultant prior to and during the grading and construction phases of the project are essential to confirming the basis of this report.

This report has been prepared consistent with that level of care being provided by other professionals providing similar services at the same locale and time period. The contents of this report are professional opinions and as such, are not to be considered a guaranty or warranty.

This report should be reviewed and updated after a period of one year or if the site ownership or project concept changes from that described herein.

This report has been prepared for the exclusive use of **VenturePoint Inc. as well as Signal Hill Petroleum** to assist the project consultants in the design of the proposed development. This report has not been prepared for use by parties or projects other than those named or described herein. This report may not contain sufficient information for other parties or other purposes.

Respectfully submitted,

***ALBUS-KEEFE & ASSOCIATES, INC***

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## REFERENCES

### Publications

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California Department of Conservation, Division of Mines and Geology, Special Publication 117A "Guidelines for Evaluating and Mitigating Seismic Hazards in California", 2008.

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### Reports

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Albus-Keefe & Associates, Inc., Preliminary Geotechnical Investigation for Proposed Retail/Restaurant Development, Pad A Parcel, Signal Hill Gateway Project, Northwest Corner of East Spring Street and California Avenue, Signal Hill, California, November 4, 2013, (J.N. 2218.00)

Albus-Keefe & Associates, Inc., Preliminary Geotechnical Investigation, Proposed Applebee's Restaurant, Northwest of Intersection of East Spring Street and California Avenue, Signal Hill, California, December 13, 2012, (J.N. 2127.00)

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Global Solutions, Inc., Phase II Environmental Site Assessment, Fields Lease North, city of Signal Hill, California, May 5 2001

**Plans**

ALTA/NSPS Land Title Survey, 860 E. 33rd Street, In the City of Signal Hill, County of Los Angeles, State of California, prepared by Ware Malcomb Sheets 1 and 2, Job No.: WMA19076

Conceptual Design, Signal Hill Retail Development, 950 E 33rd Street, Signal Hill, CA 90755, prepared for VenturePoint, prepared by Ware Malcomb, Sheet 2, dated December 16, 2016, Job No.: IRV19-0211

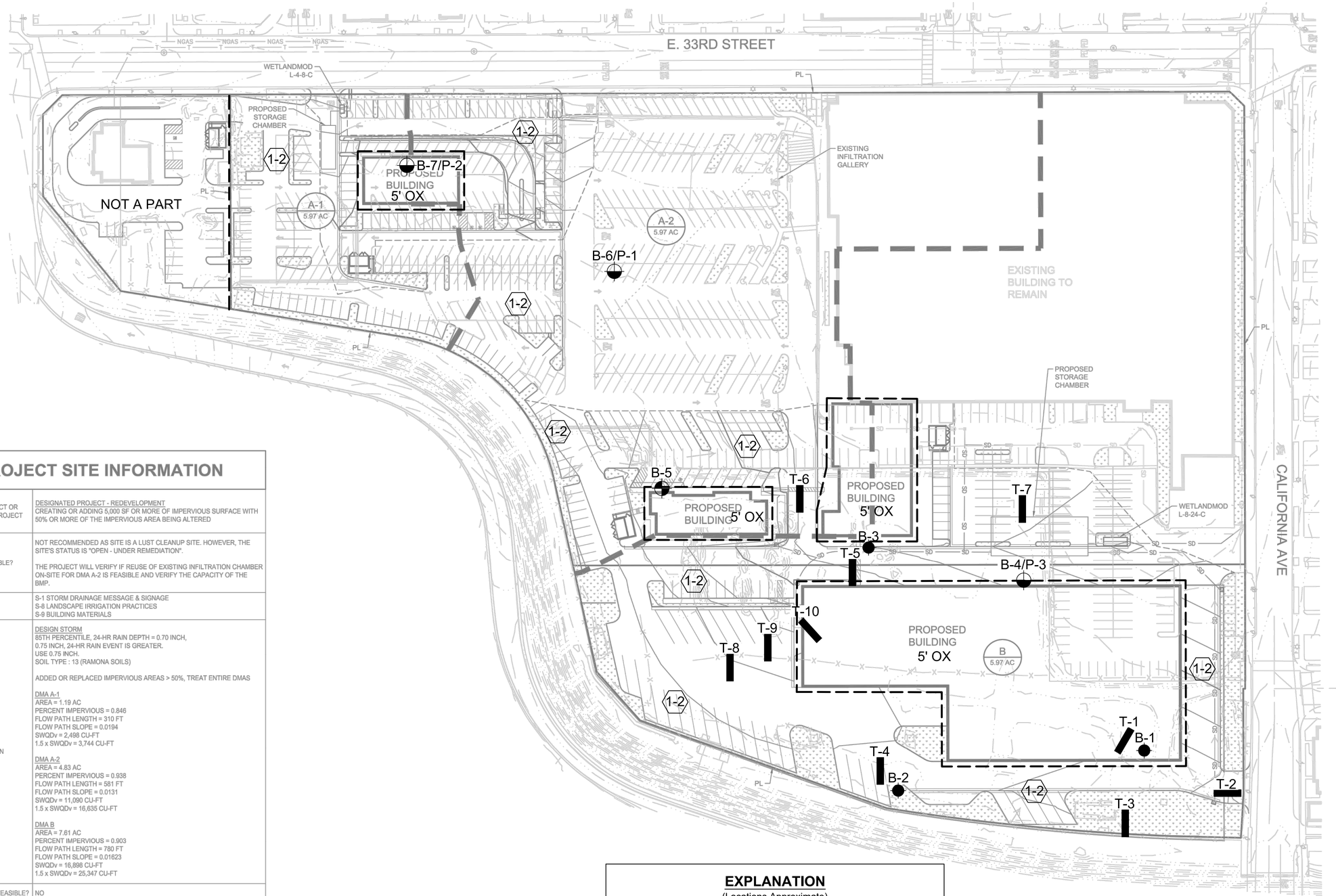
Preliminary Grading Plan and Utility Plan, Venture Point, 950 E. 33rd Street, Signal Hill, CA, prepared for VenturePoint, prepared by Ware Malcomb, Sheets 1 through 8, dated December 19, 2019, Job No.: IRV19-0211

Preliminary LID Plan, prepared for VenturePoint, prepared by Ware Malcomb, Sheet 7, dated December 19, 2019, Job No. IRV19-0211

**Aerial Photographs**

| Source | Date Flown | Flight No. | Photo No. |
|---|---|---|---|
| Continental | 11/19/53 | 14K | 94 & 95 |
| Continental | 1/31/70 | 61-7 | 177 &178 |
| Continental | 5/12/79 | FC-LA | 11-126, -127, & -28 |
| Continental | 4/1981 | ORA | 4-1 & -2 |
| Continental | 1/27/86 | F | 351, 352, & 353 |
| Continental | 7/7/88 | | 19205 & 10206 |
| Continental | 7/7/88 | | 19210 & 19211 |
| Continental | 6/12/90 | C84-15 | -7 & -8 |
| Continental | 1/29/92 | C85-7 | -29, -30, & 31 |
| Continental | 6/9/93 | C93-13 | -164, 165, & -166 |
| Continental | 1/29/95 | C103-35 | -126, 127, & 128 |
| Continental | 10/15/97 | C117-35 | -239 & -240 |
| Continental | 2/24/99 | C134-35 | -132 & -133 |
| UCSB | 1928 | C-300 | M-156 |
| UCSB | 1947 | C-11351 | 7-67 |
| UCSB | 1947 | C-11351 | 7-68 |
| UCSB | 1956 | C-22555 | 26-34 |
| UCSB | 1956 | C-22555 | 26-35 |
| UCSB | 1960 | C-23870 | 2131 |
| UCSB | 1960 | C-23870 | 2130 |
| UCSB | 1968 | TG-2400 | 2-10 |

CAUTION: IF THIS SHEET IS NOT 24"x36" IT IS A REDUCED PRINT




## PROJECT SITE INFORMATION

| | |
|---|---|
| DESIGNATED PROJECT OR NON-DESIGNATED PROJECT | DESIGNATED PROJECT - REDEVELOPMENT<br>CREATING OR ADDING 5,000 SF OR MORE OF IMPERVIOUS SURFACE WITH 50% OR MORE OF THE IMPERVIOUS AREA BEING ALTERED |
| INFILTRATION FEASIBLE? | NOT RECOMMENDED AS SITE IS A LUST CLEANUP SITE. HOWEVER, THE SITE'S STATUS IS "OPEN - UNDER REMEDIATION".<br><br>THE PROJECT WILL VERIFY IF REUSE OF EXISTING INFILTRATION CHAMBER ON-SITE FOR DMA A-2 IS FEASIBLE AND VERIFY THE CAPACITY OF THE BMP. |
| SOURCE CONTROL MEASURES | S-1 STORM DRAINAGE MESSAGE & SIGNAGE<br>S-8 LANDSCAPE IRRIGATION PRACTICES<br>S-9 BUILDING MATERIALS |
| SWQDv CALCULATION | DESIGN STORM<br>85TH PERCENTILE, 24-HR RAIN DEPTH = 0.70 INCH,<br>0.75 INCH, 24-HR RAIN EVENT IS GREATER.<br>USE 0.75 INCH.<br>SOIL TYPE : 13 (RAMONA SOILS)<br><br>ADDED OR REPLACED IMPERVIOUS AREAS > 50%, TREAT ENTIRE DMAS<br><br>DMA A-1<br>AREA = 1.19 AC<br>PERCENT IMPERVIOUS = 0.846<br>FLOW PATH LENGTH = 310 FT<br>FLOW PATH SLOPE = 0.0194<br>SWQDv = 2,498 CU-FT<br>1.5 x SWQDv = 3,744 CU-FT<br><br>DMA A-2<br>AREA = 4.83 AC<br>PERCENT IMPERVIOUS = 0.938<br>FLOW PATH LENGTH = 581 FT<br>FLOW PATH SLOPE = 0.0131<br>SWQDv = 11,090 CU-FT<br>1.5 x SWQDv = 16,635 CU-FT<br><br>DMA B<br>AREA = 7.61 AC<br>PERCENT IMPERVIOUS = 0.903<br>FLOW PATH LENGTH = 780 FT<br>FLOW PATH SLOPE = 0.01623<br>SWQDv = 16,898 CU-FT<br>1.5 x SWQDv = 25,347 CU-FT |
| HARVEST AND USE FEASIBLE? | NO |
| STORMWATER QUALITY CONTROL MEAUSRES | PROPRIETARY TREATMENT CONTROL MEASURES<br>DMA A-1 : WETLANDMOD L-4-8-C<br>TREATMENT CAPACITY @48-HR DRAWDOWN = 30,216 CU-FT<br><br>DMA B : WETLAND MOD L-8-24-C<br>TREATMENT CAPACITY @ 48-HR DRAWDOWN = 5,036 CU-FT<br><br>RETENTION-BASED STORMWATER QUALITY CONTROL MEASURES<br>DMA A-2: REUSE OF EXISTING INFILTRATION GALLERY<br>INFILTRATION CAPACITY : TO BE VERIFIED |
| HYDROMODIFICATION REQUIRED? | STORMWATER FROM PROJECT SITE DISCHARGES INTO IMPROVED DRAINAGE SYSTEMS.<br>HYDROMODIFICATION CONTROL BMPS ARE NOT REQUIRED. |

LEGEND

- DMA BOUNDARY
- FLOW PATH LENGTH

## EXPLANATION

(Locations Approximate)

- Exploratory Boring (Albus-Keefe, this report)
- Exploratory Boring and Percolation Test (Albus-Keefe, this report)
- Exploratory Boring (Albus-Keefe, 09/18/2001, J.N. 1137.00)
- Exploratory Trench (Albus-Keefe, 09/18/2001, J.N. 1137.00)
- 1-2 - Anticipated Depth of Removals in pavement Areas (in feet)
- 5' OX - Recommended Over-Excavation of Building Pad, Extending 5' Beyond Footprint (to be based on final plans)

ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

**GEOTECHNICAL MAP**

Job No.: 2871.00 | Date: 02/25/20 | Plate: 1

0 25 50 100
SCALE: 1" = 50'

WARE MALCOMB
CIVIL ENGINEERING & SURVEYING
990 south broadway
suite 230
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REGISTERED PROFESSIONAL ENGINEER
LUCAS A. CORSSEN
No. 72588
CIVIL
STATE OF CALIFORNIA
Jan 10, 2020
FOR AND ON BEHALF OF WARE MALCOMB

VENTURE POINT

PRELIMINARY LID PLAN

| NO. | DATE | REMARKS |
|---|---|---|
| | | |

| | |
|---|---|
| JOB NO.: | IRV19-0211 |
| PA / PM: | BS |
| DRAWN BY: | JP |
| DATE: | 12/19/2019 |
| PLOT DATE: | |

SHEET
LID-1
Sheet 7 of 8

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY AND COPYRIGHT OF WARE MALCOMB AND SHALL NOT BE USED ON ANY OTHER WORK EXCEPT BY AGREEMENT WITH WARE MALCOMB. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS AND SHALL BE VERIFIED ON THE JOB SITE. ANY DISCREPANCY SHALL BE BROUGHT TO THE NOTICE OF WARE MALCOMB PRIOR TO THE COMMENCEMENT OF ANY WORK

# APPENDIX A

## EXPLORATION LOGS

# EXPLORATION LOG

| | | |
|---|---|---|
| Project: | | Location: |
| Address: | | Elevation: |
| Job Number: | Client: | Date: |
| Drill Method: | Driving Weight: | Logged By: |

| Depth (feet) | Lith-ology | Material Description | Water | Samples: Blows Per Foot | Samples: Core | Samples: Bulk | Laboratory Tests: Moisture Content (%) | Laboratory Tests: Dry Density (pcf) | Laboratory Tests: Other Lab Tests |
|---|---|---|---|---|---|---|---|---|---|
| 5 | | **EXPLANATION**<br>Solid lines separate geologic units and/or material types.<br>Dashed lines indicate unknown depth of geologic unit change or material type change.<br>**Solid black rectangle** in Core column represents California Split Spoon sampler (2.5in ID, 3in OD).<br>**Double triangle** in core column represents SPT sampler.<br>**Vertical Lines** in core column represents Shelby sampler.<br>**Solid black rectangle** in Bulk column respresents large bag sample.<br>**Other Laboratory Tests:**<br>Max = Maximum Dry Density/Optimum Moisture Content<br>EI = Expansion Index<br>SO4 = Soluble Sulfate Content<br>DSR = Direct Shear, Remolded<br>DS = Direct Shear, Undisturbed<br>SA = Sieve Analysis (1" through #200 sieve)<br>Hydro = Particle Size Analysis (SA with Hydrometer)<br>200 = Percent Passing #200 Sieve<br>Consol = Consolidation<br>SE = Sand Equivalent<br>Rval = R-Value<br>ATT = Atterberg Limits | | | | | | | |
| 10 | | | | | | | | | |
| 15 | | | | | | | | | |
| 20 | | | | | | | | | |

# EXPLORATION LOG

| | | |
|---|---|---|
| Project: Field's North Trust Property | | Location: B-4 |
| Address: 950 E 33rd St, Signal Hill, CA | | Elevation: 94 |
| Job Number: 2870.00 | Client: Signal Hill Petroleum | Date: 1/22/2020 |
| Drill Method: Hollow-Stem Auger | Driving Weight: 140 lbs / 30 in | Logged By: SD |

| Depth (feet) | Lith-ology | Material Description | Water | Samples: Blows Per Foot | Samples: Core | Samples: Bulk | Laboratory Tests: Moisture Content (%) | Laboratory Tests: Dry Density (pcf) | Laboratory Tests: Other Lab Tests |
|---|---|---|---|---|---|---|---|---|---|
| | | **BEDROCK - LAKEWOOD FORMATION (QIw)**<br>Silty Sandstone : Mottled grayish brown, reddish brown, and brown, damp, very dense, fine grained sand, rootlets, black stainings | | 94 | | | 6.1 | 126.9 | Max EI SO4 ATT pH Resist Ch |
| 5 | | Clayey Sandstone : Mottled reddish brown and grayish brown, damp, very dense, fine grained sand, trace coarse grained sand, iron oxide stainings, increased sand content toward sampler tip | | 75 | | | 6.7 | 119.2 | |
| | | @ 6 ft, dense, mica present, caliche | | 54 | | | 10.2 | 122.1 | |
| 10 | | Sandstone/ Silty Sandstone : Light brown, damp, dense, fine grained sand, rootlets, pin-hole pores | | 40 | | | 12.8 | 109.9 | |
| 15 | | Sandstone : Light gray, moist, dense, fine grained sand, iron oxide stainings | | 23 | | | | | SA |

# EXPLORATION LOG

| | | |
|---|---|---|
| Project: Field's North Trust Property | | Location: B-4 |
| Address: 950 E 33rd St, Signal Hill, CA | | Elevation: 94 |
| Job Number: 2870.00 | Client: Signal Hill Petroleum | Date: 1/22/2020 |
| Drill Method: Hollow-Stem Auger | Driving Weight: 140 lbs / 30 in | Logged By: SD |

| Depth (feet) | Lith-ology | Material Description | Water | Samples: Blows Per Foot | Samples: Core | Samples: Bulk | Laboratory Tests: Moisture Content (%) | Laboratory Tests: Dry Density (pcf) | Laboratory Tests: Other Lab Tests |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 30 | | | | | |
| 25 | | @ 25 ft, increased iron oxide stainings | | 33 | | | | | |
| | | End of boring at depth of 26.5 feet. No groundwater encountered. Backfilled with soil cuttings. | | | | | | | |

# EXPLORATION LOG

| | | |
|---|---|---|
| Project: California Retail Center | | Location: B-5 |
| Address: 950 E 33rd St, Signal Hill, CA | | Elevation: 94 |
| Job Number: 2871.00 | Client: Venture Point | Date: 1/22/2020 |
| Drill Method: Hollow-Stem Auger | Driving Weight: 140 lbs / 30 in | Logged By: SD |

| Depth (feet) | Lith-ology | Material Description | Water | Samples: Blows Per Foot | Samples: Core | Samples: Bulk | Laboratory Tests: Moisture Content (%) | Laboratory Tests: Dry Density (pcf) | Laboratory Tests: Other Lab Tests |
|---|---|---|---|---|---|---|---|---|---|
| | | **BEDROCK - LAKEWOOD FORMATION (QIw)** | | | | | | | |
| | | Silty Sandstone : Mottled brown and reddish brown, damp, very dense, fine grained sand, trace fine to medium gravel, iron oxide stainings | | 50 | ■ | | 5.1 | 120.6 | |
| 5 | | @ 4 ft, dense, some clay nodules, some fine to coarse gravel, some red stainings | | 44 | ■ | | 6.6 | 117.5 | Consol |
| | | Clayey Sandstone : Light brown, damp, dense, fine grained sand, trace pores, rootlet, increased medium sand toward sampler tip, some red spots | | 39 | ■ | | 6.2 | 113.5 | |
| 10 | | @ 10 ft, increased clay content | | 49 | ■ | | 16.5 | 111.8 | |
| | | Sandstone : Mottled gray and light brown, moist, dense, fine grained sand, some iron oxide stainings | | | | | | | |
| 15 | | | | 25 | ⧗ | | | | |
| 20 | | @ 20 ft, very dense, no iron oxide stainings | | 39 | ⧗ | | | | |

# EXPLORATION LOG

| | | |
|---|---|---|
| Project: California Retail Center | | Location: B-5 |
| Address: 950 E 33rd St, Signal Hill, CA | | Elevation: 94 |
| Job Number: 2871.00 | Client: Venture Point | Date: 1/22/2020 |
| Drill Method: Hollow-Stem Auger | Driving Weight: 140 lbs / 30 in | Logged By: SD |

| Depth (feet) | Lith-ology | Material Description | Water | Samples: Blows Per Foot | Samples: Core | Samples: Bulk | Laboratory Tests: Moisture Content (%) | Laboratory Tests: Dry Density (pcf) | Laboratory Tests: Other Lab Tests |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 34 | | | | | |
| | | End of boring at depth of 26.5 feet. No Groundwater encountered. Backfilled with soil cuttings. | | | | | | | |

# EXPLORATION LOG

| | | |
|---|---|---|
| Project: California Retail Center | | Location: B-6 |
| Address: 950 E 33rd St, Signal Hill, CA | | Elevation: 90 |
| Job Number: 2871.00 | Client: Venture Point | Date: 1/22/2020 |
| Drill Method: Hollow-Stem Auger | Driving Weight: 140 lbs / 30 in | Logged By: SD |

| Depth (feet) | Material Description | Water | Samples: Blows Per Foot | Samples: Core | Samples: Bulk | Laboratory Tests: Moisture Content (%) | Laboratory Tests: Dry Density (pcf) | Laboratory Tests: Other Lab Tests |
|---|---|---|---|---|---|---|---|---|
| | Asphalt (AC): 5.5" Asphalt | | | | | | | Max EI SO4 DS ATT pH Resist Ch |
| | **ARTIFICIAL FILL (Af)** Clayey Sand (SC): Reddish brown, moist, medium dense, fine grained sand, some dark brown spots, increased fine content in the tip of sampler | | 29 | | | 9.8 | 117.6 | |
| | **BEDROCK - LAKEWOOD FORMATION (QIw)** Clayey Sandstone : Light brown, moist, dense, fine grained sand, trace pin-hole porous, red and brown spots | | 61 | | | 10.2 | 118.5 | |
| 5 | Sandstone : light brown, damp, medium dense, fine grained sand, rootlet, some red and brown spots | | 14 | | | 4.3 | 97.1 | Consol |
| 10 | @ 10 ft, mottled gray, white, and black, dry, very dense | | 59 | | | 1.1 | 100.1 | SA |
| 15 | @ 15 ft, mottled light gray and light brown, dense, increased medium grained sand in the tip of sampler | | 33 | | | | | |

# EXPLORATION LOG

| | | |
|---|---|---|
| Project: California Retail Center | | Location: B-6 |
| Address: 950 E 33rd St, Signal Hill, CA | | Elevation: 90 |
| Job Number: 2871.00 | Client: Venture Point | Date: 1/22/2020 |
| Drill Method: Hollow-Stem Auger | Driving Weight: 140 lbs / 30 in | Logged By: SD |

| Depth (feet) | Lith-ology | Material Description | Water | Samples: Blows Per Foot | Samples: Core | Samples: Bulk | Laboratory Tests: Moisture Content (%) | Laboratory Tests: Dry Density (pcf) | Laboratory Tests: Other Lab Tests |
|---|---|---|---|---|---|---|---|---|---|
| | | @ 20 ft, very dense | | 49 | | | | | |
| 25 | | | | 44 | | | | | |
| 30 | | @ 30 ft, light brown, dense, fine to coarse grained sand | | 48 | | | | | |
| | | **BEDROCK - San Pedro Formation (Qsp) ?**<br>Sandstone : Mottled light brown, gray, and reddish brown, damp, very dense, fine to coarse grained sand | | | | | | | |
| 35 | | | | 49 | | | | | |

# EXPLORATION LOG

| | | |
|---|---|---|
| Project: California Retail Center | | Location: B-6 |
| Address: 950 E 33rd St, Signal Hill, CA | | Elevation: 90 |
| Job Number: 2871.00 | Client: Venture Point | Date: 1/22/2020 |
| Drill Method: Hollow-Stem Auger | Driving Weight: 140 lbs / 30 in | Logged By: SD |

| Depth (feet) | Lith-ology | Material Description | Water | Samples: Blows Per Foot | Samples: Core | Samples: Bulk | Laboratory Tests: Moisture Content (%) | Laboratory Tests: Dry Density (pcf) | Laboratory Tests: Other Lab Tests |
|---|---|---|---|---|---|---|---|---|---|
| | | @ 40 ft, some iron oxide stainings | | 53 | | | | | |
| 45 | | @ 45 ft, light brown, iron oxide layers, layer of reddish brown | | 56 | | | | | |
| 50 | | @ 50 ft, fine to medium grained sand | | 82 | | | | | |
| | | End of Boring at depth of 51.5 feet. No Groundwater encountered. Backfilled with soil cuttings and patched with cold asphalt. | | | | | | | |

# EXPLORATION LOG

| | | |
|---|---|---|
| Project: California Retail Center | | Location: B-7 |
| Address: 950 E 33rd St, Signal Hill, CA | | Elevation: 89 |
| Job Number: 2871.00 | Client: Venture Point | Date: 1/22/2020 |
| Drill Method: Hollow-Stem Auger | Driving Weight: 140 lbs / 30 in | Logged By: SD |

| Depth (feet) | Lith-ology | Material Description | Water | Samples: Blows Per Foot | Samples: Core | Samples: Bulk | Laboratory Tests: Moisture Content (%) | Laboratory Tests: Dry Density (pcf) | Laboratory Tests: Other Lab Tests |
|---|---|---|---|---|---|---|---|---|---|
| | | Asphalt (AC): 5" Asphalt | | | | | | | |
| | | Crushed Aggregate Base (CAB): 4" | | | | | | | |
| | | **ARTIFICIAL FILL (Af)** Clayey Sand (SC): Reddish brown, moist, medium dense, fine grained sand, iron oxide stainings | | 29 | ■ | | 13.6 | 117.3 | |
| | | **BEDROCK - LAKEWOOD FORMATION (Qlw)** Clayey Sandstone : Mottled light brown and reddish brown, moist, dense, fine to medium grained sand, rootlet, black spots, mica present | | 41 | ■ | | 16.1 | 113.5 | Consol |
| 5 | | @ 6 ft, light brown to brown, medium dense, fine grained sand, some dark brown spots | | 13 | ■ | | 11.5 | 95.2 | Consol |
| | | Sandstone : Light gray, moist, dense, fine grained sand, mica present | | | | | | | |
| 10 | | | | 43 | ■ | | 13 | 86.4 | SA |
| 15 | | @ 15 ft, some black spots | | 33 | ⧗ | | | | |

*Albus-Keefe & Associates, Inc.*

Plate A-9

# EXPLORATION LOG

| | | |
|---|---|---|
| Project: California Retail Center | | Location: B-7 |
| Address: 950 E 33rd St, Signal Hill, CA | | Elevation: 89 |
| Job Number: 2871.00 | Client: Venture Point | Date: 1/22/2020 |
| Drill Method: Hollow-Stem Auger | Driving Weight: 140 lbs / 30 in | Logged By: SD |

| Depth (feet) | Lith-ology | Material Description | Water | Samples: Blows Per Foot | Samples: Core | Samples: Bulk | Laboratory Tests: Moisture Content (%) | Laboratory Tests: Dry Density (pcf) | Laboratory Tests: Other Lab Tests |
|---|---|---|---|---|---|---|---|---|---|
| | | @ 20 ft, very dense, no black spots | | 37 | | | | | |
| 25 | | @ 25 ft, dense | | 28 | | | | | |
| | | End of boring at depth of 26.5 feet. No groundwater encountered. Backfilled with soil cuttings and patched with cold asphalt. | | | | | | | |

# APPENDIX B

## LABORATORY TEST PROGRAM

# LABORATORY TESTING PROGRAM

## Soil Classification

Soils encountered within the exploratory borings were initially classified in the field in general accordance with the visual-manual procedures of the Unified Soil Classification System (ASTM D2488). The samples were re-examined in the laboratory and classifications reviewed and then revised where appropriate. The assigned group symbols are presented on the logs provided in Appendix A.

## In-Situ Moisture and Density

Moisture content and dry density of in-place soil materials were determined in representative strata. Test data are summarized on the Boring Logs provided in Appendix A.

## Laboratory Maximum Dry Density

Maximum dry density and optimum moisture content of onsite soils were determined for selected samples in general accordance with ASTM D1557. Pertinent test values are given on Table B.

## Expansion Potential

Expansion index testing was performed on a selected sample. The test was performed in accordance with ASTM D4829. The test result is presented on Table B.

## Consolidation

Consolidation tests were performed for selected soil samples in general conformance with ASTM D2435. Axial loads were applied in several increments to a laterally restrained 1-inch-high sample. Loads were applied in geometric progression by doubling the previous load, and the resulting deformations were recorded at selected time intervals. The test sample was inundated at a selected load to evaluate the effect of a sudden increase in moisture content (hydro-consolidation potential). Results of the tests are graphically presented on Plates B-4 through B-8.

## Direct Shear

The Coulomb shear strength parameters, angle of internal friction and cohesion, were determined for a bulk sample obtained from one our borings. The tests were performed in general conformance with Test Method ASTM D 3080. The sample was remolded to 90 percent of maximum dry density and at the optimum moisture content. Three specimens were prepared for each test, artificially saturated, and then sheared under varied loads at an appropriate constant rate of strain. Results are graphically presented on Plate B-9.

## Atterberg Limits

Atterberg Limits (Liquid Limit, Plastic Limit, and Plasticity Index) were performed in accordance with Test Method ASTM D-4318. Pertinent test values are presented within Table B-1.

## Corrosion

Select samples were tested for minimum resistivity, chloride, and pH in accordance with California Test Method 643. Results of these tests are provided in Table B-1.

## Soluble Sulfate Analysis

A chemical analysis was performed on a selected sample to determine soluble sulfate content. Soil and Plant Laboratories, Inc. of Orange, California in accordance with Test Method No performed this test. California 417. Their test result is included on Table B-1.

## Particle-Size Analyses

Particle-size analyses were performed on selected samples in accordance with ASTM D 422-63. The results are presented graphically on the attached Plates B-1 through B-3.

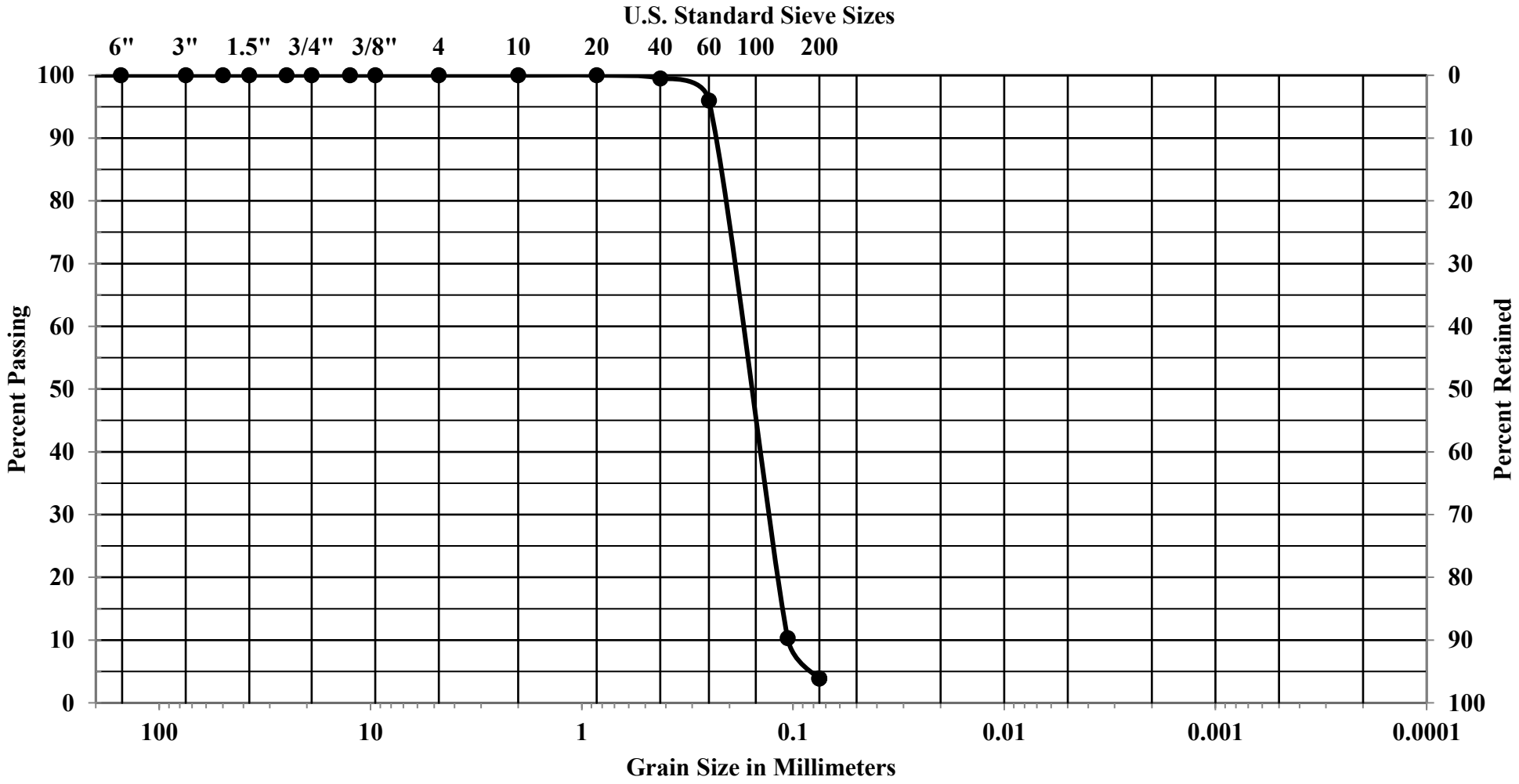
**TABLE B-1**
**SUMMARY OF LABORATORY TEST RESULTS**

| Boring No. | Sample Depth (ft.) | Soil Description | Test Results | |
|---|---|---|---|---|
| B-2 | 3 - 5 | Silty Sandstone | Maximum Dry Density:<br>Optimum Moisture Content:<br>Expansion Index:<br>Expansion Potential:<br>Soluble Sulfate Content: | 125.0 pcf<br>10.5 %<br>28<br>Low<br>0.030 % |
| B-3 | 0 - 5 | Silty Sandstone | Maximum Dry Density:<br>Optimum Moisture Content:<br>Expansion Index:<br>Expansion Potential:<br>Soluble Sulfate Content:<br>Minimum Resistivity:<br>pH:<br>Chloride:<br>Liquid Limit:<br>Plastic Index: | 130 pcf<br>8.5 %<br>2<br>Very Low<br>0.005 %<br>101,000 ohm-cm<br>7.55<br>24.5 ppm<br>19<br>4 |
| B-6 | 0 - 5 | Clayey Sandstone | Maximum Dry Density:<br>Optimum Moisture Content:<br>Expansion Index:<br>Expansion Potential:<br>Soluble Sulfate Content:<br>Minimum Resistivity:<br>pH:<br>Chloride:<br>Liquid Limit:<br>Plastic Index: | 127.0 pcf<br>10.5 %<br>42<br>Low<br>0%<br>1,400 ohm-cm<br>7.49<br>19.2 ppm<br>29<br>16 |

Note: Additional laboratory test results are provided on the boring logs provided in Appendix A.

## GRAIN SIZE DISTRIBUTION

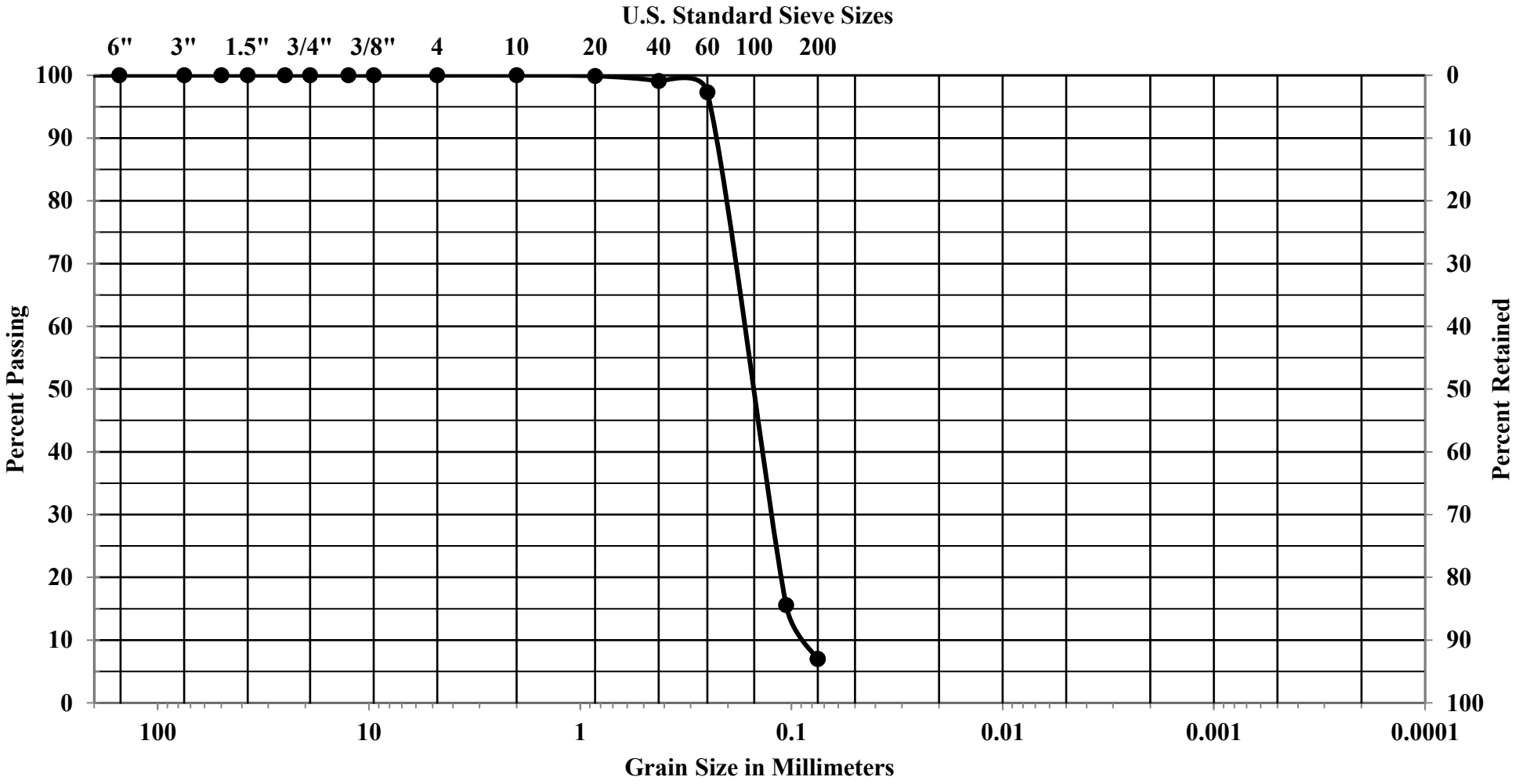
| COBBLES | GRAVEL | | SAND | | | SILT AND CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |




| Job Number | Location | Depth | Description |
|---|---|---|---|
| 2870.00 | B-4 | 15 | Sand (SP) |

## GRAIN SIZE DISTRIBUTION

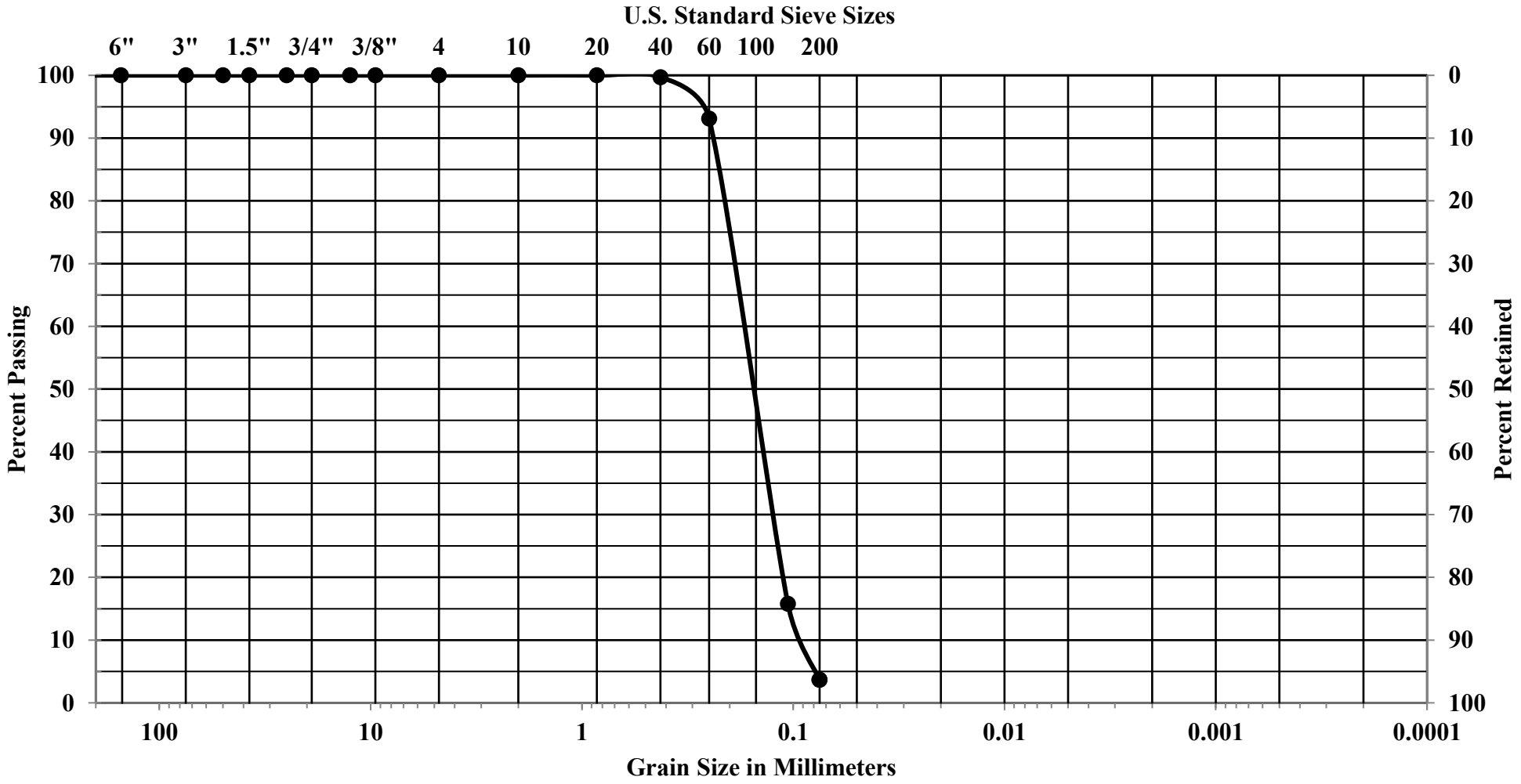
| COBBLES | GRAVEL | | SAND | | | SILT AND CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |




| Job Number | Location | Depth | Description |
|---|---|---|---|
| 2871.00 | B-6 | 10 | Poorly graded Sand with Silt (SP-SM) |

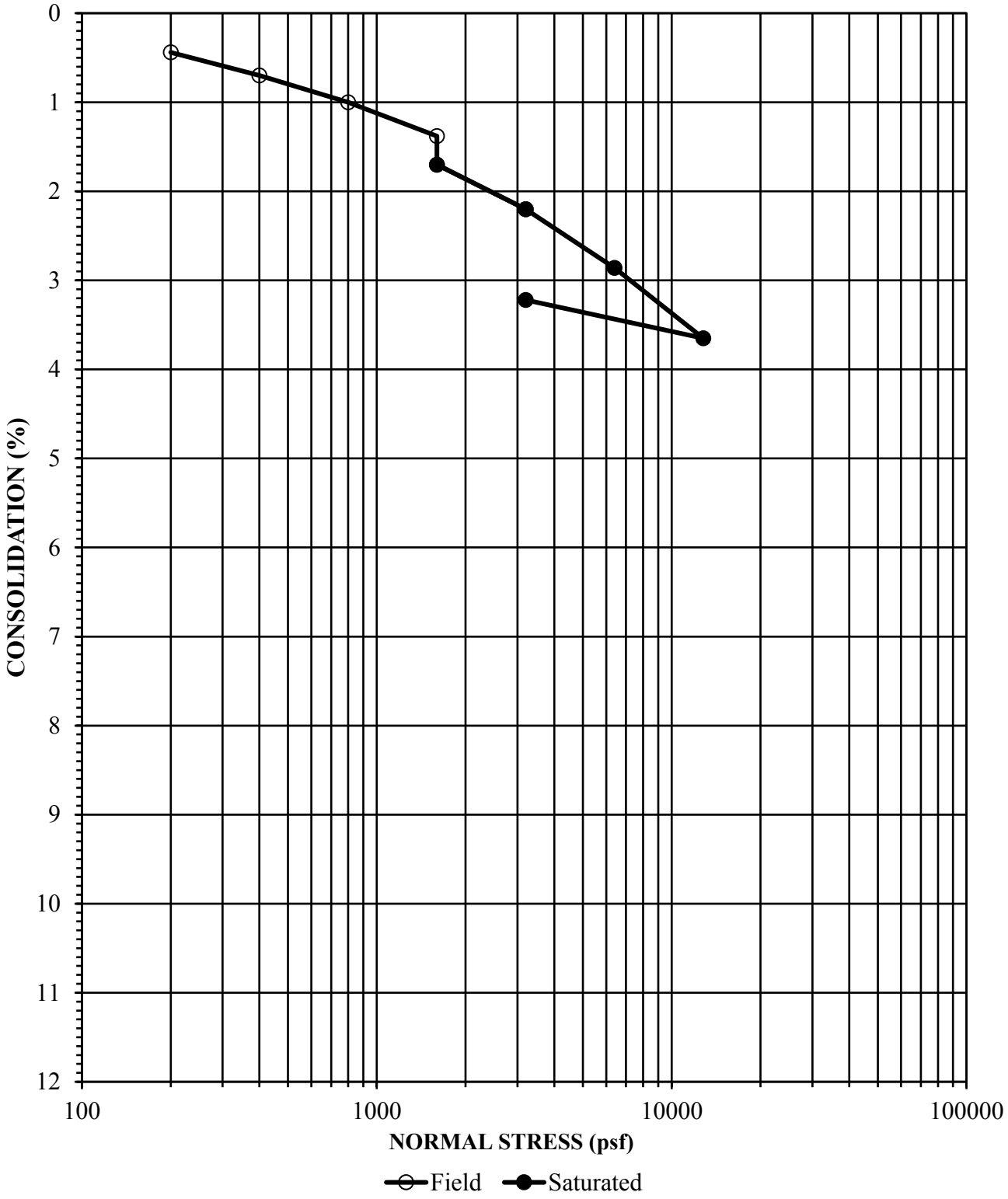
## GRAIN SIZE DISTRIBUTION

| COBBLES | GRAVEL | | SAND | | | SILT AND CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |




| Job Number | Location | Depth | Description |
|---|---|---|---|
| 2871.00 | B-7 | 10 | Sand (SP) |

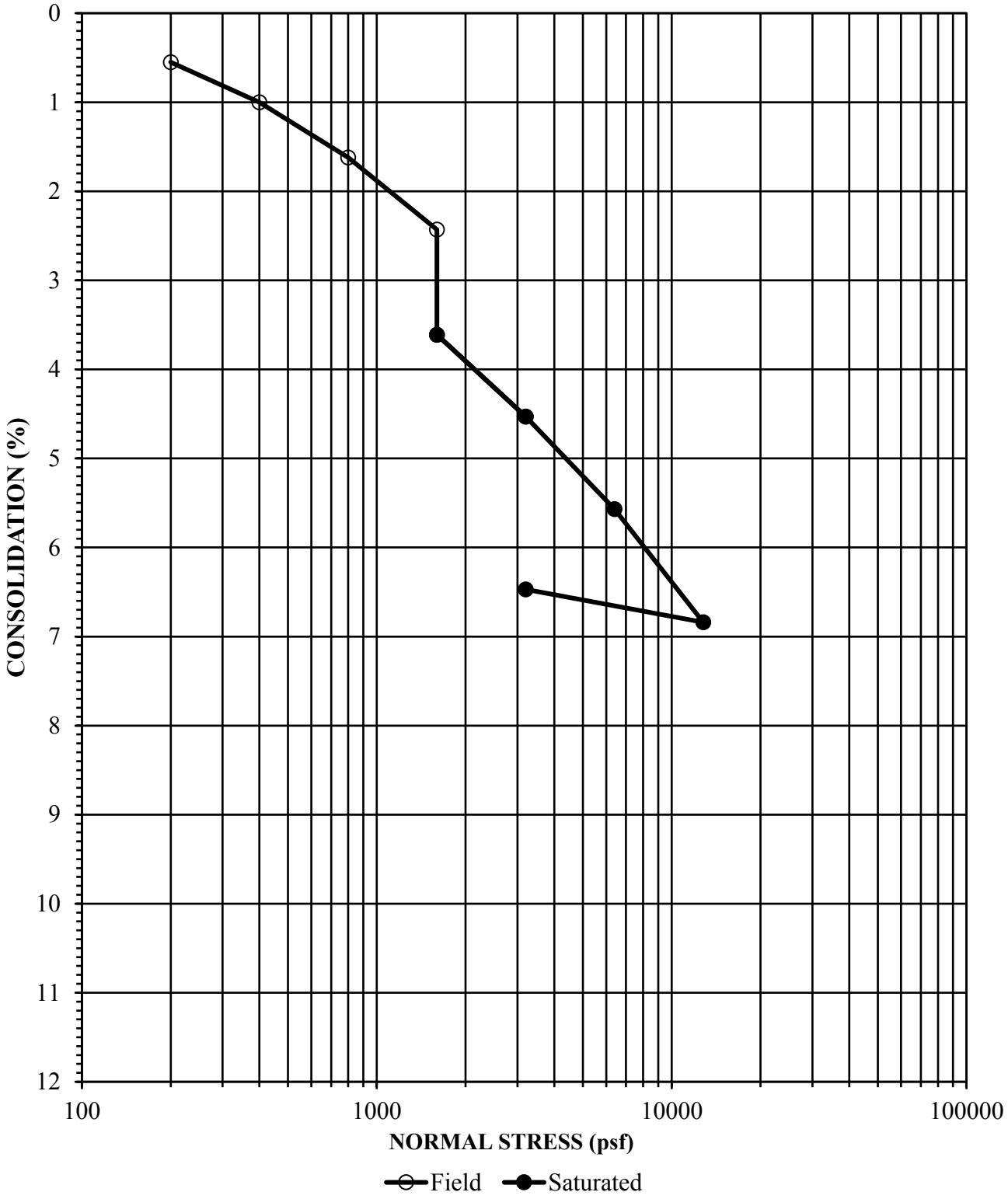
## CONSOLIDATION




| Job Number | Location | Depth | Description |
|---|---|---|---|
| 2870.00 | B-4 | 4 | Clayey Sandstone () |

| Initial Dry Density (pcf) | Initial Moisture Content (%) | Final Moisture Concent (%) |
|---|---|---|
| 121.7 | 7 | 10.4 |

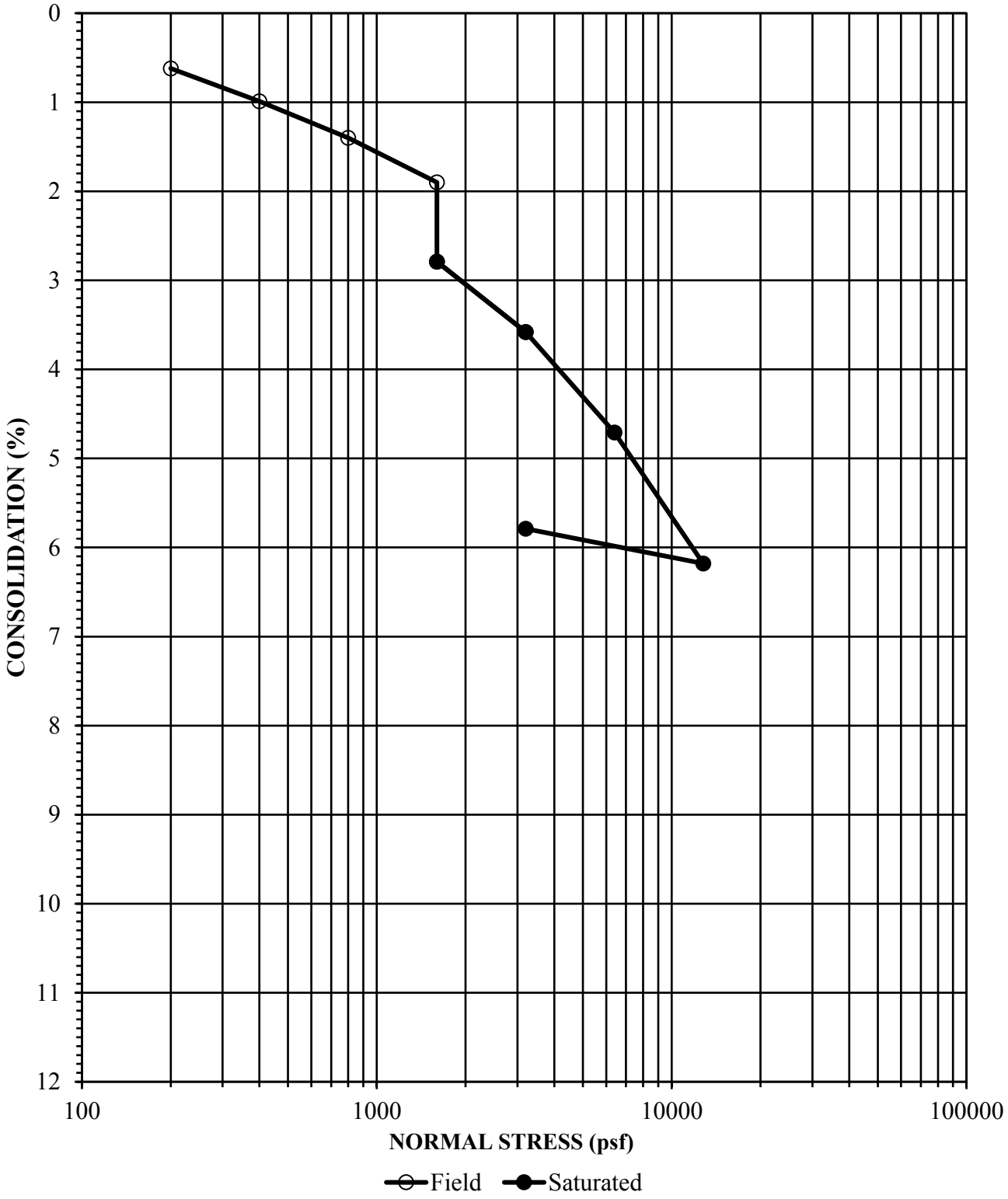
## CONSOLIDATION




| Job Number | Location | Depth | Description |
|---|---|---|---|
| 2871.00 | B-5 | 4 | Silty Sandstone |

| Initial Dry Density (pcf) | Initial Moisture Content (%) | Final Moisture Concent (%) |
|---|---|---|
| 110.4 | 21 | 12.1 |

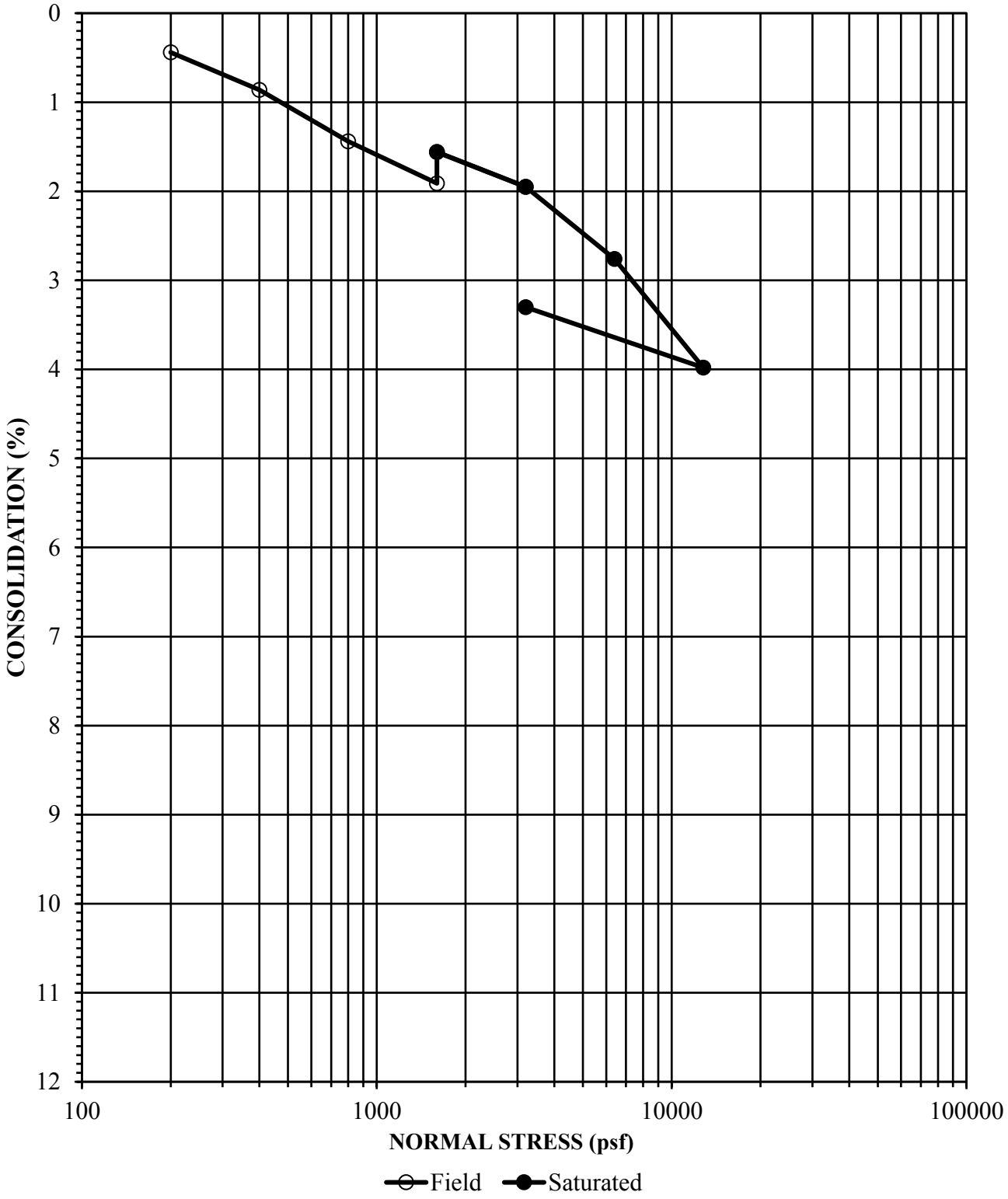
## CONSOLIDATION




| Job Number | Location | Depth | Description |
|---|---|---|---|
| 2871.00 | B-6 | 6 | Sandstone |

| Initial Dry Density (pcf) | Initial Moisture Content (%) | Final Moisture Concent (%) |
|---|---|---|
| 96.5 | 6.2 | 21.4 |

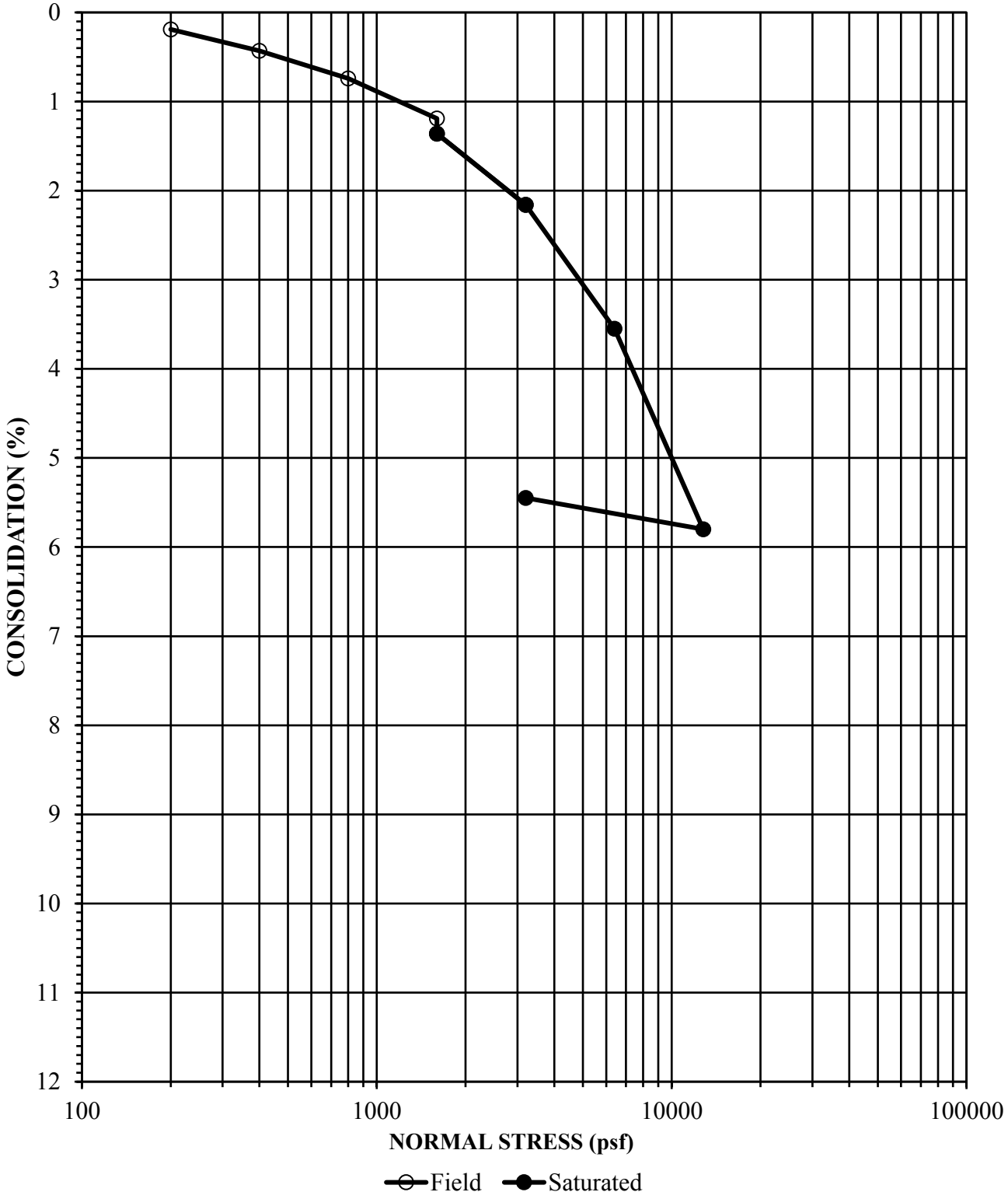
## CONSOLIDATION




| Job Number | Location | Depth | Description |
|---|---|---|---|
| 2871.00 | B-7 | 4 | Clayey Sandstone |

| Initial Dry Density (pcf) | Initial Moisture Content (%) | Final Moisture Concent (%) |
|---|---|---|
| 115.1 | 20.7 | 17.2 |

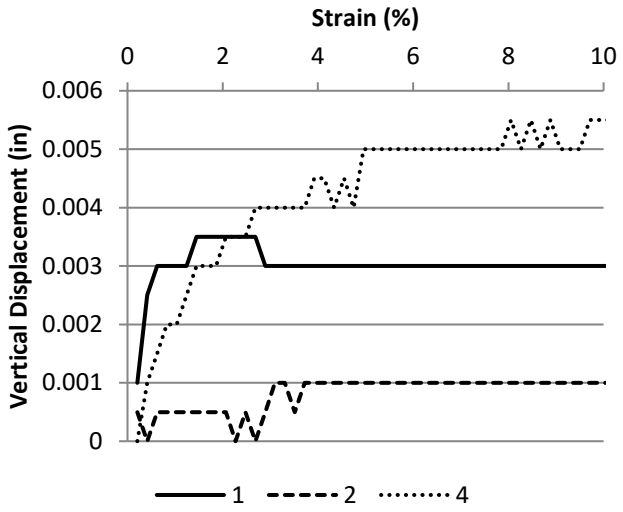
## CONSOLIDATION

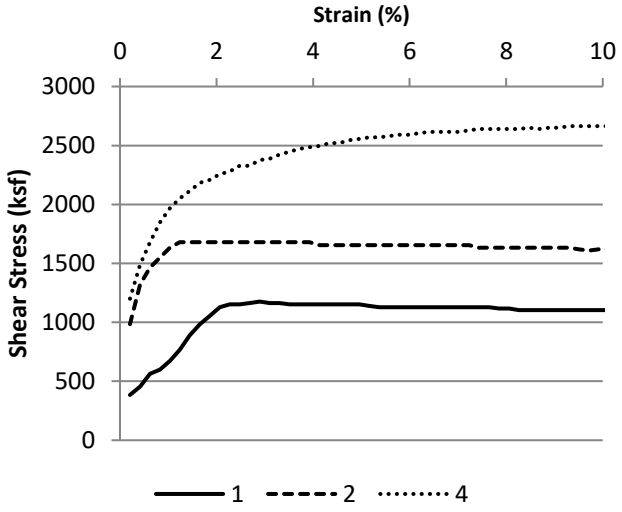


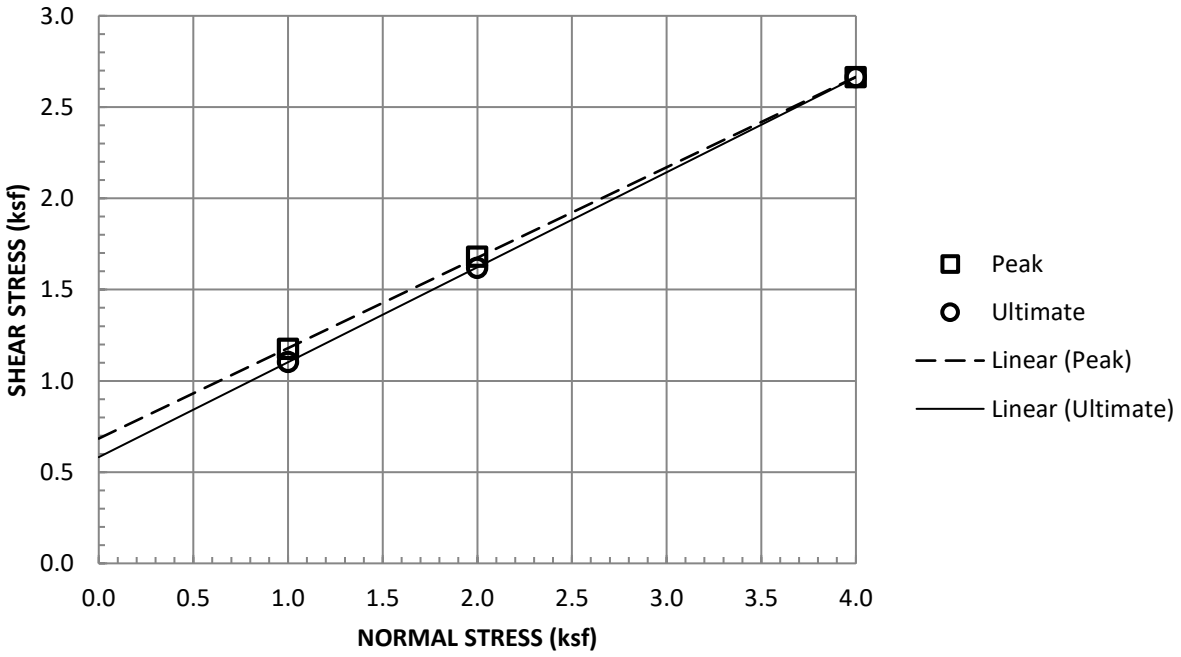

| Job Number | Location | Depth | Description |
|---|---|---|---|
| 2871.00 | B-7 | 6 | Clayey Sandstone |

| Initial Dry Density (pcf) | Initial Moisture Content (%) | Final Moisture Concent (%) |
|---|---|---|
| 97.4 | 11.4 | 21.3 |

# DIRECT SHEAR




| Sample Type: | Remolded 90% of 127 @ 10.5%, Saturated | | |
|---|---|---|---|
| Normal Stress (ksf) | 1 | 2 | 4 |
| Peak Shear Stress (ksf) | 1.176 | 1.68 | 2.664 |
| Peak Displacement (in) | 0.004 | 0.001 | 0.006 |
| Ultimate Shear Stress (ksf) | 1.104 | 1.62 | 2.664 |
| Ultimate Displacement (in) | 0.25 | 0.25 | 0.25 |
| Initial Dry Density (pcf) | 114.3 | 114.3 | 114.3 |
| Initial Moisture Content (%) | 10.5 | 10.5 | 10.5 |
| Final Moisture Content (%) | 16.3 | 15.5 | 14.2 |
| Strain Rate (in/min) | 0.01 | | |

| Job Number | Location | Depth | Description |
|---|---|---|---|
| 2871.00 | B-6 | 0-5 | Clayey Sand (SC) |

# APPENDIX C

## PREVIOUS EXPLORATION LOGS AND LABORATORY TEST DATA (AKA 9-18-2001)

# BORING LOG NO. B-1

| | | | |
|---|---|---|---|
| **Client:** | **Signal Hill Petroleum** | **Job No.: 1137.00** | |
| **Project:** | **Field's North Trust Property** | **Elevation:** | **Date: 8/31/01** |
| **Location:** | **Signal Hill, California** | **Total Depth: 20.0'** | **Log by: RSR** |
| **Drill Rig Type:** | **24" Bucket Auger** **Driving Weights: 0-25 feet: 2500 lbs.** | **Sheet: 1 of 1** | **Start:** **Stop:** |

| Depth (Feet) | USCS Symbol | Material Description | Water | Samples: Blow Count | Samples: Ring | Samples: Bulk | Laboratory Tests: Dry Density (pcf) | Laboratory Tests: Moisture Content (%) | Laboratory Tests: Other Lab Tests |
|---|---|---|---|---|---|---|---|---|---|
| | SM | **ARTIFICIAL FILL (Qaf):** Silty sand, fine grained, brown, dry to damp, medium dense, gravelly road base in upper 2 inches. | | PUSH | ■ | | 107.5 | 8.9 | |
| 5 | | **BEDROCK: LAKEWOOD FORMATION (Qlw):** Silty sandstone, fine grained, brown to red-brown, damp, soft, soft to moderately hard, weathered, locally porous, some rootlets. | | 4 | ■ | | 120.3 | 11.2 | |
| | | | | 4 | ■ | | 107.0 | 17.1 | |
| 10 | | @ 5.0 feet: Becomimg less porous, moderately hard, with some weathered siltstone clods. | | 4 | ■ | | 97.1 | 3.6 | |
| | | @ 9.0 feeet: Sandstone with some traces of silt, fine grained, tan to light gray, damp, moderately hard, slightly micaceous. | | | | | | | |
| 15 | | | | 5 | ■ | | 97.8 | 4.2 | |
| | | @ 18.0 feet: Heavy caving. | | | | | | | |
| 20 | | Total Depth: 20.0 feet<br>Caving from 18.0 feet to 20.0 feet<br>No Ground Water | | | | | | | |
| 25 | | | | | | | | | |

# BORING LOG NO. B-2

| | | | |
|---|---|---|---|
| **Client:** | **Signal Hill Petroleum** | **Job No.: 1137.00** | |
| **Project:** | **Field's North Trust Property** | **Elevation:** | **Date: 8/31/01** |
| **Location:** | **Signal Hill, California** | **Total Depth: 12.0'** | **Log by: RSR** |
| **Drill Rig Type:** | **24" Bucket Auger** **Driving Weights: 0-25 feet: 2500 lbs.** | **Sheet: 1 of 1** | **Start:** **Stop:** |

| Depth (Feet) | USCS Symbol | Material Description | Water | Samples: Blow Count | Samples: Ring | Samples: Bulk | Laboratory Tests: Dry Density (pcf) | Laboratory Tests: Moisture Content (%) | Laboratory Tests: Other Lab Tests |
|---|---|---|---|---|---|---|---|---|---|
| | SM | **ARTIFICIAL FILL (Qaf):** | | | | | | | (MAX./ |
| | | Silty sand, fine grained, brown, dry to damp, medium dense, | | | | | | | E.I./$SO_4$/ |
| | | scattered gravel and debris. | | | | | | | & D.S.) |
| | | | | 6 | ■ | | 118.4 | 9.4 | (Consol.) |
| 5 | | | | | | | | | |
| | | **BEDROCK: LAKEWOOD FORMATION (Qlw):** | | | | | | | |
| | | Silty sandstone, fine grained, brown to red-brown, damp, moderately | | 5 | ■ | | 108.9 | 7.6 | |
| | | hard, weathered, locally porous, scattered rootlets. | | | | | | | |
| | | | | 3 | ■ | | 97.0 | 3.0 | |
| 10 | | @ 3.0 feet: Becoming harder and less porous. | | | | | | | |
| | | @ 6.0 feet: Becoming locally more porous, increase in rootlets. | | | | | | | |
| | | @ 8.0 feet: Becoming less weathered, less porous, decrease in | | | | | | | |
| 15 | | rootlets. | | | | | | | |
| | | @ 9.0 feet: Sandstone with traces of silt, fine grained, tan to light | | | | | | | |
| | | gray, dry to damp, moderately hard, micaceous. | | | | | | | |
| 20 | | @ 12.0 feet: Heavy caving. | | | | | | | |
| | | Total Depth: 12.0 feet | | | | | | | |
| 25 | | Caving @ 12.0 feet | | | | | | | |
| | | No Ground Water | | | | | | | |

# BORING LOG NO. B-3

| | | | |
|---|---|---|---|
| **Client:** | **Signal Hill Petroleum** | **Job No.: 1137.00** | |
| **Project:** | **Field's North Trust Property** | **Elevation:** | **Date: 8/31/01** |
| **Location:** | **Signal Hill, California** | **Total Depth: 10.0'** | **Log by: RSR** |
| **Drill Rig Type:** | **24" Bucket Auger** **Driving Weights: 0-25 feet: 2500 lbs.** | **Sheet: 1 of 1** | **Start:** **Stop:** |

| Depth (Feet) | USCS Symbol | Material Description | Water | Samples: Blow Count | Samples: Ring | Samples: Bulk | Laboratory Tests: Dry Density (pcf) | Laboratory Tests: Moisture Content (%) | Laboratory Tests: Other Lab Tests |
|---|---|---|---|---|---|---|---|---|---|
| | SM | **ARTIFICIAL FILL (Qaf):** | | | | | | | |
| | | Silty sand, fine grained, brown, dry to damp, medium dense, | | 2 | ■ | | 115.2 | 7.3 | |
| | | scattered gravel and debris. | | | | | | | |
| | | | | 2 | ■ | | 103.3 | 23.8 | |
| 5 | | **BEDROCK: LAKEWOOD FORMATION (Qlw):** | | | | | | | |
| | | Silty sandstone, fine grained, brown to red-brown, damp, soft to | | PUSH | | | | | |
| | | moderately hard, weathered, locally porous. | | for 6"/ 1 for 6" | ■ | | 93.7 | 2.8 | |
| | | @ 3.0 feet: Increase in moisture and silt content. | | | | | | | |
| 10 | | | | 4 | ■ | | 96.2 | 2.6 | |
| | | @ 4.0 feet: Clayey sandstone with some silt, fine grained, red- | | | | | | | |
| | | brown, damp to slightly moist, soft to moderately hard, weathered, | | | | | | | |
| | | mottled, locally porous. | | | | | | | |
| 15 | | @ 6.0 feet: Sandstone with traces of silt, fine grained, tan to light | | | | | | | |
| | | gray, damp, soft to moderately hard, micaceous. | | | | | | | |
| | | @ 10.0 feet: Some rust-brown oxidation staining present. Hole | | | | | | | |
| 20 | | caving heavily. | | | | | | | |
| | | Total Depth: 10.0 feet | | | | | | | |
| | | Caving @ 10.0 feet | | | | | | | |
| | | No Ground Water | | | | | | | |
| 25 | | | | | | | | | |

## DESCRIPTIVE LOG OF TRENCH EXCAVATION

| Trench Number | Depth (Feet) | U.S.C.S. Symbol | Field Description |
|---|---|---|---|
| T-1 | 0-1.0 | SM | ARTIFICIAL FILL (Qaf): Silty sand, fine grained, brown, dry to damp, medium dense to dense, gravelly road base in upper 2 inches. |
| | 1.0-3.0 | | BEDROCK: LAKEWOOD FORMATION (Qlw): Silty sandstone, fine grained, brown to red-brown, damp, moderately hard, locally porous (porosity decreases with depth). |
| | | | Total Depth: 3.0 feet<br>No Caving<br>No Ground Water<br>Backfill Not Compacted |

## DESCRIPTIVE LOG OF TRENCH EXCAVATION

| Trench Number | Depth (Feet) | U.S.C.S. Symbol | Field Description |
|---|---|---|---|
| T-2 | 0-2.5 | SM | ARTIFICIAL FILL (Qaf): Silty sand, fine grained, light tan to gray, dry to damp, loose to medium dense, rootlets in upper 6 inches, gravelly road base in upper 12 inches. |
| | 2.5-3.5 | | BEDROCK: LAKEWOOD FORMATION (Qlw): Silty sandstone, fine grained, brown to red-brown, damp, moderately hard to hard, weathered, rootlets, pinhole pores. |
| | | | Total Depth: 3.5 feet<br>No Caving<br>No Ground Water<br>Backfill Not Compacted |

## DESCRIPTIVE LOG OF TRENCH EXCAVATION

| Trench Number | Depth (Feet) | U.S.C.S. Symbol | Field Description |
|---|---|---|---|
| T-3 | 0-1.5 | SM | ARTIFICIAL FILL (Qaf): Silty sand, fine grained, light brown to tan, dry, medium dense to dense, rootlets, locally porous. |
| | 1.5-4.0 | | BEDROCK: LAKEWOOD FORMAION (Qlw): Silty sandstone, fine grained, brown to red-brown, dry to damp, moderately hard, weathered, pinhole pores, scattered rootlets.<br><br>@ 3.5: Becoming less weathered, damp to moist.<br><br>Total Depth: 4.0 feet<br>No Caving<br>No Ground Water<br>Backfill Not Compacted |

## DESCRIPTIVE LOG OF TRENCH EXCAVATION

| Trench Number | Depth (Feet) | U.S.C.S. Symbol | Field Description |
|---|---|---|---|
| T-4 | 0-1.0 | SM | ARTIFICIAL FILL (Qaf): Silty sand, fine grained with some gravel, brown, dry to damp, loose to medium dense, rootlets, pinhole pores, scattered debris. |
| | 1.0-2.5 | | BEDROCK: LAKEWOOD FORMATION (Qlw): Silty sandstone, fine grained, brown to red-brown, damp, moderately hard, weathered, locally porous, scattered rootlets, some ped development. |
| | | | Total Depth: 2.5 feet<br>No Caving<br>No Ground Water<br>Backfill Not Compacted |

## DESCRIPTIVE LOG OF TRENCH EXCAVATION

| Trench Number | Depth (Feet) | U.S.C.S. Symbol | Field Description |
|---|---|---|---|
| T-5 | 0-1.0 | SM | ARTIFICIAL FILL (Qaf): Silty sand, fine grained, light brown to tan, dry, medium dense to dense, rootlets, locally porous. |
| | 1.0-2.0 | | BEDROCK: LAKEWOOD FORMATION (Qlw): Silty sandstone, fine grained, brown to red-brown, damp, moderately hard to hard, weathered, rootlets, pinhole pores. |
| | | | Total Depth: 2.0 feet<br>No Caving<br>No Ground Water<br>Backfill Not Compacted |

## DESCRIPTIVE LOG OF TRENCH EXCAVATION

| Trench Number | Depth (Feet) | U.S.C.S. Symbol | Field Description |
|---|---|---|---|
| T-6 | 0-1.0 | SM | ARTIFICIAL FILL (Qaf): Silty sand, fine grained with some gravel, brown, dry to damp, loose to medium dense, rootlets, pinhole pores, scattered debris. |
| | 1.0-2.5 | | BEDROCK: LAKEWOOD FORMATION (Qlw): Silty sandstone, fine grained, brown to red-brown, damp, moderately hard, weathered, locally porous, scattered rootlets. |
| | | | Total Depth: 2.5 feet<br>No Caving<br>No Ground Water<br>Backfill Not Compacted |

## DESCRIPTIVE LOG OF TRENCH EXCAVATION

| Trench Number | Depth (Feet) | U.S.C.S. Symbol | Field Description |
|---|---|---|---|
| T-7 | 0-3.0 | | BEDROCK: LAKEWOOD FORMATION (Qlw): Silty sandstone, brown to red-brown, damp, moderately hard, moderately to very weathered, locally very porous, some ped development, some roots.<br><br>@ 3.0 feet: Less weathered and harder.<br><br>Total Depth: 3.0 feet<br>No Caving<br>No Ground Water<br>Backfill Not Compacted |

## DESCRIPTIVE LOG OF TRENCH EXCAVATION

| Trench Number | Depth (Feet) | U.S.C.S. Symbol | Field Description |
|---|---|---|---|
| T-8 | 0-2.0 | SM | ARTIFICIAL FILL (Qaf): Silty sand, fine grained, gray-brown, very moist to saturated, medium dense. |
| | 2.0-4.0 | | BEDROCK: LAKEWOOD FORMATION (Qlw): Silty sandstone, fine grained, brown to red-brown, very moist, soft to moderately hard. |
| | | | @ 3.0 feet: Becoming damp and moderately hard. |
| | | | Note: Trench located approximately 7.0 feet below adjacent grade within excavated tank site. |
| | | | Total Depth: 4.0 feet<br>No Caving<br>No Ground Water<br>Backfill Not Compacted |

## DESCRIPTIVE LOG OF TRENCH EXCAVATION

| Trench Number | Depth (Feet) | U.S.C.S. Symbol | Field Description |
|---|---|---|---|
| T-9 | 0-3.0 | | BEDROCK: LAKEWOOD FORMATION (Qlw): Silty sandstone/Sandy siltstone, red-brown, damp to moist, soft to moderately hard, desiccated with clayey film and caliche.<br><br>@ 2.0 feet: Becoming moderately hard.<br><br>Note: Trench located 5.0 feet below adjacent grade within excavated tank site.<br><br>Total Depth: 3.0 feet<br>No Caving<br>No Ground Water<br>Backfill Not Compacted |

## DESCRIPTIVE LOG OF TRENCH EXCAVATION

| Trench Number | Depth (Feet) | U.S.C.S. Symbol | Field Description |
|---|---|---|---|
| T-10 | 0-1.0 | SM | ARTIFICIAL FILL (Qaf): Silty sand, fine grained, brown and dark gray-brown, very moist to saturated, loose, roots from nearby palm tree. |
| | 1.0-4.0 | | BEDROCK: LAKEWOOD FORMATION (Qlw): Silty sandstone/Sandy siltstone, red-brown, damp to moist, soft to moderately hard, desiccated with clayey film and caliche.<br><br>@ 2.0 feet: Becoming moderately hard.<br><br>Note: Trench located approximately 2.0 feet below adjacent grade within excavated tank site.<br><br>Total Depth: 4.0 feet<br>No Caving<br>No Ground Water<br>Backfill Not Compacted |

sudden increase in moisture content (hydro-consolidation potential). Results of this test are graphically presented on Plate B-1.

**Direct Shear**

The Coulomb shear strength parameters, angle of internal friction and cohesion, were determined for a sample remolded to 90 percent of maximum dry density. AMEC Earth & Environmental of Anaheim, California performed the test in general conformance with Test Method ASTM D 3080-80. Three specimens were prepared for each test, artificially saturated, and then sheared under varied loads at an appropriate constant rate of strain. Results are graphically presented on Plate B-2.

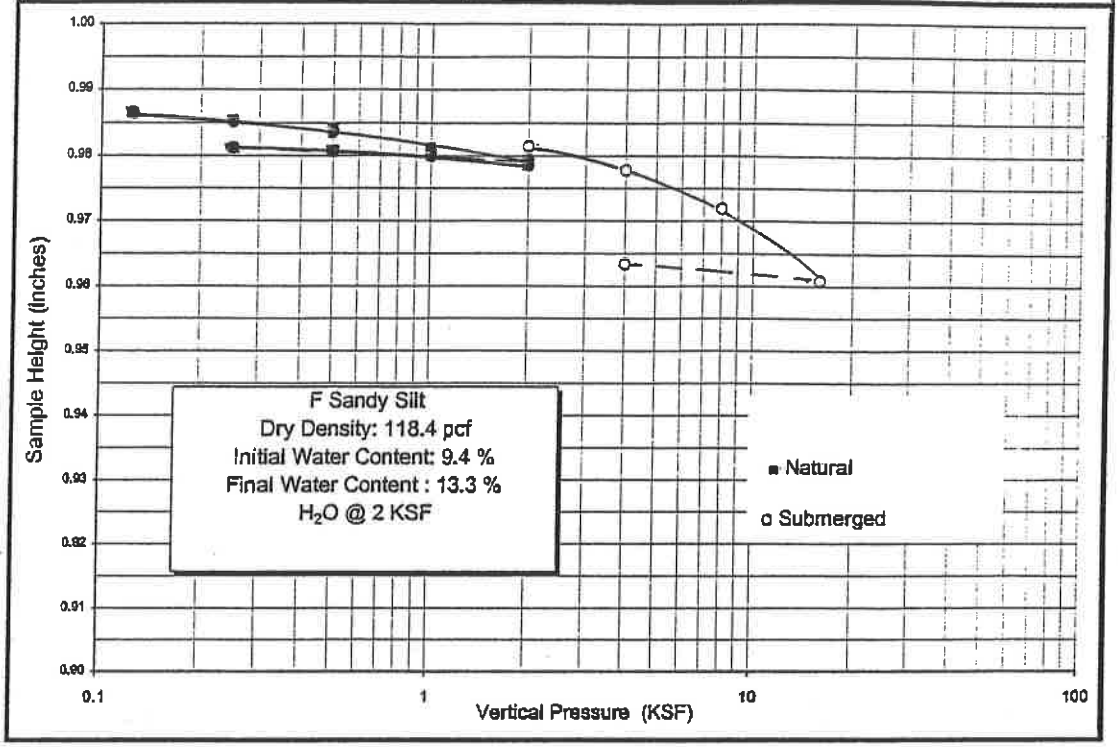
**TABLE B-1**
**Summary of Laboratory Test Data**

| Number | Depth (feet) | Material Type | Test Results | |
|---|---|---|---|---|
| B-2 | 3.0-5.0 | Silty Sandstone | Maximum Dry Density:<br>Optimum Moisture Content:<br>Expansion Index:<br>Expansion Potential:<br>Soluble Sulfate Content: | 125.0<br>10.5 %<br>28<br>Low<br>0.0297 |

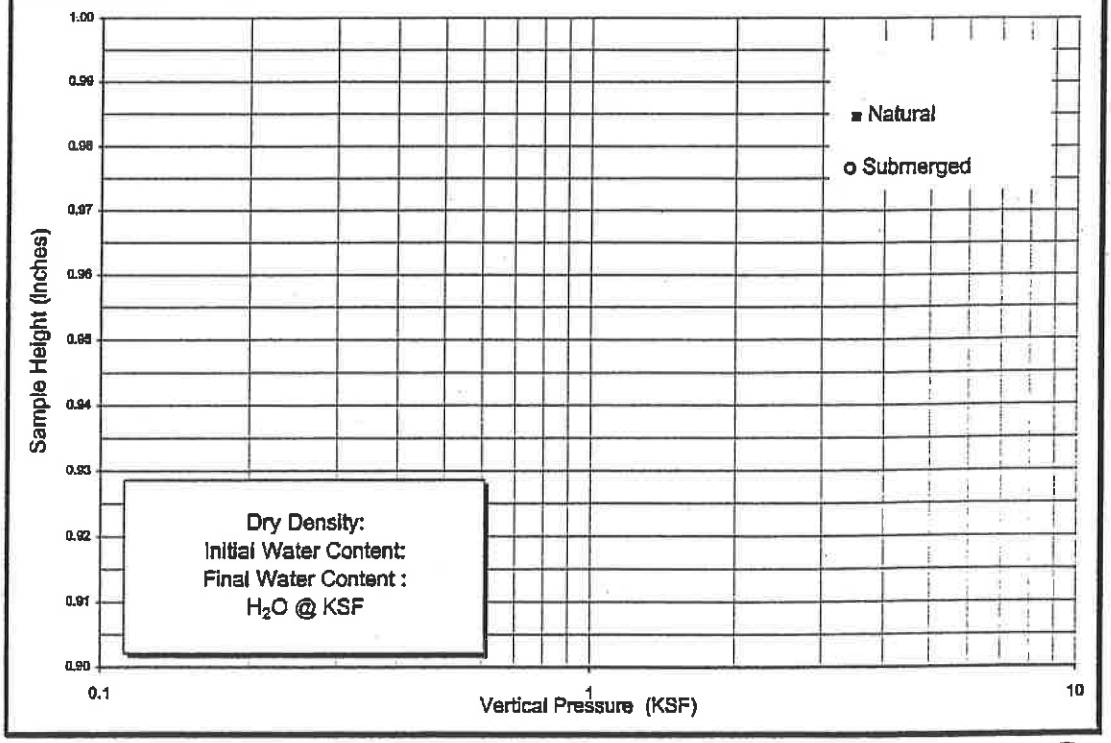
CONSOLIDATION TESTS

*Job No. 0-212-1022_Albus Keefe # 1115.00*

| Boring / Sample No. B2 | Depth: 3' | Date 09-06-01 |
|---|---|---|




| Boring / Sample No. | Depth: | Date |
|---|---|---|



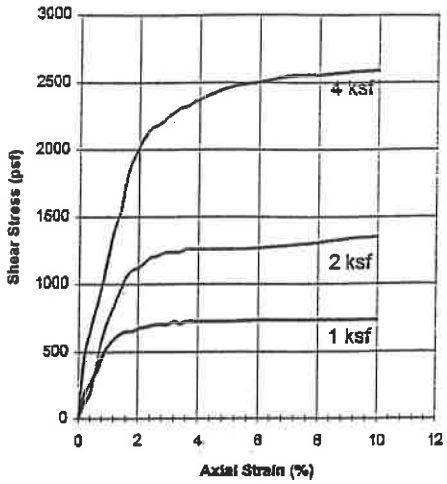

amec

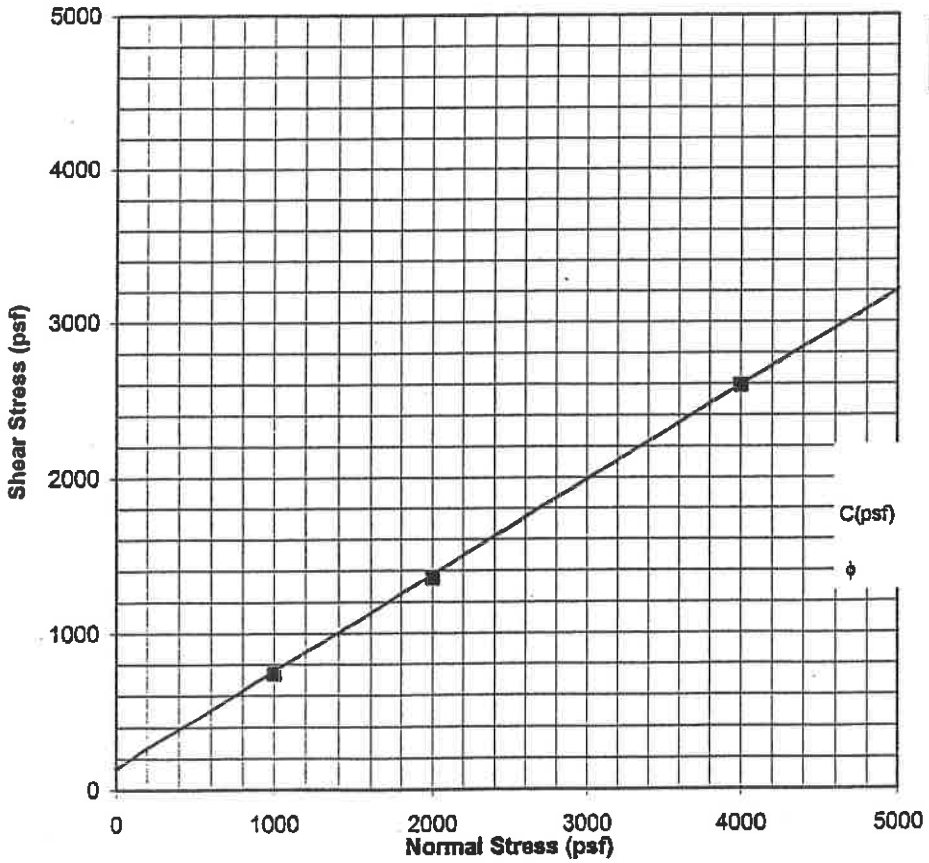
PLATE B–1

## DIRECT SHEAR TEST

| | | | |
|---|---|---|---|
| PROJECT: | Albus-Keefe #1137.00 | Date: | 09/07/2001 |
| JOB NO.: | 0-212-1022 | | |
| SAMPLE LOCATION: | B2 @ 3-5' | | |
| SAMPLE TYPE: | Remolded –Saturated | | |
| DESCRIPTION: | Silty F Sand | | |

| Specimen No. | | 1 | 2 | 3 |
|---|---|---|---|---|
| Normal Stress, | psf | 1000 | 2000 | 4000 |
| Peak Stress, | psf | 740 | 1350 | 2590 |
| Displacement, | in. | 0.100 | 0.249 | 0.227 |
| Ultimate Stress, | psf | 740 | 1350 | 2590 |
| Displacement, | in. | 0.250 | 0.250 | 0.250 |
| Initial Dry Density, | pcf | 112.5 | 112.5 | 112.5 |
| Initial Water Content, | % | 10.5 | 10.5 | 10.5 |
| Strain Rate, | in/min. | 0.0083 | 0.0083 | 0.0083 |




| | Peak | Ultimate |
|---|---|---|
| C(psf) | 150 ~~70~~ | 150 ~~70~~ |
| ϕ | 31 | 31 |

amec

PLATE B–2

# APPENDIX C:

## Hazard Assessments

# Phase I Environmental Site Assessment

MEARNS CONSULTING LLC
ENVIRONMENTAL CONSULTANTS
RISK ASSESSORS

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# Phase I Environmental Site Assessment
# 950 East 33rd Street
# Signal Hill, California 90755
# Volume I

## February 12, 2020

**Prepared for:**

**Venture Point Inc.**
**4685 MacArthur Court**
**Newport Beach, California 92660**

**Prepared by:**

**Mearns Consulting LLC**
**738 Ashland Avenue**
**Santa Monica, California 90405**

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February 12, 2020

***via email***

Venture Point Inc.
4685 MacArthur Court
Newport Beach, California 92660

RE: **Phase I Environmental Site Assessment**
**950 East 33rd Street, Signal Hill, California 90755**

Dear Messrs. Lee and Clement:

I am pleased to present this Phase I Environmental Site Assessment (Phase I ESA) for the 9.067-acre property located at 950 East 33rd Street in Signal Hill, California (the site) pursuant to the contract executed on January 21, 2020.

This Phase I ESA was conducted in accordance with ASTM guidance E 1527-13, ASTM Standard E 2600-15 and USEPA's All Appropriate Inquiries Standard (AAI Standard) as cited in the Code of Federal Regulations (40CFR 312) in order to evaluate whether historical and/or current site operations, and/or activities conducted at properties within a one-mile radius of the subject site, pose an adverse environmental impact to the site.

**Conclusions** –
The 9.067-acre site was an oil field since at least 1924; there are two previously abandoned oil wells onsite. Historically, the site had these two oil wells, aboveground storage tanks and oil field activities that visually impacted the land.

The Tesoro Service Station formerly located at the northwestern corner of the site has caused soil matrix, soil vapor and groundwater contamination.

Recognized Environmental Conditions onsite include: (1) the two previously abandoned oil wells; (2) the aboveground storage tanks and visible soil impacts in the 1928, 1947 and 1953 aerial photographs; and (3) the former Tesoro Service Station.

The adjacent contiguous property to the south is an oil field and historically had aboveground storage tanks. Adjacent properties to the north, east and west of the site are a mix of residential, commercial and industrial properties and oil fields including tank farms.

**Recommendations** -
Suspect building material samples should be collected and submitted for analysis of lead and asbestos. If lead-based paint and/or lead or asbestos containing building materials are present at concentrations that exceed threshold criteria, abatement of lead-based paint and lead or asbestos containing building materials by a licensed contractor and appropriate disposal of building materials should be performed prior to demolition of the buildings.

A Limited Phase II Environmental Site Assessment (Phase II ESA) should be performed on the approximately 9.067-acre site. The Phase II ESA should include soil matrix and soil vapor sampling adjacent to the former Tesoro

Service Station at the planned location of a new drive-thru restaurant, adjacent to the previously abandoned oil wells, at the planned location of an additional 11,500 square feet of retail, and at the planned location of 5,000 square feet of shopping.

Soil should be collected from 5-feet below ground surface (bgs) and 10-feet bgs or the depth of anticipated construction activities and submitted to a State of California certified laboratory for analysis of TPH-gasoline range, (TPH-g), TPH-diesel range (TPH-d), TPH-oil range (TPH-o), speciated carbon chains, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) including polycyclic aromatic hydrocarbons (PAHs) and total threshold limit concentration (TTLC) metals. Nested soil vapor probes should be installed at 5-feet and 10-feet bgs and sampled for VOCs.

A methane assessment of the site should be conducted pursuant to the City of Signal Hill Oil and Gas Code §16.24.080 and Property Development Guidelines to determine if methane concentrations warrant mitigation, i.e., installation of a vapor barrier and modified active vapor collection/diffusion system, during construction of any buildings.

A baseline human health risk assessment should be performed with the data generated during the proposed soil matrix and soil vapor investigations to determine whether residual concentrations of constituents detected in onsite soils and in soil vapor underlying the site pose a risk or an adverse impact to human health or the environment.

As the site contains abandoned oil wells redevelopment of the site will require City oversight pursuant to the City of Signal Hill Oil and Gas Code §16.24 and Property Development Guidelines.

A soil management plan should be prepared prior to any grading activities to be conducted onsite. This soil management plan should provide instructions for the contractor to implement in the event discolored or odiferous soils are discovered during any grading operations.

Should you have any questions or desire additional information, please do not hesitate to contact me at 310.403.1921.

Sincerely,

× Susan Mearns

Susan L. Mearns, Ph.D.

**Mearns Consulting LLC**

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## EXECUTIVE SUMMARY

At the request of Messrs. Tom Lee and John E. Clement and to comply with the City of Signal Hill Project Development Guide (June 20, 2017) Mearns Consulting LLC performed a Phase I Environmental Site Assessment (Phase I ESA) for the 9.067-acre property located at 950 East 33rd Street in Signal Hill, Los Angeles County, California 90755 (the site).

The main objective of the Phase I ESA is to develop an opinion regarding the potential for soil, soil vapor or ground water contamination resulting from present or past activities at the site or from known hazardous waste sites in the surrounding area that might result in significant environmental impairment of the site. This Phase I ESA included a review of environmental agency databases, historical documents; visual observation of the site and neighboring properties. This assessment was performed in accordance with ASTM Standard E 1527-13, ASTM Standard E 2600-15 and the USEPA All Appropriate Inquiries Standard (AAI Standard) as cited in Title 40 of the Code of Federal Regulations (40CFR 312). A summary of the findings and conclusions are listed below:

### Adjacent Properties

The adjacent properties include single family residential, commercial and industrial enterprises, and oil fields, including aboveground storage tanks. The adjacent properties are not recognized environmental conditions that could impact the site.

### Site Historical Reviews

### Agency and Environmental Database Review

The site name, Target, in addition to the addresses 950 East 33rd Street and 700 East 33rd Street, are listed on the federal and State databases searched, primarily due to the former Tesoro Service Station (GeoTracker – Target Store #T-292, ID. No. T0603701871).

CVS Pharmacy #17385 also is listed on federal and State databases at 950 East 33rd Street, Suite B.

There are numerous facilities listed on both federal and State databases searched within ¼-mile to 1-mile radius of the site. These facilities were determined not to be Recognized Environmental Conditions that could impact the site.

*Asbestos-Containing Building Materials*

Suspect asbestos containing building materials may be present due to the age of the original building. Prior to demolition it would be prudent to perform an asbestos building material survey and sample building materials identified as potentially containing asbestos to determine whether abatement of asbestos containing building materials by a licensed contractor was warranted.

*Lead-based Paint*

It is possible that lead-based paint was applied to the interior and to the exterior of the original building and subsequent renovations. Prior to demolition it would be prudent to collect and analyze paint chips to determine whether concentrations of lead-based paint warrant abatement prior to demolition.

### Conclusions

The 9.067-acre site was an oil field since at least 1924; there are two previously abandoned oil wells onsite. Historically, the site had these two oil wells, aboveground storage tanks and oil field activities that visually impacted the land.

The Tesoro Service Station formerly located at the northwestern corner of the site has caused soil matrix, soil vapor and groundwater contamination.

Recognized Environmental Conditions onsite include: (1) the two previously abandoned oil wells; (2) the aboveground storage tanks and visible soil impacts in the 1928, 1947 and 1953 aerial photographs; and (3) the former Tesoro Service Station.

The adjacent contiguous property to the south is an oil field and historically had aboveground storage tanks.

**Recommendations**

Suspect asbestos containing building materials and lead-based paint should be tested and appropriately abated by a licensed contractor prior to demolition of the building if warranted.

A Limited Phase II Environmental Site Assessment (Phase II ESA) should be performed on the site. The Phase II ESA should include soil matrix and soil vapor sampling adjacent to the former Tesoro Service Station at the planned location of a new drive-thru restaurant, adjacent to the previously abandoned oil wells, at the planned location of an additional 11,500 square feet of retail, and at the planned location of 5,000 square feet of shopping.

A methane assessment of the site should be conducted pursuant to the City of Signal Hill Oil and Gas Code §16.24.080 and Project Development Guide (June 20, 2017).

A baseline human health risk assessment should be performed with the data generated from the Phase II ESA.

As the site contains abandoned oil wells redevelopment of the site will require City oversight pursuant to the City of Signal Hill Oil and Gas Code §16.24 and Project Development Guide (June 20, 2017).

A soil management plan should be prepared prior to any grading activities to be conducted onsite. This soil management plan should provide instructions for the contractor to implement in the event discolored or odiferous soils are discovered during any grading operations.

## 1.0 INTRODUCTION

This report summarizes the results of a Phase I Environmental Site Assessment (Phase I ESA) for the 9.067-acre property located at 950 East 33rd Street in Signal Hill, Los Angeles County, California 90755 (the site).

### 1.1 Purpose and Scope

The purpose of this report was to identify potential environmental problems at the site and at adjacent and surrounding properties at the time of the reconnaissance. This assessment was conducted utilizing generally accepted Phase I ESA industry standards in accordance with the ASTM Standard Practice E 1527-13 and the U.S. Environmental Protection Agency (USEPA) All Appropriate Inquiries Standard (AAI Standard) as cited in Title 40 of the Code of Federal Regulations (40CFR 312). The scope of work completed for this assessment included the following:

1. Physical characteristics of the site through a review of available topographic, geologic, wetland, and groundwater data.

2. Site history through a review of reasonably ascertainable standard sources such as fire insurance maps, historic topographic maps, aerial photographs and published materials.

3. Current site conditions including observations regarding the presence or absence of hazardous substances/petroleum products; generation, treatment, storage, or disposal of hazardous, regulated, or medical wastes; electrical equipment that utilizes oils which potentially contain PCBs; and storage tanks (above or below ground).

4. Review of previous environmental investigations, if any.

5. Review of environmental liens, if any.

6. Usage of adjacent and nearby properties to identify the potential for environmental problems (if present and/or suspected) to migrate onto the site.

7. An evaluation of information contained within federal and state environmental databases and other local environmental records, within specific search distances.

# 2.0 SITE DESCRIPTION

## 2.1 Site Location and Description

The 9.067-acre site is located at 950 East 33rd Street in Signal Hill, California 90755 (Figures 1 and 2). The latitude of the site is 33° 48' 59.41" north and the longitude is 118° 10' 53.32" west.

The legal description of the 9.067-acre site is all real property located in the City of Signal Hill, being a portion of Lot 15, the American Colony Tract as shown on the Map filed in Book 19 at pages 89 and 50 of miscellaneous records in the office of the County Recorder of said County, described as follows.

Beginning at a point 15.00 feet west of the east line of said Lot 15, said point being south 44.00 feet and west 45.00 feet from the center line intersection of thirty-third Street and California Avenue, thence south 89° 49' 35" west, parallel with the centerline of thirty-third Street, said centerline also being the north line of said Lot 15, 1031.97 feet; thence south 0° 10' 25" east 195.94 feet, to a point that is 25.00 feet northerly, measured at right angles, from the northerly right-of-way line of San Diego Freeway. Thence south 80° 43' 59" east parallel with the northerly right-of-way line 185.03 feet; to the beginning of a tangent curve concave southwesterly, thence southeasterly along said curve central angle 55° 06' 48" and radius 215.00 feet, an arc distance of 206.91 feet to appoint on said curve with radial line through said point south 64° 22' 49" west; thence leaving said north 89° 49'N 35" east 89.61 feet; thence south 0° 10' 25" east 42.00 feet thence north 89° 49' 35" east 413.00 feet; thence south 0° 10' 25" east 220.21 feet, thence north 89° 54' 50" east 201. 98 feet to the east line of said Lot 15, said point also being the west line of California Avenue, 60 feet wide, thence north 0° 6' 10" west along the west line of said California Avenue 593.48 feet, thence north 45° 07' 48" west 21.20 feet to the point of beginning, containing 9.067 acres more or less.

The Los Angeles County Assessor Number for the site is 7148-005-028. The 9.067-acre site is occupied by a 135,911 square foot slab on grade commercial building constructed in 1971.

## 2.2 Physical Setting - *Topography*

The driveway, parking lots and loading docks are asphalt. The topography is fairly level. Drainage is by sheetflow towards East 33rd Street and California Avenue.

### *Geology and Hydrology*

The following information was obtained from the *Alternative Groundwater Remediation Work Plan, 950 East 33rd Street, Signal Hill, California, Target Store T-292, RWQCB File #I-11132* (Orion Environmental Inc., January 31, 2017). The site and surrounding area are composed of Holocene, Pleistocene, and Pliocene-age marine and alluvial sediments. The sediments include sand, silt, and clay deposits of varying thickness (California Department of Water Resources [CDWR], 2004).

Quaternary-aged alluvial aquifers in the area include the semi-perched, Bellflower, Gaspur, and Gardena aquifers. The Gage, Lynwood, and Silverado aquifers are semi-consolidated Pleistocene-age aquifers. The site monitoring wells are likely screened into the upper portion of the Gage aquifer. Pumping for groundwater production in the area is primarily from the Silverado aquifer (CDWR, 2004). Based on the variable depth of the Silverado aquifer, production wells in this aquifer are screened from 400 to 600 feet below ground surface. The site monitoring wells are screened from approximately 110 to 150 feet below ground surface.

The Newport-Inglewood fault zone trends in a northwest-southeasterly direction near the site. The Cherry Hill fault, which is part of the Newport-Inglewood fault zone, is approximately 1,800 feet to the south of the site (Orion, 2001b). The fault zone is apparently a barrier to groundwater movement (CDWR, 1961; CDWR, 2004; Orion, 2001b; Southern California Water Replenishment District [WRD], 2004).

The Wardlow-Airport fault trace has been mapped approximately 1,100 feet to the north of the site (Orion, 2001b). It apparently trends in a northwest-southeasterly direction, and may intersect the Cherry Hill fault northwest of the site. The Wardlow-Airport fault has been mapped only in the subsurface at a depth of approximately 6,500 feet (Orion, 2001b). It is not considered potentially active (City of Signal Hill, 1986).

The Cherry Hill fault escarpment forms part of the boundary between the West Coast Basin and the Central Basin, which are two sub basins of the Coastal Plain of Los Angeles County Groundwater Basin (CDWR, 1961; CDWR, 2004). The West Coast Basin lies on the southern, or down-dropped side of the fault, while the Central Basin is on the northern, or uplifted side, of the fault. Based on the basin boundary definition referenced in the West Coast Basin adjudication document and subsequent Water Replenishment District of Southern California (WRD) maps, the site lies within the Central Basin.

The Los Angeles River trends north-south approximately 1-mile west of the site. The Dominguez Channel trends circuitously north-south approximately 2-miles west of the site. The WRD purchases Colorado River water and injects the water into strategically located injection well barriers to prevent the intrusion of seawater into the production aquifers. The northern extent of the Dominguez Gap Barrier is approximately 2.5-miles southwest of the site. The Alamitos Barrier is a series of groundwater injection wells approximately 5-miles southeast of the site. The West Coast Basin Barrier is a series of groundwater injection wells approximately 10-miles west of the site.

Groundwater elevations have risen by an average of approximately 16-feet since Orion began groundwater monitoring in 1996. Since 2002, groundwater levels at the site have risen by more than 8-feet. The depth to groundwater in well MW-1, which is now screened below the water table, has risen from 141-feet below grade to 121-feet below grade. Rising groundwater elevations observed in monitoring wells at the site are consistent with regional data showing groundwater elevations increasing throughout the West Coast basin and portions of the Central basin. The increase appears to be due to a combination of groundwater injection at the Dominguez Gap barrier and reduced groundwater extraction within the West Coast basin.

Borehole drilling and lithologic logging at the site have shown that the vadose zone generally consists of fine- to medium-grained sand with occasional layers of silty sand and sandy silt. Groundwater is encountered in a sandy unit at a depth of approximately 120-feet below grade. The groundwater gradient is generally towards northeast. However, the hydraulic gradient (dh/dl) is relatively flat and estimated at 0.001 (feet per feet).

There were no visible indications during the site reconnaissance that the site is classified or could be classified as wetlands.

# 3.0 SITE RECONNAISSANCE

## 3.1 Current Site Use

The 9.067-acre site is accessible from the East 33rd Street and California Avenue. The 135,911 square foot retail store occupied by Target and CVS Pharmacy and surface level asphalt paved parking occupy the site. Susan L. Mearns, Ph.D. performed a visual reconnaissance of the site for potential environmental problems on February 6, 2020. The weather conditions were sunny and the temperature was approximately 48°F. Site photographs are included in Appendix A.

There are two previously abandoned oil wells onsite (1) Chevron U.S.A. Inc. "Field" 18, API 037-11543 and (2) Chevron U.S.A. "Field" 24, API 037-11549. According to the State of California Department of Conservation, Geologic Energy Management Division (CalGEM) oil wells files, "Field" 18 was reabandoned pursuant to division requirements in 2007 with plugging deficiencies at 4021'-3950', 1850'-1750' and 764'-660' noted; "Field" 24 was reabandoned pursuant to division requirements in 2007.

A Phase I ESA questionnaire was electronically submitted to the property owner on February 5, 2020; a copy will be added to the file when it is completed and submitted.

## 3.2 Adjacent Properties

The contiguous property to the south of the site is an oil field with three previously abandoned oil wells and four operating oil wells or water injection wells, in addition to settling basins. Single family residences are located to the east and north of the site. Oil fields including an operating unit and two aboveground storage tanks are located at the southeast corner of the intersection of East 33rd Street and California Avenue. Commercial and industrial enterprises are located north and west of the site. The I-405 Freeway is located south of the site.

## 3.3 Asbestos-Containing Materials

Most products made today do not contain asbestos. The few products made that still contain asbestos with friable fibers are required to be labeled. However, until the 1970s, many types of building products and insulation materials contained asbestos because asbestos fibers are strong, durable, resist heat, acids, and friction, i.e., they are virtually indestructible.

Asbestos was mined and used commercially in North America beginning in the late 1800s. Its use increased during World War II. It has been used in many industries; (1) the building and construction industry has used it for strengthening cement and plastics as well as for insulation, fireproofing, and sound absorption, (2) the shipbuilding industry has used asbestos to insulate boilers, steampipes, and hot water pipes, and (3) the automotive industry uses asbestos in vehicle brakeshoes and clutch pads. More than 5,000 products contain or have contained asbestos.

The U.S. Consumer Product Safety Commission (CPSC) banned the use of asbestos in wallboard patching compounds and gas fireplaces in the late 1970s because the asbestos fibers in these products could be released into the environment during use.

The USEPA issued a final rule banning most asbestos-containing products in 1989. This regulation was overturned by the Fifth Circuit Court of Appeals in New Orleans in 1991, allowing uses established prior to 1989. As a result of the Court's decision, the following specific asbestos-containing products remain banned: flooring felt, rollboard, and corrugated, commercial, or specialty paper. The regulation continues to ban the use of asbestos in products that have not historically contained asbestos, otherwise referred to

as "new uses" of asbestos (54FR 29460, 57FR11364, 58FR 58964, 59FR 33208).

Building materials that historically have contained asbestos include, but are not limited to: insulation of pipes and boilers, HVAC duct insulation, sprayed-in insulation, blown-in insulation, thermal paper products, electrical wiring insulation, acoustical plaster, decorative plaster, textured paint or coatings, fire blankets, fire curtains, fire doors, caulking, putties, joint compounds, adhesives, tapes, thermal taping compounds, high temperature gaskets, tiles, wallboard, siding, roofing shingles, roofing felt, base flashing, cement wallboard, cement siding, ceiling tiles and lay-in panels, asphalt floor tile, vinyl floor tile, vinyl sheet flooring, flooring backing, vinyl wall coverings, elevator brake shoes, elevator equipment panels, ductwork, electrical panel partitions, electrical cloth and cooling towers (USEPA 1993).
It is noteworthy that the presence of asbestos containing materials is not a health concern in and of itself; the materials must be in a degraded condition such that friable asbestos fibers are released and entrained in the breathing zone (USEPA 2017).

A survey of potentially asbestos containing building materials should be performed prior to demolition and suspect asbestos containing building materials should be removed by a licensed abatement contractor prior to building renovation and/or demolition of the existing building.

### 3.4 Lead-based Paint

Lead was added to paint to speed up drying, increase durability, maintain a fresh appearance, and resist moisture that causes corrosion. It is one of the main health and environmental hazards associated with paint.

Paint containing more than 0.05% (by weight of dried product) lead was banned for residential use in the United States in 1978 by the U.S. Consumer Product Safety Commission (16CFR 1303).

Lead-based paint is currently defined by the USEPA as paint with lead levels greater than or equal to 1.0 milligram per square centimeter (mg/cm), or more than 0.5% by weight. Lead-containing paint is currently defined by the USEPA as lead in new dried paint in excess of 90 parts per million (ppm) by weight (USEPA 2013).

Structures built before 1940 have a 87% chance of containing at least some lead paint, structures built between 1940 and 1960 have a 69% chance of containing lead paint, structures built between 1960 and 1978 have a 24% chance of containing lead paint, and structures built after 1978 are unlikely to have lead-based paint (USEPA 2013).

The routes of exposure from lead-based paint include ingestion of paint chips or soil onto which lead-based paint dust or chips have fallen, inhalation of lead-based paint dust and ingestion of lead-based paint dust after it has deposited on food (USEPA 2013). Children under the age of 6 years are particularly susceptible to adverse health effects due to the ingestion of lead.

It is noteworthy the exposure to lead in lead-based paint is from deteriorating paint that is flaking and peeling, during renovation and/or remodel activities that release lead-based paint dust into the atmosphere and from chewing or teething objects such as windowsills or ledges to which lead-based paint was applied (USEPA 2013).

It is possible that lead-based paint was applied to the interior and to the exterior of the existing building. Prior to any demolition activities it would be prudent to collect and analyze paint chips to determine

whether concentrations of lead-based paint require abatement prior to demolition.

### 3.5 Polychlorinated biphenyls (PCBs) in fluorescent light ballasts

PCBs are contained within the fluorescent light ballasts (FLB) capacitors and interior potting material of old, magnetic T12 lighting fixtures. The capacitor regulates the amount of electricity flowing into the lighting fixture, and the potting material insulates the FLB and reduces the "humming" noise. Because all PCB-containing FLBs currently in use have exceeded their designated life span, they are susceptible to leaking or rupturing. USEPA recommends all PCB-containing FLBs be removed from lighting fixtures.

PCB manufacturing in the United States was banned in 1976 due to the toxic effects of exposure to PCBs. The USEPA phased out the processing and use of PCBs, except in totally enclosed equipment in 1979. Some fluorescent lights installed before the 1976 ban or after 1979 may contain PCBs (40CFR 761.62 and 40CFR 761.125 (c)(1)).

The following criteria are provided to help identify FLBs that may contain PCBs: (1) FLBs manufactured before July 1, 1979 may contain PCBs, (2) FLBs manufactured between July 1, 1979 and July 1, 1998 that do not contain PCBs must be labeled "No PCBs" (3) if an FLB is not labeled "No PCBs," it is best to assume it contains PCBs unless it is known to be manufactured after 1979, and (4) FLBs manufactured after 1998 are not required to be labeled (USEPA 2017).

Care should be exercised during demolition activities and used fluorescent light bulbs should be disposed appropriately.

# 4.0 SITE HISTORICAL REVIEW

## 4.1 Overview

The history of the site was drawn from a review of historical aerial photographs, fire insurance maps, topographic maps and databases obtained from Environmental Data Resources, Inc. (EDR), from CalGEM, from City of Signal Hill Building files, and from the site reconnaissance.

The site was an oil field until the existing building was constructed in 1970. There are two previously abandoned oil wells onsite.

## 4.2 City of Signal Hill Records

The City of Signal Hill Building Department has records for the site dating to 1971 when a Certificate of Occupancy (CO) was issued for Van de Kamp's, a retail bakery. A 1974 CO was issued for Dorman's Inc., doing business as (dba) Gemco Automotive Center #527. A 1987 CO was issued for Target Stores. It appears additions to the Target Store were constructed in 1998 and in 2007. A permit to fence the former Tesoro Service Station during remediation was obtained by Orion Environmental Inc. in 2005. Copies of the City records are included as Appendix B.

## 4.3 Historic Topographic Maps

Historic topographic maps were reviewed for information regarding past uses of the site. Historical topographs were available and provided by EDR for the years: 1896, 1899, 1902, 1925, 1942, 1943, 1947, 1949, 1964, 1972, 1981 and 2012. Oil wells are depicted onsite on the 1943, 1947 and 1949. Aboveground storage tanks were depicted onsite in 1947 and 1964. The site in its current configuration is shown on the 1972 and 1981 historic maps. The site appears to be undeveloped land from 1896 through 1925. Copies of these topographic maps are included in Appendix C.

## 4.4 Sanborn Fire Insurance Maps

Sanborn fire insurance maps were not found for the site. A copy of this determination is included as Appendix D.

## 4.5 Aerial Photographs

Historic aerial photographs were reviewed for information regarding past uses of the site. Historical aerial photographs were available and provided by EDR for the years: 1928, 1947, 1953, 1963, 1977, 1979, 1981, 1989, 1994, 2002, 2005, 2009, 2012 and 2016. Copies of these aerial photographs are included as Appendix E.

The 1928 aerial photograph shows Chevron U.S.A. Inc. "Field" 18, API 037-11543, a few structures and oil field activity, including discolored soil, in the northwestern corner of the site later developed as the Tesoro Service Station. The remainder of the 1928 aerial shows undeveloped land.

The 1947 aerial photograph shows the same structures, discolored soil and aboveground storage tanks in the northwestern corner of the site later developed as the Tesoro Service Station. What appears as aboveground storage tanks also are visible along the southern property boundary of the site.

The 1953 aerial photograph shows the same structures and aboveground storage tanks in the northwest corner of the site later developed as the Tesoro Service Station, although the soil no longer appears discolored. The apparent aboveground storage tanks along the southern property boundary are no longer visible, instead a structure along the southeastern corner of the site is shown.

The 1963 aerial photograph shows undeveloped land where the Tesoro Service Station was later developed; the aboveground storage tanks and structures are no longer visible. The structure on the southeastern corner of the site still is visible.

The 1977, 1979, 1981, 1989 and 1994 aerial photographs show the site developed with the original building and surface level asphalt paved parking. The Tesoro Service Station is visible in the northwestern corner of the site.

The 2002 aerial photograph shows the building with the 1998 addition, the Tesoro Service Station is no longer visible. The 2005 aerial photograph shows the building with the 1998 addition, the northwestern corner of the site formerly occupied by the Tesoro Service Station now appears to have lateral piping, and aboveground storage tanks, possibly the soil vapor extraction system Orion Environmental, Inc. operated.

The 2009 aerial photograph shows the building with the 2007 addition; the northwestern corner of the site formerly occupied by the Tesoro Service Station appears unchanged from the 2005 aerial.

The 2012 and 2016 aerial photographs show the site in its current configuration, the northwestern corner of the site appears as a parking lot.

### 4.6 CalGEM Well Records

A request for well records was made to the State of California Department of Conservation, Geology Energy Management Division (CalGEM). Oil well records for the two previously abandoned oil wells located onsite are included as Appendix F.

*Chevron U.S.A., Inc. "Field" 18, API 037-11543* – was originally drilled in 1926 and redrilled in 1930. The well was abandoned to CalGEM requirements on March 4, 1940. The casing record in 1939 was 13" casing cemented at 788'; 8 ¼" casing cemented at 4230'; water shut off approved; the 5 ¾" casing was cemented at 6210', water shut off approved, perforations 4880'-4870', 4830'-4785', 4770'-4745', 4740'-4730', 4650'-4610', 4525'-4485', 4435'-4405', 4350'-4230', pulled from 4051'; the 4 ¾" perforated the liner 6120'-6366'; total depth present hole 7483'; plugged with cement 7483'-6828'; 6500'-6442'; 6366'-6190'; 6120'-6106'; 4848'-4776'; 4550'-4385'; 4375'-4185'; 4048'-4021 and 670'-627'; junk (1st hole); the 6 ¼" casing was landed at 4529', perforated 4273'-4529', pulled from 4273'; total depth (1st hole) 4529'; plugged with cement 4529'-4280'.

"Field" 18 was reabandoned in 2007 by AllenCo. CalGEM noted three deficiencies: (1) plug from 4021'-3950' not placed; (2) unable to cavity shot at 1850' or plug 1850'-1750'; unable to place plug from 764'-660'. CalGEM stated the requirements of CalGEM could NOT be met and stated "Field" 18 was not to be built over without further consideration. The casing record in 2007 was 13" cement at 788'; 8 ¼" casing cemented at 4230' water shut off, shot and pulled from 764'; 5 ¾" casing cemented at 6210' water shut off, cut and pulled 4730' and 4870', perforated at intervals 4830'-4230', shot 4170', 4100' and 4051', pulled from 4051', junk below 4828' and 4051'; 4 ¾" ID casing 6120'-6360', perforated 6120'-6366'. Total Depth (present hole) 7483', Plugged with cement 7483'-6828', 6500'-6106', 4848'-4776', 4560'-4385', 4375'-4185', 4048'-4021', 627'-5'.

CalGEM's Construction Site Review Program reviewed the well file for "Field" 18 in April 21, 1998, May 6, 1998, February 7, 2007 and May 10, 2007. CalGEM stated no further work was required for "Field" 18 in their April 21, 1998 correspondence as "Field" 18 was located approximately 170-feet from

the proposed building expansion in the parking lot. CalGEM stated in their May 6, 1998 correspondence "Field" 18 was not abandoned to current standards but no additional well work is required. CalGEM stated in their February 7, 2007 correspondence that "Field" 18 must be abandoned or reabandoned to current standards or equivalent standards, a bond securing the work must be filed with CalGEM, a gas vent must be placed on "Field" 18 after an approved methane gas leak test of the well head. The May 10, 2007 CalGEM correspondence stated it supersedes the February 7, 2007 review, and stated "Field" 18 was not abandoned to current standards but no additional work was required, a well vent system is recommended and an approved methane gas leak test was performed on April 5, 2007. Copies of these letters are included as Appendix E.

*Chevron U.S.A., Inc. "Field" 24, API 037-11549* – was originally drilled in 1944 and abandoned to CalGEM requirements in 1947. The record states junk (1st hole) drill collar and bit 3792'-3939', total depth 3939', plugged with cement 3939'-3792'; 10 ¾" casing cemented at 20'; 5 ½" cement at 5050', cut and pulled 730', four test holes at 4242', water shut off, perforated at 4835'-4770', 4725'-4610', 4300'-4255', bad 3686'-3702'; junk (in hole) 2 ½" tubing 4100'-4763'; total depth (present hole) 5047', plugged with cement 3893-3864' and 3730'-3662'. The hole could not be cleaned out below 3893'.

"Field" 24 was reabandoned in 2007 by AllenCo. CalGEM approved the reabandonment. The casing record in 2007 was 10 ¾" cement at 20'; 5 ½" cement at 5050', cut and pulled 727' and 1845', perforated at 4242', water shut off, perforated at 4255'-4300', at intervals 4470'-4825'. Junk below 4100'. Total Depth 5050'. Plugged with cement 3892'-3864', 3730'-3600', 1845'-1591', 740'-588' and 100'-6'.

CalGEM's Construction Site Review Program reviewed the well file for "Field" 24 in April 21, 1998, May 6, 1998, February 7, 2007 and May 10, 2007. CalGEM stated no further work was required for "Field" 24 in their April 21, 1998 correspondence as "Field" 24 was located under an existing structure. CalGEM stated in their May 6, 1998 correspondence "Field" 24 was not abandoned to current standards but no additional well work is required. CalGEM stated in their February 7, 2007 correspondence that "Field" 24 must be abandoned or reabandoned to current standards or equivalent standards, a bond securing the work must be filed with CalGEM, a gas vent must be placed on "Field" 18 after an approved methane gas leak test of the well head. The May 10, 2007 CalGEM correspondence stated it supersedes the February 7, 2007 review, and stated "Field" 24 was not abandoned to current standards but no additional work was required, a well vent system is recommended and an approved methane gas leak test was performed on April 5, 2007. Copies of these letters are included as Appendix E.

### 4.7 Tesoro Service Station

The following information is from *Remedial Action Plan for Impacted Soil, 950 East 33rd Street, Signal Hill, California, Target T-Store 292, RWQCB File No. I-11132* (Orion Environmental, Inc. August 28, 2006). The northwestern corner of the site was originally developed as a service station between 1970 and 1974. Three 12,000-gallon gasoline underground storage tanks (USTs) and one 1,500-gallon waste oil UST were removed from the site in November 1991. Subsequent investigations detected gasoline-impacted soil at the site. Soil is impacted by total petroleum hydrocarbons as gasoline (TPHg); benzene, toluene, ethylbenzene, and xylenes (BTEX); and oxygenates including methyl tert-butyl ether (MTBE) and tert-butyl alcohol (TBA).

The area of impacted soil was delineated by soil investigations conducted between February 1993 and September 1994. The initial soil investigation was followed up with two step-out soil boring investigations to define where TPHg and benzene concentrations were above 100 milligrams per

kilogram (mg/kg) and 0.3 mg/kg, respectively (McLaren/Hart, 1994). The impacted unsaturated zone soil spans an approximately 100-foot-diameter circular area, to a maximum depth of approximately 120 feet below grade.

One groundwater monitoring well (designated as well MW-1) was installed onsite in February 1993. The depth to groundwater measured in February 1993 was approximately 141 feet below grade. During the May 1995 groundwater monitoring event, groundwater was encountered approximately 131 feet below grade and approximately 3 feet of free product was observed in the monitoring well (Orion, 1995).

In May 1996, a site assessment was conducted to investigate the extent of gasoline-impacted groundwater and free product detected in well MW-1. Three groundwater wells (MW-2 through MW-4) were installed. In 1996 and 1997, a free product removal program was conducted in well MW-1 and approximately 5 gallons of free product was removed.

Between 1997 and 2001, wells MW-5 through MW-8 were installed to evaluate offsite downgradient groundwater conditions. The well installations are described in several reports (Orion, 1996, 1997, 2000, 2001a).

Free product was detected again in well MW-1 intermittently between October 2004 and February 2005. Approximately 1 gallon of free product was removed until free product was no longer detected in March 2005.

In June 2005, wells M-1A and MW-9 were installed on site. Groundwater well MW-1A was installed to replace well M-1 whose screen interval was submerged beneath the water table due to rapidly rising groundwater levels at the site. Downgradient well MW-9 was installed to assess and monitor the downgradient extent of impacted groundwater at the former service garage. Groundwater analytical results for downgradient well MW-9 indicated the presence of petroleum hydrocarbon-impacted groundwater beneath the former service garage.

Groundwater monitoring well MW-10 was installed in February 2006 to assess the extent of gasoline-impacted groundwater directly south of the former service garage.

Groundwater analytical results for well MW-10 confirmed the presence of low TPHg, BTEX, MTBE, and TBA concentrations at the property boundary.

The site is listed on GeoTracker as Target Store #T-292 (T0603701871) and indicates 57,000 pounds of soil vapor (presumably volatile organic compounds) have been removed using soil vapor extraction from July 1, 2007 to September 13, 2016 and 71 gallons of free product have been removed from August 11, 2005 to September 6, 2018.

### 4.8 City Directory

EDR's City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. For each address, the directory lists the name of the corresponding occupant at five year intervals. Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1972 through 2013. A copy of the search results is included as Appendix G.

Target is listed at the property address in 2006, 2010 and 2014. Gemco is listed as a watch repair and department store at the property address in 1975, 1980 and 1985. King Bear Auto Service is listed at the property address in 1985. Dons tire center is listed at the property address in 1980.

The address 930 East 33rd Street had the following notable listings: Hunter lab, Haynes auto washer in 1924 and Dow lab in 1929.

### 4.9 Environmental Lien and AUL Search

EDR's Environmental Lien and AUL Search Report provides results from a search of available current land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls.

A network of professional, trained researchers, following established procedures, uses client supplied address information to:

- search for parcel information and/or legal description;
- search for ownership information;
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc.;
- access a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved, and description); and
- provide a copy of the deed or cite documents reviewed.

The EDR Environmental Lien Search found no environmental liens or other activity and use limitations (AUL) on the site. A copy of the search results is included as Appendix H.

## 5.0 AGENCY AND ENVIRONMENTAL DATABASE REVIEW

The databases discussed in this section, provided by Environmental Data Resources, Inc., (EDR), were reviewed for information regarding documented and/or suspected releases of regulated hazardous substances and/or petroleum products on or near the site. Mearns Consulting LLC also reviewed the "orphan" listings within the database report, cross-referencing available address information and facility names. Unmapped facilities are listings that cannot be plotted with confidence, but are identified as being located within the general area of the site based on the partial street address, city name, or zip code. In general, a listing cannot be mapped due to inaccurate or incomplete address information in the database that was supplied by the corresponding regulatory agency. Any listings from the unmapped summary which were identified by Susan L. Mearns, Ph.D. as a result of the area reconnaissance and/or cross-referencing to mapped listings are included in the corresponding database discussion within this section.

The following USEPA lists were reviewed to search for facilities within the area of the site:

1. National Priority List (NPL);
2. Delisted NPL;
3. Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) List;
4. CERCLIS No Further Remedial Action Planned (NFRAP) List;
5. Resource Conservation and Recovery Act (RCRA) Corrective Action Sites (CORRACTS) List;
6. RCRA Treatment Storage and Disposal Facilities (TSD) List;
7. RCRA Hazardous Waste Generators List;
8. Emergency Response Notification System (ERNS) List

NPL and RCRA CORRACTS within 1-mile of the site; RCRA-TSDF and CERCLIS facilities within ½-mile of the site; RCRA generators within ¼-mile of the site; and US Brownfields within ½-mile of the site are listed below and/or in Appendix I.

The site address was listed on several federal, State, local and/or tribal databases searched.

### 5.1 Federal Agencies

*National Priorities Listing (NPL) – Environmental Protection Agency Superfund List*
The NPL is a subset of the CERCLIS and lists facilities that are ranked as high priority for cleanup under the Superfund program. Source: NPL database updated October 25, 2019.

No facilities were listed within ½-mile radius of the site on the Federal NPL.

*Federal RCRA CORRACTS facilities list* - CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

*Federal RCRA generators list* - RCRA-LQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on facilities which generate, transport, store, treat and/or dispose of hazardous waste as defined by the RCRA. Large quantity generators (LQGs) generate over 1,000 kg of hazardous waste, or over 1 kg of acutely hazardous waste per month.

*Federal RCRA generators list* - RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the RCRA of 1976 and the HSWA of 1984. The database includes selective information on facilities which generate, transport, store, treat and/or dispose of hazardous waste as defined by RCRA. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

### 5.2 State and tribal Agencies

The following state and tribal lists and/or files were reviewed to search for facilities within the area of the site:

1. State and tribal equivalent NPL List;
2. State and tribal equivalent CERCLIS List;
3. State and tribal Solid Waste Facilities/ Landfill Sites (SWF/LF) List;
4. State and tribal Leaking Underground Storage Tank (LUST) Sites List;
5. State and tribal Registered Storage Tank (UST) List;
6. State and tribal Voluntary Cleanup Sites (VCP) List;
7. Local Brownfields List;
8. Local Lists of Landfill/Solid Waste Disposal Sites;
9. Local Lists of Hazardous Waste/Contaminated Sites;
10. Local Land Records;
11. Records of Emergency Release Reports; and
12. EDR high Risk Historical Records

Facilities on these lists are discussed in Appendix I.

*State- and tribal - equivalent CERCLIS CA ENVIROSTOR*: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifies sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

*State and tribal leaking storage tank lists (CA LUST)* – Leaking Underground Storage Tank (LUST) sites included in GeoTracker. A review of the CA LUST list, as provided by EDR, has revealed that there are 6 CA LUST facilities within approximately 0.5 miles of the site; one of these LUST facilities is at equal or higher elevation than the site.

*California Statewide Spills, Leaks, Investigations and Cleanups (SLIC) Database* - The SLIC listings include unauthorized discharges from spills and leaks other than underground storage tanks or other regulated sites. Source: State Water Resource Control Board, last updated March 13, 2017.

*State and tribal registered Storage Tank (UST/AST) Database* - The UST list is provided by the State of California Water Resources Control Board's Hazardous Substance Storage Container Database, last updated March 12, 2017. The AST list was last updated July 6, 2016. The UST/AST list contains registered USTs and ASTs. USTs are regulated under Subtitle I of RCRA.

## 5.3 Local Agencies

*Regional Water Quality Control Board*
Mearns Consulting LLC accessed the SWRCB's GeoTracker database. The site address is listed on GeoTracker as previously discussed. A copy of the low threat closure program summary is included in Appendix J.

*California Department of Toxic Substances Control*
Mearns Consulting LLC accessed the State of California Department of Toxic Substances Control (DTSC) EnviroStor database. The database does not have any records for the site address.

*South Coast Air Quality Management District*
Mearns Consulting LLC conducted an online search of the South Coast Air Quality Management District (SCAQMD) records. The SCAQMD does not have any records for the site address.

# MAPPED SITES SUMMARY

Target Property Address:
930 E 33RD STREET
SIGNAL HILL, CA 90807

Click on Map ID to see full detail.

| MAP ID | SITE NAME | ADDRESS | DATABASE ACRONYMS | RELATIVE ELEVATION | DIST (ft. & mi.) DIRECTION |
|---|---|---|---|---|---|
| A1 | TARGET STORE T2319 | 950 E 33RD ST | RCRA-LQG | Lower | 1 ft. |
| A2 | TESORO-TARGET STORE- | 950 EAST 33RD STREET | HAZNET | Lower | 1 ft. |
| A3 | TARGET | 950 E 33RD ST | HAZNET | Higher | 1 ft. |
| A4 | TARGET | 950 E 33RD ST | HAZNET | Higher | 1 ft. |
| A5 | CVS PHARMACY #17385 | 950 E 33RD ST STE B | HAZNET | Lower | 1 ft. |
| A6 | TESORO | 950 EAST 33RD STREET | FINDS, ECHO | Lower | 1 ft. |
| A7 | TESORO | 950 E 33RD ST | HAZNET | Lower | 1 ft. |
| A8 | CVS PHARMACY #17385 | 950 E 33RD ST STE B | CERS HAZ WASTE | Lower | 1 ft. |
| A9 | TARGET T2319 | 950 E 033RD ST | CERS HAZ WASTE, CERS | Higher | 1 ft. |
| A10 | TESORO PETROLEUM CO | 950 E 33RD ST | HAZNET | Lower | 1 ft. |
| A11 | TESORO | 950 E 33RD ST | HAZNET | Lower | 1 ft. |
| A12 | TARGET 292A | 950 E 33RD ST | HAZNET | Higher | 1 ft. |
| A13 | TESORO ENVIRONMENTAL | 950 E 33RD ST | HAZNET | Lower | 1 ft. |
| A14 | TARGET T 2319 - SIGN | 950 33RD | CIWQS | Lower | 1 ft. |
| A15 | TARGET STORE #T-292 | 950 033RD ST E | LUST, Cortese, HIST CORTESE, CERS | Lower | 1 ft. |
| A16 | TESORO | 950 EAST 33RD STREET | HAZNET | Lower | 1 ft. |
| A17 | 1X TARGET #292 | 950 E 33RD STREET | HAZNET | Lower | 1 ft. |
| A18 | TESORO | 950 E 33RD ST | HAZNET | Lower | 1 ft. |
| A19 | | 950 EAST 33RD STREET | CHMIRS | Lower | 1 ft. |
| A20 | TESORO PETROLEUM CO | 950 E 33RD ST | HAZNET | Lower | 1 ft. |
| A21 | TARGET STORE T2319 | 950 E 33RD ST | FINDS, ECHO | Lower | 1 ft. |
| A22 | TARGET STORE T2319 | 950 E 33RD ST | HAZNET | Lower | 1 ft. |
| A23 | TESORO ENVIRONMENTAL | 950 E 33RD ST | HAZNET | Lower | 1 ft. |
| A24 | TESORO | 950 EAST 33RD STREET | RCRA NonGen / NLR | Lower | 1 ft. |
| A25 | TARGET STORE T-2319 | 950 E 33RD ST | HAZNET | Higher | 1 ft. |
| A26 | CVS PHARMACY #17385 | 950 E 33RD ST STE B | RCRA-VSQG, FINDS, ECHO | Lower | 1 ft. |
| 27 | | 32ND AND CALIFORNIA | CHMIRS | Higher | 5, 0.001, |
| B28 | KING BEAR AUTOMOTIVE | 750 E 33RD ST | RCRA-SQG, FINDS, ECHO, HAZNET | Higher | 10, 0.002, WNW |
| B29 | TESORO GASOLINE DIGA | 700 E 33 ST | RCRA-SQG, LUST, FINDS, ECHO, HIST CORTESE | Higher | 11, 0.002, WNW |
| B30 | ARCO | 700 E 33RD ST | SWEEPS UST, HIST UST | Higher | 11, 0.002, WNW |
| B31 | TARGET STORES INC. | 700 33RD ST | SWEEPS UST | Higher | 11, 0.002, WNW |
| B32 | FILE ONLY - CALIF TA | 0700 E 33RD ST | UST | Higher | 11, 0.002, WNW |
| B33 | TARGET STORES INCORP | 700 E 33RD ST | CA FID UST | Higher | 11, 0.002, WNW |
| B34 | BILL S AUTO CONSTRUC | 3301 LIME AVE | EDR Hist Auto | Higher | 35, 0.007, WNW |
| 35 | FIELDS LEASE NORTH | 3199 CALIFORNIA AVE | UST | Higher | 36, 0.007, SSE |
| A36 | EMERALD METAL PRODUC | 801 E 33RD ST | DRYCLEANERS, LOS ANGELES CO. HMS | Lower | 78, 0.015, NW |
| 37 | | 3280 CALIFORNIA AVE | AST | Lower | 96, 0.018, ENE |
| B38 | SCHULTZ MECHANICAL C | 3323 LIME AVE | RCRA NonGen / NLR | Higher | 193, 0.037, WNW |
| B39 | VICTORY OIL CO | 3311 OLIVE AVE | UST, SWEEPS UST | Lower | 216, 0.041, NW |

## MAPPED SITES SUMMARY

Target Property Address:
930 E 33RD STREET
SIGNAL HILL, CA 90807

Click on Map ID to see full detail.

| MAP ID | SITE NAME | ADDRESS | DATABASE ACRONYMS | RELATIVE ELEVATION | DIST (ft. & mi.) DIRECTION |
|---|---|---|---|---|---|
| C40 | SHELLY MOTORS | 3300 ATLANTIC AVE | UST | Higher | 252, 0.048, WNW |
| C41 | ODELL S SUNSET SERVI | 3300 ATLANTIC AVE | EDR Hist Auto | Higher | 252, 0.048, WNW |
| C42 | PALMER IMPORTS MTRS | 3300 ATLANTIC AVE | RCRA-SQG, FINDS, ECHO, HAZNET | Higher | 252, 0.048, WNW |
| 43 | BOOTH G E | 3261 ATLANTIC AVE | EDR Hist Auto | Higher | 288, 0.055, West |
| D44 | ALVIN'S AUTO BODY AN | 3333 OLIVE AVE | CERS HAZ WASTE, HAZNET, CERS | Lower | 291, 0.055, NW |
| D45 | MARK'S MOBILE TRUCK | 3346 OLIVE AVE | RCRA NonGen / NLR | Lower | 356, 0.067, NW |
| D46 | TRICO INDUSTRY | 3356 LIME AVE | CPS-SLIC, CERS | Higher | 364, 0.069, NW |
| D47 | TRICO INDUSTRIES | 3356 LIME AVE | CPS-SLIC, UST, CERS HAZ WASTE, SWEEPS UST, EMI, LA... | Higher | 364, 0.069, NW |
| E48 | WEATHERFORD ARTIFICI | 3356 LIME AVENUE | RCRA NonGen / NLR, FINDS, ECHO | Higher | 367, 0.070, NW |
| D49 | MARKS MOBILE TRUCK S | 3348 OLIVE AVE | CERS HAZ WASTE, CERS TANKS, CHMIRS, CERS | Lower | 394, 0.075, NNW |
| D50 | BIG TRUCKS INC | 3348 OLIVE ST | RCRA-SQG, FINDS, ECHO | Lower | 394, 0.075, NNW |
| E51 | KIROG S AUTO REPAIR | 3360 ATLANTIC AVE | CERS HAZ WASTE, CHMIRS, CERS | Higher | 526, 0.100, WNW |
| E52 | KIRO AUTO REPAIR AND | 3360 ATLANTIC AVE | RCRA NonGen / NLR | Higher | 526, 0.100, WNW |
| E53 | SKILLMAN S AUTO SERV | 3360 ATLANTIC AVE | EDR Hist Auto | Higher | 526, 0.100, WNW |
| F54 | RINGLER S UPTOWN LAU | 3377 CALIFORNIA AV | EDR Hist Cleaner | Lower | 530, 0.100, NNE |
| E55 | FOASBERG LAUNDRY | 640 E WARDLOW RD | EDR Hist Cleaner | Higher | 561, 0.106, NW |
| E56 | CHAI FIVE LAUNDRY SE | 640 E WARDLOW RD | DRYCLEANERS, HAZNET | Higher | 561, 0.106, NW |
| E57 | CHAI FIVE LAUNDRY SE | 640 E WARDLOW RD | DRYCLEANERS | Higher | 561, 0.106, NW |
| E58 | CHAI FIVE LAUNDRY SE | 640 E WARDLOW RD | RCRA NonGen / NLR | Higher | 561, 0.106, NW |
| E59 | FOASBERG LAUNDRY & C | 640 E WARDLOW RD | UST, CERS HAZ WASTE, SWEEPS UST, HIST UST, CA FID... | Higher | 561, 0.106, NW |
| F60 | | 3381 MYRTLE AVE | UST | Lower | 569, 0.108, North |
| F61 | LONG BEACH OFFICE | 3381 MYRTLE AVE | SWEEPS UST, CA FID UST | Lower | 569, 0.108, North |
| G62 | DOLLAR TREE #04313 | 3075 CALIFORNIA AVE | RCRA NonGen / NLR | Higher | 581, 0.110, SSE |
| G63 | DOLLAR TREE #04313 | 3075 CALIFORNIA AVE | CERS HAZ WASTE, HAZNET, CERS | Higher | 581, 0.110, SSE |
| F64 | ADAMS MUFFLERS | 1000 E WARDLOW RD | UST | Lower | 582, 0.110, NNE |
| E65 | LSENBERG E F | 3396 ATLANTIC AVE | EDR Hist Auto | Higher | 599, 0.113, NW |
| E66 | RAPID GAS | 3396 ATLANTIC AVE | LUST, Cortese, ENF, HIST CORTESE, CERS | Higher | 599, 0.113, NW |
| E67 | SHELL | 3396 ATLANTIC AVE | HIST UST | Higher | 599, 0.113, NW |
| E68 | SHELL | 3396 ATLANTIC AVE | CERS HAZ WASTE, SWEEPS UST, CERS TANKS, CA FID... | Higher | 599, 0.113, NW |
| E69 | UNITED #115 | 3396 ATLANTIC AVE | UST | Higher | 599, 0.113, NW |
| E70 | APRO LLC DBA UNITED | 3396 ATLANTIC AVE | RCRA NonGen / NLR | Higher | 599, 0.113, NW |
| H71 | | 3385 ATLANTIC AVE | UST | Higher | 608, 0.115, WNW |
| E72 | BING S AUTO SERVICE | 702 E WARDLOW AV | EDR Hist Auto | Higher | 631, 0.120, NW |
| E73 | BING'S AUTO SERVICE | 0702 E WARDLOW RD | UST | Higher | 631, 0.120, NW |
| E74 | BINGS AUTO SERVICE | 702 E WARDLOW | RCRA-SQG, SWEEPS UST, HIST UST, CA FID UST, FINDS,... | Higher | 631, 0.120, NW |
| F75 | | 920 EAST WARDLOW RD | RCRA NonGen / NLR | Lower | 641, 0.121, North |
| 76 | | 0816 E WARDLOW RD | UST | Lower | 681, 0.129, NNW |
| H77 | FORMER TIDEWATER SER | 3395 ATLANTIC AVE | LUST, CERS | Higher | 694, 0.131, WNW |
| H78 | RICHCOLOR PHOTO AND | 3395 ATLANTIC AVE | RCRA-SQG, FINDS, ECHO | Higher | 694, 0.131, WNW |

## MAPPED SITES SUMMARY

Target Property Address:
930 E 33RD STREET
SIGNAL HILL, CA 90807

Click on Map ID to see full detail.

| MAP ID | SITE NAME | ADDRESS | DATABASE ACRONYMS | RELATIVE ELEVATION | DIST (ft. & mi.) DIRECTION |
|---|---|---|---|---|---|
| H79 | | 3395 ATLANTIC AVE | UST | Higher | 694, 0.131, WNW |
| H80 | FORMER TIDEWATER SER | 3395 ATLANTIC AVE. | UST | Higher | 694, 0.131, WNW |
| I81 | FEE WELL NO 1 | 3329 LINDEN AVE | AST | Higher | 714, 0.135, WNW |
| G82 | PETCO STORE #1181 | 3065 CALIFORNIA AVE | RCRA NonGen / NLR | Higher | 741, 0.140, South |
| G83 | PETCO STORE #1181 | 3065 CALIFORNIA AVE | CERS HAZ WASTE, HAZNET | Higher | 741, 0.140, South |
| F84 | | 3401 CALIFORNIA AVE | UST | Lower | 776, 0.147, NNE |
| G85 | 3100 CALIFORNIA AVEN | 3100 CALIFORNIA AVEN | US BROWNFIELDS | Higher | 787, 0.149, SSE |
| H86 | DR. LIN'S DENTAL OFF | 554 E WARDLOW RD | CERS HAZ WASTE, HAZNET | Higher | 803, 0.152, NW |
| H87 | HONG MING LIN DDS | 554 E WARDLOW ROAD | RCRA NonGen / NLR | Higher | 803, 0.152, NW |
| J88 | | 1058 E WARDLOW RD | UST | Lower | 809, 0.153, NE |
| K89 | FRONTIER CA INC | 3440 CALIFORNIA AVE | RCRA NonGen / NLR | Lower | 813, 0.154, NNE |
| K90 | FRONTIER CALIFORNIA, | 3440 CALIFORNIA AVE | UST | Lower | 813, 0.154, NNE |
| K91 | GENERAL TELEPHONE | 3440 CALIFORNIA AVE | SWEEPS UST, HIST UST, CA FID UST, EMI | Lower | 813, 0.154, NNE |
| L92 | TEXACO | 3402 ATLANTIC AVE | LUST, CERS | Lower | 817, 0.155, NW |
| L93 | TEXACO SERVICE STATI | 3402 ATLANTIC | LUST, AST, CERS HAZ WASTE, CERS TANKS, Cortese,... | Lower | 817, 0.155, NW |
| L94 | TEXACO SERVICE STATI | 3402 ATLANTIC BLVD | LUST, UST, RCRA NonGen / NLR | Lower | 817, 0.155, NW |
| L95 | VALVOLINE INSTANT OI | 3402 ATLANTIC AVE | RCRA NonGen / NLR | Lower | 817, 0.155, NW |
| L96 | KIMS AUTO REPAIR | 3402 ATLANTIC AVE | RCRA-SQG, FINDS, ECHO | Lower | 817, 0.155, NW |
| G97 | ROSS DRESS FOR LESS | 3055 CALIFORNIA AVE | RCRA NonGen / NLR | Higher | 822, 0.156, South |
| G98 | ROSS DRESS FOR LESS | 3055 CALIFORNIA AVE | CERS HAZ WASTE, HAZNET | Higher | 822, 0.156, South |
| I99 | EUREKA-CHRISTENSON | 3301 N PASADENA AVE | SWEEPS UST, HIST UST, CA FID UST | Higher | 838, 0.159, WNW |
| I100 | SIGNAL HILL PETROLEU | 3301 PASADENA AVE | HIST UST, CERS | Higher | 838, 0.159, WNW |
| L101 | R & J, FOASBERG LAUN | 675 E WARDLOW | DRYCLEANERS | Lower | 871, 0.165, NW |
| M102 | | 3165 ATLANTIC AVE | UST | Higher | 963, 0.182, SW |
| N103 | | 0525 E WARDLOW RD | UST | Higher | 970, 0.184, WNW |
| O104 | FIELDS LEASE-AREA OF | 3033 CALIFORNIA AVE | HIST UST | Higher | 974, 0.184, South |
| N105 | BIXBY KNOLLS CAR WAS | 577 WARDLOW RD E | LUST, Cortese, HIST CORTESE, CERS | Higher | 978, 0.185, NW |
| N106 | BIXBY KNOLLS CAR WAS | 577 E WARDLOW RD | HIST UST | Higher | 978, 0.185, NW |
| N107 | BIXBY KNOLLS CAR WAS | 0577 E WARDLOW RD | UST | Higher | 978, 0.185, NW |
| N108 | BIXBY KNOLLS CAR WAS | 577 E WARDLOW RD | SWEEPS UST, HIST UST, CA FID UST, HAZNET | Higher | 978, 0.185, NW |
| J109 | JOE'S AUTO CENTER | 1079 E. WARDLOW RD | CERS HAZ WASTE, CERS | Lower | 989, 0.187, NE |
| J110 | | 1079 E WARDLOW RD | RCRA NonGen / NLR | Lower | 989, 0.187, NE |
| J111 | INTERNATIONAL MOTORS | 1079 E WARDLOW RD | SWEEPS UST, HIST UST, CA FID UST, RCRA NonGen /... | Lower | 989, 0.187, NE |
| 112 | HERLEY KELLY COMPANY | 3215 PASADENA AVE | UST | Lower | 1000, 0.189, WSW |
| O113 | TEXACO PRODUCING INC | 3033 CALIFORNIA AVE | LUST, SWEEPS UST, HIST CORTESE, CERS | Higher | 1010, 0.191, South |
| M114 | | 3154 ATLANTIC AVE | UST | Higher | 1013, 0.192, SW |
| N115 | COMMERCIAL RADIATOR | 500 E WARDLOW RD | RCRA NonGen / NLR | Higher | 1032, 0.195, WNW |
| N116 | DON & HAROLDS AUTOMO | 500 EAST WARDLOW RD | RCRA NonGen / NLR | Higher | 1032, 0.195, WNW |
| N117 | DON & HAROLD'S AUTOM | 500 E WARDLOW RD | RCRA NonGen / NLR | Higher | 1032, 0.195, WNW |

## MAPPED SITES SUMMARY

Target Property Address:
930 E 33RD STREET
SIGNAL HILL, CA 90807

Click on Map ID to see full detail.

| MAP ID | SITE NAME | ADDRESS | DATABASE ACRONYMS | RELATIVE ELEVATION | DIST (ft. & mi.) DIRECTION |
|---|---|---|---|---|---|
| N118 | DON AND HAROLD'S AUT | 500 E WARDLOW RD | CERS HAZ WASTE, CERS | Higher | 1032, 0.195, WNW |
| L119 | FUJITA INVESTORS OF | 3449 ATLANTIC AVE | UST | Lower | 1033, 0.196, NW |
| N120 | GALLAGHER PROPERTY ( | 3426 LINDEN AVE | CPS-SLIC, CERS | Higher | 1102, 0.209, NW |
| P121 | | 3312 ELM AVE | RCRA NonGen / NLR | Higher | 1113, 0.211, WNW |
| Q122 | OLIVE COMMUNITY | 640 EAST 35TH STREET | RCRA-LQG | Lower | 1120, 0.212, NW |
| Q123 | OLIVE COMMUNITY/SIGN | 640 E 35TH ST | AST | Lower | 1120, 0.212, NW |
| R124 | MCKENZIE #34 | 3159 PASADENA AVE | AST | Lower | 1178, 0.223, WSW |
| R125 | MCKENZIE | 3159 PASADENA AVENUE | RCRA-LQG | Lower | 1178, 0.223, WSW |
| P126 | | 3357 PASADENA AVE | RCRA NonGen / NLR | Higher | 1184, 0.224, WNW |
| S127 | | 1101 E WARDLOW RD | UST | Lower | 1185, 0.224, NE |
| S128 | BIXBY LAND CO. | 1101 E. WARDLOW RD | CPS-SLIC, EMI, CERS | Lower | 1185, 0.224, NE |
| Q129 | D.B.M. OIL CO. | 3508 ATLANTIC AVE | UST | Lower | 1221, 0.231, NW |
| M130 | JACK HERLEY OPERATIO | 3085 ATLANTIC AVE | SWEEPS UST, CA FID UST | Higher | 1234, 0.234, SW |
| M131 | JACK HERLEY OPERATIO | 3085 ATLANTIC AVE | HIST UST | Higher | 1234, 0.234, SW |
| 132 | JACK HERLEY OPERATIO | 3083 ATLANTIC AVE | HIST UST | Higher | 1255, 0.238, SW |
| T133 | M HARA LAWNMOWER CEN | 3199 ORANGE AVE | CERS HAZ WASTE, CERS | Higher | 1287, 0.244, ESE |
| T134 | | 3199 ORANGE AVE | RCRA NonGen / NLR | Higher | 1287, 0.244, ESE |
| U135 | GALLAGHER | 3241 ELM AVENUE | RCRA-LQG | Lower | 1314, 0.249, West |
| U136 | GALLAGHER #32 | 3241 ELM AVE | AST | Lower | 1314, 0.249, West |
| 137 | TOWN CENTER CHEVRON | 3101 LINDEN AVE | UST | Higher | 1314, 0.249, SW |
| V138 | HILL TOP SPORTS PARK | SPRING ST & CALIFORN | CPS-SLIC, CERS | Higher | 1345, 0.255, South |
| V139 | CALIFORNIA AVE. SITE | CALIFORNIA & SPRING | WMUDS/SWAT | Higher | 1345, 0.255, South |
| W140 | TOSCO S.S. #6117 | 3395 ORANGE AVE | LUST, CERS HAZ WASTE, SWEEPS UST, CERS TANKS, CERS | Lower | 1419, 0.269, ENE |
| U141 | MEDICAL OFFICE BUILD | 3200-3220 LONG BEACH | CPS-SLIC, CERS | Lower | 1478, 0.280, West |
| 142 | MAGNA CORP LONG BEAC | 3311 OLIVE AVE | RCRA-SQG, LUST, FINDS, ECHO, HAZNET, HIST CORTESE,... | Higher | 1487, 0.282, SSW |
| 143 | MANESS INDS | 1101 E SPRING ST | LUST, CERS HAZ WASTE, HIST UST, CERS TANKS, RCRA... | Lower | 1531, 0.290, SSE |
| W144 | TOSCO S.S. #6117 | 3395 ORANGE AVE | LUST, HIST CORTESE | Lower | 1540, 0.292, ENE |
| 145 | 700 E SPRING STREET | 700 E SPRING STREET | US BROWNFIELDS | Lower | 1564, 0.296, SSW |
| 146 | MOBIL #17-1842 | 3391 LONG BEACH BLVD | LUST, HIST CORTESE, CERS | Lower | 1715, 0.325, WNW |
| X147 | WEISSKER HERMAN, INC | 3050 ORANGE AVENUE | SWF/LF, CDL, CHMIRS, LOS ANGELES CO LF METHANE | Lower | 1716, 0.325, SE |
| 148 | INDIAN WELL TANK FAR | 2991 ATLANTIC AVE | LUST, CERS | Lower | 1764, 0.334, SSW |
| X149 | RUTHERFORD PACIFIC I | 3020 ORANGE AVE | SEMS-ARCHIVE, RESPONSE, ENVIROSTOR, DEED, RCRA... | Lower | 1809, 0.343, SE |
| X150 | FACET ENERGY COMPANY | 3020 ORANGE AVENUE | CA BOND EXP. PLAN | Lower | 1809, 0.343, SE |
| 151 | SOUZA PROPERTIES | 3200 WARDLOW ROAD, E | CPS-SLIC, CERS | Lower | 1839, 0.348, ENE |
| 152 | SIGNAL HILL SOLID FI | 900 E. 29TH ST. | SWF/LF, CERS | Lower | 2091, 0.396, South |
| 153 | WEISSKER, HERMAN INC | ORANGE ST. & SPRING | SWF/LF, CERS | Lower | 2097, 0.397, SE |
| Y154 | SIGNAL HILL BUSINESS | 29TH AND ORANGE STRE | ENVIROSTOR, VCP | Higher | 2326, 0.441, SSE |
| 155 | PHILLIP MANN PROPERT | 533 E 29TH ST | LUST, CERS | Lower | 2361, 0.447, SSW |
| 156 | LEJEND EQUIPMENT REN | 2901 ORANGE ST | SEMS-ARCHIVE, RCRA NonGen / NLR | Higher | 2375, 0.450, SE |

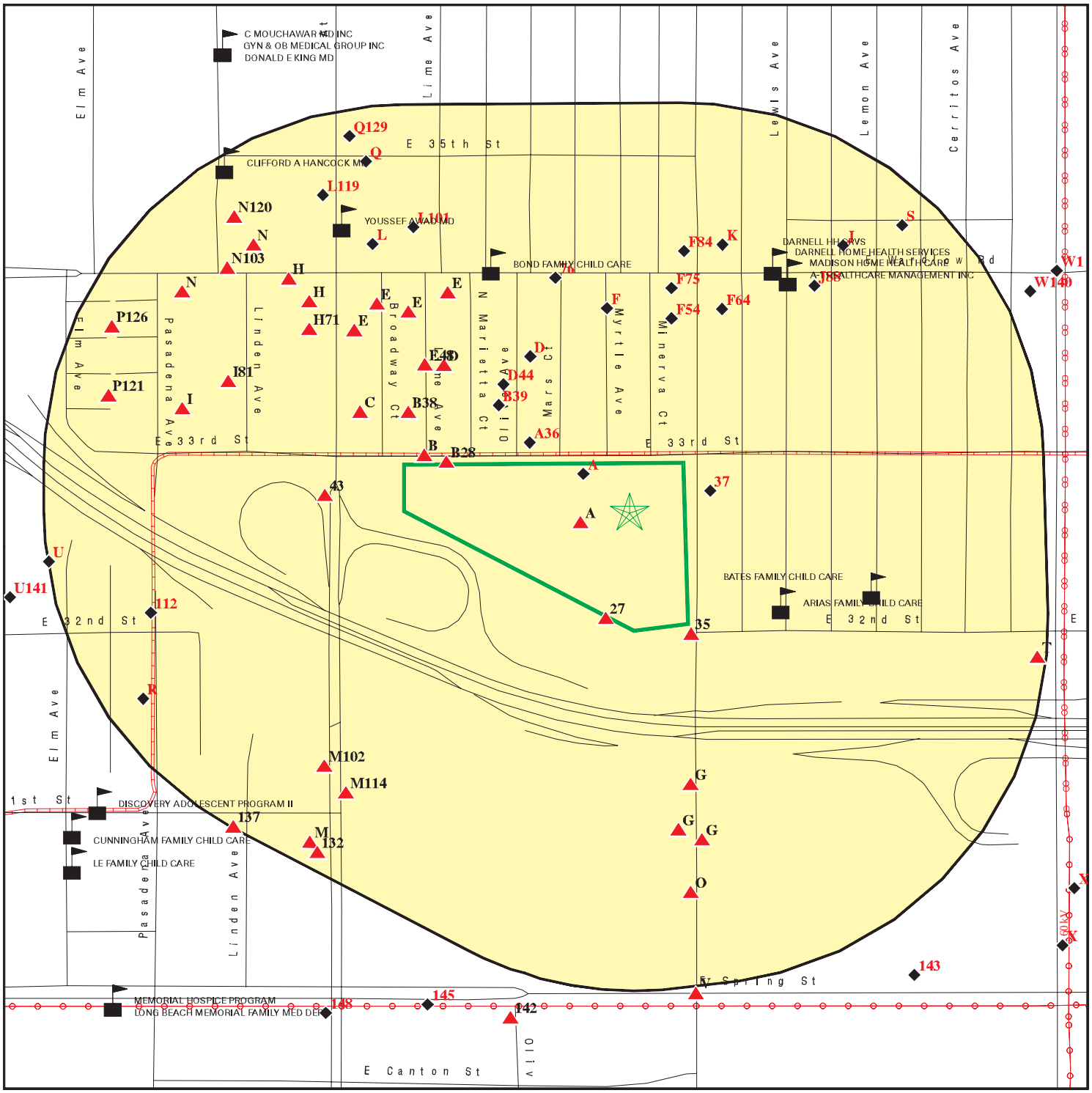
## MAPPED SITES SUMMARY

Target Property Address:
930 E 33RD STREET
SIGNAL HILL, CA 90807

Click on Map ID to see full detail.

| MAP ID | SITE NAME | ADDRESS | DATABASE ACRONYMS | RELATIVE ELEVATION | DIST (ft. & mi.) DIRECTION |
|---|---|---|---|---|---|
| Z157 | SHELL #204-4482-0508 | 3009 LONG BEACH BLVD | LUST | Lower | 2390, 0.453, SW |
| Z158 | SHELL #204-4482-0508 | 3009 LONG BEACH | LUST, Cortese, HIST CORTESE, CERS | Lower | 2390, 0.453, SW |
| 159 | SIGNAL HILL PETROLEU | 2900 CALIFORNIA | CPS-SLIC, CERS | Lower | 2421, 0.459, South |
| Y160 | SIGNAL HILL BUSINESS | 2896 ORANGE AVE | LUST, SWEEPS UST, Cortese, HIST CORTESE, CERS | Higher | 2441, 0.462, SSE |
| Y161 | SIGNAL HILL PETROLEU | 1215 029TH ST E | LUST, EMI, HIST CORTESE, NPDES, CIWQS, CERS | Higher | 2466, 0.467, SE |
| Z162 | EXXON #7-3131 | 2995 LONG BEACH BLVD | LUST, HIST CORTESE, CERS | Lower | 2533, 0.480, SW |
| 163 | LONG BEACH MEMORIAL | 2801 ATLANTIC AVE | ENVIROSTOR, SWF/LF, LUST, VCP, DEED, RCRA NonGen /... | Lower | 2851, 0.540, SSW |
| 164 | MEMORIAL MAGNETIC RE | 403 E. COLUMBIA STRE | ENVIROSTOR | Lower | 2901, 0.549, SW |
| 165 | MANEY AIRCRAFT PARTS | 101 WEST SPRING STRE | ENVIROSTOR | Lower | 3095, 0.586, WSW |
| AA166 | SIGNAL HILL TERMINAL | 1725 E. SPRING STREE | ENVIROSTOR | Lower | 3525, 0.668, ESE |
| 167 | CONTINENTAL EMSCO CO | 2850 WALNUT AVENUE | ENVIROSTOR, EMI, CERS | Higher | 3555, 0.673, SE |
| AA168 | MARLEX OIL & REFININ | 1825 E SPRING ST | SEMS-ARCHIVE, RCRA-SQG, RESPONSE, ENVIROSTOR,... | Lower | 3636, 0.689, ESE |
| 169 | CERTIFIED ALLOY PROD | 3245 CHERRY AV | EMI, Notify 65 | Lower | 3657, 0.693, East |
| AB170 | URBAN PACIFIC BUILDE | 1835-1899 ORIZABA AV | ENVIROSTOR | Higher | 4013, 0.760, ESE |
| AB171 | ENVIROPUR WEST CORP | 1835 E 29TH ST | SEMS-ARCHIVE, CORRACTS, RCRA-TSDF, RCRA-SQG, UST,... | Higher | 4029, 0.763, ESE |
| AB172 | MCAULEY OIL COMPANY- | 1835 E 29TH STREET | ENVIROSTOR, HIST UST, HWP | Higher | 4029, 0.763, ESE |
| 173 | W-H TANK LINES INC | 2202 E SPRING ST | CPS-SLIC, RCRA NonGen / NLR, HAZNET, ICE, HWP,... | Lower | 4956, 0.939, ESE |

# DETAIL MAP - 5947181.2S




- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- Power transmission lines
- Pipelines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

| | |
|---|---|
| SITE NAME: 930 E 33rd St<br>ADDRESS: 930 E 33rd Street<br>Signal Hill CA 90755<br>LAT/LONG: 33.816505 / 118.18148 | CLIENT: Mearns Consulting LLC.<br>CONTACT: Susan L Mearns Phd<br>INQUIRY #: 5947181.2s<br>DATE: January 24, 2020 1:47 pm |

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# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| **STANDARD ENVIRONMENTAL RECORDS** | | | | | | | | |
| ***Federal NPL site list*** | | | | | | | | |
| NPL | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| Proposed NPL | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| NPL LIENS | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| ***Federal Delisted NPL site list*** | | | | | | | | |
| Delisted NPL | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| ***Federal CERCLIS list*** | | | | | | | | |
| FEDERAL FACILITY | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| SEMS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Federal CERCLIS NFRAP site list*** | | | | | | | | |
| SEMS-ARCHIVE | 0.500 | | 0 | 0 | 2 | NR | NR | 2 |
| ***Federal RCRA CORRACTS facilities list*** | | | | | | | | |
| CORRACTS | 1.000 | | 0 | 0 | 0 | 1 | NR | 1 |
| ***Federal RCRA non-CORRACTS TSD facilities list*** | | | | | | | | |
| RCRA-TSDF | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Federal RCRA generators list*** | | | | | | | | |
| RCRA-LQG | 0.250 | | 1 | 3 | NR | NR | NR | 4 |
| RCRA-SQG | 0.250 | | 5 | 2 | NR | NR | NR | 7 |
| RCRA-VSQG | 0.250 | | 1 | 0 | NR | NR | NR | 1 |
| ***Federal institutional controls / engineering controls registries*** | | | | | | | | |
| LUCIS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| US ENG CONTROLS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| US INST CONTROL | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Federal ERNS list*** | | | | | | | | |
| ERNS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ***State- and tribal - equivalent NPL*** | | | | | | | | |
| RESPONSE | 1.000 | | 0 | 0 | 1 | 1 | NR | 2 |
| ***State- and tribal - equivalent CERCLIS*** | | | | | | | | |
| ENVIROSTOR | 1.000 | | 0 | 0 | 2 | 8 | NR | 10 |
| ***State and tribal landfill and/or solid waste disposal site lists*** | | | | | | | | |
| SWF/LF | 0.500 | | 0 | 0 | 3 | NR | NR | 3 |
| ***State and tribal leaking storage tank lists*** | | | | | | | | |
| LUST | 0.500 | | 3 | 6 | 12 | NR | NR | 21 |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| INDIAN LUST | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| CPS-SLIC | 0.500 | | 2 | 2 | 4 | NR | NR | 8 |
| ***State and tribal registered storage tank lists*** | | | | | | | | |
| FEMA UST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| UST | 0.250 | | 11 | 16 | NR | NR | NR | 27 |
| AST | 0.250 | | 1 | 5 | NR | NR | NR | 6 |
| INDIAN UST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| ***State and tribal voluntary cleanup sites*** | | | | | | | | |
| VCP | 0.500 | | 0 | 0 | 1 | NR | NR | 1 |
| INDIAN VCP | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***State and tribal Brownfields sites*** | | | | | | | | |
| BROWNFIELDS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| **ADDITIONAL ENVIRONMENTAL RECORDS** | | | | | | | | |
| ***Local Brownfield lists*** | | | | | | | | |
| US BROWNFIELDS | 0.500 | | 0 | 1 | 1 | NR | NR | 2 |
| ***Local Lists of Landfill / Solid Waste Disposal Sites*** | | | | | | | | |
| WMUDS/SWAT | 0.500 | | 0 | 0 | 1 | NR | NR | 1 |
| SWRCY | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| HAULERS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| INDIAN ODI | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ODI | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| DEBRIS REGION 9 | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| IHS OPEN DUMPS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Local Lists of Hazardous waste / Contaminated Sites*** | | | | | | | | |
| AOCONCERN | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| US HIST CDL | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| HIST Cal-Sites | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| SCH | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| CDL | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| CERS HAZ WASTE | 0.250 | | 9 | 7 | NR | NR | NR | 16 |
| Toxic Pits | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| US CDL | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| PFAS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Local Lists of Registered Storage Tanks*** | | | | | | | | |
| SWEEPS UST | 0.250 | | 8 | 6 | NR | NR | NR | 14 |
| HIST UST | 0.250 | | 4 | 9 | NR | NR | NR | 13 |
| CERS TANKS | 0.250 | | 2 | 1 | NR | NR | NR | 3 |
| CA FID UST | 0.250 | | 5 | 5 | NR | NR | NR | 10 |
| ***Local Land Records*** | | | | | | | | |
| LIENS | 0.001 | | 0 | NR | NR | NR | NR | 0 |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| LIENS 2 | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| DEED | 0.500 | | 0 | 0 | 1 | NR | NR | 1 |
| ***Records of Emergency Release Reports*** | | | | | | | | |
| HMIRS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| CHMIRS | 0.001 | | 2 | NR | NR | NR | NR | 2 |
| LDS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| MCS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| SPILLS 90 | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ***Other Ascertainable Records*** | | | | | | | | |
| RCRA NonGen / NLR | 0.250 | | 10 | 14 | NR | NR | NR | 24 |
| FUDS | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| DOD | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| SCRD DRYCLEANERS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| US FIN ASSUR | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| EPA WATCH LIST | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| 2020 COR ACTION | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| TSCA | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| TRIS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| SSTS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ROD | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| RMP | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| RAATS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| PRP | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| PADS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ICIS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| FTTS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| MLTS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| COAL ASH DOE | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| COAL ASH EPA | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| PCB TRANSFORMER | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| RADINFO | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| HIST FTTS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| DOT OPS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| CONSENT | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| INDIAN RESERV | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| FUSRAP | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| UMTRA | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| LEAD SMELTERS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| US AIRS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| US MINES | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| ABANDONED MINES | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| FINDS | 0.001 | | 3 | NR | NR | NR | NR | 3 |
| ECHO | 0.001 | | 3 | NR | NR | NR | NR | 3 |
| DOCKET HWC | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| UXO | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| FUELS PROGRAM | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| CA BOND EXP. PLAN | 1.000 | | 0 | 0 | 1 | 0 | NR | 1 |
| Cortese | 0.500 | | 2 | 2 | 2 | NR | NR | 6 |
| CUPA Listings | 0.250 | | 0 | 0 | NR | NR | NR | 0 |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| DRYCLEANERS | 0.250 | | 3 | 1 | NR | NR | NR | 4 |
| EMI | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ENF | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| Financial Assurance | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| HAZNET | 0.001 | | 16 | NR | NR | NR | NR | 16 |
| ICE | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| HIST CORTESE | 0.500 | | 3 | 3 | 7 | NR | NR | 13 |
| LOS ANGELES CO. HMS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| HWP | 1.000 | | 0 | 0 | 0 | 2 | NR | 2 |
| HWT | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| MINES | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| MWMP | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| NPDES | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| PEST LIC | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| PROC | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| Notify 65 | 1.000 | | 0 | 1 | 0 | 1 | NR | 2 |
| LA Co. Site Mitigation | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| UIC | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| UIC GEO | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| WASTEWATER PITS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| WDS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| WIP | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| MILITARY PRIV SITES | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| PROJECT | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| WDR | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| CIWQS | 0.001 | | 1 | NR | NR | NR | NR | 1 |
| CERS | 0.001 | | 2 | NR | NR | NR | NR | 2 |
| NON-CASE INFO | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| OTHER OIL GAS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| PROD WATER PONDS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| SAMPLING POINT | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| WELL STIM PROJ | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| MINES MRDS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| LOS ANGELES CO LF METHANE | 0.500 | | 0 | 0 | 1 | NR | NR | 1 |
| **EDR HIGH RISK HISTORICAL RECORDS** | | | | | | | | |
| ***EDR Exclusive Records*** | | | | | | | | |
| EDR MGP | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| EDR Hist Auto | 0.125 | | 6 | NR | NR | NR | NR | 6 |
| EDR Hist Cleaner | 0.125 | | 2 | NR | NR | NR | NR | 2 |
| **EDR RECOVERED GOVERNMENT ARCHIVES** | | | | | | | | |
| ***Exclusive Recovered Govt. Archives*** | | | | | | | | |
| RGA LF | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| RGA LUST | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| - Totals -- | | 0 | 105 | 84 | 39 | 13 | 0 | 241 |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

**A1** **TARGET STORE T2319** **RCRA-LQG** **1014465382**
**950 E 33RD ST** **CAR000218487**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 1 of 27 in cluster A**

**Relative:** **Lower**

**Actual:** **88 ft.**

RCRA-LQG:

| | |
|---|---|
| Date form received by agency: | 2018-02-01 00:00:00.0 |
| Facility name: | TARGET STORE T2319 |
| Facility address: | 950 E 33RD ST<br>SIGNAL HILL, CA 90755-0000 |
| EPA ID: | CAR000218487 |
| Mailing address: | PO BOX 111<br>MINNEAPOLIS, MN 55440 |
| Contact: | STEVE MUSSER |
| Contact address: | PO BOX 111<br>MINNEAPOLIS, MN 55440 |
| Contact country: | US |
| Contact telephone: | 800-587-2228 |
| Contact email: | POC@TARGET.COM |
| EPA Region: | 09 |
| Classification: | Large Quantity Generator |
| Description: | Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time |

Owner/Operator Summary:

| | |
|---|---|
| Owner/operator name: | TARGET CORPRATION |
| Owner/operator address: | PO BOX 111<br>MINNEAPOLIS, MN 55440 |
| Owner/operator country: | US |
| Owner/operator telephone: | 800-587-2228 |
| Owner/operator email: | POC@TARGET.COM |
| Owner/operator fax: | Not reported |
| Owner/operator extension: | Not reported |
| Legal status: | Private |
| Owner/Operator Type: | Operator |
| Owner/Op start date: | 2007-07-25 00:00:00. |
| Owner/Op end date: | Not reported |

| | |
|---|---|
| Owner/operator name: | TARGET CORPORATION |
| Owner/operator address: | PO BOX 111<br>MINNEAPOLIS, MN 55440 |
| Owner/operator country: | US |
| Owner/operator telephone: | 800-587-2228 |
| Owner/operator email: | POC@TARGET.COM |
| Owner/operator fax: | Not reported |
| Owner/operator extension: | Not reported |
| Legal status: | Private |
| Owner/Operator Type: | Owner |

**TARGET STORE T2319 (Continued)** **1014465382**

Owner/Op start date: 2007-07-25 00:00:00.
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 2016-02-24 00:00:00.0
Site name: TARGET STORE T2319
Classification: Not a generator, verified

Date form received by agency: 2014-03-01 00:00:00.0
Site name: TARGET STORE T2319
Classification: Small Quantity Generator

Date form received by agency: 2011-04-11 00:00:00.0
Site name: TARGET STORE NO 2319
Classification: Small Quantity Generator

Hazardous Waste Summary:

. Waste code: 121
. Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: 792

**TARGET STORE T2319 (Continued)** **1014465382**

. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D (2,4-DICHLOROPHENOXYACETIC ACID)

. Waste code: D018
. Waste name: BENZENE

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D026
. Waste name: CRESOL

. Waste code: D027
. Waste name: 1,4-DICHLOROBENZENE

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D039

**TARGET STORE T2319 (Continued)** **1014465382**

. Waste name: TETRACHLOROETHYLENE

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P042
. Waste name: 1,2-BENZENEDIOL, 4-[1-HYDROXY-2-(METHYLAMINO)ETHYL]-, (R)- (OR) EPINEPHRINE

. Waste code: P046
. Waste name: ALPHA,ALPHA-DIMETHYLPHENETHYLAMINE (OR) BENZENEETHANAMINE, ALPHA, ALPHA-DIMETHYL-

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

. Waste code: P081
. Waste name: 1,2,3-PROPANETRIOL, TRINITRATE (R) (OR) NITROGLYCERINE (R)

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

. Waste code: U034
. Waste name: ACETALDEHYDE, TRICHLORO- (OR) CHLORAL

. Waste code: U035
. Waste name: BENZENEBUTANOIC ACID, 4-[BIS(2-CHLOROETHYL)AMINO]- (OR) CHLORAMBUCIL

. Waste code: U044
. Waste name: CHLOROFORM (OR) METHANE, TRICHLORO-

. Waste code: U058
. Waste name: 2H-1,3,2-OXAZAPHOSPHORIN-2-AMINE, N,N-BIS(2-CHLOROETHYL)TETRAHYDRO-, 2-OXIDE (OR) CYCLOPHOSPHAMIDE

. Waste code: U072
. Waste name: BENZENE, 1,4-DICHLORO- (OR) P-DICHLOROBENZENE

. Waste code: U122
. Waste name: FORMALDEHYDE

. Waste code: U129
. Waste name: CYCLOHEXANE, 1,2,3,4,5,6-HEXACHLORO-, (1ALPHA, 2ALPHA, 3BETA, 4ALPHA, 5ALPHA, 6BETA)- (OR) LINDANE

. Waste code: U150
. Waste name: L-PHENYLALANINE, 4-[BIS(2-CHLOROETHYL)AMINO]- (OR) MELPHALAN

. Waste code: U154
. Waste name: METHANOL (I) (OR) METHYL ALCOHOL (I)

. Waste code: U188
. Waste name: PHENOL

**TARGET STORE T2319 (Continued)** **1014465382**

. Waste code: U200
. Waste name: RESERPINE (OR) YOHIMBAN-16-CARBOXYLIC ACID, 11,17-DIMETHOXY-18-[(3,4,5-TRIMETHOXYBENZOYL)OXY]-, METHYL ESTER, (3BETA, 16BETA, 17ALPHA, 18BETA, 20ALPHA)-

. Waste code: U201
. Waste name: 1,3-BENZENEDIOL (OR) RESORCINOL

. Waste code: U220
. Waste name: BENZENE, METHYL- (OR) TOLUENE

. Waste code: U221
. Waste name: BENZENEDIAMINE, AR-METHYL- (OR) TOLUENEDIAMINE

. Waste code: U279
. Waste name: CARBARYL (OR) 1-NAPHTHALENOL, METHYLCARBAMATE

Biennial Reports:

Last Biennial Reporting Year: 2017

Annual Waste Handled:
Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
Amount (Lbs): 3644

Waste code: D002
Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.
Amount (Lbs): 1477

Waste code: D004
Waste name: ARSENIC
Amount (Lbs): 1974

Waste code: D005
Waste name: BARIUM
Amount (Lbs): 2314

Waste code: D007
Waste name: CHROMIUM
Amount (Lbs): 2314

Waste code: D008
Waste name: LEAD
Amount (Lbs): 69

**TARGET STORE T2319 (Continued)** **1014465382**

Waste code: D010
Waste name: SELENIUM
Amount (Lbs): 1974

Waste code: D011
Waste name: SILVER
Amount (Lbs): 2314

Waste code: D016
Waste name: 2,4-D
Amount (Lbs): 1974

Waste code: D018
Waste name: BENZENE
Amount (Lbs): 340

Waste code: D024
Waste name: M-CRESOL
Amount (Lbs): 1974

Waste code: D026
Waste name: CRESOL
Amount (Lbs): 1974

Waste code: D035
Waste name: METHYL ETHYL KETONE
Amount (Lbs): 1142

Waste code: P001
Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%
Amount (Lbs): 39

Waste code: P075
Waste name: NICOTINE, & SALTS
Amount (Lbs): 39

Waste code: U002
Waste name: ACETONE (I)
Amount (Lbs): 340

Waste code: U035
Waste name: BENZENEBUTANOIC ACID, 4-[BIS(2-CHLOROETHYL)AMINO]-
Amount (Lbs): 1974

Waste code: U044
Waste name: CHLOROFORM
Amount (Lbs): 1974

Waste code: U058
Waste name: CYCLOPHOSPHAMIDE
Amount (Lbs): 1974

Waste code: U072
Waste name: BENZENE, 1,4-DICHLORO-
Amount (Lbs): 1974

**TARGET STORE T2319 (Continued)** **1014465382**

Waste code: U129
Waste name: CYCLOHEXANE, 1,2,3,4,5,6-HEXACHLORO-, (1ALPHA,2ALPHA,3BETA,4ALPHA,5ALPHA,6BETA)-
Amount (Lbs): 1974

Waste code: U154
Waste name: METHANOL (I)
Amount (Lbs): 340

Violation Status: No violations found

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**A2** **TESORO-TARGET STORE-SIGNAL HILL** **HAZNET** **S123611343**
**950 EAST 33RD STREET** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 2 of 27 in cluster A**

**Relative:** HAZNET:
**Lower**
**Actual:** Name: TESORO-TARGET STORE-SIGNAL HILL
**88 ft.** Address: 950 EAST 33RD STREET
City,State,Zip: SIGNAL HILL, CA 90755
Year: 2017
GEPAID: CAC002921987
Contact: DANNY MONSON
Telephone: 5624956877
Mailing Name: Not reported
Mailing Address: PO BOX 80730
Mailing City,St,Zip: RANCHO SANTA MARGARI, CA 92688
Gen County: Los Angeles
TSD EPA ID: CAT080013352
TSD County: Los Angeles
Tons: 0.0042
CA Waste Code: 134-Aqueous solution with total organic residues less than 10 percent
Method: H039-Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Facility County: Los Angeles

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**A3** **TARGET** **HAZNET** **S112910033**
**950 E 33RD ST** **N/A**
**< 1/8** **LONG BEACH, CA 90807**
**1 ft.**

**Site 3 of 27 in cluster A**

**Relative:** HAZNET:
**Higher**
**Actual:** Name: TARGET
**90 ft.** Address: 950 E 33RD ST
City,State,Zip: LONG BEACH, CA 908070000
Year: 2000
GEPAID: CAC002291657
Contact: PAUL WRAITH
Telephone: 8003603220
Mailing Name: Not reported
Mailing Address: 1905 ASTON AVESTE 100
Mailing City,St,Zip: CARLSBAD, CA 920090000
Gen County: Los Angeles
TSD EPA ID: CAD008302903

**TARGET (Continued)** **S112910033**

TSD County: Los Angeles
Tons: 0.1
CA Waste Code: 331-Off-specification, aged or surplus organics
Method: H01-Transfer Station
Facility County: Los Angeles

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**A4** **TARGET** **HAZNET** **S112842981**
**950 E 33RD ST** **N/A**
**< 1/8** **LONG BEACH, CA 90807**
**1 ft.**

**Site 4 of 27 in cluster A**

**Relative: Higher**
**Actual: 90 ft.**

HAZNET:
Name: TARGET
Address: 950 E 33RD ST
City,State,Zip: LONG BEACH, CA 908070000
Year: 1996
GEPAID: CAC000757056
Contact: JODI KAUTZ/CONSULT
Telephone: 8004518346
Mailing Name: Not reported
Mailing Address: 4920 CARROLL CANYON RD
Mailing City,St,Zip: SAN DIEGO, CA 921210000
Gen County: Los Angeles
TSD EPA ID: CAT080022148
TSD County: San Bernardino
Tons: 0.9
CA Waste Code: 352-Other organic solids
Method: H01-Transfer Station
Facility County: Los Angeles

Name: TARGET
Address: 950 E 33RD ST
City,State,Zip: LONG BEACH, CA 908070000
Year: 1996
GEPAID: CAC000757056
Contact: JODI KAUTZ/CONSULT
Telephone: 8004518346
Mailing Name: Not reported
Mailing Address: 4920 CARROLL CANYON RD
Mailing City,St,Zip: SAN DIEGO, CA 921210000
Gen County: Los Angeles
TSD EPA ID: CAT080022148
TSD County: San Bernardino
Tons: 0.025
CA Waste Code: 122-Alkaline solution without metals pH >= 12.5
Method: H01-Transfer Station
Facility County: Los Angeles

**A5** **CVS PHARMACY #17385** **HAZNET** **S123639101**
**950 E 33RD ST STE B** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 5 of 27 in cluster A**

**Relative:** HAZNET:
**Lower**

**Actual:** Name: CVS PHARMACY #17385
**88 ft.** Address: 950 E 33RD ST STE B
City,State,Zip: SIGNAL HILL, CA 907555114
Year: 2017
GEPAID: CAR000259549
Contact: NICOLE WILKINSON
Telephone: 4017651500
Mailing Name: Not reported
Mailing Address: 1 CVS DR - MC 1160
Mailing City,St,Zip: WOONSOCKET, RI 02895
Gen County: Los Angeles
TSD EPA ID: CAD008364432
TSD County: Los Angeles
Tons: 0.012
CA Waste Code: 311-Pharmaceutical waste
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Los Angeles

Name: CVS PHARMACY #17385
Address: 950 E 33RD ST STE B
City,State,Zip: SIGNAL HILL, CA 907555114
Year: 2017
GEPAID: CAR000259549
Contact: NICOLE WILKINSON
Telephone: 4017651500
Mailing Name: Not reported
Mailing Address: 1 CVS DR - MC 1160
Mailing City,St,Zip: WOONSOCKET, RI 02895
Gen County: Los Angeles
TSD EPA ID: INR000110197
TSD County: Not reported
Tons: 0.0025
CA Waste Code: 311-Pharmaceutical waste
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Los Angeles

Name: CVS PHARMACY #17385
Address: 950 E 33RD ST STE B
City,State,Zip: SIGNAL HILL, CA 907555114
Year: 2016
GEPAID: CAR000259549
Contact: NICOLE WILKINSON
Telephone: 4017707132
Mailing Name: Not reported
Mailing Address: 1 CVS DR
Mailing City,St,Zip: WOONSOCKET, RI 028956146
Gen County: Los Angeles
TSD EPA ID: CAD008364432
TSD County: Los Angeles
Tons: 0.006

**CVS PHARMACY #17385 (Continued)** **S123639101**

CA Waste Code: 311-Pharmaceutical waste
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Los Angeles

Name: CVS PHARMACY #17385
Address: 950 E 33RD ST STE B
City,State,Zip: SIGNAL HILL, CA 907555114
Year: 2016
GEPAID: CAR000259549
Contact: NICOLE WILKINSON
Telephone: 4017707132
Mailing Name: Not reported
Mailing Address: 1 CVS DR
Mailing City,St,Zip: WOONSOCKET, RI 028956146
Gen County: Los Angeles
TSD EPA ID: INR000110197
TSD County: Not reported
Tons: 0.001
CA Waste Code: 311-Pharmaceutical waste
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Los Angeles

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**A6** **TESORO** **FINDS 1024619125**
**950 EAST 33RD STREET** **ECHO N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 6 of 27 in cluster A**

**Relative: Lower**
**Actual: 88 ft.**

FINDS:

Registry ID: 110070407512

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1024619125
Registry ID: 110070407512
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110070407512

**A7** **TESORO** **HAZNET** **S123605555**
**950 E 33RD ST** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 7 of 27 in cluster A**

**Relative:** HAZNET:
**Lower**

| | |
|---|---|
| **Actual:** Name: | TESORO |
| **88 ft.** Address: | 950 E 33RD ST |
| City,State,Zip: | SIGNAL HILL, CA 907555114 |
| Year: | 2016 |
| GEPAID: | CAC002873384 |
| Contact: | DANNY MONSON |
| Telephone: | 5624956877 |
| Mailing Name: | Not reported |
| Mailing Address: | PO BOX 80730 |
| Mailing City,St,Zip: | RANCHO SANTA MARGARI, CA 926880730 |
| Gen County: | Los Angeles |
| TSD EPA ID: | NVT330010000 |
| TSD County: | 99 |
| Tons: | 0.0125 |
| CA Waste Code: | 352-Other organic solids |
| Method: | H132-Landfill Or Surface Impoundment That Will Be Closed As Landfill( To Include On-Site Treatment And/Or Stabilization) |
| Facility County: | Los Angeles |

| | |
|---|---|
| Name: | TESORO |
| Address: | 950 E 33RD ST |
| City,State,Zip: | SIGNAL HILL, CA 907555114 |
| Year: | 2016 |
| GEPAID: | CAC002873384 |
| Contact: | DANNY MONSON |
| Telephone: | 5624956877 |
| Mailing Name: | Not reported |
| Mailing Address: | PO BOX 80730 |
| Mailing City,St,Zip: | RANCHO SANTA MARGARI, CA 926880730 |
| Gen County: | Los Angeles |
| TSD EPA ID: | CAT080013352 |
| TSD County: | Los Angeles |
| Tons: | 0.063 |
| CA Waste Code: | 134-Aqueous solution with total organic residues less than 10 percent |
| Method: | H039-Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect |
| Facility County: | Los Angeles |

---

**A8** **CVS PHARMACY #17385** **CERS HAZ WASTE** **S112983399**
**950 E 33RD ST STE B** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 8 of 27 in cluster A**

**Relative:** CERS HAZ WASTE:
**Lower**

| | |
|---|---|
| **Actual:** Name: | CVS PHARMACY #17385 |
| **88 ft.** Address: | 950 E 33RD ST STE B |
| City,State,Zip: | SIGNAL HILL, CA 90755 |
| Site ID: | 368403 |
| CERS ID: | 10668757 |
| CERS Description: | Hazardous Waste Generator |

Affiliation:

**CVS PHARMACY #17385 (Continued)** **S112983399**

| | |
|---|---|
| Affiliation Type Desc: | Legal Owner |
| Entity Name: | Garfield Beach CVS, L.L.C. |
| Entity Title: | Not reported |
| Affiliation Address: | One CVS Drive |
| Affiliation City: | Woonsocket |
| Affiliation State: | RI |
| Affiliation Country: | United States |
| Affiliation Zip: | 02895 |
| Affiliation Phone: | (401) 765-1500 |

| | |
|---|---|
| Affiliation Type Desc: | Facility Mailing Address |
| Entity Name: | Mailing Address |
| Entity Title: | Not reported |
| Affiliation Address: | CVS Health, Attn: Dianne E. Durand, Licensing, One CVS Dr. - MC 1160 |
| Affiliation City: | Woonsocket |
| Affiliation State: | RI |
| Affiliation Country: | Not reported |
| Affiliation Zip: | 02895 |
| Affiliation Phone: | Not reported |

| | |
|---|---|
| Affiliation Type Desc: | Identification Signer |
| Entity Name: | Stephen Horn, Agent for Garfield Beach CVS, L.L.C. |
| Entity Title: | Regulatory Compliance Specialist, Verisk 3E |
| Affiliation Address: | Not reported |
| Affiliation City: | Not reported |
| Affiliation State: | Not reported |
| Affiliation Country: | Not reported |
| Affiliation Zip: | Not reported |
| Affiliation Phone: | Not reported |

| | |
|---|---|
| Affiliation Type Desc: | Parent Corporation |
| Entity Name: | CVS Health |
| Entity Title: | Not reported |
| Affiliation Address: | Not reported |
| Affiliation City: | Not reported |
| Affiliation State: | Not reported |
| Affiliation Country: | Not reported |
| Affiliation Zip: | Not reported |
| Affiliation Phone: | Not reported |

| | |
|---|---|
| Affiliation Type Desc: | CUPA District |
| Entity Name: | Los Angeles County Fire |
| Entity Title: | Not reported |
| Affiliation Address: | 5825 Rickenbacker Road |
| Affiliation City: | Commerce |
| Affiliation State: | CA |
| Affiliation Country: | Not reported |
| Affiliation Zip: | 90040-3027 |
| Affiliation Phone: | (323) 890-4045 |

| | |
|---|---|
| Affiliation Type Desc: | Document Preparer |
| Entity Name: | Stephen Horn, Agent for Garfield Beach CVS, L.L.C. |
| Entity Title: | Not reported |
| Affiliation Address: | Not reported |
| Affiliation City: | Not reported |
| Affiliation State: | Not reported |
| Affiliation Country: | Not reported |

**CVS PHARMACY #17385 (Continued)** **S112983399**

| | |
|---|---|
| Affiliation Zip: | Not reported |
| Affiliation Phone: | Not reported |
| Affiliation Type Desc: | Environmental Contact |
| Entity Name: | Verisk 3E, Regulatory Services/CVS |
| Entity Title: | Not reported |
| Affiliation Address: | 3207 Grey Hawk Ct., Ste. 200 |
| Affiliation City: | Carlsbad |
| Affiliation State: | CA |
| Affiliation Country: | Not reported |
| Affiliation Zip: | 92010 |
| Affiliation Phone: | Not reported |
| Affiliation Type Desc: | Operator |
| Entity Name: | Garfield Beach CVS, L.L.C. |
| Entity Title: | Not reported |
| Affiliation Address: | Not reported |
| Affiliation City: | Not reported |
| Affiliation State: | Not reported |
| Affiliation Country: | Not reported |
| Affiliation Zip: | Not reported |
| Affiliation Phone: | (401) 765-1500 |

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**A9** **TARGET T2319** **CERS HAZ WASTE** **S123502748**
**950 E 033RD ST** **CERS** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 9 of 27 in cluster A**

**Relative: Higher**
**Actual: 90 ft.**

CERS HAZ WASTE:

| | |
|---|---|
| Name: | TARGET T2319 |
| Address: | 950 E 033RD ST |
| City,State,Zip: | SIGNAL HILL, CA 90755 |
| Site ID: | 159781 |
| CERS ID: | 10290991 |
| CERS Description: | Hazardous Waste Generator |

CERS:

| | |
|---|---|
| Name: | TARGET T2319 |
| Address: | 950 E 033RD ST |
| City,State,Zip: | SIGNAL HILL, CA 90755 |
| Site ID: | 159781 |
| CERS ID: | 10290991 |
| CERS Description: | Chemical Storage Facilities |

Violations:

| | |
|---|---|
| Site ID: | 159781 |
| Site Name: | TARGET T2319 |
| Violation Date: | 10-13-2016 |
| Citation: | HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1) |
| Violation Description: | Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities. |
| Violation Notes: | Returned to compliance on 11/30/2016. OBSERVATION: Update the facility Hazardous Materials Inventory List to reflect all reportable hazardous materials on site. Observed unreported 52 gallon Carbon Dioxide tank |

**TARGET T2319 (Continued)** **S123502748**

at cafe area. CORRECTIVE ACTION: Complete and submit the Hazardous Materials Inventory Chemical Description page for all materials listed above electronically in the California Environmental Reporting System (CERS).

Violation Division: Los Angeles County Fire Department
Violation Program: HMRRP
Violation Source: CERS

Evaluation:

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-13-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Brandon Ross, ETL
Eval Division: Los Angeles County Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 11-30-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Los Angeles County Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-06-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Los Angeles County Fire Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-06-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Los Angeles County Fire Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-13-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Brandon Ross, ETL
Eval Division: Los Angeles County Fire Department
Eval Program: HW
Eval Source: CERS

Affiliation:

Affiliation Type Desc: Facility Mailing Address

**TARGET T2319 (Continued)** **S123502748**

| | |
|---|---|
| Entity Name: | Mailing Address |
| Entity Title: | Not reported |
| Affiliation Address: | PO Box 111 |
| Affiliation City: | Minneapolis |
| Affiliation State: | MN |
| Affiliation Country: | Not reported |
| Affiliation Zip: | 55440 |
| Affiliation Phone: | Not reported |
| | |
| Affiliation Type Desc: | Legal Owner |
| Entity Name: | Target Corporation |
| Entity Title: | Not reported |
| Affiliation Address: | PO Box 111 |
| Affiliation City: | Minneapolis |
| Affiliation State: | MN |
| Affiliation Country: | United States |
| Affiliation Zip: | 55440 |
| Affiliation Phone: | (800) 587-2228 |
| | |
| Affiliation Type Desc: | Operator |
| Entity Name: | Target Corporation |
| Entity Title: | Not reported |
| Affiliation Address: | Not reported |
| Affiliation City: | Not reported |
| Affiliation State: | Not reported |
| Affiliation Country: | Not reported |
| Affiliation Zip: | Not reported |
| Affiliation Phone: | (800) 587-2228 |
| | |
| Affiliation Type Desc: | CUPA District |
| Entity Name: | Los Angeles County Fire |
| Entity Title: | Not reported |
| Affiliation Address: | 5825 Rickenbacker Road |
| Affiliation City: | Commerce |
| Affiliation State: | CA |
| Affiliation Country: | Not reported |
| Affiliation Zip: | 90040-3027 |
| Affiliation Phone: | (323) 890-4045 |
| | |
| Affiliation Type Desc: | Parent Corporation |
| Entity Name: | Target Corporate Office Headquarters |
| Entity Title: | Not reported |
| Affiliation Address: | Not reported |
| Affiliation City: | Not reported |
| Affiliation State: | Not reported |
| Affiliation Country: | Not reported |
| Affiliation Zip: | Not reported |
| Affiliation Phone: | Not reported |
| | |
| Affiliation Type Desc: | Document Preparer |
| Entity Name: | Nathan White |
| Entity Title: | Not reported |
| Affiliation Address: | Not reported |
| Affiliation City: | Not reported |
| Affiliation State: | Not reported |
| Affiliation Country: | Not reported |
| Affiliation Zip: | Not reported |

**TARGET T2319 (Continued)** **S123502748**

| | |
|---|---|
| Affiliation Phone: | Not reported |
| Affiliation Type Desc: | Identification Signer |
| Entity Name: | Mitchel Rasmussen |
| Entity Title: | Director of Compliance |
| Affiliation Address: | Not reported |
| Affiliation City: | Not reported |
| Affiliation State: | Not reported |
| Affiliation Country: | Not reported |
| Affiliation Zip: | Not reported |
| Affiliation Phone: | Not reported |
| Affiliation Type Desc: | Environmental Contact |
| Entity Name: | Permits, Operations & Compliance |
| Entity Title: | Not reported |
| Affiliation Address: | PO Box 111 |
| Affiliation City: | Minneapolis |
| Affiliation State: | MN |
| Affiliation Country: | Not reported |
| Affiliation Zip: | 55440 |
| Affiliation Phone: | Not reported |

---

**A10** **TESORO PETROLEUM CO INC** **HAZNET** **S123584853**
**950 E 33RD ST** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 10 of 27 in cluster A**

**Relative:** HAZNET:
**Lower**

| | |
|---|---|
| **Actual:** Name: | TESORO PETROLEUM CO INC |
| **88 ft.** Address: | 950 E 33RD ST |
| City,State,Zip: | SIGNAL HILL, CA 907555114 |
| Year: | 2009 |
| GEPAID: | CAC002647948 |
| Contact: | JEFFERY M BAKER |
| Telephone: | 2538968708 |
| Mailing Name: | Not reported |
| Mailing Address: | 3450 S 344TH WAY STE 100 |
| Mailing City,St,Zip: | AUBURN, WA 98001 |
| Gen County: | Los Angeles |
| TSD EPA ID: | CAT080013352 |
| TSD County: | Los Angeles |
| Tons: | 0.231 |
| CA Waste Code: | 134-Aqueous solution with total organic residues less than 10 percent |
| Method: | H039-Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect |
| Facility County: | Los Angeles |

**A11** **TESORO** **HAZNET** **S123599267**
**950 E 33RD ST** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 11 of 27 in cluster A**

**Relative:** HAZNET:
**Lower**

| | |
|---|---|
| Name: | TESORO |
| Address: | 950 E 33RD ST |
| City,State,Zip: | SIGNAL HILL, CA 907555114 |
| Year: | 2015 |
| GEPAID: | CAC002826273 |
| Contact: | DANNY MONSON |
| Telephone: | 5624956877 |
| Mailing Name: | Not reported |
| Mailing Address: | PO BOX 80730 |
| Mailing City,St,Zip: | RANCHO SANTA MARGARI, CA 926880730 |
| Gen County: | Los Angeles |
| TSD EPA ID: | CAT080013352 |
| TSD County: | Los Angeles |
| Tons: | 0.252 |
| CA Waste Code: | 134-Aqueous solution with total organic residues less than 10 percent |
| Method: | H039-Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect |
| Facility County: | Los Angeles |

**Actual:**
**88 ft.**

---

**A12** **TARGET 292A** **HAZNET** **S112910980**
**950 E 33RD ST** **N/A**
**< 1/8** **LONG BEACH, CA 90807**
**1 ft.**

**Site 12 of 27 in cluster A**

**Relative:** HAZNET:
**Higher**

| | |
|---|---|
| Name: | TARGET 292A |
| Address: | 950 E 33RD ST |
| City,State,Zip: | LONG BEACH, CA 908070000 |
| Year: | 2001 |
| GEPAID: | CAC002302641 |
| Contact: | CINDY RADOVICH/STORE MGR |
| Telephone: | 5624277751 |
| Mailing Name: | Not reported |
| Mailing Address: | 1905 ASTON AVE STE 100 |
| Mailing City,St,Zip: | CARLSBAD, CA 920080000 |
| Gen County: | Los Angeles |
| TSD EPA ID: | TND000772186 |
| TSD County: | 99 |
| Tons: | 0.2 |
| CA Waste Code: | 141-Off-specification, aged or surplus inorganics |
| Method: | ***-Invalid Code |
| Facility County: | Los Angeles |

**Actual:**
**90 ft.**

**A13** **TESORO ENVIRONMENTAL RESOURCES COMPANY** **HAZNET** **S123592698**
**950 E 33RD ST** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 13 of 27 in cluster A**

**Relative:** HAZNET:
**Lower**

| | |
|---|---|
| Name: | TESORO ENVIRONMENTAL RESOURCES COMPANY |
| Address: | 950 E 33RD ST |
| City,State,Zip: | SIGNAL HILL, CA 907555114 |
| Year: | 2013 |
| GEPAID: | CAC002741991 |
| Contact: | JEFFREY BAKER |
| Telephone: | 2538968708 |
| Mailing Name: | Not reported |
| Mailing Address: | 2955 REDONDO AVE |
| Mailing City,St,Zip: | LONG BEACH, CA 90806 |
| Gen County: | Los Angeles |
| TSD EPA ID: | CAT080013352 |
| TSD County: | Los Angeles |
| Tons: | 0.189 |
| CA Waste Code: | 134-Aqueous solution with total organic residues less than 10 percent |
| Method: | H039-Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect |
| Facility County: | Los Angeles |

**Actual:**
**88 ft.**

---

**A14** **TARGET T 2319 - SIGNAL HILL** **CIWQS** **S121678875**
**950 33RD** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 14 of 27 in cluster A**

**Relative:** CIWQS:
**Lower**

| | |
|---|---|
| Name: | TARGET T 2319 - SIGNAL HILL |
| Address: | 950 33RD |
| City,State,Zip: | SIGNAL HILL, CA 90755 |
| Agency: | Target Corporation |
| Agency Address: | PO Box 111, Minneapolis, CA 55440 |
| Place/Project Type: | Construction - Commercial |
| SIC/NAICS: | Not reported |
| Region: | 4 |
| Program: | CONSTW |
| Regulatory Measure Status: | Terminated |
| Regulatory Measure Type: | Storm water construction |
| Order Number: | 99-08DW |
| WDID: | 4 19C343441 |
| NPDES Number: | CAS000002 |
| Adoption Date: | Not reported |
| Effective Date: | 09/06/2006 |
| Termination Date: | 07/05/2007 |
| Expiration/Review Date: | Not reported |
| Design Flow: | Not reported |
| Major/Minor: | Not reported |
| Complexity: | Not reported |
| TTWQ: | Not reported |
| Enforcement Actions within 5 years: | 0 |
| Violations within 5 years: | 0 |
| Latitude: | Not reported |
| Longitude: | Not reported |

**Actual:**
**88 ft.**

**A15** **TARGET STORE #T-292** **LUST** **S102438434**
**950 033RD ST E** **Cortese** **N/A**
**< 1/8** **SIGNAL HILL, CA 90807** **HIST CORTESE**
**1 ft.** **CERS**

**Site 15 of 27 in cluster A**

**Relative:**
**Lower**

**Actual:**
**88 ft.**

LUST:

| | |
|---|---|
| Name: | TARGET STORE #T-292 |
| Address: | 950 033RD ST E |
| City,State,Zip: | SIGNAL HILL, CA 90807 |
| Lead Agency: | LOS ANGELES RWQCB (REGION 4) |
| Case Type: | LUST Cleanup Site |
| Geo Track: | http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0603701871 |
| Global Id: | T0603701871 |
| Latitude: | 33.8169749 |
| Longitude: | -118.1812139 |
| Status: | Open - Remediation |
| Status Date: | 06/09/2010 |
| Case Worker: | NB |
| RB Case Number: | I-11132 |
| Local Agency: | LOS ANGELES COUNTY |
| File Location: | Regional Board |
| Local Case Number: | UNK |
| Potential Media Affect: | Aquifer used for drinking water supply |
| Potential Contaminants of Concern: | Gasoline |
| Site History: | Not reported |

LUST:

| | |
|---|---|
| Global Id: | T0603701871 |
| Contact Type: | Regional Board Caseworker |
| Contact Name: | NHAN BAO |
| Organization Name: | LOS ANGELES RWQCB (REGION 4) |
| Address: | 320 WEST 4TH STREET, SUITE 200 |
| City: | LOS ANGELES |
| Email: | nbao@waterboards.ca.gov |
| Phone Number: | 2135766703 |

LUST:

| | |
|---|---|
| Global Id: | T0603701871 |
| Action Type: | ENFORCEMENT |
| Date: | 12/05/2016 |
| Action: | Staff Letter |
| | |
| Global Id: | T0603701871 |
| Action Type: | RESPONSE |
| Date: | 04/12/2005 |
| Action: | Soil and Water Investigation Workplan |
| | |
| Global Id: | T0603701871 |
| Action Type: | RESPONSE |
| Date: | 01/15/2016 |
| Action: | Remedial Progress Report |
| | |
| Global Id: | T0603701871 |
| Action Type: | RESPONSE |
| Date: | 04/15/2016 |
| Action: | Monitoring Report - Semi-Annually |
| | |
| Global Id: | T0603701871 |

**TARGET STORE #T-292 (Continued)** **S102438434**

Action Type: RESPONSE
Date: 10/15/2015
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 10/15/2018
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 01/15/2019
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 04/15/2017
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 10/15/2016
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 01/15/2018
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: Other
Date: 11/01/1991
Action: Leak Stopped

Global Id: T0603701871
Action Type: RESPONSE
Date: 04/15/2002
Action: Monitoring Report - Quarterly

Global Id: T0603701871
Action Type: RESPONSE
Date: 07/31/2002
Action: Other Report / Document

Global Id: T0603701871
Action Type: RESPONSE
Date: 04/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0603701871
Action Type: RESPONSE
Date: 10/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0603701871
Action Type: RESPONSE
Date: 07/15/2004

**TARGET STORE #T-292 (Continued)** **S102438434**

| | |
|---|---|
| Action: | Monitoring Report - Quarterly |
| Global Id: | T0603701871 |
| Action Type: | RESPONSE |
| Date: | 10/15/2004 |
| Action: | Monitoring Report - Quarterly |
| Global Id: | T0603701871 |
| Action Type: | RESPONSE |
| Date: | 04/15/2005 |
| Action: | Monitoring Report - Quarterly |
| Global Id: | T0603701871 |
| Action Type: | RESPONSE |
| Date: | 01/15/2005 |
| Action: | Monitoring Report - Quarterly |
| Global Id: | T0603701871 |
| Action Type: | RESPONSE |
| Date: | 10/15/2011 |
| Action: | Monitoring Report - Semi-Annually |
| Global Id: | T0603701871 |
| Action Type: | RESPONSE |
| Date: | 04/15/2012 |
| Action: | Monitoring Report - Semi-Annually |
| Global Id: | T0603701871 |
| Action Type: | RESPONSE |
| Date: | 07/15/2017 |
| Action: | Monitoring Report - Semi-Annually |
| Global Id: | T0603701871 |
| Action Type: | RESPONSE |
| Date: | 10/11/2013 |
| Action: | Well Installation Workplan - Regulator Responded |
| Global Id: | T0603701871 |
| Action Type: | RESPONSE |
| Date: | 05/23/2014 |
| Action: | Pilot Study / Treatability Workplan - Regulator Responded |
| Global Id: | T0603701871 |
| Action Type: | RESPONSE |
| Date: | 10/15/2014 |
| Action: | Soil and Water Investigation Workplan - Regulator Responded |
| Global Id: | T0603701871 |
| Action Type: | RESPONSE |
| Date: | 07/15/2018 |
| Action: | Remedial Progress Report - Regulator Responded |
| Global Id: | T0603701871 |
| Action Type: | RESPONSE |
| Date: | 01/31/2017 |
| Action: | Corrective Action Plan / Remedial Action Plan - Regulator Responded |

**TARGET STORE #T-292 (Continued)** **S102438434**

Global Id: T0603701871
Action Type: REMEDIATION
Date: 07/01/2007
Action: Soil Vapor Extraction (SVE)

Global Id: T0603701871
Action Type: REMEDIATION
Date: 08/11/2005
Action: Free Product Removal

Global Id: T0603701871
Action Type: ENFORCEMENT
Date: 05/24/2017
Action: Health and Safety Code Section 25296.10(c)

Global Id: T0603701871
Action Type: RESPONSE
Date: 10/18/2006
Action: Monitoring Report - Quarterly

Global Id: T0603701871
Action Type: RESPONSE
Date: 07/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0603701871
Action Type: RESPONSE
Date: 04/18/2006
Action: Monitoring Report - Quarterly

Global Id: T0603701871
Action Type: Other
Date: 11/01/1991
Action: Leak Reported

Global Id: T0603701871
Action Type: RESPONSE
Date: 04/16/2007
Action: Monitoring Report - Quarterly

Global Id: T0603701871
Action Type: RESPONSE
Date: 10/15/2012
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 09/04/2007
Action: Interim Remedial Action Plan

Global Id: T0603701871
Action Type: RESPONSE
Date: 04/15/2013
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE

**TARGET STORE #T-292 (Continued)** **S102438434**

Date: 10/11/2013
Action: Well Installation Report

Global Id: T0603701871
Action Type: ENFORCEMENT
Date: 11/25/2013
Action: Staff Letter

Global Id: T0603701871
Action Type: ENFORCEMENT
Date: 11/14/2018
Action: Staff Letter

Global Id: T0603701871
Action Type: RESPONSE
Date: 07/15/2009
Action: Pilot Study / Treatability Workplan

Global Id: T0603701871
Action Type: RESPONSE
Date: 04/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0603701871
Action Type: RESPONSE
Date: 04/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0603701871
Action Type: RESPONSE
Date: 10/15/2013
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 04/15/2014
Action: Well Installation Report

Global Id: T0603701871
Action Type: RESPONSE
Date: 04/15/2014
Action: Other Workplan

Global Id: T0603701871
Action Type: ENFORCEMENT
Date: 06/15/2009
Action: Staff Letter

Global Id: T0603701871
Action Type: RESPONSE
Date: 10/15/2008
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 10/15/2007
Action: Monitoring Report - Quarterly

**TARGET STORE #T-292 (Continued)** **S102438434**

Global Id: T0603701871
Action Type: RESPONSE
Date: 01/15/2007
Action: Other Workplan

Global Id: T0603701871
Action Type: RESPONSE
Date: 10/15/2014
Action: Other Report / Document

Global Id: T0603701871
Action Type: RESPONSE
Date: 04/15/2015
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 04/15/1992
Action: Tank Removal Report / UST Sampling Report

Global Id: T0603701871
Action Type: RESPONSE
Date: 04/15/2009
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 07/15/2009
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 07/15/2010
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 01/15/2011
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 07/15/2010
Action: Soil and Water Investigation Report

Global Id: T0603701871
Action Type: RESPONSE
Date: 01/15/2010
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 10/15/2014
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: ENFORCEMENT

**TARGET STORE #T-292 (Continued)** **S102438434**

Date: 06/09/2010
Action: Staff Letter

Global Id: T0603701871
Action Type: ENFORCEMENT
Date: 06/28/2002
Action: Staff Letter

Global Id: T0603701871
Action Type: ENFORCEMENT
Date: 07/28/2014
Action: Staff Letter

Global Id: T0603701871
Action Type: Other
Date: 11/01/1991
Action: Leak Discovery

Global Id: T0603701871
Action Type: RESPONSE
Date: 10/15/2010
Action: Monitoring Report - Semi-Annually

Global Id: T0603701871
Action Type: RESPONSE
Date: 10/15/2010
Action: Remedial Progress Report

Global Id: T0603701871
Action Type: RESPONSE
Date: 12/06/2010
Action: Pilot Study/ Treatability Report

LUST:
Global Id: T0603701871
Status: Open - Case Begin Date
Status Date: 11/01/1991

Global Id: T0603701871
Status: Open - Site Assessment
Status Date: 11/20/1991

Global Id: T0603701871
Status: Open - Site Assessment
Status Date: 02/20/1993

Global Id: T0603701871
Status: Open - Site Assessment
Status Date: 11/20/1997

Global Id: T0603701871
Status: Open - Site Assessment
Status Date: 04/12/2005

Global Id: T0603701871
Status: Open - Remediation
Status Date: 06/09/2010

**TARGET STORE #T-292 (Continued)** **S102438434**

LUST REG 4:

| | | |
|---|---|---|
| Region: | 4 | |
| Regional Board: | 04 | |
| County: | Los Angeles | |
| Facility Id: | 908070234 | |
| Status: | Preliminary site assessment underway | |
| Substance: | Gasoline | |
| Substance Quantity: | Not reported | |
| Local Case No: | UNK | |
| Case Type: | Groundwater | |
| Abatement Method Used at the Site: | | Not reported |
| Global ID: | T0603701871 | |
| W Global ID: | Not reported | |
| Staff: | UNK | |
| Local Agency: | Not reported | |
| Cross Street: | ATLANTIC AVE | |
| Enforcement Type: | Not reported | |
| Date Leak Discovered: | 11/1/1991 | |
| Date Leak First Reported: | | 11/1/1991 |
| Date Leak Record Entered: | 9/23/1996 | |
| Date Confirmation Began: | Not reported | |
| Date Leak Stopped: | 11/1/1991 | |
| Date Case Last Changed on Database: | | 1/3/1997 |
| Date the Case was Closed: | | Not reported |
| How Leak Discovered: | Tank Closure | |
| How Leak Stopped: | Not reported | |
| Cause of Leak: | Not reported | |
| Leak Source: | Not reported | |
| Operator: | Not reported | |
| Water System: | Not reported | |
| Well Name: | Not reported | |
| Approx. Dist To Production Well (ft): | | 3532.1067443702109482595975816 |
| Source of Cleanup Funding: | | Not reported |
| Preliminary Site Assessment Workplan Submitted: | | Not reported |
| Preliminary Site Assessment Began: | | 8/22/1996 |
| Pollution Characterization Began: | | Not reported |
| Remediation Plan Submitted: | | Not reported |
| Remedial Action Underway: | | Not reported |
| Post Remedial Action Monitoring Began: | | Not reported |
| Enforcement Action Date: | | Not reported |
| Historical Max MTBE Date: | | 2/19/2002 |
| Hist Max MTBE Conc in Groundwater: | | 2500 |
| Hist Max MTBE Conc in Soil: | | Not reported |
| Significant Interim Remedial Action Taken: | | Not reported |
| GW Qualifier: | = | |
| Soil Qualifier: | Not reported | |
| Organization: | Not reported | |
| Owner Contact: | Not reported | |
| Responsible Party: | TESORO REFINING & MARKETING | |
| RP Address: | 320 S.W. STARK ST., STE 511, PORTLAND OR 97204 | |
| Program: | LUST | |
| Lat/Long: | 33.8169749 / -1 | |
| Local Agency Staff: | Not reported | |
| Beneficial Use: | Not reported | |
| Priority: | Not reported | |
| Cleanup Fund Id: | Not reported | |
| Suspended: | Not reported | |

**TARGET STORE #T-292 (Continued)** **S102438434**

Assigned Name: Not reported
Summary: Not reported

CORTESE:
Name: TARGET STORE #T-292
Address: 950 033RD ST E
City,State,Zip: SIGNAL HILL, CA 90807
Region: CORTESE
Envirostor Id: Not reported
Global ID: T0603701871
Site/Facility Type: LUST CLEANUP SITE
Cleanup Status: OPEN - REMEDIATION
Status Date: Not reported
Site Code: Not reported
Latitude: Not reported
Longitude: Not reported
Owner: Not reported
Enf Type: Not reported
Swat R: Not reported
Flag: active
Order No: Not reported
Waste Discharge System No: Not reported
Effective Date: Not reported
Region 2: Not reported
WID Id: Not reported
Solid Waste Id No: Not reported
Waste Management Uit Name: Not reported
File Name: Active Open

HIST CORTESE:
edr_fname: TARGET STORE #T-292
edr_fadd1: 950 033RD
City,State,Zip: SIGNAL HILL, CA 90807
Region: CORTESE
Facility County Code: 19
Reg By: LTNKA
Reg Id: 908070234

CERS:
Name: TARGET STORE #T-292
Address: 950 033RD ST E
City,State,Zip: SIGNAL HILL, CA 90807
Site ID: 226843
CERS ID: T0603701871
CERS Description: Leaking Underground Storage Tank Cleanup Site

Affiliation:
Affiliation Type Desc: Regional Board Caseworker
Entity Name: NHAN BAO - LOS ANGELES RWQCB (REGION 4)
Entity Title: Not reported
Affiliation Address: 320 WEST 4TH STREET, SUITE 200
Affiliation City: LOS ANGELES
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: 2135766703

**A16** **TESORO** **HAZNET** **S123608321**
**950 EAST 33RD STREET** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 16 of 27 in cluster A**

**Relative:** HAZNET:
**Lower**

| | |
|---|---|
| **Actual:** Name: | TESORO |
| **88 ft.** Address: | 950 EAST 33RD STREET |
| City,State,Zip: | SIGNAL HILL, CA 90755 |
| Year: | 2017 |
| GEPAID: | CAC002896243 |
| Contact: | DANNY MONSON |
| Telephone: | 5624952675 |
| Mailing Name: | Not reported |
| Mailing Address: | PO BOX 80730 |
| Mailing City,St,Zip: | RANCHOSANTAMARGARITA, CA 92688 |
| Gen County: | Los Angeles |
| TSD EPA ID: | NVT330010000 |
| TSD County: | 99 |
| Tons: | 0.0225 |
| CA Waste Code: | 352-Other organic solids |
| Method: | H132-Landfill Or Surface Impoundment That Will Be Closed As Landfill( To Include On-Site Treatment And/Or Stabilization) |
| Facility County: | Los Angeles |

| | |
|---|---|
| Name: | TESORO |
| Address: | 950 EAST 33RD STREET |
| City,State,Zip: | SIGNAL HILL, CA 90755 |
| Year: | 2017 |
| GEPAID: | CAC002896243 |
| Contact: | DANNY MONSON |
| Telephone: | 5624952675 |
| Mailing Name: | Not reported |
| Mailing Address: | PO BOX 80730 |
| Mailing City,St,Zip: | RANCHOSANTAMARGARITA, CA 92688 |
| Gen County: | Los Angeles |
| TSD EPA ID: | CAT080013352 |
| TSD County: | Los Angeles |
| Tons: | 0.21 |
| CA Waste Code: | 134-Aqueous solution with total organic residues less than 10 percent |
| Method: | H039-Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect |
| Facility County: | Los Angeles |

---

**A17** **1X TARGET #292** **HAZNET** **S123741131**
**950 E 33RD STREET** **N/A**
**< 1/8** **SIGNAL HILL, CA 90807**
**1 ft.**

**Site 17 of 27 in cluster A**

**Relative:** HAZNET:
**Lower**

| | |
|---|---|
| **Actual:** Name: | 1X TARGET #292 |
| **88 ft.** Address: | 950 E 33RD STREET |
| City,State,Zip: | SIGNAL HILL, CA 908070000 |
| Year: | 1991 |
| GEPAID: | CAC000647600 |
| Contact: | CARMEN RIVERA/OPERATION MGR |
| Telephone: | 2134277751 |
| Mailing Name: | Not reported |

**1X TARGET #292 (Continued)** **S123741131**

| | |
|---|---|
| Mailing Address: | 950 E 33RD STREET |
| Mailing City,St,Zip: | SIGNAL HILL, CA 908070000 |
| Gen County: | Los Angeles |
| TSD EPA ID: | CAT080011059 |
| TSD County: | Los Angeles |
| Tons: | 0.0625 |
| CA Waste Code: | 331-Off-specification, aged or surplus organics |
| Method: | H01-Transfer Station |
| Facility County: | Los Angeles |

---

**A18** **TESORO** **HAZNET** **S118225129**
**950 E 33RD ST** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 18 of 27 in cluster A**

**Relative:** **Lower**
**Actual:** **88 ft.**

HAZNET:

| | |
|---|---|
| Name: | TESORO |
| Address: | 950 E 33RD ST |
| City,State,Zip: | SIGNAL HILL, CA 907555114 |
| Year: | 2014 |
| GEPAID: | CAC002790097 |
| Contact: | DANNY MONSON |
| Telephone: | 5624956877 |
| Mailing Name: | Not reported |
| Mailing Address: | PO BOX 80730 |
| Mailing City,St,Zip: | RANCHO SANTA MARGARI, CA 926880730 |
| Gen County: | Los Angeles |
| TSD EPA ID: | CAT080013352 |
| TSD County: | Los Angeles |
| Tons: | 0.231 |
| CA Waste Code: | 134-Aqueous solution with total organic residues less than 10 percent |
| Method: | H039-Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect |
| Facility County: | Los Angeles |

---

**A19** **CHMIRS** **S100278362**
**950 EAST 33RD STREET** **N/A**
**< 1/8** **SIGNAL HILL, CA 90806**
**1 ft.**

**Site 19 of 27 in cluster A**

**Relative:** **Lower**
**Actual:** **88 ft.**

CHMIRS:

| | |
|---|---|
| Name: | Not reported |
| Address: | 950 EAST 33RD STREET |
| City,State,Zip: | SIGNAL HILL, CA 90806 |
| OES Incident Number: | 119917 |
| OES notification: | Not reported |
| OES Date: | Not reported |
| OES Time: | Not reported |
| **Date Completed:** | **20-OCT-91** |
| Property Use: | 500 |
| Agency Id Number: | 19620 |
| Agency Incident Number: | H-049-91 |
| Time Notified: | 735 |
| Time Completed: | 900 |

**(Continued)** **S100278362**

| | |
|---|---|
| Surrounding Area: | 400 |
| Estimated Temperature: | 70 |
| Property Management: | P |
| More Than Two Substances Involved?: | N |
| Resp Agncy Personel # Of Decontaminated: | 0 |
| Responding Agency Personel # Of Injuries: | 0 |
| Responding Agency Personel # Of Fatalities: | 0 |
| Others Number Of Decontaminated: | 0 |
| Others Number Of Injuries: | 0 |
| Others Number Of Fatalities: | 0 |
| Vehicle Make/year: | Not reported |
| Vehicle License Number: | Not reported |
| Vehicle State: | Not reported |
| Vehicle Id Number: | Not reported |
| CA DOT PUC/ICC Number: | Not reported |
| Company Name: | Not reported |
| Reporting Officer Name/ID: | J. PETERSON 48 |
| Report Date: | 12-NOV-91 |
| Facility Telephone: | 213 426-7311 |
| Waterway Involved: | Not reported |
| Waterway: | Not reported |
| Spill Site: | Not reported |
| Cleanup By: | Not reported |
| Containment: | Not reported |
| What Happened: | Not reported |
| Type: | Not reported |
| Measure: | Not reported |
| Other: | Not reported |
| Date/Time: | Not reported |
| Year: | 88-92 |
| Agency: | Not reported |
| Incident Date: | 20-OCT-91 |
| Admin Agency: | Not reported |
| Amount: | Not reported |
| Contained: | Not reported |
| Site Type: | Not reported |
| E Date: | 06-AUG-92 |
| Substance: | Not reported |
| Unknown: | Not reported |
| Substance #2: | Not reported |
| Substance #3: | Not reported |
| Evacuations: | Not reported |
| Number of Injuries: | Not reported |
| Number of Fatalities: | Not reported |
| #1 Pipeline: | Not reported |
| #2 Pipeline: | Not reported |
| #3 Pipeline: | Not reported |
| #1 Vessel >= 300 Tons: | Not reported |
| #2 Vessel >= 300 Tons: | Not reported |
| #3 Vessel >= 300 Tons: | Not reported |
| Evacs: | Not reported |
| Injuries: | Not reported |
| Fatals: | Not reported |
| Comments: | Y |
| Description: | Not reported |

**A20** **TESORO PETROLEUM CO INC** **HAZNET** **S123581838**
**950 E 33RD ST** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 20 of 27 in cluster A**

**Relative: Lower**
**Actual: 88 ft.**

HAZNET:

| | |
|---|---|
| Name: | TESORO PETROLEUM CO INC |
| Address: | 950 E 33RD ST |
| City,State,Zip: | SIGNAL HILL, CA 907555114 |
| Year: | 2004 |
| GEPAID: | CAC002584744 |
| Contact: | JEFFERY M BAKER |
| Telephone: | 2538968708 |
| Mailing Name: | Not reported |
| Mailing Address: | 3450 S 344TH WAY STE 100 |
| Mailing City,St,Zip: | AUBURN, WA 98001 |
| Gen County: | Los Angeles |
| TSD EPA ID: | CAT080013352 |
| TSD County: | Los Angeles |
| Tons: | 0.231 |
| CA Waste Code: | 134-Aqueous solution with total organic residues less than 10 percent |
| Method: | R01-Recycler |
| Facility County: | Los Angeles |

---

**A21** **TARGET STORE T2319** **FINDS** **1014672004**
**950 E 33RD ST** **ECHO** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 21 of 27 in cluster A**

**Relative: Lower**
**Actual: 88 ft.**

FINDS:

Registry ID: 110043534672

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

HAZARDOUS WASTE BIENNIAL REPORTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

| | |
|---|---|
| Envid: | 1014672004 |
| Registry ID: | 110043534672 |
| DFR URL: | http://echo.epa.gov/detailed-facility-report?fid=110043534672 |

**A22** **TARGET STORE T2319** **HAZNET** **S113803694**
**950 E 33RD ST** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 22 of 27 in cluster A**

**Relative:** HAZNET:
**Lower**

**Actual:**
**88 ft.**

| | |
|---|---|
| Name: | TARGET STORE T2319 |
| Address: | 950 E 33RD ST |
| City,State,Zip: | SIGNAL HILL, CA 907550000 |
| Year: | 2017 |
| GEPAID: | CAR000218487 |
| Contact: | STEVE MUSSER |
| Telephone: | 8005872228 |
| Mailing Name: | Not reported |
| Mailing Address: | PO BOX 111 |
| Mailing City,St,Zip: | MINNEAPOLIS, MN 554400000 |
| Gen County: | Los Angeles |
| TSD EPA ID: | CAD044429835 |
| TSD County: | Los Angeles |
| Tons: | 0.0045 |
| CA Waste Code: | 791-Liquids with pH <= 2 |
| Method: | H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135) |
| Facility County: | Los Angeles |

| | |
|---|---|
| Name: | TARGET STORE T2319 |
| Address: | 950 E 33RD ST |
| City,State,Zip: | SIGNAL HILL, CA 907550000 |
| Year: | 2017 |
| GEPAID: | CAR000218487 |
| Contact: | STEVE MUSSER |
| Telephone: | 8005872228 |
| Mailing Name: | Not reported |
| Mailing Address: | PO BOX 111 |
| Mailing City,St,Zip: | MINNEAPOLIS, MN 554400000 |
| Gen County: | Los Angeles |
| TSD EPA ID: | CAD044429835 |
| TSD County: | Los Angeles |
| Tons: | 1.531 |
| CA Waste Code: | 331-Off-specification, aged or surplus organics |
| Method: | H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135) |
| Facility County: | Los Angeles |

| | |
|---|---|
| Name: | TARGET STORE T2319 |
| Address: | 950 E 33RD ST |
| City,State,Zip: | SIGNAL HILL, CA 907550000 |
| Year: | 2017 |
| GEPAID: | CAR000218487 |
| Contact: | STEVE MUSSER |
| Telephone: | 8005872228 |
| Mailing Name: | Not reported |
| Mailing Address: | PO BOX 111 |
| Mailing City,St,Zip: | MINNEAPOLIS, MN 554400000 |
| Gen County: | Los Angeles |
| TSD EPA ID: | CAD044429835 |
| TSD County: | Los Angeles |
| Tons: | 0.0535 |

**TARGET STORE T2319 (Continued)** **S113803694**

CA Waste Code: 141-Off-specification, aged or surplus inorganics
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Los Angeles

Name: TARGET STORE T2319
Address: 950 E 33RD ST
City,State,Zip: SIGNAL HILL, CA 907550000
Year: 2017
GEPAID: CAR000218487
Contact: STEVE MUSSER
Telephone: 8005872228
Mailing Name: Not reported
Mailing Address: PO BOX 111
Mailing City,St,Zip: MINNEAPOLIS, MN 554400000
Gen County: Los Angeles
TSD EPA ID: CAD044429835
TSD County: Los Angeles
Tons: 0.0225
CA Waste Code: 122-Alkaline solution without metals pH >= 12.5
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Los Angeles

Name: TARGET STORE T2319
Address: 950 E 33RD ST
City,State,Zip: SIGNAL HILL, CA 907550000
Year: 2017
GEPAID: CAR000218487
Contact: STEVE MUSSER
Telephone: 8005872228
Mailing Name: Not reported
Mailing Address: PO BOX 111
Mailing City,St,Zip: MINNEAPOLIS, MN 554400000
Gen County: Los Angeles
TSD EPA ID: TXD982290140
TSD County: 99
Tons: 0.001
CA Waste Code: 331-Off-specification, aged or surplus organics
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Los Angeles

Click this hyperlink while viewing on your computer to access
31 additional CA_HAZNET: record(s) in the EDR Site Report.

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**A23** **TESORO ENVIRONMENTAL RESOURCE CO** **HAZNET** **S123586049**
**950 E 33RD ST** **N/A**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 23 of 27 in cluster A**

**Relative:** HAZNET:
**Lower**
Name: TESORO ENVIRONMENTAL RESOURCE CO
**Actual:** Address: 950 E 33RD ST
**88 ft.** City,State,Zip: SIGNAL HILL, CA 90755
Year: 2011
GEPAID: CAC002662694

**TESORO ENVIRONMENTAL RESOURCE CO (Continued)** **S123586049**

| | |
|---|---|
| Contact: | JEFFREY BAKER |
| Telephone: | 2538968708 |
| Mailing Name: | Not reported |
| Mailing Address: | 3450 S 344TH WAY STE 201 |
| Mailing City,St,Zip: | FEDERAL WAY, WA 98001 |
| Gen County: | Los Angeles |
| TSD EPA ID: | CAT080013352 |
| TSD County: | Los Angeles |
| Tons: | 0.231 |
| CA Waste Code: | 134-Aqueous solution with total organic residues less than 10 percent |
| Method: | H039-Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect |
| Facility County: | Los Angeles |

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**A24** **TESORO** **RCRA NonGen / NLR** **1024764438**
**950 EAST 33RD STREET** **CAC002984306**
**< 1/8** **SIGNAL HILL, CA 90755**
**1 ft.**

**Site 24 of 27 in cluster A**

**Relative:** **Lower**
**Actual:** **88 ft.**

RCRA NonGen / NLR:

| | |
|---|---|
| Date form received by agency: | 2018-10-10 00:00:00.0 |
| Facility name: | TESORO |
| Facility address: | 950 EAST 33RD STREET<br>SIGNAL HILL, CA 90755 |
| EPA ID: | CAC002984306 |
| Mailing address: | O PO BOX 80730<br>RANCHO SANTA MARGARI, CA 92688 |
| Contact: | DANNY MONSON |
| Contact address: | 400 OCEANGATE SUITE 600<br>LONG BEACH, CA 90802-4692 |
| Contact country: | Not reported |
| Contact telephone: | 562-495-6877 |
| Contact email: | DANIEL.M.MONSON@ANDEAVOR.COM |
| EPA Region: | 09 |
| Classification: | Non-Generator |
| Description: | Handler: Non-Generators do not presently generate hazardous waste |

Owner/Operator Summary:

| | |
|---|---|
| Owner/operator name: | TESORO ENVIRONMENTAL RESOURCES CO |
| Owner/operator address: | 400 OCEANGATE SUITE 600<br>LONG BEACH, CA 90802 |
| Owner/operator country: | Not reported |
| Owner/operator telephone: | 562-495-6877 |
| Owner/operator email: | Not reported |
| Owner/operator fax: | Not reported |
| Owner/operator extension: | Not reported |
| Legal status: | Other |
| Owner/Operator Type: | Owner |
| Owner/Op start date: | Not reported |
| Owner/Op end date: | Not reported |

| | |
|---|---|
| Owner/operator name: | DANNY MONSON |
| Owner/operator address: | 400 OCEANGATE SUITE 600<br>LONG BEACH, CA 90802 |
| Owner/operator country: | Not reported |
| Owner/operator telephone: | 562-495-6877 |

**TESORO (Continued)** **1024764438**

Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

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**A25** **TARGET STORE T-2319** **HAZNET** **S113097302**
**950 E 33RD ST** **N/A**
**< 1/8** **LONG BEACH, CA 90807**
**1 ft.**

**Site 25 of 27 in cluster A**

**Relative: Higher**
**Actual: 90 ft.**

HAZNET:
Name: TARGET STORE T-2319
Address: 950 E 33RD ST
City,State,Zip: LONG BEACH, CA 908070000
Year: 2011
GEPAID: CAL000183395
Contact: USER
Telephone: 8005872228
Mailing Name: Not reported
Mailing Address: PO BOX 111
Mailing City,St,Zip: MINNEAPOLIS, MN 554400111
Gen County: Los Angeles
TSD EPA ID: AZD081705402
TSD County: 99
Tons: 0.162
CA Waste Code: 331-Off-specification, aged or surplus organics
Method: H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Los Angeles

Name: TARGET STORE T-2319
Address: 950 E 33RD ST
City,State,Zip: LONG BEACH, CA 908070000
Year: 2011
GEPAID: CAL000183395

**TARGET STORE T-2319 (Continued)** **S113097302**

| | |
|---|---|
| Contact: | USER |
| Telephone: | 8005872228 |
| Mailing Name: | Not reported |
| Mailing Address: | PO BOX 111 |
| Mailing City,St,Zip: | MINNEAPOLIS, MN 554400111 |
| Gen County: | Los Angeles |
| TSD EPA ID: | MID980991566 |
| TSD County: | Not reported |
| Tons: | 0.0005 |
| CA Waste Code: | 311-Pharmaceutical waste |
| Method: | H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135) |
| Facility County: | Los Angeles |

| | |
|---|---|
| Name: | TARGET STORE T-2319 |
| Address: | 950 E 33RD ST |
| City,State,Zip: | LONG BEACH, CA 908070000 |
| Year: | 2010 |
| GEPAID: | CAL000183395 |
| Contact: | USER |
| Telephone: | 8005872228 |
| Mailing Name: | Not reported |
| Mailing Address: | PO BOX 111 |
| Mailing City,St,Zip: | MINNEAPOLIS, MN 554400111 |
| Gen County: | Los Angeles |
| TSD EPA ID: | CAD008364432 |
| TSD County: | Los Angeles |
| Tons: | 0.05 |
| CA Waste Code: | 122-Alkaline solution without metals pH >= 12.5 |
| Method: | H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135) |
| Facility County: | Los Angeles |

| | |
|---|---|
| Name: | TARGET STORE T-2319 |
| Address: | 950 E 33RD ST |
| City,State,Zip: | LONG BEACH, CA 908070000 |
| Year: | 2010 |
| GEPAID: | CAL000183395 |
| Contact: | USER |
| Telephone: | 8005872228 |
| Mailing Name: | Not reported |
| Mailing Address: | PO BOX 111 |
| Mailing City,St,Zip: | MINNEAPOLIS, MN 554400111 |
| Gen County: | Los Angeles |
| TSD EPA ID: | AZD081705402 |
| TSD County: | 99 |
| Tons: | 0.1225 |
| CA Waste Code: | 331-Off-specification, aged or surplus organics |
| Method: | H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135) |
| Facility County: | Los Angeles |

| | |
|---|---|
| Name: | TARGET STORE T-2319 |
| Address: | 950 E 33RD ST |
| City,State,Zip: | LONG BEACH, CA 908070000 |
| Year: | 2009 |
| GEPAID: | CAL000183395 |

**TARGET STORE T-2319 (Continued)** **S113097302**

| | |
|---|---|
| Contact: | USER |
| Telephone: | 8005872228 |
| Mailing Name: | Not reported |
| Mailing Address: | PO BOX 111 |
| Mailing City,St,Zip: | MINNEAPOLIS, MN 554400111 |
| Gen County: | Los Angeles |
| TSD EPA ID: | AZD081705402 |
| TSD County: | 99 |
| Tons: | 0.0075 |
| CA Waste Code: | 331-Off-specification, aged or surplus organics |
| Method: | H141-Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135) |
| Facility County: | Los Angeles |

Click this hyperlink while viewing on your computer to access
15 additional CA_HAZNET: record(s) in the EDR Site Report.

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**A26** **CVS PHARMACY #17385** **RCRA-VSQG 1018273763**
**950 E 33RD ST STE B** **FINDS CAR000259549**
**< 1/8** **SIGNAL HILL, CA 90755** **ECHO**
**1 ft.**

**Site 26 of 27 in cluster A**

**Relative: Lower**
**Actual: 88 ft.**

RCRA-VSQG:

| | |
|---|---|
| Date form received by agency: | 2016-03-29 00:00:00.0 |
| Facility name: | CVS PHARMACY #17385 |
| Facility address: | 950 E 33RD ST STE B<br>SIGNAL HILL, CA 90755 |
| EPA ID: | CAR000259549 |
| Mailing address: | CVS DR<br>WOONSOCKET, RI 02895 |
| Contact: | NICOLE WILKINSON |
| Contact address: | CVS DR MAIL CODE 2340<br>WOONSOCKET, RI 02895 |
| Contact country: | US |
| Contact telephone: | 401-770-7132 |
| Contact email: | NICOLE.WILKINSON@CVSHEALTH.COM |
| EPA Region: | 09 |
| Classification: | Conditionally Exempt Small Quantity Generator |
| Description: | Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste |

Owner/Operator Summary:

| | |
|---|---|
| Owner/operator name: | GARFIELD BEACH CVS LLC |
| Owner/operator address: | Not reported |

**CVS PHARMACY #17385 (Continued)** **1018273763**

Not reported
Owner/operator country: US
Owner/operator telephone: Not reported
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 2015-12-16 00:00:00.
Owner/Op end date: Not reported

Owner/operator name: ALBERT A ZIMMERMAN TRUST
Owner/operator address: DASSIA WAY EAST
OCEANSIDE, CA 92056
Owner/operator country: US
Owner/operator telephone: Not reported
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 1970-06-16 00:00:00.
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Hazardous Waste Summary:

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 123
. Waste name: Unspecified alkaline solution

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 181

**CVS PHARMACY #17385 (Continued)** **1018273763**

. Waste name: Other inorganic solid waste

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 311
. Waste name: Pharmaceutical waste

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 561
. Waste name: Detergent and soap

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: U034
. Waste name: ACETALDEHYDE, TRICHLORO- (OR) CHLORAL

. Waste code: U044
. Waste name: CHLOROFORM (OR) METHANE, TRICHLORO-

. Waste code: U122
. Waste name: FORMALDEHYDE

**CVS PHARMACY #17385 (Continued)** **1018273763**

. Waste code: U129
. Waste name: CYCLOHEXANE, 1,2,3,4,5,6-HEXACHLORO-, (1ALPHA, 2ALPHA, 3BETA, 4ALPHA, 5ALPHA, 6BETA)- (OR) LINDANE

. Waste code: U188
. Waste name: PHENOL

. Waste code: U201
. Waste name: 1,3-BENZENEDIOL (OR) RESORCINOL

. Waste code: U205
. Waste name: SELENIUM SULFIDE (OR) SELENIUM SULFIDE SES2 (R,T)

Violation Status: No violations found

FINDS:

Registry ID: 110067553196

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1018273763
Registry ID: 110067553196
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110067553196

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**27** **CHMIRS** **S100278410**
**N/A**

**32ND AND CALIFORNIA**
**SIGNAL HILL, CA 92806**

**< 1/8**
**0.001 mi.**
**5 ft.**

**Relative:**
**Higher**

**Actual:**
**92 ft.**

CHMIRS:
Name: Not reported
Address: 32ND AND CALIFORNIA
City,State,Zip: SIGNAL HILL, CA 90806
OES Incident Number: 121193
OES notification: Not reported
OES Date: Not reported
OES Time: Not reported
**Date Completed:** **31-DEC-91**
Property Use: 962
Agency Id Number: 19620
Agency Incident Number: H-064-91
Time Notified: 1900
Time Completed: 1600
Surrounding Area: 400
Estimated Temperature: 50

**O113** **TEXACO PRODUCING INC.** **LUST** **S101298126**
**South** **3033 CALIFORNIA AVE** **SWEEPS UST** **N/A**
**1/8-1/4** **SIGNAL HILL, CA 90807** **HIST CORTESE**
**0.191 mi.** **CERS**
**1010 ft.** **Site 2 of 2 in cluster O**

**Relative:**
**Higher**

**Actual:**
**107 ft.**

LUST:

| | |
|---|---|
| Name: | TEXACO PRODUCING INC. |
| Address: | 3033 CALIFORNIA AVE |
| City,State,Zip: | SIGNAL HILL, CA 90807 |
| Lead Agency: | LOS ANGELES RWQCB (REGION 4) |
| Case Type: | LUST Cleanup Site |
| Geo Track: | http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0603703964 |
| Global Id: | T0603703964 |
| Latitude: | 33.8125714 |
| Longitude: | -118.1806817 |
| Status: | Completed - Case Closed |
| Status Date: | 10/12/1995 |
| Case Worker: | YR |
| RB Case Number: | I-12359 |
| Local Agency: | LOS ANGELES COUNTY |
| File Location: | Not reported |
| Local Case Number: | Not reported |
| Potential Media Affect: | Soil |
| Potential Contaminants of Concern: | Gasoline |
| Site History: | Not reported |

LUST:

| | |
|---|---|
| Global Id: | T0603703964 |
| Contact Type: | Local Agency Caseworker |
| Contact Name: | JOHN AWUJO |
| Organization Name: | LOS ANGELES COUNTY |
| Address: | 900 S FREMONT AVE |
| City: | ALHAMBRA |
| Email: | jawujo@dpw.lacounty.gov |
| Phone Number: | 6264583507 |

| | |
|---|---|
| Global Id: | T0603703964 |
| Contact Type: | Regional Board Caseworker |
| Contact Name: | YUE RONG |
| Organization Name: | LOS ANGELES RWQCB (REGION 4) |
| Address: | 320 W. 4TH ST., SUITE 200 |
| City: | Los Angeles |
| Email: | yrong@waterboards.ca.gov |
| Phone Number: | Not reported |

LUST:

| | |
|---|---|
| Global Id: | T0603703964 |
| Action Type: | Other |
| Date: | 08/01/1989 |
| Action: | Leak Stopped |

| | |
|---|---|
| Global Id: | T0603703964 |
| Action Type: | Other |
| Date: | 02/26/1990 |
| Action: | Leak Reported |

| | |
|---|---|
| Global Id: | T0603703964 |
| Action Type: | Other |

**TEXACO PRODUCING INC. (Continued)** **S101298126**

Date: 08/01/1989
Action: Leak Discovery

LUST:
Global Id: T0603703964
Status: Open - Case Begin Date
Status Date: 08/01/1989

Global Id: T0603703964
Status: Open - Site Assessment
Status Date: 02/26/1990

Global Id: T0603703964
Status: Completed - Case Closed
Status Date: 10/12/1995

LUST REG 4:

| | | |
|---|---|---|
| Region: | 4 | |
| Regional Board: | 04 | |
| County: | Los Angeles | |
| Facility Id: | I-12359 | |
| Status: | Case Closed | |
| Substance: | Gasoline | |
| Substance Quantity: | Not reported | |
| Local Case No: | Not reported | |
| Case Type: | Soil | |
| Abatement Method Used at the Site: | | Not reported |
| Global ID: | T0603703964 | |
| W Global ID: | Not reported | |
| Staff: | UNK | |
| Local Agency: | 19000 | |
| Cross Street: | SPRING ST | |
| Enforcement Type: | Not reported | |
| Date Leak Discovered: | 8/1/1989 | |
| Date Leak First Reported: | | 2/26/1990 |
| Date Leak Record Entered: | 4/19/1990 | |
| Date Confirmation Began: | Not reported | |
| Date Leak Stopped: | 8/1/1989 | |
| Date Case Last Changed on Database: | | 10/12/1995 |
| Date the Case was Closed: | | 10/12/1995 |
| How Leak Discovered: | Tank Closure | |
| How Leak Stopped: | Not reported | |
| Cause of Leak: | UNK | |
| Leak Source: | UNK | |
| Operator: | SKIBA, R. | |
| Water System: | Not reported | |
| Well Name: | Not reported | |
| Approx. Dist To Production Well (ft): | | 4120.943337150961811148848353 9 |
| Source of Cleanup Funding: | | UNK |
| Preliminary Site Assessment Workplan Submitted: | | Not reported |
| Preliminary Site Assessment Began: | | 2/26/1990 |
| Pollution Characterization Began: | | Not reported |
| Remediation Plan Submitted: | | Not reported |
| Remedial Action Underway: | | Not reported |
| Post Remedial Action Monitoring Began: | | Not reported |

**TEXACO PRODUCING INC. (Continued)** **S101298126**

Enforcement Action Date: Not reported
Historical Max MTBE Date: Not reported
Hist Max MTBE Conc in Groundwater: Not reported
Hist Max MTBE Conc in Soil: Not reported
Significant Interim Remedial Action Taken: Not reported
GW Qualifier: Not reported
Soil Qualifier: Not reported
Organization: Not reported
Owner Contact: Not reported
Responsible Party: TEXACO PRODUCING INC.
RP Address: PO BOX 811, VENTURA, CA 93002
Program: LUST
Lat/Long: 33.812222 / -1
Local Agency Staff: Not reported
Beneficial Use: Not reported
Priority: Not reported
Cleanup Fund Id: Not reported
Suspended: Not reported
Assigned Name: Not reported
Summary: Not reported

SWEEPS UST:
Name: TEXACO PRODUCING INC
Address: 3033 CALIFORNIA AVE
City: SIGNAL HILL
Status: Active
Comp Number: 12359
Number: 9
Board Of Equalization: Not reported
Referral Date: 06-30-89
Action Date: Not reported
Created Date: 06-30-89
Owner Tank Id: Not reported
SWRCB Tank Id: Not reported
Tank Status: Not reported
Capacity: Not reported
Active Date: Not reported
Tank Use: Not reported
STG: Not reported
Content: Not reported
Number Of Tanks: Not reported

HIST CORTESE:
edr_fname: TEXACO PRODUCING INC.
edr_fadd1: 3033 CALIFORNIA
City,State,Zip: SIGNAL HILL, CA 90807
Region: CORTESE
Facility County Code: 19
Reg By: LTNKA
Reg Id: I-12359

CERS:
Name: TEXACO PRODUCING INC.
Address: 3033 CALIFORNIA AVE
City,State,Zip: SIGNAL HILL, CA 90807
Site ID: 239647

**TEXACO PRODUCING INC. (Continued)** **S101298126**

CERS ID: T0603703964
CERS Description: Leaking Underground Storage Tank Cleanup Site

Affiliation:
Affiliation Type Desc: Local Agency Caseworker
Entity Name: JOHN AWUJO - LOS ANGELES COUNTY
Entity Title: Not reported
Affiliation Address: 900 S FREMONT AVE
Affiliation City: ALHAMBRA
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: 6264583507

Affiliation Type Desc: Regional Board Caseworker
Entity Name: YUE RONG - LOS ANGELES RWQCB (REGION 4)
Entity Title: Not reported
Affiliation Address: 320 W. 4TH ST., SUITE 200
Affiliation City: Los Angeles
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

---

**M114** **UST** **U003919818**
**SW** **3154 ATLANTIC AVE** **N/A**
**1/8-1/4** **LONG BEACH, CA**
**0.192 mi.**
**1013 ft.** **Site 2 of 4 in cluster M**

**Relative:** LONG BEACH UST:
**Higher**

**Actual:** DATA AS OF 02/25/2014:
**107 ft.**
Name: Not reported
Address: 3154 ATLANTIC AVE
City,State,Zip: LONG BEACH, CA
Region: LONG BEACH
Tanks: 0F
Tank Test: Not reported
Leak Test: Not reported
Tank Status: Not reported

---

**N115** **COMMERCIAL RADIATOR** **RCRA NonGen / NLR** **1024802471**
**WNW** **500 E WARDLOW RD** **CAL000244661**
**1/8-1/4** **LONG BEACH, CA 90807**
**0.195 mi.**
**1032 ft.** **Site 6 of 10 in cluster N**

**Relative:** RCRA NonGen / NLR:
**Higher**
Date form received by agency: 2002-01-22 00:00:00.0
**Actual:** Facility name: COMMERCIAL RADIATOR
**93 ft.** Facility address: 500 E WARDLOW RD
LONG BEACH, CA 90807-0000
EPA ID: CAL000244661
Contact: JACK ROSE
Contact address: 500 E WARDLOW RD

# 6.0 CONCLUSIONS

**Conclusions**

The 9.067-acre site was an oil field since at least 1924; there are two previously abandoned oil wells onsite. Historically, the site had these two oil wells, aboveground storage tanks and oil field activities that visually impacted the land.

The Tesoro Service Station formerly located at the northwestern corner of the site has caused soil matrix, soil vapor and groundwater contamination.

Recognized Environmental Conditions onsite include: (1) the two previously abandoned oil wells; (2) the aboveground storage tanks and visible soil impacts in the 1928, 1947 and 1953 aerial photographs; and (3) the former Tesoro Service Station.

The adjacent contiguous property to the south is an oil field and historically had aboveground storage tanks.

## 7.0 RECOMMENDATIONS

Suspect building material samples should be collected and submitted for analysis of lead and asbestos. If lead-based paint and/or lead or asbestos containing building materials are present at concentrations that exceed threshold criteria, abatement of lead-based paint and lead or asbestos containing building materials by a licensed contractor and appropriate disposal of building materials should be performed prior to demolition of the buildings.

A Limited Phase II Environmental Site Assessment (Phase II ESA) should be performed on the approximately 9.067-acre site. The Phase II ESA should include soil matrix and soil vapor sampling adjacent to the former Tesoro Service Station at the planned location of a new drive-thru restaurant, adjacent to the previously abandoned oil wells, at the planned location of an additional 11,500 square feet of retail, and at the planned location of 5,000 square feet of shopping.

Soil should be collected from 5-feet below ground surface (bgs) and 10-feet bgs or the depth of anticipated construction activities and submitted to a State of California certified laboratory for analysis of TPH-gasoline range, (TPH-g), TPH-diesel range (TPH-d), TPH-oil range (TPH-o), speciated carbon chains, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) including polycyclic aromatic hydrocarbons (PAHs) and total threshold limit concentration (TTLC) metals. Nested soil vapor probes should be installed at 5-feet and 10-feet bgs and sampled for VOCs.

A methane assessment of the site should be conducted pursuant to the City of Signal Hill Oil and Gas Code §16.24.080 and Property Development Guidelines to determine if methane concentrations warrant mitigation, i.e., installation of a vapor barrier and modified active vapor collection/diffusion system, during construction of any buildings.

A baseline human health risk assessment should be performed with the data generated during the proposed soil matrix and soil vapor investigations to determine whether residual concentrations of constituents detected in onsite soils and in soil vapor underlying the site pose a risk or an adverse impact to human health or the environment.

As the site contains abandoned oil wells redevelopment of the site will require City oversight pursuant to the City of Signal Hill Oil and Gas Code §16.24 and Property Development Guidelines.

A soil management plan should be prepared prior to any grading activities to be conducted onsite. This soil management plan should provide instructions for the contractor to implement in the event discolored or odiferous soils are discovered during any grading operations.

## 8.0 LIMITATIONS

Mearns Consulting LLC performed a Phase I Environmental Site Assessment (Phase I ESA) of the 9.067-acre site located at 950 East 33rd Street, in Signal Hill, Los Angeles County, California 90755 (the site).

The site reconnaissance was conducted on February 6, 2020 by Susan L. Mearns, Ph.D. The Phase I ESA included public environmental agency and historical record reviews, site observations, and report preparation. The scope of the Phase I ESA was consistent with the ASTM Standard E 1527-13, ASTM Standard E 2600-15 and the AAI Standard (40CFR 312).

Mearns Consulting LLC prepared this Phase I ESA using reasonable efforts in each phase of work to identify recognized environmental conditions associated with hazardous substances, wastes and petroleum products at the site. "Reasonable efforts" are limited to information gained from visual observation of largely unobstructed areas, recorded database information held in public record and available information gathered from interviews. Such methods may not identify subsurface conditions or equipment that may have been hidden from view due to paving, construction or debris pile storage, or incorrect information from sources.

Findings within this report are based on information collected from observations made on the day of the site investigation and from reasonably ascertainable information obtained from governing public agencies and private sources.

The regulatory database report provided is based on an evaluation of the data collected and compiled by a contracted data research company. The report focuses on the site and neighboring properties which could impact the site. Neighboring properties listed in governmental environmental records are identified within specific search distances. The search distance varies depending upon the particular government record being checked. The regulatory research is designed to meet the requirements of ASTM Standard E 1527-13, ASTM Standard E 2600-15 and the AAI Standard (40CFR 312). The information provided in the regulatory database report is assumed to be correct and complete.

Past ownership of the site was reviewed in an attempt to determine past site usage. Mearns Consulting LLC is not a professional title insurance firm and makes no guarantee, explicit or implied, that the records which were reviewed represent a comprehensive or precise delineation of past site ownership or tenancy for legal purposes.

This report is not definitive and should not be assumed to be a complete or specific definition of the conditions above or below grade. Information in this report is not intended to be used as a construction document and should not be used for demolition, renovation, or other construction purposes. Mearns Consulting LLC makes no representation or warranty that the past or current operations at the site are or have been in compliance with all applicable federal, state and local laws, regulations and codes.

This report is for the use and benefit of, and may be relied upon by, Messrs. Lee and Clement, and third parties authorized by this entity. Any third party agrees by accepting this report that any use or reliance on this report shall be limited by the terms and conditions of the project contract with Messrs. Lee and Clement and with the acknowledgment that actual site conditions may change with time, and that hidden conditions may exist at the site that were not discoverable within the authorized scope of the assessment.

Regardless of the findings stated in this report, Mearns Consulting LLC is not responsible for consequences or conditions arising from facts that were concealed, withheld, or not fully disclosed at the time the assessment was conducted. Mearns Consulting LLC makes no other representation to any third party except that it has used the degree of care and skill ordinarily exercised by environmental consultants in the preparation of the report and in the assembling of data and information related thereto. No other warranties are made to any third party, either express or implied.

## 9.0 REFERENCES

Aerial Photographs, 1928, 1947, 1953, 1963, 1977, 1979, 1983, 1989, 1994, 2002, 2005, 2009, 2012 and 2016. Source: EDR.

ASTM, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process," ASTM Designation E 1527-13.

California Department of Conservation, Geologic Energy Management Division (CalGEM).

California Department of Water Resources, 1961. West Coast Basin Judgment.

California Department of Water Resources, 2004. California's Groundwater, Bulletin 118-2004 Update. City of Signal Hill, 1986. Safety Element of the Signal Hill General Plan.

Environmental Data Resources, Inc. (EDR). Phase I Environmental Site Assessment Report, 950 East 33rd Street, Signal Hill, CA. January 24, 2020.

McLaren/Hart Environmental Engineering Corporation, October 13, 1994. Site Assessment Report for Soil Investigation, Target Store T-292, 700 East 33rd Street, Signal Hill, California (LACDPW File #I011132).

Orion Environmental Inc., June 21, 1995. Results of Groundwater Monitoring for May 1995 at 700 East 33rd Street in Signal Hill, California, prepared for Tesoro Refining, Marketing & Supply Company, Portland, Oregon.

Orion Environmental Inc., August 22, 1996. Site Assessment Report, Target Store T-292, 950 East 33rd Street, Signal Hill, California, prepared for Tesoro Refining, Marketing & Supply Company, Portland, Oregon.

Orion Environmental Inc., May 30, 1997. Downgradient Well Installation Report, Target Store T-292, 950 East 33rd Street in Signal Hill, California, prepared for Tesoro Refining, Marketing & Supply Company, Portland, Oregon.

Orion Environmental Inc., June 7, 2000. Groundwater Monitoring Results, Fourth Quarter 1999 and First Quarter 2000 and Installation of Free Product Monitoring Well, 700 East 33rd Street, Signal Hill, California, prepared for Tesoro Petroleum Companies, Inc., Auburn, Washington.

Orion Environmental Inc., March 27, 2001a. Groundwater Monitoring Results and Well Installation Report, Fourth Quarter 2000 and First Quarter 2001, 950 East 33rd Street in Signal Hill California, Target Store T-292, prepared for Tesoro Petroleum Companies, Inc., Auburn, Washington.

Orion Environmental, Inc., July 18, 2001b. File Review Summary for Nearby Property and Summary of Local Geology and Hydrogeology, Target Store T-292, 700 East 33rd Street, Signal Hill, California.

Orion Environmental, Inc., October 28, 2005. Groundwater, Soil Vapor Extraction, and Vapor Monitoring Well Installation Work Plan, Target Store T-292, 700 East 33rd Street, Signal Hill, California.

Orion Environmental, Inc., August 2006. Remedial Action Plan for Impacted Soil, Target Store T-292, 950

East 33rd Street, Signal Hill, California.

Orion Environmental, Inc., January 31, 2017. Alternative Groundwater Remediation Work Plan, 950 East 33rd Street, Signal Hill, California, Target Store T-292, RWQCB File #I-11132.

Regional Water Quality Control Board.

South Coast Air Quality Management District (SCAQMD).

USEPA. All Appropriate Inquiries Standard (AAI Standard). 40CFR 312.

USEPA. January 11, 2017. Asbestos Containing Building Materials Information. https://www.epa.gov/large-scale-residential-demolition/asbestos-containing-materials-acm-and-demolition

USEPA. February 28, 2017. PCB Information https://www.epa.gov/pcbs/polychlorinated-biphenyl-pcb-containing-fluorescent-light-ballasts-flbs-school-buildings

USEPA. March 15, 2017. Lead Information https://www.epa.gov/lead

USGS Topographic Map, Azusa, CA Quadrangle Map, 7.5 Minute Series, dated 1896, 1899, 1902, 1925, 1942, 1943, 1947, 1949, 1964, 1972, 1981 and 2012. Source: EDR.

# FIGURES




EXPLANATION

Previously abandoned oil wells

A12, A17, AW-2, and A22 are operating oil wells

N

0 500 feet

Base map: Google Earth Pro, 2019

**Figure 1: Site Location Map**
950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC




EXPLANATION

Previously abandoned oil wells

A12, A17, AW-2, and A22 are operating oil wells

N

0 200 feet

Base map: Google Earth Pro, 2019

**Figure 2: Site Map**
950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC

# APPENDIX A

# SITE PHOTOGRAPHS



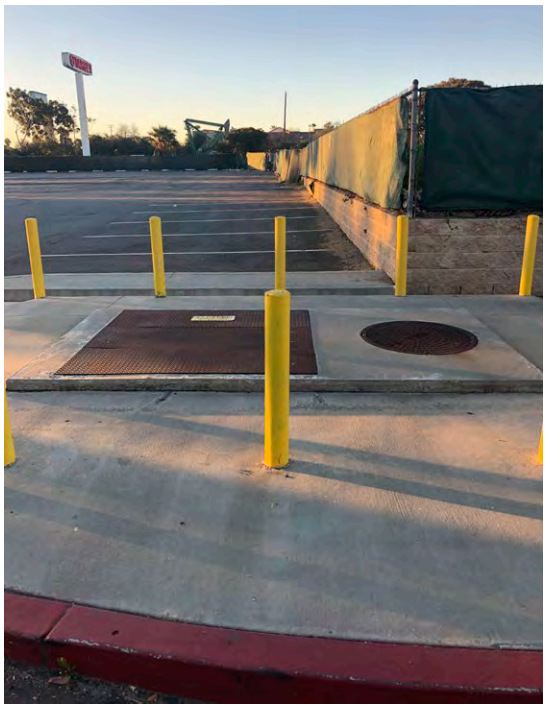

Site, Target, 950 E 33rd St., looking east




Site, Target and CVS Pharmacy, 950 E 33rd Street, looking east



Site, Target, looking north; note stormwater drain in asphalt and methane vent riser from well “Field” 24, API No. 037-11549, abandoned in 2007.



Below grade electrical panel located in parking lot south of building.

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

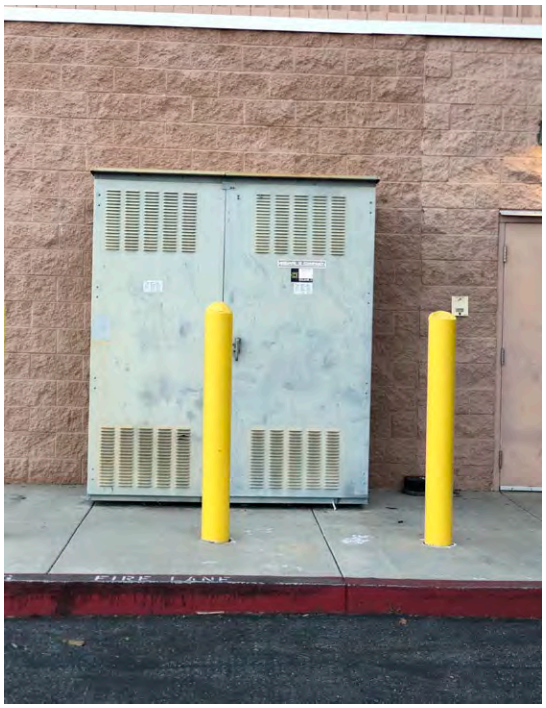
Mearns Consulting LLC




Above grade electrical panel, located in parking lot south of building.



Propane cylinders located in fenced enclosure, southside of building.



Panel located southside of building




Loading dock, southside of building

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC




Backflow preventers in landscape islands located in parking lot south of building



South parking lot looking west, Signal Hill Petroleum property behind privacy screened fencing



View from California Avenue entrance, loading dock, parking lot, building and adjacent property



View from north parking lot, looking east

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC



Site, 950 E 33rd Street, east side of Target building



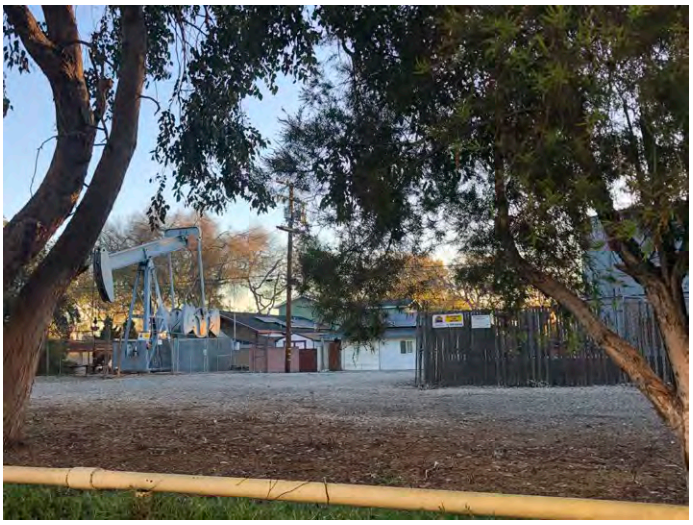
Site, 950 E 33rd Street, Target building, corner of California Avenue and E 33rd St., looking west; note residential neighborhood



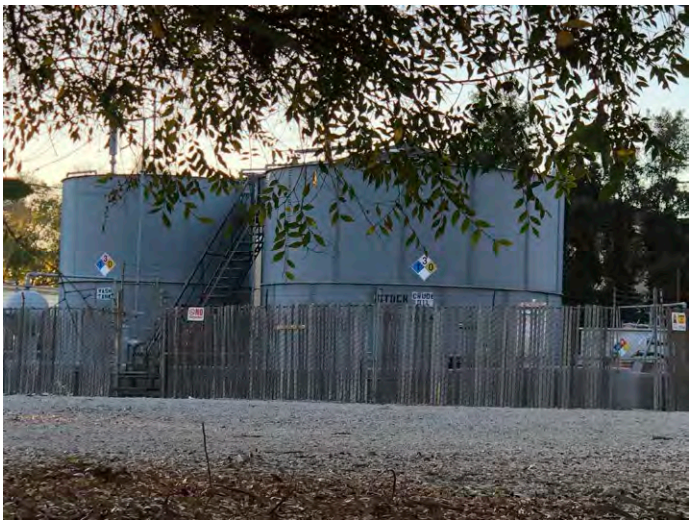
Adjacent property, residential neighborhood, east of California Avenue



Adjacent property, residential neighborhood, east of California Avenue



Adjacent property, southeast corner of California Avenue and E 33rd St., Signal Hill Petroleum operating unit and two aboveground storage tanks for crude



Adjacent property, southeast corner of California Avenue and E 33rd St., Signal Hill Petroleum aboveground storage tanks for crude oil



Adjacent property, southeast corner of California Avenue and E 33rd St., Signal Hill Petroleum, truck fill from aboveground storage tanks




Adjacent property, Memorial West Aluminum, north side of E. 33rd Street.

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC



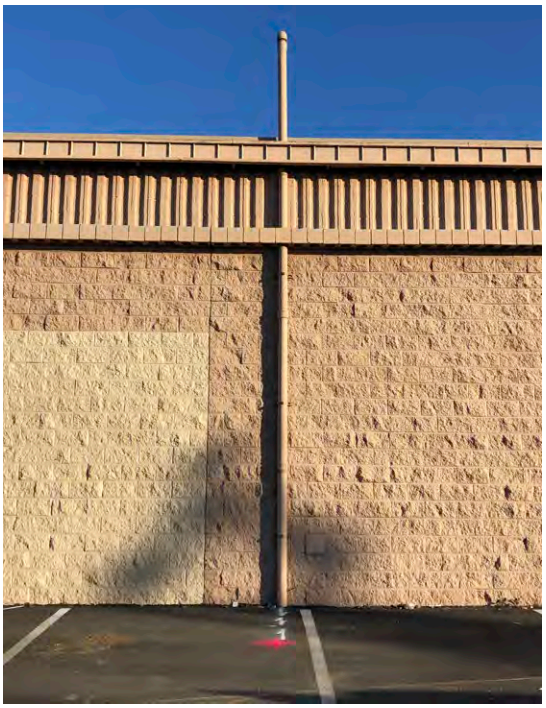
Adjacent property, north side E. 33rd Street.




Adjacent property, north side of E. 33rd St.



Oil well “Field” 18, API No. 037-11543 previously abandoned in 2007; note methane gas vent riser in landscape island



Oil well “Field” 24, API No. 037-11549, located approximately 5-feet from south side of building; note methane gas vent riser extending to roof top

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC



Contiguous property, south of parking lot, Signal Hill Petroleum, 3177 California Avenue; operating unit A-22



Contiguous property, south of site, Signal Hill Petroleum, 3177 California Avenue; note settling basins



Contiguous property south of site, Signal Hill Petroleum, 3177 California Avenue; note settling basin, berm and swale directing surface flow to the north




Contiguous property, south of the site, Signal Hill Petroleum, 3177 California Avenue, operating unit AW-2

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC




Contiguous property, south of site, Signal Hill Petroleum, 3177 California Avenue, operating unit A-17



Contiguous property, south of site, Signal Hill Petroleum, 3177 California Avenue, operating unit A-12



Contiguous property, south of site, Signal Hill Petroleum, 3177 California Avenue, transformer



Contiguous property, south of site, Signal Hill Petroleum, 3177 California Avenue, stormdrain and overpass to I-405

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC



Contiguous property to the south, Signal Hill Petroleum, oil well SHWU A-19, API No. 037-11552, previously abandoned in 2004, to become part of site due to lot line adjustment.



Contiguous property to the south, Signal Hill Petroleum, oil well “Field” 36, API No. 037-00410, previously abandoned in 1971, to become part of site due to lot line adjustment.



Contiguous property to the south, Signal Hill Petroleum, oil well AW-1, API No. 037-00338, previously abandoned in 2004, to become part of site due to lot line adjustment.

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC

# APPENDIX B

# CITY OF SIGNAL HILL RECORDS

DEPARTMENT OF CONSERVATION
**DIVISION OF OIL, GAS,**
**AND GEOTHERMAL RESOURCES**
5816 Corporate Avenue, Suite 200
CYPRESS, CA 90630-4731
(714) 816-6847
TELEFAX (714) 816-6853

May 6, 1998

Donn Showers
CITY OF SIGNAL HILL
Department of Building and Safety
2175 Cherry Avenue
Signal Hill, CA 90806

**PROJECT NAME**: Target Store Addition

**PROJECT ADDRESS**: 950 E. 33rd Street
Signal Hill, CA

**DIVISION RERENCE NUMBER**: SH-98-001

Enclosed are your copies of our Construction Project Site Plan Review. If you have any question, please call Edward Santiago at 714/816-6847.

ES:kj
Enclosure

COVERLETTER

THE RESOURCES AGENCY
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# ENVIRONMENTAL PLAN REVIEW AND RECOMMENDATIONS

Applicant: SLS Associates, Inc.

Project: TARGET Store Addition
950 E. 33rd Street
Signal Hill, CA

Division Ref. No. SH-98-001

The Environmental Unit of the Long Beach Division of Oil, Gas and Geothermal Resources has reviewed the site plan and submits the following comments for consideration.

Our records indicate two (2) abandoned oil wells within the project site. Although future problems from oil and gas wells that have been abandoned or reabandoned to the Division's current specifications are remote, we, nevertheless suggest that an effort be made to avoid building over or in close proximity to any abandoned well. If construction over an abandoned well is unavoidable, we recommend that an approved venting system be placed over the well.

If an unrecorded well is discovered during construction, please contact us immediately. The well may require additional plugging and abandonment work.

Division policy requires that soil contaminated by hydrocarbons should be remedied or disposed of in accordance with local, state or federal laws. If any saturated soil or seepage is detected during construction please contact us immediately.

Robert H. Samuelian
Reviewing Environmental Engineer

Robert H Samuelian
Signature

5/1/98
Date

RHS:rhs
file: SH-98-001

THE RESOURCES AGENCY
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES
**PLAN REVIEW**

Applicant: SLS Associates, Inc.

Project name and number: Target Store Addition

Project Address: 950 E. 33rd Street
Signal Hill, CA

Division reference number: SH-98-001

The staff of the Division of Oil, Gas, and Geothermal Resources has reviewed the attached project site plan and determined the following:

A. The subject well must be abandoned or reabandoned to current standards(or equivalent) of the Division of Oil, Gas, and Geothermal Resources.
B. The subject well has been abandoned or reabandoned to current standards (or equivalent)of the Division of Oil, Gas, and Geothermal Resources.
C. The subject well was not abandoned to current standards, but no additional well work is required.
D. The well is active, therefore, no abandonment is required at this time.
E. The required well work cannot be performed because the well could not be located.
F. A current Division-approved well vent must be properly installed on this well.
G. Other.

| A | B | C | D | E | F | G | COMPANY/OPERATOR | WELL DESIGNATION/API NO. | FIELD/COUNTY |
|---|---|---|---|---|---|---|---|---|---|
| | | X | | | | | Texaco Exploration & Production Inc. | "Field" 18 (037-11543) | Signal Hill/ Los Angeles |
| | | X | | | | | Texaco Exploration & Production Inc. | "Field" 24 (037-11549): | Signal Hill/ Los Angeles |
| | | | | | | | | | |
| | | | | | | | | | |

Total number of wells: 2

PROJECT REVIEW CERTIFICATION
CYPRESS OFFICE
MAY 12 1998
ENGINEER
DIVISION OF OIL AND GAS

May 6, 1998

Edward Santiago
Construction Site Engineer
Edward Santiago
Signature

**Note**: The approval expires one year from the date shown on the "Project Review Certification" stamp.

DEPARTMENT OF CONSERVATION
**DIVISION OF OIL, GAS,**
**AND GEOTHERMAL RESOURCES**
5816 Corporate Avenue, Suite 200
CYPRESS, CA 90630-4731
(714) 816-6847
TELEFAX (714) 816-6853

April 21, 1998

**Donn Showers**
CITY OF SIGNAL HILL
Community Development Agency
2175 Cherry Avenue
Signal Hill, CA 90806

**Subject:** Target Store T-292 @ 950 East 33rd Street

Dear Donn:

This is to inform you that the Division of Oil, Gas, and Geothermal Resources is in receipt of the proposed submittal. Our records indicate the following information:

1. Oil well Texaco Exploration and Production, Inc. "Field" 24 is already abandoned and located under the existing structure. Therefore, no further review is required.
2. Oil well Texaco Exploration and Production, Inc. "Field" 18 is also abandoned and located approximately 170 feet from the proposed expansion area in the existing parking lot. Therefore, no further review is required.

Please accept this as our clearance for a building permit. A formal Division letter certifying the project will be sent to you and the applicant once it is completed. Your patience and understanding in this matter is appreciated.

If you have any questions regarding this information, please call me at 714/816-6847.

Sincerely,

Edward Santiago

Edward Santiago
Construction Site Plan Engineer

cc: Greg Friel, SLS Assoc.
Sh0000~01.wai

# DEPARTMENT OF CONSERVATION

## DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

5816 Corporate Avenue • Suite 200 • CYPRESS, CALIFORNIA, 90630-4731

**PHONE** 714 / 816-6847 • **FAX** 714 / 816-6853 • **WEBSITE** conservation.ca.gov


February 7, 2007

**Mr. David Henry**
Target Corporation
1000 Nicollet Mall
Minneapolis, MN 55403

Applicant: TARGET CORPORATION
Project Name: TARGET T-2319
Project Address: 950 East 33rd Street, Signal Hill, CA 90755
Division Reference Number: SH 07-001

Dear Mr. Henry:

The Division of Oil, Gas and Geothermal Resources' Construction Site Review Program provides an assessment of the integrity of plugged and abandoned wells located on the property and reviews access to the wells for purposes of remedying future problems. This review does not preclude other permitting agencies from identifying high-risk areas of gas accumulation and establishing their own mitigation measures.

I have reviewed the above referenced project application and submit the following comments for your consideration.

The project is located in the Long Beach oil field. Our records show there are two oil wells located within the project's boundaries. Both wells have not been abandoned to the Division's current plugging and abandonment requirements. See Plan Review for well information and recommendations.

If during construction any abandoned or unrecorded wells are uncovered, please contact us immediately. Remedial plugging and reabandonment operations may be required. Also, oil saturated soil or oil seepage on the site must be remediated or disposed of in accordance with local, State, or Federal laws.

Enclosed is your copy of our Construction Site Plan Review. If you should have any questions, please call me at (714) 816-6847. Your cooperation is appreciated.

Sincerely,

Grace P. Brandt
Construction Site Plan Engineer
Division of Oil, Gas, and Geothermal Resources

PROJECT REVIEW CYPRESS OFFICE FEB 07 2007 ENGINEER DIVISION OF OIL AND GAS

SH07-001
Enclosure
cc: David Henry, Target Corp.

THE RESOURCES AGENCY
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES
**PLAN REVIEW**

Applicant: **TARGET CORPORATION**

Project name and number: TARGET T-2319

Project Address: 950 East 33rd Street, Signal Hill, CA 90755

Division Reference Number: **SH 07-001**

The staff of the Division of Oil, Gas, and Geothermal Resources has reviewed the and attached project site plan and determined the following:

A. The subject well must be abandoned or reabandoned to current standards (or equivalent) of the Division of Oil, Gas, and Geothermal Resources.
B. The subject well has been abandoned or reabandoned to current standards (or equivalent) of the Division of Oil, Gas, and Geothermal Resources.
C. The subject well is not abandoned to current standards, but a bond securing the required well work has been filed with this division.
D. The well is active, therefore, no abandonment is required at this time.
E. A gas vent approved by the city or county permitting agency is recommended.
F. Additional gas mitigation is recommended, prior to construction.
G. An approved Division gas test on the well needs to be done after reabandonment to current standards.

| COMPANY/OPERATOR | WELL DESIGNATION/API NO. | FIELD/COUNTY | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|
| Chevron USA Inc. | "Fields" 18 / 037-11543 | Long Beach / Los Angeles | X | | X | | X | | X |
| Chevron USA Inc. | "Fields" 24 / 037-11549 | Long Beach / Los Angeles | X | | X | | X | | X |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Number of Wells: **2**

PROJECT REVIEW
CYPRESS OFFICE
FEB 0 7 2007
ENGINEER
DIVISION OF OIL AND GAS

**February 7, 2007**

**Grace P. Brandt**
Construction Site Plan Engineer

Signature

**Note**: The approval expires one year from the date shown on the "Project Review" stamp.

# DEPARTMENT OF CONSERVATION

## DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

5816 Corporate Avenue • Suite 200 • CYPRESS, CALIFORNIA, 90630-4731

PHONE 714 / 816-6847 • FAX 714 / 816-6853 • WEBSITE conservation.ca.gov


May 10, 2007

**Donn Showers**
City of Signal Hill
2175 Cherry Avenue
Signal Hill, CA 90755

Applicant: TARGET CORPORATION
Project Name: TARGET T-2319
Project Address: 950 East 33rd Street, Signal Hill, CA 90755
Division Reference Number: SH-07-004

Dear Mr. Showers:

The Department of Conservation's Division of Oil, Gas, and Geothermal Resources (Division) Construction Site Plan Review Program provides an assessment of the integrity of plugged and abandoned wells on the property and reviews access to the wells for purposes of remedying future problems. This review does not preclude other permitting agencies from identifying high-risk areas of gas accumulation and establishing their own mitigation measures.

If during construction, any additional wells are uncovered, please contact us immediately. Remedial plugging and re-abandonment may be required.

The Division of Oil, Gas and Geothermal Resources has no authority to review or comment on the design of oil and gas well vent systems, or their installation. Approval of well vent design is the purview of permitting agencies.

Division policy requires that soil contaminated by hydrocarbons shall be remediated or disposed of in accordance with local, state, or federal laws. If any saturated soil or seepage is detected during construction, please contact us immediately.

Enclosed are your copies of our Construction Site Plan Review. This letter serves as a replacement to the Division's Site Plan Review No. SH-07-001, dated February 07, 2007. If you should have any questions regarding this project, please call AB Gorashi Abdulrahman at (714) 816-6553. Your cooperation is appreciated.

PROJECT REVIEW CYPRESS OFFICE MAY 10 2007 ENGINEER DIVISION OF OIL AND GAS

Sincerely,

AB Gorashi Abdulrahman, PE
Site Plan Engineer

SH-07-004
Enclosures
cc: David Henry



*The Department of Conservation's mission is to protect Californians and their environment by: Protecting lives and property from earthquakes and landslides; Ensuring safe mining and oil and gas drilling; Conserving California's farmland; and Saving energy and resources through recycling.*

THE RESOURCES AGENCY
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES
**PLAN REVIEW**

Applicant: TARGET CORPORATION

Project Name: TARGET T-2319

Project Address: 950 East 33rd Street, Signal Hill, CA 90755

Division Reference Number: SF-07-004

The staff of the Division of Oil, Gas, and Geothermal Resources has reviewed the attached project site plan and determined the following:

A. The subject well must be abandoned or reabandoned to current standards (or equivalent) of the Division of Oil, Gas, and Geothermal Resources.
B. The subject well has been abandoned or reabandoned to current standards (or equivalent) of the Division of Oil, Gas, and Geothermal Resources.
C. The subject well was not abandoned to current standards, but no additional well work is required.
D. The well is active, therefore, no abandonment is required at this time.
E. The required well work cannot be performed because the well could not be located.
F. A well vent system approved by the city or county permitting agency is recommended.
G. An approved Division gas test was performed on April 5, 2007 on the two wells.

| COMPANY/OPERATOR | WELL DESIGNATION/API NO. | FIELD/COUNTY | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|
| Chevron USA, Inc. | "Field "18 (API No. 037-11543) | Long Beach/LA | | | x | | | x | x |
| Chevron USA, Inc. | "Field" 24 (API No. 037-11549) | Long Beach /LA | | x | | | | x | x |
| | | | | | | | | | |
| | | | | | | | | | |

Total number of wells: 2

May 10, 2007

PROJECT REVIEW
CYPRESS OFFICE
MAY 10 2007
ENGINEER
DIVISION OF OIL AND GAS

AB Gorashi Abdulrahman, PE
Site Plan Engineer

Signature

**Note**: The approval expires one year from the date shown on the "Project Review" stamp.

**Orion Environmental Inc.**
3450 E. Spring St., Suite 212 562 988-2755 PHONE
Long Beach, CA 90806 562 988-2759 FAX

**DBA Arctos Environmental**
411 Alcatraz Avenue 510 595-4040 PHONE
Oakland, CA 94609 510 595-4070 FAX

13 April 2005

Reina Schaetzl
Assistant Planner
City of Signal Hill
2175 Cherry Avenue
Signal Hill, California 90755

**Subject: Proposal for Installation of a Fenced Compound**
**950 East 33rd Street, Signal Hill, California**
**Target Store T-292, RWQCB File #I-11132**

Dear Ms. Schaetzl:

As per our phone conversation on 10 December 2004, Orion Environmental Inc. (Orion), on behalf of Tesoro Petroleum Companies, Inc. (Tesoro), is requesting authorization from the City of Signal Hill to install a fenced compound in the parking lot of Target Store T-292 at 950 East 33rd Street in Signal Hill, California (Figure 1, the site). The site is a former automobile service station originally located at 700 East 33rd Street in Signal Hill, California.

The fenced compound would be on site approximately 36 to 60 months and be used to store purge water generated during quarterly groundwater monitoring events. Clean-up and quarterly groundwater monitoring at the site is conducted under a directive from the RWQCB (RWQCB File #I-11132). The site currently includes a total of eight groundwater monitoring wells (MW-1 through MW-8) installed between 1996 and 2001.

Future remediation activities at the site are expected to include operation of a SVE system. Building and construction permits for operation of the SVE system will be procured at the appropriate time from both the City of Signal Hill and the South Coast Air Quality Management District (SCAQMD).

Orion is proposing the installation of a 20-foot wide by 30-foot long chain-link fence 40 feet south of the western corner of the Target parking lot between wells MW-2 and MW-3 (see the attached site plan). The fenced compound will be located on a private parking lot owned by the Target Store. Access to the parking lot and the exact location of

the fenced compound has been agreed upon by Orion and Target Store representatives. Attached to this proposal is an approval letter for construction of the fenced compound from Target Corporation.

Please review our proposal for the fenced compound and provide us with any additional requirements or comments. If you have any questions please feel free to contact either Miguel Tseng or Harry Takach at (562) 988-2755.

Very truly yours,

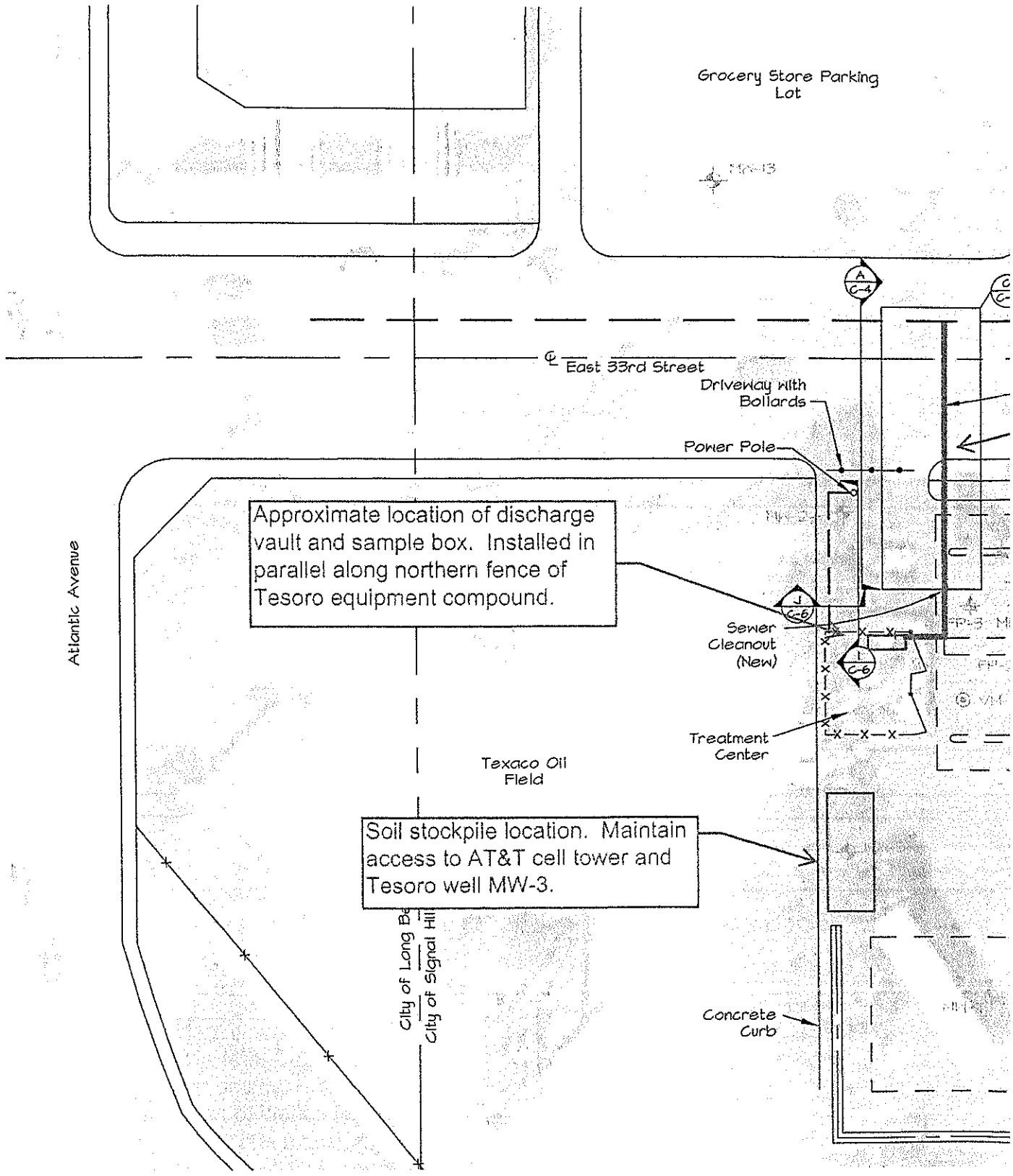
**ORION ENVIRONMENTAL INC.**

Miguel Tseng
Project Engineer

Jeffrey P. Gwinn
Vice President

Copy: Jeff Baker – Tesoro Petroleum Companies, Inc.
David Luick – Target Corporation

Attachments: Figure 1 - Site Location Map
Figure 2 – Site Plan
Construction Approval Letter from Property Owner




950 E 33rd

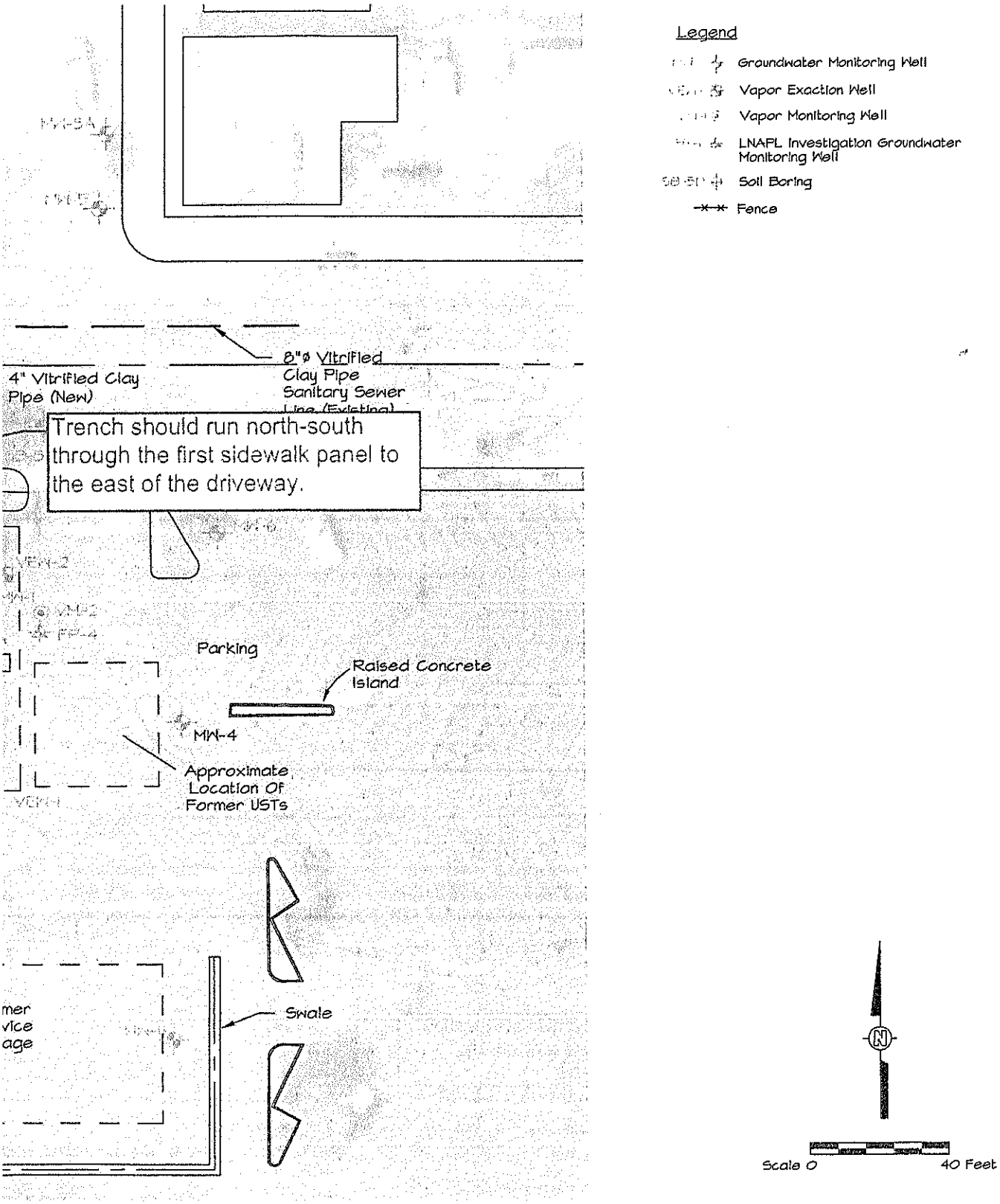
6/20/2014 9:00AM 01LB3A0201A.dwg

NOTE: IF THIS SCALE BAR IS NOT .5 INCH LONG, THIS DRAWING IS NOT TO SCALE.

CAD FILE 01LB3B0201A.DWG

| REV | DESCRIPTION OF REVISION | BY | CHK | REV | DATE |
|---|---|---|---|---|---|
| 1 | RFP019 | MY | BS | JPG | 6/20/14 |
| 0 | EXTENDED PUMP TEST | MY | BS | JPG | 10/23/13 |

TESORO
Tesoro Companies





ORION
Orion Environmental Inc.
3450 E. Spring St., Suite 212
Long Beach, California 90806
(562) 988-2755


| | |
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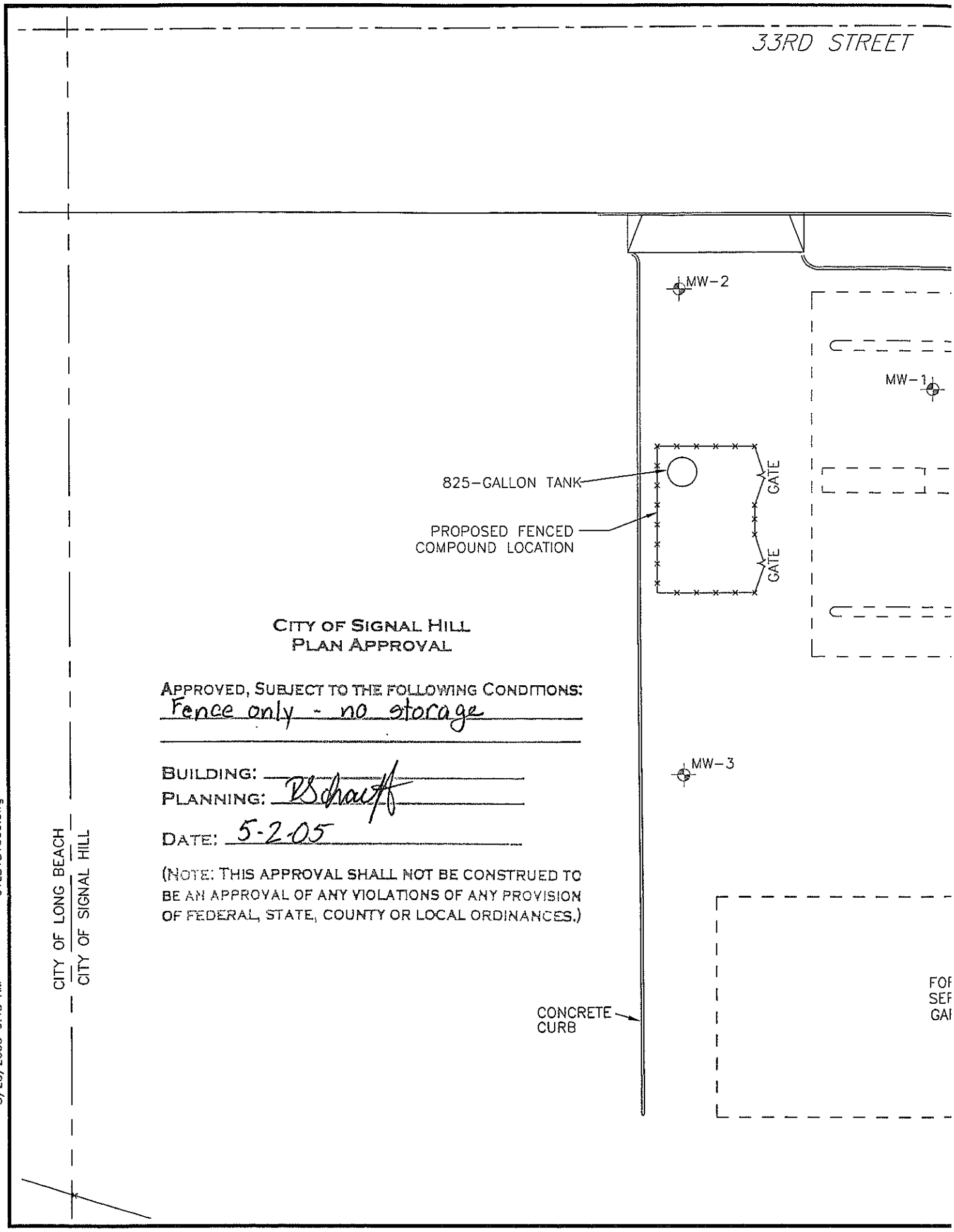
| DESIGNED | AS |
| DRAWN | MY |
| CHECKED | SH |
| REVIEWED | JPG |
| SCALE | AS NOTED |
| DATE | 3/1/14 |

TESORO LONG BEACH

SITE PLAN

| | |
|---|---|
| REVISION | 1 |
| PROJECT | 01LB11B |
| FIGURE | C-1 |



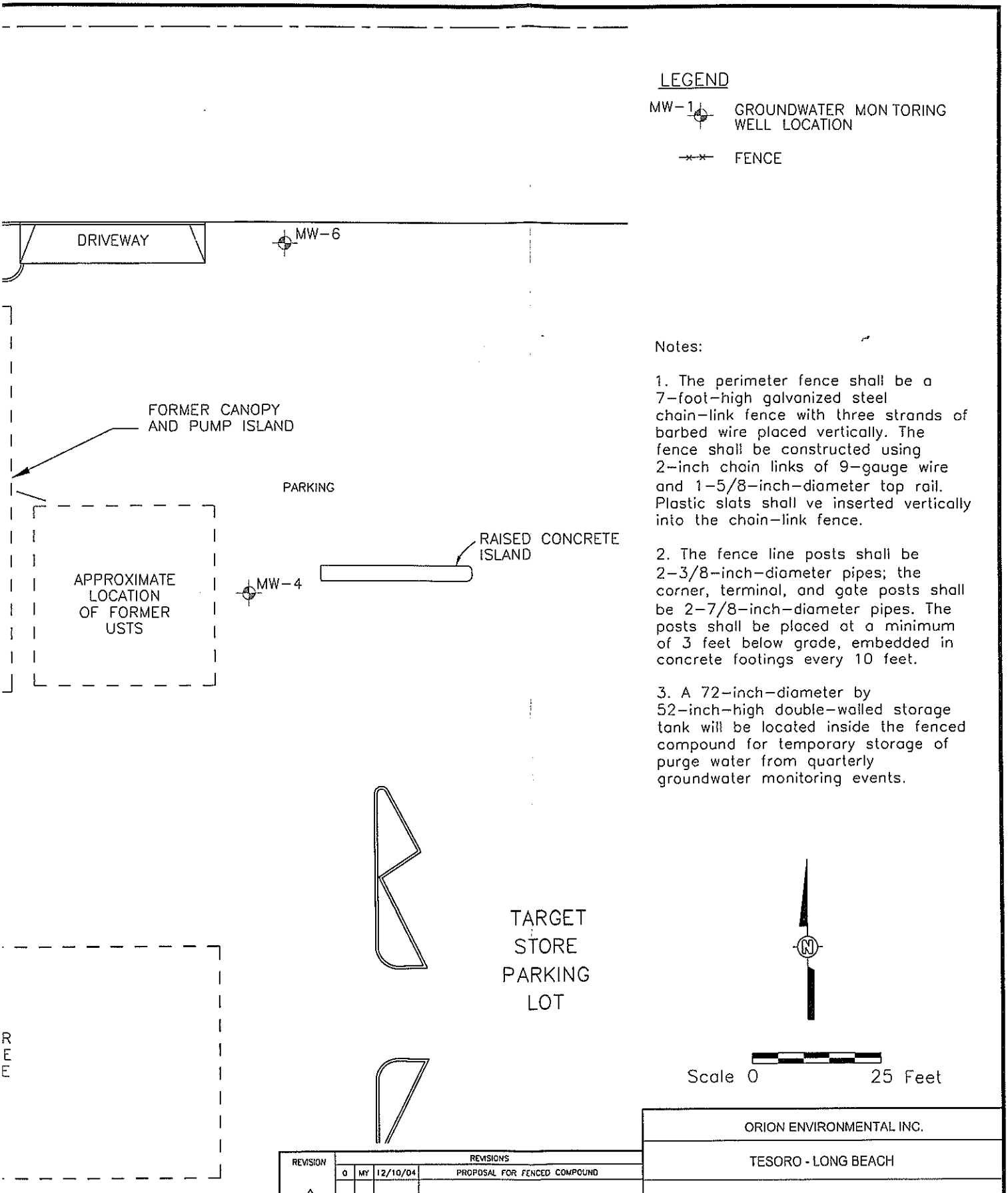

CITY OF SIGNAL HILL
PLAN APPROVAL

APPROVED, SUBJECT TO THE FOLLOWING CONDITIONS:
Fence only - no storage

BUILDING: _____
PLANNING: DS draft
DATE: 5-2-05

(NOTE: THIS APPROVAL SHALL NOT BE CONSTRUED TO BE AN APPROVAL OF ANY VIOLATIONS OF ANY PROVISION OF FEDERAL, STATE, COUNTY OR LOCAL ORDINANCES.)

3/28/2005 9:45 AM 01LB1B1000.dwg




Notes:

1. The perimeter fence shall be a 7-foot-high galvanized steel chain-link fence with three strands of barbed wire placed vertically. The fence shall be constructed using 2-inch chain links of 9-gauge wire and 1-5/8-inch-diameter top rail. Plastic slats shall ve inserted vertically into the chain-link fence.

2. The fence line posts shall be 2-3/8-inch-diameter pipes; the corner, terminal, and gate posts shall be 2-7/8-inch-diameter pipes. The posts shall be placed at a minimum of 3 feet below grade, embedded in concrete footings every 10 feet.

3. A 72-inch-diameter by 52-inch-high double-walled storage tank will be located inside the fenced compound for temporary storage of purge water from quarterly groundwater monitoring events.

| REVISION | REVISIONS | | | |
|---|---|---|---|---|
| | 0 | MY | 12/10/04 | PROPOSAL FOR FENCED COMPOUND |
| 0 | | | | |

ORION ENVIRONMENTAL INC.

TESORO - LONG BEACH

SITE PLAN

| PROJECT NO. | DRAWN BY | CHECKED BY | APPROVED BY |
|---|---|---|---|
| 01LBCH | MY | MT | JPG |

FILE NO. 01LB1B1000.DWG

FIGURE 2

FILE

TEMPORARY

# Certificate of Occupancy

CITY OF SIGNAL HILL

2175 CHERRY AVENUE • SIGNAL HILL, CALIFORNIA 90806 • (213) 426-7333

*This Certificate issued pursuant to the requirements of Section 306 of the Uniform Building Code certifying that at the time of issuance this structure was in compliance with the various ordinances of the City regulating building construction or use. For the following:*

Address where Business will be conducted: 950 E. 33rd — Building Address: Same

Name of Occupant/Owner: Target Stores — Business Phone:

Address of Home Office of Occupant if different than above: 33 S. 6th St. Minn. MN — Home Office Phone: Unknown

Permit No.: 6360 — Occupancy Group: B2 — No. of Units: 0 — Type of Construction: VN

Building Division — Date Approved: 6/26/87 — By: GARY JONES

Use Zone: CG — Signal Hill Municipal Code: 20.34.020

Planning Division — Date Approved: 6/26/87 — By: GARY JONES

LIMITATIONS: Temporary Certificate of Occupancy for stocking of the store only. NO retail sales permitted before issuance of a Final Certificate of Occupancy.

Date: 6/26/87

GARY JONES — Building Official

This Certificate shall be posted in a conspicuous place on the premises and shall not be removed except by the Building Official

White—Original; Yellow—Bldg. Records; Pink—Finance

Form 486 4/87

COUNTY OF LOS ANGELES FIRE DEPARTMENT

TO: DEPARTMENT OF COUNTY ENGINEER
BUILDING AND SAFETY DIVISION

SUBJECT: APPROVAL OF FIRE DEPARTMENT REQUIREMENTS

On June 26, 1987 an inspection was made at:

Name of Business Target Store #292

Address 950 E. 33rd Street, Signal Hill, California 90807

Tract - Parcel - Legal Description _____

Sufficient compliance with Fire Department requirements has been made to permit occupancy of premises upon your approval.
Temporary Permit to Occupy (Storage)

Captain -- Inspector

# Certificate of Occupancy

CITY OF SIGNAL HILL

2175 CHERRY AVENUE • SIGNAL HILL, CALIFORNIA 90806 • (213) 426-7333

*This Certificate issued pursuant to the requirements of Section 306 of the Uniform Building Code certifying that at the time of issuance this structure was in compliance with the various ordinances of the City regulating building construction or use. For the following:*

Address where Business will be conducted: 950 E. 33rd — Building Address: Same

Name of Occupant/Owner: Target Stores — Business Phone:

Address of Home Office of Occupant if different than above: 33 S. 6th St. Minn. MN — Home Office Phone: Unknown

Permit No. 6360 — Occupancy Group: B2 — No. of Units: (0) — Type of Construction: VN

Building Division — Date Approved: 7/14/87 — By: GARY JONES

Use Zone: CG — Signal Hill Municipal Code: 20.34.020

Planning Division — Date Approved: 7/14/87 — By: GARY JONES

LIMITATIONS:

Date: 7/14/87

Gary Jones
Building Official

This Certificate shall be posted in a conspicuous place on the premises and shall not be removed except by the Building Official

White—Original; Yellow—Bldg. Records; Pink—Finance

ORIGINAL—White
(Applicant's Copy)
FILE — Canary (Bldg. Folder)
OFFICE — Pink (Water Dept.
to Finance to City Clerk)

# Certificate of Occupancy

## CITY OF SIGNAL HILL

### DEPARTMENT OF BUILDING & PLANNING

Certificate No. _____ Date _____

BUILDING ADDRESS _____

LEGAL DESCRIPTION _____

OWNER _____ ADDRESS _____ CITY _____

The issuance of this Occupancy Permit does not, in any way, waive or modify any of the prescribed codes or regulations of The City of Signal Hill.

This Occupancy Permit shall become void if said code provisions are not complied with.

This Certificate shall be posted in a conspicuous place on the premises and shall not be removed except by the Building Official.

The Building Official shall be notified of any change of occupancies or use of this building.

LIMITATIONS:

SIGNATURE OF APPLICANT _____

This Occupancy Permit issued pursuant to title 14 and 19 of the Signal Hill Municipal Code.

L. B. WYNN
Director of Building & Planning

Group _____ No. of Units _____ Type _____

by _____
BUILDING DEPT.

Fire Zone _____ Use Zone _____ Permit No. _____

by _____
FIRE DEPT.

ORIGINAL—White (Applicant's Copy)
FILE — Canary (Bldg. Folder)
OFFICE — Pink (Water Dept. to Finance to City Clerk)

# Certificate of Occupancy

## CITY OF SIGNAL HILL

### DEPARTMENT OF BUILDING & SAFETY

Certificate No. 532 Date NOVEMBER 4, 1974

BUILDING ADDRESS 950 E. 33RD ST., SIGNAL HILL, CA 90806

LEGAL DESCRIPTION LOT 15, AMERICAN COLONY TRACT

OWNER C. A. DORMAN ADDRESS P.O. BOX 12379 CITY SAN DIEGO

The issuance of this Occupancy Permit does not, in any way, waive or modify any of the prescribed codes or regulations of The City of Signal Hill.

This Occupancy Permit shall become void if said code provisions are not complied with.

This Certificate shall be posted in a conspicuous place on the premises and shall not be removed except by the Building Official.

The Building Official shall be notified of any change of occupancies or use of this building.

LIMITATIONS:

THIS OCCUPANCY, TO BE INCLUDED AT DORMAN'S INC. DBA GEMCO AUTOMOTIVE CENTER #527, SHALL BE SUBJECT TO THE PROVISIONS OF CHAPTER 19.42 OF THE SIGNAL HILL MUNICIPAL CODE. NO OUTSIDE OF STORAGE SHALL BE PERMITTED.

SIGNATURE OF APPLICANT C. A. Dorman by K. Von Ohlen

C. A. DORMAN

This Occupancy Permit issued pursuant to title 14 and 19 of the Signal Hill Municipal Code.

W. L. WESTBY
Director of Building & Safety

by _____
BUILDING DEPT.

Group F-2 No. of Units 1 Type III

Fire Zone 3 Use Zone C-G Permit No. _____

ORIGINAL—White (Applicant's Copy)
FILE — Canary (Bldg. Folder)
OFFICE — Pink (Water Dept. to Finance to City Clerk)

# Certificate of Occupancy

## CITY OF SIGNAL HILL

### DEPARTMENT OF BUILDING & SAFETY

Certificate No. [illegible] Date [illegible] JANUARY [illegible]

BUILDING ADDRESS [illegible] EAST 33[illegible] STREET, SIGNAL HILL, CAL[illegible]

LEGAL DESCRIPTION [illegible] AMERICAN COLONY TRACT

OWNER [illegible] ADDRESS P.O. [illegible] 67[illegible] CITY

The issuance of this Occupancy Permit does not, in any way, waive or modify any of the prescribed codes or regulations of The City of Signal Hill.

This Occupancy Permit shall become void if said code provisions are not complied with.

This Certificate shall be posted in a conspicuous place on the premises and shall not be removed except by the Building Official.

The Building Official shall be notified of any change of occupancies or use of this building.

LIMITATIONS:

THIS OCCUPANCY, TO BE KNOWN AS "GLOBAL AUTOMOTIVE ENTERPRISES DBA GEMCO AUTO CENTER #527", SHALL BE SUBJECT TO THE PROVISIONS OF CHAPTER 10.[illegible] OF THE SIGNAL HILL MUNICIPAL CODE.

SIGNATURE OF APPLICANT [signature]

A[illegible] STO[illegible]

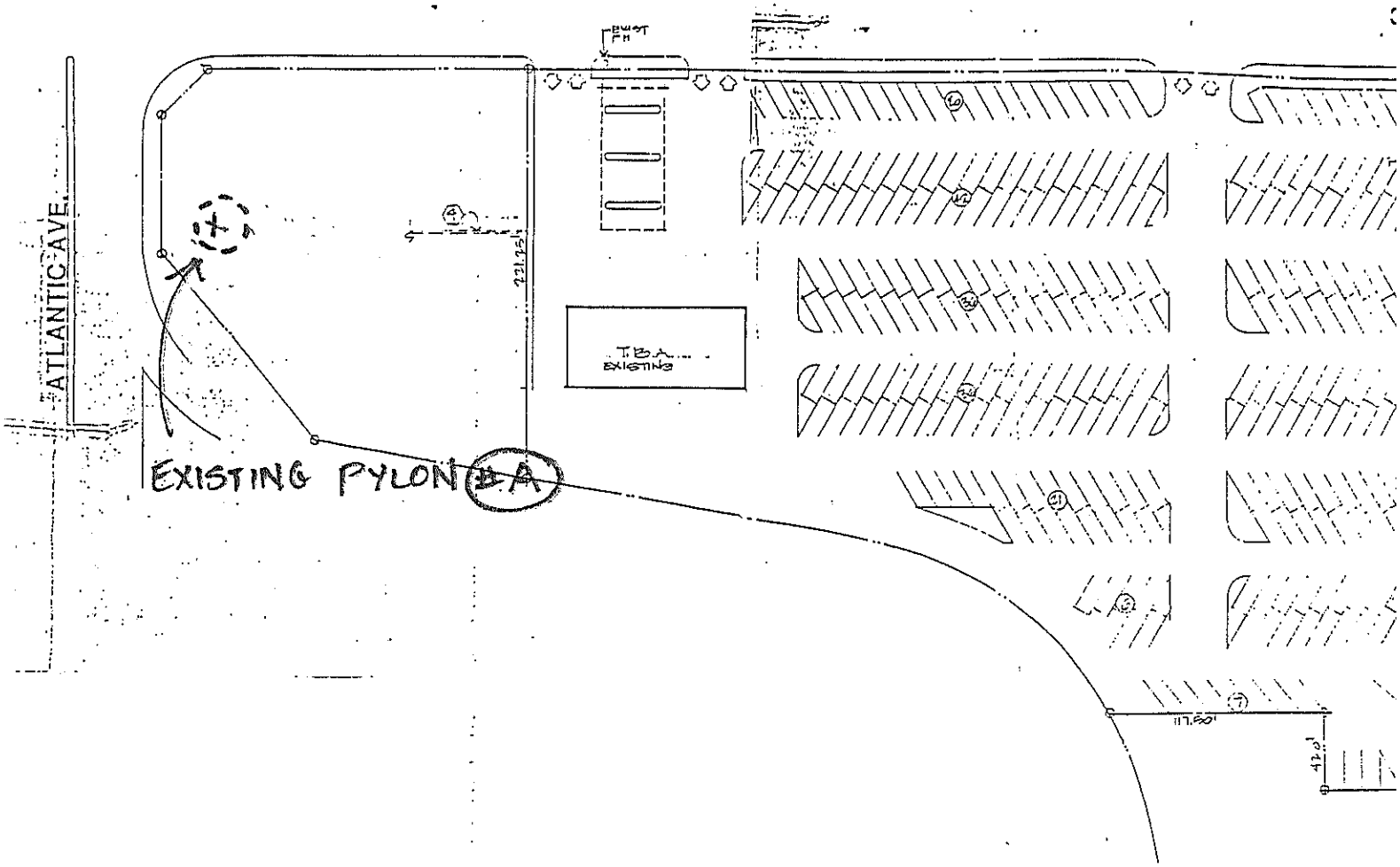
This Occupancy Permit issued pursuant to title 14 and 19 of the Signal Hill Municipal Code.

W. L. WESTBY
Director of Building & Safety

by [signature]
BUILDING DEPT.

Group [illegible] No. of Units _____ Type IV

Fire Zone _____ Use Zone _____ Permit No. _____




## BUILDING APPROVAL

APPROVED, SUBJECT TO THE FOLLOWING CONDITIONS:

APPROVED BY: _____ DATE: 9/10/84

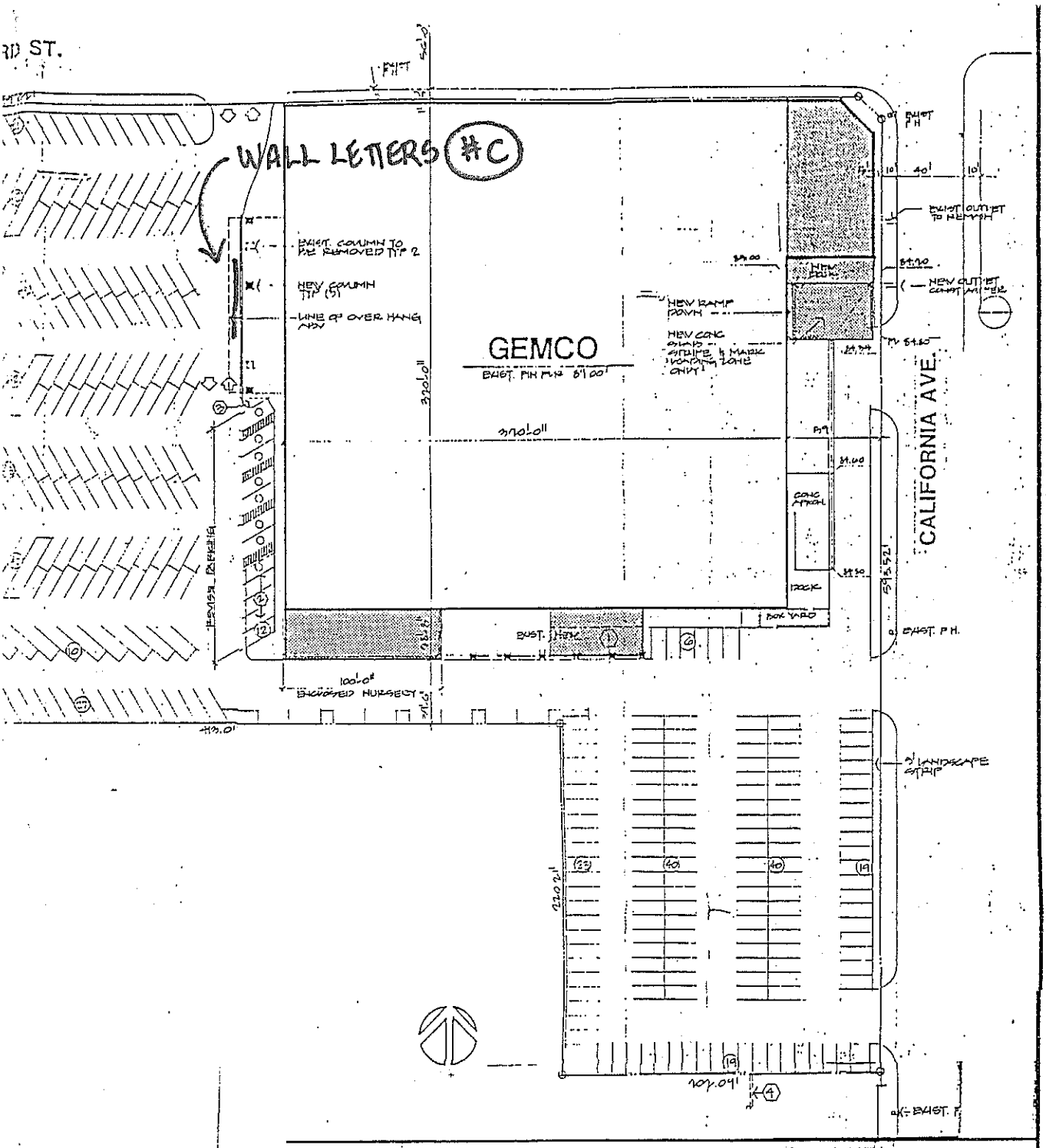
(NOTE: THIS APPROVAL SHALL NOT BE CONSTRUED TO BE AN APPROVAL OF ANY VIOLATIONS OF ANY PROVISION OF STATE OR LOCAL ORDINANCES.)

## PLANNING APPROVAL

APPROVED, SUBJECT TO THE FOLLOWING CONDITIONS:

APPROVED BY: _____ DATE: 9/10/84

(NOTE: THIS APPROVAL SHALL NOT BE CONSTRUED TO BE AN APPROVAL OF ANY VIOLATIONS OF ANY PROVISION OF THE ZONING CODE OR OTHER APPLICABLE MUNICIPAL CODE REQUIREMENT.)




## PARKING

| | | |
|---|---|---|
| | PARKING | |
| 2,400 SF | 1 EXISTING PARKING STALLS | 600 STALLS |
| | 2 ADDED STALLS | 3 STALLS |
| 5,300 SF | 3 REMOVED STALLS | 6 STALLS |
| 2,800 SF | 4 TOTAL EXISTING | 597 STALLS |
| 0,500 SF | 5 REQUIRED PARKING (1 STALL PER 200) 110,500 ÷ 200 | 553 STALLS |
| | 6 HANDICAPPED PROVIDED | 8 STALLS |
| | 7 EXCESS PARKING | 44 STALLS |

9,283 ACRES
748 SF — AREA TO BE STRIPPED, PROVIDE 4" WIDE STRIPS AT 12" O.C. WHITE TRAFFIC PAINT

58 SF — NEW CONC WORK

983 SF

201 SF

## LEGEND

PROPOSED AREA OF ADDITION OR REMODEL WORK

EXISTING #B PYLON

GEMCO
LONG BEACH CALIF.

mmurray architects
sands lyons planners
1110 n. coast hwy. suite laguna beach, calif. 92651
714/494-1044

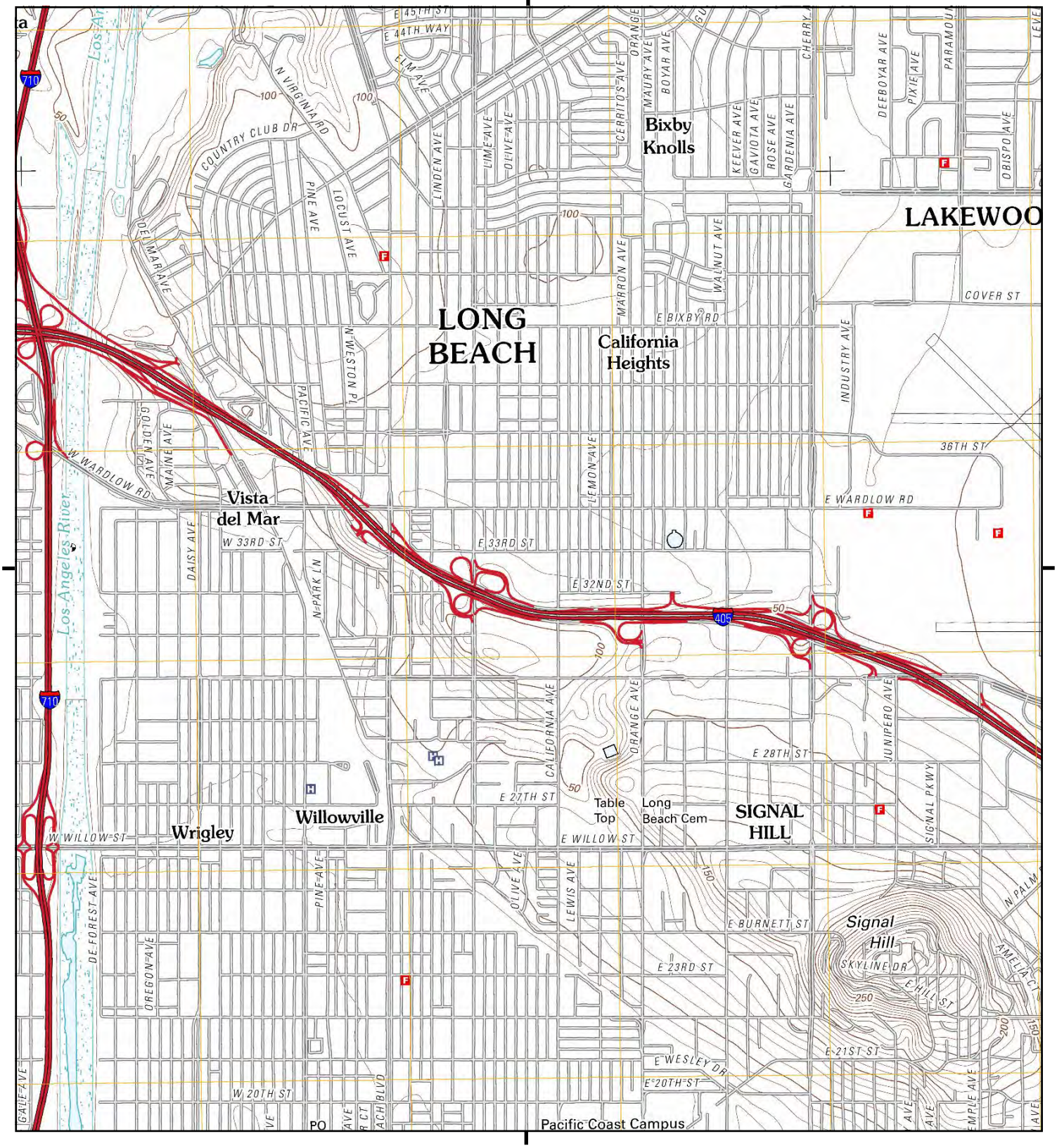
DRAWN LOUISE
CHECKED
DATE
SCALE
JOB NO. 994
SHEET
A-1

# APPENDIX C

# HISTORIC TOPOGRAPHIC MAPS

# Historical Topo Map

2012




This report includes information from the following map sheet(s).

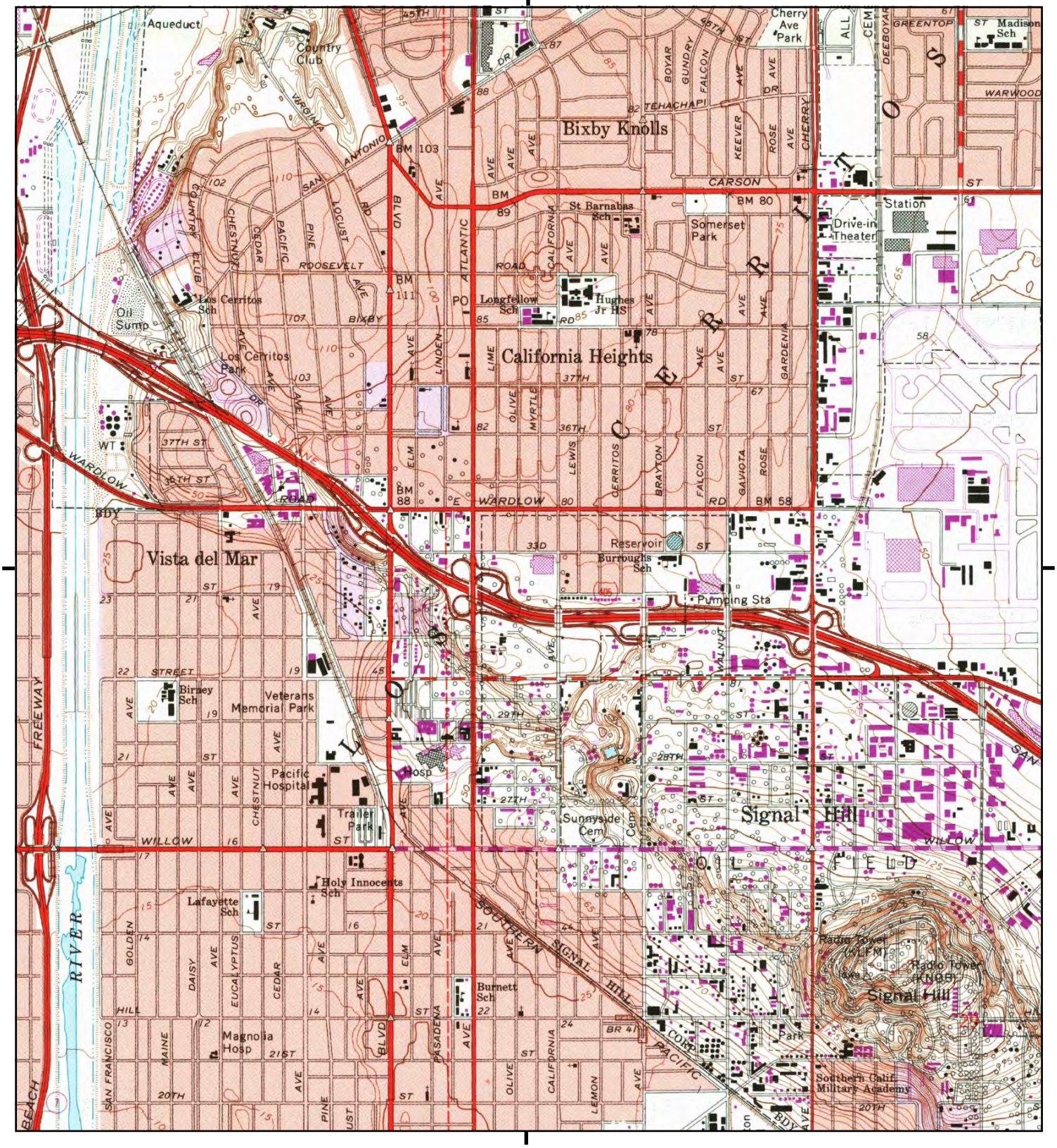
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Long Beach, 2012, 7.5-minute

SITE NAME: 930 E 33rd St
ADDRESS: 930 E 33rd Street
Signal Hill, CA 90755
CLIENT: Mearns Consulting LLC.

N




This report includes information from the following map sheet(s).

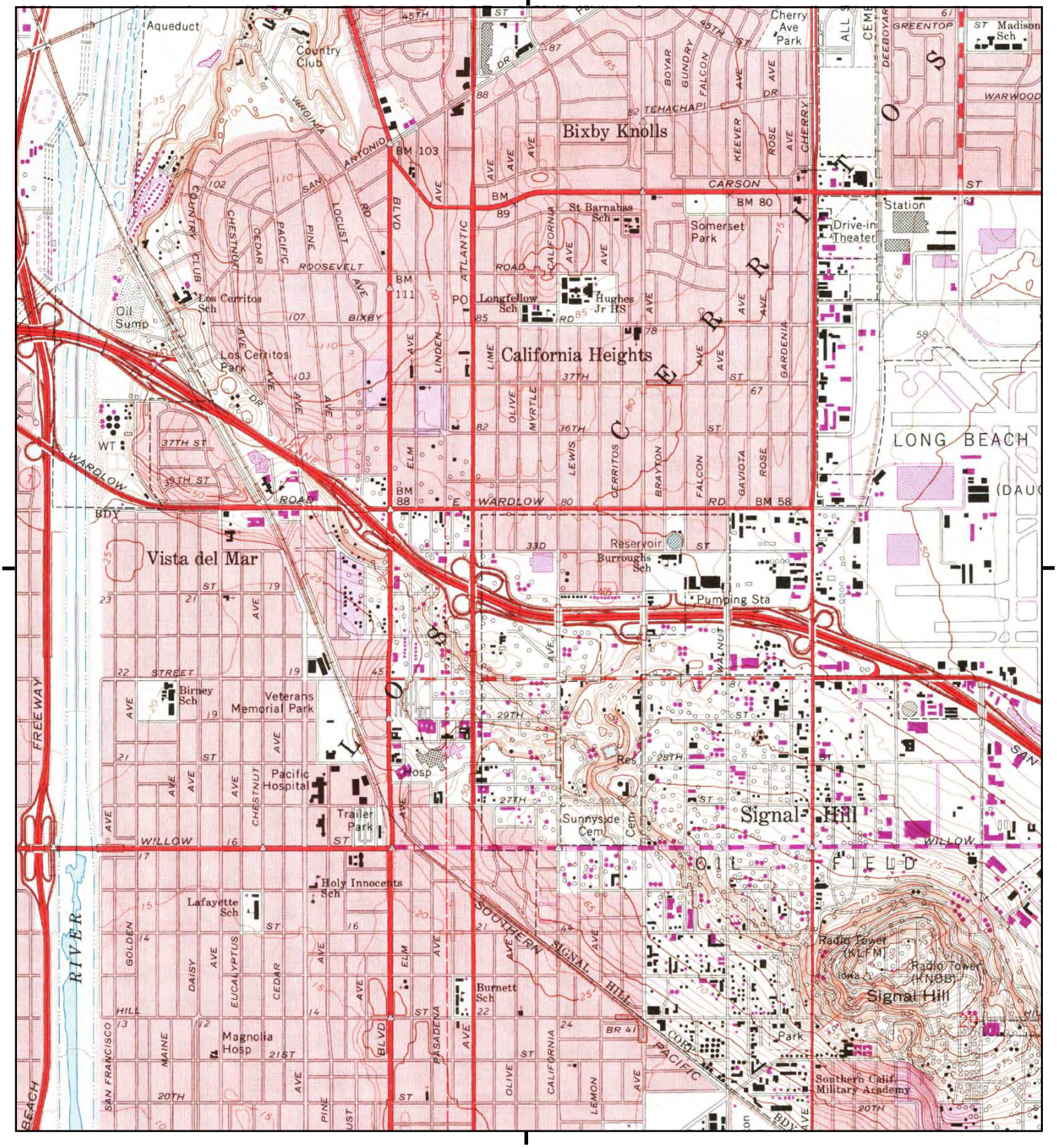
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Long Beach, 1981, 7.5-minute

SITE NAME: 930 E 33rd St
ADDRESS: 930 E 33rd Street
Signal Hill, CA 90755
CLIENT: Mearns Consulting LLC.

N




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

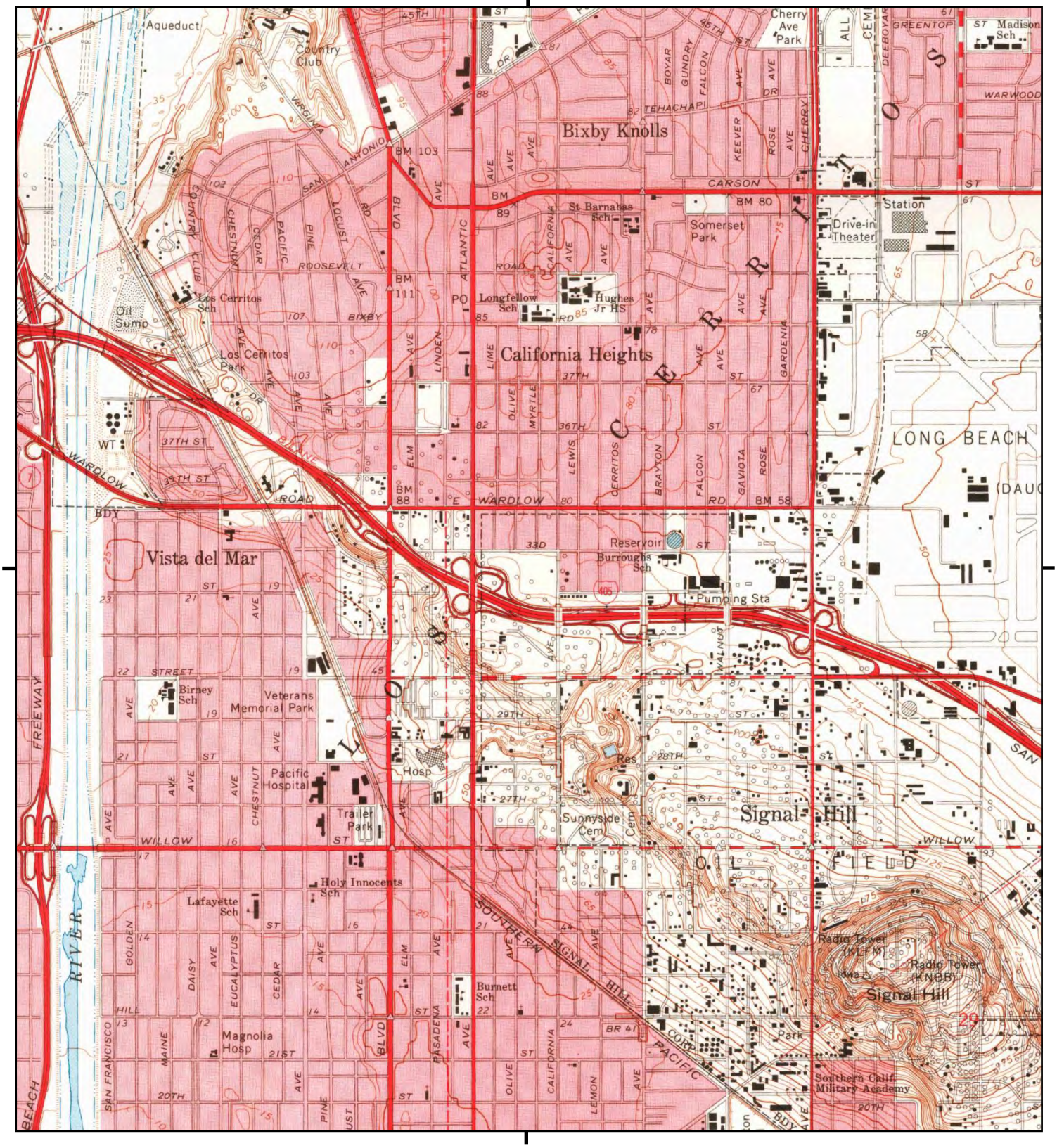
TP, Long Beach, 1972, 7.5-minute

SITE NAME: 930 E 33rd St
ADDRESS: 930 E 33rd Street
Signal Hill, CA 90755
CLIENT: Mearns Consulting LLC.

N

# Historical Topo Map

1964




This report includes information from the following map sheet(s).

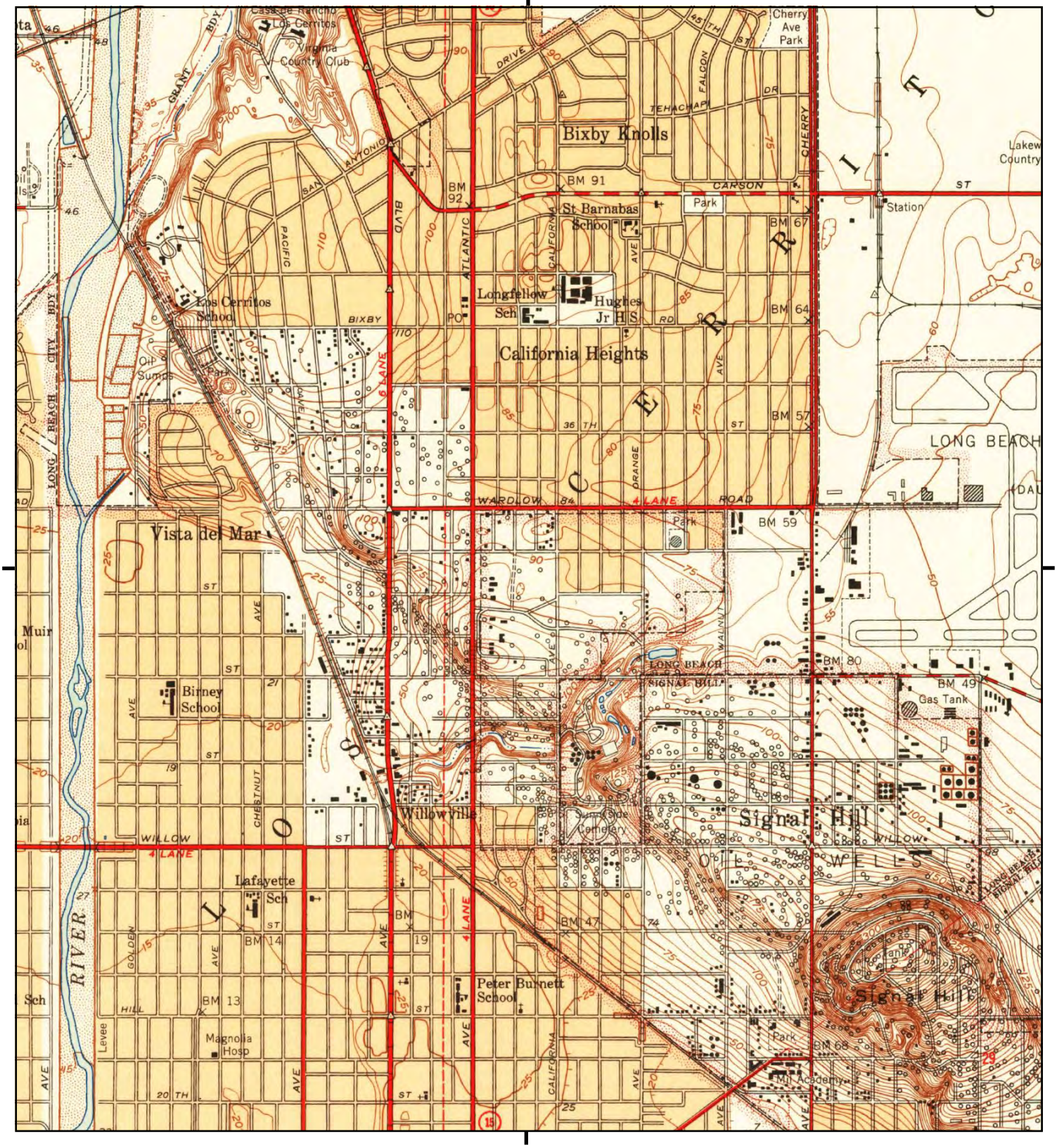
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Long Beach, 1964, 7.5-minute

SITE NAME: 930 E 33rd St
ADDRESS: 930 E 33rd Street
Signal Hill, CA 90755
CLIENT: Mearns Consulting LLC.

N




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

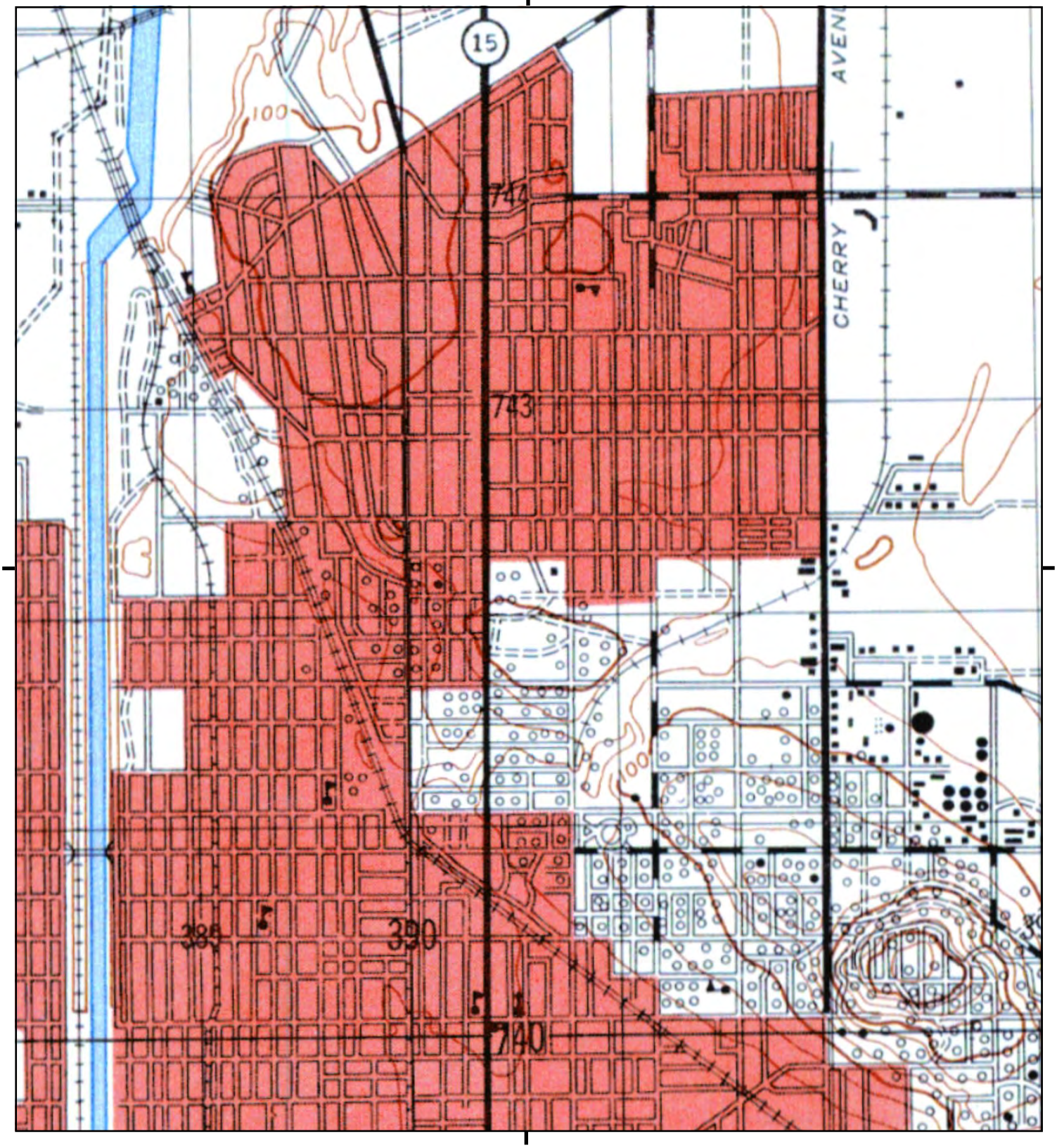
TP, Long Beach, 1949, 7.5-minute

SITE NAME: 930 E 33rd St
ADDRESS: 930 E 33rd Street
Signal Hill, CA 90755
CLIENT: Mearns Consulting LLC.

N

# Historical Topo Map

1947




This report includes information from the following map sheet(s).

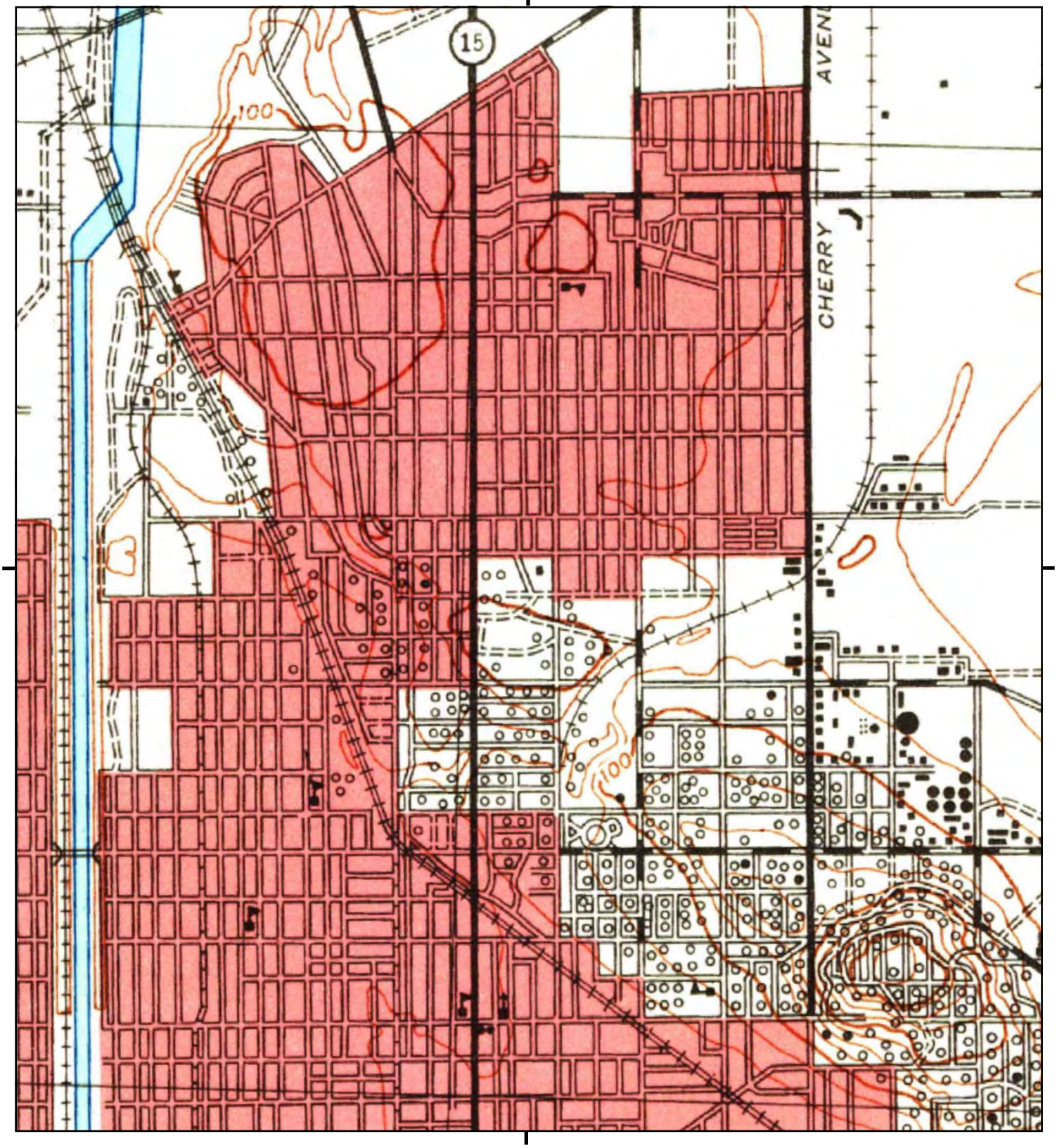
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, DOWNEY, 1947, 15-minute

SITE NAME: 930 E 33rd St
ADDRESS: 930 E 33rd Street
Signal Hill, CA 90755
CLIENT: Mearns Consulting LLC.

N




This report includes information from the following map sheet(s).

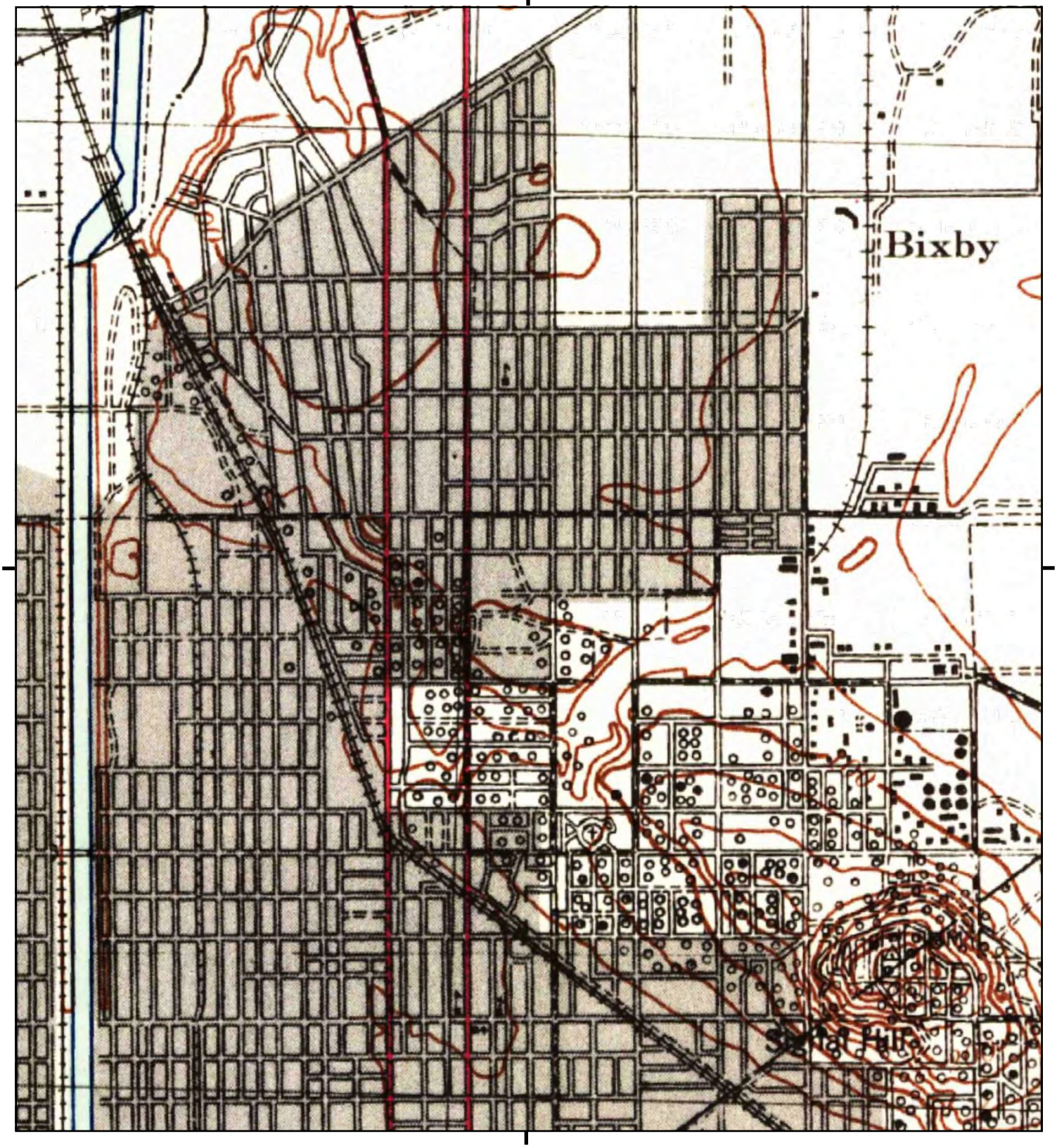
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Downey, 1943, 15-minute

SITE NAME: 930 E 33rd St
ADDRESS: 930 E 33rd Street
Signal Hill, CA 90755
CLIENT: Mearns Consulting LLC.

N




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

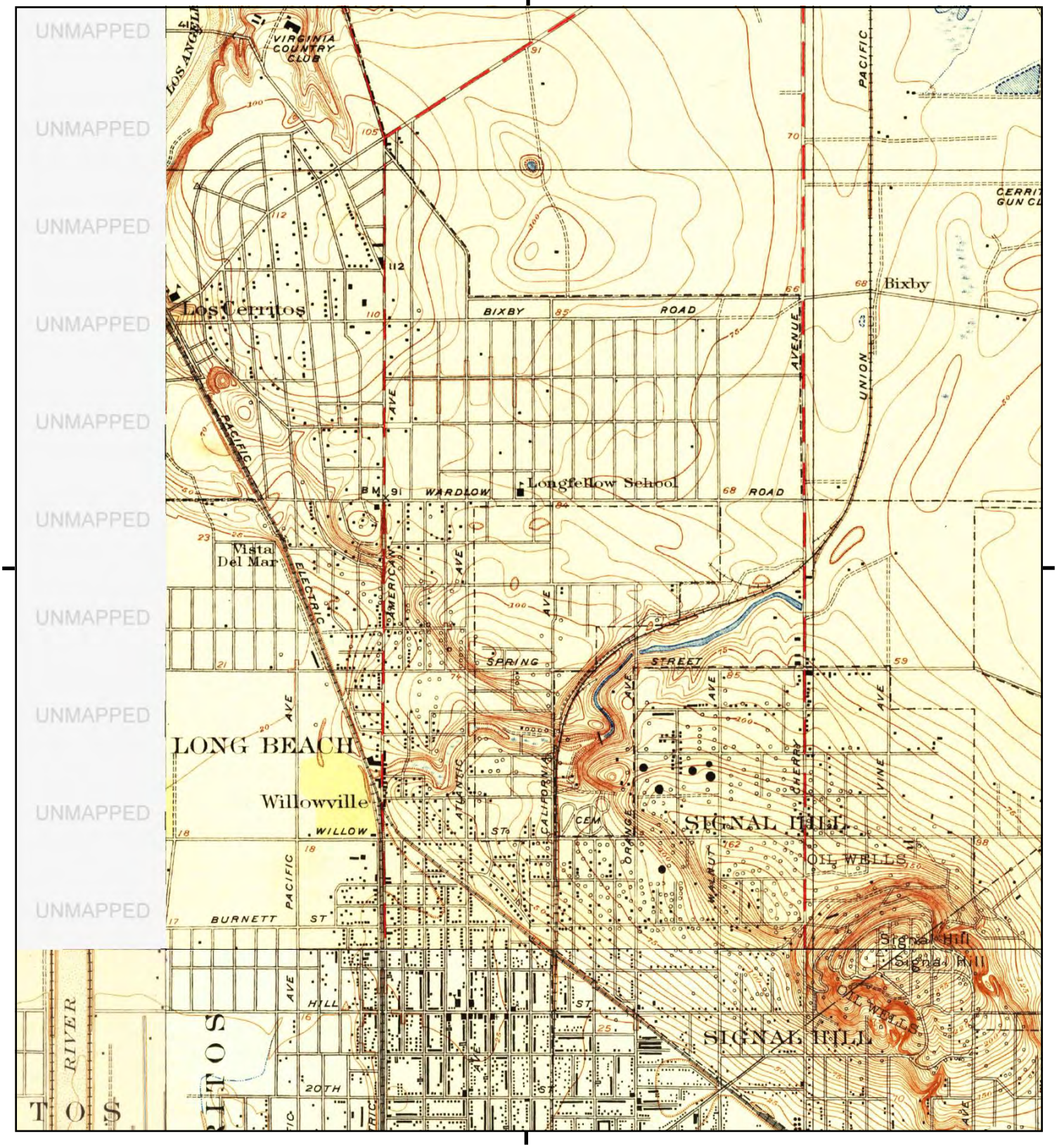
TP, Downey, 1942, 15-minute

SITE NAME: 930 E 33rd St
ADDRESS: 930 E 33rd Street
Signal Hill, CA 90755
CLIENT: Mearns Consulting LLC.

N

# Historical Topo Map

1925




This report includes information from the following map sheet(s).

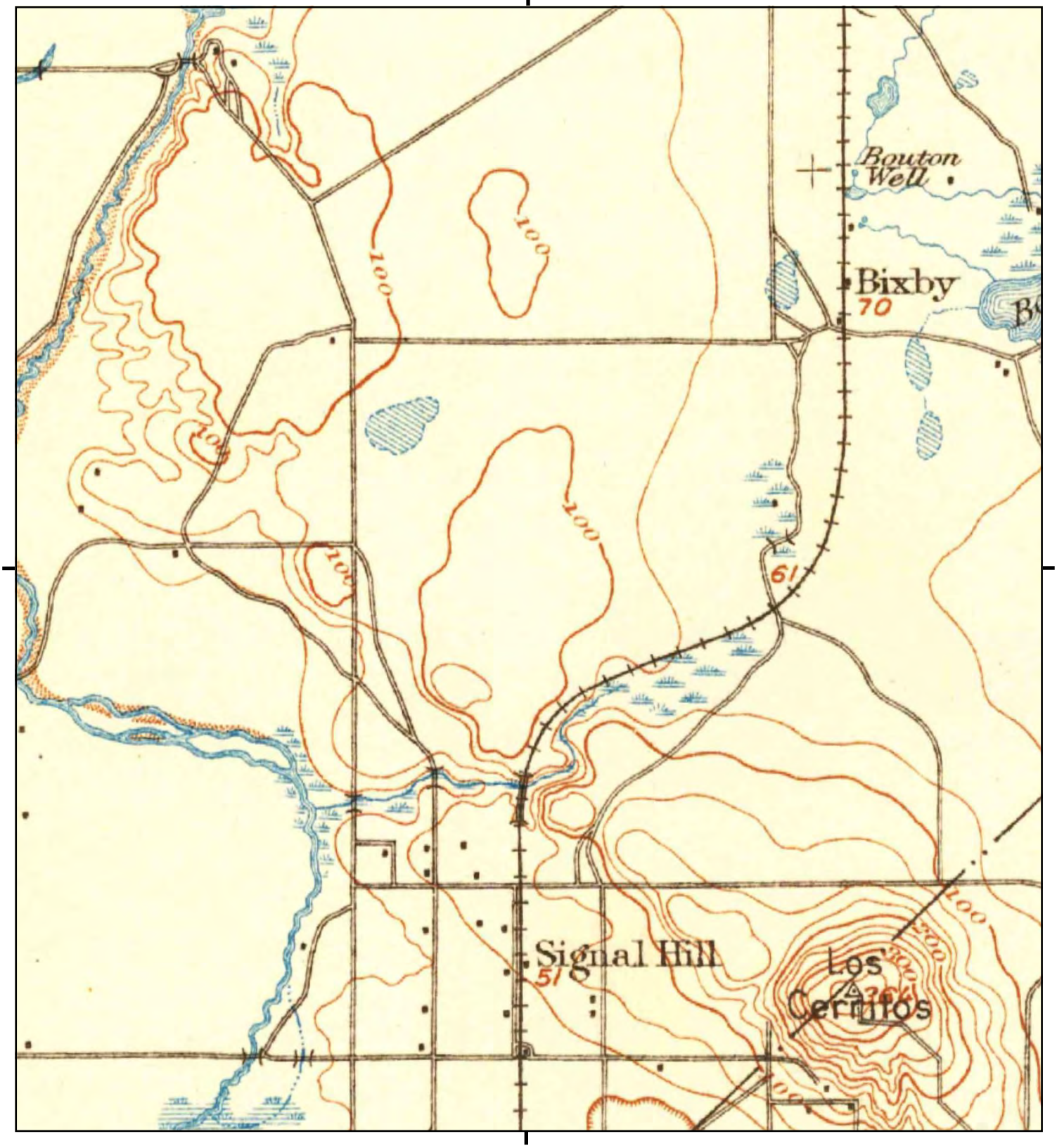
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Clearwater, 1925, 7.5-minute
SE, Long Beach, 1925, 7.5-minute
SW, Wilmington, 1925, 7.5-minute

SITE NAME: 930 E 33rd St
ADDRESS: 930 E 33rd Street
Signal Hill, CA 90755
CLIENT: Mearns Consulting LLC.

N




This report includes information from the following map sheet(s).

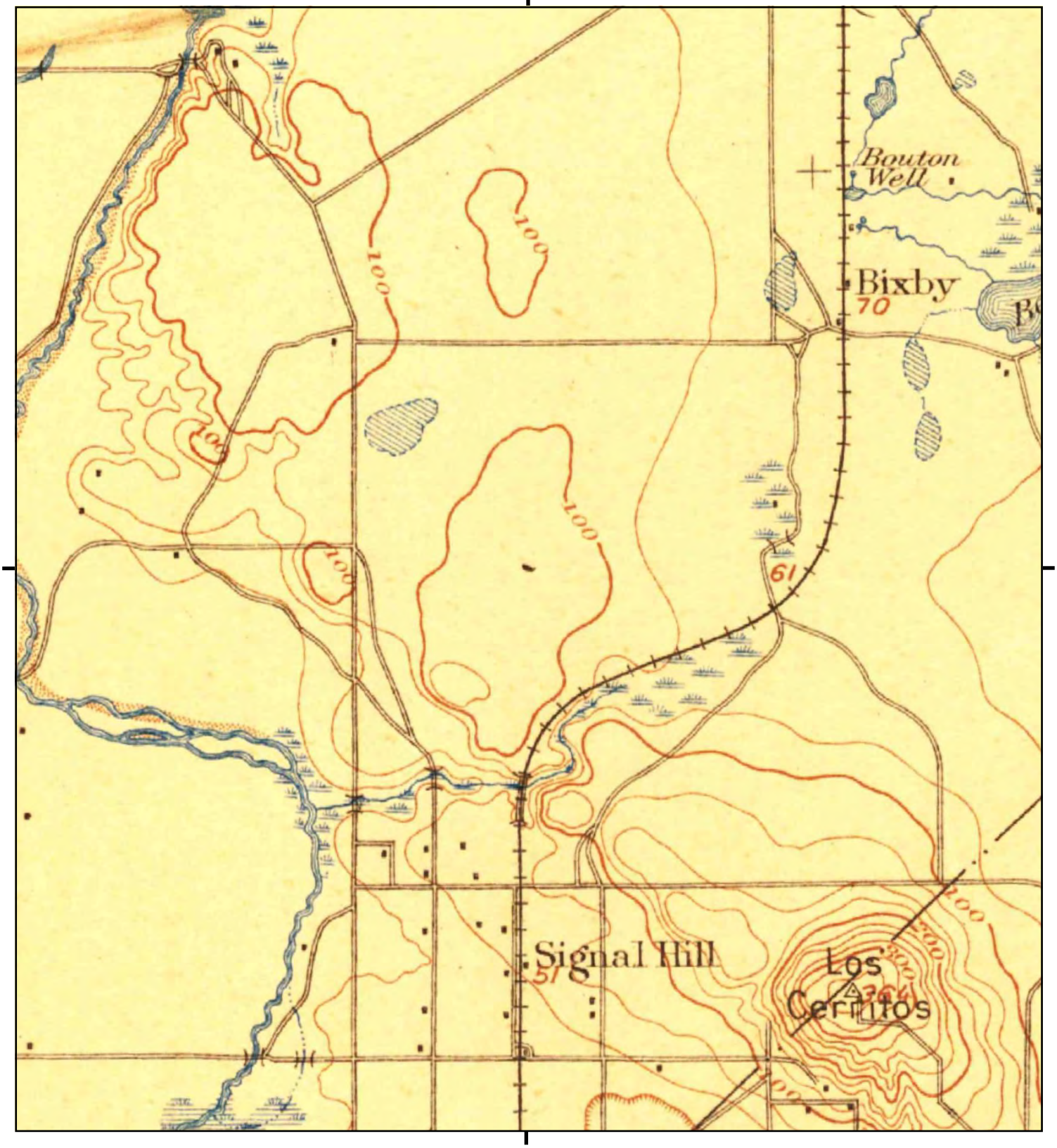
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Downey, 1902, 15-minute

SITE NAME: 930 E 33rd St
ADDRESS: 930 E 33rd Street
Signal Hill, CA 90755
CLIENT: Mearns Consulting LLC.

N




This report includes information from the following map sheet(s).

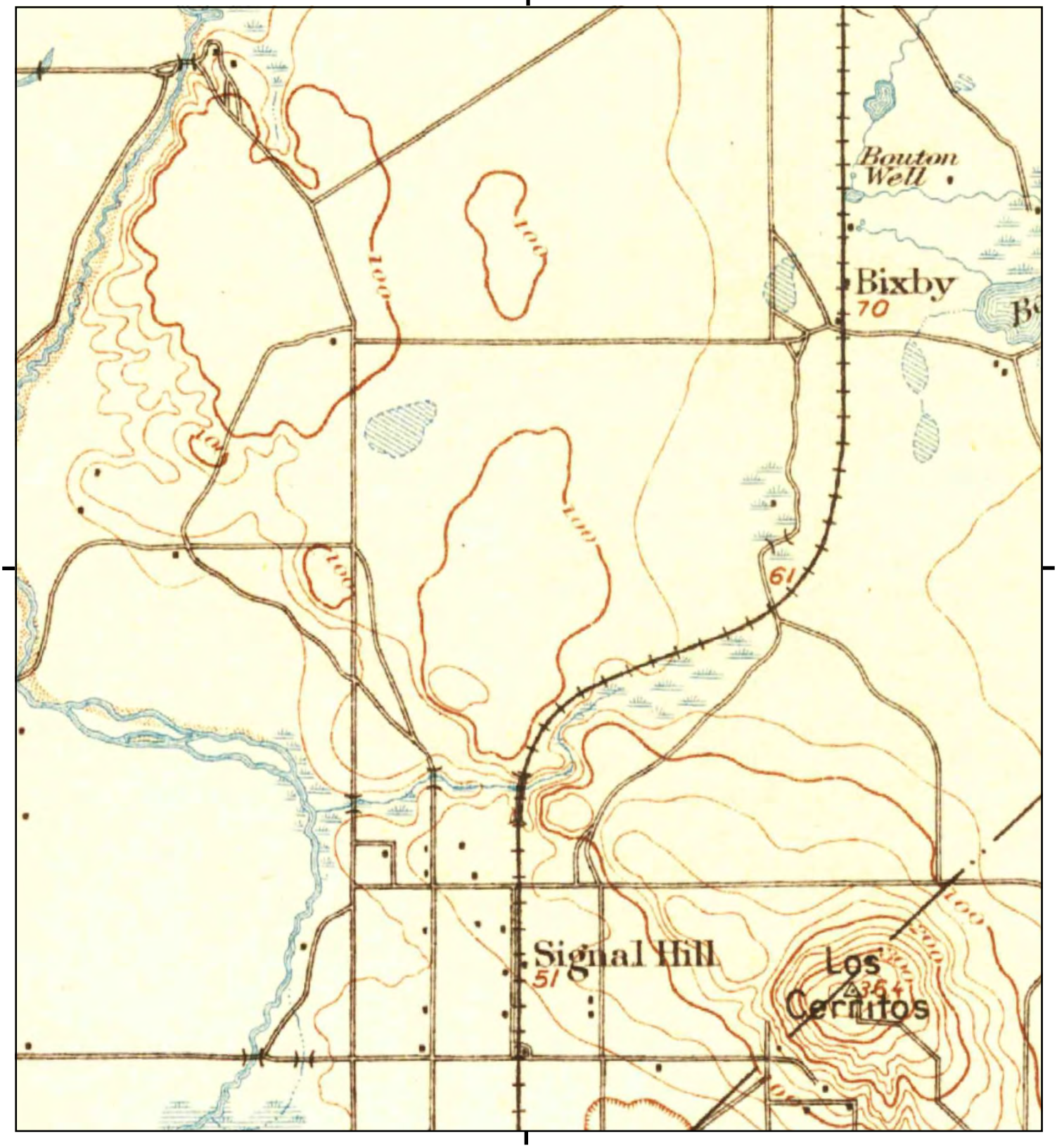
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Downey, 1899, 15-minute

SITE NAME: 930 E 33rd St
ADDRESS: 930 E 33rd Street
Signal Hill, CA 90755
CLIENT: Mearns Consulting LLC.

N




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Downey, 1896, 15-minute

SITE NAME: 930 E 33rd St
ADDRESS: 930 E 33rd Street
Signal Hill, CA 90755
CLIENT: Mearns Consulting LLC.

N

# APPENDIX D

# HISTORIC SANBORN FIRE INSUARANCE MAPS

# Certified Sanborn® Map Report

01/24/20

**Site Name:**

930 E 33rd St
930 E 33rd Street
Signal Hill, CA 90755
EDR Inquiry # 5947181.3

**Client Name:**

Mearns Consulting LLC.
738 Ashland Avenue
Santa Monica, CA 90405
Contact: Susan L Mearns Phd

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Mearns Consulting LLC. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

## *Certified Sanborn Results:*

**Certification #** 7333-4E93-B247

**PO #** NA

**Project** 930 E 33rd Street, Signal Hill

**UNMAPPED PROPERTY**

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 7333-4E93-B247

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

*The Sanborn Library LLC Since 1866™*

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# APPENDIX E

# AERIAL PHOTOGRAPHS



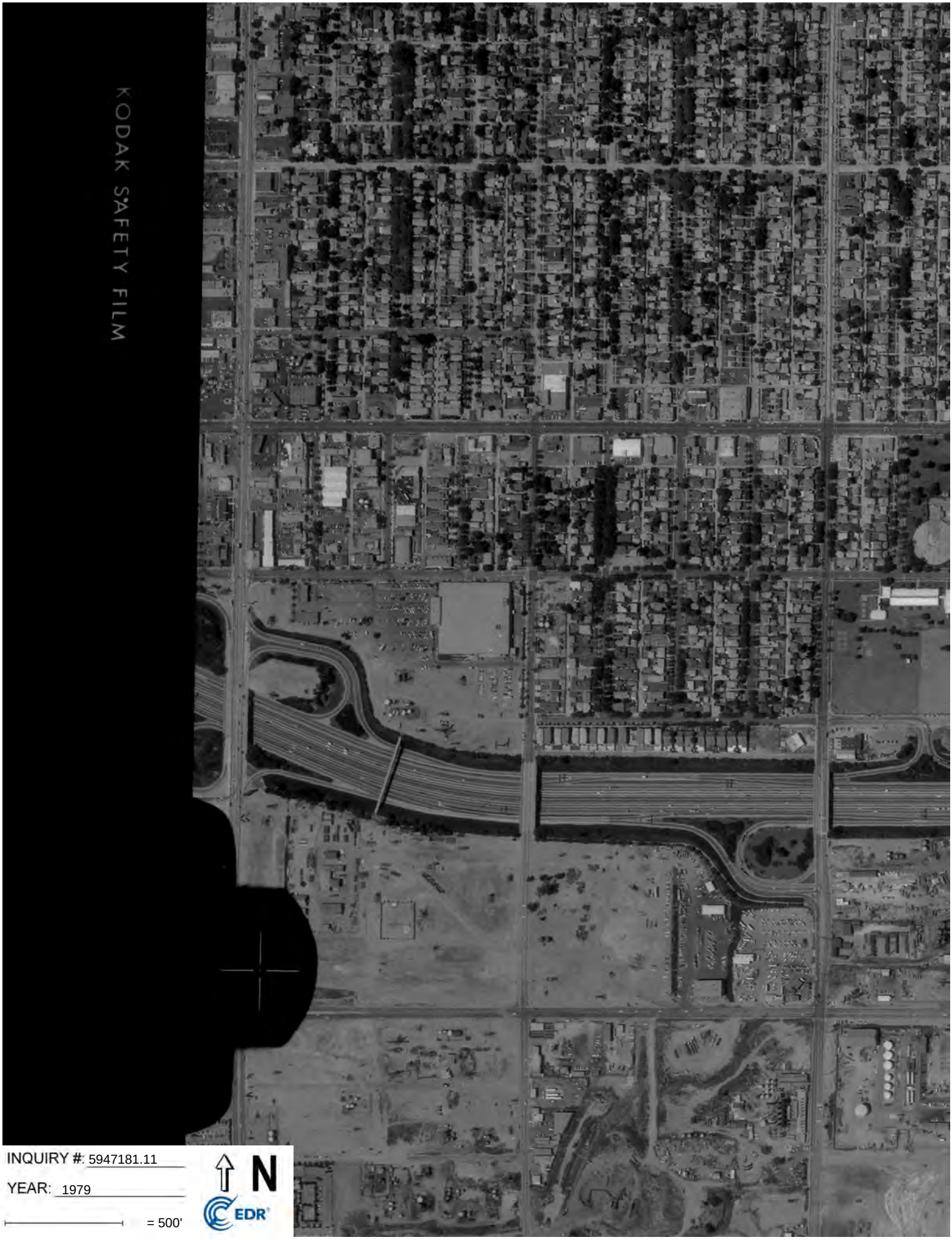

INQUIRY #: 5947181.11

YEAR: 1981

= 500'

N

EDR




INQUIRY #: 5947181.11

YEAR: 1979

= 500'

N

EDR


INQUIRY #: 5947181.11
YEAR: 1977
= 500'
N
EDR


INQUIRY #: 5947181.11
YEAR: 1963
= 500'
N
EDR


INQUIRY #: 5947181.11
YEAR: 1953
= 500'
N
EDR


INQUIRY #: 5947181.11
YEAR: 1947
= 500'
N
EDR



INQUIRY #: 5947181.11

YEAR: 1928

= 500'

N

EDR


INQUIRY #: 5947181.11
YEAR: 2016
= 500'
N
EDR


INQUIRY #: 5947181.11
YEAR: 2012
= 500'
N
EDR


INQUIRY #: 5947181.11
YEAR: 2009
= 500'
N
EDR


INQUIRY #: 5947181.11
YEAR: 2005
= 500'
N
EDR


INQUIRY #: 5947181.11
YEAR: 2002
= 500'
N
EDR


INQUIRY #: 5947181.11
YEAR: 1994
= 500'
N
EDR


INQUIRY #: 5947181.11
YEAR: 1989
= 500'
N
EDR

# APPENDIX F

# CalGEM WELL RECORDS

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

## DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# REPORT OF WELL PLUGGING AND ABANDONMENT

Cypress, California
May 4, 2007

Target Dept. Stores
c/o M.E. WRIGHT
16531 Bolsa Chica Street #301
Huntington Beach, CA 92649

Your report of the plugging and **reabandonment** of well **Chevron U.S.A. Inc./"Field" 18**, A.P.I. No. **037-11543**, Section **19**, T. **4**S, R. **12**W, S.B. B & M., **Long Beach** Field, **Los Angeles** County, dated **02-18-07**, received **04-18-07**, has been examined in conjunction with operations witnessed and records filed in this office. We have determined that the requirements of this Division **COULD NOT** be fulfilled.

**NOTE:**

1. Surface plugging completed on **03-20-07**.
2. Surface inspection made and approved on **05-02-07**.
3. This well is NOT to be built over without further consideration.
4. Deficiencies:
   1. Plug from 4021'-3950' not placed.
   2. Unable to cavity shot @ 1850' or plug 1850'-1750'.
   3. Unable to place plug from 764'-660'.

Hal Bopp
*State Oil and Gas Supervisor*

**By:** _____
**For:** R. K. Baker, *Deputy Supervisor*

INDIVIDUAL BOND

cc: Update
Los Angeles County Assessor
Los Angeles County Fire Prevention Bureau
Long Beach Department of Building & Planning
Department of Oil Properties
Chevron U.S.A. Inc.

KMC:dw

DIVISI )F OIL, GAS, AND GEOTHERMAL RES RCES

# CHECK LIST – RECORDS RECEIVED AND WELL STATUS

| | | |
|---|---|---|
| Company: | **Target Dept. Stores** | Well: **Chevron U.S.A. Inc./"Fields" 18** |
| API#: | **037-11543** | Sec. **19**, T. **4S**, R.**12W**. S. B. B. & M. |
| County: | **Los Angeles** | Field: **Long Beach** |

| RECORDS RECEIVED | DATE |
|---|---|
| Well Summary (Form OG100) | |
| History (Form OG103) | **4/18/07** |
| Core Record (Form OG101) | |
| Directional Survey | |
| Sidewall Samples | |
| Date final records received. | |
| Electric Logs: | |
| Other: | |

**STATUS**

| | | | |
|---|---|---|---|
| Producing | ☐ | Drilling | ☐ |
| Abandoned | ☐ | Idle | ☐ |
| Reabandoned | ☒ | Other | ☐ |

**WELL TYPE**

| | | | |
|---|---|---|---|
| Oil | ☒ | Waterflood | ☐ |
| Gas | ☐ | Water Disposal | ☐ |
| Water Source | ☐ | Cyclic Steam | ☐ |
| Observation | ☐ | Steam Flood | ☐ |
| Exploratory | ☐ | Fire Flood | ☐ |
| Dry Hole | ☐ | Other | ☐ |

EFFECTIVE DATE: 3/20/07

REMARKS: Reabd

| | ENGINEERS CHECK LIST | CLERICAL CHECK LIST |
|---|---|---|
| ☒ | Summary, History & Core Record (Dupl.) | Location change |
| ☐ | Electric Log | Elevation change |
| ☒ | Operator's Name | Form OGD121 |
| ☒ | Signature | Form OGD150b (Release of Bond) |
| ☒ | Well Designation | Duplicate logs to archives |
| ☐ | Location | Notice of Records Due |
| ☐ | Elevation | EDP 5.15.07 vm |
| ☒ | Notices | District Date Base |
| ☒ | "T" Reports | Final Letter (OG159) 5/10/07 sr |
| ☐ | Casing Record | Update Center 5.15.07 vm |
| ☒ | Plugs | |
| ☐ | Directional Survey | |
| ☐ | Production/Injection (FAP Codes: ) | |
| ☐ | E Well on Prod., enter EDP | **FIELD CHECK LIST** |
| ☒ | Surface Inspection Required | Date Surface Inspection Completed: 5/2/07 GBOK |
| ☐ | Surface inspection Waived (Island) | Other: |
| ☐ | Well site restoration deferred (common cellar) | |
| ☒ | Final Letter Required AB: ☐ REAB: ☒ 5-4-07 DW | |
| ☐ | Other: | |

Note: Also to state "This well is not to be built over with out further consideration" JM 5/07

| RECORDS NOT APPROVED | RECORDS APPROVED |
|---|---|
| *(Reason:)* Need Surf Insp | *(Signature)* |
| | RELEASE BOND |
| | Date Eligible |
| | *(Use date last needed records received.)* |
| | MAP AND MAP BOOK N/C |

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# HISTORY OF OIL OR GAS WELL

Operator Target Dept. Stores. Field LONG BEACH County LOS ANGELES

Well Chevron-Texaco E & P Co. "FIELDS" 18-Rd Sec. 19 T. 4S R. 12 S.B. B.&M.

A.P.I. No. 037-11543 Name M. E. WRIGHT Title CONSULTANT

(Person submitting report) (President, Secretary, or Agent)

Date 2-18-07
(Month, day, year)

Signature M. E. Wright

Address 3350 - 6th St, CC 3425, Minneapolis, MN 55402 Telephone Number 612-204-0214

History must be complete in all detail. Use this form to report all operations during drilling and testing of the well or during redrilling or altering the casing, plugging, or abandonment, with the dates thereof. Include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, and initial production data.

| Date 2007 | |
|---|---|
| 3-5 | Drove rig and equipment to location. Set drilling mat in place. Moved rig in, RU mast. Had backhoe dig holes through asphalt. Sank marsh anchors and put out guy lines. Had welder welding wellhead, flange and riser onto 8-5/8" csg stub. Unloaded equipment. Hooked up hoses on mud pump. Secured rig and well. |
| 3-6 | Drove to location. Serviced rig and equipment. Installed, nippled up and function tested BOPE. RU working platform, mud pump and circulating equipment, tbg equipment, and power swivel. Made up 6-1/4" bit on one 4-3/4" drill collar, unable to get bit deeper than 16' due to bend in surface csg. LD 4-3/4" drill collar. Made 6-1/4" bit up on 1 joint 2-7/8" tbg. Drilled wood from 16' to 33', circulating with mud. Started getting returns coming up through cellar floor from outside 9" surface pipe. Pulled out with bit. Secured rig and well until A.M. |
| 3-7 | Drove to location. Serviced rig and equipment. Ran back in hole with 6-1/4" bit on 2-7/8" tbg. Continued drilling up wooden plug and circulating out coarse sand from 33' to 246'. Pulled out with bit. Found bit plugged and balled up clay. Secured rig and well until A.M. |
| 3-8 | Drove to location. Serviced rig and equipment. Made up good, used 6 -1/4" bit and ran in hole. Bit stopped on fill at 40'. Drilled and cleaned out sand and gravel from 40' to 310'. Circulated hole clean at 310'. Pulled out with bit. Secured rig and well until A.M. |
| 3-9 | Drove to location. Serviced rig and equipment. Checked and re-ran same 6-1/4" bit and stopped on hard fill at 180'. Continued drilling and cleaning out wood, sand and gravel from 180' to 465'. Circulated hole clean at 465'. POOH with bit. Secured rig and well.<br>*NOTE: Vacuum truck hauled in 2 loads (120 bbls) mud from Allenco yard. |
| 3-12 | Drove to location. Serviced rig and equipment. Made up good 6-1/4" bit and ran on 2-7/8" tbg. Bit stopped at 120' on hard fill. Drilled and cleaned out sand, gravel and wood from 120' to 559'. Circulated hole clean at 559'. POOH with bit. Secured rig and well until A.M.<br>*NOTE: Vacuum truck hauled in 2 loads (120 bbls) of mud from Allenco yard. |
| 3-13 | Drove to location. Serviced rig and equipment. Picked up two 3-1/2" drill collars and made up good 6-1/4" bit on bottom. RIH to top of fill at 120'. Circulated and drilled out sand and gravel down to 624'. Circulated hole clean at 625'.<br>*NOTE: Vacuum truck hauled in 2 loads (120 bbls) mud from Allenco yard. |
| 3-14 | Drove to location. Serviced rig and equipment. Replaced worn 6-1/4" bit with good 6-1/4" bit and ran in hole on two 3-1/2" drill collars and 1 joint 2-1/3" tbg to tag top of fill at 98'. Drilled and cleaned out sand and gravel from 98' to 565'. POOH with bit. Secured rig and well until A.M.<br>*NOTE: Vacuum truck hauled in 1 load (60 bbls) mud from Allenco yard. |

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# HISTORY OF OIL OR GAS WELL

| | |
|---|---|
| 3-15 | Drove to location. Serviced rig and equipment. Checked and ran in with same 6-1/4" bit with two 3-1/2" drill collars and 2-7/8" tbg. Continued drilling and cleaning out sand and gravel from 65' to 565'. Circulated hole clean at 565'. POOH with tbg, drill collars and bit. RU Tiger Wireline Service. Ran 1 Gamma Ray log from surface down to 565', and 1 Casing Caliper Profile log on 8-5/8" from surface to bottom of 8-5/8" stub at 39'. Rigged down Tiger Wireline Service. Secured rig and well until A.M.<br>*NOTE: Vacuum truck hauled in 1 load (60 bbls) mud. |
| 3-16 | Drove to location. Serviced rig and equipment. Ran same 6-1/4" bit on 3-1/2" drill collars and 2-7/8" tbg. Drilled and cleaned out sand from 192' to TOC plug at 625'. Circulated hole clean at 625'. POOH with tbg, drill collars and bit. Secured rig and well until A.M. DOGGR Mr. K. Carlson & Mr. M. Kratovil approved cmt plugging from 625' to surface.<br>*NOTE: Vacuum truck hauled in 1 load (60 bbls) mud. |
| 3-19 | Drove to location. Serviced rig and equipment. Ran in with 2-7/8" saw-toothed collar. Drilled and cleaned out sand and gravel from 95' to top of cement plug at 625'. RU Ausburn Cementers, with bottom of tubing at 625', Ausburn mixed, pumped and displaced 195 sx (225 cu. ft.) Class "G" neat cement to leave calc TOC at 383'. Hole size unknown. Pulled out with tubing. Secured rig and well until A.M. DOGGR witnessed plug from 627'. By A. B. Gorashia |
| 3-20 | Drove to location. Serviced rig and equipment. Ran in with tbg and tagged TOC plug at 40'. Hung bottom of tbg at 38' and RU Ausburn Cementing. Ausburn mixed and pumped 11 sx (12 cu. ft) "G" neat cmt to bring cmt to surface. Rigged down cementers. LD tbg. RD work floor and BOPE. Loaded out tbg equipment, took down guy lines and rigged down mast. Started cleaning out solids from mud pump tank. Secured rig and well.<br>DOGGR A. B. Gorashia witnessed surface plug (Phase 1 tag), 40'<br>DOGGR A. B. Gorashia witnessed surface plug (up grade) 12 cf. |
| 3-21 | Drove to location. Serviced rig and equipment. Finished loading out tools and equipment and cleaning out mud pump. Helped stinger crane load out drilling mat and BOPE. Moved pipe trailer, mud pump and rig off location. Cleaned location. Set up fences, moved off. |
| 4-3 | Drove to location. Cut csg 5' below surface. Chipped away cmt, got ready for gas test. Steel I. D. plate. Gas test approved. |

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# CONSTRUCTION SITE WELL INSPECTION

District Ref. No. _____

Field: Long Beach City/County Long Beach Sec. 19 T. 4S R. 12W S.BB.&M.

Location (major cross streets): Atlantic Ave and 33rd Street

Development representative: Mick Beyer Phone: (310) 505-9787

Describe the exact location of the excavation or well at the building site (from a reference point on a Division Map):

How the location was determined: Measured ☒ Surveyed ☐ Other ☐

Describe: _____

Well designation: "Field" 18 , API No. 03711543

Operator: Target Dept. Stores

## SAFETY PRECAUTIONS AND UNSAFE EXCAVATIONS

**CAUTION!** Oil and gas wells may produce hydrogen sulfide gas, which is highly poisonous and will accumulate and concentrate in low areas such as excavations. Before entering an excavation area, test to ensure that there is sufficient oxygen and that the flammable/toxic gas readings are within safe limits.

| INSPECTIONS | 1 | Initials Date | 2 | Initials Date | 3 | Initials Date | 4 | Initials Date |
|---|---|---|---|---|---|---|---|---|
| Excavation size | 6'X6' 5' down | 5/4/07 AB | | | | | | |
| Picture No. | | | | | | | | |
| Picture direction | | | | | | | | |
| Metal detector (Y/N) | N | | | | | | | |
| Visible casing size(s) (or comment) | 81/4" | | | | | | | |
| Fluid leaks (Y/N)* | N | | | | | | | |
| Amount (est.) | | | | | | | | |
| Gas leaks (Y/N)* | N | | | | | | | |
| Amount (est.) | | | | | | | | |
| Gas detector (N/Y) | Y | | | | | | | |
| Bubble test (Y/N) | Y | | | | | | | |

*Leak location(s): N/A

Describe hazardous or damaged well condition(s): N/A

Report finalized by: AB Gorashi A., Division of Oil, Gas & Geothermal Res. Date: 5/4/07



OG190A (12/00/GSR1/1M)

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

4e

**No. T 107-0380**

# REPORT ON OPERATIONS

Cypress, California
April 12, 2007

Target Department Stores
c/o M.E. WRIGHT
16531 Bolsa Chica Street #301
Huntington Beach, CA 92649

Your operations at well **Chevron U.S.A. Inc./"Field" 18,** A.P.I. No. **037-11543**, Sec. **19**, T. **4**S., R. **12**W, S.B. B. & M., **Long Beach** Field, **Los Angeles** County, were witnessed on **4/5/07**. **AB Gorashi**, representative of the supervisor, was present from **0800** to **1000**. There was also present **Mick Beyer**, **Allenco Supervisor**.

Present condition of well: **13" cem 788'; 8 1/4" cem 4230' WSO, shot & pulled fr 764'; 5 3/4" cem 6210' WSO, cp 4730' & 4870', perfs @ int 4230'-4830', shot 4051', 4100' & 4170', pulled fr 4051'; 4 3/4" ld 6120'-6366', perfs 6120'-6366'. Junk below 4051' & 4828'. TD (present hole) 7483'. Plugged w/ cem 7483'-6828', 6500'-6106', 4848'-4776', 4560'-4385', 4375'-4185', 4048'-4021' & 627'-5'.**

The operations were performed for the purpose of witnessing the plugging operations in the process of reabandonment.

**DECISION:** APPROVED.

NOTE: The required Class II2M blowout prevention equipment was inspected and approved on **3/14/07**.

DEFICIENCIES:
1. Plug from 4021'-3950' not placed.
2. Unable to cavity shot @ 1850' or plug 1850'-1750'.
3. Unable to place plug from 764'-660'.

CONTRACTOR: Allenco.

KMC:sjl

[redacted] Approved 5-2-07 GBA

cc: Update
Chevron U.S.A. Inc.

Hal Bopp
*State Oil and Gas Supervisor*

**By:**
**For:** R. K. Baker, *Deputy Supervisor*

OG109 3-16-99

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# CEMENTING/PLUGGING MEMO

T107-0380

Operator Target Dept. Stores c/o M.E Wright Well No. Chevron USA. Inc. / "Field" 18

API No. 037-11543 Sec. 19 T. 4S R. 12W , SB B&M

Field Long Beach , County Los Angeles . On 4-5-2007 ,

Mr. / Ms. AB GORASHI A representative of the supervisor, was present from 800 to 1000 .

There were also present MICK BEYER, ALLENCO, SUPERVISOR

Casing record of well: 13" cem 788'; 8¼" cem 4230' WSO, Shot & pulled fr 764'; 5¾" cem 6210' WSO, cp 4730' & 4870', perfs @ int 4830'-4230', Shot 4170', 4100' & 4051', pulled fr 4051', Junk below 4828' & 4051'; 4¾" ld 6120'-6366', perfs 6120'-6366'. TD (Present Hole) 7483'. Plugged w/ cem 7483'-6828', 6500'-6106', 4848'-4776', 4560'-4385', 4375'-4185', 4048'-4021', 627'.

The operations were performed for the purpose of: (N) Reabandonment

☐ The plugging/cementing operations as witnessed and reported are approved.

☐ The location and hardness of the cement plug @ _____ ' are approved.

Hole size: _____ " fr. 0 ' to 788 ', 12 " to 4235 ' & _____ " to _____ '

| Casing | | | | Cemented | | | Top of Fill | | Squeezed Away | Final Pressure | Perforations |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | Wt. | Top | Bottom | Date | MO-Depth | Volume | Annulus | Casing | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Casing/tubing recovered: _____ " Shot/cut at _____ ', _____ ', _____ ', Pulled fr. _____ ';

_____ " Shot/cut at _____ ', _____ ', _____ ', Pulled fr. _____ '.

Junk (in hole): _____

Hole fluid (bailed to) at _____ '. Witnessed by _____

| Mudding | Date | bbls | Displaced | Poured | Fill | Engineer |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |

Note: (K) II2M 3/14/07 (Q) Gas Leak 4/5/07 AGA C/O = 627'

| Cement Plugs | | Placing | Placing Witnessed | | Top Witnessed | | | |
|---|---|---|---|---|---|---|---|---|
| Date | Sx./cf | MO & Depth | Time | Engineer | Depth | Wt/Sample | Date & Time | Engineer |
| 3/19/07 | 225 cf | TO 627' | 1330 | AB GORASHI | 40'/285' | ATW | 3/20/07 830 | AB GORASHI A |
| 3/20/07 | 12 cf | TO 38' | 1000 | AB GORASHI | 5'/5' | VISUAL | 4/05/07 900 | AB GORASHI A |
| | | | | | | | | |
| | | | | | | | | |

CONTRACTOR:

Allenco

UNCORRECTABLE DEFICIENCIES:

None

DEFICIENCIES NOTED AND TO BE CORRECTED:

None

DEFICIENCIES NOTED AND CORRECTED:

None.

API No. 037-11543 DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES T_____

# BLOWOUT PREVENTION EQUIPMENT MEMO

Operator Target Dept. Stores c/o M.E. Wright Well Chevron U.S.A, Inc. / "Field" 18 Sec. 19 T. 4S R. 12W

Field Long Beach County Los Angeles Spud Date_____

| VISITS: | Date | Engineer | Time | Operator's Rep. | Title |
|---|---|---|---|---|---|
| 1st | 3-14-07 | W. Chen | (1015 to 1045) | | |
| 2nd | | | ( to ) | | |

Contractor Allenco Rig# 5 Contractor's Rep. & Title Mike Russell, operation manager

Casing record of well: Memo

**OPERATION:** ~~Testing~~ (inspecting) the blowout prevention equipment and installation. Critical well? Y ✓ N___

**DECISION:** The blowout prevention equipment and its installation on the 8 5/8 " casing are approved.

Proposed Well Opns: Reabandon . MACP:_____psi

Hole size:_____" fr._____' to_____' ,_____" to_____' &_____" to_____'

**REQUIRED BOPE CLASS:**

| CASING RECORD OF BOPE ANCHOR STRING | | | | | Cement Details | Top of Cement | |
|---|---|---|---|---|---|---|---|
| Size | Weight(s) | Grade(s) | Shoe at | CP at | | Casing | Annulus |
| | | | | | | | |
| | | | | | | | |

| BOP STACK | | | | | | | TEST DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| API Symb. | Ram Size (in.) | Manufacturer | Model or Type | Vert. Bore Size (in.) | Press. Rtg. | Date Last Overhaul | Gal. to Close | Recovery Time (Min.) | Calc. GPM Output | psi Drop to Close | Secs. to Close | Test Date | Test Press. |
| Rd | 2 7/8" | WSI | Duke | 9" | 3000 | | 0.72 | | | | | | |
| Rd | CSO | WSI | Duke | 9" | 3000 | | 0.72 | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

TOTAL: 1.44

**ACTUATING SYSTEM**

Accumulator Unit(s) Working Pressure — psi

Total Rated Pump Output_____gpm Fluid Level

Distance From Well Bore 25 ft. OK

| | Accum. Manufacturer | Capacity | Precharge |
|---|---|---|---|
| 1 | Hand pump | 10 gal. | psi |
| 2 | | gal. | psi |

| CONTROL STATIONS | Elec. | Hyd. | Pneu. |
|---|---|---|---|
| ✓ Manifold at accumulator unit | | ✓ | |
| Remote at Driller's station | | | |
| Other: | | | |

| EMERG. BACKUP SYSTEM | | | Press. | Wkg. Fluid |
|---|---|---|---|---|
| ✓ $N_2$ Cylinders | 1 | L= 51" | 2700 | 9.10 gal. |
| Other: | 2 | L= " | | gal. |
| | 3 | L= " | | gal. |
| | 4 | L= " | | gal. |
| | 5 | L= " | | gal. |
| | 6 | L= " | | gal. |
| | | TOTAL: | | 9.10 gal. |

**AUXILIARY EQUIPMENT**

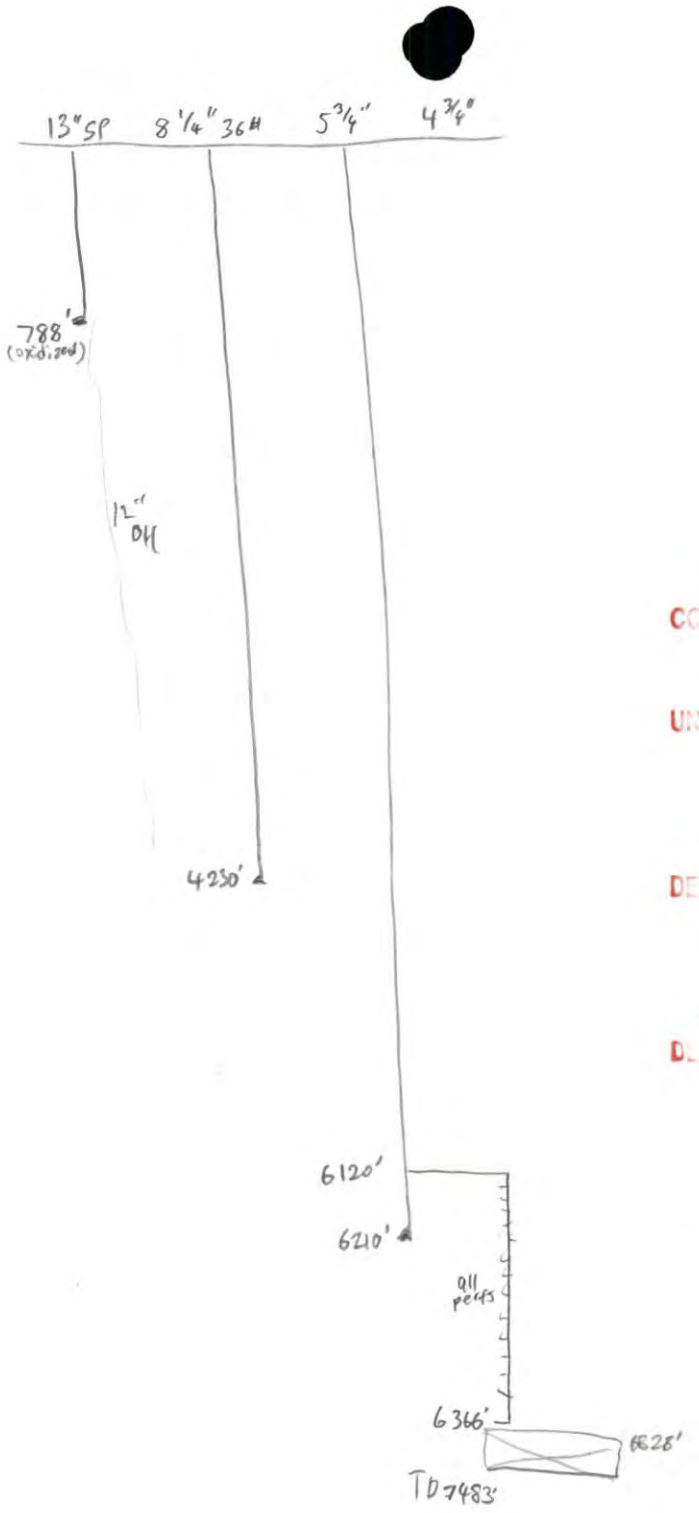
| | | No. | Size (in.) | Rated Press. | Connections: Weld | Flange | Thread | Test Press. |
|---|---|---|---|---|---|---|---|---|
| | Fill-up Line | | | | | | | |
| ✓ | Kill Line | | 2" | 3000 | | | ✓ | |
| ✓ | Control Valve(s) | 3 | | 3000 | | | ✓ | |
| | Check Valve(s) | | | | | | | |
| | Aux. Pump Connect. | | | | | | | |
| | Choke Line | | | | | | | |
| | Control Valve(s) | | | | | | | |
| | Pressure Gauge | | | | | | | |
| | Adjustable Choke(s) | | | | | | | |
| | Bleed Line | | | | | | | |
| | Upper Kelly Cock | | | | | | | |
| | Lower Kelly Cock | | | | | | | |
| | Standpipe Valve | | | | | | | |
| | Standpipe Press. Gauge | | | | | | | |
| ✓ | Pipe Safety Valve | | 2 7/8" | 3000 | | | | |
| | Internal Preventer | | | | | | | |

| HOLE FLUID MONITORING EQUIPMENT | Alarm Type: Audible | Visual | Class |
|---|---|---|---|
| Calibrated Mud Pit | | | A |
| Pit Level Indicator | | | B |
| Pump Stroke Counter | | | |
| Pit Level Recorder | | | C |
| Flow Sensor | | | |
| Mud Totalizer | | | |
| Calibrated Trip Tank | | | |
| Other: | | | |

| Hole Fluid Type | Weight | Storage Pits (Type & Size) |
|---|---|---|
| Drilling Mud | 12 # | pump tanks 110 + 60 vac truck bbls |
| | | |

**REMARKS AND DEFICIENCIES:**

OGD8 (4/03/LICP/3M)




BOPE Insp

C/O Depth

Mud

PLH 4021'-3950'

Set 8 1/4" csg cmt shoe 1850'

PLH 1850'-1750' in + out 8 1/4" csg

PLH 764'-660'

PLH 100'-5' all csgs in out

Surf Insp

BFW 1850'±

CONTRACTOR:

Allenco

UNCORRECTABLE DEFICIENCIES:

None

DEFICIENCIES NOT CORRECTED:

None

DEFICIENCIES CORRECTED:

None.

M.E. Wright
16531 Bolsa Chica St
Suite 301
Huntington Beach, CA 92649

Chevron USA
Field 28
Long Beach

SANTA ANA
19 MAR 2007










DIVISION of OIL & GAS & G. R.
5816 CORPORATE AVE
CYPRESS CA 90630

037-11543

ATTN: K. CARLSON

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

No. P 107-0098

412
(Field Code)

# PERMIT TO CONDUCT WELL OPERATIONS

06
(Area Code)

--
(New Pool Code)

--
(Old Pool Code)

Target Dept. Stores
C/O M.E. Wright
16531 Bolsa Chica St. #301
Huntington Beach CA 92649

Cypress, California
March 2, 2007

Your proposal to **reabandon** well **Chevron U.S.A. Inc./"Field" 18**, A.P.I. No. **037-11543**, Section **19**, T. **4S**, R. **12W**, **S.B.** B. & M., **Long Beach** Field, **Old** area, -- pool, **Los Angeles** County, dated **01/31/07**, received **02/02/07** has been examined in conjunction with records filed in this office.

**THE PROPOSAL IS APPROVED PROVIDED:**

1. Blowout prevention equipment with hydraulic controls, equivalent to this Division's Class **II2M** requirements, or better, shall be installed and maintained in operating condition.
2. Well killing fluid of a quality and in sufficient quantity to control all subsurface conditions in order to prevent blowouts shall be used.
3. At least **400′** of surface casing shall be cemented in the well, if the surface casing is not competent.
4. All portions of the well not plugged with cement shall be filled with clay base mud having a minimum density of 72 lb/cu ft and a minimum gel-shear strength of 25 lb/100 sq ft.
5. This Division shall be consulted and a Supplementary Notice may be required before making any changes in the proposed program.
6. **THIS DIVISION SHALL BE NOTIFIED TO:**
   a. Inspect the installed blowout prevention equipment prior to commencing downhole operations.
   b. Witness the clean-out depth.
   c. Witness the mudding of the hole.
   d. Witness the placing, location and hardness of the cement plug from **4021′** to **3950′**.
   e. Witness the squeeze cementing of the **8 1/4"** casing through the **cavity shot** at **1850′**.
   f. Witness the placing, location and hardness of the cement plug from **1850′** to **1750′**, inside and outside the **8 1/4"** casing.
   g. Witness the placing, location and hardness of the cement plug from **764′** to **660′**.
   h. Witness the placing, location and hardness of the cement plug from **100′** to **5′**, inside and outside **all** casings.
   i. Inspect and approve the cleanup of the well site within 60 days after placement of the surface plug.

**NOTE:**

1. A crew drill may be required at the time of the blowout prevention equipment inspection.
2. This Division does not pass upon your right to enter the property, but merely approves the proposal as conforming to our requirements.
3. Issuance of this report was delayed pending receipt of additional information.
4. The proposed surface plug shall not contain rock or gravel.
5. The base of the freshwater sands is at **1850′±**.

3/16/07 Carlson/Mel Wright (in office)
Need letter from target that they will never be able to build w/in proximity of well. Need all Caliper + E logs.

KMC:kc
cc: Update
Chevron U.S.A. Inc.
INDIVIDUAL BOND

Engineer: Kenneth Carlson

Phone: 714/816-6847

OK to cem 627'± to surface
DOG to wit cem. + Tag ops,
+ Bope insp.

Hal Bopp
*State Oil and Gas Supervisor*

By [signature]
For R. K. Baker, *Deputy Supervisor*

**A copy of this permit and the proposal must be posted at the well site prior to commencing operations. Records for work done under this permit are due within 60 days after the work has been completed or the operations have been suspended.** OG 111

OS/KC

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

Re-

## Notice of Intention to Abandon Well

P# 1070098

| FOR DIVISION USE ONLY | | | |
|---|---|---|---|
| CARDS | BOND | FORMS | |
| | | OGD114 | OGD121 |
| | | 2/3/07 KJ | 2/2/07 KJ |

DIVISION OF OIL AND GAS

In compliance with Section 3229, Division 3, Public Resources Code, notice is hereby given that it is our intention to abandon well Chevron USA, Inc / Chevron Texaco E&P Co "Fields" 18 Rd, API No. 037-11543, Sec. 19, T. 4S, R. 12W, SB B. & M., Long Beach Field, Los Angeles County.

commencing work on FEB. 18, 2007, 19

The present condition of the well is:

1. Total depth 7483 (Plugged to 6828) Pulled 5¾" @ 4051, 8¼" @ 764 (only 29 jts range 1)
2. Complete casing record, including plugs and perforations (present hole) 13" S.P. Cem. 788 (oxidized) 8¼" Cem 4230, 5¾" Cem. 6210, 4¾" liner 6120 to 6366 Perfs - 6120 to 6366; 4880 to 70, 4740 to 30, 4650 to 40, 4770 to 45, 4650 to 10, 4784 to 4830, 4550 to 25, 4435 to 04, 4350 to 4230, W/SO 6210 - Plugs below #9
3. Last produced Jan. 1938 - 14 (Date) (Oil, B/D) (Gas, Mcf/D) (Water, B/D)

or

4. Last injected (Date) (Water, B/D) (Gas, Mcf/D) (Surface pressure)

Additional data for dry hole (show depths):

5. Oil or gas shows
6. Stratigraphic markers
7. Formation and age at total depth
8. Base of fresh water sands 1800± (See "Fields" 24) LOG

9. Is this a critical well according to the definition on the reverse side of this form? ☐ Yes ☐ No

The proposed work is as follows: (Plugs continued from above) 7483 to 6828, 6500 to 6442, 6366 to 6190, 6120 to 6106, 4848 to 4776, 4550 to 4385, 4375 to 4185, 4048 to 4021 (wood plug), 670 (Fill on 8') to 627, 75 sks @ surface on mud filled csg.

— See attached program —

1750
92
BFW 1842 1850'± OK

It is understood that if changes in this plan become necessary, we are to notify you immediately.

Address 3350 6th St. CC3425 (Street)
Minneapolis, MN 55402 (City) (State) (Zip)
Telephone Number (612) 304-0214 (Area Code) (Number)

TARGET DEPT STORES (Name of Operator)
By B. Ullery - M.E. Wright (Print Name)
M.E. Wright (Signature) 1-31-07 (Date)

C/O M. WRIGHT
16531 Bolsa Chica St. #301
HUNTINGTON BEACH CA 92649
(714) 377-9234

OG108 (2/84/DWRR/5M)

**ABANDONMENT PROGRAM**
**CHEVRON-TEXACO "FIELDS" 18 RD.**

**API 037-11543 LONG BEACH FIELD -Sec 19 - T4S - R12W -**

Well is in a planned parking lot 200 feet from bldg. & 160' so. of intersection of Olive Ave and 33rd Sts. 13" stove pipe csg. is rusted away and unknown length of stuck, bent 8 5/8" is exposed 3.5' below ground surface.

**PROGRAM**

1. Remediate well head. MIRU - Install BOP equipment on the 8 5/8" csg. determine strength, length, and usefullness of the 8 5/8" csg. Cmt. if necessary. (90 to 180 feet may be in place)
2. Fill hole with DOG spec mud. Try to circulate. Cmt. csg if necessary.
3. Drill with, extreme care, 6 1/4" hole to top of highest plug at 627. Wood plug is below cement. 100' of fill is under the wood plug.
4. If able to drill and circulate drill out plug, be careful not to tear up 13" SP. Enter 8 5/8" cmt lap if running sand is a problem.
5. Clean out fill to 4021, cmt 4021 to 3950.
6. Condition mud to DOG spec. 72# mud.
7. Shoot cavity shot at 1850.
8. Squeeze cement 8 5/8" casing from 1850 to 1750 inside and out. Tag TOC.
9. Condition mud to DOG specs. Cmt 8 5/8" stub at 764 up to 660.
10. Condition mud to DOG specs. Cmt all csg, 100 feet to the surface.
11. Gas test and weld on a ID plate.

MEW 2/1/07

Department of Oil Properties

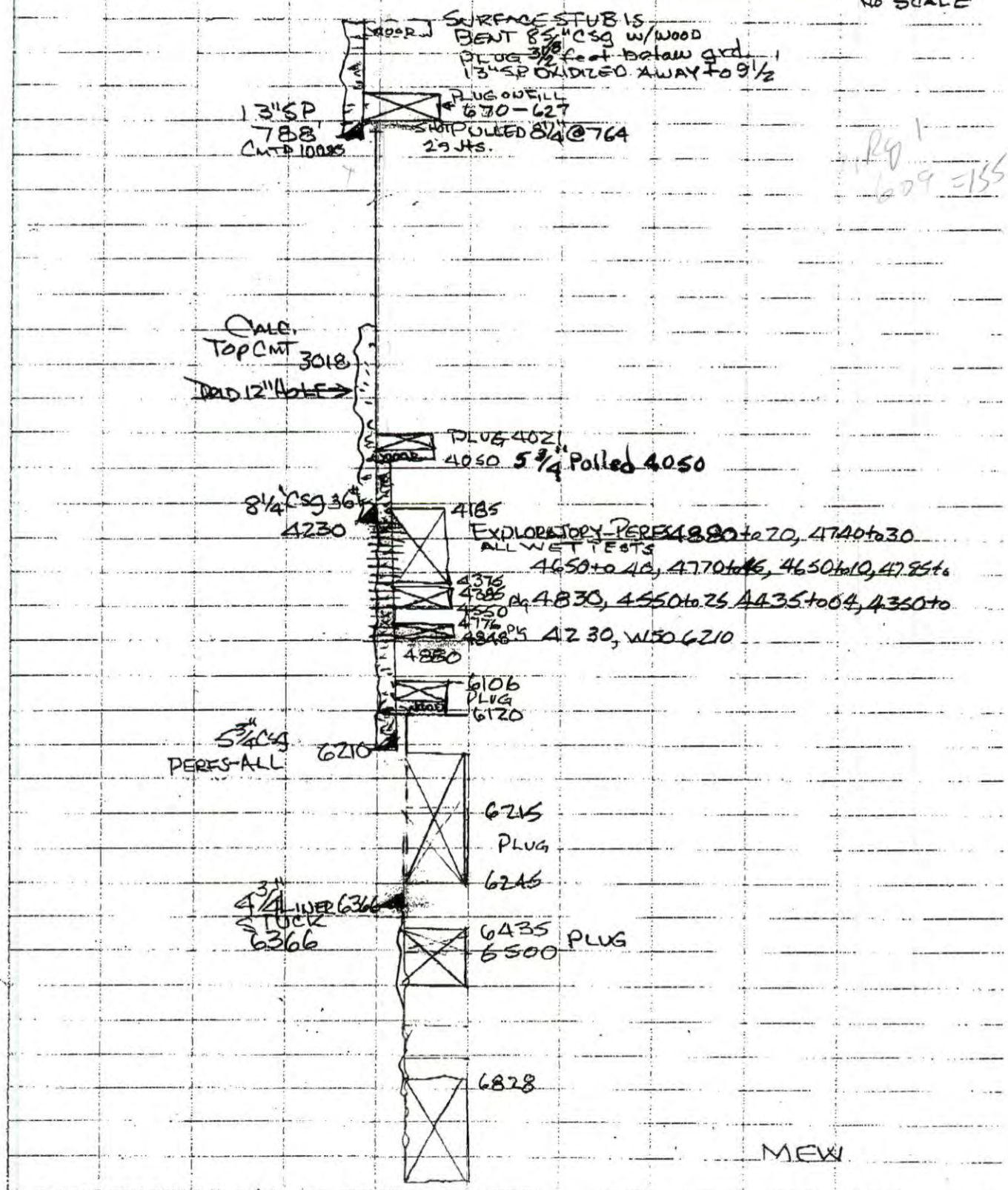
# CHEVRON-TEXACO FIELDS #18 Rd.

API# 037_11543

1-1

1-25-0°

MEWright
NO SCALE




MEW

DPNG. & PERMIT I.D. 7483

TELECOPIER TRANSMISSION RECORD

DATE: 2-2-07 HUNTINGTON BEACH, CALIF TIME: 730 A.M. ~~P.M.~~

FOR: 3 PAGES FOLLOWING THIS PAGE.

TO

NAME: Ken Carlson

COMPANY NAME: DOGGR

ADDRESS: CYPRESS

Ken: Fields 18Rd the "Krataville-Target" well Program — well is in parking lot distant from any Buildings. See Bob's Plans.

NAME OF SENDER: Mel Wright

City of Long Beach

Department of Oil Properties

PAGE NO 1 - 1

DATE

TEXACO FIELD 18

Mel - 1-25-07

Surface Plug
NO FENCE
7 SXS
8 5/8 @ SURFACE

180'

670 CANNOT CLEAN OUT FILL

13 3/8 @ 788
Cmtd 100 SXS

670 PLUG

Shot 8 5/8 @ 764 PULL 29 JTS. (8 5/8 @ SURFACE)

CALCTO CMT. 3018'

12" DRLD. HOLE

MUDDED HOLE 45T

PLUG 4051-4021

WOOD

8 5/8 @ 4230
Cmtd. 400 SXS.
TESTED WSO

PERFS 4222-4529
LINER 6 1/4 @

1ST HOLE, Orig. TD 4529

5 3/4 CZ 10K

DEPTH BREAK

No 13" Csg. Get in hole with hose or Pipe & fill up with enough Cmt to make 200' plug at 670 & mud to 100' & Cmt to Surface.

REDRILL TO TD 7483

NOTE:
DRLD 1926
DPN - REDRILLED 1930
PLUGD 1938 to 6106
- 1938-39 WELL TEST
PERFD 4880-4876
4740-4730, 4650-4640
4770-4745, 4650-4610
4785-4830 CMTD 4848 to 4776 & 4560 to 4540 CMTD. out to 4550 PERF 4550 TO 4525, Cmt to 4466, PERF. 4435-4405, Cmtd 4466 to 4385, PERFD. 4350 to 4230,
1939 ABN. WELL; CO to 4375 Cmt to 4185, PULL 5 3/4 @ 4051
Cmt to 4021 on WOODEN PLUG; PULL 8 5/8 FILL @ 670 Cmt to 627, 5 SXS @ SURFACE)
SHOOT 5 3/4 @ 4170, 4100, 4051 PULL @ 4051
WSO 4230
1931 RD. PULLED 6 1/4" 4273
PLUGGED 4529 to 4280
40 SXS.
6106 PLUG GN 4 3/4" CO 20
6245-6215
3 3/4" 2465 TOC 4636 TOP 6120
6500-6435
SQUEEZE PLUGGED 7483-6828

Post-it® Fax Note 7671
Date 1-31 # of pages ▶ 1
To Ken Cantor
From Mel
Co./Dept.
Co.
Phone # Phone #
Fax # Fax #
Fred 18 Gve to Nuno Please

Mel Wright

"Field" 18

Need

Bot. Plug 4021-3921

combo plug 1942-1742' { UH2 Plug.

BFW Plug 1842-1742

Stub Plug 620' 570'

Surf. Plug 55' 5'

must have competent surface casing.

1750
92
1842

1050 AM

1/31/07

Carlson / Kratovil

Mel needs to (re)abd Field
18 he has "touched" it

Target is expecting him (mel) to
submit paperwork & use rig that
is on Carson property to abd this
well.

called Mel Wright left him
message on ans. machine ≈ 10:55 AM
Kr

Carlson / mel wright
11:10 AM
positively
not
leaking

oxidized 43"
S.P.

754

85/8

90' - 29 jts 180' 85/8"

43'
670




FIELD: LONG BEACH
SITE: CHEVRON U.S.A. INC. "FIELD" 18

API # 037-11543




FIELD: LONG BEACH
SITE: CHEVRON U.S.A. INC. "FIELD" 18
API # 037-11543

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

# REPORT OF PROPERTY AND WELL TRANSFER

| Field or County | District |
|---|---|
| Imperial Co., Wilmington, L.A. Co., W. Coyote, Montebello, Beverly Hills, Seal Beach, El Segundo, Inglewood, Rosecrans, Venice Beach, Las Cienegas, S. Salt Lake, Dominguez, Hyperion, Lawndale, Leffingwell, Long Beach, Los Angeles Downtown, Potrero, Salt Lake, Santa Fe Springs, Cheviot Hills, Sherman, Torrance, Whittier, Howard Townsite, Huntington Beach, Yorba Linda, Orange Co., Richfield, Kraemer, W. Newport, Sunset Beach, Belmont Offshore | District 1 (Cypress, California) |
| Former owner: ChevronTexaco Exploration & Production Co. \| C5680 | Date: 9/23/2005 |

| Well Name | API Number | Section Township Range |
|---|---|---|
| See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA | See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA | See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA |

Description of the land upon which the well (s) is (are) located.
Various

| Date of transfer | New owner | | Type of organization |
|---|---|---|---|
| 7/11/2005 | | Chevron U.S.A. Inc.<br>**C5640** | Corp. |
| | Address: | 9525 Camino Media<br>Bakersfield, CA 93311 | Telephone: 661/654-7065 |
| Reported by | OG30A received in Sacramento 9/2005 | | |
| Confirmed by | Same as above | | |
| New operator new status: **PA** | Designation of Agent: Greg Leyendecker, Agent | | |
| Old operator new status: **AB** | Remarks: For further information see Operator file (C5640) Chevron U.S.A. Inc. | | |

| OPERATOR STATUS ABBREVIATIONS |
|---|
| *PA – Producing Active* |
| *NPA- No potential, Active* |
| *PI- Potential Inactive* |
| *NPI-No potential, Inactive* |
| *AB-Abandoned or No More Wells* |

cc: Update; Envir Desk (2); File
Conservation Committee
Harold W. Bertholf, Inc.
L.A. & Orange County Assessors
WellStats – Cypress Dist. 1
WellStats – Sacrament HQS

Deputy Supervisor: R. K. Baker

Signature: Richard K. Baker, District Deputy

**FORM AND RECORD CHECK LIST**

| Form or Record | Initials | Date | Form or Record | Initials | Date |
|---|---|---|---|---|---|
| Form OGD121 | — | — | Map and Book | | |
| Operator Card | (initials) | 9-23-05 | Notice cancellations | — | — |
| Well Records | (initials) | 9/26/05 — | Bond Status BB | (initials) | 9-23-05 |
| Log Records | (initials) | 9/26/05 — | EDP HQS | J.C | 7-11-05 |
| Production Reports | — | — | Data Base Poly DI | GM | 9-26-05 |
| | | | | | |

# WELL TRANSFER NOTICE

Effective August 22, 2002

**Chevron USA Inc.**
**Texaco California Inc.**
**And**
**Texaco Exploration and Production, Inc.**

Transferred ALL THEIR WELLS
To

## ChevronTexaco Exploration & Production Company

*See OGD156 dated October 18, 2002 in Operator File for ChevronTexaco Exploration & Production Company (C5680) for details*

629 South Hill Street,
Los Angeles, California,
March 4, 1940

Mr. V. H. Wilhelm,
929 South Broadway,
Los Angeles, Calif.

Agent for The Texas Company

Dear Sir:

Your report of abandonment of well No. "Field" 18, Sec. 19, T. 4 S., R. 12 W., S. B. B. & M., Long Beach oil field, Los Angeles County, dated February 16, 1940, and submitted to this division on our form 102, has been examined in conjunction with records filed in this office.

A review of the reports and records shows that the requirements of this division, which are based on all information filed with it, have now been fulfilled.

Yours truly,

R. D. Bush
State Oil and Gas Supervisor

By E. Higginson

cc- Company
Mr. R. D. Bush
WJC:G
Long Beach

Reference to file of data

| No. | | | | Forms | |
|---|---|---|---|---|---|
| 20 | | | | | 121 |
| CS | | | | | ✓ |

Book
3-5-40
CS

FORM 102.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE
STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Subsequent Work Report

OPERATOR The Texas Company FIELD Long Beach

Well No. Field #18, Sec. 19, T. 4-S., R. 12-W., S.B. B. & M.

In compliance with the provisions of Chapter 718, Statutes 1915, as amended, the information given herewith is a complete and correct record of all work done on the well since the previous record, dated 7/25/39, was filed.

SIGNED [signature]

Date February 16, 1940

Title Chief Petroleum Engineer
(President, Secretary or Agent)

Outline in the order of performance, together with the dates thereof, all important operations which alter the condition of the well. Include such information as depth at which redrilling operations were started, size of hole redrilled or deepened; size of pipe, amount of perforations in casing, weight and length of casing landed or cemented or removed; number of sacks of cement used in cementing or plugging operations and exact position thereof. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

| 1940 Date | |
|---|---|
| 12/1 | Rigging up to abandon. Pumps all salt water at 50 B/D rate. |
| 12/2 | Cleaned out to 4375'. Dumped 20 sacks of cement in stages beginning at 4375'. |
| 12/3 | Your Division witnessed and approved plug at 4185'. |
| 12/4 | Shot 5-3/4" casing at 4170', 4100', and 4051'. |
| 12/8 | Pulled a total of 166 joints, 4051'. Dumped 6 sacks of cement on top of three foot wooden plug driven into stub of 5-3/4" casing. Your Division witnessed and approved plug at 4021'. |
| 12/9 | Shot 8-5/8" casing at 764' and pulled a total of 29 joints. |
| 12/10 | Could not clean out below 670'. Dumped 15 sacks of Riverside cement at 670'. |
| 12/11 | Your Division witnessed and approved plug at 627'. Filled to surface with heavy mud, capped casing with 7 sacks of cement. Abandonment complete. |

DIVISION OF OIL AND GAS
RECEIVED
FEB 20 1940
LOS ANGELES, CALIFORNIA

M 109-D.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T1-37001

Los Angeles, Calif. December 27, 1939.

Mr. V. H. Wilhelm,
Los Angeles, Calif.

Agent for THE TEXAS COMPANY

DEAR SIR:

Operations at your well No. "FIELD" 18 Sec. 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by Frank J. Karmelich, Inspector, representative of the supervisor, on December 11, 1939. There was also present A. Nightingale, Driller, and L. Owens, Contractor.

Casing Record 13" cem. 788'; 8¼" cem. 4230', W.S.O., pulled from 764'; 5-3/4" cem. 6210', perf. 4880'-4870', 4830'-4785', 4770'-4745', 4740'-4730', 4650'-4610', 4525'-4485', 4435'-4405', 4350'-4230', pulled from 4051'. T. D. 7483', plugged with cement 7483'-6828', 6500'-6442', 6366'-6190', 6120'-6106', 4848'-4776', 4550'-4385' *

Junk (1st hole) 6¼", 4273'-4529'. T.D. 4529', plugged with cement 4529'-4280'.

The operations were performed for the purpose of testing the location and hardness of a cement plug placed from 670' to 627' in the process of abandonment,

and the data and conclusions are as follows:

*4375'-4185', 4048'-4021', and 670'-627'.

INSPECTOR CORWIN VISITED THE WELL AT 11:30 A. M., DECEMBER 9, 1939, AND NOTED THAT the 8¼" casing was shot loose at 764'.

ENGINEER PEIRCE VISITED THE WELL AT 11:00 A. M., DECEMBER 10, 1939, AND MR. NIGHTINGALE REPORTED THAT the 8¼" casing was pulled from 764'.
THE ENGINEER NOTED THE FOLLOWING:
1. Sand had filled to 624' and could not be cleaned out below 670'.
2. 15 sacks of Riverside cement was dumped at 670'.

INSPECTOR KARMELICH VISITED THE WELL AT 9:00 A. M., AND NOTED THAT the bailer could not be spudded below 627' and brought up a sample of set cement.

The test was completed at 9:30 a. m.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 627' ARE APPROVED.

cc- Company
Long Beach
FJK:OH

R. D. BUSH
State Oil and Gas Supervisor

By E. Hagenbuch Deputy

FORM 109-D.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T 1-36981

Los Angeles, Calif. December 21, 1939.

Mr. V. H. Wilhelm,
Los Angeles, Calif.
Agent for THE TEXAS COMPANY

DEAR SIR:

Operations at your well No. "FIELD" 18 Sec. 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by Chas. Corwin, Inspector, representative of the supervisor, on December 9, 1939. There was also present A. Nightengale, Driller, and R. Rooker, Helper.

Casing Record 13" cem. 788'; 8¼" cem. 4230', W.S.O.; 5-3/4" cem. 6210'; perf. 4880'-4870', 4830'-4785', 4770'-4745', 4740'-4730', 4650'-4610', 4525'-4485', 4435'-4405', 4350'-4230', pulled from 4051'; 4-3/4" perf. liner 6120'-6366'. T.D. 7483', plugged with cement 7483'-6828', 6500'-6442', 6366'-6190', 6120'-6106', *

Junk (1st hole) 6¼", 4273'-4529'; T.D. 4529', plugged with cement 4529'-4280'.

The operations were performed for the purpose of testing the location and hardness of a cement plug placed from 4048' to 4021' in the process of abandonment,

and the data and conclusions are as follows:

*4848'-4776', 4550'-4385', 4375'-4185' and 4048'-4021'.

INSPECTOR KARMELICH ARRIVED AT THE WELL AT 3:00 P. M., DECEMBER 8, 1939, AND MR. NIGHTENGALE REPORTED THAT the 5-3/4" casing was shot at 4170', 4100' and 4051' and pulled from 4051'.

THE INSPECTOR NOTED THAT 6 sacks of Victor cement was dumped on a wooden plug driven in the stub of the 5-3/4" casing at 4048'.

INSPECTOR CORWIN ARRIVED AT THE WELL AT 10:00 A. M., DECEMBER 9, 1939, AND NOTED THAT the bailer could not be spudded below 4021' and brought up a sample of set cement.

The test was completed at 10:45 a. m.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 4021' ARE APPROVED.

cc- Company
Long Beach
CC:OH
CJB

R. D. BUSH
State Oil and Gas Supervisor

By E. Karmelich Deputy

FORM 109-D.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T 1-36980

Los Angeles, Calif. December 21, 1939.

Mr. V. H. Wilhelm,
Los Angeles, Calif.
Agent for THE TEXAS COMPANY

DEAR SIR:

Operations at your well No. "FIELD" 18 Sec. 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by Frank J. Karmelich, Inspector, representative of the supervisor, on December 3, 1939. There was also present L. Owens, Contractor, and A. Nightengale, Driller.

| | |
|---|---|
| Casing Record 13" cem. 788'; 8¼" cem. 4230', W.S.O.; 5-3/4" cem. 6210', perf. 4880'-4870', 4830'-4785', 4770'-4745', 4740'-4730', 4650'-4610', 4525'-4485', 4435'-4405' and 4350'-4230'; 4-3/4" perf. liner 6120'-6366'. T.D. 7483', plugged with cement 7483'-6828', 6500'-6442', 6366'-6190', 6120'-6106', 4848'-4776', 4550'-4385', and * | Junk (1st hole) 6¼", 4273'-4529'; T.D. 4529', plugged with cement 4529'-4280'. |

The operations were performed for the purpose of testing the location and hardness of a cement plug proposed to be placed from 4385' to 4210' in the process of abandonment,

and the data and conclusions are as follows:

* 4375'-4185'.

THE INSPECTOR ARRIVED AT THE WELL AT 2:30 P. M., DECEMBER 1, 1939, AND NOTED THE FOLLOWING:
1. The hole was cleaned out to 4375'.
2. The cementing operations were started at 4375'.

THE INSPECTOR ARRIVED AT THE WELL AT 1:00 P. M., DECEMBER 3, 1939, AND MR. NIGHTENGALE REPORTED THAT on December 1 and 2, 1939, 20 sacks of Victor cement was dumped in stages beginning at 4375'.

THE INSPECTOR NOTED THAT the bailer could not be spudded below 4185' and brought up a sample of set cement.

The test was completed at 2:00 p. m.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 4185' ARE APPROVED.

cc- Company
Long Beach
FJK:OH

R. D. BUSH
State Oil and Gas Supervisor

By E. Hagenbuch Deputy

FORM 111.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Proposed Operations

No. P 1-34346

Los Angeles, Calif. October 23, 1939.

Mr. V. H. Wilhelm,
Los Angeles, Calif.
Agent for THE TEXAS COMPANY

121

Dear Sir:

Your proposal to abandon Well No. "FIELD" 18, Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, Los Angeles County, dated Oct. 17, 1939, received Oct. 19, 1939, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

Records in addition to, or at variance with those shown in the notice:
The hole is plugged with cement 7483'-6828', 6500'-6442', 6366'-6190', 6120'-6106', 4848'-4776', and 4550'-4385'.
T. D. (old hole) 4529'.

THE NOTICE STATES:
"The present condition of the well is as follows:
13" cemented at 788'.
8-1/4" cemented at 4230', W. S. O.
5-3/4" cemented at 6210', W.S.O., perf. in hole 4870-4880', 4785-4830', 4745-4770', 4730-4740', 4610-4650', 4485-4525', 4435-4405', 4350-4230'.
Total depth 7483'.
Plugged depth 4385'.
Well pumps all salt water at 50 B/D rate."

PROPOSAL:
"The proposed work is as follows:
Clean out to 4385' and plug solid with cement to 4210'.
Cut and pull 5-3/4" casing from 4210'.
Cut and pull 8-1/4" casing from 768' and cap stub with 20' of cement.
Fill all voids with heavy mud.
Cap 13" at surface and abandon."

DECISION:
THE PROPOSAL IS APPROVED PROVIDED THAT THIS DIVISION SHALL BE NOTIFIED TO WITNESS the location and hardness of cement plugs at 4210' and 748'.

NOTE: In the event the proposed work is done by a contractor, this division shall be consulted regarding additional requirements.

cc- Company
Long Beach
WJC:OH
CM

R. D. BUSH
State Oil and Gas Supervisor

By E. Hugenin Deputy

FORM 108. 61558 8-38 5M.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
OCT 19 1939
LOS ANGELES, CALIFORNIA

## Notice of Intention to Abandon Well

**This notice must be given at least five days before work is to begin**

Los Angeles, Calif. October 17, 1939

DIVISION OF OIL AND GAS

Los Angeles, Calif.

In compliance with Section 16, Chapter 718, Statutes of 1915, as amended, notice is hereby given that it is our intention to abandon well No. Field #18

Sec. 19, T. 4-S., R. 12-W., S.B. B. & M. Long Beach Field,

Los Angeles County, commencing work on the 22nd day

of October, 1939.

The present condition of the well is as follows:

13" cemented at 788'.
8-1/4" cemented at 4230', W.S.O.
5-3/4" cemented at 6210', W.S.O., perf. in hole 4870-4880', 4785-4830', 4745-4770', 4730-4740', 4610-4650', 4485-4525', 4435-4405', 4350-4230'.
Total depth 7483'.
Plugged depth 4385'.
Well pumps all salt water at 50 B/D rate.

The proposed work is as follows:

Clean out to 4385' and plug solid with cement to 4210'.

Cut and pull 5-3/4" casing from 4210'.

Cut and pull 8-1/4" casing from 768' and cap stub with 20' of cement.

Fill all voids with heavy mud.

Cap 13" at surface and abandon.

aband

| Name | | | Cards | Forms | |
|---|---|---|---|---|---|
| | | | | ✓ | 21 |

THE TEXAS COMPANY
(Name of Operator)

By [signature]
Chief Petroleum Engineer

ADDRESS NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

FORM 102.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE
STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
AUG 4 - 1939
LOS ANGELES, CALIFORNIA

## Subsequent Work Report

OPERATOR The Texas Company FIELD Long Beach

Well No. Field #18, Sec. 19, T. 4-S., R. 12-W., S.B. B. & M.

In compliance with the provisions of Chapter 718, Statutes 1915, as amended, the information given herewith is a complete and correct record of all work done on the well since the previous record, dated June 22,1931, was filed.

SIGNED [signature]

Date July 25, 1939 Title Chief Petroleum Engineer
(President, Secretary or Agent)

Outline in the order of performance, together with the dates thereof, all important operations which alter the condition of the well. Include such information as depth at which redrilling operations were started, size of hole redrilled or deepened; size of pipe, amount of perforations in casing, weight and length of casing landed or cemented or removed; number of sacks of cement used in cementing or plugging operations and exact position thereof. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

| Date | |
|---|---|
| 1938 | |
| 2-16 | Cleaned out to 6366' |
| 2-17 | Dumped in 12-1/2 sacks of cement at 6366', filling to 6191'. |
| 2-18 | Your Division witnessed and approved top of plug at 6190'. |
| 2-19 | Set wood bridging plug on top of the 4-3/4" liner at 6120'. Dumped in 2 sacks cement, filling to 6106'. Filled hole to 3075' with water and perforated 4870-4880' with twenty shots. |
| 2-21 | Pumped 36 barrels of water in six hours. |
| 2-22 to 2-28 | Averaged 150 to 200 B/D water. |
| 3-4 | Pumped in 50 sacks cement through retainer set at 4848', final pressure 1900#. Estimated forty sacks away. |
| 3-10 | Bailed fluid in casing down to 3500' - no rise. Filled hole with fluid to 2100'. Perforated 4640-4650', 4730-4740' with twenty 1/2" holes. |
| 3-11 to 3-16 | Pumping 75 to 175 B/D water. |
| 3-18 | Cemented through Baker retainer at 4715' with 45 sacks, final pressure 2800#. Estimated 43 sacks away. |
| 3-24 | No fluid entering hole. |
| 3-31 | Found top of cement at 4724'. Drilled out retainer. |
| 4-2 | Drilled out cement to 4746' and cleaned out to 4852'. |
| 4-5 | Pumped 101 barrels salt water. |

FORM 102.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA

DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Subsequent Work Report

OPERATOR The Texas Company FIELD Long Beach

Well No. Field #18, Sec. 19, T. 4-S., R. 12-W., S.B. B. & M.

In compliance with the provisions of Chapter 718, Statutes 1915, as amended, the information given herewith is a complete and correct record of all work done on the well since the previous record, dated June 22, 1931, was filed.

SIGNED [signature]

Date July 25, 1939 Title Chief Petroleum Engineer

(President, Secretary or Agent)

Outline in the order of performance, together with the dates thereof, all important operations which alter the condition of the well. Include such information as depth at which redrilling operations were started, size of hole redrilled or deepened; size of pipe, amount of perforations in casing, weight and length of casing landed or cemented or removed; number of sacks of cement used in cementing or plugging operations and exact position thereof. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

| Date | |
|---|---|
| 1938 | |
| 4-6 | Perforated with McCullough gun from 4745-4770' with fifty 1/2" holes. |
| 4-7 | Perforated 4610-4650' with eighty 1/2" holes; 4485-4550' with one hundred and thirty 1/2" holes. Bailing fluid at 3300'. |
| 4-10 to 4-19 | Pumping 85 to 124 B/D water. |
| 4-21 | Perforated 4785-4830' with ninety 1/2" holes. |
| 4-23 to 4-29 | Pumping 150 to 170 B/D water. |
| 5-4 | Cleaned out to 4848'. Dumped in eight sacks cement, filling to 4776'. |
| 5-12 to 5-27 | Pumping 180 B/D water. |
| 5-28 | Cleaned out to 4776'. Ran water witch and located entry at 4546-4550'. |
| 6-19 | Filled with sand to 4560'. Dumped in two sacks of cement at 4560'. |
| 6-20 | Dumped in 1/2 sack cement, filling to 4540'. |
| 6-25 to 7-20 | Intermittently pumping 80 to 180 B/D salt water. |
| 1939 | |
| 2-27 | Drilled out to 4550'. |
| 2-28 | Reperforated 4550-4525' with thirty 1/2" holes. Fluid level dropped from 3050 to 3350'. |
| 3-14 | Cleaned out to 4550' and dumped 3-1/2 sacks of cement, filling to 4531'. |
| 3-19 to 4-3 | Pumping 65 to 97 B/D, with 98% cut. |
| 5-13 | Cleaned out to 4531'. |
| 5-14 | Dumped in fifteen sacks cement, filling from 4531 to 4466'. |

FORM 102.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE
STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Subsequent Work Report

OPERATOR The Texas Company FIELD Long Beach

Well No. Field #18, Sec. 19, T. 4-S., R. 12-W., S.B. B. & M.

In compliance with the provisions of Chapter 718, Statutes 1915, as amended, the information given herewith is a complete and correct record of all work done on the well since the previous record, dated June 22, 1931, was filed.

SIGNED [signature]

Date July 25, 1939 Title Chief Petroleum Engineer
(President, Secretary or Agent)

Outline in the order of performance, together with the dates thereof, all important operations which alter the condition of the well. Include such information as depth at which redrilling operations were started, size of hole redrilled or deepened; size of pipe, amount of perforations in casing, weight and length of casing landed or cemented or removed; number of sacks of cement used in cementing or plugging operations and exact position thereof. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

| Date | |
|---|---|
| 1939 | |
| 5-23 | Perforated with McCullough gun 4435-4405' with thirty 1/2" holes. |
| 5-26 to 6-5 | Pumped 60 to 90 B/D water. |
| 6-8 | Cleaned out to 4466' and dumped in 11 sacks cement, filling to 4385'. Perforated 4350-4230' with one hundred and twenty 5/8" holes. Fluid level dropped from 2560-3566'. |
| 6-12 to 6-25 | Pumping salt water - 40 to 60 B/D. |

FORM 109-D. 47172 7-37 15M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T 1-33890

Los Angeles, Calif. March 4 1938

Mr. V. H. Wilhelm,
Los Angeles, Calif.
Agent for THE TEXAS COMPANY

DEAR SIR:

Operations at your well No. "FIELD" 18 Sec. 19, T. 4S., R. 12W. S. B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by F.J. Karmelich, Inspector, representative of the supervisor, on February 18, 1938. There was also present H. O. Woodruff, Engineer, and I. N. Truesce, Driller.

| Casing Record | Junk |
|---|---|
| 13" cem. 788'; 8½" cem. 4230', W. S. O.; 5-3/4" cem. 6210' W. S. O.; 4-3/4" perf. liner 6120'-6366'. T. D. 7483', plugged with cement 7483'-6828', 6500'-6442' and 6366'-6190'. | (1st hole) 6½" 4273'-4529'. T. D. 4529', plugged with cement 4529'-4280'. |

The operations were performed for the purpose of testing the location and hardness of a cement plug proposed to be placed from 6366' to 6190' in the process of plugging back,

and the data and conclusions are as follows:

THE INSPECTOR ARRIVED AT THE WELL AT 3:00 P. M. AND MR. WOODRUFF REPORTED THE FOLLOWING:

1. The 4-3/4" liner was cleaned out to 6366'.
2. On February 17, 1938, 12½ sacks of Colton's Portland cement was dumped at 6366'.

THE INSPECTOR NOTED THAT the bailer could not be spudded below 6190' and brought up a sample of set cement.

The test was completed at 4:00 p. m.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 6190' ARE APPROVED.

cc- Company
Long Beach
FJK:G

R. D. BUSH
State Oil and Gas Supervisor

By E. Hugenin Deputy

FORM 111. 46011 6-37 20M.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Proposed Operations

No. P 1-32056

Los Angeles, Calif. February 23, 1938.

Mr. V. H. Wilhelm,
Los Angeles, Calif.
Agent for THE TEXAS COMPANY

121

Dear Sir:

Your proposal to plug & alter casing Well No. "FIELD" 18, Section 19, T. 4 S., R 12 W., S.B. B. & M., Long Beach Field, Los Angeles County, dated Feb. 18, 1938, received Feb. 21, 1938, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

RECORDS: The condition of the well is as stated in the notice.

THE NOTICE STATES:
"The present condition of the well is as follows:
13" cemented at 788'.
8-1/4" " " 4230', W. S. O.
5-3/4" " " 6210', W. S. O.
246' of 4-3/4" perf. liner froze at 6366'.
Total depth 7483'.
Plug depth 6366'.

Junk: 6-1/4" csg. s. t. 4273-4529'.

Average daily production for January, 1938, 14 barrels of oil and 1 barrel of water."

PROPOSAL:
"The proposed work is as follows:
Clean out to bottom and plug solid with cement to 6190'.
Set cement bridge 4900-4920'.
Gun perforate intervals 4485-4880'
Test for production."

DECISION:
THE PROPOSAL IS APPROVED PROVIDED THAT THIS DIVISION SHALL BE NOTIFIED TO WITNESS the location and hardness of cement plug at 6190'.

cc- Company
Long Beach
WJC:OH

J.P.

R. D. BUSH
State Oil and Gas Supervisor

By E. Higginbotham Deputy

FORM 107. 42649 3-37 10M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
FEB 21 1938
LOS ANGELES, CALIFORNIA

## Notice of Intention to Deepen, Redrill, Plug or Alter Casing in Well

This notice must be given fifteen days before work begins when possible

Los Angeles, Calif. February 18, 1938

DIVISION OF OIL AND GAS

Los Angeles, Calif.

In compliance with Section 17, Chapter 718, Statutes of 1915, as amended, notice is hereby given that it is our intention to commence the work of ~~deepening, redrilling~~, plugging or altering casing at well No. Field #18
(Cross out unnecessary words)

, Sec. 19, T. 4-S., R. 12-W., S. B. B. & M.

Long Beach Field, Los Angeles County.

The present condition of the well is as follows:

13" cemented at 788'.
8-1/4" " " 4230', W.S.O.
5-3/4" " " 6210', W.S.O.
246' of 4-3/4" perf. liner froze at 6366'.
Total depth 7483'.
Plug depth 6366'.

Junk: 6-1/4" csg. s.t. 4273-4529'.

Average daily production for January, 1938, 14 barrels of oil and 1 barrel of water.

The proposed work is as follows:

Clean out to bottom and plug solid with cement to 6190'.

Set cement bridge 4900-4920'.

Gun perforate intervals 4485-4880'.

Test for production.

pl + alt csg

Reference to file of date

| Name | | | | Terms | |
|---|---|---|---|---|---|
| | | | | ✓ | ✓ |

The Texas Company
(Name of Operator)

By [signature]
Chief Petroleum Engineer

ADDRESS NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

MEMORANDUM FOR WELL RECORD.

Letter to R. D. Bush, dated July 27, 1932, making typographical corrections in the designations of a number of The Texas Company wells, is filed with record of well No. "Isaac" 1, Richfield field.

FORM 102. 80626 11-30 10M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
JUN 26 1931
LOS ANGELES, CALIFORNIA

## LOG OF OIL OR GAS WELL

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M., Well No. FIELDS #18

In compliance with the provisions of Chapter 718, Statutes 1915, as amended, the information given herewith is a complete and correct record of all work done on the well since the previous record, dated 7-8-26, was filed.

SIGNED O. J. Wilkinson

Date June 22nd, 1931

Title Chief Petroleum Engr.
Reference to file of data
(President, Secretary or Agent)

| Maps | Model | Cross Section | Cards | Forms 114 | Forms 121 |
|---|---|---|---|---|---|
| | | | | | |

Rigged up to redrill and deepen 11-10-30.

Cleaned out to 4529' and pumped in 40 sax cement.
Cut and pulled 4274' of 6-1/4" casing.
Milled up 6-1/4" casing to 4278' and shot hole at this depth w/ 50# shell.
Sidetracked 6-1/4" casing to 4529'.
Drilled to 7483' and due to unfavorable showings we plugged the well to 6828' under pressure, with 170 sax Victor cement.
Your Division witnessed and approved plug at 6828'.

Filled hole w/ mud to 6500' and pumped in 35 sax Victor cmt. Top cmt. at 6435'.
Bridged hole 6245-10' w/ 15 sax Victor cmt.
Your Division witnessed and approved mudding operations.

Cemented 5-3/4" 22½# casing at 6210' w/ 75 sax cement.
Drilled out 35' of cement and cleaned out to 6215'.
Swabbed to 3,000' and fluid rose 40' in 19 hours.
Your Division witnessed and approved the shut-off.

Cleaned out to 6500' and pumped in 35 sax cement. Cement did not set, so cleaned out to 6486' and pumped in 35 sax cement under 250# pressure.
Your Division witnessed and approved plug at 6442'.

Ran 246' of 4-3/4" casing which stuck at 6366'.
A production test showed all salt water, and during the process of swabbing, about 800' of heavy rotary mud heaved up into the tubing, which suggested the failing of the plug at 6442'.
Cleaned out sand bridge 6271-6366' and milled out bull nose on bottom of liner. Cleaned out to 6442' and plug supported weight of drill pipe, indicating entry of water above the plug.
Four runs of the water witch indicated bottom water.
Plugged hole 6441-6366' w/ 7 sax cement.
Swabbed well, but it would not flow.
Put well on pump 5-12-31 and it pumped water until 5-22-31 when it produced 52 barrels gross, 50% cut.
5-23-31 Well produced 46 bbls., 27.0 grav., 11% cut.
5-28-31 Shut well in account curtailment.

M 101. 80629 11-30 30M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## LOG OF OIL OR GAS WELL—CONTINUED

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M. Well No. FIELD #18

## FORMATIONS PENETRATED BY WELL

| DEPTH TO Top of Formation | DEPTH TO Bottom of Formation | Thickness | Name of Formation |
|---|---|---|---|
| 4529 | 4577 | 48 | Sandy Shale |
| | 4611 | 34 | Sand w/ stks. sh. |
| | 4621 | 10 | Shale and sand |
| | 4622 | 1 | Shell |
| | 4630 | 8 | Hard sand. |
| | 4751 | 21 | Sdy. sh. and shale |
| | 4785 | 34 | Sdy. sh. w/ stks. hd. sh. |
| | 4797 | 12 | Hard sand |
| | 4800 | 3 | Shell |
| | 4809 | 9 | Hard sand |
| | 4848 | 39 | Sdy. sh. and hd. sd. |
| | 4861 | 13 | Hard sand. |
| | 4875 | 14 | Sdy. sh. and shells |
| | 4923 | 48 | Sandy shale |
| | 4925 | 2 | Hard shell |
| | 4989 | 64 | Sdy. sh. and shells |
| | 5058 | 69 | Sand and shale |
| | 5078 | 20 | Sh., w/ thin stks. hd. sd. |
| | 5086 | 8 | Hard sand |
| | 5106 | 20 | Sand and shale |
| | 5109 | 3 | Hard sand |
| | 5119 | 10 | Sand and shale |
| | 5133 | 14 | Hard sand |
| | 5199 | 66 | Sandy shale |
| | 5206 | 7 | Sand and shale |
| | 5232 | 26 | Sand, sh., and shell |
| | 5259 | 27 | Hard sd. and shale |
| | 5322 | 63 | Sandy shale |
| | 5370 | 48 | Sand and shale |
| | 5395 | 25 | Sdy. sh. w/ stks. hd. sh. |
| | 5422 | 27 | Hard sd. and shale |
| | 5428 | 6 | Hard sand |
| | 5431 | 3 | Sand and shells |
| | 5458 | 27 | Tough shale |
| | 5472 | 14 | Shale and shell |
| | 5490 | 18 | Sand and shale |
| | 5492 | 2 | Shell |
| | 5498 | 6 | Sand and shale |
| | 5508 | 10 | Tough shale |
| | 5521 | 13 | Sdy. sh. and shells |
| | 5536 | 15 | Sand and shale |
| | 5548 | 12 | Tough shale |
| | 5563 | 15 | Sh. and stks. sand |
| | 5577 | 14 | Sand and shale |

M 101. 80629 11-30 30M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## LOG OF OIL OR GAS WELL—CONTINUED

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M. Well No. FIELD #18

## FORMATIONS PENETRATED BY WELL

| DEPTH TO Top of Formation | DEPTH TO Bottom of Formation | Thickness | Name of Formation |
|---|---|---|---|
| 5577 | 5611 | 34 | Tough shale |
| | 5632 | 21 | Sdy. sh. and shells |
| | 5655 | 23 | Sand and Shale |
| | 5694 | 39 | Shale |
| | 5712 | 18 | Shale and shell |
| | 5721 | 9 | Shale and hd. sand |
| | 5731 | 10 | Tough shale |
| | 5754 | 23 | Shale and shell |
| | 5764 | 10 | Sd. and stks. tgh. sh. |
| | 5777 | 13 | Shells and shale |
| | 5801 | 24 | Shale w/ stks. sand |
| | 5817 | 16 | Tough shale |
| | 5819 | 2 | Shell |
| | 5839 | 20 | Tough shale |
| | 5842 | 3 | Shell |
| | 5846 | 4 | Shale and shell |
| | 5878 | 32 | Shale |
| | 5888 | 10 | Shale and shell |
| | 5910 | 22 | Sandy shale |
| | 5924 | 14 | Shale and hd. sd. |
| | 5982 | 58 | Sandy shale |
| | 6125 | 143 | Sand and shale |
| | 6150 | 25 | Shale |
| | 6151 | 1 | Gray sd. |
| | 6155 | 4 | Hd. sh. w/ thin stks. oil sd. |
| | 6157 | 2 | Oil sd. and shale |
| | 6163 | 6 | Hard shale |
| | 6166 | 3 | Gray sand |
| | 6169 | 3 | Hard shale |
| | 6172 | 3 | Oil sd. and shale |
| | 6193 | 21 | Br. fract. sh. w/ few small stks. oil sd. |
| | 6214 | 21 | Fract. br. and black sh. |
| | 6234 | 20 | Oil sd. and shale |
| | 6237 | 3 | Hd. sandstone shell |
| | 6252 | 15 | Oil sand |
| | 6253 | 1 | Shale |
| | 6255 | 2 | Oil sand |
| | 6256 | 1 | Shale |
| | 6261 | 5 | Oil sd. w/ few stks. sh. |
| | 6271 | 10 | Oil sand |
| | 6284 | 13 | Oil sd. w/ stks. shale |
| | 6285 | 1 | Sandstone shell |

M 101. 80629 11-30 30M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## LOG OF OIL OR GAS WELL—CONTINUED

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M. Well No. FIELD #18

## FORMATIONS PENETRATED BY WELL

| DEPTH TO Top of Formation | DEPTH TO Bottom of Formation | Thickness | Name of Formation |
|---|---|---|---|
| 6285 | 6286 | 1 | Oil sand |
| | 6287 | 1 | Shell and shale |
| | 6290 | 3 | Oil sand |
| | 6392 | 2 | Shell and shale |
| | 6301 | 9 | Sand |
| | 6308 | 7 | Oil sand |
| | 6311 | 3 | Hd. br. shale |
| | 6317 | 6 | Oil sand |
| | 6318 | 1 | Shell |
| | 6364 | 46 | Oil sand |
| | 6365 | 1 | Shell |
| | 6384 | 19 | Oil sand |
| | 6387 | 3 | Hd. sandstone shell |
| | 6458 | 71 | Oil sd. w/ 3" shell on bottom |
| | 6542 | 84 | Sand and shell |
| | 6545 | 3 | Shell |
| | 6548 | 3 | Sand and shale |
| | 6550 | 2 | Hard sand |
| | 6553 | 3 | Br. sdy. shale |
| | 6560 | 7 | Br. sh. w/ stks. med. grained water sd. |
| | 6570 | 10 | Gray water sd. w/ few small stks. sdy. sh. |
| | 6571 | 1 | Hd. sdstone shell. |
| | 6580 | 9 | Gray water sand |
| | 6611 | 31 | Sand w/ hd. stks. |
| | 6626 | 15 | Sand |
| | 6640 | 14 | Sd. and stks. hd. sd. |
| | 6650 | 10 | Sand |
| | 6652 | 2 | Poor oil sd. and stks. sh. |
| | 6654 | 2 | Brown shale |
| | 6660 | 6 | Br. sh. w/ stks. gr. sd. |
| | 6749 | 89 | Sand and shale |
| | 6750 | 1 | Hd. sandstone shell |
| | 6752 | 2 | Fract. black shale |
| | 6759 | 7 | Gr. sh. stkd. w/ oil sd. |
| | 6845 | 86 | Sand and shale |
| | 6847 | 2 | Sandstone shell |
| | 6854 | 7 | Poor Oil sd. stks. gray |
| | 6866 | 12 | Firm gray sd., stks. poor oil sd. |
| | 6877 | 11 | Br. sh. w/ stks. good oil sd. |
| | 6882 | 5 | Fract. br. sh., showing oil |
| | 6910 | 28 | Oil sand |
| | 6911 | 1 | Sdy. br. shale |
| | 6926 | 15 | Oil sand |
| | 6928 | 2 | Sandstone shell |
| | 6931 | 3 | Oil sand |

FORM 101. 80629 11-30 30M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## LOG OF OIL OR GAS WELL—CONTINUED

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M. Well No. FIELD #18

## FORMATIONS PENETRATED BY WELL

| DEPTH TO Top of Formation | DEPTH TO Bottom of Formation | Thickness | Name of Formation |
|---|---|---|---|
| 6931 | 6932 | 1 | Sandy shale |
| | 6940 | 8 | Poor oil sand |
| | 6942 | 2 | Oil sd., w/ 3" shell on top |
| | 6951 | 9 | Br. sh. and oil sd. |
| | 6953 | 2 | Gray water sd. and black sdy. shale |
| | 6956 | 3 | Poor oil sd. |
| | 6962 | 6 | "ater sd. and sdy. sh. |
| | 7018 | 56 | Shell, shale and gr. water sd. |
| | 7021 | 3 | Hard shale |
| | 7022 | 1 | Br. sdy. shale |
| | 7053 | 31 | Gr. water sd., shell and shale |
| | 7056 | 3 | Brown shale, free oil in fract. planes |
| | 7068 | 12 | Hd. sdy. sh. w/ 6" oil sd. on top |
| | 7077 | 9 | Br. sh. and sdy. br. sh. |
| | 7083 | 11 | Soft gray sd. |
| | 7089 | 1 | Br. sh. and gray sd. |
| | 7105 | 16 | Gray water sand w/ shell on bottom |
| | 7107 | 2 | Shell |
| | 7111 | 4 | Gray sand |
| | 7113 | 2 | Shell |
| | 7122 | 9 | Gray water sand |
| | 7125 | 3 | Br. sdy. sh. and gr. sd. |
| | 7135 | 10 | Gray water sd. |
| | 7153 | 18 | Br. sh. and gray sd. |
| | 7159 | 6 | Hd. br. sdy. shale |
| | 7161 | 2 | Soft gray sd. |
| | 7167 | 6 | Br. sh. w/ stks. gr. sd. |
| | 7169 | 2 | Soft oil sand |
| | 7171 | 2 | Hd. br. shale |
| | 7187 | 16 | Soft oil sd. w/ stks. sh. |
| | 7193 | 6 | Hd. br. shale |
| | 7207 | 14 | Gr. water sd. w/ small stks. sh. |
| | 7227 | 20 | Hd. br. sh. w/ few thin stks. gray sd. |
| | 7276 | 49 | Sand and shale |
| | 7283 | 7 | Poor oil sd. |
| | 7296 | 13 | Sh. w/ stks. soft fair oil sd. |
| | 7300 | 4 | Soft fair oil sd. |
| | 7308 | 8 | Oil sd. and sdy. sh. |
| | 7319 | 11 | Hd. br. sh. w/ small lense gr. sd. near bottom |
| | 7349 | 30 | Oil sd. and shale |
| | 7352 | 3 | Br. sh. and sand |
| | 7371 | 19 | Oil sand |
| | 7404 | 33 | Br. sh. w/ stks. oil sd. |

FORM 101. 80629 11-30 30M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## LOG OF OIL OR GAS WELL—CONTINUED

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M. Well No. FIELD #18

## FORMATIONS PENETRATED BY WELL

| DEPTH TO | | Thickness | Name of Formation |
|---|---|---|---|
| Top of Formation | Bottom of Formation | | |
| 7404 | 7424 | 20 | Oil sd. and stks. shale |
| | 7427 | 3 | Oil sand |
| | 7430 | 3 | Hd. sandstone shell |
| | 7443 | 13 | Oil sand |
| | 7463 | 20 | Oil sd., w/ thin hd. gr. stks. |
| | 7483 | 20 | Gray water sd. w/ stks. oil sd. |

FORM 101-A. 82953 2-31 20M
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE
FILL THIS BLANK IN WITH TYPEWRITER. WRITE ON ONE SIDE OF PAPER ONLY

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS
RECEIVED
JUN 26 1931
LOS ANGELES, CALIFORNIA

# DIVISION OF OIL AND GAS

## CORE RECORD OF OIL OR GAS WELL

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M., Elevation 92. Well No. FIELDS #18

In compliance with the provisions of Section 18, Chapter 718, Statutes of 1915, as amended, the information given herewith is a complete and correct record of all cores taken in this well to the depth on the accompanying log.

Signed [signature]

Date June 23rd, 1931. Title Chief Petroleum Engr.
(President, Secretary or Agent)

Reference to file of data
Maps | Model | Cross section | Cards | Forms 121

| DATE | MAKE OF BARREL | SIZE OF BARREL | FROM (DEPTH) | TO (DEPTH) | CORE RECOVERED | DESCRIPTION OF CORE | ETHER TEST | CONDITION OF CORE |
|---|---|---|---|---|---|---|---|---|
| | | | 6150 | 6172 | 21' | 6" soft gray sd., 4' hd. shale, w/ thin stks. firm fair oil sd., & one stk. fine gray., 2" oil sd., 8" hd. shale, 8" fine good oil sd., 6' hard shale w/ one thin stk. oil sd., 1' fine gray sd., 5° dip., 2' fine firm gray sd., 3' hd. shale, 6" oil sd., 6" sh., 1' oil sd., 1' shale, 1' firm fair oil sd. | ✓ | |
| | | | 6172 | 6193 | 15' | Slightly fract. brown shale w/ a few small stks. oil sd. | | |
| | | | 6193 | 6214 | 12' | 3' hd. br. sh., 1½' fract. fossile black shale, 3½' hd. br. sh., 4' very fract. brown & black shale. | | |
| | | | 6214 | 6234 | 10½' | 1'8" hd. sh., 4" fine firm oil sd., 2" shale, 2' fine firm oil sd., 6" hd. sh.,1' fine good oil sd., 1' hd. sh., 3'10" fine firm good oil sd., w/ 3" stk. shale. | | |
| | | | 6234 | 6251 | 3' | 2½' very hd. sandstone shell, 6" med. fine fair oil sd. | | |
| | | | 6251 | 6271 | 19½' | 1'3" fine firm good oil sd., 9" shale, 2' fine firm good oil sd., 8" shale, 4'10" fine firm fair oil sd., w/ few 2" stks. sh., 10' hd. cse. fair to poor oil sd. | | |
| | | | 6271 | 6284 | 6' | 3' fine firm good oil sd., 6" hd. shale, 1½' med. to fine fair oil sd., 4" shale, 8" fine oil sd. | | |
| | | | 6284 | 6301 | 6' | 1' sandstone shell, 1' fine good oil sd., 1' hd. sh.,3" sandstone shell, 1'3" fine firm fair oil sd., 1' sandstone shell, 6" sh. | | |
| | | | 6301 | 6321 | 18' | 3" shell, 5' fine firm good oil sd., 2'9" hd. br. sh., 5'8" fine firm good oil sd.,1'4" sandstone shell, 3' fine firm good oil sd. | | |

FORM 101-A. 62953 2-31 20M
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STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## CORE RECORD OF OIL OR GAS WELL

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M., Elevation 92. Well No. FIELD #18

In compliance with the provisions of Section 18, Chapter 718, Statutes of 1915, as amended, the information given herewith is a complete and correct record of all cores taken in this well to the depth on the accompanying log.

Signed [signature]

Date June 23rd, 1931 Title Chief Petroleum Engr.
(President, Secretary or Agent)

| DATE | MAKE OF BARREL | SIZE OF BARREL | FROM (DEPTH) | TO (DEPTH) | CORE RECOVERED | DESCRIPTION OF CORE | ETHER TEST | CONDITION OF CORE |
|---|---|---|---|---|---|---|---|---|
| | | | 6321 | 6341 | 20' | 13½' med. fine hard rich oil sd., 6" slickensided br. shale, 6' med. fine hard rich oil sand. | | |
| | | | 6341 | 6361 | 4' | 1' firm fine rich oil sd., 3' soft fine good oil sd. | | |
| | | | 6361 | 6381 | 9' | 3' fine firm rich oil sd., w/one 2" stk. shale, 1' hd. shell, 5' fine firm good oil sd. | | |
| | | | 6381 | 6401 | 9½' | 2'8" hd. cse. good oil sd., 4" sandstone shell, 3' hd. cse. good oil sd., 2½' hd. sandstone shell, 1' fine fairly soft good oil sd. | | |
| | | | 6401 | 6421 | 5' | 4'8" hd. med. fine oil sd., 4" hd. sdy. sh. | | |
| | | | 6421 | 6441 | 6' | Fine firm soft good oil sd. | | |
| | | | 6441 | 6458 | 4'3" | 4' hd. med. fine good oil sd., 3" hard dark sandstone shell. | | |
| | | | 6550 | 6560 | 5' | 2½' br. sdy. sh., 5-6° dips., 2½' br. sh. w/ stks. med. gray water sd. | | |
| | | | 6560 | 6570 | 7½' | Med. grained gray water sd., w/ few small stks. sdy. shale | | |
| | | | 6570 | 6580 | 7½' | 1' hd. sdstone shell, 6" fine gray sd., and br. sh. & 6' med. grained soft gray water sand. | | |
| | | | 6650 | 6660 | 6' | 6" br. sh., 4" fine poor oil sd., 4" br. sh., 7" fine poor oil sd., 2' br. shale, some slickensiding, 3" hd. dark gray sd., 2' br. sh., stks. fine gray sd. | | |
| | | | 6749 | 6759 | 3'8" | 1'2" hd. sandstone shell, 1'6" fract. black shale, 1' fine firm gray sd., stkd. w/ oil sd. | | |
| | | | 6846 | 6854 | 2½' | 1' hd. sandstone shell, 1½' cse. poor oil sd., stks. gray sd.,wet. | | |
| | | | 6854 | 6866 | 4' | Med. fine firm gray sd., stkd. w/ poor oil sd. | | |
| | | | 6866 | 6877 | 11' | Br. sh., stks. fine good oil sd., 90-95% shale, dip 19°. | | |

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STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## CORE RECORD OF OIL OR GAS WELL

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M., Elevation 92. Well No. FIELD #18

In compliance with the provisions of Section 18, Chapter 718, Statutes of 1915, as amended, the information given herewith is a complete and correct record of all cores taken in this well to the depth on the accompanying log.

Signed [signature]

Date June 23rd, 1931

Title Chief Petroleum Engr.
(President, Secretary or Agent)

| DATE | MAKE OF BARREL | SIZE OF BARREL | FROM (DEPTH) | TO (DEPTH) | CORE RECOVERED | DESCRIPTION OF CORE | ETHER TEST | CONDITION OF CORE |
|---|---|---|---|---|---|---|---|---|
| | | | 6877 | 6887 | 9½' | 5'4" firm brown shale w/ one 2" stk. fine good oil sd., free oil in fractures. Dip 19°, 4'2" soft good oil sd. | | |
| | | | 6887 | 6898 | 9½' | 4" hd. oil sd., 5'2" fine firm good oil sd., 6" hd. sdy. sh., 3½' fine soft good oil sd. | | |
| | | | 6898 | 6909 | 8' | fine firm good oil sand. | | |
| | | | 6909 | 6920 | 3'4" | 10" fine good oil sd., 1' sdy. br. sh., 1½' fine firm good oil sd. | | |
| | | | 6920 | 6930 | 8' | 6" hd. br. sh., 5½' fine good oil sd., 1½' hd. sdstone shell, 6" fine soft good oil sand. | | |
| | | | 6930 | 6940 | 6' | 1' fine good oil sd., 6" sdy. sh., 4½' fine fair oil sd., does not look rich. | | |
| | | | 6940 | 6951 | 3' | 3" very hard shell, 1½' fine soft good oil sd., 1' stks. br. sh. & oil sd. | | |
| | | | 6951 | 6962 | 11' | 4" black sdy. sh., 1'8" water sd., 3' med. coarse poor oil sd., 6" sdy. sh., 2'6" water sd., 1½' sdy. black sh., 1½' water sand | | |
| | | | 6962 | 6970 | 2' | 8" hd. sh., 10" gray water sd., 6" hd. sandstone shell. | | |
| | | | 6970 | 6981 | 10' | 1' sandstone shell, 6' med. fine gray water sd.,,couple thin stks. shale, 2' hard br. shale, 1' soft gray sand. | | |
| | | | 6981 | 7001 | 13' | 6' br. sh., couple thin stks. fine gray sand, 7' soft gray water sd., couple thin stks. shale, Dip 20°. | | |
| | | | 7001 | 7006 | 1-1/3' | 3" hard shale, 13" firm gr. water sand. | | |
| | | | 7006 | 7018 | 3½' | 2" gray water sd., 1'4" hard sh., 2' hard sandstone shell. | | |
| | | | 7018 | 7038 | 9' | 3' hard shale, 1' br. sdy. sh., 1½' gr. water sd., & wet oil sd., 3" sh., 6" soft gr. sd., 9" hd. sh., 2' soft fine gr. sd., | | |

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STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## CORE RECORD OF OIL OR GAS WELL

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M., Elevation 92. Well No. FIELD #18

In compliance with the provisions of Section 18, Chapter 718, Statutes of 1915, as amended, the information given herewith is a complete and correct record of all cores taken in this well to the depth on the accompanying log.

Signed [signature]

Date June 23rd, 1931 Title Chief Petroleum Engr.
(President, Secretary or Agent)

| DATE | MAKE OF BARREL | SIZE OF BARREL | FROM (DEPTH) | TO (DEPTH) | CORE RECOVERED | DESCRIPTION OF CORE | ETHER TEST | CONDITION OF CORE |
|---|---|---|---|---|---|---|---|---|
| | | | | | | couple 2" stks. sh., Dip about 20°. | | |
| | | | 7038 | 7053 | 11' | 1' soft gray sd., 6" sandstone shell, 9½' soft gray water sd., couple 2" stks. br. sh. | | |
| | | | 7053 | 7068 | 4' | 2½" br. sh., free oil in planes, 6" fine rich oil sd., 1' hd. sdy. sh. | | |
| | | | 7068 | 7088 | 10' | 8½' br. shale and sdy. br. shale w/ one 2" stk. oil sd., 1½' fine soft gr. sd. | | |
| | | | 7088 | 7105 | 10½' | 1' br. sh., soft gr. sd., 9' firm and soft gr. water sd., 6" hd. sandstone shell. | | |
| | | | 7105 | 7122 | 12' | 1½' hd. sandstone shell, 3½' med. gr. sd., 1½' hd. sandstone shell, 5½' med. soft gr. water sand. | | |
| | | | 7122 | 7135 | 6' | 3" sandstone shell, 2'9" br. sdy. sh. & fine gr. sd., 3' soft gr. water sd., little oil staining, but all wet. | | |
| | | | 7135 | 7153 | 7'3" | 5" stky hd. sh., sdy. br. sh., couple stks. firm gr. sd., 6" soft gr. sd., 9" br. shale, stks. fine gr. sd., 1' fine soft gr. sand. | | |
| | | | 7153 | 7167 | 7'4" | 5'3" hd. br. sdy. sh., 1½' fine soft gr. sd., 7" br. sh., stks. gr. sd. | | |
| | | | 7167 | 7187 | 7'3" | 2'9" soft med. fine good oil sd., good cut, 1½' hd. br. sh., 6" soft fine oil sd., 3" br. sh., 2'3" fine soft & firm oil sd., good cut, 2" sh. on bottom. | | |
| | | | 7187 | 7207 | 9' | 5½" hd. br. sh., 3½' fine soft gr. water sd., couple 2" stks. sh., Dip about 15°. | | |
| | | | 7207 | 7227 | 20' | Hd. br. sh., few thin stks. gr. sd. | | |

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STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## CORE RECORD OF OIL OR GAS WELL

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M., Elevation 92. Well No. FIELD #18

In compliance with the provisions of Section 18, Chapter 718, Statutes of 1915, as amended, the information given herewith is a complete and correct record of all cores taken in this well to the depth on the accompanying log.

Signed J. J. Wilbur Jr.

Date June 23rd, 1931 Title Chief Petroleum Engr.
(President, Secretary or Agent)

| DATE | MAKE OF BARREL | SIZE OF BARREL | FROM (DEPTH) | TO (DEPTH) | CORE RECOVERED | DESCRIPTION OF CORE | ETHER TEST | CONDITION OF CORE |
|---|---|---|---|---|---|---|---|---|
| | | | 7276 | 7296 | 9½' | 5' firm poor oil sd., w/ 1-2" and 1-4" shell, 1' fine soft poor oil sand, 6" sandstone shell, 3' hd. sh., stks. soft fair oil sd. | | |
| | | | 7296 | 7308 | 5½' | 4' fine soft fair oil sd., 4" sandstone shell, 1'2" soft fine oil sd., & sdy. shale. | | |
| | | | 7308 | 7319 | 6' | hd. br. sh., w/ one thin lense gr. sd., near bottom, Dip 30°. | | |
| | | | 7319 | 7329 | 5' | 4'8" fine oil sd. & br. sh., all mixed up, 4" hd. shale. | | |
| | | | 7329 | 7349 | 9' | 1½' firm rich oil sd., 2' hd. sh., 2½' hd. oil sd., 3' fine soft good oil sd., w/ 4" stk. sh. near bottom. | | |
| | | | 7349 | 7367 | 6' | 3' hd. dk. br. shale w/ little sand, 3' fine good oil sd., stks. shale, 75% sd. - 29° dip. | | |
| | | | 7367 | 7386 | 8' 4' | Med. fine good oil sd., 4' br. shale, thin stks. fine good oil sd., 95% sh. | | |
| | | | 7386 | 7404 | 6' | 8" hd. shale, 1' med. fine good oil sd., 4'10" br. sh., couple thin stks. oil sd. at top. | | |
| | | | 7404 | 7424 | 12' | 2' hard good oil sd., 1' hd. sh. 3½' fine hd. fair oil sd., stks. hd. sh., 2½' med. hd. oil sd., w/ one stk. shale, 4" sandstone shell, 2'8" soft and firm good oil sd. | | |
| | | | 7424 | 7443 | 9' | 3' med. fine good oil sd., 3' hd. sandstone shell, 3' fine soft good oil sd. | | |
| | | | 7443 | 7463 | 15" | Fine hard good oil sd., w/ thin hd. gray stk. | | |
| | | | 7463 | 7483 | 13' | Med. fine soft & firm gr. water sd., w/ stks. showing oil, couple 1" stks. sdy. shale near bottom. | | |

FORM 109-A. 81365 12-30 20M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T -1-22929

Los Angeles, Cal. April 17, 1931.

Mr. V. E. Wilhelm,
Los Angeles, Cal.

121

Agent for THE TEXAS Company

DEAR SIR:

Operations at your well No. "FIELDS" 18 Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Oil Field, in Los Angeles County, were witnessed by F. C. Hodges, representative of the supervisor, on April 14, 1931. There was also present D. K. Weaver, Engineer, and C. W. Sweet, Foreman.

Casing Record 13" S.P. cem. 788'; 8¼" cem. 4230', W.S.O.; 5¾" cem. 6210', W.S.O.; T.D. present hole 7483'; plugged with cement 7483'-6825'; and 6500'-6442'; Junk: (1st hole) 6¼" perf. 4273'-4529'; T.D. (1st hole) 4529', plugged with cement 4529'-4280'.

The operations were performed for the purpose of testing the location and hardness of a cement plug proposed to be placed from 6500' to 6435' in the process of plugging off bottom water.

and the data and conclusions are as follows:

MR. WEAVER REPORTED THE FOLLOWING:

1. The hole was cleaned out to 6500'.
2. On April 7, 1931, 35 sacks of Victor cement was pumped in thru 2½" drill pipe hung at 6500'. The top of the cement was located at 6260' and the hole was cleaned out to 6486'.
3. On April 11, 1931, 35 sacks of Victor cement was pumped in thru 2½" tubing hung at 6436' and a pressure of 250 lb. was applied.

THE INSPECTOR NOTED THAT the cement plug at the reported depth of 6442' supported part of the weight of the drill pipe.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 6442' ARE APPROVED.

cc-Company 2
Long Beach
FCH:OH

R. D. BUSH
State Oil and Gas Supervisor

By E. Huguenin Deputy

FORM 109-B. 82427 1-31 6M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Test of Water Shut-off
(BAILING)

No. T -1-22899

Los Angeles, Cal. April 9, 1931.

Mr. V. H. Wilhelm,
Los Angeles, Cal.

Agent for THE TEXAS Company

DEAR SIR:

Your well No. "FIELDS" 18, Sec. 19, T. 4 S., R. 12 W., S.B. B. & M.,
Long Beach Oil Field, in Los Angeles County, was tested for
shut-off of water on April 6 (Time and date), 1931. Mr F. C. Hodges,
designated by the supervisor, was present as prescribed in Section 19, Chapter 718, Statutes 1915, as amended, and there were also present D. K. Weaver, Engineer, and
E. J. McEuen, Driller.

Location of water tested between 4230'-6210' and normal fluid level Not reported.

Depth and manner of water shut-off: { 6210 ft. of 5¾ in. 22.5 lb. / xft. of xxxxx in xxxxx lb.x } casing was { cemented / 3/28/31 / xlanded } in Shale Formation
at 6210 ft. with 150 sacks Victor cement by Casing method.

Water string was landed in 7-5/8" rotary (Size, rotary or cable tool) hole.

Casing record of well 13" S.P. cem. 788'; 8¼" cem. 4230', W.S.O.; 5¾" as above; 2½" tubing hung at 6089' for this test only. Junk: (1st hole) 6¼" perf. 4273'-4529'; T.D. (1st hole) 4529', plugged with cement 4529'-4280'.

Reported total depth of hole 7483 ft. Hole ~~bridged~~ plugged w/c 7483'-6828', 6500'-6435' and bridged w/c present from 6245 ft. to 6210 ft. Hole cleaned out to 6215 ft. for this test.

At time of test depth of hole measured 6213 ft. and bailer brought up sample of shale, sand and set cement.

At 3:00 p.m., April 5, 1931 (Time and date) oil bailed to showing ft., drilling fluid { ~~bailed~~ / swabbed } to 3000 ft.

At 10:00 a.m., April 6, 1931 (Time and date) top of oil found at showing ft., top of fluid found at 2960 ft.

Result of test:

MR. WEAVER REPORTED THE FOLLOWING:

1. A casing test was made by applying a pressure of 500 lb. to the inside of the casing for 1 hr. without loss.
2. 35' of set cement was drilled out of the 5¾" casing, equivalent to 4 sacks.

THE INSPECTOR NOTED THE FOLLOWING:

1. Gas was issuing from the 5¾" casing during the test.
2. The fluid rose 40' in 19 hr., equivalent to 1.2 bbl. per 24 hr.
3. A fluid sample from 6213' consisted of medium gas-cut, oily mud that tasted fresh.

THE SHUT-OFF IS APPROVED.

cc-Company 2
Long Beach
FCH:CH

R. D. BUSH
State Oil and Gas Supervisor

By E. Huguenin Deputy

FORM 109-A. 81365 12-30 20M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T -1-22870

Los Angeles, Cal. March 30, 1931.

Mr. V. H. Wilhelm,
Los Angeles, Cal.

Agent for THE TEXAS Company

DEAR SIR:

Operations at your well No. "FIELDS" 18 Section 19, T. 4 S., R. 12 W., S. B. B. & M., Long Beach Oil Field, in Los Angeles County, were witnessed by Paul J. Howard, representative of the supervisor, on March 27, 1931. There was also present D. K. WEAVER, Engineer, and E. J. McEuen, Driller.

Casing Record 13" S.P. cem. 788'; 8¼" cem. 4230', W.S.O.; T.D. 7483'; plugged with cement 7483' to 6828' and 6500' to 6435'. Junk: (1st hole) 6¼" perf. 4273'-4529'; T.D. 4529'; plugged with cement 4529' to 4280'.

The operations were performed for the purpose of demonstrating that the formations between 4230' and 6210' were mudded until the loss was not more than 4 bbl. per hr.

and the data and conclusions are as follows:

MR. WEAVER REPORTED THE FOLLOWING:

1. A 7-5/8" rotary hole was drilled from 4230' to 7483'.
2. The hole was filled with heavy mud from 6828' to 6500'.
3. Cement bridges were placed in the hole from 6500' to 6435' and from 6245' to 6210'. The latter bridge was placed for the sole purpose of aiding in securing a test of shut-off.
4. Mud fluid was circulated for 28 hr. prior to the test.
5. No record was kept of the loss of mud fluid prior to the test.
6. The drill pipe was hanging at 6200' during the test.
7. Cores were taken from the following important depth:
   6170' - 6220' Shale with a few thin streaks of oil sand.

THE INSPECTOR NOTED THE FOLLOWING:

1. During a circulation test from 9:00 a. m. to 9:30 a. m. mud fluid was loss from the pit at the rate of 3.0 bbl. per hr.
2. The cement bridge at 6210' supported 9 points of the weight of the drill pipe.

THE MUDDING OPERATIONS AS WITNESSED AND REPORTED ARE APPROVED.

Oral approval given to cement 5¾" casing at 6210' is hereby confirmed.

cc-Company 2
Long Beach
PJH:OH

R. D. BUSH
State Oil and Gas Supervisor

By E. Hugenin Deputy

FORM 109-A. 81365 12-30 20M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T -1-22856

Los Angeles, Cal. March 27, 1931.

Mr. V. H. Wilhelm,
Los Angeles, Cal.

Agent for THE TEXAS Company

DEAR SIR:

Operations at your well No. "FIELDS" 18 Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Oil Field, in Los Angeles County, were witnessed by Paul J. Howard, representative of the supervisor, on March 25, 1931. There was also present D. K. Weaver, Engineer, and E. J. McEuen, Driller.

Casing Record 13" S.P. cem. 788'; 8¼" cem. 4230', W.S.O.; T.D. 7483'; plugged with cement 7483'-6828'; Junk: 6¼" landed 4529'. perf. 4273'-4529', pulled from 4273'; T.D. 4529'; plugged with cement 4529'-4280'.

The operations were performed for the purpose of testing the location and hardness of a cement plug proposed to be placed from 7483' to 6850' in the process of plugging.

and the data and conclusions are as follows:

MR. WEAVER REPORTED THE FOLLOWING:

1. On March 21, 1931, 170 sacks Victor cement was pumped into the hole thru 4" drill pipe hung at 7481'.
2. The top of the cement was located at 6828'.

THE INSPECTOR NOTED THAT The plug at 6828' supported 6 points of the weight of the drill pipe.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 6828' ARE APPROVED.

cc-Company 2
Long Beach
PJH:OH
CRB

R. D. BUSH
State Oil and Gas Supervisor

By E. Huguenin Deputy

FORM 111. 79322 9-30 20M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Proposed Operations

No. P-1-23170

Los Angeles, Cal. March 27, 1931.

Mr. V. H. Wilhelm,
Los Angeles, Cal.
Agent for THE TEXAS Company

Dear Sir:

Your supplementary proposal to redrill oil string and deepen Well No. "FIELDS" 18,
Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Oil Field, Los Angeles County,
dated March 25, 1931, received March 26, 1931, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

Records in addition to, or at variance with those shown in the notice:
The 8½" shut-off was approved.

THE NOTICE STATES:
"The new conditions are as follows:
13" S.P. cem. 788'
8-1/4" cem. 4230'
6-1/4" landed 4529' incl. 307' perfs. Pulled from 4273'. Plugged w/ 40 sacks cement under pressure 4529-4280.
Total depth 7483'
Cored shale 6170-6220'
" oil zone 6220-6450'
" water sands 6550-6650/6750 and continuous 6850 to 7319. Cored oil zone 7319-7440 and water sands to 7483'."

PROPOSAL:
"We now propose
Plug hole w/ cement under pressure 7483' to 6850' and have plug witnessed. Fill with heavy mud to 6500'. Put in cement plug 6500-6435'. Cement solid string of 5-3/4" casing 6215'. Test shoe, and set 4-3/4" flush joint perf. liner 6210 to 6435 and attempt to produce."

DECISION:
THE PROPOSAL IS APPROVED PROVIDED THAT THIS DIVISION SHALL BE NOTIFIED TO WITNESS the location and hardness of the cement plug at 6435'.

cc-Company 2
Long Beach
WJC:OH

GFB

R. D. BUSH
State Oil and Gas Supervisor
By E. H. Guerin Deputy

FORM 123. 66215 6-29 5M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
MAR 26 1931
LOS ANGELES, CALIFORNIA

## Supplementary Notice

Long Beach, Cal. March 25, 1931

MR. E. Huguenin

Deputy State Oil and Gas Supervisor

Los Angeles, Cal.

DEAR SIR:

Please be advised that our notice to you dated November 7, 1930,

stating our intention to redrill and deepen well No. "Fields" 18,
(Drill, deepen, redrill, abandon)

Sec. 19, T. 4 S, R. 12 W, S.B. B. & M. Long Beach Oil Field

Los Angeles County, must be amended on account of changed or recently discovered conditions.

The new conditions are as follows:

13" S.P. cem. 788'
8-1/4" cem. 4230'
6-1/4" landed 4529' incl. 307' perfs. Pulled from 4273'. Plugged w/ 40 sacks cement under pressure 4529-4280.
Total depth 7483'
Cored shale 6170-6220'
" oil zone 6220-6450'
" water sands 6550-6650-6750 and continuous 6850 to 7319. Cored oil zone 7319-7440 and water sands to 7483'.

We now propose

Plug hole w/ cement under pressure 7483' to 6850' and have plug witnessed. Fill with heavy mud to 6500'. Put in cement plug 6500-6435'. Cement solid string of 5-3/4" casing 6215'. Test shoe, and set 4-3/4" flush joint perf. liner 6210 to 6435 and attempt to produce.

Reference to file of data

| Maps | Field | Cross Section | Cards | Forms | |
|---|---|---|---|---|---|
| | | | | | ✓ |

Respectfully yours

(Name of Company)

By The Texas Co.

FORM 111. 79322 9-30 20M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Proposed Operations

No. P-1-22652

Los Angeles, Cal. November 12, 1930.

MR. V. H. Wilhelm,

Los Angeles, Cal.

121

Agent for THE TEXAS Company

DEAR SIR:

Your proposal to redrill and deepen oil string/ Well No. "FIELDS" 18,

Section 19, T. 4-S., R. 12-W. S.B. B. & M., Long Beach Oil Field, Los Angeles County,

dated Nov. 7, 1930, received Nov. 8, 1930, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

Records in addition to or at variance with those shown in the notice:
The 8¼" shut-off was approved.
Total depth 4529'.

THE NOTICE STATES:
"The present condition of the well is as follows:
13" S.P. cemented at 788'
8¼" Casing " at 4230'
6¼" Casing landed at 4529' including 307' Perforations
Produced before curtailment
35 barrels oil - 10 barrels water daily."

PROPOSAL:
"The proposed work is as follows:
To plug 6¼" solid of cement 4280'-4529'.
Pull 6¼" from 4280, redrill and deepen to 7500', cementing 6-5/8" casing at 6500' with 5" oil string on bottom."

DECISION:
THE PROPOSAL IS APPROVED PROVIDED THAT:

1. The proposed cement plug from 4529' to 4280' shall be placed under a minimum pressure of 500 lb.
2. Adequate blow-out prevention equipment shall be provided and ready for operation at all times.
3. Any hole to be sidetracked at any time during the drilling of this well shall be completely filled with cement.
4. The formations to be left back of the 6-5/8" casing shall be mudded by open circulation until the loss is not more than 2.0 bbl. per hr.
5. The exact cementing depth for the 6-5/8" casing shall be determined by careful coring, beginning not lower than 6150'.
6. Sufficient cement shall be used to fill back of the 6-5/8" casing to reach to at least 1000' above the shoe.
7. The column of mud fluid back of the 6-5/8" casing shall be maintained to the surface for at least 30 days after cementing this casing.
8. THIS DIVISION SHALL BE NOTIFIED TO WITNESS:
   (a) Final mudding operations before cementing the 6-5/8" casing.
   (b) Bailing test of the 6-5/8" shut-Off.

cc-Company 2
Long Beach

GP:GH

R. D. BUSH
State Oil and Gas Supervisor

By [signature] Deputy

FORM 107. 68217 6-29 10M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
NOV 8 - 1930
LOS ANGELES, CALIFORNIA

## Notice of Intention to Deepen, Redrill, Plug or Alter Casing in Well

This notice must be given fifteen days before work begins when possible

Los Angeles, Cal. November 7th, 19 30

MR. E. Huguenin,

Deputy State Oil and Gas Supervisor

Los Angeles, Cal.

DEAR SIR:

In compliance with Section 17, Chapter 718, Statutes of 1915, as amended, notice is hereby given that it is our intention to commence the work of deepening, redrilling, plugging or altering casing at well No. Fields #18
(Cross out unnecessary words)
, Sec. 19, T. 4-S, R. 12-W, S.B. B. & M.
Long Beach Oil Field, Los Angeles County.

The present condition of the well is as follows:

13" S.P. cemented at 788'
8¼"Casing " "4230'
6¼"Casing landed "4529' including 307' Perforations

Produced before curtailment

35 barrels oil - 10 barrels water daily

The proposed work is as follows:

To plug 6¼" solid of cement 4280' - 4529'.

Pull 6¼" from 4280, redrill and deepen to 7500', cementing 6 5/8" casing at 6500' with 5" oil string on bottom.

redrill o.s. & deepen

Reference to file of data

| Maps | Model | Cross section | Cards | Forms | |
|---|---|---|---|---|---|
| | | | | ✓ | ✓ |

Respectfully yours

The Texas Company
Name of Company or Operator

By V. H. Wilhelm
Chief Petroleum Engineer R

ADDRESS NOTICE TO DEPUTY STATE OIL AND GAS SUPERVISOR IN CHARGE OF DISTRICT WHERE WELL IS LOCATED

Form 100.

Fill th ink in with typewriter. Write on one side of p only

# CALIFORNIA STATE MINING BUREAU

FERRY BUILDING, SAN FRANCISCO

## LOG OF OIL OR GAS WELL

CALIFORNIA STATE MINING BUREAU
RECEIVED
JUL 10 1926
Department of Petroleum and Gas
LOS ANGELES, CALIFORNIA

FIELD Long Beach COMPANY California Petroleum Corp. of Cal.

Township 4S Range 12W Section 19 Elevation 92' Number of Well Fields #18

In compliance with the provisions of Chapter 718, Statutes 1915, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Signed J. P. Thomas

Date July 8, 1926 Title Engineer.
(President, Secretary or Agent)

Reference to file of data

| | Cross Section | Cards | |
|---|---|---|---|
| | | | ✓ |

The summary on this page is for the ORIGINAL condition of the well

### OIL SANDS

1st sand from 4232 to 4235 4th sand from ____ to ____
2d sand from 4525 to 4529 5th sand from ____ to ____
3d sand from ____ to ____ 6th sand from ____ to ____

### IMPORTANT WATER SANDS

1st sand from ____ to ____ 3d sand from ____ to ____
2d sand from ____ to ____ 4th sand from ____ to ____

### CASING RECORD

| Size of Casing | Where Landed | Where Cut | Weight Per Foot | Threads Per Inch | Kind of Shoe | Make of Casing | Cemented Yes | Cemented No | Number Sacks |
|---|---|---|---|---|---|---|---|---|---|
| 13" | 788 | | S.P. | | | Here. | x | | 100 |
| 8¼" | 4230 | | 36# | 8 | | Std.Seam. | x | | 400 |
| 6¼" | 4529 | | 26# | 10 | | " " | | x | |
| | | | | | | | | | |
| | | | | | | | | | |

### CEMENTING OR OTHER SHUT-OFF RECORD

| Casing, Size | Sacks | Time Set | Method | Test and Result (Give water level and bailing results) |
|---|---|---|---|---|
| 8¼" | 400 | 5 days | Perkins | Bailed to 2000. No fluid entered well in 12 hrs. WSOOK |
| | | | | |
| | | | | |

### PLUGS AND ADAPTERS

Heaving Plug—Material ____ Length ____ Where set ____

Adapters —Material ____ Size ____

### TOOLS

Rotary Tools were used from 0 ft. to 4529 ft.

Cable Tools were used from ____ ft. to ____ ft.

### PERFORATIONS

State clearly whether a machine was used or casing was drilled in shop

| From | To | Size of Holes | Number of Rows | Holes Per Foot | Machine—Shop |
|---|---|---|---|---|---|
| 4222 ft. | 4529 ft. | EMS Screen | | | |
| ft. | ft. | | | | |
| ft. | ft. | | | | |
| ft. | ft. | | | | |
| ft. | ft. | | | | |

Thirty days after completion well produced 67 barrels of oil per day.

The gravity of oil was 17.6 degrees Baumé. Water in oil amounted to 23.3 per cent.

FORM 103. 43286 1-26 10M

# CALIFORNIA STATE MINING BUREAU

DEPARTMENT OF PETROLEUM AND GAS

## HISTORY OF OIL OR GAS WELL

CALIFORNIA STATE MINING BUREAU
RECEIVED
Department of Petroleum and Gas

FIELD Long Beach COMPANY California Petroleum Corp. of Cal.

*Township* 4S, *Range* 12W, *Section* 19, *Number of well* Fields #18

Signed J P Thomas

Date July 8, 1926 Title Engineer.

(*President, Secretary or Agent*)

It is of the greatest importance to have a complete history of the well. Please state in detail the dates of redrilling, together with the reasons for the work and its results. If there were any changes made in the casing, state fully, and if any casing was "sidetracked" or left in the well, give its size and location. If the well has been dynamited, give date, size, position, and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position, and results of pumping or bailing.

| | Cross Section | Cards |
|---|---|---|
| | | |

Spudded well in 2-4-26.

Drilled to 788' and cemented 13" S.P. at 788' w/100 sax McDuffy treated cement, by Perkins.

Drilled to 4235' and took mud test, which was witnessed and approved by your Department.

Cemented 4230' of 8¼" 36# Standard Seamless csg. at 4230' w/400 sax McDuffy treated cement, under 800# pressure, by Perkins.

Drilled out cement 4194-4235.

Bailed to 2000'. No fluid entered well in 12 hrs. Your Department witnessed and approved the shut-off.

Drilled to 4829' and landed 6¼" 26# Standard Seamless csg. incl. 307' EMS Screen on bottom.

Swabbed and bailed well. Pumped to sump 4-5-25

4-6-26 Produced 80 bbl. 15.8 grav. 16% water, 18% emulsion.

NAMES OF DRILLERS

A. L. Anders

F. C. Brown

Homer Batson

NAMES OF TOOL DRESSERS

S. G. Vanzant

F. N. Bakers

F. Camp

Date drilling started 2-4-26

Date well was completed 4-6-26

FORMATIONS PENETRATED BY WELL

| DEPTH TO | | Thickness | Name of Formation |
|---|---|---|---|
| Top of Formation | Bottom of Formation | | |
| 0 | 500 | 500 | Sand & gravel |
| | 735 | 235 | Sand, gravel & shale |
| | 760 | 25 | Hard sand |
| | 788 | 28 | Shale |
| | 858 | 70 | Sand & shale |
| | 1155 | 247 | Sandy shale |
| | 1225 | 70 | Sticky shale |
| | 1235 | 10 | Hard sand |
| | 1388 | 153 | Sand & gravel |
| | 1658 | 270 | Sand & shale |
| | 1700 | 42 | Sandy shale |
| | 1800 | 100 | Sand & stks. hard sand |
| | 1820 | 20 | Sticky shale |
| | 1900 | 80 | Sand |
| | 1930 | 30 | Sticky shale |
| | 2015 | 85 | Stky.sh. & stks. hard sand |
| | 2165 | 150 | Sticky shale |
| | 2185 | 20 | Sandy shale |
| | 2230 | 45 | Sticky shale |
| | 2305 | 75 | Sandy shale |
| | 2425 | 120 | Sticky shale |
| | 2435 | 10 | Sandy shale |
| | 2455 | 20 | Sticky shale |
| | 2550 | 95 | Sticky shale & stks. sand |
| | 2635 | 85 | Hard sandy shale |
| | 2665 | 30 | Sticky shale |
| | 2675 | 10 | Hard sand |
| | 2760 | 85 | Sandy shale |
| | 2875 | 115 | Stky.sh. & stks. hard sand |
| | 2890 | 15 | Sandy shale |
| | 3003 | 113 | Sticky sh. & stks. hard sd. |
| | 3015 | 12 | Hard sand |
| | 3038 | 23 | Sticky shale |
| | 3065 | 27 | Hard sand & stky.shale |
| | 3110 | 45 | Stky.sh. w/stks. sand |
| | 3135 | 25 | Tough shale |
| | 3185 | 50 | Sandy shale |
| | 3195 | 10 | Hard sand |
| | 3215 | 20 | Hard sandy shale |
| | 3275 | 60 | Hard sand |
| | 3300 | 25 | Stky.sh. w/stks. hard sand |
| | 3306 | 6 | Sticky shale |
| | 3331 | 25 | Stky.sh. w/stks. hard sand |

Form 101. 32282 4-24 15M

# CALIFORNIA STATE MINING BUREAU

DEPARTMENT OF PETROLEUM AND GAS

CALIFORNIA STATE MINING BUREAU
RECEIVED
JUL 10 1926
Department of Petroleum

## LOG OF OIL OR GAS WELL—Continued

FIELD Long Beach COMPANY California Petroleum Corp. of Cal.

*Township* 4S, *Range* 12W, *Section* 19, *Number of well* Fields #18

## FORMATIONS PENETRATED BY WELL

| DEPTH TO | | Thickness | Name of Formation |
|---|---|---|---|
| Top of Formation | Bottom of Formation | | |
| 3331 | 3336 | 5 | Hard sand |
| | 3368 | 32 | Sticky shale |
| | 3378 | 10 | Hard sand |
| | 3408 | 30 | Stky. sh. & hard sand |
| | 3500 | 92 | Sandy shale |
| | 3515 | 15 | Hard sandy shale |
| | 3555 | 40 | Sticky shale |
| | 3570 | 15 | Sandy sh. stks. hard sand |
| | 3618 | 48 | Sandy shale |
| | 3665 | 47 | Sandy sh. stks. hard sand |
| | 3738 | 73 | Hard sand |
| | 3756 | 18 | Hard sand & stks. shale |
| | 3771 | 15 | Tough shale |
| | 3818 | 47 | Hard sand |
| | 3851 | 33 | Sticky shale |
| | 3933 | 82 | Hard sand |
| | 3935 | 2 | Sticky shale |
| | 3940 | 5 | Hard sand |
| | 3963 | 23 | Sandy sh. w/stks. hard sand |
| | 4000 | 37 | Sandy shale |
| | 4013 | 13 | Sticky shale |
| | 4033 | 20 | Sandy shale |
| | 4060 | 27 | Sandy sh. w/stks. hard sand |
| | 4070 | 10 | Hard sand |
| | 4072 | 2 | Shell |
| | 4073 | 1 | Sand |
| | 4096 | 23 | Hard sand |
| | 4110 | 14 | Sticky shale |
| | 4120 | 10 | Sandy shale |
| | 4150 | 30 | Hard sand |
| | 4170 | 20 | Hard sandy shale |
| | 4232 | 62 | Brown shale, continuous core 4200-4235 |
| | 4235 | 3 | Brown shale stkd. w/oil sand |
| | 4239 | 4 | Sandy shale |
| | 4258 | 19 | Hard sand |
| | 4275 | 17 | Sandy shale w/stks. hard sand |
| | 4295 | 20 | Hard sand & sandy shale |
| | 4320 | 25 | Sandy shell & stks. sand |
| | 4321 | 1 | Hard sand & shell |
| | 4382 | 61 | Hard sand stks. shale |
| | 4443 | 61 | Hard sand |
| | 4450 | 7 | Sticky shale |
| | 4465 | 15 | Hard sand & sandy shale |
| | 4525 | 60 | Sandy shale |
| | 4529 | 4 | Oil sand, cored |

FORM 109-B. 39807 7-25 10M

# CALI_ _RNIA STATE MINING B[ ]EAU

DEPARTMENT OF PETROLEUM AND GAS

## Report on Test of Water Shut-off

(BAILING)

No. T-1-10178

Los Angeles, Cal. March 30, 1926

Mr. J. R. Thomas

Montebello, Cal.

Agent for CALIFORNIA PETROLEUM CORPORATION OF ~~CALIFORNIA~~ Company CALIFORNIA.

DEAR SIR:

Your well No. "FIELDS" 18, Sec. 19, T. 4 S, R. 12 W, S.B. B. & M., Long Beach Oil Field, in Los Angeles County, was tested for shut-off of water on March 17, Time and date 1926. Mr. V. AUSTIN, designated by the supervisor, was present as prescribed in Section 19, Chapter 718, Statutes 1915, as amended, and there were also present Frank Halfen, Foreman and R. R. Crandall, Engineer

Location of water tested above 4230 and normal fluid level not determined

Depth and manner of water shut-off: { 4230 ft. of 8¼ in. 36 lb. / ____ ft. of ____ in. ____ lb. } casing was { cemented / ~~landed~~ } 4-11-26 in brown shale Formation

at 4230 ft. with 400 sacks Santa Cruz cement by Perkins method; 12" Rotary Size and kind tools were used in landing water string. The last 100 sacks of cement was treated with quick setting chemical.

Casing record of well 13" S. P. cemented at 788', 8¼" as above

Reported total depth of hole 4235 ft. Hole bridged from - ft. to - ft. Hole cleaned out to 4235 ft. for this test.

At time of test depth of hole measured 4232 ft. and bailer brought up sample of sand

At 4:30 a.m. Mar. 17, 1926, Time and date oil bailed to - ft., ~~water~~ fluid bailed to 2000 ft.

At 4:30 p.m. Mar. 17, 1926 Time and date top of oil found at - ft., top of ~~water~~ fluid found at 2000 ft.

**Result of bailing test:**

MR. HALFEN REPORTED THE FOLLOWING:
1. No casing test was made.
2. 36' of set cement was drilled out of the 8¼" casing.

THE INSPECTOR NOTED THE FOLLOWING:
1. No fluid entered the well while standing 12 hrs. for test.
2. The fluid samples taken were as follows:
   from the top - heavy mud fluid
   " "bottom - " " " showing some gas.

THE SHUT OFF IS APPROVED.

cc-J.R.Thomas
Long Beach

VA:LH

R. D. BUSH,
*State Oil and Gas Supervisor*

By E. Haguenin Deputy

106. 32204 4-24 10M

CALIFORNIA STATE MINING BUREAU
RECEIVED
MAR 18 1926
Department of Petroleum and Gas
LOS ANGELES, CAL.

# CALIF[ ]NIA STATE MINING BU[ ]AU

DEPARTMENT OF PETROLEUM AND GAS

## Notice of Test of Water Shut-off

**This notice must be given at least five days before the test, and a longer time is desirable**

Montebello, Cal. March 15, 1926

MR. E. Huguenin,
*Deputy State Oil and Gas Supervisor*

Los Angeles, Cal.

DEAR SIR:

In compliance with Section 19, Chapter 718, Statutes of 1915, as amended, notice is hereby given that it is our intention to test the shut-off of water in well number Fields #18, Sec. 19, T. 4S, R. 12W, S.B. B. & M., Long Beach Oil Field, Los Angeles County, on the 16th day of March 1926

8¼ inch 36 lb. casing was ~~landed~~/cemented in brown shale (Formation) at 4230 (Depth)

on March 11, (Date) 1926

400 sacks S.C. (Kind) of cement were used.

The Perkins method was used in placing cement.

Fluid level will be bailed to a depth of 2000 feet and left undisturbed for at least 12 hours before your inspection.

The well is 4235 feet deep. There ~~is~~/is not a plug or bridge from x feet to x feet.

Respectfully yours,

California Petroleum Corp. of Cal.
(Name of Company or Operator)

By J. R. Thomas
Engineer.

Address notice to Deputy State Oil and Gas Supervisor in charge of district where well is located

Reference to file of data

| Maps | Model | Cross Section | Cards | Logs | |
|---|---|---|---|---|---|
| | 3/24/26 | | | 114 | ✓ |

FORM 109-A. 39906 7-25 1M

# CALI RNIA STATE MINING BU EAU
DEPARTMENT OF PETROLEUM AND GAS

## Special Report on Operations Witnessed

No. T-1-10126

Los Angeles Cal. March 18 1926

Mr. J. R. Thomas

Montebello Cal.

Agent for CALIFORNIA PETROLEUM CORPORATION OF ~~CALIFORNIA~~ Company CALIFORNIA

DEAR SIR:

Operations at your well No. "FIELDS" 18 Section 19, T. 4 S, R. 12 W, S.B. B. & M.,

Long Beach Oil Field, in Los Angeles County, were witnessed by

V. Austin, representative of the supervisor,

on Mar. 10, 1926. There were also present R. R. Crandall, Engineer and C. W. Shaw, Foreman

Casing Record 13" S.P. cemented at 788', only

The operations were performed for the purpose of testing the effectiveness of the mudding of the formations between 788' and 4230'.

and the data and conclusions are as follows:

MR. CRANDALL REPORTED THE FOLLOWING:
1. A 12" rotary hole was drilled from 788' to 4235'.
2. Mud fluid was circulated for 12 hr. prior to the test.
3. No record was kept of the loss of mud fluid prior to the test.
4. The drill pipe was hanging at 4230' during the test.

THE INSPECTOR NOTED THAT during a circulation test from 10:30 a.m. to 11 a.m. mud fluid was lost from the pit at the rate of 4 bbl. per hr.

THE MUDDING OPERATIONS AS WITNESSED AND REPORTED ARE APPROVED.

Oral approval given to cement 8¼" casing at 4230' is hereby confirmed.

cc--J. R. Thomas
Long Beach

VA:D

R. D. BUSH,
*State Oil and Gas Supervisor*

By E. Huguenin Deputy

FORM 111. 39803 7-25 10M

# CALIFORNIA STATE MINING BUREAU

DEPARTMENT OF PETROLEUM AND GAS

## Report on Proposed Operations

No. P -1-12459

Los Angeles, Cal. January 27, 1926

Mr. J. R. Thomas

Montebello, Cal.

Agent for CALIFORNIA PETROLEUM CORPORATION OF ~~XXXXX~~ Company CALIFORNIA

DEAR SIR:

Your proposal to drill Well No. "FIELDS" 18,

Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Oil Field, Los Angeles County,

dated Jan. 12, 1926, received Jan. 20, 1926, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES:
"The well is 160' S. of N. prop. line and 660' E. from int. c/l Atlantic Ave. & Crest Drive. Dist. parallel and at right angles to c/l streets.
The elevation of the derrick floor above sea level is 92.00'.
We estimate that the first productive oil or gas sand should be encountered at a depth of about--------feet, more or less."

PROPOSAL:
"We propose to use the following strings of casing either cementing or landing them as here indicated:

| Size of Casing | Weight | New or Second Hand | Depth | Landed or Cemented |
|---|---|---|---|---|
| 13 | S.P. | New | 800 | Cemented |
| 8¼ | 36# | " | 4270 | " |
| 6¼ | 26# | " | 4560 | Landed |

It is understood that if changes in this plan become necessary we are to notify you before cementing or landing casing."

RECOMMENDATION:
We estimate that the top of the oil zone should be encountered at a depth of about 4205' at this location.

THE PROPOSAL IS APPROVED WITH THE FOLLOWING RECOMMENDATIONS:
1. The exact top of the oil zone shall be located be careful coring below a depth of 4185'.
2. Effective mudding of the formations to be left back of the 8¼" casing shall be demonstrated by circulating mud fluid through the drill pipe hanging just off bottom after drilling and reaming to the cementing depth for this casing until the loss is not more than 5 bbl. per hr.

KINDLY NOTIFY THIS DEPARTMENT TO WITNESS:
1. Final mudding operations before cementing the 8¼" casing.
2. A bailing test of the 8¼" shut off.

cc--J. R. Thomas
Long Beach

R. D. BUSH,
*State Oil and Gas Supervisor*

By E. Ferguson Deputy

LWS:L

Form 105. 36617 1-25 10M

# CALIFORNIA STATE MINING BUREAU

DEPARTMENT OF PETROLEUM AND GAS

JAN 20 1926

Department of Petroleum and Gas
LOS ANGELES, CAL.

## NOTICE OF INTENTION TO DRILL NEW WELL

037-11543

This notice must be given before drilling begins

TEXACO INC.

Montebello, Cal. Jan. 12, 1926

MR. E. Huguenin,

*Deputy State Oil and Gas Supervisor*

Los Angeles, Cal.

DEAR SIR:

"Field" 18

In compliance with Section 17, Chapter 718, Statutes of 1915, as amended, notice is hereby given that it is our intention to commence the work of drilling well number Fields 18 Section 19 T. 4S R. 12W, S.B. B. & M., Long Beach Oil Field, Los Angeles County.

* The well is 160 feet ~~N.~~ or S. of N. prop. line and 660 feet E. ~~or W.~~ from Int. c/l Atlantic Ave. & Crest Drive,
(Give location in distance from section corners or other corners of legal subdivision)
Dist. parallel and at right angles to c/l streets.

The elevation of the derrick floor above sea level is 92.00 feet.

We propose to use the following strings of casing either cementing or landing them as here indicated:

| Size of Casing, Inches | Weight, Lb. Per Foot | New or Second Hand | Depth | Landed or Cemented |
|---|---|---|---|---|
| 13" | S.P. | New | 800 | Cemented |
| 8¼" | 36# | " | 4270 | " |
| 6¼" | 26# | " | 4560 | Landed |
| | | | | |

It is understood that if changes in this plan become necessary we are to notify you before cementing or landing casing.

We estimate that the first productive oil or gas sand should be encountered at a depth of about ..... feet, more or less.

Respectfully yours,

Address .....

California Petroleum Corp. of Cal.
(Name of Company or Operator)

Telephone number .....

By J. R. Thomas
Engineer.

Address notice to Deputy State Oil and Gas Supervisor in charge of district where well is located

Reference to file of data

| | | Cross section | Cards | Forms 114 | Forms 121 |
|---|---|---|---|---|---|
| #20 | | | | | |
| HMO. 1/20/26 | HMO 1/21/26 | | | ✓ | ✓ |

+ Correy to HMO 1/21/26

OB HMO. 1/21/26

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

## DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# REPORT OF WELL PLUGGING AND ABANDONMENT

Cypress, California
May 4, 2007

Target Dept. Stores
c/o M.E. Wright
16531 Bolsa Chica St. #301
Huntington Beach, CA 92649

Your report of the plugging and **reabandonment** of well **Chevron U.S.A. Inc./"Field" 24**, A.P.I. No. **037-11549**, Section **19**, T. **4**S, R. **12**W, S.B. B & M., **Long Beach** Field, **Los Angeles** County, dated **02-21-07**, received **04-16-07**, has been examined in conjunction with operations witnessed and records filed in this office.

We have determined that all of the requirements of this Division have been fulfilled relative to plugging and **reabandonment** of the well, removal of well equipment and junk, and the filing of well records.

**NOTE:**

1. Surface plugging completed on **03-30-07**.
2. Surface inspection made and approved on **05-02-07**.

Hal Bopp
*State Oil and Gas Supervisor*

**By:** _____
**For:** R. K. Baker, *Deputy Supervisor*

INDIVIDUAL BOND

cc: Update
Los Angeles County Assessor
Los Angeles County Fire Prevention Bureau
Long Beach Department of Building & Planning
Department of Oil Properties
Chevron U.S.A. Inc.

KMC:dw

DIVIS OF OIL, GAS, AND GEOTHERMAL RE IRCES

# CHECK LIST – RECORDS RECEIVED AND WELL STATUS

| | | |
|---|---|---|
| Company: | **Target Dept. Stores** | Well: **Chevron U.S.A. Inc./"Fields" 24** |
| API#: | **037-11549** | Sec. **19**, T. **4S**, R.**12W**. S. B. B. & M. |
| County: | **Los Angeles** | Field: **Long Beach** |

| RECORDS RECEIVED | DATE |
|---|---|
| Well Summary (Form OG100) | |
| History (Form OG103) | **4/18/07** |
| Core Record (Form OG101) | |
| Directional Survey | |
| Sidewall Samples | |
| Date final records received. | |
| Electric Logs: | |
| Other: | |

| STATUS | | | |
|---|---|---|---|
| Producing | ☐ | Drilling | ☐ |
| Abandoned | ☐ | Idle | ☐ |
| Reabandoned | ☐ | Other | ☐ |

| WELL TYPE | | | |
|---|---|---|---|
| Oil | ☐ | Waterflood | ☐ |
| Gas | ☐ | Water Disposal | ☐ |
| Water Source | ☐ | Cyclic Steam | ☐ |
| Observation | ☐ | Steam Flood | ☐ |
| Exploratory | ☐ | Fire Flood | ☐ |
| Dry Hole | ☐ | Other | ☐ |

EFFECTIVE DATE:

REMARKS:

| | ENGINEERS CHECK LIST |
|---|---|
| ☐ | Summary, History & Core Record (Dupl.) |
| ☐ | Electric Log |
| ☐ | Operator's Name |
| ☐ | Signature |
| ☐ | Well Designation |
| ☐ | Location |
| ☐ | Elevation |
| ☐ | Notices |
| ☐ | "T" Reports |
| ☐ | Casing Record |
| ☐ | Plugs |
| ☐ | Directional Survey |
| ☐ | Production/Injection (FAP Codes: ) |
| ☐ | E Well on Prod., enter EDP |
| ☐ | Surface Inspection Required |
| ☐ | Surface inspection Waived (Island) |
| ☐ | Well site restoration deferred (common cellar) |
| ☐ | Final Letter Required AB: ☐ REAB: ☐ |
| ☐ | Other: |

| CLERICAL CHECK LIST |
|---|
| Location change |
| Elevation change |
| Form OGD121 |
| Form OGD150b (Release of Bond) |
| Duplicate logs to archives |
| Notice of Records Due |
| EDP |
| District Date Base |
| Final Letter (OG159) |
| Update Center |
| |
| |
| |
| **FIELD CHECK LIST** |
| Date Surface Inspection Completed: |
| Other: |
| |
| |
| |

| RECORDS NOT APPROVED | RECORDS APPROVED |
|---|---|
| *(Reason:)* | *(Signature)* |
| | RELEASE BOND |
| | Date Eligible |
| | *(Use date last needed records received.)* |
| | MAP AND MAP BOOK |
| | |

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# HISTORY OF OIL OR GAS WELL

Operator Target Dept. Stores. Field LONG BEACH County LOS ANGELES

Well Target-Chevron-Texaco "FIELDS" 24 Sec. 19 T. 4S R. 12 S.B. B.&M.

A.P.I. No. 037-11549 Name M. E. WRIGHT Title CONSULTANT
(Person submitting report) (President, Secretary, or Agent)

Date 2-21-07
(Month, day, year)

Signature M. E. Wright

Address 3350 - 6th St, CC 3425, Minneapolis, MN 55402 Telephone Number 612-204-0214

History must be complete in all detail. Use this form to report all operations during drilling and testing of the well or during redrilling or altering the casing, plugging, or abandonment, with the dates thereof. Include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, and initial production data.

| Date 2007 | |
|---|---|
| 3-21 | Hauled in and spotted mud pump, pipe trailer, drilling mat and BOPE on location. Moved in and spotted rig. RU mast. Sank marsh anchors and put out guy lines. Installed, nippled up and function tested BOPE. Set up working platform. Secured rig and well. |
| 3-22 | Drove to location. Serviced rig and equipment. RU and filled mud pump with mud. RU power swivel. Picked up one 3-1/2" drill collar and made up 4-3/4" bit on bottom. Started drilling on cement at surface. Unable to get bit past 5-1/2" csg stub at surface. Replaced 4-3/4" bit with 4-3/8" bit and continued trying to drill cmt, still couldn't get bit through 5-1/2" csg stub. Pulled bit and removed BOPE. Found lip on csg stub to be rolled over, restricting inside diameter of stub. Secured rig and well. |
| 3-23 | Drove to location. Serviced rig and equipment. Removed work floor and BOPE. Used chisels to chip out concrete from inside 5-1/2" csg stub down to about 1'. Used cutting torch to remove rolled over lip from top of csg stub. Re-installed BOPE and set up work floor. Picked up one 3-1/2" drill collar, made up 4-5/8" bit. Hooked up power swivel, mud pump and circulating equipment. Drilled out cmt plug from 0' to 50', cleaned out fill from 50' to 70'±. Continued running in hole with bit and two 3-1/2" drill collars, picking up 97 joints 2-7/8" tbg from trailer. Broke circulation with bit at 3060'. Circulated hole clean. Secured rig and well. |
| 3-26 | Drove to location. Serviced rig and equipment. Continued running in hole with 4-5/8" bit and two 3-1/2" drill collars, after hauling to location and picking up 23 joints 2-7/8" tbg, tagged TOC plug at 3662'. Hooked up mud pump. Broke circulation and circulated hole clean at 3662'. POOH. Laying down 117 joints 2-7/8" tbg, two 3-1/2" drill collars and 4-5/8" bit. Picked up and ran in hole with 117 joints 2-7/8" tbg with saw toothed collar on bottom. Secured rig and well. |
| 3-27 | Drove to location. Serviced rig and equipment. Continued running in hole with 2-7/8" saw tooth collar and tagged TOC plug at 3662'. RU Ausburn Cementers. Ausburn mixed, pumped and displaced 11 sx (13 cu. ft.) class "G" neat cement with 2% CaCl2. Pulled tubing up to 3300'± with calculated TOC at 3562'±. Cement in place at 9:12 AM. Waited on cement until 1:30 PM. Checked cement sample and found cement still too soft to tag.<br>DOGGR A. B. Gorashi inspected BOPE Class 2.<br>DOGGR A. B. Gorashi witnessed bottom plug, 13 cu. ft. Est. TOC at 3562'.<br>Secured rig and well. |

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# HISTORY OF OIL OR GAS WELL

3-28 Drove to location. Serviced rig and equipment. Ran in with 2-7/8" saw toothed collar and tagged TOC plug at 3600'. Pumped 46 bbls, 73# clay base mud to mud hole from 3600' to 1845'. POOH, laying down excess tbg. RU Tiger Wireline Service. Tiger made 1 run and shot eight ½" holes in 5-1/2" csg from 1845' to 1847'. RIH and hung tbg at 1850'. RU Ausburn Cementers. Mixed, pumped and displaced 49 sx "G" neat cmt. Pulled 10 stands, filled hole and shut well in. Squeezed away total of 22 cu. ft. at 600 # max and final shut in pressure. Calc TOC @ 1600'. Witness BFW SQZ @, 56 cu. ft.
DOGGR A. B. Gorashi witnessed cmt tag at 3600'. DOGGR E. Moser witnessed mudding from 3600' to 1845±.

3-29 Drove to location. Serviced rig and equipment. RIH with tbg and tagged TOC plug at 1591'. Hung tbg at 1588' and pumped 22 bbls, 73# clay based P & A mud to mud hole up to 730'. Pulled and LD 28 jnts excess tbg. RU Ausburn Cementers with bottom of tbg at 740'. Ausburn filled hole, shut well in and attempted to pressure test 5-1/2" csg to 600# psi, would not hold pressure. Bleeds off slowly, no low pressure checked. Ausburn mixed, pumped and displaced 16 sx (18 cu. ft) "G" neat cmt with 3% CaCl2, pulled tbg up to 430'. Calc TOC at 605'. CIP at 10:00 AM. Waited on cmt until 2:00 PM. Ran in and tagged at 680'. Hung btm of tbg at 678'. Mixed, pumped and displaced 10 sx "G" neat cmt. Pulled tbg up to 400'. Calc TOC at 596'. CIP at 2:27 PM. Secured rig and well.
DOGGR E. Moser witnessed cmt tag at 1,591, mudding from 1591 to 750, tag TOC @ 680. DOGGR E. Moser witnessed placement of cmt @ 680', est TOC 596.

3-30 Drove to location. Serviced rig and equipment. Ran in with 2-7/8" saw toothed collar and tagged TOC plug at 588' (calc TOC at 596'). Hung tbg at 586' and hooked up mud pump, pumped 20 bbls, 73# clay based P & A mud to fill 5-1/2" csg from 588' to surface. Pulled and LD remainder of tbg. Removed work floor and BOPE. RIH with tbg to 100'. Hooked up Ausburn Cementers. Ausburn mixed and pumped 21 sx "G" neat cmt (24 cu. ft). Pulled and LD tbg. Loaded out tools and equipment. Took down guy lines. Rigged down mast. Cleaned location and moved rig off.
DOGGR A. B. Gorashi witnessed port sleeve plug tag at 588'.
DOGGR A. B. Gorashi witnessed mudding (588' to surface), 14 bbls.

4-3 Drove to location. Backhoe dug down, removed cellar ring. Dug down around well csg. Cut csg 6' below grade. Got ready for gas test. Made location safe.
Gas test approved by DOG.

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# CHECK LIST – RECORDS RECEIVED AND WELL STATUS

| | | |
|---|---|---|
| Company: | **Target Dept. Stores** | Well: **Chevron U.S.A. Inc./"Fields" 24** |
| API#: | **037-11549** | Sec. **19**, T. **4S**, R.**12W**. S. B. B. & M. |
| County: | **Los Angeles** | Field: **Long Beach** |

| RECORDS RECEIVED | DATE |
|---|---|
| Well Summary (Form OG100) | |
| History (Form OG103) | **4/16/07** |
| Core Record (Form OG101) | |
| Directional Survey | |
| Sidewall Samples | |
| Date final records received. | |
| Electric Logs: | |
| Other: | |

**STATUS**

| | | | |
|---|---|---|---|
| Producing | ☐ | Drilling | ☐ |
| Abandoned | ☐ | Idle | ☐ |
| Reabandoned | ☒ | Other | ☐ |

**WELL TYPE**

| | | | |
|---|---|---|---|
| Oil | ☑ | Waterflood | ☐ |
| Gas | ☐ | Water Disposal | ☐ |
| Water Source | ☐ | Cyclic Steam | ☐ |
| Observation | ☐ | Steam Flood | ☐ |
| Exploratory | ☐ | Fire Flood | ☐ |
| Dry Hole | ☐ | Other | ☐ |

EFFECTIVE DATE: 3/30/07

REMARKS: Reabd

| | ENGINEERS CHECK LIST |
|---|---|
| ☑ | Summary, History & Core Record (Dupl.) |
| ☐ | Electric Log |
| ☑ | Operator's Name |
| ☑ | Signature |
| ☒ | Well Designation |
| ☐ | Location |
| ☐ | Elevation |
| ☒ | Notices |
| ☑ | "T" Reports |
| ☑ | Casing Record |
| ☒ | Plugs |
| ☐ | Directional Survey |
| ☐ | Production/Injection (FAP Codes: ) |
| ☐ | E Well on Prod., enter EDP |
| ☒ | Surface Inspection Required |
| ☐ | Surface inspection Waived (Island) |
| ☐ | Well site restoration deferred (common cellar) |
| ☒ | Final Letter Required AB: ☐ REAB: ☒ 5-4-07 DW |
| ☐ | Other: |

| CLERICAL CHECK LIST |
|---|
| Location change |
| Elevation change |
| Form OGD121 |
| Form OGD150b (Release of Bond) |
| Duplicate logs to archives |
| Notice of Records Due |
| EDP 5.15.07 vm |
| District Date Base |
| Final Letter (OG159) 5/10/07 SL |
| Update Center 5.15.07 vm |
| |
| |
| |
| **FIELD CHECK LIST** |
| Date Surface Inspection Completed: 5-2-07 GBR |
| Other: |
| |
| |
| |

| RECORDS NOT APPROVED | RECORDS APPROVED |
|---|---|
| *(Reason:)* | *(Signature)* 4/07 |
| | RELEASE BOND |
| | Date Eligible |
| | *(Use date last needed records received.)* |
| | MAP AND MAP BOOK |
| | N/C |

Need sout insp

OGD2 5/16/01 CYPRESS

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# HISTORY OF OIL OR GAS WELL

Operator Target Dept. Stores, Field LONG BEACH County LOS ANGELES
Well Target-Chevron-Texaco "FIELDS" 24 Sec. 19 T. 4S R. 12 S.B. B.&M.
A.P.I. No. 037-11549 Name M. E. WRIGHT Title CONSULTANT
(Person submitting report) (President, Secretary, or Agent)

Date 2-21-07
(Month, day, year)

Signature M. E. Wright

Address 3350 - 6th St, CC 3425, Minneapolis, MN 55402 Telephone Number 612-204-0214

History must be complete in all detail. Use this form to report all operations during drilling and testing of the well or during redrilling or altering the casing, plugging, or abandonment, with the dates thereof. Include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, and initial production data.

| Date 2007 | |
|---|---|
| 3-21 | Hauled in and spotted mud pump, pipe trailer, drilling mat and BOPE on location. Moved in and spotted rig. RU mast. Sank marsh anchors and put out guy lines. Installed, nippled up and function tested BOPE. Set up working platform. Secured rig and well. |
| 3-22 | Drove to location. Serviced rig and equipment. RU and filled mud pump with mud. RU power swivel. Picked up one 3-1/2" drill collar and made up 4-3/4" bit on bottom. Started drilling on cement at surface. Unable to get bit past 5-1/2" csg stub at surface. Replaced 4-3/4" bit with 4-3/8" bit and continued trying to drill cmt, still couldn't get bit through 5-1/2" csg stub. Pulled bit and removed BOPE. Found lip on csg stub to be rolled over, restricting inside diameter of stub. Secured rig and well. |
| 3-23 | Drove to location. Serviced rig and equipment. Removed work floor and BOPE. Used chisels to chip out concrete from inside 5-1/2" csg stub down to about 1'. Used cutting torch to remove rolled over lip from top of csg stub. Re-installed BOPE and set up work floor. Picked up one 3-1/2" drill collar, made up 4-5/8" bit. Hooked up power swivel, mud pump and circulating equipment. Drilled out cmt plug from 0' to 50', cleaned out fill from 50' to 70'±. Continued running in hole with bit and two 3-1/2" drill collars, picking up 97 joints 2-7/8" tbg from trailer. Broke circulation with bit at 3060'. Circulated hole clean. Secured rig and well. |
| 3-26 | Drove to location. Serviced rig and equipment. Continued running in hole with 4-5/8" bit and two 3-1/2" drill collars, after hauling to location and picking up 23 joints 2-7/8" tbg, tagged TOC plug at 3662'. Hooked up mud pump. Broke circulation and circulated hole clean at 3662'. POOH. Laying down 117 joints 2-7/8" tbg, two 3-1/2" drill collars and 4-5/8" bit. Picked up and ran in hole with 117 joints 2-7/8" tbg with saw toothed collar on bottom. Secured rig and well. |
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RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# HISTORY OF OIL OR GAS WELL

3-28 Drove to location. Serviced rig and equipment. Ran in with 2-7/8" saw toothed collar and tagged TOC plug at 3600'. Pumped 46 bbls, 73# clay base mud to mud hole from 3600' to 1845'. POOH, laying down excess tbg. RU Tiger Wireline Service. Tiger made 1 run and shot eight ½" holes in 5-1/2" csg from 1845' to 1847'. RIH and hung tbg at 1850'. RU Ausburn Cementers. Mixed, pumped and displaced 49 sx "G" neat cmt. Pulled 10 stands, filled hole and shut well in. Squeezed away total of 22 cu. ft. at 600 # max and final shut in pressure. Calc TOC @ 1600'. Witness BFW SQZ @, 56 cu. ft.
DOGGR A. ~~B. Gorashi witnessed cmt tag~~ E-MOSGR at 3600'. DOGGR E. Moser witnessed mudding from 3600' to 1845±.

3-29 Drove to location. Serviced rig and equipment. RIH with tbg and tagged TOC plug at 1591'. Hung tbg at 1588' and pumped 22 bbls, 73# clay based P & A mud to mud hole up to 730'. Pulled and LD 28 jnts excess tbg. RU Ausburn Cementers with bottom of tbg at 740'. Ausburn filled hole, shut well in and attempted to pressure test 5-1/2" csg to 600# psi, would not hold pressure. Bleeds off slowly, no low pressure checked. Ausburn mixed, pumped and displaced 16 sx (18 cu. ft) "G" neat cmt with 3% CaCl2, pulled tbg up to 430'. Calc TOC at 605'. CIP at 10:00 AM. Waited on cmt until 2:00 PM. Ran in and tagged at 680'. Hung btm of tbg at 678'. Mixed, pumped and displaced 10 sx "G" neat cmt. Pulled tbg up to 400'. Calc TOC at 596'. CIP at 2:27 PM. Secured rig and well.
DOGGR E. Moser witnessed cmt tag at 1,591, mudding from 1591 to 750, tag TOC @ 680. DOGGR E. Moser witnessed placement of cmt @ 680', est TOC 596.

3-30 Drove to location. Serviced rig and equipment. Ran in with 2-7/8" saw toothed collar and tagged TOC plug at 588' (calc TOC at 596'). Hung tbg at 586' and hooked up mud pump, pumped 20 bbls, 73# clay based P & A mud to fill 5-1/2" csg from 588' to surface. Pulled and LD remainder of tbg. Removed work floor and BOPE. RIH with tbg to 100'. Hooked up Ausburn Cementers. Ausburn mixed and pumped 21 sx "G" neat cmt (24 cu. ft). Pulled and LD tbg. Loaded out tools and equipment. Took down guy lines. Rigged down mast. Cleaned location and moved rig off.
DOGGR A. B. Gorashi witnessed port sleeve plug tag at 588'.
DOGGR A. B. Gorashi witnessed mudding (588' to surface), 14 bbls.

4-3 Drove to location. Backhoe dug down, removed cellar ring. Dug down around well csg. Cut csg 6' below grade. Got ready for gas test. Made location safe.
Gas test approved by DOG.

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# CONSTRUCTION SITE WELL INSPECTION

District Ref. No. _____

Field: Long Beach City/County Long Beach Sec. 19 T. 4S R. 12W S.BB.&M.

Location (major cross streets): Atlantic Ave and 33rd Street

Development representative: Mick Beyer Phone: (310) 505-9787

Describe the exact location of the excavation or well at the building site (from a reference point on a Division Map):

How the location was determined: Measured ☒ Surveyed ☐ Other ☐

Describe: _____

Well designation: "Field" 24 , API No. 03711549

Operator: Target Dept. Stores

## SAFETY PRECAUTIONS AND UNSAFE EXCAVATIONS

**CAUTION!** Oil and gas wells may produce hydrogen sulfide gas, which is highly poisonous and will accumulate and concentrate in low areas such as excavations. Before entering an excavation area, test to ensure that there is sufficient oxygen and that the flammable/toxic gas readings are within safe limits.

| INSPECTIONS | 1 | Initials Date | 2 | Initials Date | 3 | Initials Date | 4 | Initials Date |
|---|---|---|---|---|---|---|---|---|
| Excavation size | 6'X6' 6' down | 4/5/07 AB | | | | | | |
| Picture No. | | | | | | | | |
| Picture direction | | | | | | | | |
| Metal detector (Y/N) | N | | | | | | | |
| Visible casing size(s) (or comment) | 103/4" & 51/2" | | | | | | | |
| Fluid leaks (Y/N)* | N | | | | | | | |
| Amount (est.) | | | | | | | | |
| Gas leaks (Y/N)* | N | | | | | | | |
| Amount (est.) | | | | | | | | |
| Gas detector (N/Y) | Y | | | | | | | |
| Bubble test (Y/N) | Y | | | | | | | |

*Leak location(s): N/A

Describe hazardous or damaged well condition(s): N/A

Report finalized by: AB Gorashi A., Division of Oil, Gas & Geothermal Res. Date: 4/5/07

Abdulm



OG190A (12/00/GSR1/1M)

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

**No. T 107-0401**

# REPORT ON OPERATIONS

Cypress, California
April 18, 2007

Target Dept. Stores
C/O M.E. Wright
16531 Bolsa Chica St. #301
Huntington Beach, CA 92649

Your operations at well **Chevron U.S.A. Inc./"Field" 24,** A.P.I. No. **037-11549**, Sec. **19**, T. **4**S., R. **12**W, S.B. B. & M., **Long Beach** Field, **Los Angeles** County, were witnessed on **04-05-07**. **AB Gorashi**, representative of the supervisor, was present from **0830** to **1000**. There was also present **Mick Beyer**, Supervisor.

Present condition of well: **10 3/4" cem 20'; 5 1/2" cem 5050', cp 727' & 1845', perf 4242' WSO, perf 4255'-4300', @ int 4470'-4825'. Junk below 4100'. TD 5050'. Plugged w/cem 3892'-3864', 3730'-3600', 1845'-1591', 740'-588' & 100'-6'.**

The operations were performed for the purpose of witnessing the plugging operations in the process of reabandonment.

**DECISION:** APPROVED.

NOTE: The required Class II2M blowout prevention equipment was inspected and approved on **03-27-07**.

DEFICIENCIES: None.

CONTRACTOR: Allenco

Witness Inspection Approved 5-2-07 GB

KMC:dw

cc: Update
Chevron U.S.A. Inc.

Hal Bopp
*State Oil and Gas Supervisor*

**By:** _____
**For:** R. K. Baker, *Deputy Supervisor*

T107-0401

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# CEMENTING/PLUGGING MEMO

Operator TARGET DEPT. STORES Well No. CHEVRON U.S.A. INC. / "FIELD" 24
API No. 037-11549 Sec. 19 T. 4S R. 12W , B&M
Field LONG BEACH , County LOS ANGELES. On 4/05/07 ,
Mr. / Ms. AB GORASHI A , representative of the supervisor, was present from 830 to 1000 .

There were also present MICK BEYER, SUPERVISOR

Casing record of well: 10 3/4" CEM 20'; 5-1/2" CEM 5050', CP 727' & 1845', perfs 4242' WSO, perf 4255'-4300', & int 4470'-4825'. Junk below 4100'. TD 5050. plugged w/CEM 3892'-3864', 3730'-3600', 1845'-1591', 746'-588', 100'-6'.

The operations were performed for the purpose of: REABANDON

☒ The plugging/cementing operations as witnessed and reported are approved.

☐ The location and hardness of the cement plug @ _____ ' are approved.

Hole size: _____ " fr. _____ ' to _____ ', _____ " to _____ ' & _____ " to _____ '

| Casing | | | | Cemented | | | Top of Fill | | Squeezed Away | Final Pressure | Perforations |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | Wt. | Top | Bottom | Date | MO-Depth | Volume | Annulus | Casing | | | |
| 5 1/2 | 15.5# | 0 | 5050 | 3/28/07 | TD 1845 | 56 cf | 1745 | 1614' | 24 cf | 400 psi | CP 1847-1845 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Casing/tubing recovered: _____ " Shot/cut at _____ ', _____ ', _____ ', Pulled fr. _____ ';
_____ " Shot/cut at _____ ', _____ ', _____ ', Pulled fr. _____ '.

Junk (in hole):

Hole fluid (bailed to) at _____ '. Witnessed by _____

| Mudding | Date | bbls | Displaced | Poured | Fill | Engineer |
|---|---|---|---|---|---|---|
| 73# | 3/28/07 | 46 BBLS | 3600' | | 1845' | E-MOSER |
| 73# | 3/29/07 | 22 BBLS | 1591' | | 750 | E. MOSER |
| 73# | 3/30/07 | 14 BBLS | 588' | | SURFACE | AB. GORASHI |

NOTE (K) #2M, 3/27/07 C/O DEPTH 3662'

| Cement Plugs | | Placing | Placing Witnessed | | Top Witnessed | | | |
|---|---|---|---|---|---|---|---|---|
| Date | Sx./cf | MO & Depth | Time | Engineer | Depth | Wt/Sample | Date & Time | Engineer |
| 3/27/07 | 13 cf | TD 3662 | 900 | AB GORASHI | 3600' 3562' | ATW | 3/28/07 800 | E. MOSER |
| 3/28/07 | 56 cf | TD 1845 | 1400 | AB GORASHI | 1591' 1614' | ATW | 3/29/07 | E MOSER |
| 3/29/07 | 18 cf | TD 740' | 1400 | E. MOSER | 588' 596' | ATW | 3/30/07 730 | AB GORASHI |
| 3/30/07 | 24 cf | TD 100' | | RPT | 6' 5' | VISUAL | 4/5/07 | AB GORASHI |

API No. 037-11549 D...ON OF OIL, GAS, AND GEOTHERMAL RESOURCES T_____

# BLOWOUT PREVENTION EQUIPMENT MEMO

Operator TARGET DEPT. STORES Well CHEVRON U-S-A. INC / FIG 24 Sec. 19 T. 4S R. 12W

Field LONG BEACH County L-A Spud Date _____

| VISITS: | Date | Engineer | Time | Operator's Rep. | Title |
|---|---|---|---|---|---|
| 1st | 3/27/07 | AB GORASHI A. | (800 to 1100) | | |
| 2nd | | | ( to ) | | |

Contractor ALLENCO Rig# 5 Contractor's Rep. & Title CECIL GLENN, RIG SUPERVISOR

Casing record of well: MEMO

**OPERATION:** Testing (inspecting) the blowout prevention equipment and installation. Critical well? Y____ N____

**DECISION:** The blowout prevention equipment and its installation on the 10 3/4" casing are approved.

Proposed Well Opns: _____. MACP: _____ psi

Hole size: _____" fr. _____' to _____', _____" to _____' & _____" to _____'

**REQUIRED BOPE CLASS:** II 2M

## CASING RECORD OF BOPE ANCHOR STRING

| Size | Weight(s) | Grade(s) | Shoe at | CP at | Cement Details | Top of Cement: Casing | Top of Cement: Annulus |
|---|---|---|---|---|---|---|---|
| CD | | | | | | | |
| | | | | | | | |

## BOP STACK

| API Symb. | Ram Size (in.) | Manufacturer | Model or Type | Vert. Bore Size (in.) | Press. Rtg. | Date Last Overhaul |
|---|---|---|---|---|---|---|
| RD | 27/8" | TOWNSON | | 9" | 3000 | |
| RD | CSO | TOWNSON | | 9" | 3000 | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

## TEST DATA

| Gal. to Close | Recovery Time (Min.) | Calc. GPM Output | psi Drop to Close | Secs. to Close | Test Date | Test Press. |
|---|---|---|---|---|---|---|
| 0-68 | | | | | | |
| 0-68 | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

TOTAL: 1.36

## ACTUATING SYSTEM

Accumulator Unit(s) Working Pressure 1500 psi

Total Rated Pump Output _____ gpm Fluid Level OK

Distance From Well Bore _____ ft.

| | Accum. Manufacturer | Capacity | Precharge |
|---|---|---|---|
| 1 | HAND PUMP | 10 gal. | — psi |
| 2 | | gal. | psi |

| | CONTROL STATIONS | Elec. | Hyd. | Pneu. |
|---|---|---|---|---|
| | Manifold at accumulator unit | | | |
| | Remote at Driller's station | | | |
| | Other: HAND PUMP | | X | |

| | EMERG. BACKUP SYSTEM | | | Press. | Wkg. Fluid |
|---|---|---|---|---|---|
| X | $N_2$ Cylinders | 1 | L=51" | 2600 | 5-5 gal. |
| | Other: | 2 | L= " | | gal. |
| | | 3 | L= " | | gal. |
| | | 4 | L= " | | gal. |
| | | 5 | L= " | | gal. |
| | | 6 | L= " | | gal. |
| | | | TOTAL: | | 5-5 gal. |

## AUXILIARY EQUIPMENT

| | | No. | Size (in.) | Rated Press. | Connections: Weld | Connections: Flange | Connections: Thread | Test Press. |
|---|---|---|---|---|---|---|---|---|
| | Fill-up Line | | | | | | | |
| X | Kill Line | | 2" | 3000 | | | | |
| X | Control Valve(s) | 3 | | 3000 | | | | |
| | Check Valve(s) | | | | | | | |
| | Aux. Pump Connect. | | | | | | | |
| | Choke Line | | | | | | | |
| | Control Valve(s) | | | | | | | |
| | Pressure Gauge | | | | | | | |
| | Adjustable Choke(s) | | | | | | | |
| | Bleed Line | | | | | | | |
| | Upper Kelly Cock | | | | | | | |
| | Lower Kelly Cock | | | | | | | |
| | Standpipe Valve | | | | | | | |
| | Standpipe Press. Gauge | | | | | | | |
| X | Pipe Safety Valve | | 2 7/8 | 3000 | | | | |
| | Internal Preventer | | | | | | | |

| | HOLE FLUID MONITORING EQUIPMENT | Alarm Type: Audible | Alarm Type: Visual | Class |
|---|---|---|---|---|
| | Calibrated Mud Pit | | | A |
| | Pit Level Indicator | | | B |
| | Pump Stroke Counter | | | B |
| | Pit Level Recorder | | | B |
| | Flow Sensor | | | C |
| | Mud Totalizer | | | C |
| | Calibrated Trip Tank | | | C |
| | Other: | | | C |

| Hole Fluid Type | Weight | Storage Pits (Type & Size) |
|---|---|---|
| WATER + MUD | 9-24/GAL | 100 BBLS |

**REMARKS AND DEFICIENCIES:**

CONTRACTOR: ALLENCO

UNCORRECTABLE DEFICIENCIES:

DEFICIENCIES NOTED AND TO BE CORRECTED:

DEFICIENCIES NOTED AND CORRECTED:



RESOURCES AGENCY OF CALIFORNIA
**DEPARTMENT OF CONSERVATION**
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

No. P 107-0114

412 (Field Code)

06 (Area Code)

-- (New Pool Code)

-- (Old Pool Code)

# PERMIT TO CONDUCT WELL OPERATIONS

Target Dept. Stores
C/O M.E. Wright
16531 Bolsa Chica St. #301
Huntington Beach CA 92649

Cypress, California
February 22, 2007

Your proposal to **reabandon** well **Chevron U.S.A. Inc./"Field" 24**, A.P.I. No. **037-11549**, Section **19**, T. **4S**, R. **12W**, **S.B.** B. & M., **Long Beach** Field, **Old** area, **--** pool, **Los Angeles** County, dated **02/08/07**, received **02/08/07** has been examined in conjunction with records filed in this office.

**THE PROPOSAL IS APPROVED PROVIDED:**

1. Blowout prevention equipment with hydraulic controls, equivalent to this Division's Class **II2M** requirements, or better, shall be installed and maintained in operating condition.
2. Well killing fluid of a quality and in sufficient quantity to control all subsurface conditions in order to prevent blowouts shall be used.
3. At least **360'** of surface casing shall be cemented in the well, if the surface casing is not competent.
4. The well shall be plugged with cement from **730'** to **630'**.
5. All portions of the well not plugged with cement shall be filled with clay base mud having a minimum density of 72 lb/cu ft and a minimum gel-shear strength of 25 lb/100 sq ft.
6. This Division shall be consulted and a Supplementary Notice may be required before making any changes in the proposed program.
7. **THIS DIVISION SHALL BE NOTIFIED TO:**
   a. Inspect the installed blowout prevention equipment prior to commencing downhole operations.
   b. Witness the clean-out depth.
   c. Witness the mudding of the hole.
   d. Witness the placing, location and hardness of the cement plug from **3662'** to **3605'**.
   e. Witness the squeeze cementing of the **5 1/2"** casing through the **perforations** at **1845'**.
   f. Witness the placing, location and hardness of the cement plug from **1845'** to **1745'**, inside and outside the **5 1/2"** casing.
   g. Witness the placing, location and hardness of the cement plug from **730'** to **630'**.
   h. Witness the placing, location and hardness of the cement plug from **100'** to **5'**, inside and outside **all** casings.
   i. Inspect and approve the cleanup of the well site within 60 days after placement of the surface plug.

**NOTE:**

1. A crew drill may be required at the time of the blowout prevention equipment inspection.
2. This Division does not pass upon your right to enter the property, but merely approves the proposal as conforming to our requirements.
3. The proposed surface plug shall not contain rock or gravel.
4. The base of the freshwater sands is at **1845'±**.

KMC:kc
cc: Update
Chevron U.S.A. Inc.
INDIVIDUAL BOND

Engineer: Kenneth Carlson

Phone: 714/816-6847

Hal Bopp
*State Oil and Gas Supervisor*

By _____
For R. K. Baker, *Deputy Supervisor*

**A copy of this permit and the proposal must be posted at the well site prior to commencing operations. Records for work done under this permit are due within 60 days after the work has been completed or the operations have been suspended.** OG 111

09/KC

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## Notice of ~~Intention to~~ RE Abandon Well

R# 1070114

| FOR DIVISION USE ONLY | | | |
|---|---|---|---|
| CARDS | BOND | FORMS OGD114 | FORMS OGD121 |
| | | 2/10/07 KG | 2/9/07 KG |

DIVISION OF OIL AND GAS

In compliance with Section 3229, Division 3, Public Resources Code, notice is hereby given that it is our intention to ~~abandon~~ RE abandon well TARGET-CHEVRON-TEXACO Chevron U.S.A. Inc. FIELDS "N" 24, API No. 037-11549

Sec. 19, T. 4S, R. 12W, SB B. & M., Long Beach Field, Los Angeles County.

commencing work on FEB 21, ~~19~~ 2007

The present condition of the well is:

1. Total depth 5050 (Plug 5045)
2. Complete casing record, including plugs and perforations (present hole) See Attached Diagram
3. Last produced Nov '46 3 — 3 (Date) (Oil, B/D) (Gas, Mcf/D) (Water, B/D)

or

4. Last injected (Date) (Water, B/D) (Gas, Mcf/D) (Surface pressure)

Additional data for dry hole (show depths):

5. Oil or gas shows
6. Stratigraphic markers
7. Formation and age at total depth
8. Base of fresh water sands 1750 (Dog, Map)

9. Is this a critical well according to the definition on the reverse side of this form? ☐ Yes ☒ No

The proposed work is as follows:

See attached program

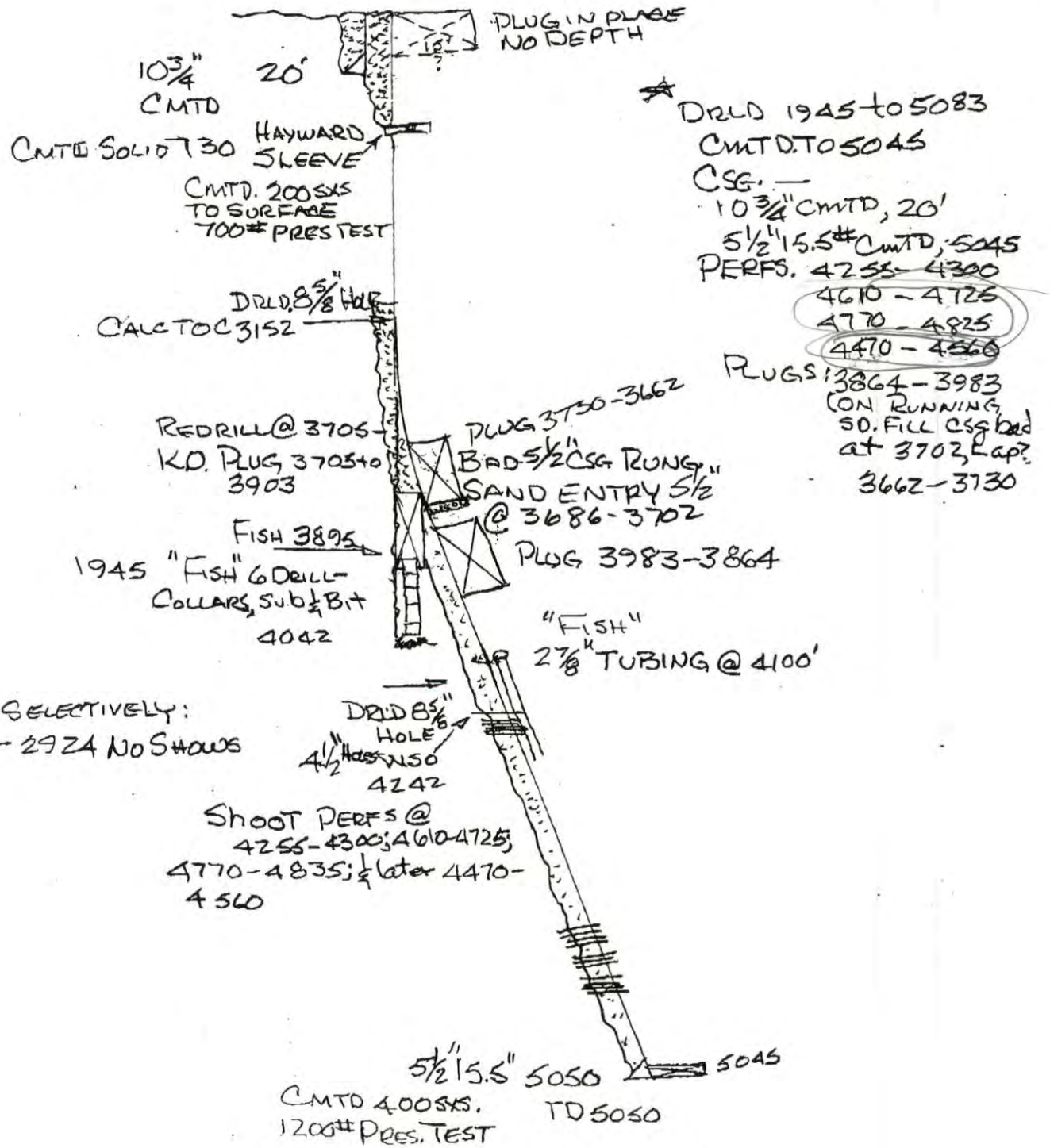
It is understood that if changes in this plan become necessary, we are to notify you immediately.

Address 33506th St. CC.3425 (Street)
Minneapolis MN 55402 (City) (State) (Zip)
Telephone Number (612) 304-0214 (Area Code) (Number)

TARGET DEPT STORES (Name of Operator)
By B. Ullery - M.E. WRIGHT (C.O. Below) (Print Name)
M.E. Wright (714) 3779234 2/08/07 (Signature) (Date)
C.O. 16531 Bolsa Chica St #301
HUNTINGTON BEACH CA 92649

OG108 (2/84/DWRR/5M)

# TARGET - CHEVRON TEXACO
# WELL DIAGRAM FIELDS 24
# API # 037-11549




MEW 2-05-07

**ABANDONMENT PROGRAM**
**CHEVRON-TEXACO "FIELDS" 24**

**API 037-11549 LONG BEACH FIELD -Sec 19 - T4S - R12W -**

PROGRAM

1. MIRU - Install BOP equipment on the 5 1/2' csg. 20' long 10 3/4" is too short to support equipment.
2. Fill hole with water.
3. Drill out and clean out surface plug to 3662 raise plug too 3605. Can't drill out below, 5 1/2" casing bad 3686 and has running sand entry.
4. Shoot eight 1/2" holes at 1845, base of fresh water.
5. Squeeze cement 1845 to 1745. Tag TOC.
6. Fill hole with spec mud to 100 feet.
7. Cement surface plug 100 feet to surface. 5 1/2" is cemented from 730 to surface.
8. Gas test and weld on a ID plate.

MEW 2/08/07

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

# REPORT OF PROPERTY AND WELL TRANSFER

| Field or County | District |
|---|---|
| Imperial Co., Wilmington, L.A. Co., W. Coyote, Montebello, Beverly Hills, Seal Beach, El Segundo, Inglewood, Rosecrans, Venice Beach, Las Cienegas, S. Salt Lake, Dominguez, Hyperion, Lawndale, Leffingwell, Long Beach, Los Angeles Downtown, Potrero, Salt Lake, Santa Fe Springs, Cheviot Hills, Sherman, Torrance, Whittier, Howard Townsite, Huntington Beach, Yorba Linda, Orange Co., Richfield, Kraemer, W. Newport, Sunset Beach, Belmont Offshore | District 1 (Cypress, California) |
| Former owner: ChevronTexaco Exploration & Production Co. C5680 | Date: 9/23/2005 |

| Well Name | API Number | Section Township Range |
|---|---|---|
| See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA | See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA | See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA |

Description of the land upon which the well (s) is (are) located.
Various

| Date of transfer | New owner | | Type of organization |
|---|---|---|---|
| 7/11/2005 | | Chevron U.S.A. Inc.<br>**C5640** | Corp. |
| | Address: | 9525 Camino Media<br>Bakersfield, CA 93311 | Telephone: 661/654-7065 |

| | |
|---|---|
| Reported by | OG30A received in Sacramento 9/2005 |
| Confirmed by | Same as above |
| New operator new status: **PA** | Designation of Agent: Greg Leyendecker, Agent |
| Old operator new status: **AB** | Remarks: For further information see Operator file (C5640) Chevron U.S.A. Inc. |

| OPERATOR STATUS ABBREVIATIONS |
|---|
| *PA – Producing Active* |
| *NPA- No potential, Active* |
| *PI- Potential Inactive* |
| *NPI-No potential, Inactive* |
| *AB-Abandoned or No More Wells* |

cc: Update; Envir Desk (2); File
Conservation Committee
Harold W. Bertholf, Inc.
L.A. & Orange County Assessors
WellStats – Cypress Dist. 1
WellStats – Sacrament HQS

Deputy Supervisor: R. K. Baker

Signature: Richard K. Baker, District Deputy

**FORM AND RECORD CHECK LIST**

| Form or Record | Initials | Date | Form or Record | Initials | Date |
|---|---|---|---|---|---|
| Form OGD121 | — | — | Map and Book | | |
| Operator Card | CC | 9-23-05 | Notice cancellations | — | — |
| Well Records | CC | 9/26/05 | Bond Status BB | CC | 9-23-05 |
| Log Records | CC | 9/26/05 | EDP HQS | J.C | 7-11-05 |
| Production Reports | — | — | Data Base Pdoy D1 | GM | 9-26-05 |

# WELL TRANSFER NOTICE

Effective August 22, 2002

**Chevron USA Inc.**
**Texaco California Inc.**
**And**
**Texaco Exploration and Production, Inc.**

Transferred ALL THEIR WELLS
To

## ChevronTexaco Exploration & Production Company

*See OGD156 dated October 18, 2002 in Operator File for ChevronTexaco Exploration & Production Company (C5680) for details*

1015 West Olympic Blvd.,
Los Angeles 15, California,
May 27, 1947.

Mr. W. H. Loomis,
P. O. Box 320,
Long Beach 1, California.

Agent for The Texas Company.

Dear Sir:

Your report of abandonment of well No. "Field" 24, Sec. 19, T. 4 S., R. 12 W., S. B. B. & M., Long Beach oil field, Los Angeles County, dated May 20, 1947, and submitted to this division on our form No. 103, has been examined in conjunction with records filed in this office.

A review of the reports and records shows that the requirements of this division, which are based on all information filed with it, have been fulfilled.

Yours truly,

R. D. BUSH,
State Oil and Gas Supervisor,

By C H Wasser
Deputy Supervisor.

my
cc - Mr. R. D. Bush
- Long Beach
- Mr. W. A. Clark

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| 20 | 5-28-47 P.W.B. | | Blanket | | ✓ |

FORM 103. 36346 7-44 37,500
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
MAY 22 1947
LOS ANGELES, CALIFORNIA

## History of Oil or Gas Well

OPERATOR THE TEXAS COMPANY FIELD Signal Hill

Well No. Field #24, Sec. 19, T. 4-S, R. 12-W, S.B. B. & M.

Signed

Date May 20, 1947 Title Division Engineer
(President, Secretary or Agent)

**Use this form in reporting all important operations at the well, together with the dates thereof, in the order of their performance.** Such operations include drilling, redrilling, deepening, plugging, or altering casing as by perforating, shooting, or pulling. Include in your report size of hole drilled, redrilled, or deepened; size, weight and length of casing landed, cemented, or removed, amount and location of perforations; number of sacks of cement used in cementing or plugging operations, number of feet of cement drilled out of casing, location of top and bottom of cement plugs. If the well was dynamited, give date, dimensions and weight of all shots. If tests were made give interval tested and results of tests, such as, amount and nature of fluids recovered.

| Date | |
|---|---|
| 1946 | |
| 10/30 | Well sanded up. Tubing stuck. Bottom of tubing 4823'. |
| 10/31 | Could not work tubing loose. |
| 11/ 1 | Fishing rods with left hand rods. 73 rods out. |
| 11/ 2 | " " " " " " . 137 " " |
| 11/ 3 | " " " " " " . 142 " " |
| 11/ 4 | " " " " " " . 156 " " |
| 11/ 5 | Left one rod and pump in hole. |
| 11/ 6 | Cut tubing at 4763'. The bottom piece dropped, but could not pull tubing loose. McCullough Magna-Tector showed tubing stuck at 3800'. |
| 11/ 8 | Re-ran Magna-Tector. Found tubing stuck at 4025'. Relanded tubing. Ran pump and rods with an Ardmore anchor set at 4325'. |
| 11/ 9 | Pumped 8 barrels and pumped off. |
| 11/10 | Not producing. |
| | Idle. |
| 11/16 | Fished parted rods and lowered tubing to 4435'. |
| 11/17 | Pumped 9 barrels. |
| 11/18 | " 7 " |
| 11/19 | " 5 " |
| 11/20 | " 2 " |
| 11/21 | " 10 " . Off 10 hours, lowered pump to 4600'. |
| 11/22 | " 10 " |
| 11/23 | " 5 " |
| 11/24 | Pump sanded up. Could not work pump loose. |
| 11/25 | Recovered 112 rods with left hand rods. |
| 11/26 | Recovered 30 rods. |
| 11/27 | Recovered 4 rods for a total of 146. Left 4, 3/4" rods, pump and Ardmore anchor at 4600'. |
| | Idle. |
| 12/16 | Checked fluid level in tubing at 870'. |
| 12/17 | Bailed mud from 4418' to 4462'. Rod box up at 4462'. |
| 12/18 | Bailed mud. |
| 12/23 | Recovered rod box with left hand rods. |
| 12/24 | Could not recover rods. |
| 12/26 | Cut tubing at 4200'. Not loose. |
| 12/27 | Cut tubing at 4100'. |
| 12/30 | Bailed sand inside of tubing from 4002' to 4091'. |

FORM 103. 54705 2-46 50M
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
MAY 22 1947
LOS ANGELES, CALIFORNIA

## History of Oil or Gas Well

OPERATOR THE TEXAS COMPANY FIELD Signal Hill

Well No. Field #24, Sec. 19, T. 4-S, R. 12-W, S.B. B. & M.

Signed W. A. Clark

Date May 20, 1947 Title Division Engineer
(President, Secretary or Agent)

**Use this form in reporting all important operations at the well, together with the dates thereof, in the order of their performance.** Such operations include drilling, redrilling, deepening, plugging, or altering casing as by perforating, shooting, or pulling. Include in your report size of hole drilled, redrilled, or deepened; size, weight and length of casing landed, cemented, or removed, amount and location of perforations; number of sacks of cement used in cementing or plugging operations, number of feet of cement drilled out of casing, location of top and bottom of cement plugs. If the well was dynamited, give date, dimensions and weight of all shots. If tests were made give interval tested and results of tests, such as, amount and nature of fluids recovered.

| Date | |
|---|---|
| 1946 | |
| 12/31 | Cleaned out inside of tubing at 4040'. After bailing for a time, the tubing could be pulled a short distance. Recovered 5 joints of tubing. |
| 1947 | |
| 1/ 2 | Cleaned out inside of tubing from 3715' to 3825'. Pulled out 15' of tubing. |
| 1/ 3 | Cleaned out inside of tubing and recovered a total of 4100' of tubing. |
| 1/ 4 | Checked fluid at 1425', top mud 3670' and top of sand 3736'. Cleaned out to 3820'. |
| 1/ 6 | Cleaned out to 3855'. Recovered mud and sand at 3815' and coarse sand at 3855'. |
| 1/ 7 | Cleaned out to 3870'. Coarse gravel at 3870'. |
| 1/ 8 | Cleaned out to 3878'. |
| | Idle. |
| 4/30 | Found fluid at 1180' and sand at 3690'. Cleaned out to 3715'. |
| 5/ 1 | Cleaned out to 3855'. |
| 5/ 2 | Cleaned out to 3885'. |
| 5/ 3 | Cleaned out to 3893'. Dumped 3-1/2 sacks of cement at 3893'. D.O.G. representative witnessed and approved location and hardness of plug at 3864'. |
| 5/ 5 | Dumped 9 sacks cement in stages starting at 3730'. |
| 5/ 6 | Dumped 1-1/2 sacks cement at 3674'. D.O.G. representative witnessed and approved location and hardness of plug at 3662'. Set wood plug at 32' and dumped 3 sacks cement. Top of plug 6 feet below surface. Abandoned well. |

RFC:tg

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| | | | | | |

FORM 109-D

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

DIVISION OF OIL AND GAS
RECEIVED
MAY 17 1947
LOS ANGELES, CALIFORNIA

No. T_____

_____ Calif. _____ 19____

Mr._____

_____ Calif.

Agent for The Texas Company

DEAR SIR:

Operations at your well No. "Field" 29 Sec. 19, T. 4S, R. 12W, S.B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by A. Pfeil - Inspector, representative of the supervisor, on May 13, 1947. There was also present _____

| Casing Record | Junk |
|---|---|
| Nema. | |
| | |
| | |
| | |
| | |

The operations were performed for the purpose of _____

The inspector arrived at the well at _____ and Mr. _____ reported:

1. The 5½" casing is plugged with cement at the surface.
2. There is no evidence of Oil or gas escaping at the surface.

R. D. BUSH
State Oil and Gas Supervisor

By _____ Deputy

43395 3-45 15M
STATE PRINTING OFFICE

FORM 109-D

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T 1-46720

Los Angeles 15, Calif. May 13, 1947

Mr. W. H. Loomis
Long Beach 1, Calif.
Agent for THE TEXAS COMPANY

171

DEAR SIR:

Operations at your well No. "Field" 24 Sec. 19, T. 4 S., R. 12W, S.B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by John M. Carls, Inspector, representative of the supervisor, on May 6, 1947. There was also present J. R. Flum, Driller; C. C. Jackson, Helper.

Casing Record 10-3/4" cem. 20'; 5-1/2" cem. 5050', c.p. 730', four test holes at 4242', W. S. O., perf. 4835'-4770', 4725'-4610', 4300'-4255', bad at 3686'-3702'. Junk (in hole) 2-1/2" tubing, 4100'-4763'. T. D. (present hole) 5047', plugged with cement 3893'-3864' and 3730'-3662'.

Junk (1st hole) drill collar and bit, 3792'-3939'; T. D. 3939', plugged with cement 3939'-3792'.

The operations were performed for the purpose of testing the location and hardness of a cement plug placed from 3730' to 3662' in the process of abandonment.

The inspector arrived at the well at 10:45 a.m. and Mr. Flum reported:
On May 5, 1947, 10-1/2 sacks of cement was dumped in the hole on a wooden plug at 3730'.

THE INSPECTOR NOTED THAT the bailer could not be spudded below 3662' and brought up a sample of set cement.

The test was completed at 11:15 a.m.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 3663' ARE APPROVED.

JMC:OH

cc- Company
Long Beach

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Musser Deputy

59352 6-46 15M
STATE PRINTING OFFICE

FORM 109-D

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T1-46719

Los Angeles 15, Calif. May 13, 1947

Mr. W. H. Loomis
Long Beach 1, Calif.
Agent for THE TEXAS COMPANY

DEAR SIR:

Operations at your well No. "Field" 24 Sec. 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by John M. Carls, Inspector, representative of the supervisor, on May 5, 1947. There was also present J. R. Flum, Driller; C. C. Jackson, Helper.

Casing Record 10-3/4" cem. 20'; 5-1/2" cem. 5050', c.p. 730', four test holes at 4242', W. S. O., perf. 4835'-4770', 4725'-4610', 4300'-4255', bad 3686'-3702'; Junk (in hole) 2-1/2" tubing 4100'-4763'; T. D. (present hole) 5047', plugged with cement 3893'-3864'.

Junk(1st hole) drill collar and bit, 3792'-3939'; T. D. 3939', plugged with cement 3939'-3792'.

The operations were performed for the purpose of testing the location and hardness of a cement plug placed from 3893' to 3864' in the process of abandonment.

The inspector arrived at the well at 2:30 p.m. and Mr. Flum reported:

1. The hole could not be cleaned out below 3893'.
2. On May 5, 1947, 3-1/2 sacks of cement was dumped in the hole at 3893'.

THE INSPECTOR NOTED THAT the bailer could not be spudded below 3864' and brought up a sample of set cement.

The test was completed at 3:15 p.m.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 3864' ARE APPROVED.

JMC:OH

cc- Company
Long Beach

B/W

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Meesen Deputy

59352 6-46 15M
STATE PRINTING OFFICE

FORM 111.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Proposed Operations

No. P 1-43026

Los Angeles 14, Calif. February 7, 1947

Mr. W. H. Loomis

Long Beach 1, Calif.

Agent for THE TEXAS COMPANY

Dear Sir:

Your proposal to abandon Well No. "Field" 24,

Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, Los Angeles County,

dated Jan. 30, 1947, received Feb. 5, 1947, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

RECORDS IN ADDITION TO, OR AT VARIANCE WITH, THOSE SHOWN IN THE NOTICE:

Junk (1st hole) drill collar and bit 3792'-3939', T. D. 3939', plugged with cement 3939'-3792'.

THE NOTICE STATES:

"The present condition of the well is as follows:

1. Complete casing record.

5-1/2", 15.5# - 5050' cmt'd. w/400 sacks, CTP at 730' w/200 sacks. W. S. O. on 4, 1/2" holes at 4242'. Gun perforated 4835'-4770', 4725'-4610', 4300'-4255'. 2-1/2" tubing stuck at 4823', cut at 4763' and bottom piece dropped approximately 30' with tubing still stuck. Cut at 4200'- not loose. Cut and recovered from 4100'. Top sand in 5-1/2" casing found at 3736'. Cleaned out to 3878'; casing bad and sand running in at 3686' to 3702'.

October 1946 Ave. : 27 B/D, 18° gravity oil with 27 B/D water.

November 1946 Ave.: 3 B/D oil, 3 B/D water."

PROPOSAL:

"PROPOSED WORK:

1. Clean out below bad place in 5-1/2" casing at 3686'-3702' by running fluid in hole to hold back sand, if possible.
2. Place 20' cement bridge in solid blank casing below bad place and continue plug up above 3666'.
3. Cap surface and abandon well."

DECISION:

THE PROPOSAL IS APPROVED PROVIDED THAT

1. If possible the hole should be cleaned out to 4100' and a 20' cement plug placed on the stub of the junk tubing.
2. THIS DIVISION SHALL BE NOTIFIED AS FOLLOWS:
   (a) To witness the location and hardness of cement plugs at 4080' and 3666'.
   (b) To inspect the completed surface cap or plug.

Hist. of abnd. 5/22/47 SHR

SHR:OH

cc- Company
Long Beach

R. D. BUSH
State Oil and Gas Supervisor

By H. Mueller Deputy

Blanket bond.

FORM 108. 20296 1-43 5M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
FEB 5 1947
LOS ANGELES, CALIFORNIA

## Notice of Intention to Abandon Well

This notice must be given at least five days before work is to begin

Long Beach, Calif. January 30, 1 19 47

DIVISION OF OIL AND GAS

Los Angeles 14, Calif.

In compliance with Sec. 3228, 3229, 3230, 3231 and 3232, Ch. 93, Stat. 1939, notice is hereby given that it is our intention to abandon well No. Field #24

Sec. 19, T. 4-S, R. 12-W, S.B. B. & M. Long Beach Field, Los Angeles County, commencing work on the day of 19.

The present condition of the well is as follows:

1. Complete casing record.

5-1/2", 15.5# - 5050' cmt'd. w/400 sacks, CTP at 730' w/200 sacks. W.S.O. on 4, 1/2" holes at 4242'. Gun perforated 4835'-4770', 4725'-4610', 4300'-4255'. 2-1/2" tubing stuck at 4823', cut at 4763' and bottom piece dropped approximately 30' with tubing still stuck. Cut at 4200' - not loose. Cut and recovered from 4100'. Top sand in 5-1/2" casing found at 3736'. Cleaned out to 3878'; casing bad and sand running in at 3686' to 3702'.

2. Last produced.

| Date | Net oil | Gravity | Cut |
|---|---|---|---|
| October 1946 Ave. : | 27 B/D, 18° gravity oil with 27 B/D water. | | |
| November 1946 Ave.: | 3 B/D oil, 3 B/D water. | | |

~~The proposed work is as follows:~~

PROPOSED WORK:

1. Clean out below bad place in 5-1/2" casing at 3686'-3702' by running fluid in hole to hold back sand, if possible.
2. Place 20' cement bridge in solid blank casing below bad place and continue plug up above 3666'.
3. Cap surface and abandon well.

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| | | Cmt | Blanket | Cmt | Cmt |

HOW:tg

abandon

THE TEXAS COMPANY
(Name of Operator)

By H. O. Woodruff
District Engineer

ADDRESS NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

STENOGRAPHER

Forms Filed 100-101-103-elec. log

Date Rec'd. 9-28-45

Electric Log 25-5048 (1)

Location ✓

Elevation ✓

ENGINEER

Form Needed —

Map Correction producing

Form 150b (Date of Release)

At Request of Operator Blankut

Because Abandoned

Because Request by Oper.

Remarks log last core record

elec log (1)

ERma

SUBMIT LOG IN DUPLICATE

FILL IN BLANK IN WITH TYPEWRITER. WRITE ON ONE SIDE OF P ONLY

STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
SEP 28 1945
LOS ANGELES, CALIFORNIA

## WELL SUMMARY REPORT

Operator The Texas Company Field Long Beach

Well No. Field #24 Sec. 19, T. 4S, R. 12W, S.B. B. & M.

Location 370' Sly. on C/L California Ave. from C/L 33rd St. thence Wly. 260' at 90° Elevation of derrick floor / ground above sea level KB 96.52 Floor 93.42 Mat 86.94 feet.

In compliance with the provisions of Chapter 93, Statutes of 1939, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date 9-17-45 Signed W. A. Clark
W. A. Clark

H. O. Woodruff (Engineer or Geologist) W. H. Loomis (Superintendent) Title Division Engineer (President, Secretary or Agent)

Commenced drilling 8-19-44 Completed drilling 9-28-44 Drilling tools Cable / Rotary

Total depth 5050 Plugged depth 5045

Junk Bit, and 6 drill collars from 3895 to 4042 in sidetracked hole.

| GEOLOGICAL MARKERS | DEPTH |
|---|---|
| Top Brown Zone | 4252 |

Commenced producing October 1, 1944 (date) Flowing / gas lift / pumping (cross out unnecessary words)

| | Clean Oil bbl. per day | Gravity Clean Oil | Per Cent Water including emulsion | Gas Mcf. per day | Tubing Pressure | Casing Pressure |
|---|---|---|---|---|---|---|
| Initial production | 30 | 17.1 | 66% | - | - | - |
| Production after 30 days | 36 | 17.1 | 34.0% | | | |

### Casing Record (Present Hole)

| Size of Casing (A. P. I.) | Depth of Shoe | Top of Casing | Weight of Casing | New or Second Hand | Seamless or Lapweld | Grade of Casing | Size of Hole Casing landed in | Number of Sacks of Cement | Depth of Cementing if through perforations |
|---|---|---|---|---|---|---|---|---|---|
| 5½ | 5050 | 0 | 15.5 | New | Smles. | J-55 cmt'd thru Hayward sleeve at 730 ft B with 200. | 6-5/8 | 400 | |

### Perforations

| Size of Casing | From | To | Size of Perforations | Number of Rows | Distance Between Centers | Method of Perforations |
|---|---|---|---|---|---|---|
| 5½ | 4255 ft. | 4300 ft. | ½" holes | | 6" | Gun perforations |
| | 4610 ft. | 4725 ft. | | | | |
| | 4770 ft. | 4835 ft. | | | | |
| | ft. | ft. | | | | |
| | ft. | ft. | | | | |

MAP | MAP BOOK | CARDS | BOND | FORMS 114 121

Electrical Log Depths 25 - 5048 (Attach Copy of Log)

DIVISION OF OIL AND GAS
RECEIVED
SEP 28 1945
LOS ANGELES, CALIFORNIA

The Texas Company — Long Beach

Field #24 — 19 — 4S — 12W — S.B.

W. A. Clark

W. A. Clark
Division Engineer

9-17-45

1944

8-19 Spudded in at 5:00 P.M., drilling an 8-5/8" hole.

8-21 Drilled an 8-5/8" hole to 2527 and started coring in an 8-5/8" hole.

8-27 Cored in 8-5/8" hole to 2924 and drilled ahead in 8-5/8" hole.

8-30 Drilled an 8-5/8" hole to 4042. Pulled out kelly and one stand pipe, then drill pipe backed off while rotating. Dropped 36 stands, 6 drill collars and bit. Top of fish 664. Recovered 5 stands of drill pipe leaving top of fish at 1123.

8-31 Took hold of fish, established circulation and spotted oil. Could not jar fish loose. Backed off leaving sub on top of fish. Ran socket on left hand drill pipe. Backed off drill pipe at top of drill collars, leaving bit, 6 drill collars and sub in hole. Top of fish 3895.

9-1 Took hold of drill collars with socket but could not jar fish loose. Reamed hole.

9-2 Reamed to top of fish. Washed over fish to 3897.

9-3 Washed over fish to 3945.

9-4 Repaired equipment.

9-5 Washed over fish to 3967.

9-6 Washed over fish to 3946.

9-7 Washed over fish to 4042.

9-8 Took hold of fish with socket. Could not jar fish loose. Washed over fish to 4042.

9-9 Could not jar fish loose. Could not drill by top of fish.

9-10 Could not drill by fish. Washed over fish to 3903.

DIVISION OF OIL AND GAS
RECEIVED
SEP 28 1945
LOS ANGELES, CALIFORNIA

The Texas Company
Field #24

Long Beach
19 4S 12W S.B.

9-11 Could not wash over fish below 3903. Ran Halliburton hole caliper log. Pumped in 75 sacks of Victor construction cement through drill pipe hung at 3891. Displaced cement with 150 cu. ft. of mud and pulled out. M.T. 6 min., D.T. 3 min.

9-12 Drilled out cement from 3655 to 3705.

9-13 Reamed hole and conditioned mud. Whipstock would not go to bottom.

9-14 Ran removable whipstock and started redrilling at 3705.

9-23 Drilled and 8-5/8" hole to 5050 and ran Schlumberger electric log. Ran and cemented 113 joints, 5083.83' of 5½", 15.5#, J-55, seamless, 8 round thread, new, National Tube Co. casing at 5050 K.B. Used Baker guide shoe on bottom and Baker float collar one joint, 41.69', up. Hayward collar at 730'. Used 3 B & W scratchers at each of the following points: 5040, 4830, 4748, 4619, 4533, 4494, 4316 and 4273. Cemented shoe with 400 sacks of Victor construction cement using one top plug. Bumped plug at 1200# final pressure. M.T. 47 min., D.T. 18 min., T.T. 1 hr. 12 min. Cemented Hayward sleeve at 730' K.B. with 200 sacks of Victor construction cement. M.T. 17 min., D.T. 3 min., T.T. 22 min. ave. Slurry Wt. 118#/cu.ft. Closed Hayward sleeve and tested at 700# pressure for 10 minutes without loss. Surface cementing operations were witnessed and approved by a D.O.G. representative.

9-24 Landed casing and laid down drill pipe.

9-25 Drilled out cement from 667 to 733.

9-26 Drilled out cement from 5005 to 5045. Perforated 4½" holes at 4242' K.B. using a McCullough gun. Ran Halliburton tester on 2-7/8" O.D. tubing with packer set at 4220 with tailpipe extending to 4240. Tailpipe included 2 pressure bombs, 5' perforated and 3/8" choke. Used no cushion. Valve open at 1:20 P.M., closed valve at 1:51 P.M. Valve open 31 min. Had a good puff then dead. Recovered 27' of medium drilling fluid. Both bombs showed testor open. D.O.G. representative witnessed and approved water shut off. Changed mud to oil.

9-27 Perforated 4255-4300, 4610-4725, 4770-4835 with 450 ½" holes, using a McCullough gun.

9-28 Hung 2-7/8" O.D. tubing at 4239.

9-29 Moved out drilling equipment.

9-30 Moved out drilling equipment.

DIVISION OF OIL AND GAS
RECEIVED
SEP 28 1945
LOS ANGELES, CALIFORNIA

The Texas Company
Field #24

Long Beach
19 4S 12W S.B.

10-1 30 Bbls. net, 66% LLCut
25 " " 36% "
28 " " 28% "
33 " " 16% "
22 " " 30% "
25 " " 30% "
18 " " 46% "
32 " " 24% "
39 " " 9.6% "

12-29 Pulled rods and tubing. Lane Wells Gun perforated the 5½" casing 4470-4560 with 180 - ½" holes, 6" centers. Stuck gun at 4465'.

12-30 Ran Bowen socket and fished for perforating gun.

12-31 Recovered gun.

1945

1-1 Cleaned out to 5036.

1-2 Landed 2⅛" tubing at 4450'.

1-3 53 Bbls. net, 32% cut

1-4 31 " " 56% "

1-5 31 " " 48% "

1-6 25 " " 57% "

1-7 36 " " 34% "

1-8 20 " " 57% "

1-9 16 " " 71% "

Produced 873 barrels net oil during 30 days in January 1945 for an average of 29 B/D net, 15.9° gravity, 47.7% cut.

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| | | | | | |

FORM 101
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
SEP 28 1945
LOS ANGELES, CALIFORNIA

## LOG AND CORE RECORD OF OIL OR GAS WELL

Operator The Texas Company Field Long Beach

Well No. Field #24 Sec. 19, T. 4S, R. 12W, S.B. B. & M.

## FORMATIONS PENETRATED BY WELL

| DEPTH TO Top of Formation | DEPTH TO Bottom of Formation | Thickness | Drilled or Cored | Recovery | DESCRIPTION |
|---|---|---|---|---|---|
| 0 | 391 | | Drilled | | Surface conglomerate |
| 391 | 2527 | | " | | Sand and shale |
| 2527 | 2547 | | Core #1 | 12' | ½' Soft black organic shale<br>1' Soft coarse gray sand<br>2½' Soft black sandy organic shale<br>8' Soft coarse gray sand becoming silty toward bottom. |
| 2547 | 2567 | | Core #2 | 5' | 1/6' Soft silty gray sand<br>1/6' Hard sandstone shell<br>1/6' Soft sandy black organic shale<br>2½' Soft mushy coarse gray sand. |
| 2567 | 2587 | | Core #3 | 6' | Soft silty gray sand. |
| 2587 | 2607 | | Core #4 | 14' | 1' Soft coarse gray sand<br>1' Soft black organic shale<br>3' Soft coarse gray sand<br>4' Soft black organic shale<br>1' Soft coarse gray sand<br>2' Soft black organic shale<br>2' Soft coarse gray sand |
| 2607 | 2627 | | Core #5 | 0 | No recovery. |
| 2627 | 2647 | | Core #6 | 3½' | ½' Medium hard, dark gray sandy shale<br>3' Fine soft gray sand. |
| 2647 | 2667 | | Core #7 | 12' | 6' Medium hard, dark gray shale. Forams No dips<br>2' Fine, loose, soft, gray sand<br>½' Medium hard dark gray shale<br>3' Fine, loose, soft, gray sand. Increasingly silty to bottom.<br>½' Very sandy, soft, dark gray shale |
| 2667 | 2687 | | Core #8 | 18' | Medium hard sand, micaceous medium gray shale. Forams. |

DIVISION OF OIL AND GAS
RECEIVED
SEP 28 1945

The Texas Company
Field #24

Long Beach LOS ANGELES, CALIFORNIA
19 4S 12W S.B.

| | | | | |
|---|---|---|---|---|
| 2687 | 2703 | Core #9 | 3' | Soft, fine, loose, gray sand. |
| 2703 | 2723 | Core #10 | 18' | Soft, coarse, loose, gray sand. Silty in parts. |
| 2723 | 2744 | Core #11 | 12' | Soft, coarse, loose, gray sand. |
| 2744 | 2765 | Core #12 | 12' | 3½' Coarse, mushy, gray sand .<br>½' Soft, dark gray, sandy shale.<br>3½' Coarse, mushy, gray sand.<br>4½' Soft, gray, sandy, micaceous shale. |
| 2765 | 2786 | Core #13 | 14' | 3' Soft, very sandy, dark gray, micaceous shale. Forams Wafery. Dips ∔ 20°.<br>4' Soft black, micaceous shale with good partings. Forams.<br>1' Soft, interbedded black shale and gray sand.<br>2' Medium to soft, micaceous shale with partings. Forams.<br>4' Soft, silty, gray sand. |
| 2786 | 2803 | Core #14 | 12' | Hard, massive, micaceous, sandy shale with a few irregular enclosures of gray sand. No dips. |
| 2803 | 2823 | Core #15 | 18' | ½' Massive, dark gray, sandy, micaceous shale<br>1' Medium grained soft gray sand.<br>9½' Massive, soft, sandy micaceous dark gray shale with irregular inclusions of coarse gray sand on bottom.<br>1' Coarse, soft, gray sand.<br>½' Massive shale as above.<br>5½' Coarse, soft, gray sand. |
| 2823 | 2844 | Core #16 | 13' | Medium hard, massive, sandy, micaceous gray shale. Forams. No dips. |
| 2844 | 2864 | Core #17 | 13' | 5' Shale as above.<br>4' Coarse, soft, gray sand.<br>1½' Shale as above.<br>¼' Coarse, soft, gray sand.<br>1' Shale as above.<br>1¼' Coarse, soft, gray sand. |
| 2864 | 2885 | Core #18 | 12' | 4' Massive, dark gray, micaceous shale. Forams. Very sandy.<br>1' Fine, loose, gray sand.<br>1' Shale as above.<br>2' Gray sand and shale. Crushed in core bbl.<br>1' Massive, hard, dark gray, micaceous shale. Forams.<br>1½' Fine, loose, gray sand.<br>1½' Massive, sandy, dark gray, micaceous shale. Forams. |

DIVISION OF OIL AND GAS
RECEIVED
SEP 28 1945
LOS ANGELES, CALIFORNIA

The Texas Company
Field #24

Long Beach
19 4S 12W S.B.

| | | | | |
|---|---|---|---|---|
| 2885 | 2906 | Core #19 | 8' | 1' Fine, loose, gray sand.<br>2' Very sandy, medium hard, gray shale.<br>1½' Medium mushy, gray sand.<br>1½' Sandy, gray shale with irregular inclusions of fine gray sand.<br>2' Coarse, loose, gray sand. |
| 2906 | 2924 | Core #20 | 12' | Hard, light gray, massive, sandy, micaceous shale. Forams. |
| 2924 | 5050 | Drilled | | Sand and shale. |

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| | | | | | |

DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL AND GAS

No. 782

La Calif. 10-23 1944

The Texas Co.
Name of Operator

Address

*This is to acknowledge the receipt of logs and similar records of wells on* Sec. 19 T. 4S R. 12W, SB B. & M., *as herewith enumerated by well numbers.*

*Logs* Field 24 Long Beach

*History*

*Core record*

*Subsequent work* electric log 9-23-44

R. D. BUSH, *State Oil and Gas Supervisor*

FORM 127
36195 7-44 3500 TRIP SPO

By E. B. Spencer *Deputy*

FORM 109-A

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Test of Water Shut-off
(FORMATION TESTER)

No. T 1-43277

Los Angeles 14, Calif. October 9, 1944

Mr. W. H. Loomis
Long Beach 1, Calif.
Agent for THE TEXAS COMPANY

DEAR SIR:

Your well No. "Field" 24, Sec. 19, T. 4 S., R. 12 W., S. B. B. & M. Long Beach Field, in Los Angeles County, was tested for water shut-off on September 26, 1944. Mr. Chas. Corwin, Inspector, designated by the supervisor, was present as prescribed in Sec. 3222 and 3223, Ch. 93, Stat. 1939; there were also present R. F. Cory, Engineer, and R. D. Crum, Driller.

Shut-off data: 5-1/2 in. 15.5 lb. casing was cemented at 5047 ft. on September 24, 1944 in 8-5/8" hole with 400 sacks of cement of which 5 sacks was left in casing. Casing record of well: 10-3/4" cem. 20'; 5-1/2" cem. 5047', c.p. 727', perf. 4 test holes at 4242', W.S.O. Junk (1st hole) drill collar and bit 3792'-3939'. T.D. 3939', plugged with cement 3939'-3792'.

Reported total depth present hole 5047 ft. Bridged with cement from 5047 ft. to 5042 ft. Cleaned out to 5042 ft. for this test. A pressure of xxx lb. was applied to the inside of casing for xxx min. without loss after cleaning out to xxx ft. A Halliburton tester was run into the hole on 2-1/2 in. drill pipe, with xxx ft. of water cushion, and packer set at 4220 ft. with tailpiece to 4240 ft. Tester valve, with 3/8" bean, was opened at 1:20 p.m. and remained open for xxx hr. and 30 min. During this interval there was an initial puff and no blow for the balance of the test.

THE INSPECTOR ARRIVED AT THE WELL AT 3:00 P.M. AND MR. CORY REPORTED:

1. The 5-1/2" casing was perforated with four, 1/2" holes at 4242'.
2. A Halliburton tester was run into the hole as noted above.

THE INSPECTOR NOTED:

1. When the drill pipe was removed 27' of medium drilling fluid was found in the drill pipe above the tester, equivalent to 0.2 bbl.
2. The recording pressure bomb chart showed that the tester valve was open 30 minutes.

The test was completed at 3:40 p.m.

THE SHUT-OFF ABOVE 4242' IS APPROVED.

CC:OK

cc- Company
Long Beach

W/L

R. D. BUSH, State Oil and Gas Supervisor

By E. H. Musser, Deputy

36194 7-44 7500
STATE PRINTING OFFICE

FORM 109-D

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T 1-43258

Los Angeles 14, Calif. October 2, 1944

Mr. W. H. Loomis
Long Beach 1, Calif.
Agent for THE TEXAS COMPANY

DEAR SIR:

Operations at your well No. "Field" 24 Sec. 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by A. Pfeil, Inspector, representative of the supervisor, on September 23, 1944. There was also present D. M. Smith, Engineer, and M. M. French, Drilling Foreman.

Casing Record 10-3/4" cem. 20'; 5-1/2" cem. 5047', c.p. 727'; T.D. 5047'.

Junk (1st hole) drill collar and bit 3792'-3939'; T.D. 3939', plugged with cement 3939'-3792'.

The operations were performed for the purpose of demonstrating that the known surface waters are adequately protected.

The inspector arrived at the well at 9:10 p.m and Mr. Smith reported:

1. An 8-5/8" rotary hole was drilled from 20' to 5047'.
2. Electrical core readings showed the top of the Brown zone 4252'.
3. On September 24, 1944, the 5-1/2", 15.5 lb. casing with a Hayward collar at 727', was cemented with 400 sacks of cement.

THE INSPECTOR NOTED:

1. The 5-1/2" casing was cemented through ports at 727' with 200 sacks of cement.
2. The cement was displaced from the casing with 98 cubic feet of drilling fluid.
3. The final pressure was 200 lb.
4. After closing the cementing ports, a pressure of 700 lb. was applied and held for 10 minutes without loss.

The cementing operations were completed at 11:30 p.m.

THE CEMENTING OPERATIONS AS WITNESSED AND REPORTED ARE APPROVED AS INDICATING THAT THE KNOWN SURFACE WATERS ARE ADEQUATELY PROTECTED.

AP:OH

cc- Company
Long Beach

R/C 213

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Wiesser Deputy

28381 10-43 15M
STATE PRINTING OFFICE

FORM 111.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Proposed Operations

No. P 1-39926

Los Angeles 14, Calif. August 17, 1944

MR. W. H. Loomis

Long Beach 1, Calif.

121

Agent for THE TEXAS COMPANY

DEAR SIR:

Your proposal to drill Well No. "Field" 24,

Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, Los Angeles County,

dated Aug. 10, 1944, received Aug. 14, 1944, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES:

"The well is 370' S. along ℄ Calif. Ave. from ℄ 33rd St. and 260' W'ly at 90°
The elevation of the derrick floor / ground above sea level is * feet.
We estimate that the first productive oil or gas sand should be encountered at a depth of about 4250 feet."

* See Form 100

PROPOSAL:

"We propose to use the following strings of casing, either cementing or landing them as herein indicated:

| Size of Casing | Weight | Grade and Type | Depth | Landed or Cemented |
|---|---|---|---|---|
| 5-1/2" | 15.5 | J-55 Seamless cmtd. through Hayward collar | 5050<br>700 | Cmtd. w/400<br>w/200 |

Well is to be drilled with rotary tools.
It is understood that if changes in this plan become necessary we are to notify you before cementing or landing casing."

DECISION:

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. Mud fluid consistent with good drilling practice shall be used and the column of mud fluid maintained at all times to the surface, particularly while pulling the drill pipe.
2. Any hole to be sidetracked in any oil zone shall be filled with cement, if possible.
3. This division shall be consulted before running the 5-1/2" casing.
4. THIS DIVISION SHALL BE NOTIFIED TO WITNESS:
   (a) The cementing of the 5-1/2" casing through the upper ports. Any subsequent testing required will be specified at that time.
   (b) A test of the effectiveness of the 5-1/2" shut-off through holes opposite the Brown zone shale.

ERMA:OH

cc- P. A. W.
Company
Long Beach

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Musser Deputy
EHB

Blanket bond No. 130253-C

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
AUG 14 1944
LOS ANGELES, CALIFORNIA

## Notice of Intention to Drill New Well

This notice must be given and surety bond filed before drilling begins

037-11549

TEXACO INC.

Long Beach 1, Calif. August 10, 1944

DIVISION OF OIL AND GAS

Los Angeles 14, Calif.

"Field "24

In compliance with Section 3203, Chapter 93, Statutes of 1939, notice is hereby given that it is our intention to commence the work of drilling well No. "Field" #24, Sec. 19, T. 4-S, R. 12-W, S.B. B. & M., Long Beach Field, Los Angeles County.

Lease consists of

The well is 370' S. along ℄ Calif. Ave. from ℄ 33rd St. and 260' W'ly at 90° feet N. or S., and feet E. or W. from

(Give location in distance from section corners or other corners of legal subdivision)

The elevation of the derrick floor / ground above sea level is * 96.52 feet. * see form 100

We estimate that the first productive oil or gas sand should be encountered at a depth of about 4250 feet.

We propose to use the following strings of casing, either cementing or landing them as herein indicated:

| Size of Casing, Inches | Weight, Lb. Per Foot | Grade and Type | Depth | Landed or Cemented |
|---|---|---|---|---|
| 5-1/2" | 15.5 | J-55 Seamless | 5050 | Cmtd. w/400 |
| | | cmtd. through Hayward collar | 700 | w/200 |
| | | | | |
| | | | | |

Well is to be drilled with rotary ~~xxxxx~~ tools.

It is understood that if changes in this plan become necessary we are to notify you before cementing or landing casing.

Address Box 320, Long Beach 1, Calif. THE TEXAS COMPANY
(Name of Operator)

Telephone number 416-21 By H. O. Woodruff
District Engineer

ADDRESS NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

PAW

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| 20 | | | | | |
| Aug 14 1944 G.L. | 8-14-44 G.L. | Ents | Blanket 130253-C | Ents | Ents |

# Phase II Environmental Site Assessment

MEARNS CONSULTING LLC
ENVIRONMENTAL CONSULTANTS
RISK ASSESSORS

738 Ashland Avenue, Santa Monica, California 90405
Cell 310.403.1921
Tel 310.396.9606 Fax 310.396.6878
Mearns.Consulting@verizon.net
www.MearnsConsulting.com

# Phase II Environmental Site Assessment
# 950 East 33rd$^{th}$ Street
# 3177 California Avenue
# Signal Hill, California 90755

## March 11, 2020

**Prepared for:**

**Venture Point Inc.**
**4685 MacArthur Court**
**Newport Beach, California 92660**

**Signal Hill Petroleum Inc.**
**2633 Cherry Avenue**
**Signal Hill, California 90755**

**Prepared by:**

**Mearns Consulting LLC**
**738 Ashland Avenue**
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March 11, 2020

***via email***

Messrs. Tom Lee and John Clement
Venture Point, Inc.
2865 MacArthur Court
Newport Beach, California 92660

Mr. Kevin Laney
Signal Hill Petroleum, Inc.
2633 Cherry Avenue
Signal Hill, California 90755

RE: **Phase II Environmental Site Assessment Report**
**950 East 33rd Street, 3177 California Avenue, Signal Hill, California 90755**

Dear Messrs. Lee, Clement and Laney:

This Phase II Environmental Site Assessment (Phase II ESA) report has been prepared for the property located at 950 East 33rd Street and 3177 California Avenue in Signal Hill California 90755 (the site) pursuant to the City of Signal Hill Project Development Guide (June 20, 2017).

The site is being redeveloped as a commercial development, including an addition to the existing 135,911 square foot retail store, a 5,000 square foot shop, a 5,000 square foot drive-through restaurant and a 59,115 square foot storage facility.

The 950 East 33rd Street portion of the site has the following recognized environmental conditions per the Phase I ESA: two previously abandoned oil wells, aboveground storage tanks and visible soil impacts in the 1928, 1947 and 1953 aerial photographs, the former Tesoro Service Station located at the northwestern corner of the site that has caused soil matrix, soil vapor and groundwater contamination. This Phase II ESA was prepared to investigate these recognized environmental conditions.

The results of this Phase II ESA indicate a human health risk assessment including vapor intrusion assessment should be prepared to address the detected concentrations of metals and semi-volatile organics in site soils and volatile organic compounds in soil vapor that exceed their respective environmental screening level thresholds.

Should you have any questions or desire additional information, please contact me at your earliest convenience at 310.403.1921.

Sincerely,

Scott Fagan

Scott Fagan PG #4289

PROFESSIONAL GEOLOGIST
SCOTT R. FAGAN
NO. 4289
3/11/20
STATE OF CALIFORNIA

x Susan Mearns

Susan L. Mearns, Ph.D.

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**Phase II Environmental Site Assessment**
**950 East 33rd Street**
**3177 California Avenue**
**Signal Hill, California 90755**

**Background**
Mearns Consulting LLC performed a Phase I Environmental Site Assessment (Phase I ESA) on the portion of the 9.067-acre property located at 950 East 33rd Street, Signal Hill, California (the site) in February 2020.

The Phase I ESA had the following conclusions:

- The 9.067-acre site was an oil field since at least 1924; there are two previously abandoned oil wells onsite. Historically, the site had these two oil wells, aboveground storage tanks and oil field activities that visually impacted the land.

- The Tesoro Service Station formerly located at the northwestern corner of the site has caused soil matrix, soil vapor and groundwater contamination.

Recognized Environmental Conditions onsite include: (1) the two previously abandoned oil wells; (2) the aboveground storage tanks and visible soil impacts in the 1928, 1947 and 1953 aerial photographs; and (3) the former Tesoro Service Station.

The Phase I ESA had the following recommendations:

Suspect asbestos containing building materials and lead-based paint should be tested and appropriately abated by a licensed contractor prior to demolition of the building if warranted.

A Limited Phase II Environmental Site Assessment (Phase II ESA) should be performed on the site. The Phase II ESA should include soil matrix and soil vapor sampling adjacent to the former Tesoro Service Station at the planned location of a new drive-thru restaurant, adjacent to the previously abandoned oil wells, at the planned location of an additional 11,500 square feet of retail, and at the planned location of 5,000 square feet of shopping.

A methane assessment of the site should be conducted pursuant to the City of Signal Hill Oil and Gas Code §16.24.080 and Project Development Guide (June 20, 2017).

A baseline human health risk assessment should be performed with the data generated from the Phase II ESA.

As the site contains abandoned oil wells redevelopment of the site will require City oversight pursuant to the City of Signal Hill Oil and Gas Code §16.24 and Project Development Guide (June 20, 2017).

A soil management plan should be prepared prior to any grading activities to be conducted onsite. This soil management plan should provide instructions for the contractor to implement in the event discolored or odiferous soils are discovered during any grading operations.

**Phase II ESA**

Based on the conclusions, including the identification of Recognized Environmental Conditions, of the Phase I ESA, Mearns Consulting LLC conducted a Phase II ESA.

Mearns Consulting LLC delineated the work areas with white spray paint and notified Underground Service Alert to clear public utility lines as required by law on February 11, 2020, at least two business days prior to boring activities conducted on February 18, 2020 (ticket numbers B200420334-00B and B200420342-00B).

Prior to drilling, all locations were excavated to a minimum depth of 5-feet bgs using a hand auger to prevent damage to possible unidentified subsurface utilities.

Gregg Drilling, LLC advanced the borings using a track mounted direct push rig. The sampling system was appropriately cleaned between each borehole. Rinsate generated from cleaning was appropriately disposed.

Mearns Consulting LLC collected soil matrix samples pursuant to SW846 from nine locations (SV1-SV9) at depths of 5-feet below ground surface (bgs) and 10-feet bgs. Soil samples were collected in acetate sleeves with Teflon liners and end caps with minimal headspace, logged onto a chain-of-custody form and stored in a cooler at 4ºC until delivered under chain of custody to Sierra Analytical Labs (a State of California Department of Health Services ELAP accredited laboratory; ELAP No. 2320). Analyses requested were total hydrocarbons-gasoline range (TPH-g), TPH-diesel range (TPH-d), TPH-oil range (TPH-o), speciated carbon chains via USEPA method GC/FID 8015B, total threshold limit concentration (TTLC) metals including hexavalent chromium via USEPA methods 6000/7000, volatile organic compounds (VOCs) via USEPA 8260B, collected via USEPA 5035B in the field by placing 5g of soil into volatile organic analyte (VOA) vials to which preservative had been added and semi-volatile organic compounds (SVOCs) via USEPA 8270C. Soil matrix analytical results are included as Appendix A.

These soil borings were then developed as dual-nested soil vapor probes at 5-feet and 10-feet bgs (SV1-SV9) in accordance with *Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance)*, DTSC, October 2011 and the *Advisory Active Soil Gas Investigations*, DTSC, LARWQCB, SFRWQCB, June 2015.

A new section of ¼-inch diameter nylaflow tubing with a new 6-inch stainless steel probe tip at the terminal end was inserted into the borehole to the desired sampling depth. One-inch diameter polyvinyl chloride (PVC) casing was used as a guide for the tubing to ensure that the desired sampling depth was achieved. Sand was poured into the boring annulus to form an approximately one-foot long sand pack around the probe tip, at which time the PVC piping was withdrawn. Approximately one foot of dry, granular bentonite was placed atop the sand pack and the remainder of the borehole was backfilled with hydrated bentonite to the ground surface to form a seal. The sampling end of the tubing was fitted with a three-way valve and the probe was labeled for identification. A diagram of the triple nested probes is provided as Figure 5.

Soil gas samples were collected in general accordance with the July 2015 Department of Toxic Substances Control (DTSC) and Los Angeles Regional Water Quality Control Board (LARWQCB) "Advisory – Active Soil Gas Investigations."

Each probe was allowed to equilibrate for a minimum of 48-hours after installation prior to sampling by a mobile laboratory. Soil vapor samples were collected in glass gas-tight syringes equipped with Teflon plungers. A tracer gas mixture of n-pentane, n-hexane, and n-heptane was placed at the tubing-surface interface before sampling. These compounds were analyzed during the 8260B analytical run to determine if there were surface leaks into the subsurface due to improper installation of the probe. The sampling rate was approximately 200 cc/min, except when noted differently on the chain of custody record, using a glass gas-tight syringe. Purging was completed using a pump set at approximately 200 cc/min, except when noted differently on the chain of custody record. A default of

three purge volumes was used as recommended by July 2015 DTSC/RWQCB guidance documents. Prior to purging and sampling of soil vapor at each location, a shut-in test was conducted to check for leaks in the aboveground fittings. The shut-in test was performed on the aboveground apparatus by evacuating the line to a vacuum of 100 inches of water, sealing the entire system and watching the vacuum for at least one minute. A vacuum gauge attached in parallel to the apparatus measured the vacuum. If there is any observable loss of vacuum, the fittings were adjusted as needed until the vacuum did not change noticeably. The soil gas sample was then collected. No flow conditions occur when a sampling rate greater than 10 mL/min cannot be maintained without applying a vacuum greater than 100 inches of water to the sampling train. The sampling train is left at a vacuum for no less than three minutes. If the vacuum does not subside appreciably after three minutes, the sample location is determined to be a no flow sample.

Twenty soil vapor samples were collected from these soil vapor probes by a Jones Environmental, Inc. (ELAP 2882) chemist and analyzed in a mobile laboratory on February 21, 2020. Two duplicates, one per 10 soil vapor samples, were collected and analyzed by the chemist. Soil vapor analytical results are included as Appendix B.

All drilling, logging and sampling activities were conducted by or under the direct supervision of a California-Professional Geologist, and in accordance with California Well Standards presented in the Department of Water Resources (DWR) Bulletins 74-81 and 74-90. The Site Geology section and boring logs were prepared by Mr. Scott R. Fagan, a State of California Professional Geologist PG #4289. Boring logs are included as Appendix C.

**Site Geology** - The site is located in the Los Angeles Coastal Plain near the northwest side of the Signal Hill uplift in Signal Hill, California. The Signal Hill Uplift is the surface expression of the east-west trending Newport-Inglewood fault zone. The site is just north of the Cherry Hill Fault, the fault with the largest vertical offset in the Newport Inglewood fault complex.

Surface sediments in this area are characterized as sand, silt, gravel and clays of the Lakewood Formation within the Upper Pleistocene Series of the Quaternary System. Sediments encountered during the investigation were silt and clay.

The closest aquifer is the Gage aquifer at approximately 50-75 feet from the surface. Groundwater was not encountered during this investigation at 10 feet bgs.

**Soil Vapor Analytical Results** – The following VOCs were detected in soil vapor: benzene, chloroform, ethylbenzene, n-propylbenzene, tetrachloroethene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, m,p-xylenes and o-xylene. Detected concentrations of benzene, chloroform and ethylbenzene did exceed their respective San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels (ESLs) (Table 1 and Figure 3). Detected concentrations of the remaining VOCs in soil vapor did not exceed their respective ESLs.

**Soil Matrix Analytical Results** – The following metals were detected in concentrations greater than their respective reporting limits and less than their respective ESLs, barium, cobalt, trivalent chromium, copper, mercury, nickel, silver and zinc. The following metals were detected at concentrations greater than their respective ESLs, lead and vanadium (Table 2 and Figure 4). Although arsenic was not detected in concentrations greater than its reporting limit, the reporting limit of 7.7 is greater than the ESL, 0.67 milligrams per kilogram (mg/kg). However the reporting limit is less than the regulatory accepted background concentration of arsenic in Southern California soils, 10 mg/kg (Table 2).

Total volatile petroleum hydrocarbons - diesel range (TPH-d) and TPH-oil range (TPH-o) were detected in two soil borings at depths of 5-feet bgs at concentrations greater than their respective reporting limits and less than their respective ESLs. Seven SVOCs: benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, fluoranthene, phenanthrene and pyrene were detected once in the soil matrix (SV7-5'). Benzo(a)pyrene and

fluoranthene were detected at concentrations greater than their respective ESLs, the remaining SVOCs were detected at concentrations less than their respective ESLs (Table 3 and Figure 4).

**Conclusions**

Total petroleum hydrocarbons, carbon chains and SVOCs were detected in the soil matrix, and fuel related VOCs, were detected in the soil vapor (Figures 3 and 4).

Benzene, chloroform and ethylbenzene were detected in soil vapor at concentrations greater than their respective ESLs (Figure 3).

The metals, lead and vanadium, and the SVOCs, benzo(a)pyrene and fluoranthene were detected at concentrations greater than their respective ESLs (Figure 4).

**Recommendations**

As the proposed future development for the site is commercial, a human health risk assessment including vapor intrusion is warranted based on the results of this Phase II ESA. The human health risk assessment should include an evaluation of potential health impacts to future commercial and construction workers.

The Phase I ESA recommendations: building material sampling of the existing structures prior to renovation for appropriate abatement and disposal, if necessary, a methane assessment pursuant to the City of Signal Hill Oil and Gas Code §16.24.080 and Project Development Guide (June 20, 2017) and a soil management plan are warranted.

**References**

City of Signal Hill. June 2, 2015. Oil and Gas Code.

City of Signal Hill. June 20, 2017. Project Development Guide.

Mearns Consulting LLC. February 12, 2020. Phase I Environmental Site Assessment, 950 East 33rd Street, Signal Hill, California 90755. Two volumes.

San Francisco Bay Regional Water Quality Control Board. 2019. Rev. 2. Environmental Screening Levels.

USEPA. November 2019. Regional Screening Levels.

# TABLES

## Table 1 - Soil Vapor Analytical Results

| SAMPLE ID | DATE SAMPLED | Benzene µg/m³ | Chloroform µg/m³ | Ethylbenzene µg/m³ | n-Propylbenzene µg/m³ | Tetrachloroethene µg/m³ | Toluene µg/m³ | 1,2,4-Trimethylbenzene µg/m³ | 1,3,5-Trimethylbenzene µg/m³ | m,p-xylenes µg/m³ | o-xylene µg/m³ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ESL | | 3.2 | 4.1 | 37 | | 15 | 10,000 | | | 3,500 | 3,500 |
| SV1-5' | 2/21/20 | <8 | **12** | 18 | <8 | <8 | 21 | 8 | 9 | 100 | 34 |
| SV1-10' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV2-5' | 2/21/20 | <8 | <8 | <8 | <8 | 8 | 33 | 11 | <8 | <16 | <8 |
| SV2-10' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | 11 | <8 | <8 | <16 | <8 |
| SV3-5' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | 32 | 11 | <8 | <16 | <8 |
| SV3-10' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV4-5' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | 10 | 16 | <8 | <16 | <8 |
| SV4-10' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV4-10' REP | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV5-5' | 2/21/20 | <8 | 8 | <8 | <8 | <8 | <8 | 13 | <8 | 19 | 9 |
| SV5-10' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV6-5' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV6-5' REP | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV6-10 | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV7-5' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV7-10' | 2/21/20 | **19** | **11** | 23 | 20 | <8 | 45 | 123 | 40 | 76 | 40 |
| SV8-5' | 2/21/20 | <8 | **34** | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV8-10' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV9-5' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV9-10' | 2/21/20 | **19** | **20** | **99** | <8 | <8 | 27 | <8 | <8 | 322 | 151 |

Notes:

µg/m³ = micrograms per cubic meter

<8 = concentration is less than the Reporting Limit (8), i.e., not detected (ND)

SV1-5' = Soil Vapor Probe 1, 5' bgs

BOLD = detected concentration exceeds ESL

Analytical results are included as Appendix A

Only detected concentrations of VOCs are presented in this table. All other VOCs were ND.

ESL = San Francisco Regional Water Quality Control Board Environmental Screening Level 2019 (Rev. 2)

Blank Cell = ESL Not Available

# Table 2 - Metals Analytical Results in Soil Matrix

| SAMPLE ID | DATE SAMPLED | As mg/kg | Ba mg/kg | Co mg/kg | $Cr^{+3}$ mg/kg | Cu mg/kg | Hg mg/kg | Ni mg/kg | Pb mg/kg | Ag mg/kg | V mg/kg | Zn mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ESL | | 0.67 | 390 | 23 | 120,000 | 180 | 13 | 86 | 32 | 25 | 18 | 340 |
| SV1-5 | 2/18/20 | **<7.7** | 66 | 6.6 | 15 | 12 | <0.05 | 10 | 2.6 | <1 | **22** | 26 |
| SV1-10 | 2/18/20 | **<7.7** | 44 | 4.7 | 10 | <7 | <0.06 | <6.8 | <2.6 | <1 | 16 | 23 |
| SV2-5 | 2/18/20 | **<7.7** | 42 | 5 | 16 | 7.3 | <0.06 | 7.5 | 3 | <1 | **34** | 21 |
| SV2-10 | 2/18/20 | **<7.7** | 35 | 4.1 | 7.6 | <7 | <0.05 | 7.4 | <2.6 | <1 | 13 | 19 |
| SV3-5 | 2/18/20 | **<7.7** | 53 | 7.9 | 21 | 11 | <0.06 | 16 | 3.5 | <1 | **28** | 35 |
| SV3-10 | 2/18/20 | **<7.7** | 30 | 3.8 | 6.9 | <7 | <0.05 | <6.8 | <2.6 | <1 | 11 | 17 |
| SV4-5 | 2/18/20 | **<7.7** | 110 | 7 | 14 | 27 | 0.2 | 10 | **33** | 1.1 | **23** | 110 |
| SV4-10 | 2/18/20 | **<7.7** | 33 | 5.5 | 14 | 8.8 | <0.06 | 9.2 | <2.6 | 1 | **23** | 29 |
| SV5-5 | 2/18/20 | **<7.7** | 130 | 8.3 | 17 | 15 | 0.06 | 12 | 13 | 1.2 | **28** | 76 |
| SV5-10 | 2/18/20 | **<7.7** | 63 | 7.6 | 19 | 12 | <0.05 | 15 | 3.5 | 1.1 | **26** | 41 |
| SV6-5 | 2/18/20 | **<7.7** | 110 | 5 | 11 | 7.8 | <0.06 | 7.1 | 6.9 | <1 | 18 | 30 |
| SV6-10 | 2/18/20 | **<7.7** | 74 | 7.7 | 24 | 11 | <0.06 | 11 | 5.4 | 1.5 | **32** | 44 |
| SV7-5 | 2/18/20 | **<7.7** | 85 | 4.5 | 9.8 | 7 | 0.09 | <6.8 | 8.4 | <1 | 17 | 36 |
| SV7-10 | 2/18/20 | **<7.7** | 240 | 6.5 | 27 | 11 | <0.06 | 10 | 3.7 | 1.1 | **25** | 35 |
| SV8-5 | 2/18/20 | **<7.7** | 86 | 5.8 | 12 | 8.4 | <0.06 | 8.2 | 6.8 | <1 | **20** | 32 |
| SV8-10 | 2/18/20 | **<7.7** | 87 | 10 | 28 | 19 | <0.05 | 22 | 5.7 | 1.1 | **34** | 57 |
| SV9-5 | 2/18/20 | **<7.7** | 130 | 6.3 | 14 | 9.7 | 0.09 | 9.1 | 7.1 | <1 | **24** | 38 |
| SV9-10 | 2/18/20 | **<7.7** | 64 | 7 | 25 | 11 | <0.06 | 14 | 4.6 | 1 | **38** | 39 |

Notes:
mg/kg = milligram per kilogram
As = arsenic, Ba = barium, Co = cobalt, $Cr^{+3}$ = trivalent chromium, Cu = copper, Hg = mercury, Ni = nickel, Pb = lead, Ag = silver, V = vanadium
Zn = zinc
<7.7 = concentration is less than the Reporting Limit (7.7), i.e., not detected (ND)
SV1-5 = Soil Boring1, 5-feet below ground surface (bgs).
BOLD = value exceeds the ESL
Analytical results are included as Appendix B
Soil was collected from 5-feet bgs and 10-feet bgs from the same boring.
Only detected concentrations of metals are presented in this table. All other metals were ND.
ESL = San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels 2019 (Rev. 2)

**Table 3 - Total Petroleum Hydrocarbons and SemiVolatile Organic Compounds Analytical Results in Soil Matrix**

| Sample ID | Date Sampled | TPHd mg/kg | TPHo mg/kg | <C8 mg/kg | C8-C9 mg/kg | C9-C10 mg/kg | C10-C11 mg/kg | C11-C12 mg/kg | C12-C14 mg/kg | C14-C16 mg/kg | C16-C18 mg/kg | C18-C20 mg/kg | C20-C24 mg/kg | C24-C28 mg/kg | C28-C32 mg/kg | C>32 mg/kg | C7-C36 mg/kg | Benzo(b)fluoranthene mg/kg | Benzo(k)fluoranthene mg/kg | Benzo(a)pyrene mg/kg | Chrysene mg/kg | Fluoranthene mg/kg | Phenanthrene mg/kg | Pyrene mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RSL*r Aromatic* | | 97 | 2,400 | | | | | | | | | | | | | | | | | | | | | |
| ESL | | | | | | | | | | | | | | | | | | 1.1 | 2.8 | 0.11 | 2.2 | 0.69 | 7.8 | 45 |
| SV1-5 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV1-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV2-5 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV2-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV3-5 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV3-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV4-5 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV4-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV5-5 | 2/18/20 | 48 | 45 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 8 | 9.9 | 19 | 15 | 8.3 | 3.9 | 64 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV5-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV6-5 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV6-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV7-5 | 2/18/20 | 69 | 33 | <1 | <1 | <1 | <1 | <1 | <1 | 33 | 8.2 | 9.5 | 16 | 12 | 5.8 | 2.3 | 87 | 0.67 | 0.65 | **0.53** | 0.7 | **1.1** | 0.63 | 2.5 |
| SV7-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV8-5 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV8-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV9-5 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV9-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |

Notes:

TPH-d = Total Petroleum Hydrocarbons-diesel range C10-C24

TPH-o = Total Petroleum Hydrocarbons-oil range C22-C36

mg/kg = milligram per kilogram

<1 = concentration is less than the Reporting Limit (1), i.e., not detected (ND)

SV1-5 = Soil Boring1, 5-feet below ground surface (bgs).

Analytical results are included as Appendix B

BOLD = detected concentrations exceeded the respective ESL

Soil was collected from 5-feet bgs and 10-feet bgs from the same boring

RSL*r* = USEPA Regional Screening Level for residential soils (November 2019)

ESL = San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels 2019 (Rev. 2)

# FIGURES




EXPLANATION

Previously abandoned oil wells

A12, A17, AW-2, and A22 are operating oil wells

N

0 500 feet

Base map: Google Earth Pro, 2019

**Figure 1: Site Location Map**
950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC




EXPLANATION

Previously abandoned oil wells

A12, A17, AW-2, and A22 are operating oil wells

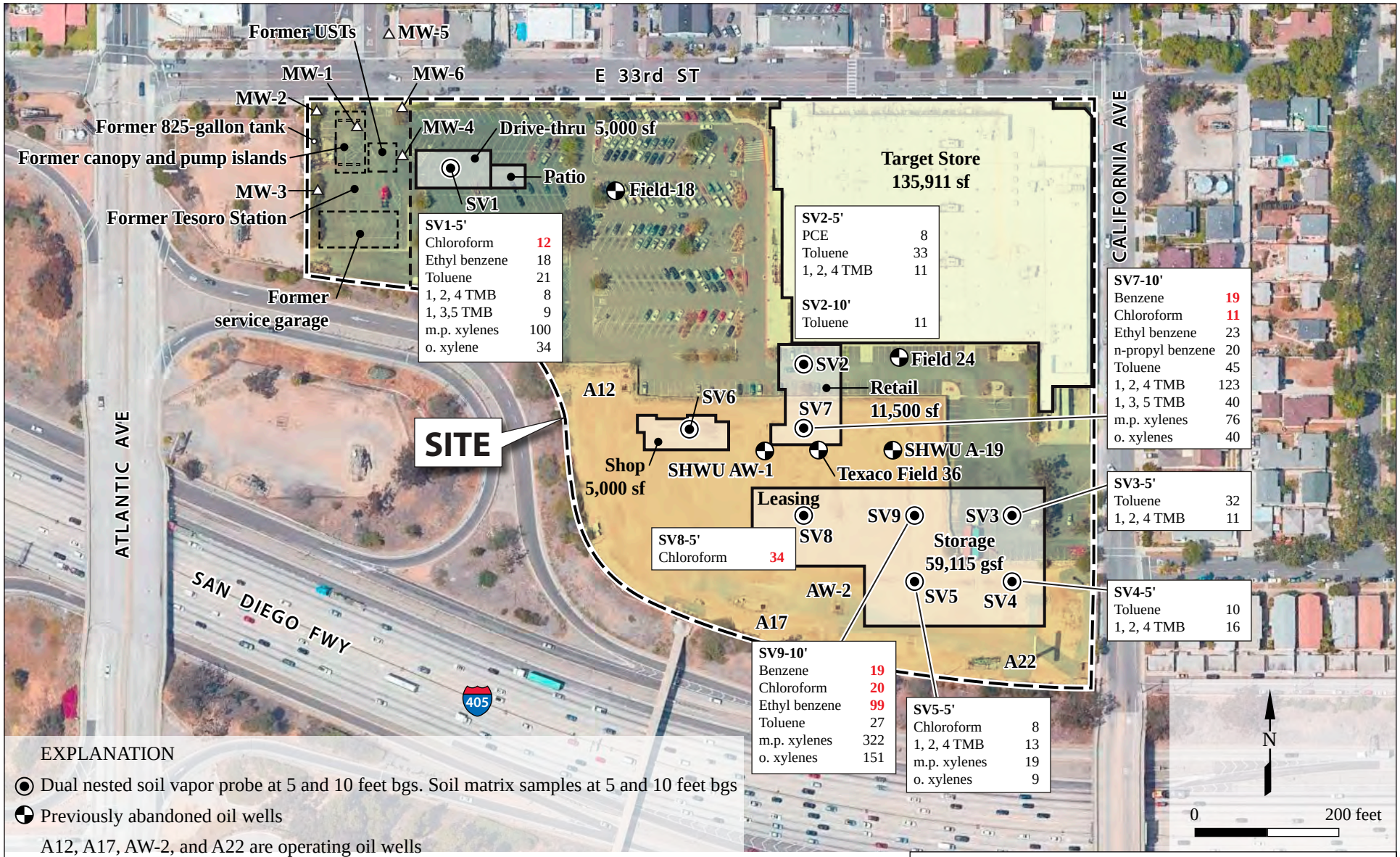
N

0 200 feet

Base map: Google Earth Pro, 2019

**Figure 2: Site Map**
950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC




EXPLANATION

◉ Dual nested soil vapor probe at 5 and 10 feet bgs. Soil matrix samples at 5 and 10 feet bgs

◓ Previously abandoned oil wells

A12, A17, AW-2, and A22 are operating oil wells

△ Monitoring wells

PCE = Tetrachloroethene

1, 2, 4 TMB = 1, 2, 4 Trimethyl benzene

1,3, 5 TMB = 1, 3, 5 Trimethyl benzene

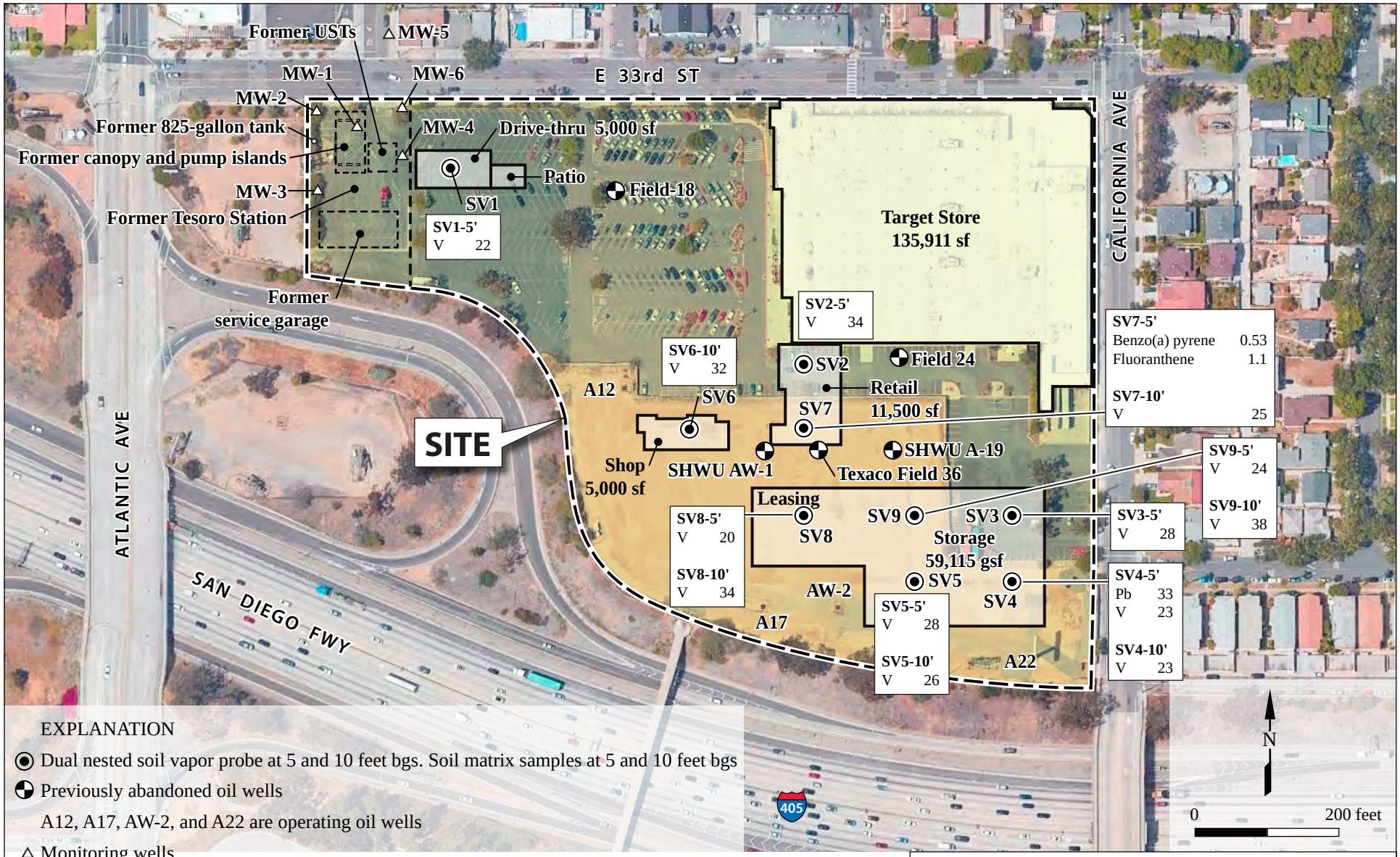
Units are micrograms per cubic meter ($\mu g/m^3$)

**Red** numbers = Detected concentration exceeds SFRWQCB ESL

Base map:
Google Earth Pro, 2019

**Figure 3: Soil Vapor Analytical Results**
950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC




EXPLANATION

◉ Dual nested soil vapor probe at 5 and 10 feet bgs. Soil matrix samples at 5 and 10 feet bgs

◓ Previously abandoned oil wells

A12, A17, AW-2, and A22 are operating oil wells

△ Monitoring wells

PB = Lead

V = Vanadium

Units are milligrams per kilogram (mg/kg)

RSLr = USEPA Regional Screening Levels for Residential Soils (November 2019)

ESL = San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels, 2019) (Rev. 2)

Base map: Google Earth Pro, 2019

**Figure 4: Metals and SVOCs Analytical Results Exceeding Thresholds**
950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC

TRIPLE NESTED PROBE

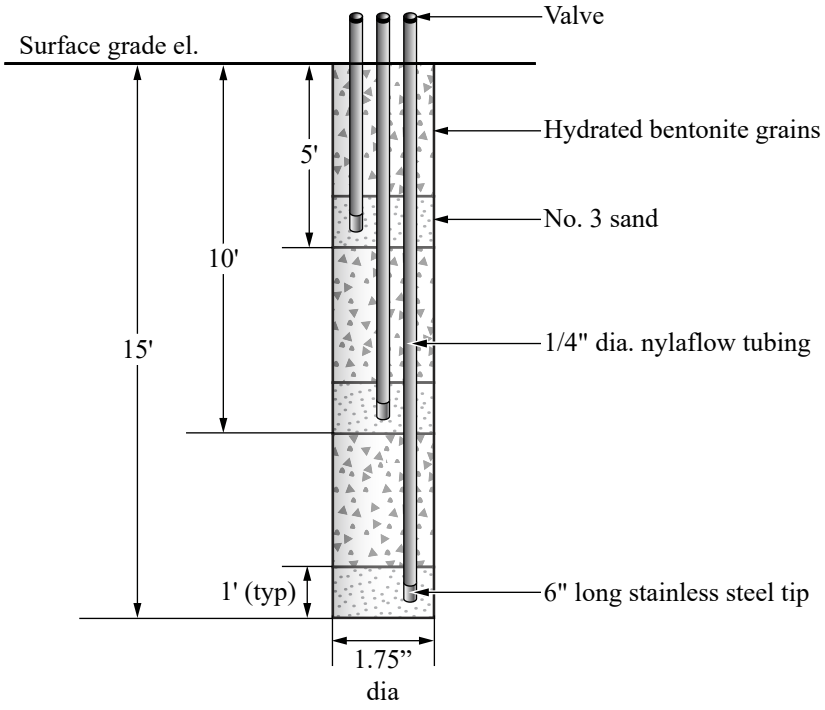



**Figure 5: Soil Vapor Probe**
950 East 33rd Street,
3177 California Avenue
Signal Hill, CA 90755

Date: 02/18/20

Not to scale

Mearns Consulting LLC

# APPENDIX A

## Sierra Analytical Labs, Inc.
## Soil Matrix Analytical Data
## February 18, 2020

26 February 2020

Susan Mearns
Mearns Consulting LLC
738 Ashland Avenue
Santa Monica, CA 90405

RE:950 E. 33rd & 3177 California Ave.

Work Order No.: 2002212

Attached are the results of the analyses for samples received by the laboratory on 02/18/20 16:10.

The samples were received by Sierra Analytical Labs, Inc. with a chain of custody record attached or completed at the submittal of the samples.

The analyses were performed according to the prescribed method as outlined by EPA, Standard Methods, and A.S.T.M.

The remaining portions of the samples will be disposed of within 30 days from the date of this report.
If you require any additional retaining time, please advise us.

Sincerely,

Richard K. Forsyth

Richard K. Forsyth

Laboratory Director

Sierra Analytical Labs, Inc. is certified by the California Department of Health Services (DOHS),
Environmental Laboratory Accredidation Program (ELAP) No. 2320.

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

**ANALYTICAL REPORT FOR SAMPLES**

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| SB1-5 | 2002212-01 | Soil | 02/18/20 08:17 | 02/18/20 16:10 |
| SB1-10 | 2002212-02 | Soil | 02/18/20 08:17 | 02/18/20 16:10 |
| SB2-5 | 2002212-03 | Soil | 02/18/20 09:17 | 02/18/20 16:10 |
| SB2-10 | 2002212-04 | Soil | 02/18/20 09:24 | 02/18/20 16:10 |
| SB3-5 | 2002212-05 | Soil | 02/18/20 10:14 | 02/18/20 16:10 |
| SB3-10 | 2002212-06 | Soil | 02/18/20 10:21 | 02/18/20 16:10 |
| SB4-5 | 2002212-07 | Soil | 02/18/20 11:09 | 02/18/20 16:10 |
| SB4-10 | 2002212-08 | Soil | 02/18/20 11:16 | 02/18/20 16:10 |
| SB5-5 | 2002212-09 | Soil | 02/18/20 11:42 | 02/18/20 16:10 |
| SB5-10 | 2002212-10 | Soil | 02/18/20 11:49 | 02/18/20 16:10 |
| SB6-5 | 2002212-11 | Soil | 02/18/20 13:01 | 02/18/20 16:10 |
| SB6-10 | 2002212-12 | Soil | 02/18/20 13:10 | 02/18/20 16:10 |
| SB7-5 | 2002212-13 | Soil | 02/18/20 13:41 | 02/18/20 16:10 |
| SB7-10 | 2002212-14 | Soil | 02/18/20 13:48 | 02/18/20 16:10 |
| SB8-5 | 2002212-15 | Soil | 02/18/20 14:22 | 02/18/20 16:10 |
| SB8-10 | 2002212-16 | Soil | 02/18/20 14:35 | 02/18/20 16:10 |
| SB9-5 | 2002212-17 | Soil | 02/18/20 15:08 | 02/18/20 16:10 |
| SB9-10 | 2002212-18 | Soil | 02/18/20 15:19 | 02/18/20 16:10 |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

26052 MERIT CIRCLE SUITE 105, LAGUNA HILLS, CALIFORNIA 92653
TELEPHONE: (949) 348-9389 FAX: (949) 348-9115
E-MAIL: SIERRALABS @ SIERRALABS.NET

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **66** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **6.6** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **15** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **12** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.05 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **10** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **2.6** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **22** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **26** | 4.0 | " | " | " | " | " | " | |
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **44** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **4.7** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **10** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| Copper | ND | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Nickel | ND | 6.8 | " | " | " | " | " | " | |
| Lead | ND | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **16** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **23** | 4.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **42** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **5.0** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **16** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **7.3** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **7.5** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **3.0** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **34** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **21** | 4.0 | " | " | " | " | " | " | |
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **35** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **4.1** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **7.6** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| Copper | ND | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.05 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **7.4** | 6.8 | " | " | " | " | " | " | |
| Lead | ND | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **13** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **19** | 4.0 | " | " | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **53** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **7.9** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **21** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **11** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **16** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **3.5** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **28** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **35** | 4.0 | " | " | " | " | " | " | |
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **30** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **3.8** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **6.9** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| Copper | ND | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.05 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Nickel | ND | 6.8 | " | " | " | " | " | " | |
| Lead | ND | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **11** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **17** | 4.0 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.1** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **110** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **7.0** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **14** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **27** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Mercury** | **0.20** | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **10** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **33** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **23** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **110** | 4.0 | " | " | " | " | " | " | |
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.0** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **33** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **5.5** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **14** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **8.8** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **9.2** | 6.8 | " | " | " | " | " | " | |
| Lead | ND | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **23** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **29** | 4.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.2** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **130** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **8.3** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **17** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **15** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Mercury** | **0.06** | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **12** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **13** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **28** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **76** | 4.0 | " | " | " | " | " | " | |
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.1** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **63** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **7.6** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **19** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **12** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.05 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **15** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **3.5** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **26** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **41** | 4.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **110** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **5.0** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **11** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **7.8** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **7.1** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **6.9** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **18** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **30** | 4.0 | " | " | " | " | " | " | |
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.5** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **74** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **7.7** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **24** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **11** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **11** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **5.4** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **32** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **44** | 4.0 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **85** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **4.5** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **9.8** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **7.0** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Mercury** | **0.09** | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Nickel | ND | 6.8 | " | " | " | " | " | " | |
| **Lead** | **8.4** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **17** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **36** | 4.0 | " | " | " | " | " | " | |
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.1** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **240** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **6.5** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **27** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **11** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **10** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **3.7** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **25** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **35** | 4.0 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **86** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **5.8** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **12** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **8.4** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **8.2** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **6.8** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **20** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **32** | 4.0 | " | " | " | " | " | " | |
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.1** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **87** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **10** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **28** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **19** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.05 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **22** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **5.7** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **34** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **57** | 4.0 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **130** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **6.3** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **14** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.38 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **9.7** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Mercury** | **0.09** | 0.05 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **9.1** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **7.1** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **24** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **38** | 4.0 | " | " | " | " | " | " | |
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.0** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **64** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **7.0** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **25** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **11** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **14** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **4.6** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **38** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **39** | 4.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Volatile Petroleum Hydrocarbons (TVPH) by GC/FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.045 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *102 %* | *35-130* | | " | " | " | " | |
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *92.5 %* | *35-130* | | " | " | " | " | |
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.041 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.5 %* | *35-130* | | " | " | " | " | |
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *99.5 %* | *35-130* | | " | " | " | " | |
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.042 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *90.5 %* | *35-130* | | " | " | " | " | |
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *65.2 %* | *35-130* | | " | " | " | " | |
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.043 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *70.8 %* | *35-130* | | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Volatile Petroleum Hydrocarbons (TVPH) by GC/FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *98.5 %* | *35-130* | | " | " | " | " | |
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.035 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *36.8 %* | *35-130* | | " | " | " | " | |
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *39.5 %* | *35-130* | | " | " | " | " | |
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.043 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *98.8 %* | *35-130* | | " | " | " | " | |
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.041 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *95.8 %* | *35-130* | | " | " | " | " | |
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.042 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.7 %* | *35-130* | | " | " | " | " | |
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *66.7 %* | *35-130* | | " | " | " | " | |

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Volatile Petroleum Hydrocarbons (TVPH) by GC/FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.038 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *92.2 %* | *35-130* | | " | " | " | " | |
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.7 %* | *35-130* | | " | " | " | " | |
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.043 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *86.5 %* | *35-130* | | " | " | " | " | |
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.4 %* | *35-130* | | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons (TPH) by GC/FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *128 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *128 %* | *60-175* | | " | " | " | " | |
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *140 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *140 %* | *60-175* | | " | " | " | " | |
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *98.4 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *98.4 %* | *60-175* | | " | " | " | " | |
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *70.0 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *70.0 %* | *60-175* | | " | " | " | " | |
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *158 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *158 %* | *60-175* | | " | " | " | " | |

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons (TPH) by GC/FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *101 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *101 %* | *60-175* | | " | " | " | " | |
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *87.6 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *87.6 %* | *60-175* | | " | " | " | " | |
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *74.4 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *74.4 %* | *60-175* | | " | " | " | " | |
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| **Diesel Range Organics (C10-C24)** | **48** | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *138 %* | *60-175* | | " | " | " | " | |
| **Oil Range Organics (C22-C36)** | **45** | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *138 %* | *60-175* | | " | " | " | " | |
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *97.6 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *97.6 %* | *60-175* | | " | " | " | " | |

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons (TPH) by GC/FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *63.2 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *63.2 %* | *60-175* | | " | " | " | " | |
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *72.8 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *72.8 %* | *60-175* | | " | " | " | " | |
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| **Diesel Range Organics (C10-C24)** | **69** | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *68.4 %* | *60-175* | | " | " | " | " | |
| **Oil Range Organics (C22-C36)** | **33** | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *68.4 %* | *60-175* | | " | " | " | " | |
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *70.4 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *70.4 %* | *60-175* | | " | " | " | " | |
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *73.6 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *73.6 %* | *60-175* | | " | " | " | " | |

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons (TPH) by GC/FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *60.0 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *60.0 %* | *60-175* | | " | " | " | " | |
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *75.2 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *75.2 %* | *60-175* | | " | " | " | " | |
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *64.8 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *64.8 %* | *60-175* | | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *128 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0090 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0090 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0090 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0090 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0090 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0090 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0090 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0090 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.045 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *102 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *140 %* | | *60-175* | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *92.5 %* | | *35-130* | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *98.4 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0083 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0083 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0083 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0083 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0083 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0083 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0083 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0083 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.041 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.5 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *70.0 %* | | *60-175* | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *99.5 %* | | *35-130* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *158 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0084 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0084 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0084 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0084 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0084 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0084 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0084 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0084 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.042 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *90.5 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
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| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *101 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *65.2 %* | *35-130* | | " | " | " | " | |

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| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *87.6 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0085 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0085 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0085 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0085 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0085 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0085 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0085 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0085 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.043 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *70.8 %* | *35-130* | | " | " | " | " | |

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|---|---|---|
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| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *74.4 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *98.5 %* | *35-130* | | " | " | " | " | |

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| | | |
|---|---|---|
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| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| **C16 <= HC < C18** | **8.0** | 1.0 | " | " | " | " | " | " | |
| **C18 <= HC < C20** | **9.9** | 1.0 | " | " | " | " | " | " | |
| **C20 <= HC < C24** | **19** | 1.0 | " | " | " | " | " | " | |
| **C24 <= HC < C28** | **15** | 1.0 | " | " | " | " | " | " | |
| **C28 <= HC < C32** | **8.3** | 1.0 | " | " | " | " | " | " | |
| **HC >= C32** | **3.9** | 1.0 | " | " | " | " | " | " | |
| **Total Petroleum Hydrocarbons (C7-C36)** | **64** | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *138 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0071 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0071 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0071 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0071 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0071 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0071 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0071 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0071 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.035 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *36.8 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *97.6 %* | | *60-175* | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *39.5 %* | | *35-130* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | | |
|---|---|---|---|
| Mearns Consulting LLC | Project: | 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: | [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: | Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *63.2 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0085 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0085 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0085 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0085 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0085 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0085 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0085 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0085 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.043 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *98.8 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *72.8 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0083 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0083 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0083 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0083 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0083 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0083 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0083 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0083 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.041 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *95.8 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| **C14 <= HC < C16** | **33** | 1.0 | " | " | " | " | " | " | |
| **C16 <= HC < C18** | **8.2** | 1.0 | " | " | " | " | " | " | |
| **C18 <= HC < C20** | **9.5** | 1.0 | " | " | " | " | " | " | |
| **C20 <= HC < C24** | **16** | 1.0 | " | " | " | " | " | " | |
| **C24 <= HC < C28** | **12** | 1.0 | " | " | " | " | " | " | |
| **C28 <= HC < C32** | **5.8** | 1.0 | " | " | " | " | " | " | |
| **HC >= C32** | **2.3** | 1.0 | " | " | " | " | " | " | |
| **Total Petroleum Hydrocarbons (C7-C36)** | **87** | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *68.4 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0085 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0085 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0085 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0085 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0085 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0085 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0085 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0085 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.042 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.7 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *70.4 %* | | *60-175* | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *96.9 %* | | *35-130* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *73.6 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0076 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0076 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0076 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0076 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0076 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0076 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0076 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0076 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.038 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *92.2 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *60.0 %* | | *60-175* | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.7 %* | | *35-130* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *75.2 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0086 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0086 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0086 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0086 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0086 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0086 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0086 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0086 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.043 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *86.5 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

26052 Merit Circle Suite 105, Laguna Hills, California 92653
Telephone: (949) 348-9389 Fax: (949) 348-9115
E-Mail: sierralabs @ sierralabs.net

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *64.8 %* | | *60-175* | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.4 %* | | *35-130* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.2 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.2 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.2 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.2 | " | " | " | " | " | " | |
| Bromoform | ND | 4.2 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.2 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.2 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.2 | " | " | " | " | " | " | |
| Chloroform | ND | 4.2 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.2 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.2 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.2 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 4.2 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.2 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.2 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 4.2 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.2 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.2 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.2 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.2 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Naphthalene | ND | 4.2 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| n-Propylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Styrene | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.2 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.2 | " | " | " | " | " | " | |
| Toluene | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.2 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 4.2 | " | " | " | " | " | " | |
| o-Xylene | ND | 4.2 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *117 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *114 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *117 %* | | *74-121* | " | " | " | " | |
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.6 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.6 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.6 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.6 | " | " | " | " | " | " | |
| Bromoform | ND | 5.6 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.6 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.6 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.6 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.6 | " | " | " | " | " | " | |
| Chloroform | ND | 5.6 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.6 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.6 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.6 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.6 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 5.6 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| 1,2-Dibromoethane (EDB) | ND | 5.6 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.6 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.6 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.6 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.6 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.6 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.6 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.6 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.6 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.6 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.6 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.6 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.6 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.6 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.6 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.6 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 5.6 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.6 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.6 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.6 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.6 | " | " | " | " | " | " | |
| Naphthalene | ND | 5.6 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| Styrene | ND | 5.6 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.6 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.6 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.6 | " | " | " | " | " | " | |
| Toluene | ND | 5.6 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.6 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.6 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.6 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.6 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.6 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.6 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.6 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.6 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| m,p-Xylene | ND | 5.6 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| o-Xylene | ND | 5.6 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *104 %* | *80-120* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *102 %* | *81-117* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *116 %* | *74-121* | | " | " | " | " | |
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.3 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.3 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.3 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.3 | " | " | " | " | " | " | |
| Bromoform | ND | 4.3 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.3 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.3 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.3 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.3 | " | " | " | " | " | " | |
| Chloroform | ND | 4.3 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.3 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.3 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.3 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 4.3 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 4.3 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.3 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.3 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.3 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.3 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.3 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.3 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.3 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.3 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.3 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.3 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.3 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 4.3 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Ethylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.3 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.3 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.3 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.3 | " | " | " | " | " | " | |
| Naphthalene | ND | 4.3 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| Styrene | ND | 4.3 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.3 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.3 | " | " | " | " | " | " | |
| Toluene | ND | 4.3 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.3 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.3 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.3 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.3 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.3 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.3 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 4.3 | " | " | " | " | " | " | |
| o-Xylene | ND | 4.3 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *119 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *103 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *112 %* | | *74-121* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromoform | ND | 5.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Chloroform | ND | 5.0 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| Naphthalene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| n-Propylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Styrene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Toluene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.0 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| o-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *109 %* | *80-120* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *99.6 %* | *81-117* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *111 %* | *74-121* | | " | " | " | " | |
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromoform | ND | 4.1 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.1 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.1 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Chloroform | ND | 4.1 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.1 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.1 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| 1,2-Dibromoethane (EDB) | ND | 4.1 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.1 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.1 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.1 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.1 | " | " | " | " | " | " | |
| Naphthalene | ND | 4.1 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Styrene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Toluene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.1 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| m,p-Xylene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| o-Xylene | ND | 4.1 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *116 %* | *80-120* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *108 %* | *81-117* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *98.3 %* | *74-121* | | " | " | " | " | |
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromoform | ND | 5.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Chloroform | ND | 5.0 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Ethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.0 | " | " | " | " | " | " | |
| Naphthalene | ND | 5.0 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Styrene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Toluene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.0 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| o-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *116 %* | *80-120* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *103 %* | *81-117* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *108 %* | *74-121* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.2 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.2 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.2 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.2 | " | " | " | " | " | " | |
| Bromoform | ND | 4.2 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.2 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.2 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.2 | " | " | " | " | " | " | |
| Chloroform | ND | 4.2 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.2 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.2 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.2 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 4.2 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.2 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.2 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 4.2 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.2 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.2 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.2 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.2 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| Naphthalene | ND | 4.2 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| n-Propylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Styrene | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.2 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.2 | " | " | " | " | " | " | |
| Toluene | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.2 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 4.2 | " | " | " | " | " | " | |
| o-Xylene | ND | 4.2 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *117 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *114 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *118 %* | | *74-121* | " | " | " | " | |
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromoform | ND | 5.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Chloroform | ND | 5.0 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.0 | " | " | " | " | " | " | |
| Naphthalene | ND | 5.0 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Styrene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Toluene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| m,p-Xylene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| o-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *99.6 %* | | *80-120* | | " | " | " | |
| *Surrogate: Toluene-d8* | | *115 %* | | *81-117* | | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *109 %* | | *74-121* | | " | " | " | |
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 3.9 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 3.9 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 3.9 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 3.9 | " | " | " | " | " | " | |
| Bromoform | ND | 3.9 | " | " | " | " | " | " | |
| Bromomethane | ND | 3.9 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 3.9 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 3.9 | " | " | " | " | " | " | |
| Chloroethane | ND | 3.9 | " | " | " | " | " | " | |
| Chloroform | ND | 3.9 | " | " | " | " | " | " | |
| Chloromethane | ND | 3.9 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 3.9 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 3.9 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 3.9 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 3.9 | " | " | " | " | " | " | |
| Dibromomethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 3.9 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 3.9 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 3.9 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 3.9 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 3.9 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 3.9 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 3.9 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 3.9 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 3.9 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 3.9 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 3.9 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 3.9 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Ethylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 3.9 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 3.9 | " | " | " | " | " | " | |
| Methylene chloride | ND | 3.9 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 3.9 | " | " | " | " | " | " | |
| Naphthalene | ND | 3.9 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| Styrene | ND | 3.9 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 3.9 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 3.9 | " | " | " | " | " | " | |
| Toluene | ND | 3.9 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 3.9 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 3.9 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 3.9 | " | " | " | " | " | " | |
| Trichloroethene | ND | 3.9 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 3.9 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 3.9 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 3.9 | " | " | " | " | " | " | |
| o-Xylene | ND | 3.9 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *96.1 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *108 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *93.1 %* | | *74-121* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromoform | ND | 5.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Chloroform | ND | 5.0 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| Naphthalene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| n-Propylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Styrene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Toluene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.0 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| o-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *107 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *86.6 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *98.5 %* | | *74-121* | " | " | " | " | |
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromoform | ND | 4.1 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.1 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.1 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Chloroform | ND | 4.1 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.1 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.1 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| 1,2-Dibromoethane (EDB) | ND | 4.1 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.1 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.1 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.1 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.1 | " | " | " | " | " | " | |
| Naphthalene | ND | 4.1 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Styrene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Toluene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.1 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| m,p-Xylene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| o-Xylene | ND | 4.1 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *113 %* | *80-120* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *117 %* | *81-117* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *110 %* | *74-121* | | " | " | " | " | |
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.4 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.4 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.4 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.4 | " | " | " | " | " | " | |
| Bromoform | ND | 4.4 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.4 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.4 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.4 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.4 | " | " | " | " | " | " | |
| Chloroform | ND | 4.4 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.4 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.4 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.4 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 4.4 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 4.4 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.4 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.4 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.4 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.4 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.4 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.4 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.4 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.4 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.4 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.4 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.4 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 4.4 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Ethylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.4 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.4 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.4 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.4 | " | " | " | " | " | " | |
| Naphthalene | ND | 4.4 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| Styrene | ND | 4.4 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.4 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.4 | " | " | " | " | " | " | |
| Toluene | ND | 4.4 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.4 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.4 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.4 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.4 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.4 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.4 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 4.4 | " | " | " | " | " | " | |
| o-Xylene | ND | 4.4 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *112 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *108 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *119 %* | | *74-121* | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromoform | ND | 5.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Chloroform | ND | 5.0 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.0 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| Naphthalene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| n-Propylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Styrene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Toluene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.0 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| o-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *108 %* | *80-120* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *117 %* | *81-117* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *102 %* | *74-121* | | " | " | " | " | |
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromoform | ND | 5.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Chloroform | ND | 5.0 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.0 | " | " | " | " | " | " | |
| Naphthalene | ND | 5.0 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Styrene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Toluene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| m,p-Xylene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| o-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *112 %* | | *80-120* | | " | " | " | |
| *Surrogate: Toluene-d8* | | *105 %* | | *81-117* | | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *88.2 %* | | *74-121* | | " | " | " | |
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromoform | ND | 4.1 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.1 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.1 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Chloroform | ND | 4.1 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.1 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 4.1 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Ethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.1 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.1 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.1 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.1 | " | " | " | " | " | " | |
| Naphthalene | ND | 4.1 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Styrene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Toluene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.1 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 4.1 | " | " | " | " | " | " | |
| o-Xylene | ND | 4.1 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *116 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *106 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *107 %* | | *74-121* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromoform | ND | 5.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Chloroform | ND | 5.0 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| Naphthalene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| n-Propylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Styrene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Toluene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.0 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| o-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *110 %* | *80-120* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *105 %* | *81-117* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *114 %* | *74-121* | | " | " | " | " | |
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.5 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.5 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.5 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.5 | " | " | " | " | " | " | |
| Bromoform | ND | 4.5 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.5 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.5 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.5 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.5 | " | " | " | " | " | " | |
| Chloroform | ND | 4.5 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.5 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.5 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.5 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.5 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 4.5 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| 1,2-Dibromoethane (EDB) | ND | 4.5 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.5 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.5 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.5 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.5 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.5 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.5 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.5 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.5 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.5 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.5 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.5 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.5 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.5 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.5 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.5 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 4.5 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.5 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.5 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.5 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.5 | " | " | " | " | " | " | |
| Naphthalene | ND | 4.5 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| Styrene | ND | 4.5 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.5 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.5 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.5 | " | " | " | " | " | " | |
| Toluene | ND | 4.5 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.5 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.5 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.5 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.5 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.5 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.5 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.5 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.5 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| m,p-Xylene | ND | 4.5 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| o-Xylene | ND | 4.5 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *106 %* | *80-120* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *105 %* | *81-117* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *101 %* | *74-121* | | " | " | " | " | |
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromoform | ND | 4.1 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.1 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.1 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Chloroform | ND | 4.1 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.1 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 4.1 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Ethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.1 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.1 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.1 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.1 | " | " | " | " | " | " | |
| Naphthalene | ND | 4.1 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Styrene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Toluene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.1 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 4.1 | " | " | " | " | " | " | |
| o-Xylene | ND | 4.1 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *101 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *98.5 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *119 %* | | *74-121* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *94.8 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *82.6 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *106 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *74.2 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *74.6 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *80.8 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *111 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *104 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *81.7 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *92.2 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *91.0 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *94.6 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *112 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *101 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *88.6 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *91.6 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *97.8 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *90.7 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *113 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *102 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *85.9 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *94.0 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *96.8 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *84.1 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *98.8 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *52.0 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *93.4 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *101 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *111 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *73.3 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *118 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *107 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *91.6 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *97.0 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *96.8 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *90.4 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *120 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *107 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *88.9 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *94.3 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *110 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *83.8 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *117 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *103 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *87.1 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *95.8 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *110 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *88.3 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *61.6 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *99.4 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *97.0 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *101 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *64.6 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *68.2 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *119 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *111 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *85.3 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *97.3 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *120 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *95.5 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *115 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *106 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *88.0 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *91.3 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *54.4 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *76.6 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *58.6 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *50.8 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *97.0 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *98.8 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *80.4 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *62.2 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| **Benzo (b) fluoranthene** | **0.67** | 0.33 | " | " | " | " | " | " | |
| **Benzo (k) fluoranthene** | **0.65** | 0.33 | " | " | " | " | " | " | |
| **Benzo (a) pyrene** | **0.53** | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| **Chrysene** | **0.70** | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| **Fluoranthene** | **1.1** | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| **Phenanthrene** | **0.63** | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| **Pyrene** | **2.5** | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *57.6 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *50.6 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *96.4 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *99.1 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *71.8 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *71.8 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *110 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *105 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *78.1 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *93.4 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *93.0 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *50.2 %* | *18-137* | | " | " | " | " | |

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *115 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *48.8 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *84.4 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *90.1 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *81.2 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *69.7 %* | *18-137* | | " | " | " | " | |

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *120 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *47.8 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *96.4 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *98.8 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *79.2 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *117 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *111 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *102 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *82.3 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *88.0 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *90.0 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *90.1 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *92.2 %* | | *25-121* | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *94.0 %* | | *24-113* | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *111 %* | | *23-120* | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *82.3 %* | | *30-115* | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *92.6 %* | | *19-122* | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *84.1 %* | | *18-137* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B1911 - EPA 7471A** | | | | | | | | | | |
| **Blank (B0B1911-BLK1)** | | | | Prepared & Analyzed: 02/19/20 | | | | | | |
| Mercury | ND | 0.06 | mg/kg | | | | | | | |
| **LCS (B0B1911-BS1)** | | | | Prepared & Analyzed: 02/19/20 | | | | | | |
| Mercury | 0.17 | 0.06 | mg/kg | 0.167 | | 102 | 70-130 | | | |
| **Matrix Spike (B0B1911-MS1)** | | **Source: 2002212-01** | | Prepared & Analyzed: 02/19/20 | | | | | | |
| Mercury | 0.19 | 0.06 | mg/kg | 0.165 | 0.009 | 110 | 70-130 | | | |
| **Matrix Spike Dup (B0B1911-MSD1)** | | **Source: 2002212-01** | | Prepared & Analyzed: 02/19/20 | | | | | | |
| Mercury | 0.20 | 0.06 | mg/kg | 0.166 | 0.009 | 115 | 70-130 | 5.13 | 30 | |
| **Batch B0B1912 - EPA 3050B** | | | | | | | | | | |
| **Blank (B0B1912-BLK1)** | | | | Prepared: 02/19/20 Analyzed: 02/21/20 | | | | | | |
| Antimony | ND | 5.0 | mg/kg | | | | | | | |
| Arsenic | ND | 7.7 | " | | | | | | | |
| Barium | ND | 3.0 | " | | | | | | | |
| Beryllium | ND | 1.3 | " | | | | | | | |
| Cadmium | ND | 1.4 | " | | | | | | | |
| Chromium | ND | 3.1 | " | | | | | | | |
| Cobalt | ND | 1.5 | " | | | | | | | |
| Copper | ND | 7.0 | " | | | | | | | |
| Lead | ND | 2.6 | " | | | | | | | |
| Molybdenum | ND | 4.2 | " | | | | | | | |
| Nickel | ND | 6.8 | " | | | | | | | |
| Selenium | ND | 7.6 | " | | | | | | | |
| Silver | ND | 1.0 | " | | | | | | | |
| Thallium | ND | 2.5 | " | | | | | | | |
| Vanadium | ND | 3.0 | " | | | | | | | |
| Zinc | ND | 4.0 | " | | | | | | | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B1912 - EPA 3050B** | | | | | | | | | | |
| **LCS (B0B1912-BS1)** | | | | Prepared: 02/19/20 Analyzed: 02/21/20 | | | | | | |
| Antimony | 109 | 5.0 | mg/kg | 100 | | 109 | 75-125 | | | |
| Arsenic | 97.3 | 7.7 | " | 100 | | 97.3 | 78-122 | | | |
| Barium | 102 | 3.0 | " | 100 | | 102 | 80-120 | | | |
| Beryllium | 106 | 1.3 | " | 100 | | 106 | 80-120 | | | |
| Cadmium | 102 | 1.4 | " | 100 | | 102 | 80-120 | | | |
| Chromium | 104 | 3.1 | " | 100 | | 104 | 80-120 | | | |
| Cobalt | 104 | 1.5 | " | 100 | | 104 | 80-120 | | | |
| Copper | 105 | 7.0 | " | 100 | | 105 | 78-122 | | | |
| Lead | 99.4 | 2.6 | " | 100 | | 99.4 | 80-120 | | | |
| Molybdenum | 97.3 | 4.2 | " | 100 | | 97.3 | 80-120 | | | |
| Nickel | 99.4 | 6.8 | " | 100 | | 99.4 | 80-120 | | | |
| Selenium | 101 | 7.6 | " | 100 | | 101 | 76-124 | | | |
| Silver | 92.1 | 1.0 | " | 100 | | 92.1 | 60-140 | | | |
| Thallium | 99.6 | 2.5 | " | 100 | | 99.6 | 80-120 | | | |
| Vanadium | 102 | 3.0 | " | 100 | | 102 | 80-120 | | | |
| Zinc | 100 | 4.0 | " | 100 | | 100 | 80-120 | | | |
| **LCS Dup (B0B1912-BSD1)** | | | | Prepared: 02/19/20 Analyzed: 02/21/20 | | | | | | |
| Antimony | 110 | 5.0 | mg/kg | 100 | | 110 | 75-125 | 0.913 | 20 | |
| Arsenic | 98.4 | 7.7 | " | 100 | | 98.4 | 78-122 | 1.12 | 20 | |
| Barium | 102 | 3.0 | " | 100 | | 102 | 80-120 | 0.00 | 20 | |
| Beryllium | 106 | 1.3 | " | 100 | | 106 | 80-120 | 0.00 | 20 | |
| Cadmium | 101 | 1.4 | " | 100 | | 101 | 80-120 | 0.985 | 20 | |
| Chromium | 107 | 3.1 | " | 100 | | 107 | 80-120 | 2.84 | 20 | |
| Cobalt | 104 | 1.5 | " | 100 | | 104 | 80-120 | 0.00 | 20 | |
| Copper | 104 | 7.0 | " | 100 | | 104 | 78-122 | 0.957 | 20 | |
| Lead | 100 | 2.6 | " | 100 | | 100 | 80-120 | 0.602 | 20 | |
| Molybdenum | 105 | 4.2 | " | 100 | | 105 | 80-120 | 7.61 | 20 | |
| Nickel | 100 | 6.8 | " | 100 | | 100 | 80-120 | 0.602 | 20 | |
| Selenium | 101 | 7.6 | " | 100 | | 101 | 76-124 | 0.00 | 20 | |
| Silver | 87.2 | 1.0 | " | 100 | | 87.2 | 60-140 | 5.47 | 40 | |
| Thallium | 101 | 2.5 | " | 100 | | 101 | 80-120 | 1.40 | 20 | |
| Vanadium | 102 | 3.0 | " | 100 | | 102 | 80-120 | 0.00 | 20 | |
| Zinc | 99.4 | 4.0 | " | 100 | | 99.4 | 80-120 | 0.602 | 20 | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B1912 - EPA 3050B** | | | | | | | | | | |
| **Matrix Spike (B0B1912-MS1)** | **Source: 2002212-01** | | | Prepared: 02/19/20 | Analyzed: 02/21/20 | | | | | |
| Antimony | 86.2 | 5.0 | mg/kg | 94.7 | 1.1 | 89.9 | 60-140 | | | |
| Arsenic | 90.3 | 7.7 | " | 94.7 | ND | 95.4 | 70-130 | | | |
| Barium | 163 | 3.0 | " | 94.7 | 66 | 102 | 70-130 | | | |
| Beryllium | 92.5 | 1.3 | " | 94.7 | 0.15 | 97.5 | 70-130 | | | |
| Cadmium | 91.3 | 1.4 | " | 94.7 | 0.17 | 96.2 | 70-130 | | | |
| Chromium | 111 | 3.1 | " | 94.7 | 15 | 101 | 70-130 | | | |
| Cobalt | 101 | 1.5 | " | 94.7 | 6.6 | 99.7 | 70-130 | | | |
| Copper | 113 | 7.0 | " | 94.7 | 12 | 107 | 70-130 | | | |
| Lead | 93.3 | 2.6 | " | 94.7 | 2.6 | 95.8 | 70-130 | | | |
| Molybdenum | 88.0 | 4.2 | " | 94.7 | 0.68 | 92.2 | 70-130 | | | |
| Nickel | 106 | 6.8 | " | 94.7 | 10 | 101 | 70-130 | | | |
| Selenium | 91.3 | 7.6 | " | 94.7 | ND | 96.4 | 70-130 | | | |
| Silver | 92.0 | 1.0 | " | 94.7 | 0.93 | 96.2 | 60-140 | | | |
| Thallium | 91.1 | 2.5 | " | 94.7 | 0.22 | 96.0 | 70-130 | | | |
| Vanadium | 115 | 3.0 | " | 94.7 | 22 | 98.2 | 70-130 | | | |
| Zinc | 114 | 4.0 | " | 94.7 | 26 | 92.9 | 70-130 | | | |
| **Matrix Spike Dup (B0B1912-MSD1)** | **Source: 2002212-01** | | | Prepared: 02/19/20 | Analyzed: 02/21/20 | | | | | |
| Antimony | 84.8 | 5.0 | mg/kg | 94.8 | 1.1 | 88.3 | 60-140 | 1.64 | 20 | |
| Arsenic | 88.1 | 7.7 | " | 94.8 | ND | 92.9 | 70-130 | 2.47 | 20 | |
| Barium | 158 | 3.0 | " | 94.8 | 66 | 97.0 | 70-130 | 3.12 | 20 | |
| Beryllium | 91.5 | 1.3 | " | 94.8 | 0.15 | 96.4 | 70-130 | 1.09 | 20 | |
| Cadmium | 88.4 | 1.4 | " | 94.8 | 0.17 | 93.1 | 70-130 | 3.23 | 20 | |
| Chromium | 108 | 3.1 | " | 94.8 | 15 | 98.1 | 70-130 | 2.74 | 20 | |
| Cobalt | 97.9 | 1.5 | " | 94.8 | 6.6 | 96.3 | 70-130 | 3.12 | 20 | |
| Copper | 108 | 7.0 | " | 94.8 | 12 | 101 | 70-130 | 4.52 | 30 | |
| Lead | 92.0 | 2.6 | " | 94.8 | 2.6 | 94.3 | 70-130 | 1.40 | 30 | |
| Molybdenum | 87.1 | 4.2 | " | 94.8 | 0.68 | 91.2 | 70-130 | 1.03 | 20 | |
| Nickel | 104 | 6.8 | " | 94.8 | 10 | 99.2 | 70-130 | 1.90 | 20 | |
| Selenium | 88.6 | 7.6 | " | 94.8 | ND | 93.5 | 70-130 | 3.00 | 20 | |
| Silver | 87.7 | 1.0 | " | 94.8 | 0.93 | 91.5 | 60-140 | 4.79 | 40 | |
| Thallium | 88.6 | 2.5 | " | 94.8 | 0.22 | 93.2 | 70-130 | 2.78 | 20 | |
| Vanadium | 112 | 3.0 | " | 94.8 | 22 | 94.9 | 70-130 | 2.64 | 20 | |
| Zinc | 109 | 4.0 | " | 94.8 | 26 | 87.6 | 70-130 | 4.48 | 20 | |

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| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B1913 - EPA 3060A** | | | | | | | | | | |
| **Blank (B0B1913-BLK1)** | | | | Prepared: 02/19/20 | | Analyzed: 02/20/20 | | | | |
| Hexavalent Chromium | ND | 0.41 | mg/kg | | | | | | | |
| **LCS (B0B1913-BS1)** | | | | Prepared: 02/19/20 | | Analyzed: 02/20/20 | | | | |
| Hexavalent Chromium | 0.162 | 0.41 | mg/kg | 0.150 | | 108 | 80-120 | | | |
| **Matrix Spike (B0B1913-MS1)** | | **Source: 2002212-01** | | Prepared: 02/19/20 | | Analyzed: 02/20/20 | | | | |
| Hexavalent Chromium | 0.141 | 0.41 | mg/kg | 0.141 | ND | 100 | 75-125 | | | |
| **Matrix Spike Dup (B0B1913-MSD1)** | | **Source: 2002212-01** | | Prepared: 02/19/20 | | Analyzed: 02/20/20 | | | | |
| Hexavalent Chromium | 0.138 | 0.41 | mg/kg | 0.141 | ND | 97.9 | 75-125 | 2.15 | 20 | |

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| | | |
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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

**Total Volatile Petroleum Hydrocarbons (TVPH) by GC/FID - Quality Control**

**Sierra Analytical Labs, Inc.**

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2427 - EPA 5035 P & T** | | | | | | | | | | |
| **Blank (B0B2427-BLK1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | | | | | | | |
| *Surrogate: a,a,a-Trifluorotoluene* | *0.0248* | | *"* | *0.0200* | | *124* | *35-130* | | | |
| **LCS (B0B2427-BS1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | 0.588 | 0.050 | mg/kg | 0.600 | | 98.0 | 85-115 | | | |
| **Matrix Spike (B0B2427-MS1)** | **Source: 2002212-01** | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | 0.492 | 0.050 | mg/kg | 0.600 | ND | 82.0 | 50-150 | | | |
| **Matrix Spike Dup (B0B2427-MSD1)** | **Source: 2002212-01** | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | 0.519 | 0.050 | mg/kg | 0.600 | ND | 86.5 | 50-150 | 5.34 | 30 | |

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26052 MERIT CIRCLE SUITE 105, LAGUNA HILLS, CALIFORNIA 92653
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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons (TPH) by GC/FID - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2440 - EPA 3550B Solid Ext** | | | | | | | | | | |
| **Blank (B0B2440-BLK1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | | | | | | | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | | | | | | | |
| *Surrogate: o-Terphenyl* | *1.75* | | *"* | *2.50* | | *70.0* | *60-175* | | | |
| *Surrogate: o-Terphenyl* | *1.75* | | *"* | *2.50* | | *70.0* | *60-175* | | | |
| **LCS (B0B2440-BS1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Diesel Range Organics (C10-C24) | 5.75 | 5.0 | mg/kg | 5.00 | | 115 | 80-120 | | | |
| Diesel Range Organics (C10-C24) | 5.75 | 5.0 | " | 5.00 | | 115 | 80-120 | | | |
| **Matrix Spike (B0B2440-MS1)** | | **Source: 2002212-01** | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Diesel Range Organics (C10-C24) | 5.50 | 5.0 | mg/kg | 5.00 | ND | 110 | 50-150 | | | |
| Diesel Range Organics (C10-C24) | 5.50 | 5.0 | " | 5.00 | ND | 110 | 50-150 | | | |
| **Matrix Spike Dup (B0B2440-MSD1)** | | **Source: 2002212-01** | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Diesel Range Organics (C10-C24) | 5.24 | 5.0 | mg/kg | 5.00 | ND | 105 | 50-150 | 4.84 | 30 | |
| Diesel Range Organics (C10-C24) | 5.24 | 5.0 | " | 5.00 | ND | 105 | 50-150 | 4.84 | 30 | |

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| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
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## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2427 - EPA 5035 P & T** | | | | | | | | | | |
| **Blank (B0B2427-BLK1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| C5 <= HC < C6 | ND | 0.010 | mg/kg | | | | | | | |
| C6 <= HC < C7 | ND | 0.010 | " | | | | | | | |
| C7 <= HC < C8 | ND | 0.010 | " | | | | | | | |
| C8 <= HC < C9 | ND | 0.010 | " | | | | | | | |
| C9 <= HC < C10 | ND | 0.010 | " | | | | | | | |
| C10 <= HC < C11 | ND | 0.010 | " | | | | | | | |
| C11 <= HC < C12 | ND | 0.010 | " | | | | | | | |
| HC >= C12 | ND | 0.010 | " | | | | | | | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | | | | | | | |
| *Surrogate: a,a,a-Trifluorotoluene* | *0.0248* | | *"* | *0.0200* | | *124* | *35-130* | | | |
| **LCS (B0B2427-BS1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | 0.588 | 0.050 | mg/kg | 0.600 | | 98.0 | 80-120 | | | |
| **Matrix Spike (B0B2427-MS1)** | **Source: 2002212-01** | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | 0.492 | 0.050 | mg/kg | 0.600 | ND | 82.0 | 50-150 | | | |
| **Matrix Spike Dup (B0B2427-MSD1)** | **Source: 2002212-01** | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | 0.519 | 0.050 | mg/kg | 0.600 | ND | 86.5 | 50-150 | 5.34 | 30 | |
| **Batch B0B2440 - EPA 3550B Solid Ext** | | | | | | | | | | |
| **Blank (B0B2440-BLK1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | | | | | | | |
| C8 <= HC < C9 | ND | 1.0 | " | | | | | | | |
| C9 <= HC < C10 | ND | 1.0 | " | | | | | | | |
| C10 <= HC < C11 | ND | 1.0 | " | | | | | | | |
| C11 <= HC < C12 | ND | 1.0 | " | | | | | | | |
| C12 <= HC < C14 | ND | 1.0 | " | | | | | | | |
| C14 <= HC < C16 | ND | 1.0 | " | | | | | | | |
| C16 <= HC < C18 | ND | 1.0 | " | | | | | | | |
| C18 <= HC < C20 | ND | 1.0 | " | | | | | | | |
| C20 <= HC < C24 | ND | 1.0 | " | | | | | | | |
| C24 <= HC < C28 | ND | 1.0 | " | | | | | | | |
| C28 <= HC < C32 | ND | 1.0 | " | | | | | | | |
| HC >= C32 | ND | 1.0 | " | | | | | | | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | | | | | | | |
| *Surrogate: o-Terphenyl* | *1.75* | | *"* | *2.50* | | *70.0* | *60-175* | | | |

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| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2440 - EPA 3550B Solid Ext** | | | | | | | | | | |
| **LCS (B0B2440-BS1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Diesel Range Organics (C10-C24) | 5.75 | 5.0 | mg/kg | 5.00 | | 115 | 80-120 | | | |
| **Matrix Spike (B0B2440-MS1)** | **Source: 2002212-01** | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Diesel Range Organics (C10-C24) | 5.50 | 5.0 | mg/kg | 5.00 | ND | 110 | 50-150 | | | |
| **Matrix Spike Dup (B0B2440-MSD1)** | **Source: 2002212-01** | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Diesel Range Organics (C10-C24) | 5.24 | 5.0 | mg/kg | 5.00 | ND | 105 | 50-150 | 4.84 | 30 | |

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| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2001 - EPA 5035 P & T** | | | | | | | | | | |
| **Blank (B0B2001-BLK1)** | | | | Prepared: 02/20/20 Analyzed: 02/21/20 | | | | | | |
| Benzene | ND | 5.0 | µg/kg | | | | | | | |
| Bromobenzene | ND | 5.0 | " | | | | | | | |
| Bromochloromethane | ND | 5.0 | " | | | | | | | |
| Bromodichloromethane | ND | 5.0 | " | | | | | | | |
| Bromoform | ND | 5.0 | " | | | | | | | |
| Bromomethane | ND | 5.0 | " | | | | | | | |
| n-Butylbenzene | ND | 5.0 | " | | | | | | | |
| sec-Butylbenzene | ND | 5.0 | " | | | | | | | |
| tert-Butylbenzene | ND | 5.0 | " | | | | | | | |
| Carbon tetrachloride | ND | 5.0 | " | | | | | | | |
| Chlorobenzene | ND | 5.0 | " | | | | | | | |
| Chloroethane | ND | 5.0 | " | | | | | | | |
| Chloroform | ND | 5.0 | " | | | | | | | |
| Chloromethane | ND | 5.0 | " | | | | | | | |
| 2-Chlorotoluene | ND | 5.0 | " | | | | | | | |
| 4-Chlorotoluene | ND | 5.0 | " | | | | | | | |
| Dibromochloromethane | ND | 5.0 | " | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | " | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | | | | | | | |
| Dibromomethane | ND | 5.0 | " | | | | | | | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | | | | | | | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | | | | | | | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | | | | | | | |
| Dichlorodifluoromethane | ND | 5.0 | " | | | | | | | |
| 1,1-Dichloroethane | ND | 5.0 | " | | | | | | | |
| 1,2-Dichloroethane | ND | 5.0 | " | | | | | | | |
| 1,1-Dichloroethene | ND | 5.0 | " | | | | | | | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | | | | | | | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | | | | | | | |
| 1,2-Dichloropropane | ND | 5.0 | " | | | | | | | |
| 1,3-Dichloropropane | ND | 5.0 | " | | | | | | | |
| 2,2-Dichloropropane | ND | 5.0 | " | | | | | | | |
| 1,1-Dichloropropene | ND | 5.0 | " | | | | | | | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | | | | | | | |
| trans-1,3-Dichloropropene | ND | 5.0 | " | | | | | | | |
| Ethylbenzene | ND | 5.0 | " | | | | | | | |
| Hexachlorobutadiene | ND | 5.0 | " | | | | | | | |

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| 738 Ashland Avenue | Project Number: | [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: | Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2001 - EPA 5035 P & T** | | | | | | | | | | |
| **Blank (B0B2001-BLK1)** | | | | Prepared: 02/20/20 Analyzed: 02/21/20 | | | | | | |
| Isopropylbenzene | ND | 5.0 | µg/kg | | | | | | | |
| p-Isopropyltoluene | ND | 5.0 | " | | | | | | | |
| Methylene chloride | ND | 5.0 | " | | | | | | | |
| Methyl tert-butyl ether | ND | 5.0 | " | | | | | | | |
| Naphthalene | ND | 5.0 | " | | | | | | | |
| n-Propylbenzene | ND | 5.0 | " | | | | | | | |
| Styrene | ND | 5.0 | " | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | | | | | | | |
| Tetrachloroethene | ND | 5.0 | " | | | | | | | |
| Toluene | ND | 5.0 | " | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | | | | | | | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | | | | | | | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | | | | | | | |
| Trichloroethene | ND | 5.0 | " | | | | | | | |
| Trichlorofluoromethane | ND | 5.0 | " | | | | | | | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | | | | | | | |
| Vinyl chloride | ND | 5.0 | " | | | | | | | |
| m,p-Xylene | ND | 5.0 | " | | | | | | | |
| o-Xylene | ND | 5.0 | " | | | | | | | |
| *Surrogate: Dibromofluoromethane* | *50.4* | | *"* | *50.0* | | *101* | *80-120* | | | |
| *Surrogate: Toluene-d8* | *47.7* | | *"* | *50.0* | | *95.4* | *81-117* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *57.7* | | *"* | *50.0* | | *115* | *74-121* | | | |
| **LCS (B0B2001-BS1)** | | | | Prepared: 02/20/20 Analyzed: 02/21/20 | | | | | | |
| Benzene | 51.2 | 5.0 | µg/kg | 50.0 | | 102 | 80-120 | | | |
| Chlorobenzene | 57.6 | 5.0 | " | 50.0 | | 115 | 80-120 | | | |
| 1,1-Dichloroethene | 56.6 | 5.0 | " | 50.0 | | 113 | 80-120 | | | |
| Toluene | 49.1 | 5.0 | " | 50.0 | | 98.2 | 80-120 | | | |
| Trichloroethene | 55.0 | 5.0 | " | 50.0 | | 110 | 80-120 | | | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2001 - EPA 5035 P & T** | | | | | | | | | | |
| **Matrix Spike (B0B2001-MS1)** | **Source: 2002212-18** | | | Prepared: 02/20/20 | Analyzed: 02/21/20 | | | | | |
| Benzene | 51.1 | 5.0 | µg/kg | 50.0 | ND | 102 | 37-151 | | | |
| Chlorobenzene | 53.9 | 5.0 | " | 50.0 | ND | 108 | 37-160 | | | |
| 1,1-Dichloroethene | 60.6 | 5.0 | " | 50.0 | ND | 121 | 50-150 | | | |
| Toluene | 47.0 | 5.0 | " | 50.0 | ND | 94.0 | 47-150 | | | |
| Trichloroethene | 49.6 | 5.0 | " | 50.0 | ND | 99.2 | 71-157 | | | |
| **Matrix Spike Dup (B0B2001-MSD1)** | **Source: 2002212-18** | | | Prepared: 02/20/20 | Analyzed: 02/21/20 | | | | | |
| Benzene | 58.7 | 5.0 | µg/kg | 50.0 | ND | 117 | 37-151 | 13.8 | 30 | |
| Chlorobenzene | 60.2 | 5.0 | " | 50.0 | ND | 120 | 37-160 | 11.0 | 30 | |
| 1,1-Dichloroethene | 52.7 | 5.0 | " | 50.0 | ND | 105 | 50-150 | 13.9 | 30 | |
| Toluene | 44.6 | 5.0 | " | 50.0 | ND | 89.2 | 47-150 | 5.24 | 30 | |
| Trichloroethene | 50.2 | 5.0 | " | 50.0 | ND | 100 | 71-157 | 1.20 | 30 | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | | |
|---|---|---|---|
| Mearns Consulting LLC | Project: | 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: | [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: | Susan Mearns | 02/26/20 11:36 |

**Semivolatile Organic Compounds by EPA Method 8270C - Quality Control**

**Sierra Analytical Labs, Inc.**

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2102 - EPA 3550B Solid Ext** | | | | | | | | | | |
| **Blank (B0B2102-BLK1)** | | | | Prepared: 02/21/20 Analyzed: 02/24/20 | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | | | | | | | |
| Acenaphthylene | ND | 0.33 | " | | | | | | | |
| Anthracene | ND | 0.33 | " | | | | | | | |
| Benzidine | ND | 0.33 | " | | | | | | | |
| Benzo (a) anthracene | ND | 0.33 | " | | | | | | | |
| Benzo (b) fluoranthene | ND | 0.33 | " | | | | | | | |
| Benzo (k) fluoranthene | ND | 0.33 | " | | | | | | | |
| Benzo (a) pyrene | ND | 0.33 | " | | | | | | | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | | | | | | | |
| Benzyl alcohol | ND | 0.33 | " | | | | | | | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | | | | | | | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | | | | | | | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | | | | | | | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | | | | | | | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | | | | | | | |
| Butyl benzyl phthalate | ND | 0.33 | " | | | | | | | |
| 4-Chloroaniline | ND | 0.33 | " | | | | | | | |
| 2-Chlorophenol | ND | 0.33 | " | | | | | | | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | | | | | | | |
| 2-Chloronaphthalene | ND | 0.33 | " | | | | | | | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | | | | | | | |
| Chrysene | ND | 0.33 | " | | | | | | | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | | | | | | | |
| Dibenzofuran | ND | 0.33 | " | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | | | | | | | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | | | | | | | |
| 2,4-Dichlorophenol | ND | 0.33 | " | | | | | | | |
| Diethyl phthalate | ND | 0.33 | " | | | | | | | |
| 2,4-Dimethylphenol | ND | 0.33 | " | | | | | | | |
| Dimethyl phthalate | ND | 0.33 | " | | | | | | | |
| Di-n-butyl phthalate | ND | 0.33 | " | | | | | | | |
| 2,4-Dinitrophenol | ND | 0.33 | " | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | | | | | | | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | | | | | | | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | | | | | | | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2102 - EPA 3550B Solid Ext** | | | | | | | | | | |
| **Blank (B0B2102-BLK1)** | | | | Prepared: 02/21/20 Analyzed: 02/24/20 | | | | | | |
| Di-n-octyl phthalate | ND | 0.33 | mg/kg | | | | | | | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | | | | | | | |
| Fluoranthene | ND | 0.33 | " | | | | | | | |
| Fluorene | ND | 0.33 | " | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | " | | | | | | | |
| Hexachlorobutadiene | ND | 0.33 | " | | | | | | | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | | | | | | | |
| Hexachloroethane | ND | 0.33 | " | | | | | | | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | | | | | | | |
| Isophorone | ND | 0.33 | " | | | | | | | |
| 2-Methylnaphthalene | ND | 0.33 | " | | | | | | | |
| 2-Methylphenol | ND | 0.33 | " | | | | | | | |
| 4-Methylphenol | ND | 0.33 | " | | | | | | | |
| Naphthalene | ND | 0.33 | " | | | | | | | |
| 2-Nitroaniline | ND | 0.33 | " | | | | | | | |
| 3-Nitroaniline | ND | 0.33 | " | | | | | | | |
| 4-Nitroaniline | ND | 0.33 | " | | | | | | | |
| Nitrobenzene | ND | 0.33 | " | | | | | | | |
| 2-Nitrophenol | ND | 0.33 | " | | | | | | | |
| 4-Nitrophenol | ND | 0.33 | " | | | | | | | |
| N-Nitrosodimethylamine | ND | 0.33 | " | | | | | | | |
| Diphenylamine | ND | 0.33 | " | | | | | | | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | | | | | | | |
| Pentachlorophenol | ND | 0.33 | " | | | | | | | |
| Phenanthrene | ND | 0.33 | " | | | | | | | |
| Phenol | ND | 0.33 | " | | | | | | | |
| Pyrene | ND | 0.33 | " | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | | | | | | | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | | | | | | | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | | | | | | | |
| *Surrogate: 2-Fluorophenol* | *0.410* | | " | *0.500* | | *82.0* | *25-121* | | | |
| *Surrogate: Phenol-d6* | *0.367* | | " | *0.500* | | *73.4* | *24-113* | | | |
| *Surrogate: Nitrobenzene-d5* | *0.333* | | " | *0.333* | | *100* | *23-120* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *0.235* | | " | *0.333* | | *70.6* | *30-115* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *0.368* | | " | *0.500* | | *73.6* | *19-122* | | | |
| *Surrogate: Terphenyl-d14* | *0.294* | | " | *0.333* | | *88.3* | *18-137* | | | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2102 - EPA 3550B Solid Ext** | | | | | | | | | | |
| **LCS (B0B2102-BS1)** | | | | Prepared: 02/21/20 Analyzed: 02/24/20 | | | | | | |
| Acenaphthene | 0.270 | 0.33 | mg/kg | 0.333 | | 81.1 | 47-145 | | | |
| 2-Chlorophenol | 0.838 | 0.33 | " | 0.667 | | 126 | 23-134 | | | |
| 4-Chloro-3-methylphenol | 0.791 | 0.33 | " | 0.667 | | 119 | 22-147 | | | |
| 1,4-Dichlorobenzene | 0.357 | 0.33 | " | 0.333 | | 107 | 20-124 | | | |
| 2,4-Dinitrotoluene | 0.335 | 0.33 | " | 0.333 | | 101 | 39-139 | | | |
| 4-Nitrophenol | 0.772 | 0.33 | " | 0.667 | | 116 | 0-132 | | | |
| N-Nitrosodi-n-propylamine | 0.470 | 0.33 | " | 0.333 | | 141 | 0-230 | | | |
| Pentachlorophenol | 0.526 | 0.33 | " | 0.667 | | 78.9 | 14-176 | | | |
| Phenol | 0.578 | 0.33 | " | 0.667 | | 86.7 | 5-112 | | | |
| Pyrene | 0.283 | 0.33 | " | 0.333 | | 85.0 | 52-115 | | | |
| 1,2,4-Trichlorobenzene | 0.369 | 0.33 | " | 0.333 | | 111 | 44-142 | | | |
| **Matrix Spike (B0B2102-MS1)** | | **Source: 2002212-01** | | Prepared: 02/21/20 Analyzed: 02/24/20 | | | | | | |
| Acenaphthene | 0.255 | 0.33 | mg/kg | 0.333 | ND | 76.6 | 47-145 | | | |
| 2-Chlorophenol | 0.810 | 0.33 | " | 0.667 | ND | 121 | 23-134 | | | |
| 4-Chloro-3-methylphenol | 0.756 | 0.33 | " | 0.667 | ND | 113 | 22-147 | | | |
| 1,4-Dichlorobenzene | 0.314 | 0.33 | " | 0.333 | ND | 94.3 | 20-124 | | | |
| 2,4-Dinitrotoluene | 0.145 | 0.33 | " | 0.333 | ND | 43.5 | 39-139 | | | |
| 4-Nitrophenol | 0.595 | 0.33 | " | 0.667 | ND | 89.2 | 0-132 | | | |
| N-Nitrosodi-n-propylamine | 0.421 | 0.33 | " | 0.333 | ND | 126 | 0-230 | | | |
| Pentachlorophenol | 0.361 | 0.33 | " | 0.667 | ND | 54.1 | 14-176 | | | |
| Phenol | 0.537 | 0.33 | " | 0.667 | ND | 80.5 | 5-112 | | | |
| Pyrene | 0.318 | 0.33 | " | 0.333 | ND | 95.5 | 52-115 | | | |
| 1,2,4-Trichlorobenzene | 0.318 | 0.33 | " | 0.333 | ND | 95.5 | 44-142 | | | |
| **Matrix Spike Dup (B0B2102-MSD1)** | | **Source: 2002212-01** | | Prepared: 02/21/20 Analyzed: 02/24/20 | | | | | | |
| Acenaphthene | 0.292 | 0.33 | mg/kg | 0.333 | ND | 87.7 | 47-145 | 13.5 | 30 | |
| 2-Chlorophenol | 0.808 | 0.33 | " | 0.667 | ND | 121 | 23-134 | 0.247 | 30 | |
| 4-Chloro-3-methylphenol | 0.707 | 0.33 | " | 0.667 | ND | 106 | 22-147 | 6.70 | 30 | |
| 1,4-Dichlorobenzene | 0.347 | 0.33 | " | 0.333 | ND | 104 | 20-124 | 9.98 | 30 | |
| 2,4-Dinitrotoluene | 0.175 | 0.33 | " | 0.333 | ND | 52.6 | 39-139 | 18.8 | 30 | |
| 4-Nitrophenol | 0.773 | 0.33 | " | 0.667 | ND | 116 | 0-132 | 26.0 | 30 | |
| N-Nitrosodi-n-propylamine | 0.480 | 0.33 | " | 0.333 | ND | 144 | 0-230 | 13.1 | 30 | |
| Pentachlorophenol | 0.309 | 0.33 | " | 0.667 | ND | 46.3 | 14-176 | 15.5 | 30 | |
| Phenol | 0.555 | 0.33 | " | 0.667 | ND | 83.2 | 5-112 | 3.30 | 30 | |
| Pyrene | 0.349 | 0.33 | " | 0.333 | ND | 105 | 52-115 | 9.30 | 30 | |
| 1,2,4-Trichlorobenzene | 0.356 | 0.33 | " | 0.333 | ND | 107 | 44-142 | 11.3 | 30 | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | | |
|---|---|---|---|
| Mearns Consulting LLC | Project: | 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: | [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: | Susan Mearns | 02/26/20 11:36 |

**Notes and Definitions**

| | |
|---|---|
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

**SIERRA ANALYTICAL**
TEL: 949 • 348 • 9389
FAX: 949 • 348 • 9115
26052 Merit Circle • Suite 104 • Laguna Hills, CA • 92653

# CHAIN OF CUSTODY RECORD

Date: 2 / 18 / 20 Page: 1 of 2

Lab Work Order No.: 2002212

Client: MEARNS CONSULTING CORP
Client Address: 738 ASHLAND AVE
SANTA MONICA CA 90405

Client Tel. No.: 310 403 1921
Client Fax. No.: 310 396 6878
Client Proj. Mgr.: SUSAN L MEARNS PHD

Client Project ID: 950 E 33rd & 3477 CALIFORNIA AVE

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☐ 5 Day ☒ Normal ☐ Mobile

Analyses Requested

Geotracker EDD Info:
Client LOGCODE
Site Global ID

| Client Sample ID. | Sierra No. | Date | Time | Matrix | Preservative | Container Type | No. of Containers | TPHg 8015B | TPHd 8015B | TPHo 8015B | SPECIATED CARBON CHAINS 8015B | VOCs 5035B / 8260B | SVOCs 8270 | TTLC METALS 6000/7000 | Cr+6 | | | | | Field Point Names / Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SB1-5 | 01 | 2-18-20 | 0817 | SOIL | 10E | 6" SLV 4 VOA VIALS | 1/4 | X | X | X | X | X | X | X | X | | | | | |
| SB1-10 | 02 | ↓ | 0817 | ↓ | ↓ | ↓ | ↓ | X | X | X | X | X | X | X | X | | | | | |
| SB2-5 | 03 | | 0917 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB2-10 | 04 | | 0924 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB3-5 | 05 | | 1014 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB3-10 | 06 | | 1021 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB4-5 | 07 | | 1109 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB4-10 | 08 | | 1116 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB5-5 | 09 | | 1142 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB5-10 | 10 | ↓ | 1149 | ↓ | ↓ | ↓ | ↓ | X | X | X | X | X | X | X | X | | | | | |

1 Sampler Signature: [signature] Scott Fagan
Printed Name: SUSAN MEARNS Scott Fagan
Shipped Via: HAND DELIVERED
(Carrier/Waybill No.)

50/80 Total Number of Containers Submitted to Laboratory

2 Relinquished By: [signature] Date: 2-18-20 Received By: [signature] Date: 2/18/20
Company: MEARNS CONSULTING Time: 1610 Company: SIERRA Time: 1610

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* - Samples determined to be hazardous by SIERRA will be returned to CLIENT.

3 Relinquished By: Date: Received By: Date:
Company: Time: Company: Time:

50/80 Total Number of Containers Received by Laboratory

4 Relinquished By: Date: Received By: Date:
Company: Time: Company: Time:

Special Instructions:

Sample Disposal:
☐ Return to Client
☐ Lab Disposal *
☐ Archive ____ mos.
☐ Other ____

FOR LABORATORY USE ONLY - Sample Receipt Conditions:
☑ Intact ☑ Chilled - Temp (°C) 40°
☐ Sample Seals ☐ Preservatives - Verified By
☑ Properly Labelled ☐ Other
☑ Appropriate Sample Container ☑ Storage Location R5-R1A2

Rev: 120321

DISTRIBUTION: White - To Accompany Samples, Yellow - Laboratory Copy, Pink - Field Personnel Copy

**SIERRA ANALYTICAL**
TEL: 949 • 348 • 9389
FAX: 949 • 348 • 9115
26052 Merit Circle • Suite 104 • Laguna Hills, CA • 92653

# CHAIN OF CUSTODY RECORD

Date: 2 / 18 / 20 Page: 2 of 2

Lab Work Order No.: 2002212

Client: MEARNS CONSULTING CORP
Client Address: 738 ASHLAND AVE
SANTA MONICA CA 90405

Client Tel. No.: 310 403 1921
Client Fax. No.: 310 396 6878
Client Proj. Mgr.: SUSAN L MEARNS PHD

Client Project ID: 950 E33rd & 3177 CALIFORNIA

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☐ 5 Day ☒ Normal ☐ Mobile

Analyses Requested

Geotracker EDD Info:
Client LOGCODE
Site Global ID

| Client Sample ID. | Sierra No. | Date | Time | Matrix | Preservative | Container Type | No. of Containers | TPHg 8015B | TPHd 8015B | TPHo 8015B | Speciated Carbon Chains 8015B | VOCs 5035B/8260B | SVOCs 8270 | TLC Metals 6000/7000 | Cr+6 | | | | | Field Point Names / Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SB6-5 | 11 | 2-18-20 | 1301 | SOIL | ICE | 6" SDV VOA VIALS | 1/4 | X | X | X | X | X | X | X | X | | | | | |
| SB6-10 | 12 | ↓ | 1310 | ↓ | ↓ | ↓ | ↓ | X | X | X | X | X | X | X | X | | | | | |
| SB7-5 | 13 | | 1341 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB7-10 | 14 | | 1348 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB8-5 | 15 | | 1422 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB8-10 | 16 | | 1435 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB9-5 | 17 | | 1508 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB9-10 | 18 | ↓ | 1519 | ↓ | ↓ | ↓ | ↓ | X | X | X | X | X | X | X | X | | | | | |

1 Sampler Signature: [signature] Scott Fagan
Printed Name: SUSAN MEARNS Scott Fagan
Shipped Via: HAND DELIVERED
(Carrier/Waybill No.)

2 Relinquished By: [signature] Date: 2-18-20 Received By: [signature] Date: 2/18/20
Company: MEARNS CONSULTING Time: 1610 Company: Scott Fagan Time: 1610

3 Relinquished By: Date: Received By: Date:
Company: Time: Company: Time:

4 Relinquished By: Date: Received By: Date:
Company: Time: Company: Time:

Special Instructions:

40/80 Total Number of Containers Submitted to Laboratory

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* Samples determined to be hazardous by SIERRA will be returned to CLIENT.

40/80 Total Number of Containers Received by Laboratory

Sample Disposal:
☐ Return to Client
☐ Lab Disposal *
☐ Archive ____ mos.
☐ Other ____

FOR LABORATORY USE ONLY - Sample Receipt Conditions:
☑ Intact ☑ Chilled - Temp (°C) 40
☐ Sample Seals ☐ Preservatives - Verified By
☑ Properly Labelled ☐ Other
☑ Appropriate Sample Container ☑ Storage Location (RS-WCAH)

Rev: 120321

DISTRIBUTION: White - To Accompany Samples, Yellow - Laboratory Copy, Pink - Field Personnel Copy

# APPENDIX B

## Jones Environmental Inc.
## Soil Vapor Analytical Results
## February 21, 2020

JONES ENVIRONMENTAL, INC.

714-449-9937
562-646-1611
805-399-0060

11007 FOREST PLACE
SANTA FE SPRINGS, CA 90670
WWW.JONESENV.COM

# JONES ENVIRONMENTAL LABORATORY RESULTS

| | | | |
|---|---|---|---|
| **Client:** | Mearns Consulting Corp | **Report date:** | 2/21/2020 |
| **Client Address:** | 738 Ashland Avenue<br>Santa Monica, CA 90405 | **Jones Ref. No.:** | G-0094 |
| **Attn:** | Susan L Mearns | **Date Sampled:** | 2/21/2020 |
| | | **Date Received:** | 2/21/2020 |
| **Project:** | 950 E 33rd & 3177 California Ave | **Date Analyzed:** | 2/21/2020 |
| **Project Address:** | 950 E 33rd & 3177 California Ave<br>Signal Hill, CA 90755 | **Physical State:** | Soil Gas |

**ANALYSES REQUESTED**

1. EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

Sampling – Soil Gas samples were collected in glass gas-tight syringes equipped with Teflon plungers.

A tracer gas mixture of n-pentane, n-hexane, and n-heptane was placed at the tubing-surface interface before sampling. These compounds were analyzed during the 8260B analytical run to determine if there were surface leaks into the subsurface due to improper installation of the probe. No tracer was detected in any of the samples reported herein.

The sampling rate was approximately 200 cc/min, except when noted differently on the chain of custody record, using a glass gas-tight syringe. Purging was completed using a pump set at approximately 200 cc/min, except when noted differently on the chain of custody record. A default of 3 purge volumes was used as recommended by July 2015 DTSC/RWQCB guidance documents.

Prior to purging and sampling of soil gas at each point, a shut-in test was conducted to check for leaks in the above ground fittings. The shut-in test was performed on the above ground apparatus by evacuating the line to a vacuum of 100 inches of water, sealing the entire system and watching the vacuum for at least one minute. A vacuum gauge attached in parallel to the apparatus measured the vacuum. If there was any observable loss of vacuum, the fittings were adjusted as needed until the vacuum did not change noticeably. The soil gas sample was then taken.

No flow conditions occur when a sampling rate greater than 10 mL/min cannot be maintained without applying a vacuum greater than 100 inches of water to the sampling train. The sampling train is left at a vacuum for no less than three minutes. If the vacuum does not subside appreciably after three minutes, the sample location is determined to be a no flow sample.

Analytical – Soil Gas samples were analyzed using EPA Method 8260 that includes extra compounds required by DTSC/RWQCB (such as Freon 113). Instrument Continuing Calibration Verification, QC Reference Standards, Instrument Blanks and Sampling Blanks were analyzed every 12 hours as prescribed by the method. In addition, a Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (LCSD) were analyzed with each batch of Soil Gas samples. A duplicate/replicate sample was analyzed each day of the sampling activity. All samples were injected into the GC/MS system within 30 minutes of collection.

**Approval:**

Colby Wakeman
QA/QC Manager

JONES ENVIRONMENTAL, INC.
714-449-9937
562-646-1611
805-399-0060
11007 FOREST PLACE
SANTA FE SPRINGS, CA 90670
WWW.JONESENV.COM

# JONES ENVIRONMENTAL LABORATORY RESULTS

| | | | |
|---|---|---|---|
| **Client:** | Mearns Consulting Corp | **Report date:** | 2/21/2020 |
| **Client Address:** | 738 Ashland Avenue<br>Santa Monica, CA 90405 | **Jones Ref. No.:** | G-0094 |
| **Attn:** | Susan L Mearns | **Date Sampled:** | 2/21/2020 |
| | | **Date Received:** | 2/21/2020 |
| **Project:** | 950 E 33rd & 3177 California Ave | **Date Analyzed:** | 2/21/2020 |
| **Project Address:** | 950 E 33rd & 3177 California Ave<br>Signal Hill, CA 90755 | **Physical State:** | Soil Gas |

## EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV1-5'** | **SV1-10'** | **SV2-5'** | **SV2-10'** | **SV3-5'** | | |
|---|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-01** | **G-0094-02** | **G-0094-03** | **G-0094-04** | **G-0094-05** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | | |
| Benzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromobenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromodichloromethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromoform | ND | ND | ND | ND | ND | 8 | µg/m3 |
| n-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| sec-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| tert-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| Carbon tetrachloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Chlorobenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Chloroform | **12** | ND | ND | ND | ND | 8 | µg/m3 |
| 2-Chlorotoluene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| 4-Chlorotoluene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| Dibromochloromethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromo-3-chloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromoethane (EDB) | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Dibromomethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2- Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,3-Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,4-Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Dichlorodifluoromethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| cis-1,2-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,2-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,3-Dichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 2,2-Dichloropropane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloropropene | ND | ND | ND | ND | ND | 10 | µg/m3 |

## JONES ENVIRONMENTAL LABORATORY RESULTS

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV1-5'** | **SV1-10'** | **SV2-5'** | **SV2-10'** | **SV3-5'** | | |
|---|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-01** | **G-0094-02** | **G-0094-03** | **G-0094-04** | **G-0094-05** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | | |
| cis-1,3-Dichloropropene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,3-Dichloropropene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Ethylbenzene | **18** | ND | ND | ND | ND | 8 | µg/m3 |
| Freon 113 | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Hexachlorobutadiene | ND | ND | ND | ND | ND | 24 | µg/m3 |
| Isopropylbenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 4-Isopropyltoluene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Methylene chloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Naphthalene | ND | ND | ND | ND | ND | 40 | µg/m3 |
| n-Propylbenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Styrene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,1,2-Tetrachloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Tetrachloroethene | ND | ND | **8** | ND | ND | 8 | µg/m3 |
| Toluene | **21** | ND | **33** | **11** | **32** | 8 | µg/m3 |
| 1,2,3-Trichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,4-Trichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1,1-Trichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2-Trichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Trichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Trichlorofluoromethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,3-Trichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2,4-Trimethylbenzene | **8** | ND | **11** | ND | **11** | 8 | µg/m3 |
| 1,3,5-Trimethylbenzene | **9** | ND | ND | ND | ND | 8 | µg/m3 |
| Vinyl chloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| m,p-Xylene | **100** | ND | ND | ND | ND | 16 | µg/m3 |
| o-Xylene | **34** | ND | ND | ND | ND | 8 | µg/m3 |
| MTBE | ND | ND | ND | ND | ND | 40 | µg/m3 |
| Ethyl-tert-butylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| Di-isopropylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| tert-amylmethylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| tert-Butylalcohol | ND | ND | ND | ND | ND | 400 | µg/m3 |
| Gasoline Range Organics (C4-C12) | ND | ND | ND | ND | ND | 2000 | µg/m3 |
| **Tracer:** | | | | | | | |
| n-Pentane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| n-Hexane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| n-Heptane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| **Dilution Factor** | 1 | 1 | 1 | 1 | 1 | | |
| **Surrogate Recoveries:** | | | | | | **QC Limits** | |
| Dibromofluoromethane | 112% | 110% | 113% | 116% | 113% | 60 - 140 | |
| Toluene-$d_8$ | 95% | 103% | 97% | 98% | 98% | 60 - 140 | |
| 4-Bromofluorobenzene | 99% | 102% | 101% | 100% | 103% | 60 - 140 | |
| **Batch ID:** | G1-022120-01 | G1-022120-01 | G1-022120-01 | G1-022120-01 | G1-022120-01 | | |

ND = Value below reporting limit

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# JONES ENVIRONMENTAL LABORATORY RESULTS

| | | | |
|---|---|---|---|
| **Client:** | Mearns Consulting Corp | **Report date:** | 2/21/2020 |
| **Client Address:** | 738 Ashland Avenue<br>Santa Monica, CA 90405 | **Jones Ref. No.:** | G-0094 |
| **Attn:** | Susan L Mearns | **Date Sampled:** | 2/21/2020 |
| | | **Date Received:** | 2/21/2020 |
| **Project:** | 950 E 33rd & 3177 California Ave | **Date Analyzed:** | 2/21/2020 |
| **Project Address:** | 950 E 33rd & 3177 California Ave<br>Signal Hill, CA 90755 | **Physical State:** | Soil Gas |

## EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV3-10'** | **SV4-5'** | **SV4-10'** | **SV4-10' REP** | **SV5-5'** | | |
|---|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-06** | **G-0094-07** | **G-0094-08** | **G-0094-09** | **G-0094-10** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | | |
| Benzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromobenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromodichloromethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromoform | ND | ND | ND | ND | ND | 8 | µg/m3 |
| n-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| sec-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| tert-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| Carbon tetrachloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Chlorobenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Chloroform | ND | ND | ND | ND | **8** | 8 | µg/m3 |
| 2-Chlorotoluene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| 4-Chlorotoluene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| Dibromochloromethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromo-3-chloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromoethane (EDB) | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Dibromomethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2- Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,3-Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,4-Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Dichlorodifluoromethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| cis-1,2-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,2-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,3-Dichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 2,2-Dichloropropane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloropropene | ND | ND | ND | ND | ND | 10 | µg/m3 |

## JONES ENVIRONMENTAL LABORATORY RESULTS

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV3-10'** | **SV4-5'** | **SV4-10'** | **SV4-10' REP** | **SV5-5'** | | |
|---|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-06** | **G-0094-07** | **G-0094-08** | **G-0094-09** | **G-0094-10** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | | |
| cis-1,3-Dichloropropene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,3-Dichloropropene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Ethylbenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Freon 113 | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Hexachlorobutadiene | ND | ND | ND | ND | ND | 24 | µg/m3 |
| Isopropylbenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 4-Isopropyltoluene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Methylene chloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Naphthalene | ND | ND | ND | ND | ND | 40 | µg/m3 |
| n-Propylbenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Styrene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,1,2-Tetrachloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Tetrachloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Toluene | ND | **10** | ND | ND | ND | 8 | µg/m3 |
| 1,2,3-Trichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,4-Trichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1,1-Trichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2-Trichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Trichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Trichlorofluoromethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,3-Trichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2,4-Trimethylbenzene | ND | **16** | ND | ND | **13** | 8 | µg/m3 |
| 1,3,5-Trimethylbenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Vinyl chloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| m,p-Xylene | ND | ND | ND | ND | **19** | 16 | µg/m3 |
| o-Xylene | ND | ND | ND | ND | **9** | 8 | µg/m3 |
| MTBE | ND | ND | ND | ND | ND | 40 | µg/m3 |
| Ethyl-tert-butylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| Di-isopropylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| tert-amylmethylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| tert-Butylalcohol | ND | ND | ND | ND | ND | 400 | µg/m3 |
| Gasoline Range Organics (C4-C12) | ND | ND | ND | ND | ND | 2000 | µg/m3 |
| **Tracer:** | | | | | | | |
| n-Pentane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| n-Hexane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| n-Heptane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| **Dilution Factor** | 1 | 1 | 1 | 1 | 1 | | |
| **Surrogate Recoveries:** | | | | | | **QC Limits** | |
| Dibromofluoromethane | 113% | 107% | 115% | 115% | 110% | 60 - 140 | |
| Toluene-$d_8$ | 98% | 99% | 98% | 97% | 98% | 60 - 140 | |
| 4-Bromofluorobenzene | 104% | 101% | 100% | 97% | 100% | 60 - 140 | |
| **Batch ID:** | G1-022120-01 | G1-022120-01 | G1-022120-01 | G1-022120-01 | G1-022120-01 | | |

ND = Value below reporting limit

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# JONES ENVIRONMENTAL LABORATORY RESULTS

| | | | |
|---|---|---|---|
| **Client:** | Mearns Consulting Corp | **Report date:** | 2/21/2020 |
| **Client Address:** | 738 Ashland Avenue<br>Santa Monica, CA 90405 | **Jones Ref. No.:** | G-0094 |
| **Attn:** | Susan L Mearns | **Date Sampled:** | 2/21/2020 |
| | | **Date Received:** | 2/21/2020 |
| **Project:** | 950 E 33rd & 3177 California Ave | **Date Analyzed:** | 2/21/2020 |
| **Project Address:** | 950 E 33rd & 3177 California Ave<br>Signal Hill, CA 90755 | **Physical State:** | Soil Gas |

## EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV5-10'** | **SV6-5'** | **SV6-5' REP** | **SV7-5'** | **SV7-10'** | | |
|---|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-11** | **G-0094-12** | **G-0094-13** | **G-0094-15** | **G-0094-16** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | | |
| Benzene | ND | ND | ND | ND | **19** | 8 | µg/m3 |
| Bromobenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromodichloromethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromoform | ND | ND | ND | ND | ND | 8 | µg/m3 |
| n-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| sec-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| tert-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| Carbon tetrachloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Chlorobenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Chloroform | ND | ND | ND | ND | **11** | 8 | µg/m3 |
| 2-Chlorotoluene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| 4-Chlorotoluene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| Dibromochloromethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromo-3-chloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromoethane (EDB) | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Dibromomethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2- Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,3-Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,4-Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Dichlorodifluoromethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| cis-1,2-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,2-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,3-Dichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 2,2-Dichloropropane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloropropene | ND | ND | ND | ND | ND | 10 | µg/m3 |

## JONES ENVIRONMENTAL LABORATORY RESULTS

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV5-10'** | **SV6-5'** | **SV6-5' REP** | **SV7-5'** | **SV7-10'** | | |
|---|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-11** | **G-0094-12** | **G-0094-13** | **G-0094-15** | **G-0094-16** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | | |
| cis-1,3-Dichloropropene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,3-Dichloropropene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Ethylbenzene | ND | ND | ND | ND | **23** | 8 | µg/m3 |
| Freon 113 | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Hexachlorobutadiene | ND | ND | ND | ND | ND | 24 | µg/m3 |
| Isopropylbenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 4-Isopropyltoluene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Methylene chloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Naphthalene | ND | ND | ND | ND | ND | 40 | µg/m3 |
| n-Propylbenzene | ND | ND | ND | ND | **20** | 8 | µg/m3 |
| Styrene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,1,2-Tetrachloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Tetrachloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Toluene | ND | ND | ND | ND | **45** | 8 | µg/m3 |
| 1,2,3-Trichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,4-Trichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1,1-Trichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2-Trichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Trichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Trichlorofluoromethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,3-Trichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2,4-Trimethylbenzene | ND | ND | ND | ND | **123** | 8 | µg/m3 |
| 1,3,5-Trimethylbenzene | ND | ND | ND | ND | **40** | 8 | µg/m3 |
| Vinyl chloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| m,p-Xylene | ND | ND | ND | ND | **76** | 16 | µg/m3 |
| o-Xylene | ND | ND | ND | ND | **40** | 8 | µg/m3 |
| MTBE | ND | ND | ND | ND | ND | 40 | µg/m3 |
| Ethyl-tert-butylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| Di-isopropylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| tert-amylmethylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| tert-Butylalcohol | ND | ND | ND | ND | ND | 400 | µg/m3 |
| Gasoline Range Organics (C4-C12) | ND | ND | ND | ND | ND | 2000 | µg/m3 |
| **Tracer:** | | | | | | | |
| n-Pentane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| n-Hexane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| n-Heptane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| **Dilution Factor** | 1 | 1 | 1 | 1 | 1 | | |
| **Surrogate Recoveries:** | | | | | | **QC Limits** | |
| Dibromofluoromethane | 113% | 113% | 109% | 108% | 111% | 60 - 140 | |
| Toluene-$d_8$ | 98% | 100% | 98% | 98% | 97% | 60 - 140 | |
| 4-Bromofluorobenzene | 99% | 101% | 104% | 102% | 101% | 60 - 140 | |
| **Batch ID:** | G1-022120-01 | G1-022120-01 | G1-022120-01 | G1-022120-01 | G1-022120-01 | | |

ND = Value below reporting limit

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# JONES ENVIRONMENTAL LABORATORY RESULTS

| | | | |
|---|---|---|---|
| **Client:** | Mearns Consulting Corp | **Report date:** | 2/21/2020 |
| **Client Address:** | 738 Ashland Avenue<br>Santa Monica, CA 90405 | **Jones Ref. No.:** | G-0094 |
| **Attn:** | Susan L Mearns | **Date Sampled:** | 2/21/2020 |
| | | **Date Received:** | 2/21/2020 |
| **Project:** | 950 E 33rd & 3177 California Ave | **Date Analyzed:** | 2/21/2020 |
| **Project Address:** | 950 E 33rd & 3177 California Ave<br>Signal Hill, CA 90755 | **Physical State:** | Soil Gas |

## EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV8-5'** | **SV8-10'** | **SV9-5'** | **SV9-10'** | | |
|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-17** | **G-0094-18** | **G-0094-19** | **G-0094-20** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | |
| Benzene | ND | ND | ND | **19** | 8 | µg/m3 |
| Bromobenzene | ND | ND | ND | ND | 8 | µg/m3 |
| Bromodichloromethane | ND | ND | ND | ND | 8 | µg/m3 |
| Bromoform | ND | ND | ND | ND | 8 | µg/m3 |
| n-Butylbenzene | ND | ND | ND | ND | 12 | µg/m3 |
| sec-Butylbenzene | ND | ND | ND | ND | 12 | µg/m3 |
| tert-Butylbenzene | ND | ND | ND | ND | 12 | µg/m3 |
| Carbon tetrachloride | ND | ND | ND | ND | 8 | µg/m3 |
| Chlorobenzene | ND | ND | ND | ND | 8 | µg/m3 |
| Chloroform | **34** | ND | ND | **20** | 8 | µg/m3 |
| 2-Chlorotoluene | ND | ND | ND | ND | 12 | µg/m3 |
| 4-Chlorotoluene | ND | ND | ND | ND | 12 | µg/m3 |
| Dibromochloromethane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromo-3-chloropropane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromoethane (EDB) | ND | ND | ND | ND | 8 | µg/m3 |
| Dibromomethane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2- Dichlorobenzene | ND | ND | ND | ND | 16 | µg/m3 |
| 1,3-Dichlorobenzene | ND | ND | ND | ND | 16 | µg/m3 |
| 1,4-Dichlorobenzene | ND | ND | ND | ND | 16 | µg/m3 |
| Dichlorodifluoromethane | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloroethane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloroethane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1-Dichloroethene | ND | ND | ND | ND | 8 | µg/m3 |
| cis-1,2-Dichloroethene | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,2-Dichloroethene | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloropropane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,3-Dichloropropane | ND | ND | ND | ND | 8 | µg/m3 |
| 2,2-Dichloropropane | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloropropene | ND | ND | ND | ND | 10 | µg/m3 |

## JONES ENVIRONMENTAL LABORATORY RESULTS

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV8-5'** | **SV8-10'** | **SV9-5'** | **SV9-10'** | | |
|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-17** | **G-0094-18** | **G-0094-19** | **G-0094-20** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | |
| cis-1,3-Dichloropropene | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,3-Dichloropropene | ND | ND | ND | ND | 8 | µg/m3 |
| Ethylbenzene | ND | ND | ND | **99** | 8 | µg/m3 |
| Freon 113 | ND | ND | ND | ND | 16 | µg/m3 |
| Hexachlorobutadiene | ND | ND | ND | ND | 24 | µg/m3 |
| Isopropylbenzene | ND | ND | ND | ND | 8 | µg/m3 |
| 4-Isopropyltoluene | ND | ND | ND | ND | 8 | µg/m3 |
| Methylene chloride | ND | ND | ND | ND | 8 | µg/m3 |
| Naphthalene | ND | ND | ND | ND | 40 | µg/m3 |
| n-Propylbenzene | ND | ND | ND | ND | 8 | µg/m3 |
| Styrene | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,1,2-Tetrachloroethane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | ND | 16 | µg/m3 |
| Tetrachloroethene | ND | ND | ND | ND | 8 | µg/m3 |
| Toluene | ND | ND | ND | **27** | 8 | µg/m3 |
| 1,2,3-Trichlorobenzene | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,4-Trichlorobenzene | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1,1-Trichloroethane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2-Trichloroethane | ND | ND | ND | ND | 8 | µg/m3 |
| Trichloroethene | ND | ND | ND | ND | 8 | µg/m3 |
| Trichlorofluoromethane | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,3-Trichloropropane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2,4-Trimethylbenzene | ND | ND | ND | ND | 8 | µg/m3 |
| 1,3,5-Trimethylbenzene | ND | ND | ND | ND | 8 | µg/m3 |
| Vinyl chloride | ND | ND | ND | ND | 8 | µg/m3 |
| m,p-Xylene | ND | ND | ND | **322** | 16 | µg/m3 |
| o-Xylene | ND | ND | ND | **151** | 8 | µg/m3 |
| MTBE | ND | ND | ND | ND | 40 | µg/m3 |
| Ethyl-tert-butylether | ND | ND | ND | ND | 40 | µg/m3 |
| Di-isopropylether | ND | ND | ND | ND | 40 | µg/m3 |
| tert-amylmethylether | ND | ND | ND | ND | 40 | µg/m3 |
| tert-Butylalcohol | ND | ND | ND | ND | 400 | µg/m3 |
| Gasoline Range Organics (C4-C12) | ND | ND | ND | ND | 2000 | µg/m3 |
| **Tracer:** | | | | | | |
| n-Pentane | ND | ND | ND | ND | 80 | µg/m3 |
| n-Hexane | ND | ND | ND | ND | 80 | µg/m3 |
| n-Heptane | ND | ND | ND | ND | 80 | µg/m3 |
| **Dilution Factor** | 1 | 1 | 1 | 1 | | |
| **Surrogate Recoveries:** | | | | | **QC Limits** | |
| Dibromofluoromethane | 108% | 109% | 113% | 112% | 60 - 140 | |
| Toluene-$d_8$ | 99% | 96% | 95% | 96% | 60 - 140 | |
| 4-Bromofluorobenzene | 101% | 100% | 99% | 100% | 60 - 140 | |
| **Batch ID:** | G1-022120-01 | G1-022120-01 | G1-022120-01 | G1-022120-01 | | |

ND = Value below reporting limit

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## JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

| | | | |
|---|---|---|---|
| **Client:** | Mearns Consulting Corp | **Report date:** | 2/21/2020 |
| **Client Address:** | 738 Ashland Avenue<br>Santa Monica, CA 90405 | **Jones Ref. No.:** | G-0094 |
| **Attn:** | Susan L Mearns | **Date Sampled:** | 2/21/2020 |
| | | **Date Received:** | 2/21/2020 |
| **Project:** | 950 E 33rd & 3177 California Ave | **Date Analyzed:** | 2/21/2020 |
| **Project Address:** | 950 E 33rd & 3177 California Ave<br>Signal Hill, CA 90755 | **Physical State:** | Soil Gas |

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **METHOD BLANK** | **SAMPLING BLANK** | | |
|---|---|---|---|---|
| **Jones ID:** | **022120-G1MB1** | **022120-G1SB1** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | |
| Benzene | ND | ND | 8 | µg/m3 |
| Bromobenzene | ND | ND | 8 | µg/m3 |
| Bromodichloromethane | ND | ND | 8 | µg/m3 |
| Bromoform | ND | ND | 8 | µg/m3 |
| n-Butylbenzene | ND | ND | 12 | µg/m3 |
| sec-Butylbenzene | ND | ND | 12 | µg/m3 |
| tert-Butylbenzene | ND | ND | 12 | µg/m3 |
| Carbon tetrachloride | ND | ND | 8 | µg/m3 |
| Chlorobenzene | ND | ND | 8 | µg/m3 |
| Chloroform | ND | ND | 8 | µg/m3 |
| 2-Chlorotoluene | ND | ND | 12 | µg/m3 |
| 4-Chlorotoluene | ND | ND | 12 | µg/m3 |
| Dibromochloromethane | ND | ND | 8 | µg/m3 |
| 1,2-Dibromo-3-chloropropane | ND | ND | 8 | µg/m3 |
| 1,2-Dibromoethane (EDB) | ND | ND | 8 | µg/m3 |
| Dibromomethane | ND | ND | 8 | µg/m3 |
| 1,2- Dichlorobenzene | ND | ND | 16 | µg/m3 |
| 1,3-Dichlorobenzene | ND | ND | 16 | µg/m3 |
| 1,4-Dichlorobenzene | ND | ND | 16 | µg/m3 |
| Dichlorodifluoromethane | ND | ND | 16 | µg/m3 |
| 1,1-Dichloroethane | ND | ND | 8 | µg/m3 |
| 1,2-Dichloroethane | ND | ND | 8 | µg/m3 |
| 1,1-Dichloroethene | ND | ND | 8 | µg/m3 |
| cis-1,2-Dichloroethene | ND | ND | 8 | µg/m3 |
| trans-1,2-Dichloroethene | ND | ND | 8 | µg/m3 |
| 1,2-Dichloropropane | ND | ND | 8 | µg/m3 |
| 1,3-Dichloropropane | ND | ND | 8 | µg/m3 |
| 2,2-Dichloropropane | ND | ND | 16 | µg/m3 |
| 1,1-Dichloropropene | ND | ND | 10 | µg/m3 |

## JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **METHOD BLANK** | **SAMPLING BLANK** | | |
|---|---|---|---|---|
| **Jones ID:** | **022120-G1MB1** | **022120-G1SB1** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | |
| cis-1,3-Dichloropropene | ND | ND | 8 | µg/m3 |
| trans-1,3-Dichloropropene | ND | ND | 8 | µg/m3 |
| Ethylbenzene | ND | ND | 8 | µg/m3 |
| Freon 113 | ND | ND | 16 | µg/m3 |
| Hexachlorobutadiene | ND | ND | 24 | µg/m3 |
| Isopropylbenzene | ND | ND | 8 | µg/m3 |
| 4-Isopropyltoluene | ND | ND | 8 | µg/m3 |
| Methylene chloride | ND | ND | 8 | µg/m3 |
| Naphthalene | ND | ND | 40 | µg/m3 |
| n-Propylbenzene | ND | ND | 8 | µg/m3 |
| Styrene | ND | ND | 8 | µg/m3 |
| 1,1,1,2-Tetrachloroethane | ND | ND | 8 | µg/m3 |
| 1,1,2,2-Tetrachloroethane | ND | ND | 16 | µg/m3 |
| Tetrachloroethene | ND | ND | 8 | µg/m3 |
| Toluene | ND | ND | 8 | µg/m3 |
| 1,2,3-Trichlorobenzene | ND | ND | 16 | µg/m3 |
| 1,2,4-Trichlorobenzene | ND | ND | 16 | µg/m3 |
| 1,1,1-Trichloroethane | ND | ND | 8 | µg/m3 |
| 1,1,2-Trichloroethane | ND | ND | 8 | µg/m3 |
| Trichloroethene | ND | ND | 8 | µg/m3 |
| Trichlorofluoromethane | ND | ND | 16 | µg/m3 |
| 1,2,3-Trichloropropane | ND | ND | 8 | µg/m3 |
| 1,2,4-Trimethylbenzene | ND | ND | 8 | µg/m3 |
| 1,3,5-Trimethylbenzene | ND | ND | 8 | µg/m3 |
| Vinyl chloride | ND | ND | 8 | µg/m3 |
| m,p-Xylene | ND | ND | 16 | µg/m3 |
| o-Xylene | ND | ND | 8 | µg/m3 |
| MTBE | ND | ND | 40 | µg/m3 |
| Ethyl-tert-butylether | ND | ND | 40 | µg/m3 |
| Di-isopropylether | ND | ND | 40 | µg/m3 |
| tert-amylmethylether | ND | ND | 40 | µg/m3 |
| tert-Butylalcohol | ND | ND | 400 | µg/m3 |
| Gasoline Range Organics (C4-C12) | ND | ND | 2000 | µg/m3 |
| **Tracer:** | | | | |
| n-Pentane | ND | ND | 80 | µg/m3 |
| n-Hexane | ND | ND | 80 | µg/m3 |
| n-Heptane | ND | ND | 80 | µg/m3 |
| **Dilution Factor** | 1 | 1 | | |
| **Surrogate Recoveries:** | | | **QC Limits** | |
| Dibromofluoromethane | 114% | 110% | 60 - 140 | |
| Toluene-$d_8$ | 97% | 92% | 60 - 140 | |
| 4-Bromofluorobenzene | 105% | 97% | 60 - 140 | |
| **Batch ID:** | G1-022120-01 | G1-022120-01 | | |

ND = Value below reporting limit

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## JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

| | | | |
|---|---|---|---|
| **Client:** | Mearns Consulting Corp | **Report date:** | 2/21/2020 |
| **Client Address:** | 738 Ashland Avenue<br>Santa Monica, CA 90405 | **Jones Ref. No.:** | G-0094 |
| **Attn:** | Susan L Mearns | **Date Sampled:** | 2/21/2020 |
| | | **Date Received:** | 2/21/2020 |
| **Project:** | 950 E 33rd & 3177 California Ave | **Date Analyzed:** | 2/21/2020 |
| **Project Address:** | 950 E 33rd & 3177 California Ave<br>Signal Hill, CA 90755 | **Physical State:** | Soil Gas |

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

**Batch ID:** G1-022120-01

| **Jones ID:** | **022120-G1LCS1** | **022120-G1LCSD1** | | | **022120-G1CCV1** | |
|---|---|---|---|---|---|---|
| Parameter | LCS Recovery (%) | LCSD Recovery (%) | RPD | Acceptability Range (%) | CCV | Acceptability Range (%) |
| Vinyl chloride | 58% | 58% | 0.3% | 60 - 140 | 80% | 80 - 120 |
| 1,1-Dichloroethene | 78% | 81% | 2.8% | 60 - 140 | 98% | 80 - 120 |
| Cis-1,2-Dichloroethene | 104% | 102% | 2.4% | 70 - 130 | 100% | 80 - 120 |
| 1,1,1-Trichloroethane | 100% | 93% | 6.9% | 70 - 130 | 107% | 80 - 120 |
| Benzene | 102% | 98% | 3.4% | 70 - 130 | 103% | 80 - 120 |
| Trichloroethene | 93% | 96% | 3.0% | 70 - 130 | 98% | 80 - 120 |
| Toluene | 105% | 100% | 5.0% | 70 - 130 | 105% | 80 - 120 |
| Tetrachloroethene | 97% | 95% | 2.3% | 70 - 130 | 109% | 80 - 120 |
| Chlorobenzene | 107% | 101% | 6.3% | 70 - 130 | 102% | 80 - 120 |
| Ethylbenzene | 116% | 110% | 5.0% | 70 - 130 | 112% | 80 - 120 |
| 1,2,4 Trimethylbenzene | 127% | 119% | 6.8% | 70 - 130 | 107% | 80 - 120 |
| Gasoline Range Organics (C4-C12) | 113% | 107% | 5.1% | 70 - 130 | 107% | 80 - 120 |
| **Surrogate Recovery:** | | | | | | |
| Dibromofluoromethane | 111% | 109% | | 60 - 140 | 104% | 60 - 140 |
| Toluene-$d_8$ | 96% | 96% | | 60 - 140 | 102% | 60 - 140 |
| 4-Bromofluorobenzene | 100% | 101% | | 60 - 140 | 106% | 60 - 140 |

LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
CCV = Continuing Calibration Verification
RPD = Relative Percent Difference; Acceptability range for RPD is ≤ 20%

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# Soil-Gas Chain-of-Custody Record

**Client:** Mearns Consulting Corp
**Project Name:** 950 E 33rd & 3177 California Ave
**Project Address:** 950 E 33rd & 3177 California Ave
Signal Hill, CA 90755
**Email:**
**Phone:** 310-403-1921
**Report To:** Susan L Mearns
**Sampler:** Casey Ellis

**Date:** 2/21/2020
**Client Project #:**

Purge Number: ☐ 1P ☒ 3P ☐ 7P ☐ 10P
Shut-In Test: (Y) / N

**Report Options**
EDD ____
EDF* - 10% Surcharge____
*Global ID _____

*LAB USE ONLY*
**Jones Project #** G-0094
Page 1 of 2
Sample Container: GASTIGHT GLASS SYRINGE
If different than above, see Notes.

**Turn Around Requested**
☐ Immediate Attention
☐ Rush 24 Hours
☐ Rush 48 Hours
☐ Rush 72 Hours
☐ Normal
☒ Mobile Lab

**Tracer**
☒ n-pentane
☒ n-hexane
☒ n-heptane
☐ Isopropyl Alchohol
☐ 1,1-DFA
☐ _____

**Reporting Limits**
☒ Standard ☐ Low Level* ☐ MDL*
*surcharge for these limits
**Units** ug/m³

**Analysis Requested**

| Sample ID | Purge Number | Purge Volume (mL) | Date | Sample Collection Time | Sample Analysis Time | Laboratory Sample ID | Purge Rate (mL/min) | Pump Used | Magnehelic | Sample Matrix: Soil Gas (SG), Air (A), Material (M) | EPA 8260B (VOCs) | Gasoline Range Organics | | | Magnehelic Vacuum (In/$H_2O$) | Number of Containers | Notes & Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SV1-5' | 3 | 1310 | 2/21/20 | 07:52 | 07:52 | G-0094-01 | 200 | CASEY.1 | 118007 | SG | X | X | | | <2 | 1 | |
| SV1-10' | 3 | 1390 | 2/21/20 | 08:09 | 08:09 | G-0094-02 | 200 | JOEL.1 | M100.102 | SG | X | X | | | <2 | 1 | |
| SV2-5' | 3 | 1310 | 2/21/20 | 08:28 | 08:28 | G-0094-03 | 200 | CASEY.1 | M100.107 | SG | X | X | | | <2 | 1 | |
| SV2-10' | 3 | 1390 | 2/21/20 | 08:43 | 08:44 | G-0094-04 | 200 | JOEL.1 | M100.155 | SG | X | X | | | <2 | 1 | |
| SV3-5' | 3 | 1,310 | 2/21/20 | 09:02 | 09:05 | G-0094-05 | 200 | CASEY.1 | 118007 | SG | X | X | | | <2 | 1 | |
| SV3-10' | 3 | 1,390 | 2/21/20 | 9:17 | 09:20 | G-0094-06 | 200 | JOEL.1 | M100.102 | SG | X | X | | | <2 | 1 | |
| SV4-5' | 3 | 1,310 | 2/21/20 | 9:37 | 09:38 | G-0094-07 | 200 | CASEY.1 | M100.107 | SG | X | X | | | <2 | 1 | |
| SV4-10' | 3 | 1390 | 2/21/20 | 09:56 | 09:57 | G-0094-08 | 200 | JOEL.1 | M100.155 | SG | X | X | | | <2 | 1 | |
| SV4-10' REP | 3 | 1390 | 2/21/20 | 10:06 | 10:12 | G-0094-09 | 200 | JOEL.1 | M100.155 | SG | X | X | | | <2 | 1 | |
| SV5-5' | 3 | 1310 | 2/21/20 | 10:28 | 10:30 | G-0094-10 | 200 | CASEY.1 | 118007 | SG | X | X | | | <2 | 1 | |

| Representative Signature | Printed Name | Laboratory Signature | Printed Name | | |
|---|---|---|---|---|---|
| [signature] | SUSAN MEARNS | [signature] | CASEY ELLIS | 10 | Total Number of Containers |
| **Company** | **Date** / **Time** | **Company** | **Date** / **Time** | | |
| MEARNS CONSULTING CORP | 2/21/2020 13:40 | JONES ENVIRONMENTAL, INC. | 2/21/2020 13:40 | | |
| **Representative Signature** | **Printed Name** | **Laboratory Signature** | **Printed Name** | | |
| | | | | | |
| **Company** | **Date** / **Time** | **Company** | **Date** / **Time** | | |
| | | | | | |

Client signature on this Chain of Custody form constitutes acknowledgement that the above analyses have been reqested, and the information provided herein is correct and accurate.

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# Soil-Gas Chain-of-Custody Record

**Client:** Mearns Consulting Corp

**Project Name:** 950 E 33rd & 3177 California Ave

**Project Address:** 950 E 33rd & 3177 California Ave

Signal Hill, CA 90755

**Email:**

**Phone:** 310-403-1921

**Report To:** Susan L Mearns

**Sampler:** Casey Ellis

**Date:** 2/21/2020

**Client Project #:** 0

**Purge Number:** □ 1P ☒ 3P □ 7P □ 10P

**Shut-In Test:** (Y) / N

**Report Options:** EDD ____ EDF* - 10% Surcharge____ *Global ID _____

**Turn Around Requested:**
- □ Immediate Attention
- □ Rush 24 Hours
- □ Rush 48 Hours
- □ Rush 72 Hours
- □ Normal
- ☒ Mobile Lab

**Tracer:**
- ☒ n-pentane
- ☒ n-hexane
- ☒ n-heptane
- □ Isopropyl Alchohol
- □ 1,1-DFA
- □ _____

**Reporting Limits:** ☒ Standard □ Low Level* □ MDL* (*surcharge for these limits)

**Units:** ug/m3

**Analysis Requested**

*LAB USE ONLY*

**Jones Project #:** G-0094

Page 2 of 2

Sample Container: GASTIGHT GLASS SYRINGE

If different than above, see Notes.

| Sample ID | Purge Number | Purge Volume (mL) | Date | Sample Collection Time | Sample Analysis Time | Laboratory Sample ID | Purge Rate (mL/min) | Pump Used | Magnehelic | Sample Matrix: Soil Gas (SG), Air (A), Material (M) | EPA 8260B (VOCs) | Gasoline Range Organics | | | Magnehelic Vacuum (In/$H_2O$) | Number of Containers | Notes & Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SV5-10' | 3 | 1390 | 2/21/20 | 10:43 | 10:47 | G-0094-11 | 200 | JOEL.1 | M100.102 | SG | X | X | | | <2 | 1 | |
| SV6-5' | 3 | 1310 | 2/21/20 | 11:05 | 11:06 | G-0094-12 | 200 | CASEY.1 | M100.107 | SG | X | X | | | <2 | 1 | |
| SV6-5' REP | 3 | 1310 | 2/21/20 | 11:12 | 11:21 | G-0094-13 | 200 | CASEY.1 | M100.107 | SG | X | X | | | <2 | 1 | |
| SV7-5' | 3 | 1310 | 2/21/20 | 11:45 | 11:45 | G-0094-15 | 200 | CASEY.1 | 118007 | SG | X | X | | | <2 | 1 | |
| SV7-10' | 3 | 1,390 | 2/21/20 | 11:53 | 12:00 | G-0094-16 | 200 | JOEL.1 | M100.102 | SG | X | X | | | 40 | 1 | |
| SV8-5' | 3 | 1,310 | 2/21/20 | 12:10 | 12:17 | G-0094-17 | 200 | CASEY.1 | M100.107 | SG | X | X | | | 20 | 1 | |
| SV8-10' | 3 | 1,390 | 2/21/20 | 12:36 | 12:39 | G-0094-18 | 200 | JOEL.1 | M100.155 | SG | X | X | | | <2 | 1 | |
| SV9-5' | 3 | 1310 | 2/21/20 | 12:55 | 12:57 | G-0094-19 | 200 | JOEL.1 | 118007 | SG | X | X | | | <2 | 1 | |
| SV9-10' | 3 | 1390 | 2/21/20 | 13:09 | 13:14 | G-0094-20 | 100 | CASEY.1 | M100.102 | SG | X | X | | | 50 | 1 | LOW FLOW |
| SV6-10' | - | - | 2/21/20 | 11:30 | - | - | - | - | M100.102 | - | - | - | | | >100 | - | NO FLOW |

9 Total Number of Containers

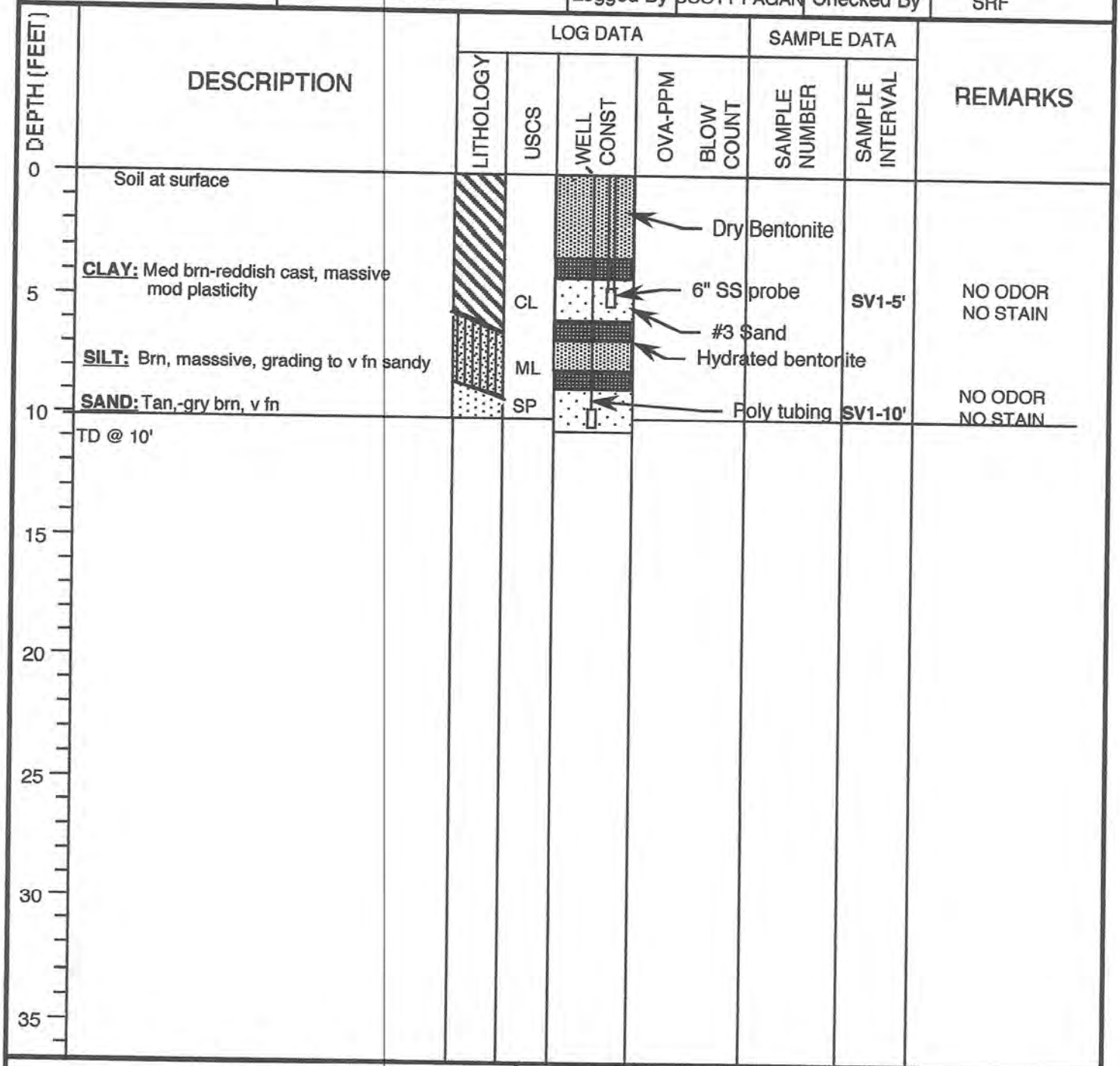
| | | | |
|---|---|---|---|
| **Representative Signature** | **Printed Name** SUSAN MEARNS | **Laboratory Signature** | **Printed Name** CASEY ELLIS |
| **Company** MEARNS CONSULTING CORP | **Date** 2/21/2020 **Time** 13:40 | **Company** JONES ENVIRONMENTAL, INC. | **Date** 2/21/2020 **Time** 13:40 |
| **Representative Signature** | **Printed Name** | **Laboratory Signature** | **Printed Name** |
| **Company** | **Date** **Time** | **Company** | **Date** **Time** |

Client signature on this Chain of Custody form constitutes acknowledgement that the above analyses have been reqested, and the information provided herein is correct and accurate.

# APPENDIX C

## Boring Logs

| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV1 | Elevation or Datum | grade | | |
| Drilling Company | Gregg Drilling | Completion Depth | 10 FEET | | |
| Drilling Equipment | Marl 25 DP | Number of Samples | 2 | | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | NA | | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | NA | | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |

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**BORING LOG SV1**
3177 California Ave
Signal Hill, California

| Project Number | Date | PM | Page |
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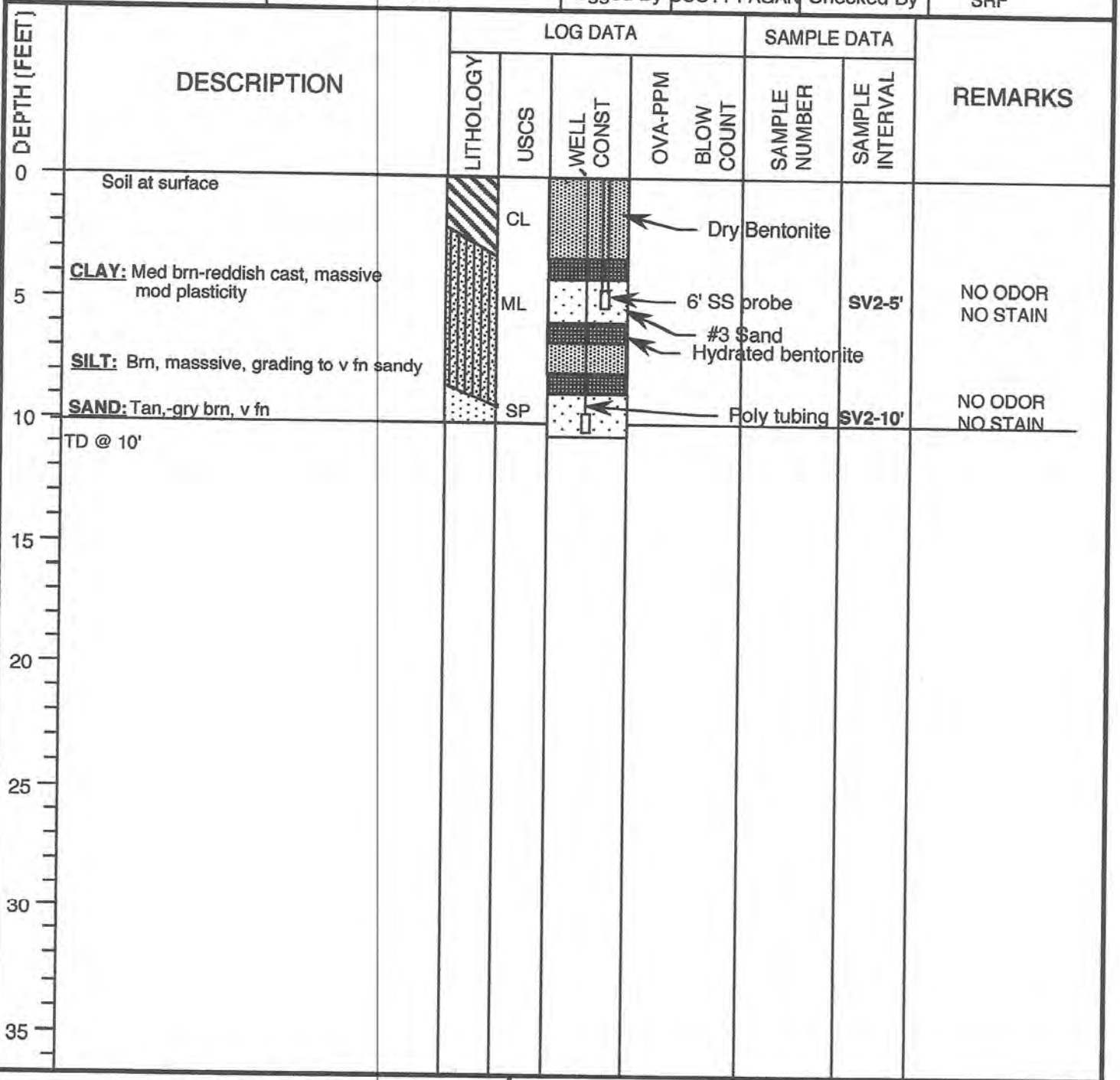
| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV2 | Elevation or Datum | grade | | |
| Drilling Company | Gregg Drilling | Completion Depth | 10 FEET | | |
| Drilling Equipment | Marl 25 DP | Number of Samples | 2 | | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | NA | | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | NA | | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |

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**BORING LOG SV2**
3177 California Ave
Signal Hill, California

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| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV3 | Elevation or Datum | grade | | |
| Drilling Company | Gregg Drilling | Completion Depth | 10 FEET | | |
| Drilling Equipment | Marl 25 DP | Number of Samples | 2 | | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | NA | | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | NA | | |
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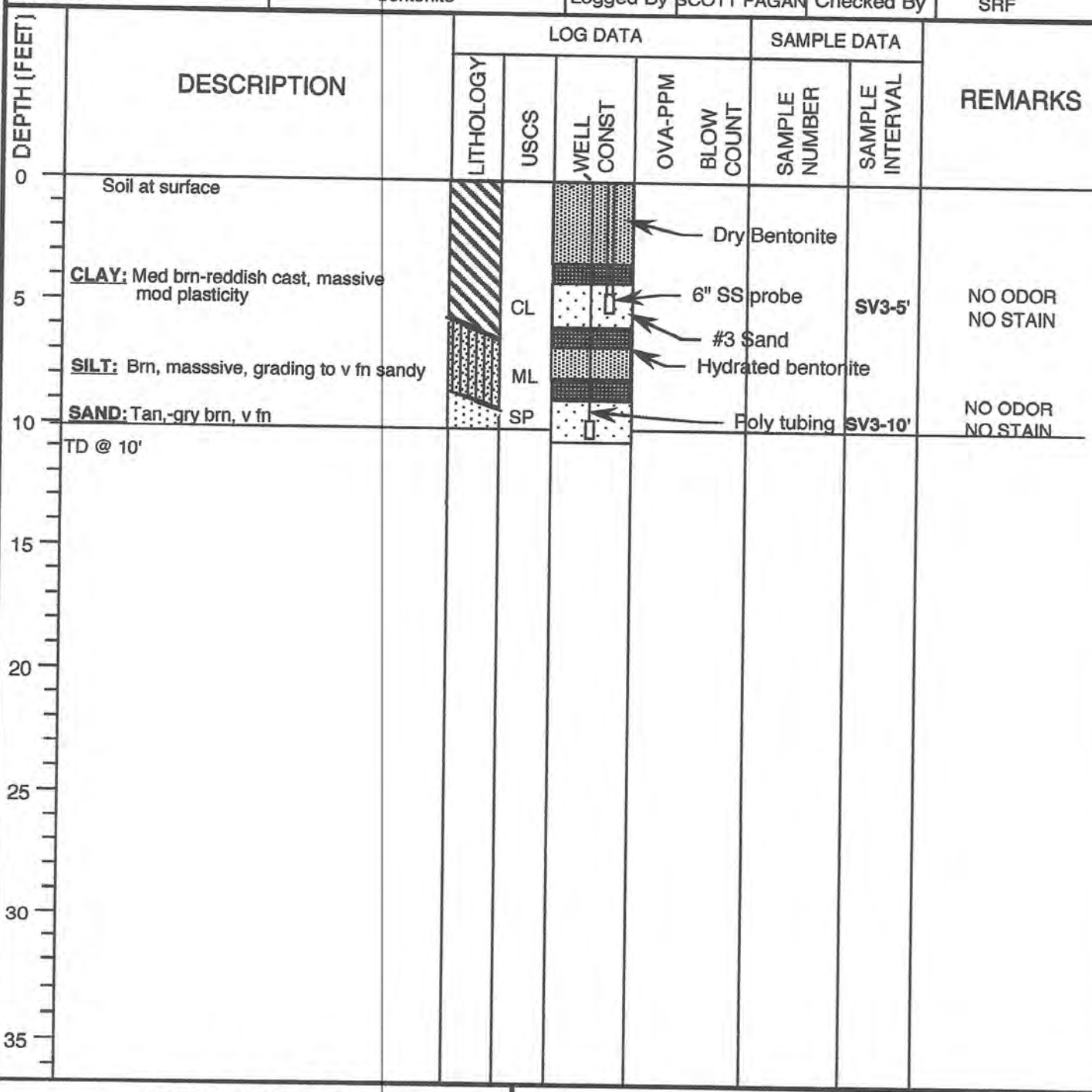


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**BORING LOG SV3**
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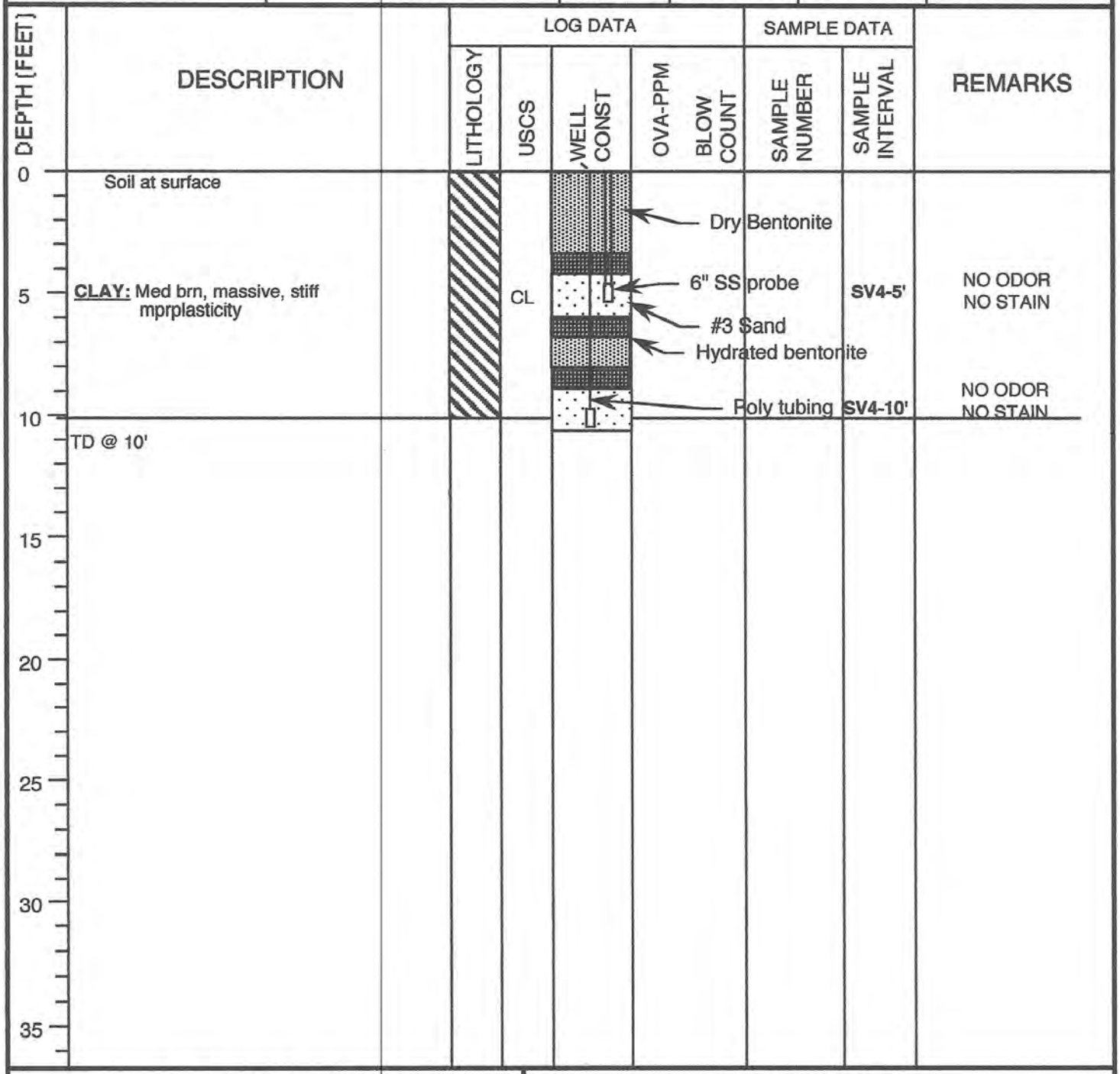
| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV4 | Elevation or Datum | grade | | |
| Drilling Company | Gregg Drilling | Completion Depth | 10 FEET | | |
| Drilling Equipment | Marl 25 DP | Number of Samples | 2 | | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | NA | | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | NA | | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |

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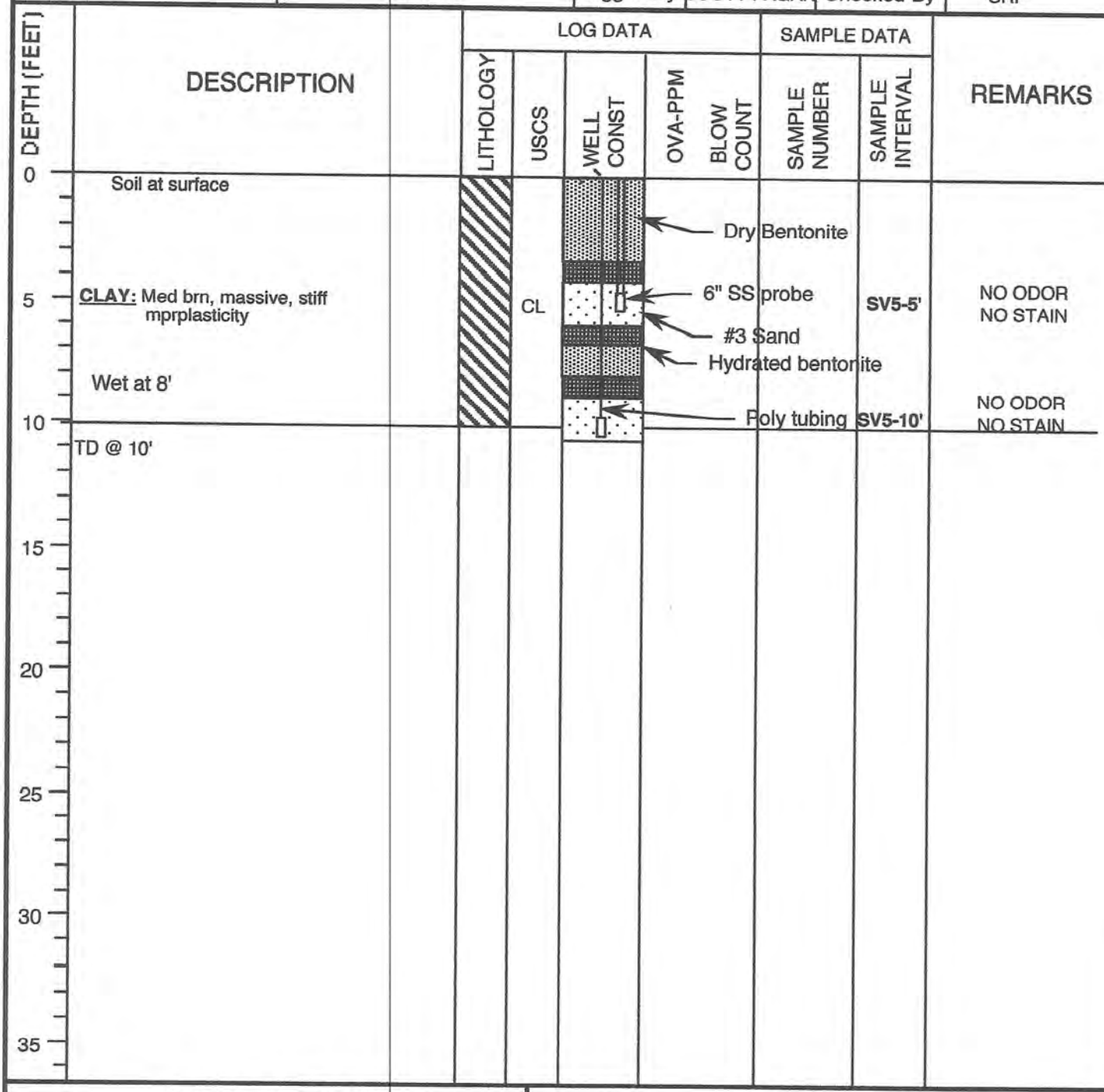
|---|---|---|---|---|---|
| Boring Location | SV5 | Elevation or Datum | | grade | |
| Drilling Company | Gregg Drilling | Completion Depth | | 10 FEET | |
| Drilling Equipment | Marl 25 DP | Number of Samples | | 2 | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | | NA | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | | NA | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |

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**BORING LOG SV5**
3177 California Ave
Signal Hill, California

| Project Number | Date | PM | Page |
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| | 2/18/20 | SM | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV6 | Elevation or Datum | | grade | |
| Drilling Company | Gregg Drilling | Completion Depth | | 10 FEET | |
| Drilling Equipment | Marl 25 DP | Number of Samples | | 2 | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | | NA | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | | NA | |
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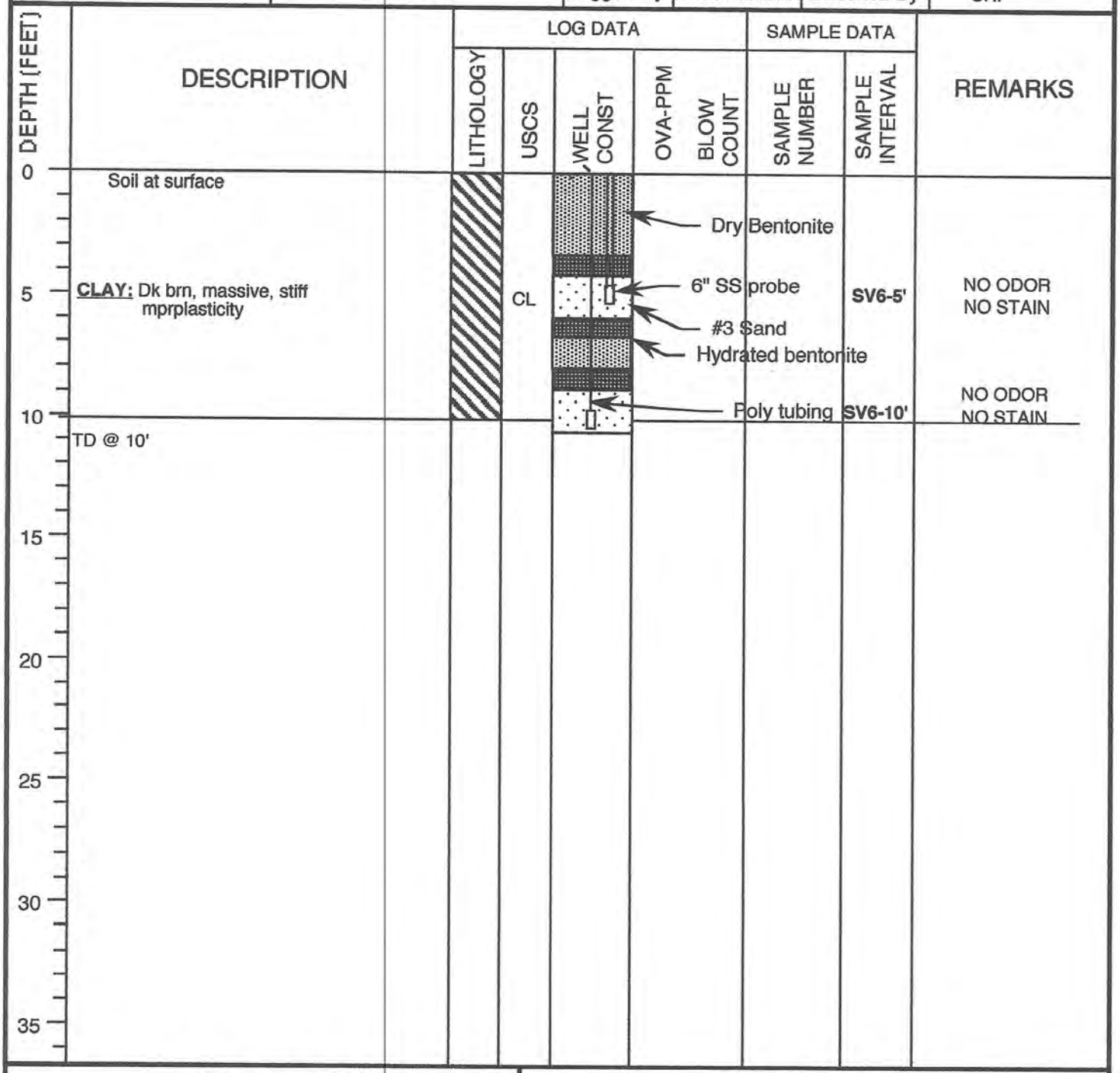


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**BORING LOG SV6**
3177 California Ave
Signal Hill, California

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|---|---|---|---|---|---|
| Boring Location | SV7 | Elevation or Datum | grade | | |
| Drilling Company | Gregg Drilling | Completion Depth | 10 FEET | | |
| Drilling Equipment | Marl 25 DP | Number of Samples | 2 | | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | NA | | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | NA | | |
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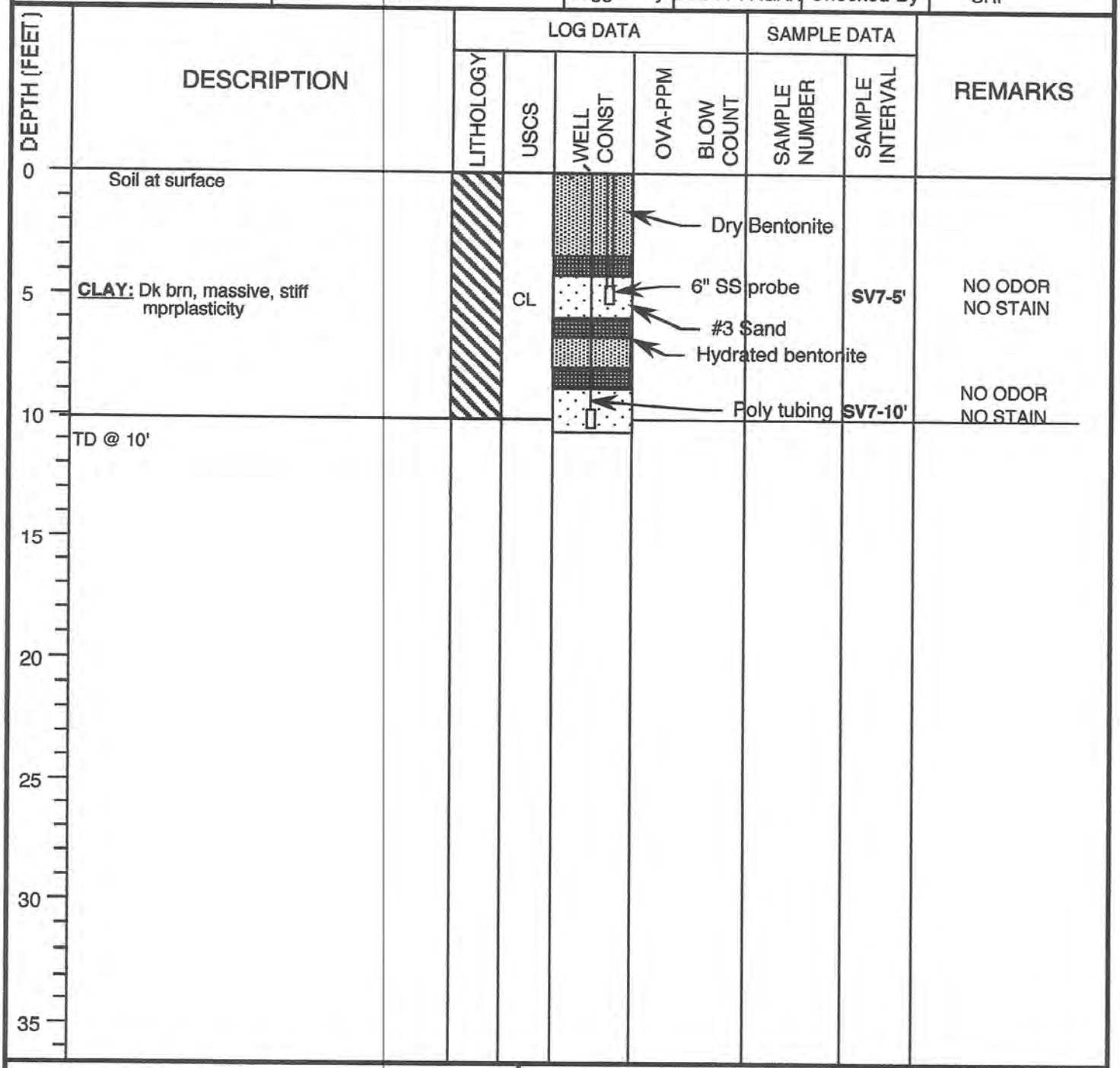


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**BORING LOG SV7**
3177 California Ave
Signal Hill, California

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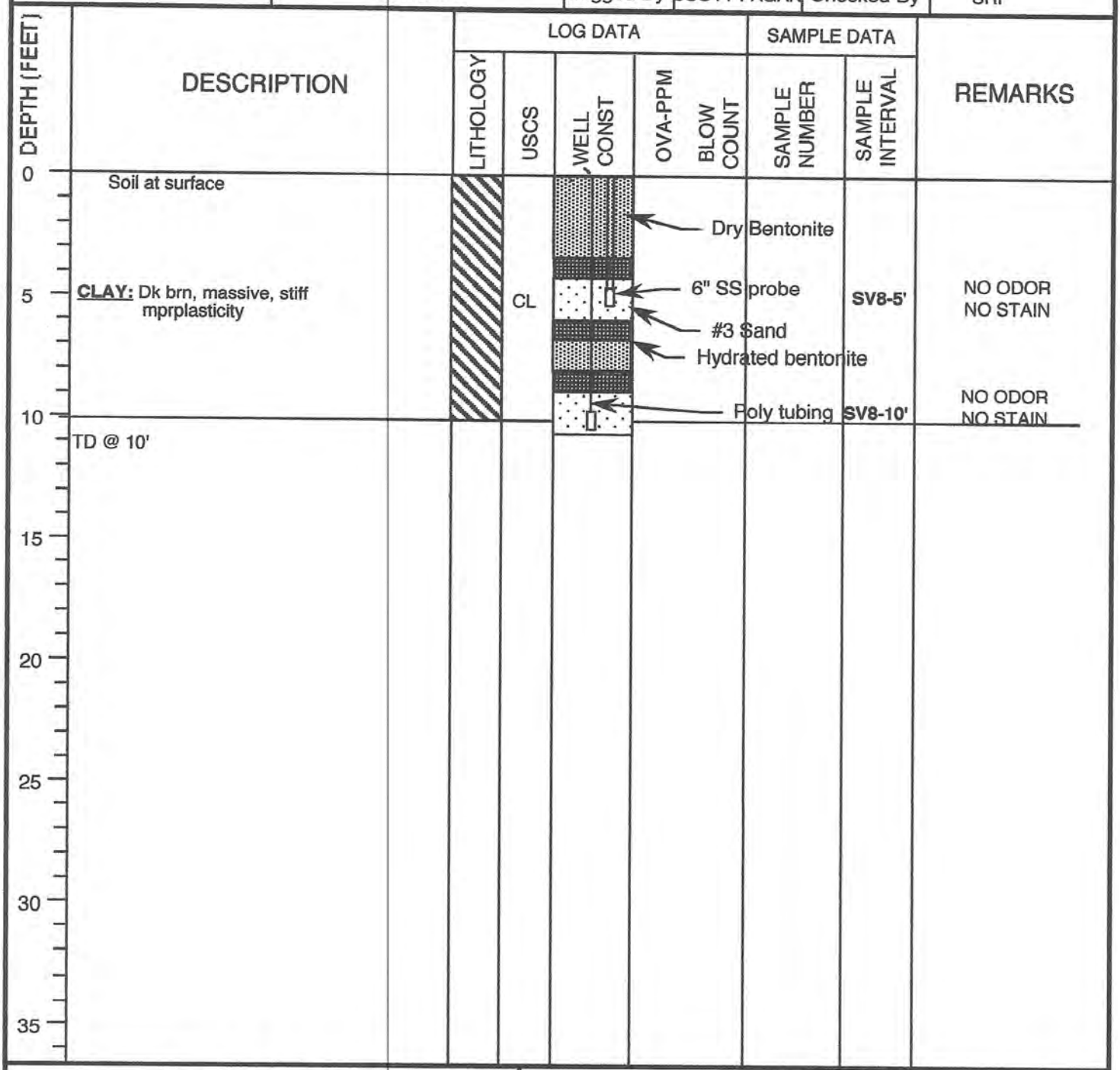
|---|---|---|---|---|---|
| Boring Location | SV8 | Elevation or Datum | grade | | |
| Drilling Company | Gregg Drilling | Completion Depth | 10 FEET | | |
| Drilling Equipment | Marl 25 DP | Number of Samples | 2 | | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | NA | | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | NA | | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |

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**BORING LOG SV8**
3177 California Ave
Signal Hill, California

| Project Number | Date | PM | Page |
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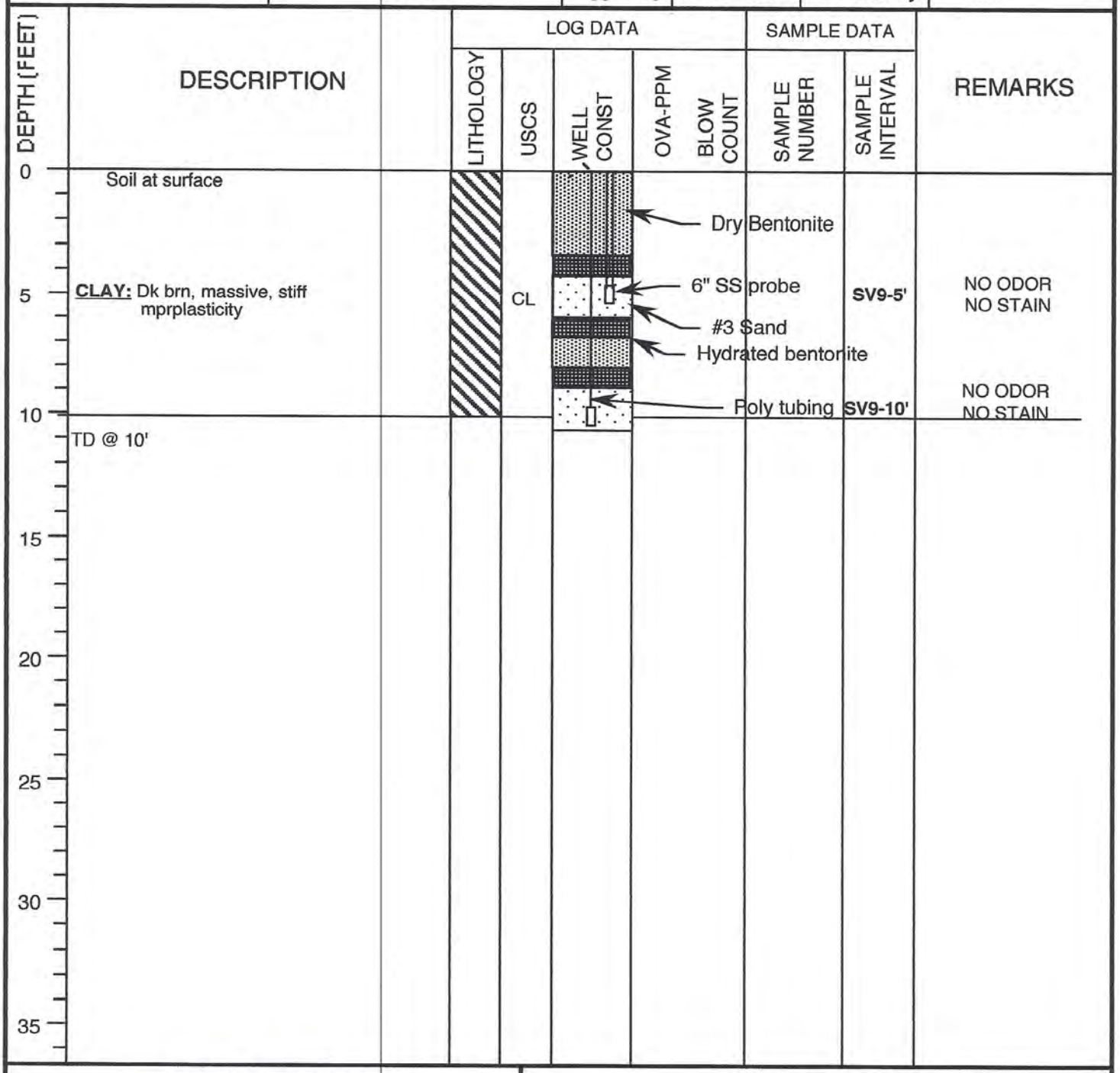
| | 2/18/20 | SM | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV9 | Elevation or Datum | | grade | |
| Drilling Company | Gregg Drilling | Completion Depth | | 10 FEET | |
| Drilling Equipment | Marl 25 DP | Number of Samples | | 2 | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | | NA | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | | NA | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |




# MEARNS CONSULTING CORP.

**BORING LOG SV9**
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Signal Hill, California

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# Human Health Risk Assessment

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RISK ASSESSORS

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# Human Health Risk Assessment
# 950 East 33rd$^{th}$ Street
# 3177 California Avenue
# Signal Hill, California 90755

## April 21, 2020

**Prepared for:**

**Signal Hill Petroleum Inc.**
**2633 Cherry Avenue**
**Signal Hill, California 90755**

**Venture Point Inc.**
**4685 MacArthur Court**
**Newport Beach, California 92660**

**Prepared by:**

**Mearns Consulting LLC**
**738 Ashland Avenue**
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April 21, 2020

***via email***

Mr. Kevin Laney
Signal Hill Petroleum, Inc.
2633 Cherry Avenue
Signal Hill, California 90755

Messrs. Tom Lee and John Clement
Venture Point, Inc.
2865 MacArthur Court
Newport Beach, California 92660

RE: **Human Health Risk Assessment**
**950 East 33rd Street and 3177 California Avenue, Signal Hill, California 90755**

Dear Messrs. Laney, Lee and Clement:

This Human Health Risk Assessment has been prepared for the property located at 950 East 33rd Street and 3177 California Avenue in Signal Hill California 90755 (the site) pursuant to the City of Signal Hill Project Development Guide (February 28, 2019).

The 13.367-acre property consists of a 9.067-acre parcel occupied by a Target store and a 4.3-acre vacant undeveloped property. Historically the 13.367-acre property was an oil field and has four operating and five previously abandoned oil wells onsite in addition to the 135,911 square foot Target store.

The site is being redeveloped as a commercial development, including an addition to the existing 135,911 square foot retail store, a 5,000 square foot shop, a 5,000 square foot drive-through restaurant and a 59,115 square foot storage facility.

This baseline human health risk assessment followed the guidance in the Department of Toxic Substances Control (DTSC) Preliminary Endangerment Assessment (PEA) guidance manual (DTSC 2015), U.S. Environmental Protection Agency Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual (RAGs) (USEPA 2004), the U.S. Environmental Protection Agency Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment) (USEPA 2009), the DTSC Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (DTSC, October 2011), the DTSC LeadSpread 8.0 Model, the San Francisco Bay Regional Water Quality Control Board (SFRWQCB) Environmental Screening Levels (ESL) model and the Virginia Department of Environmental Quality Virginia Unified Risk Assessment Model (VURAM).

The results of the human health risk assessment indicate the summed risk of the carcinogenic constituents in soil and soil vapor did exceed the target threshold of $1 \times 10^{-6}$ for the residential scenario and did not exceed the target threshold of $1x10^{-5}$ for the commercial worker or construction worker scenarios.

The results of the human health risk assessment indicate that the estimated summed hazard index of the noncarcinogenic constituents in soil and soil vapor did not exceed the target hazard threshold for the residential, commercial worker and construction workers scenarios.

It is unlikely that site will be redeveloped for residential occupancy as it is zoned commercial/industrial and its current use is commercial. The estimated risks and hazards due to exposure to constituents detected in the soil matrix and soil vapor underlying the site for commercial and construction workers indicate the site can be safely redeveloped for commercial use.

Should you have any questions or desire additional information, please contact me at your earliest convenience at 310.403.1921.

Sincerely,

x Susan Mearns

Susan L. Mearns, Ph.D.

**Mearns Consulting LLC**

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## EXECUTIVE SUMMARY

The 13.367-acre property consists of a 9.067-acre parcel occupied by a Target store and a 4.3-acre vacant undeveloped property. Historically the 13.367-acre property was an oil field and has four operating and five previously abandoned oil wells onsite in addition to the 135,911 square foot Target store.

The objectives of this baseline human health risk assessment are: (1) to evaluate potential health risks to human receptors posed by concentrations of constituents detected at least one time in the soil matrix and soil vapor underlying the site and (2) to satisfy the City of Signal Hill's requirement under the California Environmental Quality Act.

This baseline human health risk assessment followed the guidance in the Department of Toxic Substances Control (DTSC) *Preliminary Endangerment Assessment* (PEA) guidance manual (DTSC 2015), U.S. Environmental Protection Agency *Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual* (RAGs) (USEPA 2004), the U.S. Environmental Protection Agency *Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual* (Part F, Supplemental Guidance for Inhalation Risk Assessment) (USEPA 2009), the DTSC *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (DTSC, October 2011), the DTSC LeadSpread 8.0 Model, the San Francisco Bay Regional Water Quality Control Board (SFRWQCB) Environmental Screening Levels (ESL) model and the Virginia Department of Environmental Quality Virginia Unified Risk Assessment Model (VURAM).

The planned redevelopment is to construct an 11,500 square foot addition onto the south of the existing Target store, a 5,000 square foot drive through store, a 5,000 square foot standalone retail shop and a 59,115 ground level square foot storage building.

Due to the presence of four operating and five previously abandoned oil wells onsite in accordance with the City of Signal Hill's Oil and Gas Code §16.24.080, the City's Project Development Guide (February 28, 2019) and Methane Assessment Minimum Requirements Standard a Methane Assessment was performed in March 2020 (DL Science, Inc. March 25, 2020). The Methane Assessment concluded that a passive methane mitigation system subslab proposed buildings was warranted.

The passive methane mitigation system shall consist of a subslab impervious membrane placed inbetween geotextile or geocloth to protect it from sand above and the minimum 2" thick gravel blanket below. Perforated horizontal vent pipes should be placed in the 2" thick gravel blanket and tied into vertical vent risers (typically cast iron) placed inbetween the interior and exterior walls, less than 100-feet apart, extending a minimum of 3-feet above the roof line and should not terminate less than 100-feet from any opening.

Methane mitigation underneath paved areas greater than 5,000 square feet within 15-feet of the proposed buildings shall consist of a minimum 12-inch square vents with ¾ inch rock placed on the exposed soil at a minimum depth of 1-foot, protected by traffic rated grates.

Although designed to capture and vent methane to the atmosphere, other volatile organic compounds in the subsurface (in the soil matrix and soil vapor) also will be captured and vented by this system.

The results of the human health risk assessment indicate the summed risk of the carcinogenic constituents in soil and soil vapor did exceed the target threshold of $1 \times 10^{-6}$ for the residential scenario and did not exceed the target threshold of $1 \times 10^{-5}$ for the commercial worker or construction worker scenarios.

The results of the human health risk assessment indicate that the estimated summed hazard index of the noncarcinogenic constituents in soil and soil vapor did not exceed the target hazard threshold for the residential, commercial worker and construction workers scenarios.

**Conclusions and Recommendations** – Although the human health risk assessment assessed the potential risks and hazards to residential receptors the current and planned future use of the site is commercial/industrial and the property is zoned commercial/industrial. The residual concentrations of constituents detected in the soil matrix and soil vapor underlying the site do not pose an adverse impact to the health of the future construction workers or the commercial workers.

Institutional controls, i.e., the required methane mitigation system to be installed subslab of the proposed buildings and paved areas greater than 5,000 square feet, and paving of surface soils for parking also mitigates exposure by future commercial workers.

Mitigation measures during grading activities such as monitoring under the Air Quality Management District (AQMD) Rule 1166 permit/compliance plan and the application of Simple Green mixed with water applied as a dust suppressant mitigates exposure to the construction worker.

## 1.0 INTRODUCTION

This report presents the results of a human health risk assessment for the 13.367 -acre commercial/industrial property located at 950 East 33rd Street and 3177 California Avenue in Signal Hill, California (the site) (Figures 1 and 2).

The purpose of this human health risk assessment is to evaluate the potential adverse health impacts due to exposure to concentrations of constituents detected in the soil matrix and soil vapor underlying the site. If a constituent was detected one time in soil sampled, and/or one time in soil vapor, it was retained and quantitatively assessed in this human health risk assessment. This human health risk assessment assessed the potential risk and hazard attributable to exposure to five carcinogenic constituents and 24 noncarcinogenic constituents, including lead, detected in the soil matrix and soil vapor underlying the site.

This human health risk assessment followed the guidance in the Department of Toxic Substances Control (DTSC) *Preliminary Endangerment Assessment* (PEA) guidance manual (DTSC 2015), U.S. Environmental Protection Agency *Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual* (RAGs) (USEPA 2004), the U.S. Environmental Protection Agency *Risk Assessment Guidance for Superfund volume 1, Human Health Evaluation Manual* (Part F, Supplemental Guidance for Inhalation Risk Assessment) (USEPA 2009), the DTSC *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (DTSC, October 2011), the DTSC LeadSpread 8.0 Model, the San Francisco Bay Regional Water Quality Control Board (SFRWQCB) Environmental Screening Level (ESL) Model (2019, Rev. 2) and the Virginia Department of Environmental Quality Virginia Unified Risk Assessment Model (VURAM) (October 2018) .

## 2.0 SITE BACKGROUND

SCS Engineers (SCS) completed a Phase I Environmental Site Assessment in June 2000 and a limited Phase II Environmental Site Assessment for the entire 30-acre oil production parcel of which the site was a part (Global Solutions, Inc. 2000).

Global Solutions, Inc. prepared a Remedial Action Plan (RAP) for the 30-acre oil production parcel bounded by Atlantic Avenue to the west, California Avenue to the east, 33rd Street to the north and Spring Street to the south of which the site was a part in October 2000 (Global Solutions, Inc. 2000). The RAP was approved by the Los Angeles Regional Water Quality Control Board in May 2001 (LARWQCB 2001). The RAP summarized the analytical results from the sampling conducted by SCS and concluded the primary constituents of concern were total petroleum hydrocarbons (TPH) in carbon chain lengths C18-C40 at concentrations of 1,000 parts per million (ppm) to 46,000ppm (Global Solutions, Inc. 2000). Global Solutions reported that concentrations of benzene, toluene, ethylbenzene and total xylenes were usually less than detection limits and metals although detected were generally less than hazardous levels.

Global Solutions, Inc. proposed to clean-up soil impacted with crude oil using the LARWQCB's soil screening levels as a guide and proposed the following clean-up goals: (1) C6-C12 1,000 milligrams per kilogram (mg/kg), (2) C13-C22 5,000mg/kg and (3) C23-C44 15,000mg/kg. Global Solutions also proposed clean-up goals of total threshold limit concentrations for metals detected in soil (Global Solutions, Inc. 2000). Global Solutions proposed bioremediation in an onsite land farm as the remedial strategy (Global Solutions, Inc. 2000).

**2.1 950 East 33rd Street Background -** The 9.067-acre site was an oil field since at least 1924; there are two previously abandoned oil wells onsite. Historically, the site had these two oil wells, aboveground storage tanks and oil field activities that visually impacted the land. The Tesoro Service Station formerly located at the northwestern corner of the site has caused soil matrix, soil vapor and groundwater contamination. The 135,911 square foot retail store occupied by Target and CVS Pharmacy was previously occupied by Van de Kamp's, a retail bakery in 1971, and Dorman's Inc., doing business as (dba) Gemco Automotive Center #527 in 1974. Additions to the Target Store were constructed in 1998 and in 2007.

**2.2 950 East 33rd Street Previous Environmental Investigations -** The following information is from *Remedial Action Plan for Impacted Soil, 950 East 33rd Street, Signal Hill, California, Target T-Store 292, RWQCB File No. I-11132* (Orion Environmental, Inc. August 28, 2006). The northwestern corner of the site was originally developed as a service station between 1970 and 1974. Three 12,000-gallon gasoline underground storage tanks (USTs) and one 1,500-gallon waste oil UST were removed from the site in November 1991. Subsequent investigations detected gasoline-impacted soil at the site. Soil is impacted by total petroleum hydrocarbons as gasoline (TPHg); benzene, toluene, ethylbenzene, and xylenes (BTEX); and oxygenates including methyl tert-butyl ether (MTBE) and tert-butyl alcohol (TBA).

The area of impacted soil was delineated by soil investigations conducted between February 1993 and September 1994. The initial soil investigation was followed up with two step-out soil boring investigations to define where TPHg and benzene concentrations were above 100 milligrams per kilogram (mg/kg) and 0.3 mg/kg, respectively (McLaren/Hart, 1994). The impacted unsaturated zone soil spans an approximately 100-foot-diameter circular area, to a maximum depth of approximately 120 feet below grade.

One groundwater monitoring well (designated as well MW-1) was installed onsite in February 1993. The depth to groundwater measured in February 1993 was approximately 141 feet below grade. During the May 1995 groundwater monitoring event, groundwater was encountered approximately 131 feet below grade and approximately 3 feet of free product was observed in the monitoring well (Orion, 1995).

In May 1996, a site assessment was conducted to investigate the extent of gasoline-impacted groundwater and free product detected in well MW-1. Three groundwater wells (MW-2 through MW-4) were installed. In 1996 and 1997, a free product removal program was conducted in well MW-1 and approximately 5 gallons of free product was removed.

Between 1997 and 2001, wells MW-5 through MW-8 were installed to evaluate offsite downgradient groundwater conditions. The well installations are described in several reports (Orion, 1996, 1997, 2000, 2001a).

Free product was detected again in well MW-1 intermittently between October 2004 and February 2005. Approximately 1 gallon of free product was removed until free product was no longer detected in March 2005.

In June 2005, wells M-1A and MW-9 were installed on site. Groundwater well MW-1A was installed to replace well M-1 whose screen interval was submerged beneath the water table due to rapidly rising groundwater levels at the site. Downgradient well MW-9 was installed to assess and monitor the downgradient extent of impacted groundwater at the former service garage. Groundwater analytical results for downgradient well MW-9 indicated the presence of petroleum hydrocarbon-impacted groundwater beneath the former service garage.

Groundwater monitoring well MW-10 was installed in February 2006 to assess the extent of gasoline-impacted groundwater directly south of the former service garage.

Groundwater analytical results for well MW-10 confirmed the presence of low TPHg, BTEX, MTBE, and TBA concentrations at the property boundary.

The site is listed on GeoTracker as Target Store #T-292 (T0603701871) and indicates 57,000 pounds of soil vapor (presumably volatile organic compounds) have been removed using soil vapor extraction from July 1, 2007 to September 13, 2016 and 71 gallons of free product have been removed from August 11, 2005 to September 6, 2018.

**2.3 3177 California Avenue Background -** The 4.3-acre site located north of the I-405 Freeway, south of a Target store, west of California Avenue and east of Atlantic Avenue was part of a larger oil producing parcel that extended from Atlantic Avenue to California Avenue and from 33rd Street to Spring Street. The site has been used for oil and gas production since the 1920s and contains three previously abandoned and four operating oil wells. Prior to the 1920s the site was open space (Global Solutions 2001). Texaco, Inc. was the oil operator from the 1920s through the 1990s; since 1994 Signal Hill Petroleum, Inc. is the current oil operator (Global Solutions 2001). Prior to 2001 the site contained six aboveground storage tanks, three horizontal heater treater vessels and other facilities to support oil production.

**2.4 3177 California Avenue Previous Environmental Investigations -** Global Solutions, Inc. prepared a Phase II Environmental Site assessment of the 4.3-acre site in May 2001. Global Solutions performed 20 backhoe trenches to a maximum depth of 15-feet below ground surface (bgs), 20 soil

samples were collected and submitted for analysis of TPH, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) and total threshold metals. Global Solutions reported that VOCs and SVOCs were less than their respective detection limits and although metals were detected the concentrations were less than hazardous levels. Global Solutions reported the concentrations of TPH ranged from non-detect to 9,000mg/kg (Global Solutions, Inc. 2001). Global Solutions concluded that 5,500 cubic yards of non-hazardous petroleum impacted soils were present on the 4.3-acre Fields Lease North site and could be remediated by following the procedures outlined in the RAP (Global Solutions, Inc. 2000).

Brycon LLC (Brycon) provided oversight to Global Industrial Cleaning under contract to Signal Hill Petroleum to demolish the aboveground storage tanks and associated structures and transport 600 cubic yards of material to the Fields Lease South Biocell area (Brycon LLC 2001). Additionally Brycon directed Global Industrial Cleaning to remove the 5,500 cubic yards of petroleum impacted soil identified by Global Solutions, Inc. Brycon collected 12 confirmation soil samples from the base and sidewalls of the excavations and submitted these samples for analysis of TPH, two soil samples were submitted for analysis of VOCs, SVOCs and total threshold limit metals. Brycon concluded the soil remaining in the base and sidewalls met the criteria in the RAP (Brycon LLC 2001).

Brycon performed six trenches and collected two soil samples from each trench, one at 2.5-feet below ground surface (bgs) and one from 6-feet bgs onsite in 2004 (Brycon LLC 2004). These 12 soil samples were submitted for analysis of TPH only (Figure 4); Brycon concluded that all petroleum impacted soil had been removed from the site (Brycon LLC 2004).

Brycon LLC performed a Phase I Environmental Site Assessment of the 4.3-acre site in 2004 and concluded there were no recognized environmental conditions (Brycon 2004).

Brycon LLC provided oversight of site grading in 2004, 2005 and 2007. During site grading and post-grading Brycon collected random soil samples from the top 2-feet and submitted 23 samples for analysis of TPH, two for analysis of VOCs, SVOCs, pesticides, polychlorinated biphenyls (PCBs) and total threshold limit metals (Brycon 2008). Brycon concluded that during site grading there were no substances or concentrations of substances that could be classified as hazardous waste (Brycon LLC 2008). Analytical data collected by Brycon was used in this human health risk assessment and is Appendix A.

**2.5 Proposed Development -** The proposed development for the portion of the site currently occupied by Target includes an 11,500 square feet extension to the existing Target building, a 5,000 square feet drive-through establishment and a 5,000 square feet free standing retail shop.

The proposed development for the portion of the site currently vacant includes a 59,115 ground level square feet storage facility.

**2.6 Intent of Human Health Risk Assessment -** The City of Signal Hill requires environmental assessments, investigations, remedial strategies and a baseline human health risk assessment in order to assess the feasibility of a project under California Environmental Quality Act (CEQA) guidelines. This baseline human health risk assessment satisfies the City's requirement.

## 3.0 SUMMARY OF FIELD ACTIVITIES

Based on the conclusions, including the identification of Recognized Environmental Conditions, of the Phase I ESA (Mearns Consulting LLC, February 12, 2020), Mearns Consulting LLC conducted a Phase II ESA (March 11, 2020).

Mearns Consulting LLC delineated the work areas with white spray paint and notified Underground Service Alert to clear public utility lines as required by law on February 11, 2020, at least two business days prior to boring activities conducted on February 18, 2020 (ticket numbers B200420334-00B and B200420342-00B).

Prior to drilling, all locations were excavated to a minimum depth of 5-feet bgs using a hand auger to prevent damage to possible unidentified subsurface utilities.

Gregg Drilling, LLC advanced the borings using a track mounted direct push rig. The sampling system was appropriately cleaned between each borehole. Rinsate generated from cleaning was appropriately disposed.

Mearns Consulting LLC collected soil matrix samples pursuant to SW846 from nine locations (SV1-SV9) at depths of 5-feet below ground surface (bgs) and 10-feet bgs. Soil samples were collected in acetate sleeves with Teflon liners and end caps with minimal headspace, logged onto a chain-of-custody form and stored in a cooler at 4oC until delivered under chain of custody to Sierra Analytical Labs (a State of California Department of Health Services ELAP accredited laboratory; ELAP No. 2320). Analyses requested were total hydrocarbons-gasoline range (TPH-g), TPH-diesel range (TPH-d), TPH-oil range (TPH-o), speciated carbon chains via USEPA method GC/FID 8015B, total threshold limit concentration (TTLC) metals including hexavalent chromium via USEPA methods 6000/7000, volatile organic compounds (VOCs) via USEPA 8260B, collected via USEPA 5035B in the field by placing 5g of soil into volatile organic analyte (VOA) vials to which preservative had been added and semi-volatile organic compounds (SVOCs) via USEPA 8270C. Soil matrix analytical results are included as Appendix B.

These soil borings were then developed as dual-nested soil vapor probes at 5-feet and 10-feet bgs (SV1-SV9) in accordance with *Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance)*, DTSC, October 2011 and the *Advisory Active Soil Gas Investigations*, DTSC, LARWQCB, SFRWQCB, June 2015.

A new section of ¼-inch diameter nylaflow tubing with a new 6-inch stainless steel probe tip at the terminal end was inserted into the borehole to the desired sampling depth. One-inch diameter polyvinyl chloride (PVC) casing was used as a guide for the tubing to ensure that the desired sampling depth was achieved. Sand was poured into the boring annulus to form an approximately one-foot long sand pack around the probe tip, at which time the PVC piping was withdrawn. Approximately one foot of dry, granular bentonite was placed atop the sand pack and the remainder of the borehole was backfilled with hydrated bentonite to the ground surface to form a seal. The sampling end of the tubing was fitted with a three-way valve and the probe was labeled for identification.

Soil gas samples were collected in general accordance with the July 2015 *Department of Toxic Substances Control (DTSC) and Los Angeles Regional Water Quality Control Board (LARWQCB) "Advisory – Active Soil Gas Investigations."*

Each probe was allowed to equilibrate for a minimum of 48-hours after installation prior to sampling by a mobile laboratory. Soil vapor samples were collected in glass gas-tight syringes equipped with Teflon plungers. A tracer gas mixture of n-pentane, n-hexane, and n-heptane was placed at the tubing-surface interface before sampling. These compounds were analyzed during the 8260B analytical run to determine if there were surface leaks into the subsurface due to improper installation of the probe. The sampling rate was approximately 200 cc/min, except when noted differently on the chain of custody record, using a glass gas-tight syringe. Purging was completed using a pump set at approximately 200 cc/min, except when noted differently on the chain of custody record. A default of three purge volumes was used as recommended by July 2015 DTSC/RWQCB guidance documents. Prior to purging and sampling of soil vapor at each location, a shut-in test was conducted to check for leaks in the aboveground fittings. The shut-in test was performed on the aboveground apparatus by evacuating the line to a vacuum of 100 inches of water, sealing the entire system and watching the vacuum for at least one minute. A vacuum gauge attached in parallel to the apparatus measured the vacuum. If there is any observable loss of vacuum, the fittings were adjusted as needed until the vacuum did not change noticeably. The soil gas sample was then collected. No flow conditions occur when a sampling rate greater than 10 mL/min cannot be maintained without applying a vacuum greater than 100 inches of water to the sampling train. The sampling train is left at a vacuum for no less than three minutes. If the vacuum does not subside appreciably after three minutes, the sample location is determined to be a no flow sample.

Twenty soil vapor samples were collected from these soil vapor probes by a Jones Environmental, Inc. (ELAP 2882) chemist and analyzed in a mobile laboratory on February 21, 2020. Two duplicates, one per 10 soil vapor samples, were collected and analyzed by the chemist. Soil vapor analytical results are included as Appendix C.

All drilling, logging and sampling activities were conducted by or under the direct supervision of a California-Professional Geologist, and in accordance with California Well Standards presented in the Department of Water Resources (DWR) Bulletins 74-81 and 74-90. The Site Geology section and boring logs were prepared by Mr. Scott R. Fagan, a State of California Professional Geologist PG #4289. Boring logs are included as Appendix D.

**3.1 Site Geology** - The site is located in the Los Angeles Coastal Plain near the northwest side of the Signal Hill uplift in Signal Hill, California. The Signal Hill Uplift is the surface expression of the east-west trending Newport- Inglewood fault zone. The site is just north of the Cherry Hill Fault, the fault with the largest vertical offset in the Newport Inglewood fault complex.

Surface sediments in this area are characterized as sand, silt, gravel and clays of the Lakewood Formation within the Upper Pleistocene Series of the Quaternary System. Sediments encountered during the investigation were silt and clay.

The closest aquifer is the Gage aquifer at approximately 50-75 feet from the surface. Groundwater was not encountered during this investigation at 10-feet bgs.

**3.2 Soil Vapor Analytical Results** - The following VOCs were detected in soil vapor: benzene, chloroform, ethylbenzene, n-propylbenzene, tetrachloroethene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, m,p-xylenes and o-xylene. Detected concentrations of benzene, chloroform and ethylbenzene did exceed their respective San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels (ESLs) (Table 1 and Figure 3). Detected concentrations of the remaining VOCs in soil vapor did not exceed their respective ESLs.

**3.3 Soil Matrix Analytical Results** – The following metals were detected in concentrations greater than their respective reporting limits and less than their respective ESLs, barium, cobalt, trivalent chromium, copper, mercury, nickel, silver and zinc. The following metals were detected at concentrations greater than their respective ESLs, lead and vanadium (Table 2 and Figure 4). Although arsenic was not detected in concentrations greater than its reporting limit, the reporting limit of 7.7 is greater than the ESL, 0.67 milligrams per kilogram (mg/kg). However the reporting limit is less than the regulatory accepted background concentration of arsenic in Southern California soils, 10 mg/kg (Table 2).

Total volatile petroleum hydrocarbons - diesel range (TPH-d) and TPH-oil range (TPH-o) were detected in two soil borings at depths of 5-feet bgs at concentrations greater than their respective reporting limits and less than their respective ESLs. Seven SVOCs: benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, fluoranthene, phenanthrene and pyrene were detected once in the soil matrix (SV7-5'). Benzo(a)pyrene and fluoranthene were detected at concentrations greater than their respective ESLs, the remaining SVOCs were detected at concentrations less than their respective ESLs (Table 3 and Figure 4).

**3.4 Conclusions -** Total petroleum hydrocarbons, carbon chains and SVOCs were detected in the soil matrix, and fuel related VOCs, were detected in the soil vapor (Figures 3 and 4).

Benzene, chloroform and ethylbenzene were detected in soil vapor at concentrations greater than their respective ESLs (Figure 3).

The metals, lead and vanadium, and the SVOCs, benzo(a)pyrene and fluoranthene were detected at concentrations greater than their respective ESLs (Figure 4).

## 4.0 CONCEPTUAL SITE MODEL

A conceptual site model was developed to identify the potential complete exposure pathways by which constituents detected in soil could impact human health (Figure 5).

The conceptual site model identifies potential sources, environmental release mechanisms, potential migration pathways, potential exposure pathways, potential exposure routes and potential human receptors onsite.

The conceptual site model identified the following potential complete exposure pathways:

- Future commercial building occupant
    1. ingestion/dermal contact with surface soil
    2. inhalation of constituents from surface soil entrained in dust
    3. inhalation of VOCs from soil vapor in surface and subsurface soil that have migrated to indoor air

- Future construction worker
    1. ingestion/dermal contact with surface soil
    2. inhalation of constituents from surface and subsurface soil entrained in dust
    3. inhalation of VOCs from soil vapor in surface and subsurface soil that have migrated to outdoor air, including trenches

Consumption of fruit or vegetables grown in soil is not considered to be a complete potential exposure pathway under future site conditions as the 13.367-acre commercial/industrial zoned site will be developed as a commercial/industrial property.

Potential direct exposures (ingestion and dermal contact) to groundwater are not complete pathways as drinking water is provided by a remote municipal water supply, so there is little chance of incidental exposure. Discharge of groundwater to surface water also is not considered to be a complete migration pathway since there are no surface water bodies that are recharged by artesian flow or groundwater seepage in the vicinity of the site.

The potential for chemicals in soil to leach to underlying groundwater used as a drinking water source is considered very low as several aquitards or aquicludes exist below the maximum depth of impacted soils and groundwater used as a drinking water source.

There is very limited ecological habitat at and near the site. Wetlands were not observed onsite or at adjacent sites. There are no natural or undisturbed areas onsite. Based on the lack of viable ecological habitat at and near the site, there are no complete ecological pathways onsite.

## 5.0 IDENTIFYING CHEMICALS OF CONCERN

All constituents detected at least one time in the soil matrix and in soil vapor underlying the site were quantitatively assessed using the appropriate exposure pathway in this risk assessment.

Pursuant to the following guidance documents, *Selecting Inorganic Constituents as Chemicals of Concern for Risk Assessments at Hazardous Waste Sites and Permitted Facilities* (DTSC 1997), *Background Metals at Los Angeles Unified School Sites – Arsenic* (DTSC 2005) and *Arsenic Strategies, Determination of Arsenic Remediation, Development of Arsenic Cleanup Goals* (DTSC 2009) the following statistical tests: (a) Wilcoxon-Mann-Whitney, (b) Gehan, (c) Tarone-Ware, (d) Multiple Box Plots, (e) Multiple Histograms and (f) Q-Q Plots, were used to determine whether detected concentrations of metals in the soil matrix onsite were within background concentrations. The results of these statistical analyses are included as Appendix E.

These two sample hypotheses tests with non-detects are based on the null hypothesis. The Null hypothesis tests whether the mean and median of the concentrations of each metal detected in onsite soils are less than or equal to the mean and median concentrations of the concentrations of the same metal detected in offsite or background soil samples.

The alternative hypothesis tested was whether the mean and median of the concentrations of detected metals in soils onsite are greater than the mean and median concentrations of the concentrations of the same metals in offsite or background soil samples.

The graphs (1) Multiple Box Plots, (2) Multiple Histograms and (3) Q-Q Plots with non-detects visually indicate whether the detected concentrations of metals in onsite soils are within the population of background metals.

The conclusion based on these quantitative statistical tests was mercury and silver were not within the background population. Therefore these two metals were quantitatively assessed in the human health risk assessment via the ingestion, dermal contact and inhalation routes of exposure.

Constituents of concern quantitatively assessed include: (a) soil matrix – TPHd, TPHo, aliphatic C5-C8, aliphatic C9-C18, Aliphatic C19-C32, aromatic C9-C18, aromatic C19-C32, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, 2-methylnaphthalene, naphthalene, phenanthrene, n-propylbenzene, pyrene, lead, mercury and silver; (b) soil vapor – benzene, chloroform, ethylbenzene, n-propylbenzene, tetrachloroethene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, m,p-xylenes and o-xylene.

## 6.0 TOXICITY ASSESSMENT

Toxicity values are combined with exposure factors to estimate noncancer adverse health effects and cancer risks. Toxicity values include reference doses (RfDs), reference concentrations (RfCs), unit risk factors (URFs) and slope factors (SFs) that are used to evaluate noncancer adverse health effects and cancer risks. USEPA (1989) has developed the following hierarchical toxicity identification protocol:

- Integrated Risk Information System (IRIS, USEPA 1999)
- Health Effects Assessment Summary Tables (HEAST, USEPA 1997)
- National Center for Environmental Assessment (NCEA)

The State of California Office of Environmental Health Hazard Assessment (OEHHA) and the State of California Department of Toxic Substances Control (DTSC) Office of Human and Ecological Risk (HERO) have developed URFs SFs, RfCs and RfDs. Pursuant to regulatory agency guidance OEHHA's and HERO's values are preferentially used instead of USEPA's when available, as OEHHA's and HERO's values are generally more conservative than USEPA's (DTSC 2015, USEPA 2004).

If a constituent had both a risk factor and a reference concentration it was assessed as a carcinogen and as a noncarcinogen. The unit risk factors and reference concentrations were obtained from DTSC HERO (DTSC 2019), ATSDR, IRIS, OEHHA, PPRTV as listed in USEPA's Regional Screening Levels (November 2019) and DTSC's Screening Levels for residential soils (April 2019).

The exposure point concentrations, the slope factors and reference doses for the constituents detected in the soil matrix and soil vapor and quantitatively assessed are presented in Table 4.

## 7.0 EXPOSURE ASSESSMENT

The exposure assessment provides a scientifically defensible basis for the identification of potentially exposed human receptors and the most likely ways they might be exposed to chemicals of concern at the site. As defined by USEPA (1989), the following four components are necessary for chemical exposure to occur:

- A chemical source and a mechanism of chemical release to the environment
- An environmental transport medium (e.g., soil) for the released chemical
- A point of contact between the contaminated medium and the receptor (i.e., the exposure point)
- An exposure route (e.g., ingesting chemically-impacted soil) at the exposure point

All four of these elements must be present for an exposure pathway to be considered complete and for chemical exposure to occur (USEPA 1989).

This human health risk assessment evaluated the potential for receptors to be exposed to the maximum detected concentrations or the upper confidence level (UCL), whichever value was less, pursuant to the ProUCL User's Guide (USEPA 2004) of the constituents detected in the top 10-ft of soil. The ProUCL model output for constituents detected in the soil matrix and soil vapor is included as Appendix F.

The maximum detected concentrations or upper confidence levels of the volatile organic compounds detected in soil vapor in shallow soil (10-feet bgs or less) was used as the exposure point concentrations in the ESL and VURAM models.

**7.1 Average and Reasonable Maximum Exposures -** Typically two types of exposure scenarios are evaluated in a risk assessment; an average exposure scenario, and a reasonable maximum exposure (RME) scenario. The average exposure scenario represents a more typical exposure, believed to be most likely to occur, while the reasonable maximum exposure scenario represents a plausible worst case situation - one that is not very likely to occur. USEPA guidance (1989) recommends evaluating a reasonable maximum exposure scenario. The reasonable maximum exposure scenario estimates the exposure a receptor might receive using highly conservative intake assumptions (e.g., $90^{th}$ or $95^{th}$ percentile for most intake assumptions) and the upper confidence limit (UCL) on the mean of the chemical concentrations. It is assumed that by evaluating a reasonable maximum exposure scenario potential health risks to extremely sensitive individuals within a particular receptor population will be adequately addressed. As an added measure of conservatism, only a reasonable maximum exposure scenario was evaluated in this human health risk assessment.

The DTSC PEA and USEPA guidance contain formulae that incorporate default values which were selected to be health protective. Some of these default values, such as, the exposure frequency, exposure time and exposure duration, were modified when evaluating the construction worker scenarios (DTSC 2015, USEPA 2004).

## 8.0 RISK CHARACTERIZATION

The risk characterization process incorporates data from the exposure and toxicity assessments. The exposure assessment information necessary to estimate risks and hazards includes the estimated chemical intakes, exposure modeling assumptions, and the exposure pathways assumed to contribute to the majority of exposure for each receptor over a given time period (USEPA 1989a). The exposure parameters for assessing the constituents detected in the soil matrix are included as Table 5.

The method by which chemicals with carcinogenic and/or noncarcinogenic effects are evaluated to determine whether they pose a risk or an adverse impact to human health is discussed below, relative to the exposure pathways by which the receptors may be exposed to the exposure point concentrations of the chemicals of concern.

**8.1 Ingestion and Dermal Contact Pathways -** To provide an evaluation of chronic risk along the ingestion and dermal contact pathways the following equations for risk and hazard were used consistent with PEA guidance (DTSC 2015).

$$Risk_{soil} = \frac{SF_o \times C_s \times IR_{s,\,adult} \times EF \times ED_{adult} \times 10^{-6}\ kg/mg}{BW_{adult} \times AT \times EF}$$

$$+ \frac{SF_o \times C_s \times SA_{adult} \times AF \times ABS \times EF \times ED_{adult} \times 10^{-6}\ kg/mg}{BW_{adult} \times AT \times EF}$$

$$+ \frac{SF_o \times C_s \times IR_{s,\,child} \times EF \times ED_{child} \times 10^{-6}\ kg/mg}{BW_{child} \times AT \times EF}$$

$$+ \frac{SF_o \times C_s \times SA_{child} \times AF \times ABS \times EF \times ED_{child} \times 10^{-6}\ kg/mg}{BW_{child} \times AT \times EF}$$

$$Hazard_{soil} = \frac{(1/RfD_o) \times C_s \times IR_{s,child} \times EF \times ED_{child} \times 10^{-6}\ kg/mg}{BW_{child} \times AT}$$

$$+ \frac{(1/RfD_o) \times C_s \times SA_{child} \times AF \times ABS \times EF_{child} \times ED_{child} \times 10^{-6}\ kg/mg}{BW_{child} \times AT}$$

$$+ \frac{(1/RfD_o) \times C_s \times IR_{s,adult} \times EF \times ED_{adult} \times 10^{-6}\ kg/mg}{BW_{adult} \times AT}$$

$$+ \frac{(1/RfD_o) \times C_s \times SA_{adult} \times AF \times ABS \times EF_{adult} \times ED_{adult} \times 10^{-6}\ kg/mg}{BW_{adult} \times AT}$$

Where:

$SF_o$ = cancer slope factor (mg/kg-day) $^{-1}$
$C_s$ = concentration in soil (mg/kg)
$RfD_o$ = oral reference dose (mg/kg-day)
ABS = absorption fraction (dimensionless)
ED = exposure duration (years)
EF = exposure frequency (days/year)
BW = body weight (kg)
IRs = incidental soil ingestion rate (mg/day)
SA = skin surface area ($cm^2$/event)
AF = soil to skin adherence factor ($mg/cm^2$)
AT = averaging time (days)

Chemical specific values for the absorption fractions (ABS) parameter were obtained from USEPA and DTSC (USEPA November 2019; DTSC April 2019). Toxicity and exposure point concentrations are found in Table 4. Exposure parameters for assessing constituents detected in the soil matrix are presented in Table 5. The maximum concentration or the upper confidence level, whichever was less, of the constituents detected in the top 10-ft of soils were evaluated in this risk assessment for the residential, commercial and construction worker scenarios.

| Analyte | EPC mg/kg |
|---|---|
| TPHd | 69 |
| TPHo | 45 |
| Aliphatic C5-C8 | 0.54 |
| Aliphatic C9-C18 | 114.6 |
| Aliphatic C19-C32 | 264.9 |
| Aromatic C9-C18 | 2.053 |
| Aromatic C19-C32 | 2.638 |
| Naphthalene | 0.062 |
| n-Propylbenzene | 0.005 |
| Benzo(b)fluoranthene | 0.67 |
| Benzo(k)fluoranthene | 0.65 |
| Benzo(a)pyrene | 0.53 |
| Chrysene | 0.7 |
| Fluoranthene | 1.1 |
| Fluorene | 0.057 |
| 2-Methylnaphthalene | 0.29 |
| Pyrene | 2.5 |
| Mercury | 0.2 |
| Lead | 33 |
| Silver | 1.5 |

The exposure factors presented in Tables 4 and 5 provide a conservative estimate of chronic risk and hazard to human health due to exposure to the chemicals of concern detected in the soil matrix via the ingestion and dermal contact routes of exposure. The calculated estimates of risk and hazard due to exposure to constituents detected in the soil matrix are provided in Tables 6-8.

**8.2 Inhalation Pathway Soil Matrix -** To provide an evaluation of chronic risk along the inhalation pathway the following equations (DTSC 2015, USEPA 2009) for estimating risk and hazard due to exposure to constituents of concern detected in the soil matrix were used consistent with PEA guidance (DTSC 2015, USEPA 2009).

Semi-volatile organic compounds and metals in soil are evaluated in outdoor air using particulate emission factors (PEFs) to obtain concentrations of chemicals in dust. PEFs are used to develop an estimate of the concentration of a chemical in dust based on its concentration in soil. It assumes that the dust from the site is caused by the wind and not created by mechanical means (e.g. construction activities, tilling, automobile traffic, etc.) (DTSC 2015).

A default PEF of 1.36E+09 ($m^3$/kg) is used for the residential and commercial worker scenarios, and a PEF of 1.00E+06 is used for the construction worker scenario (DTSC 2015, USEPA 2009). It assumes an infinite source of chemicals, a vegetative cover of 50%, and a mean annual wind speed of 4.69 m/s. This is equivalent to a dust concentration of 0.76 g/$m^3$ at the receptor. The default dispersion term (Q/C) of 90.80 (g/m2-s per kg/m3) is based on a site of 0.5 acres and dispersion modeling runs of 29 sites across the United States. The default Q/C provides a conservative estimate of the long-term exposure to dust (DTSC 2015).

$$C_a = (C_s/PEF) \times 1000\mu g/mg$$

Where:

$C_a$ = concentration in air, µg/$m^3$
$C_s$ = concentration in soil, mg/kg
PEF = particulate emission factor

$$Risk_{air} = IUR \times C_a \times \frac{ET \times EF \times ED}{AT}$$

$$Hazard_{air} = (1/RfC \times 1000\mu g/mg) \times C_a \times \frac{ET \times EF \times ED}{AT}$$

Where:

IUR = inhalation unit risk factor (µg/$m^3$)$^{-1}$
RfC = reference concentration (µg/$m^3$)
$C_a$ = contaminant concentration in air (µg/$m^3$)
ET = exposure time (hours/day)
EF = exposure frequency (days/year)
ED = exposure duration (years)
AT = averaging time (hours)

The risk and hazard for the air pathway are based on either the exposure to volatile emissions for VOCs or the exposure to fugitive dust emissions for non-VOCs. The Office of Scientific Affairs defines a VOC as a chemical with a vapor pressure of 0.001 mm mercury or higher and a Henry's Law Constant of 1 x $10^{-5}$ or higher. Exposure to a chemical via the air pathway can be adequately performed using either volatilization or fugitive dust scenarios; it is not necessary to do both (DTSC 2015).

For this risk assessment exposure to non-VOCs detected in the soil matrix via the inhalation pathway was performed using the fugitive dust scenario.

**8.3 SFRWQCB ESL Vapor Intrusion Model** - The SFRWQCB Environmental Screening Levels vapor intrusion model (2019, Rev. 2) was used to estimate potential risk and hazard due to exposure to volatiles in soil vapor in shallow soil (10-feet bgs or less) and deep soil (greater than 10-feet bgs).

The maximum detected concentration was used as the exposure point concentration in this vapor intrusion model. Those chemicals of concern that had both reference doses and slope factors available were assessed as both noncarcinogenic and carcinogenic compounds.

Constituents detected in the soil vapor: tetrachloroethene and gasoline range organics were assessed via the inhalation route of exposure for residential land use.

The exposure point concentrations (EPC) of the constituents detected in soil vapor at 5-feet and 10-feet are presented below and were input into the SFRWQCB ESL model.

| VOC | EPC Soil Vapor 5-ft & 10-ft bgs µg/m$^3$ |
|---|---|
| Benzene | 19 |
| Chloroform | 12.89 |
| Ethylbenzene | 23.23 |
| tetrachloroethene | 8 |
| Toluene | 18.68 |
| xylenes | 101.52 |

The results of the vapor intrusion risk assessment for detected concentrations of the constituents of concern in soil vapor at 5-feet and 10-feet (shallow soil) for a residential land use scenario estimated using the SFRWQCB ESL model are presented below and included as Appendix G:

**Residential Scenario VOCs in Shallow Soil (5-ft & 10-ft bgs)**

| VOC | $Risk_r$ Shallow Soil | $Hazard_r$ Shallow Soil | $Risk_r$ Shallow Soil | $Hazard_r$ Shallow Soil |
|---|---|---|---|---|
| | AF 0.03 | AF 0.03 | AF 0.001 | AF 0.001 |
| Benzene | 5.9E-06 | 1.8E-01 | 2.0E-07 | 6.1E-03 |
| Chloroform | 3.2E-06 | 3.8E-03 | 1.1E-07 | 1.3E-04 |
| Ethylbenzene | 6.2E-07 | 6.7E-04 | 2.1E-08 | 2.2E-05 |
| tetrachloroethene | 5.2E-07 | 5.8E-03 | 1.7E-08 | 1.9E-04 |
| Toluene | | 1.8E-03 | | 6.0E-05 |
| xylenes | | 2.9E-02 | 2.6E-08 | 9.7E-04 |
| **SUM** | 1E-05 | 0.219 | 3.4E-07 | 0.007 |

Notes: $Risk_r$ = estimated risk value for carcinogenic constituents for residential land use
$Hazard_r$ = estimated hazard value for noncarcinogenic constituents for residential land use
AF = attenuation factor; AF = 0.03 (SWRCB), AF = 0.001 (USEPA)

**Shallow Soil** - The individual estimated risk values for benzene and chloroform and the summed estimated risk values derived using the attenuation factor 0.03 are greater than the threshold of 1 x $10^{-6}$. The individual and summed estimated hazard values for all volatile organic compounds derived using the attenuation factor 0.03 are less than the threshold of 1.

The individual and summed estimated risk and hazard values derived using the attenuation factor 0.001

are less than the thresholds of 1 x $10^{-6}$ and 1.

The results of the vapor intrusion risk assessment for detected concentrations of the constituents of concern in soil vapor at 5-feet and 10-feet (shallow soil) for a commercial or industrial land use scenario estimated using the SFRWQCB ESL model are presented below and included as Appendix H:

**Commercial Scenario VOCs in Shallow Soil (5-ft & 10-ft bgs)**

| VOC | $Risk_c$ Shallow Soil | $Hazard_c$ Shallow Soil | $Risk_c$ Shallow Soil | $Hazard_c$ Shallow Soil |
|---|---|---|---|---|
| | AF 0.03 | AF 0.03 | AF 0.001 | AF 0.001 |
| Benzene | 1.3E-06 | 4.3E-02 | 4.5E-08 | 1.4E-03 |
| Chloroform | 7.3E-07 | 9.0E-04 | 2.4E-08 | 3.0E-05 |
| Ethylbenzene | 1.4E-07 | 1.6E-04 | 4.7E-09 | 5.3E-06 |
| tetrachloroethene | 1.2E-07 | 1.4E-03 | 4.0E-09 | 4.6E-05 |
| Toluene | | 4.3E-04 | | 1.4E-05 |
| xylenes | | 7.0E-03 | 2.6E-08 | 2.3E-04 |
| **SUM** | 2.3E-06 | 0.053 | 7.8E-08 | 0.002 |

Notes: $Risk_c$ = estimated risk value for carcinogenic constituents for commercial or industrial land use
$Hazard_c$ = estimated hazard value for noncarcinogenic constituents for commercial or industrial land use
AF = attenuation factor; AF = 0.03 (SWRCB), AF = 0.001 (USEPA)

**Shallow Soil** - The individual and summed estimated risk values derived using the attenuation factor 0.03 are less than the threshold of 1 x $10^{-5}$. The individual and summed estimated hazard values derived using the attenuation factor 0.03 are less than the threshold of 1.

The individual and summed estimated risk and hazard values derived using the attenuation factor 0.001 are less than the thresholds of 1 x $10^{-5}$ and 1.

**8.4 VURAM -** The Virginia Unified Risk Assessment Model (VURAM) was used to estimate the potential risks and hazards due to inhalation of VOCs by construction workers while working in a trench.

The exposure point concentrations of the constituents detected in soil vapor and assessed using the VURAM model are presented below.

| VOC | Exposure Point Concentration in Soil Vapor µg/$m^3$ |
|---|---|
| benzene | 19 |
| chloroform | 12.89 |
| ethylbenzene | 23.23 |
| n-propylbenzene | 20 |
| tetrachloroethene | 8 |
| toluene | 18.68 |
| 1,2,4-trimethylbenzene | 41.32 |
| 1,3,5-trimethylbenzene | 19.25 |
| xylenes | 101.52 |

The results of the vapor intrusion risk assessment for the constituents of concern in soil vapor for construction workers estimated using the VURAM model are presented below and included as Appendix I:

**Construction Worker Scenario VURAM**

| VOC | $Risk_i$ | $Hazard_i$ |
|---|---|---|
| benzene | 2.17E-09 | 2.53E-04 |
| chloroform | 3.72E-09 | 4.84E-05 |
| ethylbenzene | 6.49E-10 | 2.11E-06 |
| n-propylbenzene | | 1.43E-05 |
| tetrachloroethene | 1.71E-11 | 1.20E-04 |
| toluene | | 3.46E-06 |
| 1,2,4-trimethylbenzene | | 4.74E-04 |
| 1,3,5-trimethylbenzene | | 1.38E-03 |
| xylenes | | 2.07E-04 |
| **SUM** | 6.56E-09 | 0.003 |

Neither the individual nor summed estimated risk values exceed the threshold of 1 x $10^{-5}$ for all carcinogenic VOCs for construction workers working in a trench. Neither the individual nor summed estimated hazard values exceed the threshold of 1 for construction workers working in a trench.

**8.5 DTSC's LeadSpread 8.0 Model -** DTSC's LeadSpread 8.0 Model estimates the hazard due to exposure to lead in air and onsite soils/dust for adults and children within a residential exposure scenario. Typically, lead concentrations in air are not measured onsite. Therefore the model extrapolates these concentrations from the measured concentrations of lead in onsite soils.

DTSC's LeadSpread 8.0 Model results indicate that lead does not pose an unacceptable hazard to adults or children exposed to either the maximum detected concentration (33mg/kg) or the 95UCL concentration (10.54mg/kg) of lead in site soils used in the model as the exposure point concentration. These results are provided in Appendix J.

**8.6 Noncancer Adverse Health Effects -** Noncarcinogenic effects or hazards are typically evaluated by comparing an exposure level over a specified time period (e.g., a lifetime or 25 years), with a reference dose based on a similar time period. Hazard quotient values less than 1 indicate that potential exposures to noncarcinogenic constituents of concern are not expected to result in toxicity (USEPA 1989). Summing the hazard quotient values to derive a hazard index (HI) provides an estimation of the total potential hazard due to a simultaneous exposure to all the noncarcinogenic constituents of concern. However, summing hazard quotient values is not necessary when the chemicals of concern target different organs within the body (USEPA 1989, DTSC 2015). Although the noncarcinogenic chemicals of concern quantitatively assessed in this risk assessment target different organs within the body, the estimated hazard quotients were summed to derive a hazard index.

**8.7 Lifetime Excess Cancer Risk -** Slope factors are used to estimate the potential risk associated with exposure to individual constituents of concern. The slope factor is multiplied by the chronic daily intake averaged over 70 years to estimate lifetime excess cancer risk. "Excess" or "incremental" cancer risk represents the probability of an individual developing cancer over a lifetime as a result of chemical exposure, over and above the baseline or "background" cancer risk in the general population. Cancer risks and noncancer health hazards estimated in the human health risk assessment are regarded as estimated or theoretical results developed on the basis of the toxicity factors, chemical fate and transport, exposure assumption, and other inputs previously described. Cancer risks do not represent actual cancer cases in actual people. Rather, risks are calculated on the basis of an entirely hypothetical set of conditions. This assumed "exposure scenario" is developed to protect human health, and is based on

standard USEPA and Cal-EPA methods and assumptions.

USEPA characterizes theoretical excess lifetime cancer risks below one in one million ($10^{-6}$) as not of concern and has stated that risks between $10^{-6}$ and one in 10,000 ($10^{-4}$) are "safe and protective of public health" (Federal Register 56(20):3535, 1991). Remedial action is not generally required by USEPA for sites with a theoretical lifetime excess risk of less than $10^{-4}$; whereas the State of California uses a risk-management approach (DTSC 2011).

The more stringent target risk of $10^{-6}$ is typically applied to residential receptors. To provide perspective, a total theoretical lifetime excess cancer risk of one in 100,000 ($10^{-5}$) is frequently accepted by Cal-EPA for worker receptors at California sites, and the target risk for chemicals evaluated under State Proposition 65 regulations is $10^{-5}$ (22CCR 12703).

**8.8 Multipathway Cancer Risk -** Based on regulatory guidelines, it is appropriate to combine risk estimates across exposure pathways for a given receptor. At the same time, exposure to multiple carcinogenic constituents of concern is also typically considered to be additive. For exposures to multiple pathways and chemicals, the following equation was used to estimate total theoretical lifetime excess carcinogenic risks:

$$\text{Total Risk} = \sum_{p=1}^{m} \sum_{i=1}^{n} CR_{i,p}$$

Where:

| | | |
|---|---|---|
| Total Risk | = | Excess cancer risk from exposure to n chemicals via m pathways |
| m | = | Number of exposure pathways |
| n | = | Number of chemicals |
| $CR_{i,p}$ | = | Potential cancer risk from exposure to chemical i via pathway p |

This equation was used to estimate the total potential cancer risks due to exposure to the carcinogenic constituents of concern via the ingestion, dermal contact and inhalation routes of exposure. The estimated risks, total risk, estimated hazards and hazard index are presented in Tables 6-9 .

**8.9 Estimation of Risks and Hazards**

**Residential Scenario**

***Estimated Risk Soil Ingestion and Dermal contact*** - The estimated risk due to exposure to constituents detected in the soil matrix via the ingestion and dermal contact exposure routes is $1.3 \times 10^{-6}$ slightly greater than the target threshold $1 \times 10^{-6}$.

***Estimated Risk Soil & Soil Vapor Inhalation*** - The estimated risk due to exposure to constituents detected in the soil matrix via the inhalation exposure route and due to exposure to volatile organic compounds in the vapor phase is $1.02 \times 10^{-5}$ (using the AF 0.03) greater than the target threshold $1 \times 10^{-6}$ or $3.48 \times 10^{-7}$ (using the AF 0.001) less than the target threshold $1 \times 10^{-6}$.

***Hazard Quotients Soil Ingestion and Dermal Contact*** - The sum of the estimated hazard quotients due to exposure to constituents detected in the soil matrix via the ingestion and dermal contact exposure routes is 0.57, less than 1, the target hazard value.

***Hazard Quotients Soil & Soil Vapor Inhalation*** - The sum of the estimated hazard quotients due to

exposure to constituents detected in the soil matrix via the inhalation exposure route and to volatile organic compounds in the vapor phase is 0.22 (using the AF 0.03) or 0.007 (using the AF 0.001) both less than the threshold value 1.

***Summed Risk*** - The total risk, summed across all exposure pathways for all carcinogenic constituents of concern in the soil matrix and soil vapor is $1.15 \times 10^{-5}$ (using the AF 0.03) or $1.65 \times 10^{-6}$ (using the AF 0.001), both greater than the target risk.

***Hazard Index*** – The total hazard, summed across all exposure pathways for all noncarcinogenic constituents of concern in the soil matrix and soil vapor is 0.79 (using the AF 0.03) or 0.58 (using the AF 0.001) both are less than the target hazard value. These estimated risk and hazards values are presented in Tables 6 and 9.

**Commercial Worker Scenario**

***Estimated Risk Soil Ingestion and Dermal contact*** - The estimated risk due to exposure to constituents detected in the soil matrix via the ingestion and dermal contact exposure routes is $5.24 \times 10^{-7}$ less than the target threshold $1 \times 10^{-5}$.

***Estimated Risk Soil & Soil Vapor Inhalation*** - The estimated risk due to exposure to constituents detected in the soil matrix via the inhalation exposure route and due to exposure to volatile organic compounds in the vapor phase is $2.29 \times 10^{-6}$ (using the AF 0.03) or $7.77 \times 10^{-8}$ (using the AF 0.001), both are less than the target threshold $1 \times 10^{-5}$.

***Hazard Quotients Soil Ingestion and Dermal Contact*** - The sum of the estimated hazard quotients due to exposure to constituents detected in the soil matrix via the ingestion and dermal contact exposure routes is 0.06, less than 1, the target hazard value.

***Hazard Quotients Soil & Soil Vapor Inhalation*** - The sum of the estimated hazard quotients due to exposure to constituents detected in the soil matrix via the inhalation exposure route and to volatile organic compounds in the vapor phase is 0.05 (using the AF 0.03) or 0.003 (using the AF 0.001) both less than the threshold value 1.

***Summed Risk*** - The total risk, summed across all exposure pathways for all carcinogenic constituents of concern in the soil matrix and soil vapor is $2.8 \times 10^{-6}$ (using the AF 0.03) or $6 \times 10^{-7}$ (using the AF 0.001), both less than the target risk.

***Hazard Index*** – The total hazard, summed across all exposure pathways for all noncarcinogenic constituents of concern in the soil matrix and soil vapor is 0.11 (using the AF 0.03) or 0.06 (using the AF 0.001) both are less than the target hazard value. These estimated risk and hazards values are presented in Tables 7 and 9.

**Construction Worker Scenario**

***Estimated Risk Soil Ingestion and Dermal contact*** - The estimated risk due to exposure to constituents detected in the soil matrix via the ingestion and dermal contact exposure routes is $7.87 \times 10^{-8}$ less than the target threshold $1 \times 10^{-5}$.

***Estimated Risk Inhalation*** - The estimated risk due to exposure to constituents detected in the soil matrix via the inhalation exposure route is $2.65 \times 10^{-12}$ less than the target threshold $1 \times 10^{-5}$.

***Hazard Quotients Ingestion and Dermal Contact*** - The estimated hazard quotients due to exposure to constituents detected in the soil matrix via the ingestion and dermal contact exposure routes is 0.3, less than 1, the target hazard value.

***Hazard Quotients Inhalation*** - The estimated hazard quotients due to exposure to constituents detected in the soil matrix via the inhalation exposure route is 0.0009, less than the target hazard value.

***Summed Risk*** - The total risk, summed across all exposure pathways for all carcinogenic constituents of concern in the soil matrix and soil vapor underlying the site, is $8.5 \times 10^{-8}$, less than the target threshold $1 \times 10^{-5}$.

***Hazard Index*** – The total hazard, summed across all exposure pathways for all noncarcinogenic constituents of concern in the soil matrix and soil vapor underlying the site is 0.3, less than the target hazard value. These estimated risk and hazards values are presented in Tables 8 and 9.

**Conclusions and Recommendations** – It is unlikely that site will be redeveloped for residential occupancy as it is zoned commercial/industrial and its current use is commercial. The estimated risks and hazards due to exposure to constituents detected in the soil matrix and soil vapor underlying the site for commercial and construction workers indicate the site can be safely redeveloped for commercial use.

Institutional controls, i.e., the required passive methane mitigation system to be installed subslab of the proposed buildings and paved areas greater than 5,000 square feet, and paving of surface soils for parking mitigates exposure by future commercial workers.

Mitigation measures during grading activities such as monitoring under the Air Quality Management District (AQMD) Rule 1166 permit/compliance plan and the application of Simple Green mixed with water applied as a dust suppressant may result in decreased concentrations of constituents in soils and soil vapor that protect the construction worker.

## 9.0 UNCERTAINTY ANALYSIS

The uncertainty analysis characterizes the propagated uncertainty in human health risk assessments. These uncertainties are driven by variability in:

- The chemical data selection and assumptions used in the models with which concentrations at receptor locations were estimated.
- The variability of receptor intake parameters.
- The accuracy of toxicity values used to characterize exposure, hazards and cancer risks.

Additionally, uncertainties are introduced in the risk assessment when exposures to several substances across multiple pathways are summed.

Quantifying uncertainty is an essential element of the risk assessment process. According to USEPA's Guidance on Risk Characterization for Risk Managers and Risk Assessors, point estimates of risk "do not fully convey the range of information considered and used in developing the assessment" (USEPA 1992). The following components of the risk assessment process can introduce uncertainties:

- Data Collection and Evaluation
- Exposure Assessment
- Toxicity Assessment
- Risk Characterization

**9.1 Data Collection and Evaluation -** The techniques used for data sampling and analysis and the methods used for identifying chemicals for evaluation in this risk assessment, may result in a number of uncertainties. These uncertainties are itemized below in the form of assumptions.

- It was assumed that the nature and extent of chemical impacts on and near the site have been adequately characterized. If this assumption is not valid, then potential health impacts may be over- or underestimated.

- Systematic or random errors in the chemical analyses may yield erroneous data. These types of errors may result in a slight over- or underestimation of risk.

**9.2 Exposure Assessment -** A number of uncertainties are associated with the exposure assessment, including estimation of exposure point concentrations and assumptions used to estimate chemical intakes. Key uncertainties associated with these components of the human health risk assessment are summarized below.

**9.2.1 Exposure Pathways -** The exposure pathways evaluated in this human health risk assessment are expected to represent the primary pathways of exposure, based on the results of the chemical analyses, and the expected fate and transport of these chemicals in the environment. Minor or secondary pathways may also exist, but often cannot be identified or evaluated using the available data. The contribution of secondary pathways to the overall risk from the site is not likely to be significant. In addition, intake assumptions are reflective of trends (usually for the most sensitive individual within an entire population), and as such are subject to intrinsic variability. In both cases, their presence introduces a level of uncertainty to this risk assessment process.

**9.3 Toxicity Assessment -** Toxicity information for many chemicals is often limited. Consequently, there are varying degrees of uncertainty with the calculated toxicity values. Sources of uncertainty associated with toxicity values include:

- Using dose-response information from effects observed at high doses to predict the adverse health effects that may occur following exposure to the low levels expected from human contact with the agent in the environment.
- Using dose-response information from short-term exposures to predict the effects of long-term exposures.
- Using dose-response information from animal studies to predict effects in humans.
- Using dose-response information from homogeneous animal populations or human populations to predict the effects likely to be observed in the general population consisting of individuals with a wide range of sensitivities.

To compensate for these uncertainties, USEPA typically applies a margin of safety when promulgating human toxicity values. Therefore, use of USEPA toxicity values likely results in an overestimation of potential hazard and risk.

**9.4 Risk Characterization -** The reasonable maximum exposure scenario risk characterization represents an over-estimation of risk. Site-specific information regarding depth below ground at which the constituents of concern were detected was not used in the equations. The reasonable maximum exposure scenario estimated the risk to the receptors based on the maximum detected concentrations or the UCLs for the constituents quantitatively assessed in this risk assessment.

**9.5 Summary of Risk Assessment Uncertainties -** The analysis of the uncertainties associated with this risk assessment indicates that the estimated risks and hazards derived from the equations in the PEA Manual (DTSC 2015), the RAGs Manual (USEPA 2009), the LeadSpread Model (DTSC) and the ESL and VURAM Models for the reasonable maximum exposure scenario represent an over-estimation of risk. Although as outlined in the sections above, many factors can contribute to the over- or underestimation of risk, in general, a mixture of conservative and upper-bound input values were identified to estimate potential exposures. Compounding conservative and upper-bound input values in the risk assessment process are intended to lead to reasonable, maximum, health-conservative estimates. The actual impacts to human health are most likely less than those estimated in this human health risk assessment for the evaluated receptors and pathways.

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# TABLES

## Table 1 - Soil Vapor Analytical Results

| SAMPLE ID | DATE SAMPLED | Benzene µg/m³ | Chloroform µg/m³ | Ethylbenzene µg/m³ | n-Propylbenzene µg/m³ | Tetrachloroethene µg/m³ | Toluene µg/m³ | 1,2,4-Trimethylbenzene µg/m³ | 1,3,5-Trimethylbenzene µg/m³ | m,p-xylenes µg/m³ | o-xylene µg/m³ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ESL | | 3.2 | 4.1 | 37 | | 15 | 10,000 | | | 3,500 | 3,500 |
| SV1-5' | 2/21/20 | <8 | **12** | 18 | <8 | <8 | 21 | 8 | 9 | 100 | 34 |
| SV1-10' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV2-5' | 2/21/20 | <8 | <8 | <8 | <8 | 8 | 33 | 11 | <8 | <16 | <8 |
| SV2-10' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | 11 | <8 | <8 | <16 | <8 |
| SV3-5' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | 32 | 11 | <8 | <16 | <8 |
| SV3-10' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV4-5' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | 10 | 16 | <8 | <16 | <8 |
| SV4-10' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV4-10' REP | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV5-5' | 2/21/20 | <8 | 8 | <8 | <8 | <8 | <8 | 13 | <8 | 19 | 9 |
| SV5-10' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV6-5' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV6-5' REP | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV6-10 | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV7-5' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV7-10' | 2/21/20 | **19** | **11** | 23 | 20 | <8 | 45 | 123 | 40 | 76 | 40 |
| SV8-5' | 2/21/20 | <8 | **34** | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV8-10' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV9-5' | 2/21/20 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <8 | <16 | <8 |
| SV9-10' | 2/21/20 | **19** | **20** | **99** | <8 | <8 | 27 | <8 | <8 | 322 | 151 |

Notes:

µg/m³ = micrograms per cubic meter

<8 = concentration is less than the Reporting Limit (8), i.e., not detected (ND)

SV1-5' = Soil Vapor Probe 1, 5' bgs

BOLD = detected concentration exceeds ESL

Analytical results are included as Appendix A

Only detected concentrations of VOCs are presented in this table. All other VOCs were ND.

ESL = San Francisco Regional Water Quality Control Board Environmental Screening Level 2019 (Rev. 2)

Blank Cell = ESL Not Available

# Table 2 - Metals Analytical Results in Soil Matrix

| SAMPLE ID | DATE SAMPLED | As mg/kg | Ba mg/kg | Co mg/kg | $Cr^{+3}$ mg/kg | Cu mg/kg | Hg mg/kg | Ni mg/kg | Pb mg/kg | Ag mg/kg | V mg/kg | Zn mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ESL | | 0.67 | 390 | 23 | 120,000 | 180 | 13 | 86 | 32 | 25 | 18 | 340 |
| SV1-5 | 2/18/20 | **<7.7** | 66 | 6.6 | 15 | 12 | <0.05 | 10 | 2.6 | <1 | **22** | 26 |
| SV1-10 | 2/18/20 | **<7.7** | 44 | 4.7 | 10 | <7 | <0.06 | <6.8 | <2.6 | <1 | 16 | 23 |
| SV2-5 | 2/18/20 | **<7.7** | 42 | 5 | 16 | 7.3 | <0.06 | 7.5 | 3 | <1 | **34** | 21 |
| SV2-10 | 2/18/20 | **<7.7** | 35 | 4.1 | 7.6 | <7 | <0.05 | 7.4 | <2.6 | <1 | 13 | 19 |
| SV3-5 | 2/18/20 | **<7.7** | 53 | 7.9 | 21 | 11 | <0.06 | 16 | 3.5 | <1 | **28** | 35 |
| SV3-10 | 2/18/20 | **<7.7** | 30 | 3.8 | 6.9 | <7 | <0.05 | <6.8 | <2.6 | <1 | 11 | 17 |
| SV4-5 | 2/18/20 | **<7.7** | 110 | 7 | 14 | 27 | 0.2 | 10 | **33** | 1.1 | **23** | 110 |
| SV4-10 | 2/18/20 | **<7.7** | 33 | 5.5 | 14 | 8.8 | <0.06 | 9.2 | <2.6 | 1 | **23** | 29 |
| SV5-5 | 2/18/20 | **<7.7** | 130 | 8.3 | 17 | 15 | 0.06 | 12 | 13 | 1.2 | **28** | 76 |
| SV5-10 | 2/18/20 | **<7.7** | 63 | 7.6 | 19 | 12 | <0.05 | 15 | 3.5 | 1.1 | **26** | 41 |
| SV6-5 | 2/18/20 | **<7.7** | 110 | 5 | 11 | 7.8 | <0.06 | 7.1 | 6.9 | <1 | 18 | 30 |
| SV6-10 | 2/18/20 | **<7.7** | 74 | 7.7 | 24 | 11 | <0.06 | 11 | 5.4 | 1.5 | **32** | 44 |
| SV7-5 | 2/18/20 | **<7.7** | 85 | 4.5 | 9.8 | 7 | 0.09 | <6.8 | 8.4 | <1 | 17 | 36 |
| SV7-10 | 2/18/20 | **<7.7** | 240 | 6.5 | 27 | 11 | <0.06 | 10 | 3.7 | 1.1 | **25** | 35 |
| SV8-5 | 2/18/20 | **<7.7** | 86 | 5.8 | 12 | 8.4 | <0.06 | 8.2 | 6.8 | <1 | **20** | 32 |
| SV8-10 | 2/18/20 | **<7.7** | 87 | 10 | 28 | 19 | <0.05 | 22 | 5.7 | 1.1 | **34** | 57 |
| SV9-5 | 2/18/20 | **<7.7** | 130 | 6.3 | 14 | 9.7 | 0.09 | 9.1 | 7.1 | <1 | **24** | 38 |
| SV9-10 | 2/18/20 | **<7.7** | 64 | 7 | 25 | 11 | <0.06 | 14 | 4.6 | 1 | **38** | 39 |

Notes:
mg/kg = milligram per kilogram
As = arsenic, Ba = barium, Co = cobalt, $Cr^{+3}$ = trivalent chromium, Cu = copper, Hg = mercury, Ni = nickel, Pb = lead, Ag = silver, V = vanadium
Zn = zinc
<7.7 = concentration is less than the Reporting Limit (7.7), i.e., not detected (ND)
SV1-5 = Soil Boring1, 5-feet below ground surface (bgs).
BOLD = value exceeds the ESL
Analytical results are included as Appendix B
Soil was collected from 5-feet bgs and 10-feet bgs from the same boring.
Only detected concentrations of metals are presented in this table. All other metals were ND.
ESL = San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels 2019 (Rev. 2)

**Table 3 - Total Petroleum Hydrocarbons and SemiVolatile Organic Compounds Analytical Results in Soil Matrix**

| Sample ID | Date Sampled | TPHd mg/kg | TPHo mg/kg | <C8 mg/kg | C8-C9 mg/kg | C9-C10 mg/kg | C10-C11 mg/kg | C11-C12 mg/kg | C12-C14 mg/kg | C14-C16 mg/kg | C16-C18 mg/kg | C18-C20 mg/kg | C20-C24 mg/kg | C24-C28 mg/kg | C28-C32 mg/kg | C>32 mg/kg | C7-C36 mg/kg | Benzo(b)fluoranthene mg/kg | Benzo(k)fluoranthene mg/kg | Benzo(a)pyrene mg/kg | Chrysene mg/kg | Fluoranthene mg/kg | Phenanthrene mg/kg | Pyrene mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RSL*r Aromatic* | | 97 | 2,400 | | | | | | | | | | | | | | | | | | | | | |
| ESL | | | | | | | | | | | | | | | | | | 1.1 | 2.8 | 0.11 | 2.2 | 0.69 | 7.8 | 45 |
| SV1-5 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV1-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV2-5 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV2-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV3-5 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV3-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV4-5 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV4-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV5-5 | 2/18/20 | 48 | 45 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 8 | 9.9 | 19 | 15 | 8.3 | 3.9 | 64 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV5-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV6-5 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV6-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV7-5 | 2/18/20 | 69 | 33 | <1 | <1 | <1 | <1 | <1 | <1 | 33 | 8.2 | 9.5 | 16 | 12 | 5.8 | 2.3 | 87 | 0.67 | 0.65 | **0.53** | 0.7 | **1.1** | 0.63 | 2.5 |
| SV7-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV8-5 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV8-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV9-5 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| SV9-10 | 2/18/20 | <5 | <5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <5 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |

Notes:

TPH-d = Total Petroleum Hydrocarbons-diesel range C10-C24

TPH-o = Total Petroleum Hydrocarbons-oil range C22-C36

mg/kg = milligram per kilogram

<1 = concentration is less than the Reporting Limit (1), i.e., not detected (ND)

SV1-5 = Soil Boring1, 5-feet below ground surface (bgs).

Analytical results are included as Appendix B

BOLD = detected concentrations exceeded the respective ESL

Soil was collected from 5-feet bgs and 10-feet bgs from the same boring

RSL*r* = USEPA Regional Screening Level for residential soils (November 2019)

ESL = San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels 2019 (Rev. 2)

**Table 4 Exposure Point Concentrations, Slope Factors and Reference Doses**

| SOIL MATRIX ANALYTE | MAX mg/kg | 95UCL mg/kg | SFo | IUR | RfDo | RfCi |
|---|---|---|---|---|---|---|
| TPHd | 69 | 13.62 | | | 4.00E-03 | 3.00E-03 |
| TPHo | 45 | 10.84 | | | 4.00E-02 | |
| Aliphatic C5-C8 | 0.54 | | | | | 6.00E-01 |
| Aliphatic C9-C18 | 2720 | 114.6 | | | 1.00E-02 | 1.00E-01 |
| Aliphatic C19-C32 | 1390 | 264.9 | | | 3.00E+00 | |
| Aromatic C9-C18 | 33 | 2.053 | | | 4.00E-03 | 3.00E-03 |
| Aromatic C19-C32 | 19 | 2.638 | | | 4.00E-02 | |
| naphthalene | 0.062 | | 1.20E-01 | 3.40E-05 | | |
| n-propylbenzene | 0.005 | | | | 1.00E-01 | 1.00E+00 |
| benzo(b)fluoranthene | 0.67 | | 1.00E-01 | 1.10E-04 | | |
| benzo(k)fluoranthene | 0.65 | | 1.00E-02 | 1.10E-04 | | |
| benzo(a)pyrene | 0.53 | | 1.00E+00 | 1.10E-03 | | |
| chrysene | 0.7 | | 1.00E-03 | 1.10E-05 | | |
| fluoranthene | 1.1 | | | | 4.00E-02 | |
| fluorene | 0.057 | | | | 4.00E-02 | 1.60E+02 |
| 2-methylnaphthalene | 0.29 | | | | 4.00E-03 | |
| phenanthrene | 0.63 | | | | | |
| pyrene | 2.5 | | | | 3.00E-02 | 1.20E-01 |
| mercury | 0.2 | 0.0656 | | | 1.60E-04 | 3.00E-05 |
| lead | 33 | 10.54 | LeadSpread | LeadSpread | LeadSpread | LeadSpread |
| silver | 1.5 | 1.106 | | | 5.00E-03 | |
| **SOIL VAPOR ANALYTE** | **MAX µg/m³** | **95UCL µg/m3** | | | | |
| benzene | 19 | | | ESL & VURAM models | | ESL & VURAM models |
| chloroform | 34 | 12.89 | | ESL & VURAM models | | ESL & VURAM models |
| ethylbenzene | 99 | 23.23 | | ESL & VURAM models | | ESL & VURAM models |
| n-propylbenzene | 20 | | | ESL & VURAM models | | ESL & VURAM models |
| tetrachloroethylene | 8 | | | ESL & VURAM models | | ESL & VURAM models |
| toluene | 45 | 18.68 | | ESL & VURAM models | | ESL & VURAM models |
| 1,2,4-trimethylbenzene | 123 | 41.32 | | ESL & VURAM models | | ESL & VURAM models |
| 1,3,5-trimethylbenzene | 40 | 19.25 | | ESL & VURAM models | | ESL & VURAM models |
| m,p-xylenes | 322 | 69.26 | | ESL & VURAM models | | ESL & VURAM models |
| o-xylene | 151 | 32.26 | | ESL & VURAM models | | ESL & VURAM models |

Notes:

95UCL calculated using ProUCL version 5.1.02 for constituents detected in top 10-feet of soil matrix

EPCs are highlighted

SFo = Slope Factor, oral route of exposure $(mg/kg\text{-}day)^{-1}$

IUR = inhalation unit risk factor, inhalation route of exposure $(\mu g/m3)^{-1}$

RfDo = Reference Dose, oral route of exposure (mg/kg-day)

RfCi = Reference Concentration, inhalation route of exposure $(mg/m^3)$

DTSC HERO Note 3 (April 2019), USEPA RSL tables (November 2019)

# Table 5 - Exposure Parameters

| Exposure Parameter | Notation | Receptor Populations | | | | Units | Reference |
|---|---|---|---|---|---|---|---|
| | | Commercial Worker | Construction Worker | Residential User | | | |
| | | | | Adult | Child | | |
| **General Parameters** | | | | | | | |
| Body Weight | BW | 80 | 80 | 80 | 15 | kg | DTSC |
| Exposure Duration | ED | 25 | 1 | 20 | 6 | years | DTSC |
| Exposure Frequency | EF | 250 | 250 | 350 | 350 | days/year | DTSC |
| Exposure Time | ET | 8 | 8 | 24 | 24 | hours/day | DTSC |
| | | | | | | | |
| **Soil Ingestion Pathway** | | | | | | | |
| Soil Ingestion Rate | IR | 100 | 330 | 100 | 200 | mg/day | DTSC |
| Averaging Time carcinogens 70dx365d/yr | Atc | 25550 | 25550 | 25550 | 25550 | days | DTSC |
| Averaging Time noncarcinogens EDx365d/yr | Atnc | 9125 | 365 | 7300 | 2190 | days | DTSC |
| **Dermal Contact with Soil** | | | | | | | |
| Skin Surface Area | SA | 6,032 | 6,032 | 6,032 | 2,900 | $cm^2$/event | OEHHA |
| Soil-to-Skin Adherence factor | AF | 0.2 | 0.8 | 0.07 | 0.2 | $mg/cm^2$ | OEHHA |
| Fraction of Chemical Dermally Absorbed | ABS | chem specific | chem specific | ch sp | ch sp | unitless | DTSC |
| Averaging Time carcinogens 70dx365d/yr | Atc | 25550 | 25550 | 25550 | 25550 | days | DTSC |
| Averaging Time noncarcinogens EDx365d/yr | Atnc | 9125 | 365 | 7300 | 2190 | days | DTSC |
| **Inhalation of Outdoor Air** | | | | | | | |
| Particulate Emission Factor | PEF | 1.36E+09 | 1.00E+06 | 1.36E+09 | 1.36E+09 | $m^3/kg$ | DTSC |
| Exposure Time (site visit duration) | ET | 6 | 12 | 6 | 6 | hours/day | USEPA |
| Averaging Time carcinogens 70dx365d/yrx24hr/d | Atc | 613200 | 613200 | 613200 | 613200 | hours | DTSC |
| Averaging Time noncarcinogens EDx365d/yrx24h/d | Atnc | 219000 | 8760 | 175200 | 52560 | hours | DTSC |

Notes:

ABS = 0.1 for VOCs, 0.13 for naphthalene, 0.01 for most metals (DTSC 2019; USEPA RSL November 2019)

## Table 6
## Estimated Risks and Hazards - Residential

| ANALYTE | RISKo | RISKi | HAZARDo | HAZARDi |
|---|---|---|---|---|
| **soil** | | | | |
| TPHd | | | 3.14E-01 | 1.62E-05 |
| TPHo | | | 2.05E-02 | |
| Aliphatic C5-C8 | | | | 6.35E-10 |
| Aliphatic C9-C18 | | | 2.09E-01 | 8.08E-07 |
| Aliphatic C19-C32 | | | 1.59E-03 | |
| Aromatic C9-C18 | | | 9.34E-03 | 4.82E-07 |
| Aromatic C19-C32 | | | 1.20E-03 | |
| naphthalene | 1.41E-08 | 3.18E-14 | | |
| n-propylbenzene | | | 9.10E-07 | 3.53E-12 |
| benzo(b)fluoranthene | 1.43E-07 | 1.11E-12 | | |
| benzo(k)fluoranthene | 1.39E-08 | 1.08E-12 | | |
| benzo(a)pyrene | 1.13E-06 | 8.81E-12 | | |
| chrysene | 1.49E-09 | 1.16E-13 | | |
| fluoranthene | | | 5.58E-04 | |
| fluorene | | | 2.89E-05 | 2.51E-13 |
| 2-methylnaphthalene | | | 1.47E-03 | |
| pyrene | | | 1.68E-03 | 1.47E-08 |
| mercury | | | 5.91E-03 | 1.54E-06 |
| silver | | | 3.19E-03 | |
| **Sum Risk = 1.30E-06** | 1.30E-06 | 1.12E-11 | | |
| **Sum Hazard = 0.57** | | | 5.68E-01 | 1.90E-05 |
| **soil vapor AF 0.03** | | | | |
| benzene | | 5.90E-06 | | 1.80E-01 |
| chloroform | | 3.20E-06 | | 3.80E-03 |
| ethylbenzene | | 6.20E-07 | | 6.70E-04 |
| tetrachloroethene | | 5.20E-07 | | 5.80E-03 |
| toluene | | | | 1.80E-03 |
| xylenes | | | | 2.90E-02 |
| **Sum Risk & Hazard** | | 1.02E-05 | | 2.21E-01 |
| **soil vapor AF 0.001** | | | | |
| benzene | | 2.00E-07 | | 6.10E-03 |
| chloroform | | 1.10E-07 | | 1.30E-04 |
| ethylbenzene | | 2.10E-08 | | 2.20E-05 |
| tetrachloroethene | | 1.70E-08 | | 1.90E-04 |
| toluene | | | | 6.00E-05 |
| xylenes | | | | 9.70E-04 |
| **Sum Risk & Hazard** | | 3.48E-07 | | 7.47E-03 |

## Table 7
## Estimated Risks and Hazards - Commercial

| ANALYTE | RISKo | RISKi | HAZARDo | HAZARDi |
|---|---|---|---|---|
| **soil** | | | | |
| TPHd | | | 3.26E-02 | 2.893E-06 |
| TPHo | | | 2.13E-03 | |
| Aliphatic C5-C8 | | | | 1.133E-10 |
| Aliphatic C9-C18 | | | 2.16E-02 | 1.443E-07 |
| Aliphatic C19-C32 | | | 1.65E-04 | |
| Aromatic C9-C18 | | | 9.70E-04 | 8.608E-08 |
| Aromatic C19-C32 | | | 1.25E-04 | |
| naphthalene | 5.02E-09 | 9.48E-14 | | |
| n-propylbenzene | | | 9.45E-08 | 6.30E-13 |
| benzo(b)fluoranthene | 5.76E-08 | 3.31E-12 | | |
| benzo(k)fluoranthene | 5.58E-09 | 3.22E-12 | | |
| benzo(a)pyrene | 4.55E-07 | 2.62E-11 | | |
| chrysene | 6.01E-10 | 3.46E-13 | | |
| fluoranthene | | | 6.61E-05 | |
| fluorene | | | 3.43E-06 | 4.49E-14 |
| 2-methylnaphthalene | | | 1.74E-04 | |
| pyrene | | | 1.98E-04 | 9.07E-04 |
| mercury | | | 3.93E-04 | 2.75E-07 |
| silver | | | 2.12E-04 | |
| **Sum Risk = 5.24E-07** | 5.24E-07 | 3.32E-11 | | |
| **Sum Hazard = 0.06** | | | 5.87E-02 | 9.10E-04 |
| **soil vapor AF 0.03** | | | | |
| benzene | | 1.30E-06 | | 4.30E-02 |
| chloroform | | 7.30E-07 | | 9.00E-04 |
| ethylbenzene | | 1.40E-07 | | 1.60E-04 |
| tetrachloroethene | | 1.20E-07 | | 1.40E-03 |
| toluene | | | | 4.30E-04 |
| xylenes | | | | 7.00E-03 |
| **Sum Risk & Hazard** | | 2.29E-06 | | 5.29E-02 |
| **soil vapor AF 0.001** | | | | |
| benzene | | 4.50E-08 | | 1.40E-03 |
| chloroform | | 2.40E-08 | | 3.00E-05 |
| ethylbenzene | | 4.70E-09 | | 5.30E-06 |
| tetrachloroethene | | 4.00E-09 | | 4.60E-05 |
| toluene | | | | 1.40E-05 |
| xylenes | | | | 2.30E-04 |
| **Sum Risk & Hazard** | | 7.77E-08 | | 1.73E-03 |

## Table 8
## Estimated Risks and Hazards - Construction Worker

| ANALYTE | RISKo | RISKi | HAZARDo | HAZARDi |
|---|---|---|---|---|
| **soil** | | | | |
| TPHd | | | 1.68E-01 | 5.786E-06 |
| TPHo | | | 1.10E-02 | |
| Aliphatic C5-C8 | | | | 2.266E-10 |
| Aliphatic C9-C18 | | | 1.12E-01 | 2.886E-07 |
| Aliphatic C19-C32 | | | 8.51E-04 | |
| Aromatic C9-C18 | | | 5.00E-03 | 1.722E-07 |
| Aromatic C19-C32 | | | 6.42E-04 | |
| naphthalene | 7.37E-10 | 7.58E-15 | | |
| n-propylbenzene | | | 6.32E-07 | 1.26E-12 |
| benzo(b)fluoranthene | 8.64E-09 | 2.65E-13 | | |
| benzo(k)fluoranthene | 8.39E-10 | 2.57E-13 | | |
| benzo(a)pyrene | 6.84E-08 | 2.10E-12 | | |
| chrysene | 9.03E-11 | 2.77E-14 | | |
| fluoranthene | | | 3.47E-04 | |
| fluorene | | | 1.80E-05 | |
| 2-methylnaphthalene | | | 9.16E-04 | 8.97E-14 |
| pyrene | | | 1.04E-03 | 9.07E-04 |
| mercury | | | 1.86E-03 | 5.51E-07 |
| silver | | | 1.00E-03 | |
| **Sum Risk = 7.87E-08** | 7.87E-08 | 2.65E-12 | | |
| **Sum Hazard = 0.3** | | | 3.02E-01 | 9.14E-04 |
| **soil vapor VURAM** | | | | |
| benzene | | 2.17E-09 | | 2.53E-04 |
| chloroform | | 3.72E-09 | | 4.84E-05 |
| ethylbenzene | | 6.49E-10 | | 2.11E-06 |
| n-propylbenzene | | | | 1.43E-05 |
| tetrachloroethene | | 1.71E-11 | | 1.20E-04 |
| toluene | | | | 3.46E-06 |
| 1,2,4-trimethylbenzene | | | | 4.27E-04 |
| 1,3,5-trimethylbenzene | | | | 1.38E-03 |
| xylenes | | | | 2.07E-04 |
| **Sum Risk & Hazard** | | 6.56E-09 | | 2.46E-03 |

**Table 9**
**Summary of Risks and Hazards**

| | Receptor Population | | | | |
|---|---|---|---|---|---|
| | Residential | Residential | Commercial | Commercial | Construction |
| | AF 0.03 | AF 0.001 | AF 0.03 | AF 0.001 | |
| ∑ **Risk** | 1.15E-05 | 1.65E-06 | 2.80E-06 | 6.00E-07 | 8.50E-08 |
| **Hazard Index** | 0.79 | 0.58 | 0.11 | 0.06 | 0.3 |

Notes:
AF = attenuation factor; AF 0.03 = SWRCB, AF 0.001 = USEPA SFRWQCB ESL model
**∑Risk Residential** = Estimated risks due to ingestion and dermal contact and inhalation of constituents in soil + estimated risks due to inhalation of constituents in soil vapor in shallow soil via SFRWQCB ESL model
**∑Risk Commercial** = Estimated risks due to ingestion and dermal contact and inhalation of constituents in soil + estimated risks due to inhalation of constituents in soil vapor in shallow soil via SFRWQCB ESL model
**∑Risk Construction Worker** = Estimated risks due to ingestion and dermal contact and inhalation of constituents in soil + estimated risks due to inhalation of constituents in soil vapor in trenches via VURAM
**Hazard Index Residential** = Estimated hazards due to ingestion and dermal contact and inhalation of constituents in soil + estimated hazards due to inhalation of constituents in soil vapor in shallow soil via SFRWQCB ESL model
**Hazard Index Commercial** = Estimated hazards due to ingestion and dermal contact and inhalation of constituents in soil + estimated hazards due to inhalation of constituents in soil vapor in shallow soil via SFRWQCB ESL model
**Hazard Index Construction Worker** = Estimated hazards due to ingestion and dermal contact and inhalation of constituents in soil + estimated hazards due to inhalation of constituents in soil vapor trenches via VURAM

# FIGURES




EXPLANATION

Previously abandoned oil wells

A12, A17, AW-2, and A22 are operating oil wells

N

0 500 feet

Base map: Google Earth Pro, 2019

**Figure 1: Site Location Map**
950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC




EXPLANATION

Previously abandoned oil wells

A12, A17, AW-2, and A22 are operating oil wells

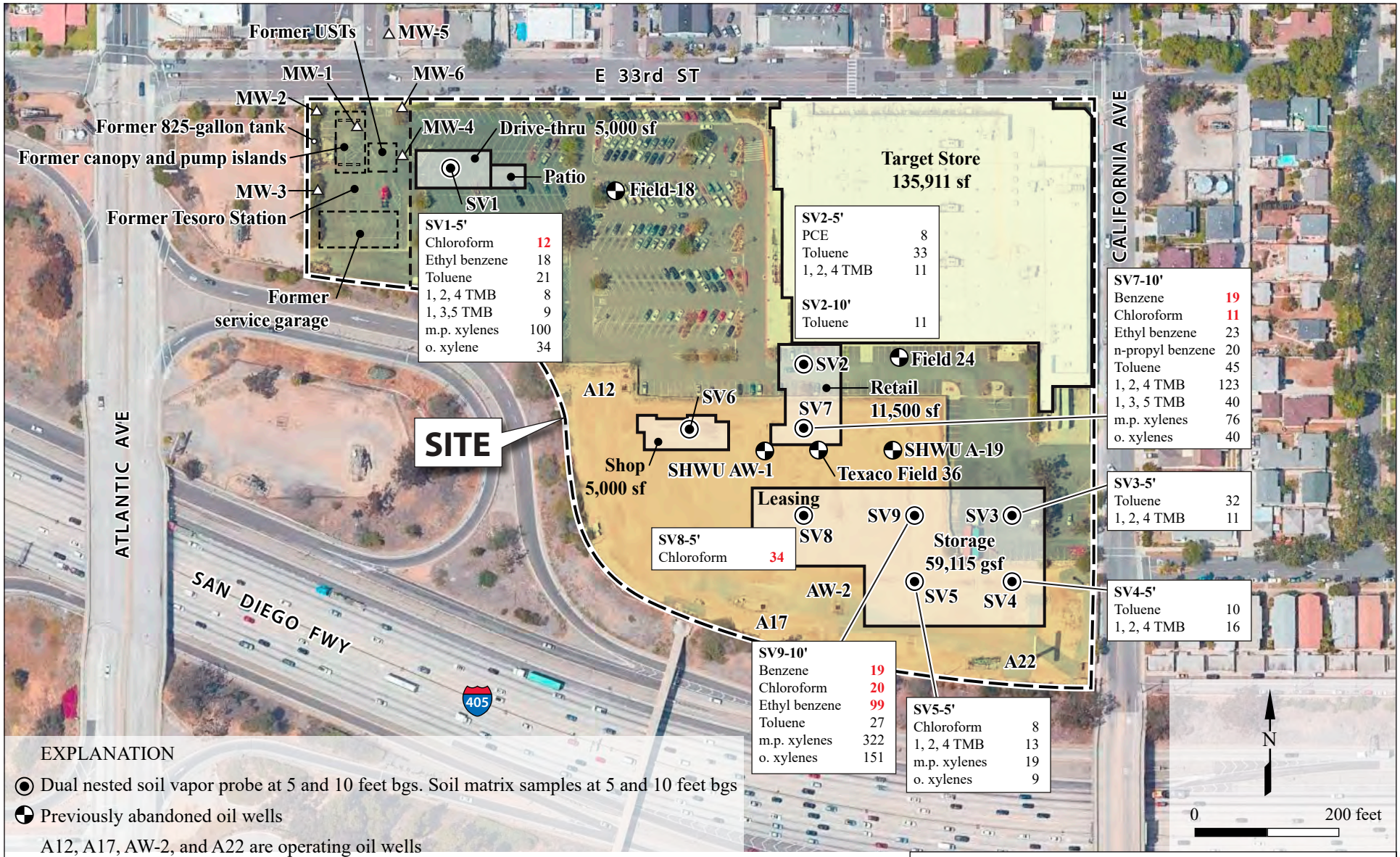
N

0 200 feet

Base map: Google Earth Pro, 2019

**Figure 2: Site Map**
950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC




EXPLANATION

◉ Dual nested soil vapor probe at 5 and 10 feet bgs. Soil matrix samples at 5 and 10 feet bgs

◓ Previously abandoned oil wells

A12, A17, AW-2, and A22 are operating oil wells

△ Monitoring wells

PCE = Tetrachloroethene

1, 2, 4 TMB = 1, 2, 4 Trimethyl benzene

1,3, 5 TMB = 1, 3, 5 Trimethyl benzene

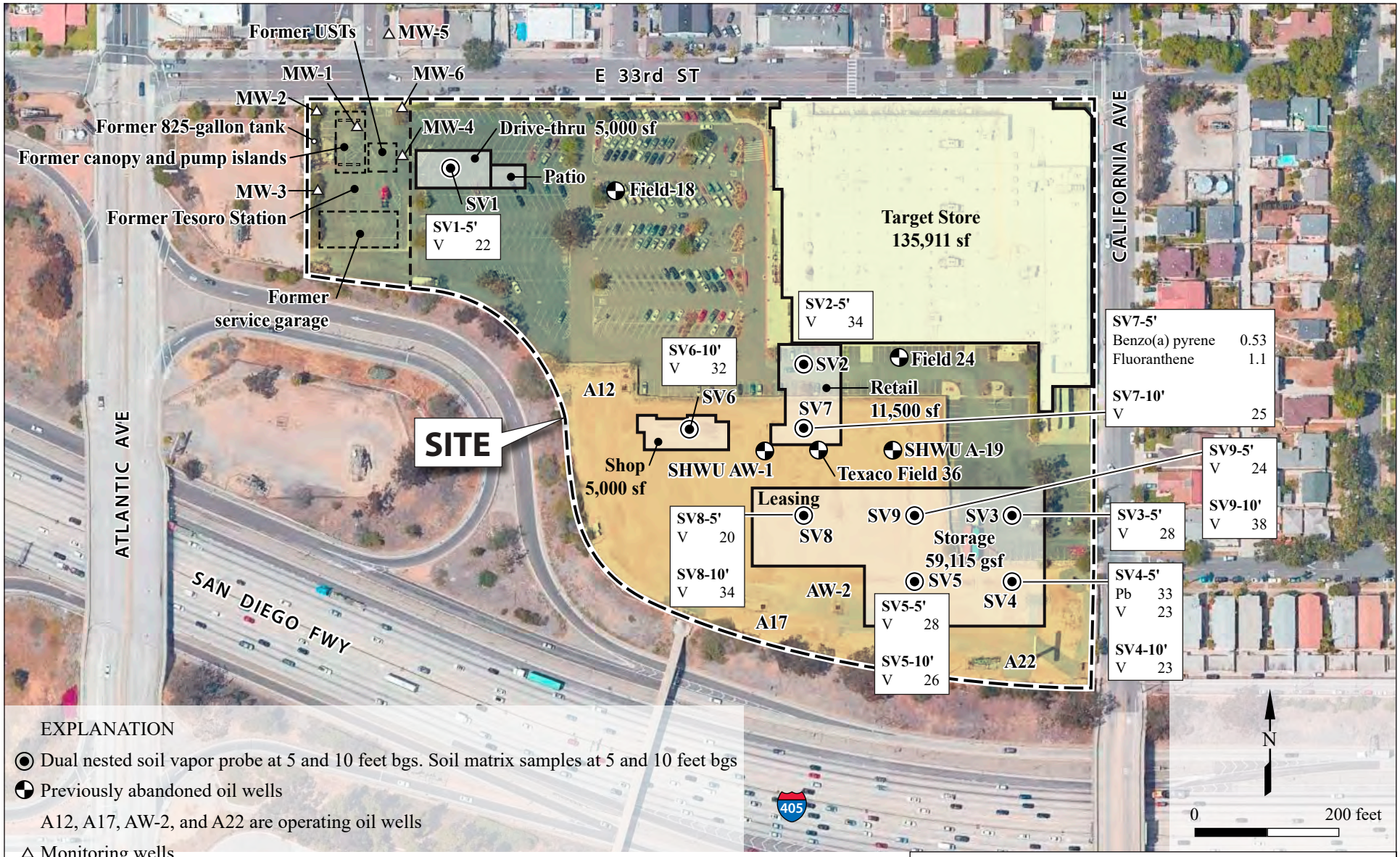
Units are micrograms per cubic meter ($\mu g/m^3$)

**Red** numbers = Detected concentration exceeds SFRWQCB ESL

Base map:
Google Earth Pro, 2019

**Figure 3: Soil Vapor Analytical Results**
950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC




EXPLANATION

◉ Dual nested soil vapor probe at 5 and 10 feet bgs. Soil matrix samples at 5 and 10 feet bgs

◓ Previously abandoned oil wells

A12, A17, AW-2, and A22 are operating oil wells

△ Monitoring wells

PB = Lead

V = Vanadium

Units are milligrams per kilogram (mg/kg)

RSLr = USEPA Regional Screening Levels for Residential Soils (November 2019)

ESL = San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels, 2019) (Rev. 2)

Base map: Google Earth Pro, 2019

**Figure 4: Metals and SVOCs Analytical Results Exceeding Thresholds**
950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC

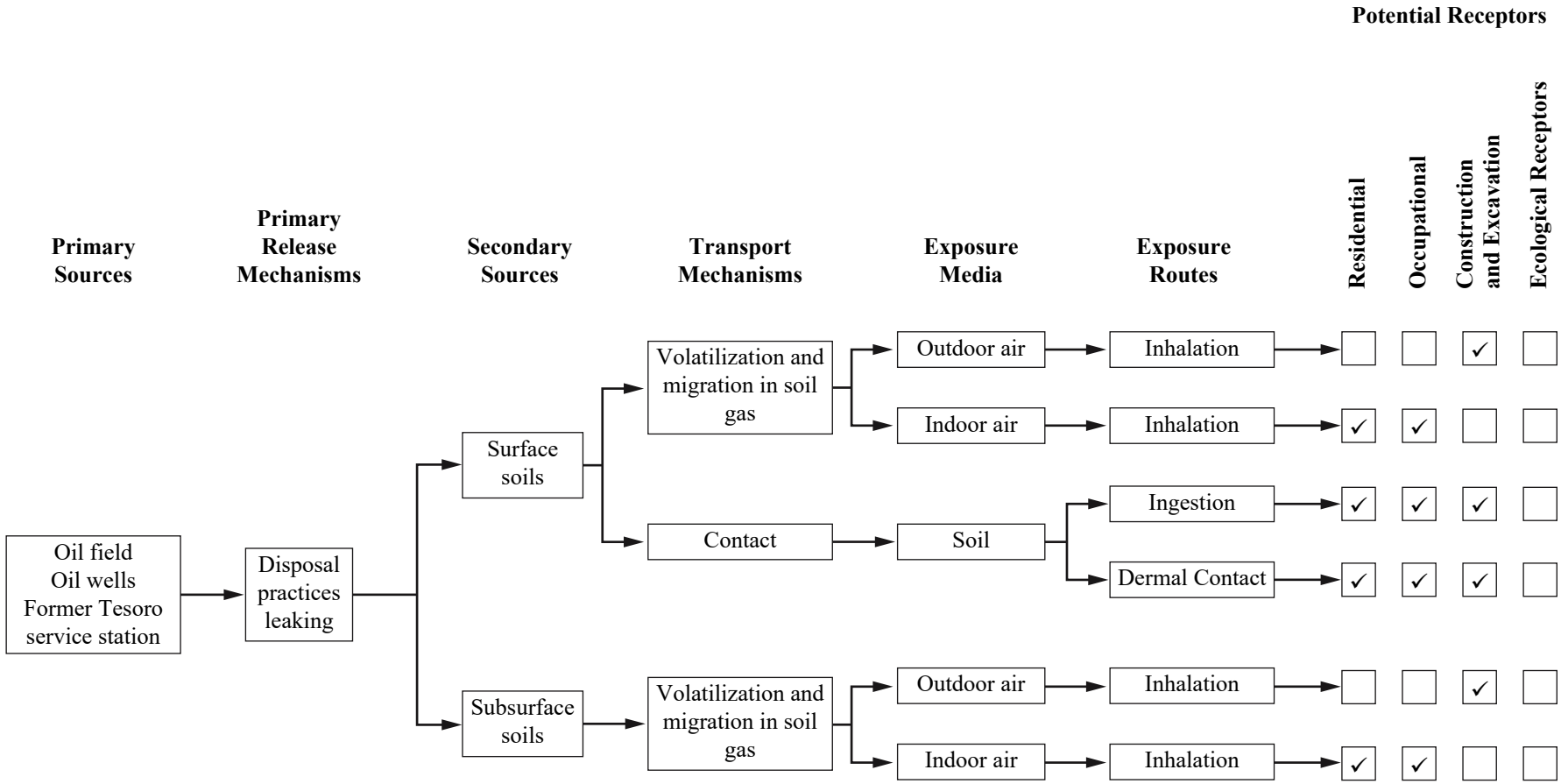
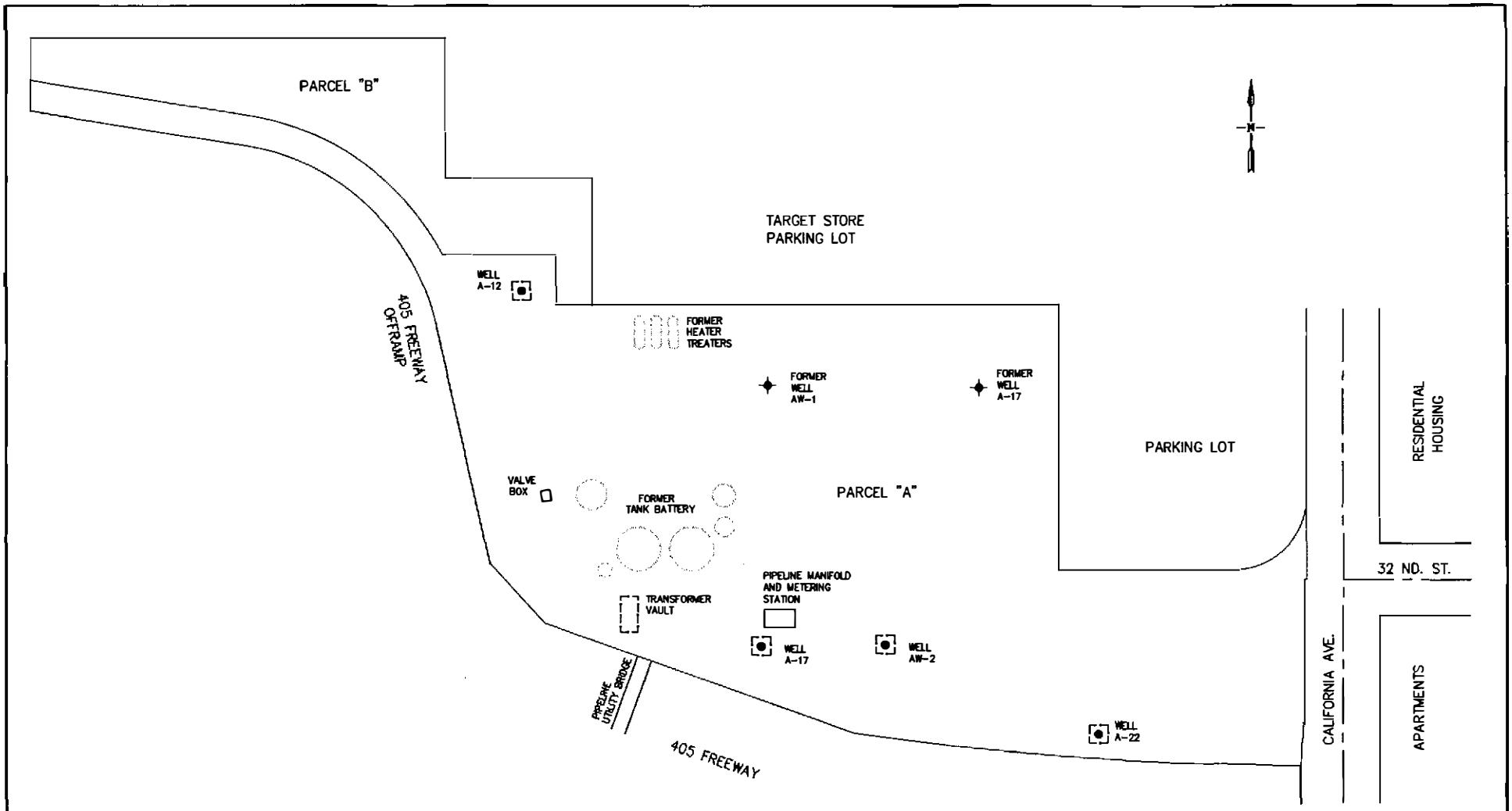



**Figure 5: Conceptual Site Model**
950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC

# APPENDIX A

## Brycon LLC
## Analytical Data




## SITE PLAN

SCALE: 1" = 80'


BRYCON, LLC
4570 CAMPUS DRIVE
NEWPORT BEACH, CA. 92646
(949) 475-7749

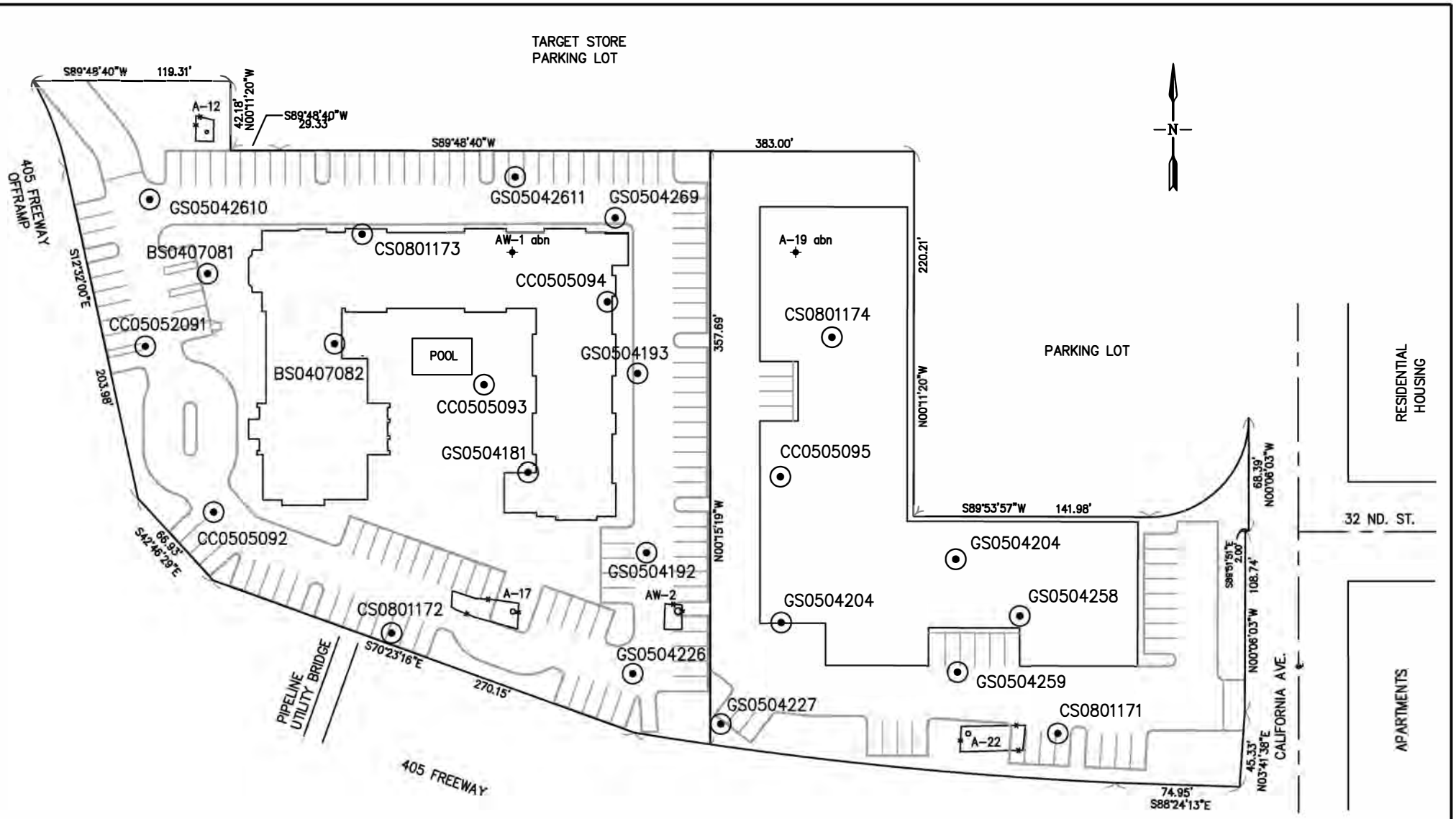

| | |
|---|---|
| DESIGNED: M.T.W. | SCALE: 1" = 80' |
| DRAWN: M.T.W. | DATE: 10/22/04 |
| CHECKED: M.T.W. | JOB NO. 04-471 |
| DWG. NO. 04-471-1 | REV. 0 |

SIGNAL HILL PETROLEUM

# FIELDS LEASE NORTH

## SITE MAP

SIGNAL HILL CALIFORNIA




## SITE PLAN

SCALE: NONE

## LEGEND

⊙ SOIL SAMPLE LOCATION


*BRYCON, LLC*
*4570 CAMPUS DRIVE*
*NEWPORT BEACH, CA. 92660*
*(949) 475-7749*


| | |
|---|---|
| DESIGNED: M.T.W. | SCALE: NONE |
| DRAWN: M.T.W. | DATE: 4/18/08 |
| CHECKED: M.T.W. | JOB NO. 04-471 |

DWG. NO. 04-471-1

WESTPORT SIGNAL HILL, LLC

# FIELDS LEASE NORTH

## SAMPLE LOCATION MAP

SIGNAL HILL CALIFORNIA

REV. 0

## Summary - TPH Analytical Results in Soil

| SAMPLE ID | DATE SAMPLED | Aliphatic C5-C8 mg/kg | Aliphatic C9-C18 mg/kg | Aliphatic C19-C32 mg/kg |
|---|---|---|---|---|
| FLN-C822-01 | 8/22/01 | | 183 | 390 |
| FLN-C822-02 | 8/22/01 | | 76 | 300 |
| FLN-C822-03 | 8/22/01 | | <10 | <10 |
| FLN-C822-04 | 8/22/01 | | <10 | <10 |
| FLN-C822-05 | 8/22/01 | | 132 | 248 |
| FLN-C822-06 | 8/22/01 | | <10 | <10 |
| FLN-C822-07 | 8/22/01 | | <10 | <10 |
| FLN-C822-SS1 | 8/22/01 | | <10 | <10 |
| FLN-C822-SS2 | 8/22/01 | | 43 | 148 |
| FLN-C822-B1 | 8/22/01 | | <10 | <10 |
| FLN-C822-B2 | 8/22/01 | | 2720 | 1390 |
| FLN-C822-B3 | 8/22/01 | | 2400 | 1240 |
| T1-2.5' | 6/24/04 | <0.5 | <10 | <10 |
| T1-6' | 6/24/04 | <0.5 | <10 | <10 |
| T2-2.5' | 6/24/04 | <0.5 | <10 | <10 |
| T2-6' | 6/24/04 | <0.5 | <10 | <10 |
| T3-2.5' | 6/24/04 | <0.5 | <10 | <10 |
| T3-6' | 6/24/04 | <0.5 | <10 | <10 |
| T4-2.5' | 6/24/04 | <0.5 | <10 | <10 |
| T4-6' | 6/24/04 | <0.5 | <10 | <10 |
| T5-2.5' | 6/24/04 | <0.5 | 11 | 52 |
| T5-6' | 6/24/04 | <0.5 | <10 | <10 |
| T6-2.5' | 6/24/04 | <0.5 | <10 | <10 |
| T6-6' | 6/24/04 | <0.5 | <10 | <10 |
| BS070408-1 | 7/8/04 | <0.5 | 25 | 120 |
| BS070408-2 | 7/8/04 | <0.5 | 130 | 420 |
| GS0504181 | 4/18/05 | <10 | <10 | <10 |
| GS0504192 | 4/18/05 | <10 | 110 | 520 |
| GS0504193 | 4/18/05 | <10 | <10 | <10 |
| GS0504204 | 4/20/05 | <10 | <10 | <10 |
| GS0504205 | 4/20/05 | <10 | 22 | 120 |
| GS0504226 | 4/22/05 | <10 | <10 | 21 |
| GS0504227 | 4/22/05 | <10 | 32 | 140 |
| GS0504258 | 4/25/05 | <10 | <10 | 23 |
| GS0504259 | 4/25/05 | <10 | 56 | 110 |
| GS0504269 | 4/26/05 | <0.5 | <10 | <10 |
| GS05042610 | 4/26/05 | <0.5 | <10 | <10 |
| GS05042611 | 4/26/05 | <0.5 | 20 | 100 |
| CC0505091 | 5/9/05 | <10 | 21 | 63 |
| CC0505092 | 5/9/05 | <10 | 64 | 240 |
| CC0505093 | 5/9/05 | <10 | 49 | 100 |
| CC0505094 | 5/9/05 | <10 | 35 | 120 |
| CC0505095 | 5/9/05 | <10 | 42 | 120 |
| CS0801171 | 1/17/08 | <0.5 | 26 | 87 |
| CS0801172 | 1/17/08 | 0.54 | 190 | 120 |
| CS0801173 | 1/17/08 | <0.5 | 110 | 140 |
| CS0801174 | 1/17/08 | <0.5 | 70 | 78 |

Notes:

mg/kg = milligrams per kilogram

Analytical results are included as Appendix A

Blank cell indicates analyte was not analyzed

Data from 8-22-01 was collected from the base and sidewalls of two excavations (Soil Sampling Results for Excavations at the Fields Lease North Site, Long Beach, California; October 25, 2001; Brycon, LLC).

Data from 6-24-04 was collected from six trenches placed in the former tank farm and sump excavation (Fields Lease North, Environmental Site Assessment; June 29, 2004; Brycon, LLC).

Data from 7-8-04 through 1-17-08 was collected after site grading in July 2004, April and May 2005 and January 2008 (Final Environmental Closure Report, Fields Lease North Site, Commercial Development, Signal Hill, California; February 12, 2008; Brycon, LLC).

# Summary - VOCs Analytical Results in Soil

| SAMPLE ID | DATE SAMPLED | Naphthalene mg/kg | n-Propylbenzene mg/kg |
|---|---|---|---|
| FLN-C822-01 | 8/22/01 | | |
| FLN-C822-02 | 8/22/01 | | |
| FLN-C822-03 | 8/22/01 | | |
| FLN-C822-04 | 8/22/01 | | |
| FLN-C822-05 | 8/22/01 | <0.002 | <0.001 |
| FLN-C822-06 | 8/22/01 | | |
| FLN-C822-07 | 8/22/01 | | |
| FLN-C822-SS1 | 8/22/01 | | |
| FLN-C822-SS2 | 8/22/01 | | |
| FLN-C822-B1 | 8/22/01 | | |
| FLN-C822-B2 | 8/22/01 | <0.002 | <0.001 |
| FLN-C822-B3 | 8/22/01 | | |
| T1-2.5' | 6/24/04 | | |
| T1-6' | 6/24/04 | | |
| T2-2.5' | 6/24/04 | | |
| T2-6' | 6/24/04 | | |
| T3-2.5' | 6/24/04 | | |
| T3-6' | 6/24/04 | | |
| T4-2.5' | 6/24/04 | | |
| T4-6' | 6/24/04 | | |
| T5-2.5' | 6/24/04 | | |
| T5-6' | 6/24/04 | | |
| T6-2.5' | 6/24/04 | | |
| T6-6' | 6/24/04 | | |
| BS070408-1 | 7/8/04 | | |
| BS070408-2 | 7/8/04 | | |
| GS0504181 | 4/18/05 | | |
| GS0504192 | 4/18/05 | | |
| GS0504193 | 4/18/05 | | |
| GS0504204 | 4/20/05 | | |
| GS0504205 | 4/20/05 | | |
| GS0504226 | 4/22/05 | | |
| GS0504227 | 4/22/05 | | |
| GS0504258 | 4/25/05 | | |
| GS0504259 | 4/25/05 | | |
| GS0504269 | 4/26/05 | | |
| GS05042610 | 4/26/05 | | |
| GS05042611 | 4/26/05 | <0.002 | <0.001 |
| CC0505091 | 5/9/05 | | |
| CC0505092 | 5/9/05 | | |
| CC0505093 | 5/9/05 | | |
| CC0505094 | 5/9/05 | | |
| CC0505095 | 5/9/05 | | |
| CS0801171 | 1/17/08 | | |
| CS0801172 | 1/17/08 | 0.062 | 0.005 |
| CS0801173 | 1/17/08 | | |
| CS0801174 | 1/17/08 | | |

Notes:

mg/kg = milligrams per kilogram

Analytical results are included as Appendix A

Blank cell indicates analyte was not analyzed

Data from 8-22-01 was collected from the base and sidewalls of two excavations (Soil Sampling Results for Excavations at the Fields Lease North Site, Long Beach, California; October 25, 2001; Brycon, LLC).

Data from 6-24-04 was collected from six trenches placed in the former tank farm and sump excavation (Fields Lease North, Environmental Site Assessment; June 29, 2004; Brycon, LLC).

Data from 7-8-04 through 1-17-08 was collected after site grading in July 2004, April and May 2005 and January 2008 (Final Environmental Closure Report, Fields Lease North Site, Commercial Development, Signal Hill, California; February 12, 2008; Brycon, LLC).

# Summary - SVOCs Analytical Results in Soil

| SAMPLE ID | DATE SAMPLED | Fluorene mg/kg | 2-Methylnaphthalene mg/kg |
|---|---|---|---|
| FLN-C822-01 | 8/22/01 | | |
| FLN-C822-02 | 8/22/01 | | |
| FLN-C822-03 | 8/22/01 | | |
| FLN-C822-04 | 8/22/01 | | |
| FLN-C822-05 | 8/22/01 | <0.33 | <0.33 |
| FLN-C822-06 | 8/22/01 | | |
| FLN-C822-07 | 8/22/01 | | |
| FLN-C822-SS1 | 8/22/01 | | |
| FLN-C822-SS2 | 8/22/01 | | |
| FLN-C822-B1 | 8/22/01 | | |
| FLN-C822-B2 | 8/22/01 | <0.33 | <0.33 |
| FLN-C822-B3 | 8/22/01 | | |
| T1-2.5' | 6/24/04 | | |
| T1-6' | 6/24/04 | | |
| T2-2.5' | 6/24/04 | | |
| T2-6' | 6/24/04 | | |
| T3-2.5' | 6/24/04 | | |
| T3-6' | 6/24/04 | | |
| T4-2.5' | 6/24/04 | | |
| T4-6' | 6/24/04 | | |
| T5-2.5' | 6/24/04 | | |
| T5-6' | 6/24/04 | | |
| T6-2.5' | 6/24/04 | | |
| T6-6' | 6/24/04 | | |
| BS070408-1 | 7/8/04 | | |
| BS070408-2 | 7/8/04 | | |
| GS0504181 | 4/18/05 | | |
| GS0504192 | 4/18/05 | | |
| GS0504193 | 4/18/05 | | |
| GS0504204 | 4/20/05 | | |
| GS0504205 | 4/20/05 | | |
| GS0504226 | 4/22/05 | | |
| GS0504227 | 4/22/05 | | |
| GS0504258 | 4/25/05 | | |
| GS0504259 | 4/25/05 | | |
| GS0504269 | 4/26/05 | | |
| GS05042610 | 4/26/05 | | |
| GS05042611 | 4/26/05 | <0.17 | <0.17 |
| CC0505091 | 5/9/05 | | |
| CC0505092 | 5/9/05 | | |
| CC0505093 | 5/9/05 | | |
| CC0505094 | 5/9/05 | | |
| CC0505095 | 5/9/05 | | |
| CS0801171 | 1/17/08 | | |
| CS0801172 | 1/17/08 | 0.057 | 0.29 |
| CS0801173 | 1/17/08 | | |
| CS0801174 | 1/17/08 | | |

Notes:

mg/kg = milligrams per kilogram

Analytical results are included as Appendix A

Blank cell indicates analyte was not analyzed

Data from 8-22-01 was collected from the base and sidewalls of two excavations (Soil Sampling Results for Excavations at the Fields Lease North Site, Long Beach, California; October 25, 2001; Brycon, LLC).

Data from 6-24-04 was collected from six trenches placed in the former tank farm and sump excavation (Fields Lease North, Environmental Site Assessment; June 29, 2004; Brycon, LLC).

Data from 7-8-04 through 1-17-08 was collected after site grading in July 2004, April and May 2005 and January 2008 (Final Environmental Closure Report, Fields Lease North Site, Commercial Development, Signal Hill, California; February 12, 2008; Brycon, LLC).

# Summary - Metals Analytical Results in Soil

| SAMPLE ID | DATE SAMPLED | As mg/kg | Ba mg/kg | Co mg/kg | Cr mg/kg | Cu mg/kg | Pb mg/kg | Hg mg/kg | Ni mg/kg | V mg/kg | Zn mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RSL*r* | | 0.68 | 15000 | 23 | 120000 | 3100 | 400 | 9.4 | 820 | 390 | 23000 |
| Offsite-1 | 4/4/2005 | 5.2 | 97 | 8.1 | 21 | 25 | 12 | <0.16 | 12 | 35 | 62 |
| Offsite-5 | 4/4/2005 | 12 | 160 | 17 | 50 | 64 | 8.1 | <0.18 | 30 | 75 | 99 |
| Offsite-10 | 4/4/2005 | 12 | 170 | 14 | 32 | 35 | 5.6 | <0.18 | 22 | 58 | 67 |
| Offsite-20 | 4/4/2005 | 14 | 73 | 17 | 35 | 80 | 10 | <0.15 | 22 | 67 | 95 |
| FLN-C822-01 | 8/22/01 | | | | | | | | | | |
| FLN-C822-02 | 8/22/01 | | | | | | | | | | |
| FLN-C822-03 | 8/22/01 | | | | | | | | | | |
| FLN-C822-04 | 8/22/01 | | | | | | | | | | |
| FLN-C822-05 | 8/22/01 | 12 | 70 | 6.9 | 12 | 11 | 3.1 | <0.10 | 7.9 | 22 | 40 |
| FLN-C822-06 | 8/22/01 | | | | | | | | | | |
| FLN-C822-07 | 8/22/01 | | | | | | | | | | |
| FLN-C822-SS1 | 8/22/01 | | | | | | | | | | |
| FLN-C822-SS2 | 8/22/01 | | | | | | | | | | |
| FLN-C822-B1 | 8/22/01 | | | | | | | | | | |
| FLN-C822-B2 | 8/22/01 | 23 | 530 | 5.6 | 12 | 13 | 17 | 0.19 | 9.2 | 20 | 51 |
| FLN-C822-B3 | 8/22/01 | | | | | | | | | | |
| T1-2.5' | 6/24/04 | | | | | | | | | | |
| T1-6' | 6/24/04 | | | | | | | | | | |
| T2-2.5' | 6/24/04 | | | | | | | | | | |
| T2-6' | 6/24/04 | | | | | | | | | | |
| T3-2.5' | 6/24/04 | | | | | | | | | | |
| T3-6' | 6/24/04 | | | | | | | | | | |
| T4-2.5' | 6/24/04 | | | | | | | | | | |
| T4-6' | 6/24/04 | | | | | | | | | | |
| T5-2.5' | 6/24/04 | | | | | | | | | | |
| T5-6' | 6/24/04 | | | | | | | | | | |
| T6-2.5' | 6/24/04 | | | | | | | | | | |
| T6-6' | 6/24/04 | | | | | | | | | | |
| BS070408-1 | 7/8/04 | | | | | | | | | | |
| BS070408-2 | 7/8/04 | | | | | | | | | | |
| GS0504181 | 4/18/05 | | | | | | | | | | |
| GS0504192 | 4/18/05 | | | | | | | | | | |
| GS0504193 | 4/18/05 | | | | | | | | | | |
| GS0504204 | 4/20/05 | | | | | | | | | | |
| GS0504205 | 4/20/05 | | | | | | | | | | |
| GS0504226 | 4/22/05 | | | | | | | | | | |
| GS0504227 | 4/22/05 | | | | | | | | | | |
| GS0504258 | 4/25/05 | | | | | | | | | | |
| GS0504259 | 4/25/05 | | | | | | | | | | |
| GS0504269 | 4/26/05 | | | | | | | | | | |
| GS05042610 | 4/26/05 | | | | | | | | | | |
| GS05042611 | 4/26/05 | 4.3 | 130 | 4.7 | 11 | 6.4 | 7.9 | 0.02 | 6.8 | 18 | 27 |
| CC0505091 | 5/9/05 | | | | | | | | | | |
| CC0505092 | 5/9/05 | | | | | | | | | | |
| CC0505093 | 5/9/05 | | | | | | | | | | |
| CC0505094 | 5/9/05 | | | | | | | | | | |
| CC0505095 | 5/9/05 | | | | | | | | | | |
| CS0801171 | 1/17/08 | | | | | | | | | | |
| CS0801172 | 1/17/08 | 2.49 | 44.2 | 4.33 | 10.7 | 6.6 | 2.44 | <0.02 | 6.36 | 18.2 | 22.7 |
| CS0801173 | 1/17/08 | | | | | | | | | | |
| CS0801174 | 1/17/08 | | | | | | | | | | |

Notes:
mg/kg = milligram per kilogram
As = arsenic, Ba = barium, Co = cobalt, Cr = chromium, Cu = copper, Pb = lead, Hg = mercury, Ni = nickel, V = vanadium, Zn = zinc
Analytical results are included as Appendix A
Only detected concentrations of metals are presented in this table. All other metals were ND.

# Summary- Metals Analytical Results in Soil

RSL*r* = USEPA Regional Screening Level for residential soils (November 2015)
Blank cell indicates analyte was not analyzed
Data from 8-22-01 was collected from the base and sidewalls of two excavations (Soil Sampling Results for Excavations at the Fields Lease North Site, Long Beach, California; October 25, 2001; Brycon, LLC).
Data from 6-24-04 was collected from six trenches placed in the former tank farm and sump excavation (Fields Lease North, Environmental Site Assessment; June 29, 2004; Brycon, LLC).
Data from 7-8-04 through 1-17-08 was collected after site grading in July 2004, April and May 2005 and January 2008 (Final Environmental Closure Report, Fields Lease North Site, Commercial Development, Signal Hill, California; February 12, 2008; Brycon, LLC).

**Centrum Analytical Laboratories, Inc.**
CERTIFIED HAZARDOUS WASTE TESTING MOBILE & IN HOUSE LABORATORIES

**Signal Hill Office**

Client: Brycon, LLC
4570 Campus Drive
Newport Beach, CA 92660

Date Sampled: 08/22/01
Date Received: 08/22/01
Job Number: 19123

Project: Fields Lease North

## CASE NARRATIVE

The following information applies to samples which were received on 08/22/01 :

The samples were received at the laboratory chilled and sample containers were intact.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested.

**8270**: Detection limit raised due to sample matrix.

Report approved by:

Richard Villafania
Laboratory Manager

ELAP # 2419

DL : Detection Limit -- The lowest level at which the compound can reliably be detected under normal laboratory conditions.
ND : Not Detected -- The compound was analyzed for but was not found to be present at or above the detection limit.
NA : Not Analyzed -- Per client request, this analyte was not on the list of compounds to be analyzed for.

Centrum Analytical Laboratories, Inc.

## Modified 8015 - Hydrocarbons by Carbon Chain Length

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 08/22/01 |
| Project: | Fields Lease North | Date Received: | 08/22/01 |
| Job No.: | 19123 | Date Extracted: | 08/24/01 |
| Matrix: | Soil | Dates Analyzed: | 08/26-27/01 |
| Analyst: | JB | Batch Number: | 8015DS2334 |

| | Sample ID: | Method Blank | FLN-C822 -01 | FLN-C822 -02 | FLN-C822 -03 | FLN-C822 -04 | FLN-C822 -05 |
|---|---|---|---|---|---|---|---|
| Compound | DL | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| C9-C12 | 10 | ND | ND | ND | ND | ND | 10 |
| C12-C14 | 10 | ND | 35 | 13 | ND | ND | 25 |
| C14-C16 | 10 | ND | 77 | 31 | ND | ND | 49 |
| C16-C18 | 10 | ND | 71 | 32 | ND | ND | 48 |
| C18-C20 | 10 | ND | 45 | 23 | ND | ND | 32 |
| C20-C22 | 10 | ND | 37 | 20 | ND | ND | 28 |
| C22-C24 | 10 | ND | 33 | 21 | ND | ND | 32 |
| C24-C26 | 10 | ND | 65 | 51 | ND | ND | 48 |
| C26-C28 | 10 | ND | 100 | 88 | ND | ND | 56 |
| C28-C30 | 10 | ND | 110 | 97 | ND | ND | 52 |
| Total | 10 | ND | 573 | 376 | ND | ND | 380 |

Centrum
Analytical
Laboratories, Inc.

## Modified 8015 - Hydrocarbons by Carbon Chain Length

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 08/22/01 |
| Project: | Fields Lease North | Date Received: | 08/22/01 |
| Job No.: | 19123 | Date Extracted: | 08/24/01 |
| Matrix: | Soil | Dates Analyzed: | 08/26-27/01 |
| Analyst: | JB | Batch Number: | 8015DS2334 |

| | Sample ID: | FLN-C822 -06 | FLN-C822 -07 | FLN-T822 -SS1 | FLN-T822 -SS2 | FLN-T822 -B1 | FLN-T822 -B2 |
|---|---|---|---|---|---|---|---|
| **Compound** | **DL** | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| **C9-C12** | 10 | ND | ND | ND | ND | ND | **940** |
| **C12-C14** | 10 | ND | ND | ND | ND | ND | **730** |
| **C14-C16** | 10 | ND | ND | ND | **20** | ND | **640** |
| **C16-C18** | 10 | ND | ND | ND | **23** | ND | **410** |
| **C18-C20** | 10 | ND | ND | ND | **19** | ND | **240** |
| **C20-C22** | 10 | ND | ND | ND | **17** | ND | **190** |
| **C22-C24** | 10 | ND | ND | ND | **21** | ND | **200** |
| **C24-C26** | 10 | ND | ND | ND | **33** | ND | **270** |
| **C26-C28** | 10 | ND | ND | ND | **33** | ND | **260** |
| **C28-C30** | 10 | ND | ND | ND | **25** | ND | **230** |
| **Total** | 10 | ND | ND | ND | **190** | ND | **4,110** |

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## Modified 8015 - Hydrocarbons by Carbon Chain Length

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 08/22/01 |
| Project: | Fields Lease North | Date Received: | 08/22/01 |
| Job No.: | 19123 | Date Extracted: | 08/24/01 |
| Matrix: | Soil | Dates Analyzed: | 08/26-27/01 |
| Analyst: | JB | Batch Number: | 8015DS2334 |

| | Sample ID: | FLN-T822 -B3 |
|---|---|---|
| **Compound** | **DL** | mg/Kg |
| **C9-C12** | 10 | **890** |
| **C12-C14** | 10 | **600** |
| **C14-C16** | 10 | **540** |
| **C16-C18** | 10 | **370** |
| **C18-C20** | 10 | **230** |
| **C20-C22** | 10 | **170** |
| **C22-C24** | 10 | **180** |
| **C24-C26** | 10 | **240** |
| **C26-C28** | 10 | **250** |
| **C28-C30** | 10 | **170** |
| **Total** | 10 | **3,640** |

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# QC Sample Report - EPA 8015M Diesel

Matrix: Soil
Batch #: 8015DS2334

## Batch Accuracy Results

Sample ID: Laboratory Control Sample

| Analyte | Spike Concentration mg/Kg | % Recovery LCS | Acceptance Limits % Recovery | Pass/Fail |
|---|---|---|---|---|
| Diesel | 100 | 87 | 70 - 130 | Pass |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

| Analyte | Spike Sample Recovery mg/Kg | Spike Duplicate Recovery mg/Kg | Relative Percent Difference (RPD) | Upper Control Limit RPD | Pass/Fail |
|---|---|---|---|---|---|
| Diesel | 87 | 87 | 0% | 29% | Pass |

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

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## Metals

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 08/22/01 |
| Project: | Fields Lease North | Date Received: | 08/22/01 |
| Job No: | 19123 | Date Digested: | 08/23/01 |
| Matrix: | Soil | Date Analyzed: | 08/23/01 |
| Analyst: | TLR/GF | Batch Number: | 6010S2134 |
| | | | 7000S0491 |

| | | Sample ID: | Blank | FLN-C822-05 | FLN-T822-B2 |
|---|---|---|---|---|---|
| **Element** | **Method #** | **RL** | mg/Kg | mg/Kg | mg/Kg |
| Antimony | 6010B | 2.0 | ND | ND | ND |
| Arsenic | 6010B | 1.0 | ND | **12** | **23** |
| Barium | 6010B | 0.50 | ND | **70** | **530** |
| Beryllium | 6010B | 0.50 | ND | ND | ND |
| Cadmium | 6010B | 0.50 | ND | ND | ND |
| Chromium | 6010B | 0.50 | ND | **12** | **12** |
| Cobalt | 6010B | 0.50 | ND | **6.9** | **5.6** |
| Copper | 6010B | 0.50 | ND | **11** | **13** |
| Lead | 6010B | 1.0 | ND | **3.1** | **17** |
| Mercury | 7471 | 0.10 | ND | ND | **0.19** |
| Molybdenum | 6010B | 1.0 | ND | ND | ND |
| Nickel | 6010B | 1.0 | ND | **7.9** | **9.2** |
| Selenium | 6010B | 5.0 | ND | ND | ND |
| Silver | 6010B | 2.0 | ND | ND | ND |
| Thallium | 6010B | 5.0 | ND | ND | ND |
| Vanadium | 6010B | 0.50 | ND | **22** | **20** |
| Zinc | 6010B | 10 | ND | **40** | **51** |

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# QC Sample Report - Metals

Sample Matrix: Soil
Analytical Batch #: 6010S2134, 7000S0491
MS/MSD Sample ID: Laboratory Control Sample, Laboratory Control Sample

| | Batch Precision Results: | | | | | Batch Accuracy Results: | | | |
|---|---|---|---|---|---|---|---|---|---|
| Metal | Spike Sample Recovery mg/Kg | Spike Duplicate Recovery mg/Kg | Relative Percent Difference (RPD) | Upper Control Limit RPD | Pass / Fail | Spike Concentration mg/Kg | % Recovery LCS | Acceptance Limits Percent Recovery | Pass / Fail |
| Antimony | 51.4 | 50.7 | 1% | 20% | Pass | 50 | 103 | 75 - 125 | Pass |
| Arsenic | 50.3 | 50.0 | 1% | 20% | Pass | 50 | 101 | 75 - 125 | Pass |
| Barium | 49.5 | 50.8 | 3% | 20% | Pass | 50 | 99 | 75 - 125 | Pass |
| Beryllium | 49.4 | 50.0 | 1% | 20% | Pass | 50 | 99 | 75 - 125 | Pass |
| Cadmium | 49.4 | 50.5 | 2% | 20% | Pass | 50 | 99 | 75 - 125 | Pass |
| Chromium | 50.2 | 51.6 | 3% | 20% | Pass | 50 | 100 | 75 - 125 | Pass |
| Cobalt | 49.7 | 51.5 | 4% | 20% | Pass | 50 | 99 | 75 - 125 | Pass |
| Copper | 49.6 | 51.0 | 3% | 20% | Pass | 50 | 99 | 75 - 125 | Pass |
| Lead | 50.3 | 50.1 | 0% | 20% | Pass | 50 | 101 | 75 - 125 | Pass |
| Mercury | 2.69 | 2.71 | 1% | 20% | Pass | 2.5 | 108 | 75 - 125 | Pass |
| Molybdenum | 51.1 | 52.5 | 3% | 20% | Pass | 50 | 102 | 75 - 125 | Pass |
| Nickel | 50.8 | 52.0 | 2% | 20% | Pass | 50 | 102 | 75 - 125 | Pass |
| Selenium | 49.4 | 48.7 | 2% | 20% | Pass | 50 | 99 | 75 - 125 | Pass |
| Silver | 51.6 | 54.3 | 5% | 20% | Pass | 50 | 103 | 75 - 125 | Pass |
| Thallium | 51.4 | 50.5 | 2% | 20% | Pass | 50 | 103 | 75 - 125 | Pass |
| Vanadium | 49.8 | 51.2 | 3% | 20% | Pass | 50 | 100 | 75 - 125 | Pass |
| Zinc | 52.1 | 54.1 | 4% | 20% | Pass | 50 | 104 | 75 - 125 | Pass |

**Analytical Notes**

LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate
MS: Matrix Spike
MSD: Matrix Spike Duplicate
RPD: Relative Percent Difference

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# EPA 8260 - Volatile Organics

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 08/22/01 |
| Project: | Fields Lease North | Date Received: | 08/22/01 |
| Job No.: | 19123 | Date Analyzed: | 08/27-28/01 |
| Matrix: | Soil | Batch Number: | M48260S499 |
| Analyst: | MBH | | |

| | Sample ID: | Blank | FLN-C822-05 | FLN-T822-B2 |
|---|---|---|---|---|
| **Compounds** | **DL** | mg/Kg | mg/Kg | mg/Kg |
| Acetone | 0.050 | ND | ND | ND |
| tert-Amyl Methyl Ether (TAME) | 0.005 | ND | ND | ND |
| Benzene | 0.001 | ND | ND | ND |
| Bromobenzene | 0.005 | ND | ND | ND |
| Bromochloromethane | 0.005 | ND | ND | ND |
| Bromodichloromethane | 0.001 | ND | ND | ND |
| Bromoform | 0.005 | ND | ND | ND |
| Bromomethane | 0.005 | ND | ND | ND |
| tert-Butanol (TBA) | 0.020 | ND | ND | ND |
| 2-Butanone (MEK) | 0.010 | ND | ND | ND |
| n-Butylbenzene | 0.002 | ND | ND | ND |
| sec-Butylbenzene | 0.002 | ND | ND | ND |
| tert-Butylbenzene | 0.002 | ND | ND | ND |
| Carbon disulfide | 0.010 | ND | ND | ND |
| Carbon tetrachloride | 0.001 | ND | ND | ND |
| Chlorobenzene | 0.001 | ND | ND | ND |
| Chloroethane | 0.005 | ND | ND | ND |
| Chloroform | 0.002 | ND | ND | ND |
| Chloromethane | 0.001 | ND | ND | ND |
| 2-Chlorotoluene | 0.002 | ND | ND | ND |
| 4-Chlorotoluene | 0.002 | ND | ND | ND |
| Dibromochloromethane | 0.002 | ND | ND | ND |
| 1,2-Dibromoethane | 0.002 | ND | ND | ND |
| 1,2-Dibromo-3-chloropropane | 0.010 | ND | ND | ND |
| Dibromomethane | 0.001 | ND | ND | ND |
| 1,2-Dichlorobenzene | 0.001 | ND | ND | ND |
| 1,3-Dichlorobenzene | 0.002 | ND | ND | ND |
| 1,4-Dichlorobenzene | 0.002 | ND | ND | ND |
| Dichlorodifluoromethane | 0.005 | ND | ND | ND |
| 1,1-Dichloroethane | 0.001 | ND | ND | ND |
| 1,2-Dichloroethane | 0.001 | ND | ND | ND |
| 1,1-Dichloroethene | 0.005 | ND | ND | ND |
| cis-1,2-Dichloroethene | 0.002 | ND | ND | ND |
| trans-1,2-Dichloroethene | 0.002 | ND | ND | ND |
| 1,2-Dichloropropane | 0.001 | ND | ND | ND |
| 1,3-Dichloropropane | 0.001 | ND | ND | ND |
| 2,2-Dichloropropane | 0.001 | ND | ND | ND |
| 1,1-Dichloropropene | 0.001 | ND | ND | ND |

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# EPA 8260 - Volatile Organics

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 08/22/01 |
| Project: | Fields Lease North | Date Received: | 08/22/01 |
| Job No.: | 19123 | Date Analyzed: | 08/27-28/01 |
| Matrix: | Soil | Batch Number: | M48260S499 |
| Analyst: | MBH | | |

| | Sample ID: | Blank | FLN-C822-05 | FLN-T822-B2 |
|---|---|---|---|---|
| Compounds | DL | mg/Kg | mg/Kg | mg/Kg |
| cis-1,3-Dichloropropene | 0.001 | ND | ND | ND |
| trans-1,3-Dichloropropene | 0.001 | ND | ND | ND |
| Diisopropyl Ether (DIPE) | 0.005 | ND | ND | ND |
| Ethylbenzene | 0.001 | ND | ND | ND |
| Ethyl tert-Butyl Ether (EtBE) | 0.005 | ND | ND | ND |
| Hexachlorobutadiene | 0.001 | ND | ND | ND |
| 2-Hexanone | 0.010 | ND | ND | ND |
| Isopropylbenzene | 0.001 | ND | ND | ND |
| p-Isopropyltoluene | 0.002 | ND | ND | ND |
| Methylene chloride | 0.050 | ND | ND | ND |
| 4-Methyl-2-pentanone | 0.010 | ND | ND | ND |
| Methyl tert-Butyl Ether (MtBE) | 0.005 | ND | ND | ND |
| Naphthalene | 0.002 | ND | ND | ND |
| n-Propylbenzene | 0.001 | ND | ND | ND |
| Styrene | 0.001 | ND | ND | ND |
| 1,1,1,2-Tetrachloroethane | 0.001 | ND | ND | ND |
| 1,1,2,2-Tetrachloroethane | 0.002 | ND | ND | ND |
| Tetrachloroethene | 0.001 | ND | ND | ND |
| Toluene | 0.001 | ND | ND | ND |
| 1,2,3-Trichlorobenzene | 0.002 | ND | ND | ND |
| 1,2,4-Trichlorobenzene | 0.002 | ND | ND | ND |
| 1,1,1-Trichloroethane | 0.001 | ND | ND | ND |
| 1,1,2-Trichloroethane | 0.003 | ND | ND | ND |
| Trichloroethene | 0.001 | ND | ND | ND |
| 1,2,3-Trichloropropane | 0.003 | ND | ND | ND |
| Trichlorofluoromethane | 0.001 | ND | ND | ND |
| Trichlorotrifluoroethane | 0.005 | ND | ND | ND |
| 1,2,4-Trimethylbenzene | 0.001 | ND | ND | ND |
| 1,3,5-Trimethylbenzene | 0.001 | ND | ND | ND |
| Vinyl chloride | 0.002 | ND | ND | ND |
| Xylenes, m-,p- | 0.002 | ND | ND | ND |
| Xylene, o- | 0.001 | ND | ND | ND |

**Surrogates (% recovery)** Limits: 70 - 130

| Sample ID: | Blank | FLN-C822-05 | FLN-T822-B2 |
|---|---|---|---|
| Dibromofluoromethane | 98 | 100 | 102 |
| Toluene-d8 | 100 | 99 | 91 |
| Bromofluorobenzene | 100 | 97 | 94 |

Centrum Analytical Laboratories, Inc.

# QC Sample Report - EPA Method 8260

Matrix: Soil
Batch #: M48260S499

## Batch Accuracy Results

Sample ID: Laboratory Control Sample

| Analyte | Spike Concentration mg/Kg | % Recovery LCS | Acceptance Limits % Recovery | Pass/Fail |
|---|---|---|---|---|
| 1,1-Dichloroethene | 0.020 | **102** | 59 - 172 | **Pass** |
| Benzene | 0.020 | **102** | 66 - 142 | **Pass** |
| Trichloroethene | 0.020 | **102** | 71 - 137 | **Pass** |
| Toluene | 0.020 | **100** | 59 - 139 | **Pass** |
| Chlorobenzene | 0.020 | **104** | 60 - 133 | **Pass** |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: 19134-11

| Analyte | Spike Sample Recovery mg/Kg | Spike Duplicate Recovery mg/Kg | Relative Percent Difference (RPD) | Upper Control Limit RPD | Pass/Fail |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 0.0198 | 0.0191 | **4%** | 22% | **Pass** |
| Benzene | 0.0198 | 0.0190 | **4%** | 21% | **Pass** |
| Trichloroethene | 0.0200 | 0.0190 | **5%** | 24% | **Pass** |
| Toluene | 0.0199 | 0.0188 | **6%** | 21% | **Pass** |
| Chlorobenzene | 0.0202 | 0.0194 | **4%** | 21% | **Pass** |

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

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# EPA 8270 Semivolatile Organics

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 08/22/01 |
| Project: | Fields Lease North | Date Received: | 08/22/01 |
| Job No.: | 19123 | Date Extracted: | 08/28/01 |
| Matrix: | Soil | Dates Analyzed: | 09/04/01 |
| Analyst: | TPW | Batch Number: | 8270S0734 |

| | Sample ID: | Blank | FLN-C822-05 |
|---|---|---|---|
| Compound | DL* | mg/Kg | mg/Kg |
| Acenaphthene | 0.33 | ND | ND |
| Acenaphthylene | 0.33 | ND | ND |
| Anthracene | 0.33 | ND | ND |
| Benzo[a]anthracene | 0.66 | ND | ND |
| Benzo[a]pyrene | 0.66 | ND | ND |
| Benzo[b]fluoranthene | 0.33 | ND | ND |
| Benzo[g,h,i]perylene | 0.99 | ND | ND |
| Benzo[k]fluoranthene | 0.66 | ND | ND |
| Benzyl alcohol | 1.3 | ND | ND |
| bis(2-Chloroethoxy)methane | 0.66 | ND | ND |
| bis(2-Chloroethyl)ether | 0.66 | ND | ND |
| bis(2-Chloroisopropyl)ether | 0.99 | ND | ND |
| bis(2-Ethylhexyl)phthalate | 3.3 | ND | ND |
| 4-Bromophenylphenylether | 0.33 | ND | ND |
| Butylbenzylphthalate | 0.33 | ND | ND |
| 4-Chloro-3-methylphenol | 1.6 | ND | ND |
| 4-Chloroaniline | 1.6 | ND | ND |
| 2-Chloronaphthalene | 0.33 | ND | ND |
| 2-Chlorophenol | 1.3 | ND | ND |
| 4-Chlorophenylphenylether | 0.33 | ND | ND |
| Chrysene | 0.33 | ND | ND |
| Di-n-butylphthalate | 3.3 | ND | ND |
| Di-n-octylphthalate | 0.33 | ND | ND |
| Dibenzo[a,h]anthracene | 0.99 | ND | ND |
| Dibenzofuran | 0.33 | ND | ND |
| 1,2-Dichlorobenzene | 0.33 | ND | ND |
| 1,3-Dichlorobenzene | 0.33 | ND | ND |
| 1,4-Dichlorobenzene | 0.33 | ND | ND |
| 3,3-Dichlorobenzidine | 1.3 | ND | ND |
| 2,4-Dichlorophenol | 1.6 | ND | ND |
| Diethylphthalate | 3.3 | ND | ND |
| 2,4-Dimethylphenol | 0.99 | ND | ND |
| Dimethylphthalate | 0.33 | ND | ND |
| 4,6-Dinitro-2-methylphenol | 3.3 | ND | ND |
| 2,4-Dinitrophenol | 16 | ND | ND |
| 2,4-Dinitrotoluene | 0.33 | ND | ND |

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# EPA 8270 Semivolatile Organics

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 08/22/01 |
| Project: | Fields Lease North | Date Received: | 08/22/01 |
| Job No.: | 19123 | Date Extracted: | 08/28/01 |
| Matrix: | Soil | Dates Analyzed: | 09/04/01 |
| Analyst: | TPW | Batch Number: | 8270S0734 |

| | Sample ID: | Blank | FLN-C822-05 |
|---|---|---|---|
| Compound | DL* | mg/Kg | mg/Kg |
| 2,6-Dinitrotoluene | 0.99 | ND | ND |
| Fluoranthene | 0.33 | ND | ND |
| Fluorene | 0.33 | ND | ND |
| Hexachlorobenzene | 0.33 | ND | ND |
| Hexachlorobutadiene | 0.33 | ND | ND |
| Hexachlorocyclopentadiene | 16 | ND | ND |
| Hexachloroethane | 0.33 | ND | ND |
| Indeno[1,2,3-c,d]pyrene | 1.3 | ND | ND |
| Isophorone | 0.33 | ND | ND |
| 2-Methylnaphthalene | 0.33 | ND | ND |
| 2-Methylphenol | 1.6 | ND | ND |
| 4-Methylphenol | 1.6 | ND | ND |
| N-Nitrosodi-n-propylamine | 0.33 | ND | ND |
| N-Nitrosodiphenylamine | 0.33 | ND | ND |
| Naphthalene | 0.33 | ND | ND |
| 2-Nitroaniline | 0.99 | ND | ND |
| 3-Nitroaniline | 0.99 | ND | ND |
| 4-Nitroaniline | 3.3 | ND | ND |
| Nitrobenzene | 0.99 | ND | ND |
| 2-Nitrophenol | 1.3 | ND | ND |
| 4-Nitrophenol | 3.3 | ND | ND |
| Pentachlorophenol | 16 | ND | ND |
| Phenanthrene | 0.66 | ND | ND |
| Phenol | 1.3 | ND | ND |
| Pyrene | 0.33 | ND | ND |
| 1,2,4-Trichlorobenzene | 0.33 | ND | ND |
| 2,4,5-Trichlorophenol | 2.00 | ND | ND |
| 2,4,6-Trichlorophenol | 3.3 | ND | ND |

* See Case Narrative regarding higher than usual detection limits.

**Surrogates (Limits) in Percent Recovery**

| Sample ID: | Blank | FLN-C822-05 |
|---|---|---|
| 2-Fluorophenol (25 - 121%) | 104 | 105 |
| Phenol-D5 (24 - 113%) | 93 | 103 |
| Nitrobenzene-D5 (23 - 120%) | 85 | 97 |
| 2-Fluorobiphenyl (30 - 115%) | 96 | 92 |
| 2,4,6-Tribromophenol (19 - 122%) | 106 | 107 |
| p-Terphenyl-D14 (18 - 137%) | 106 | 110 |

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# EPA 8270 Semivolatile Organics

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 08/22/01 |
| Project: | Fields Lease North | Date Received: | 08/22/01 |
| Job No.: | 19123 | Date Extracted: | 08/28/01 |
| Matrix: | Soil | Dates Analyzed: | 09/04/01 |
| Analyst: | TPW | Batch Number: | 8270S0734 |

| | Sample ID: | Blank | FLN-C822-B2 |
|---|---|---|---|
| Compound | DL* | mg/Kg | mg/Kg |
| Acenaphthene | 3.3 | ND | ND |
| Acenaphthylene | 3.3 | ND | ND |
| Anthracene | 3.3 | ND | ND |
| Benzo[a]anthracene | 6.6 | ND | ND |
| Benzo[a]pyrene | 6.6 | ND | ND |
| Benzo[b]fluoranthene | 3.3 | ND | ND |
| Benzo[g,h,i]perylene | 9.9 | ND | ND |
| Benzo[k]fluoranthene | 6.6 | ND | ND |
| Benzyl alcohol | 13 | ND | ND |
| bis(2-Chloroethoxy)methane | 6.6 | ND | ND |
| bis(2-Chloroethyl)ether | 6.6 | ND | ND |
| bis(2-Chloroisopropyl)ether | 9.9 | ND | ND |
| bis(2-Ethylhexyl)phthalate | 33 | ND | ND |
| 4-Bromophenylphenylether | 3.3 | ND | ND |
| Butylbenzylphthalate | 3.3 | ND | ND |
| 4-Chloro-3-methylphenol | 16 | ND | ND |
| 4-Chloroaniline | 16 | ND | ND |
| 2-Chloronaphthalene | 3.3 | ND | ND |
| 2-Chlorophenol | 13 | ND | ND |
| 4-Chlorophenylphenylether | 3.3 | ND | ND |
| Chrysene | 3.3 | ND | ND |
| Di-n-butylphthalate | 33 | ND | ND |
| Di-n-octylphthalate | 3.3 | ND | ND |
| Dibenzo[a,h]anthracene | 9.9 | ND | ND |
| Dibenzofuran | 3.3 | ND | ND |
| 1,2-Dichlorobenzene | 3.3 | ND | ND |
| 1,3-Dichlorobenzene | 3.3 | ND | ND |
| 1,4-Dichlorobenzene | 3.3 | ND | ND |
| 3,3-Dichlorobenzidine | 13 | ND | ND |
| 2,4-Dichlorophenol | 16 | ND | ND |
| Diethylphthalate | 33 | ND | ND |
| 2,4-Dimethylphenol | 9.9 | ND | ND |
| Dimethylphthalate | 3.3 | ND | ND |
| 4,6-Dinitro-2-methylphenol | 33 | ND | ND |
| 2,4-Dinitrophenol | 160 | ND | ND |
| 2,4-Dinitrotoluene | 3.3 | ND | ND |

Centrum Analytical Laboratories, Inc.

# EPA 8270 Semivolatile Organics

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 08/22/01 |
| Project: | Fields Lease North | Date Received: | 08/22/01 |
| Job No.: | 19123 | Date Extracted: | 08/28/01 |
| Matrix: | Soil | Dates Analyzed: | 09/04/01 |
| Analyst: | TPW | Batch Number: | 8270S0734 |

| | Sample ID: | Blank | FLN-C822-B2 |
|---|---|---|---|
| **Compound** | **DL*** | mg/Kg | mg/Kg |
| 2,6-Dinitrotoluene | 9.9 | ND | ND |
| Fluoranthene | 3.3 | ND | ND |
| Fluorene | 3.3 | ND | ND |
| Hexachlorobenzene | 3.3 | ND | ND |
| Hexachlorobutadiene | 3.3 | ND | ND |
| Hexachlorocyclopentadiene | 160 | ND | ND |
| Hexachloroethane | 3.3 | ND | ND |
| Indeno[1,2,3-c,d]pyrene | 13 | ND | ND |
| Isophorone | 3.3 | ND | ND |
| 2-Methylnaphthalene | 3.3 | ND | ND |
| 2-Methylphenol | 16 | ND | ND |
| 4-Methylphenol | 16 | ND | ND |
| N-Nitrosodi-n-propylamine | 3.3 | ND | ND |
| N-Nitrosodiphenylamine | 3.3 | ND | ND |
| Naphthalene | 3.3 | ND | ND |
| 2-Nitroaniline | 9.9 | ND | ND |
| 3-Nitroaniline | 9.9 | ND | ND |
| 4-Nitroaniline | 33 | ND | ND |
| Nitrobenzene | 9.9 | ND | ND |
| 2-Nitrophenol | 13 | ND | ND |
| 4-Nitrophenol | 33 | ND | ND |
| Pentachlorophenol | 160 | ND | ND |
| Phenanthrene | 6.6 | ND | ND |
| Phenol | 13 | ND | ND |
| Pyrene | 3.3 | ND | ND |
| 1,2,4-Trichlorobenzene | 3.3 | ND | ND |
| 2,4,5-Trichlorophenol | 20.00 | ND | ND |
| 2,4,6-Trichlorophenol | 33 | ND | ND |

* See Case Narrative regarding higher than usual detection limits.

**Surrogates (Limits) in Percent Recovery**

| Sample ID: | Blank | FLN-C822-B2 |
|---|---|---|
| 2-Fluorophenol (25 - 121%) | 104 | 108 |
| Phenol-D5 (24 - 113%) | 93 | 96 |
| Nitrobenzene-D5 (23 - 120%) | 85 | 74 |
| 2-Fluorobiphenyl (30 - 115%) | 96 | 98 |
| 2,4,6-Tribromophenol (19 - 122%) | 106 | 102 |
| p-Terphenyl-D14 (18 - 137%) | 106 | 113 |

Centrum
Analytical
Laboratories, Inc.

# QC Sample Report - EPA 8270

Batch #: 8270S0734 Matrix: Soil

Sample ID: Laboratory Control Sample

| Analyte | Spike Concentration mg/Kg | % Recovery LCS | Acceptance Limits % Recovery | Pass/Fail |
|---|---|---|---|---|
| Phenol | 2.66 | 88 | 5 - 112 | Pass |
| 2-Chlorophenol | 2.66 | 107 | 23 - 134 | Pass |
| 1,4-Dichlorobenzene | 1.33 | 93 | 20 - 124 | Pass |
| N-Nitrosodi-n-propylamine | 1.33 | 93 | 0 - 230 | Pass |
| 1,2,4-Trichlorobenzene | 1.33 | 93 | 44 - 142 | Pass |
| 4-Chloro-3-Methylphenol | 2.66 | 118 | 22 - 147 | Pass |
| Acenaphthene | 1.33 | 83 | 47 - 145 | Pass |
| 4-Nitrophenol | 2.66 | 82 | 0 - 132 | Pass |
| 2,4-Dinitrotoluene | 1.33 | 96 | 39 - 139 | Pass |
| Pentachlorophenol | 2.66 | 95 | 14 - 176 | Pass |
| Pyrene | 1.33 | 104 | 52 - 115 | Pass |

Analytical Notes:

**Batch Precision Results**

MS/MSD Sample ID: Laboratory Control Sample

| Analyte | Spike Sample Recovery mg/Kg | Spike Duplicate Recovery mg/Kg | Relative Percent Difference (RPD) | Upper Control Limit RPD | Pass/Fail |
|---|---|---|---|---|---|
| Phenol | 2.35 | 2.34 | 1% | 35% | Pass |
| 2-Chlorophenol | 2.86 | 2.81 | 2% | 50% | Pass |
| 1,4-Dichlorobenzene | 1.24 | 1.22 | 2% | 27% | Pass |
| N-Nitrosodi-n- propylamine | 1.24 | 1.22 | 2% | 38% | Pass |
| 1,2,4-Trichlorobenzene | 1.23 | 1.19 | 3% | 23% | Pass |
| 4-Chloro-3-Methylphenol | 3.13 | 3.01 | 4% | 33% | Pass |
| Acenaphthene | 1.10 | 1.11 | 1% | 23% | Pass |
| 4-Nitrophenol | 2.20 | 2.39 | 8% | 50% | Pass |
| 2,4-Dinitrotoluene | 1.29 | 1.24 | 4% | 47% | Pass |
| Pentachlorophenol | 2.52 | 2.48 | 2% | 47% | Pass |
| Pyrene | 1.38 | 1.36 | 2% | 36% | Pass |

Analytical Notes:

# Centrum Analytical Laboratories, Inc.

# Chain of Custody Record

Centrum Job #

1401 Research Park Drive, Suite 100
Riverside, CA 92507
Voice: 909.779.0310 ● 800.798.9336
Fax: 909.779.0344

3299 Hill Street, Suite 305
Signal Hill, CA 90806
Voice: 562.498.7005
Fax: 562.498.8617

www.centrum-labs.com lab@centrum-labs.com



Project No:

Project Name: FIELDS LEASE NORTH

Project Manager: GEORGE PASPALOF

Phone: (562) 397.1330 Fax: (714) 968.2017

Client Name: (Report and Billing) BRYCON, LLC

Address: (Report and Billing) 4570 CAMPUS DRIVE NEWPORT BEACH CA 92660

Please Circle Analyses Requested

| Centrum ID (Lab use only) | Sample ID (As it should appear on report) | Date sampled | Time sampled | Sample matrix | Site location | Containers: # and type | 8015M: Diesel, Fuel Screen, Carbon Chain | 8015M: Gas only | 8021B: BTEX/MtBE Only | 418.1 (TRPH), 413.2, 1664 | GC or GCMS Volatiles by 5035* | GCMS: 8260B, 8021B, 624, 524.2 | GCMS: MtBE Conf. Only, BTEX/Oxygenates Only | GCMS: 8270C, 625 | 8080: Pesticides, PCBs, Pest/PCB | Metals: Title 22 (CAM), RCRA, PP | pH, TDS, TSS, Conductivity | Flashpoint, Hex Cr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| - | FLN-C822-01 | 8/22/0 | 12:25 PM | SOIL | Fields Lease N. Excavation | 1 402 JARS | X | | | | | | | | | | | |
| - | FLN-C822-02 | | 12:31 | | | | X | | | | | | | | | | | |
| - | FLN-C822-03 | | 12:37 | | | | X | | | | | | | | | | | |
| - | FLN-C822-04 | | 12:44 | | | | X | | | | | | | | | | | |
| | ~~FLN-C822-05~~ | | ~~12:5~~ | | | | | | | | | | | | | | | |
| | ~~FLN-C822-01~~ | | — | | | | | | | | | | | | | | | |
| - | FLN-C822-05 | | 12:50 | | | | X | | | | | X | | X | | X | | |
| - | FLN-C822-06 | | 12:56 | | | | X | | | | | | | | | | | |
| - | FLN-C822-07 | | 1:02 | | | | X | | | | | | | | | | | |
| | — | | | | | | | | | | | | | | | | | |

Turn-Around Time

- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☒ Normal TAT

*Requires PRIOR approval, additional charges apply

Requested due date: _____

Remarks/Special Instructions

1) Relinquished by: (Sampler's Signature) Maria Robles — Date: 8/22/0 — Time: 1515

2) Received by: [illegible] — Date: 8/22/0 — Time: 1515

3) Relinquished by: — Date: — Time:

4) Received by: — Date: — Time:

5) Relinquished by: — Date: — Time:

6) Received for Laboratory by: — Date: — Time:

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

To be completed by Laboratory personnel:

Samples chilled? ☒ Yes ☐ No ☐ From Field

Custody seals? ☐ Yes ☒ No

All sample containers intact? ☒ Yes ☐ No

☐ Courier ☐ UPS/Fed Ex ☒ Hand carried

Sample Disposal

- ☐ Client will pick up
- ☐ Return to client
- ☒ Lab disposal

Laboratory Notes:

Sample Locator No.

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Centrum duplicate Gold Copy - Client Copy

# Centrum Analytical Laboratories, Inc.

## Chain of Custody Record

Centrum Job #

1401 Research Park Drive, Suite 100
Riverside, CA 92507
Voice: 909.779.0310 ● 800.798.9336
Fax: 909.779.0344

3299 Hill Street, Suite 305
Signal Hill, CA 90806
Voice: 562.498.7005
Fax: 562.498.8617

www.centrum-labs.com lab@centrum-labs.com



Project No:

Project Name: FIELDS LEASE NORTH

Project Manager: GEORGE PASPALOF

Phone: (562) 397-1830

Fax: (714) 969.2017

Client Name: (Report and Billing) BRYCON, LLC

Address: (Report and Billing) 4570 CAMPUS DRIVE, Newport Beach, CA 92660

Please Circle Analyses Requested

| Centrum ID (Lab use only) | Sample ID (As it should appear on report) | Date sampled | Time sampled P.M. | Sample matrix | Site location | Containers: # and type | 8015M: Diesel, Fuel Screen, Carbon Chain | 8015M: Gas only | 8021B: BTEX/MtBE Only | 418.1 (TRPH), 413.2, 1664 | GC or GCMS Volatiles by 5035* | GCMS: 8260B, 8021B, 624, 524.2 | GCMS: MtBE Conf. Only, BTEX/Oxygenates Only | GCMS: 8270C, 625 | 8080: Pesticides, PCBs, Pes/PCB | Metals: Title 22 (CAM), RCRA, PP | pH, TDS, TSS, Conductivity | Flashpoint, Hex Cr | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| - | FLN-T822-SS1 | 8/22/01 | 1:24 | SOIL | Fields Lease N. Tank Farm | 3 4oz JAR | X | | | | | | | | | X | | | |
| - | FLN-T822-SS2 | ↓ | 1:30 | ↓ | ↓ | ↓ | X | | | | | | | | | | | | |
| - | FLN-T822-B1 | | 1:38 | | | | X | | | | | | | | | | | | |
| - | FLN-T822-B2 | | 1:44 | | | | X | | | | | X | | X | | X | | | |
| - | FLN-T822-B3 | ↓ | 1:50 | ↓ | ↓ | ↓ | X | | | | | X | | X | | X | | | |

Turn-Around Time

- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☒ Normal TAT

*Requires PRIOR approval, additional charges apply

Requested due date: _____

Remarks/Special Instructions

RU per client request Marina Roberts phonecon 8/23/01.

RU

1) Relinquished by: (Sampler's Signature) Marina Roberts — Date: 8/22/01 — Time: 1515

2) Received by: [signature] — Date: 8/22/01 — Time: 1515

3) Relinquished by: — Date: — Time:

4) Received by: — Date: — Time:

5) Relinquished by: — Date: — Time:

6) Received for Laboratory by: — Date: — Time:

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

To be completed by Laboratory personnel:

Samples chilled? ☒ Yes ☐ No ☐ From Field

Custody seals? ☐ Yes ☒ No

All sample containers intact? ☒ Yes ☐ No

☐ Courier ☐ UPS/Fed Ex ☒ Hand carried

Sample Disposal

- ☐ Client will pick up
- ☐ Return to client
- ☒ Lab disposal

Laboratory Notes:

Sample Locator No.

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Centrum duplicate Gold Copy - Client Copy

**Centrum Analytical Laboratories, Inc.**
Certified Hazardous Waste Testing Mobile & In House Laboratories

Client: Brycon, LLC
4570 Campus Drive
Newport Beach, CA 92660

Date Sampled: 06/24/04
Date Received: 06/24/04
Job Number: 24598

Project: Fields Lease North

## CASE NARRATIVE

The following information applies to samples which were received on 06/24/04 :

The samples were received at the laboratory at ambient temperature. All sample containers were intact.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested. The date of issue for this report is 06/30/04.

Report approved by:

Tom Wilson
Laboratory Director

ELAP Lab# 2419, 2479, 2527, 2373, 2562

RL: Reporting Limit -- The lowest level at which the compound can be reliably detected under normal laboratory conditions.
ND: Not Detected -- The compound was analyzed for, but was not found to be present at or above the Reporting Limit.
NA: Not Analyzed -- This compound was not on the list of compounds requested for analysis.

Centrum
Analytical
Laboratories, Inc.

# C6 to C40 Hydrocarbons by GC/FID

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 06/24/04 |
| Project: | Fields Lease North | Date Received: | 06/24/04 |
| Job No.: | 24598 | Batch Number: | SH2GASS145 |
| Matrix: | Soil | | 8015DS3208 |
| Analyst: | RV / JB | | |

| | Carbon Chain Length: | C6-C12 | C13-C22 | C23-C40 |
|---|---|---|---|---|
| | Reporting Limits: | 0.50 | 10 | 10 |
| | Units: | mg/Kg | mg/Kg | mg/Kg |
| | **Method Blank** | ND | ND | ND |
| T1-2.5' | FS040624-1 | ND | ND | ND |
| T1-6' | BS040624-1 | ND | ND | ND |
| T2-2.5' | FS040624-2 | ND | ND | ND |
| T2-6' | BS040624-2 | ND | ND | ND |
| T3-2.5' | FS040624-3 | ND | ND | ND |
| T3-6' | BS040624-3 | ND | ND | ND |
| T4-2.5' | FS040624-4 | ND | ND | ND |
| -6' | BS040624-4 | ND | ND | ND |
| T5-2.5' | FS040624-5 | ND | **11** | **52** |
| T5-6' | BS040624-5 | ND | ND | ND |
| T6-2.5' | FS040624-6 | ND | ND | ND |
| T6-6' | GS040624-6 | ND | ND | ND |
| | **Method:** | GC/FID | GC/FID | GC/FID |
| | **Date Extracted:** | N/A | 06/25/04 | 06/25/04 |
| | **Date Analyzed:** | 04/25/04 | 06/25-26/04 | 06/25-26/04 |

Centrum
Analytical
Laboratories, Inc.

# QC Sample Report - Volatile Hydrocarbons as Gasoline by GC/FID

Matrix: Soil
Batch Number: SH2GASS145

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Gasoline | 5.0 | **91** | 70 - 130 | **Pass** |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: GS040624-6

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Gasoline | 5.42 | 5.39 | **1%** | 25% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Centrum
Analytical
Laboratories, Inc.

# QC Sample Report - Extractable Hydrocarbons as Diesel by GC/FID

Matrix: Soil
Batch Number: 8015DS3208

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Diesel | 100 | **94** | 70 - 130 | **Pass** |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: GS040624-6

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Diesel | 92.3 | 101.6 | **10%** | 25% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

**Centrum Analytical Laboratories, Inc.**

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Fax: 909.779.0344

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Signal Hill, CA 90755
Voice: 562.498.7005
Fax: 562.498.8617

www.centrum-labs.com lab@centrum-labs.com

# Chain of Custody Record RUSH

Centrum Job # 24598



| | |
|---|---|
| Project No: | Project Name: Fields Lease North |
| Project Manager: GBP | Phone: Fax: |
| Client Name: (Report and Billing) Pyram, LLC | Address: (Report and Billing) 4570 Campus Dr. Newport Beach Ca 92660 |

Please Circle Analyses Requested

| Centrum ID (Lab use only) | Sample ID (As it should appear on report) | Date sampled | Time sampled | Sample matrix | Site location | Containers: # and type | LUFT Diesel, or EPA 8015B DRO | LUFT Gas, or EPA 8015B GRO | Fuel ID (TVH, TEH), Carbon Chain (specify ranges) | 8021B: BTEX/MtBE Only | VOCs: 8260B, or 624 | VOCs: BTEX/Oxygenates Only | SVOCs: 8270C, or 625 | 8081A/8082: Pesticides, or PCBs, or Pest/PCB | Metals: Title 22 (CAM), or RCRA, or PP | Metals: TCLP, STLC | pH, TDS, TSS | 418.1 (TRPH), or 413.2, or 1664 | Remarks/Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | FS[illegible]-1 | 6/24 | | Soil | FLN | 4 oz glass | | | X | | | | | | | | | | C6-C40 |
| 2 | BS[illegible]-1 | | | | | | | | | | | | | | | | | | |
| 3 | [illegible] | | | | | | | | | | | | | | | | | | |
| 4 | [illegible] | | | | | | | | | | | | | | | | | | |
| 5 | [illegible] | | | | | | | | | | | | | | | | | | |
| 6 | [illegible] | | | | | | | | | | | | | | | | | | |
| 7 | [illegible] | | | | | | | | | | | | | | | | | | |
| 8 | [illegible] | | | | | | | | | | | | | | | | | | |
| 9 | [illegible] | | | | | | | | | | | | | | | | | | |
| 10 | [illegible] | X | | X | X | | | | X | | | | | | | | | | |

Turn-Around Time

- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☐ Normal TAT
- ☐ Other _____

*Requires PRIOR approval, additional charges apply

Requested due date: _____

| | | | |
|---|---|---|---|
| 1) Relinquished by: (Sampler's Signature) | Date: 6/24 | Time: 1140 | 3) Relinquished by: |
| 2) Received by: | Date: | Time: | 4) Received by: |
| | | | 5) Relinquished by: |
| | | | 6) Received for Laboratory by: |

Date: Time:
Date: Time:
Date: Time:
Date: 6/24/24 Time: 1140

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

To be completed by Laboratory personnel:

Samples chilled? ☐ Yes ☐ No ☒ From Field
Custody seals? ☐ Yes ☒ No
All sample containers intact? ☒ Yes ☐ No
☐ Courier ☐ UPS/Fed Ex ☒ Hand carried

Sample Disposal

- ☐ Client will pick up
- ☐ Return to client
- ☐ Lab disposal

Laboratory Notes:
C6-C12
C13-C22
C23-C40

Additional Report Formats:

- ☐ LARWQCB
- ☐ EDF (Geotracker)
- ☐ EDD (GISKEY)
- ☐ EDD (Other)*

Sample Locator No.

△

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Centrum duplicate Gold Copy - Client Copy

**Centrum Analytical Laboratories, Inc.**
1401 Research Park Drive, Suite 100
Riverside, CA 92507
Voice: 909.779.0310 ● 800.798.9336
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3299 Hill Street, Suite 305
Signal Hill, CA 90755
Voice: 562.498.7005
Fax: 562.498.8617

www.centrum-labs.com lab@centrum-labs.com

# Chain of Custody Record

**RUSH**

Centrum Job # 24598



Project No:

Project Name: Fields Lease North

Project Manager: GBP

Phone:

Fax:

Client Name: (Report and Billing) Brycon, LLC

Address: (Report and Billing) 4570 Campus Dr Newport Beach, Ca 92660

Please Circle Analyses Requested

| Centrum ID (Lab use only) | Sample ID (As it should appear on report) | Date sampled | Time sampled | Sample matrix | Site location | Containers: # and type | LUFT Diesel, or EPA 8015B DRO | LUFT Gas, or EPA 8015B GRO | Fuel ID (TVH, TEH), Carbon Chain (specify ranges) | 8021B: BTEX/MtBE Only | | VOCs: 8260B, or 624 | VOCs: BTEX/Oxygenates Only | SVOCs: 8270C, or 625 | 8081A/8082: Pesticides, or PCBs, or Pest/PCB | | Metals: Title 22 (CAM), or RCRA, or PP | Metals: TCLP, STLC | pH, TDS, TSS | 418.1 (TRPH), or 413.2, or 1664 | | Remarks/Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | FS040624-6 | 6/24 | | Soil | PLN | 4oz Stem | | | X | | | | | | | | | | | | | C6 - C9 |
| 12 | FS040624-6 | 1 | | | | | | | X | | | | | | | | | | | | | |

Turn-Around Time
- ☐ 24 Hr. RUSH*
- ☒ 48 Hr. RUSH*
- ☐ Normal TAT
- ☐ Other _____

*Requires PRIOR approval, additional charges apply

Requested due date: _____

| | Date: | Time: | | Date: | Time: |
|---|---|---|---|---|---|
| 1) Relinquished by: (Sampler's Signature) | 6/24/4 | 1140 | 3) Relinquished by: | | |
| 2) Received by: | | | 4) Received by: | | |
| | | | 5) Relinquished by: | | |
| | | | 6) Received for Laboratory by: | 6/24/4 | 1140 |

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

To be completed by Laboratory personnel:
Samples chilled? ☐ Yes ☐ No ☒ From Field
Custody seals? ☐ Yes ☐ No
All sample containers intact? ☐ Yes ☐ No
☐ Courier ☐ UPS/Fed Ex ☐ Hand carried

Sample Disposal
- ☐ Client will pick up
- ☐ Return to client
- ☐ Lab disposal

Laboratory Notes:

Additional Report Formats:
☐ LARWQCB ☐ EDF (Geotracker)
☐ EDD (GISKEY) ☐ EDD (Other)*

Sample Locator No.

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Centrum duplicate Gold Copy - Client Copy

**Centrum Analytical Laboratories, Inc.**
CERTIFIED HAZARDOUS WASTE TESTING MOBILE & IN HOUSE LABORATORIES

Client: Brycon, LLC
4570 Campus Drive
Newport Beach, CA 92660

Date Sampled: 07/08/04
Date Received: 07/08/04
Job Number: 24662

Project: Fields Lease North

## CASE NARRATIVE

The following information applies to samples which were received on 07/08/04 :

The samples were received at the laboratory directly from the field and were cooled to 4°C upon arrival. The sample containers were intact.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested. The date of issue for this report is 07/20/04.

Report approved by:

Tom Wilson
Laboratory Director

ELAP Lab# 2419, 2479, 2527, 2373, 2562

RL: Reporting Limit -- The lowest level at which the compound can be reliably detected under normal laboratory conditions.
ND: Not Detected -- The compound was analyzed for, but was not found to be present at or above the Reporting Limit.
NA: Not Analyzed -- This compound was not on the list of compounds requested for analysis.

Centrum
Analytical
Laboratories, Inc.

## C6 to C40 Hydrocarbons by GC/FID

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 07/08/04 |
| Project: | Fields Lease North | Date Received: | 07/08/04 |
| Job No.: | 24662 | Batch Number: | SH2GASS152 |
| Matrix: | Soil | | 8015DS3221 |
| Analyst: | RV / JB | | |

| Carbon Chain Length: | C6-C12 | C13-C22 | C23-C40 |
|---|---|---|---|
| Reporting Limits: | 0.50 | 10 | 10 |
| Units: | mg/Kg | mg/Kg | mg/Kg |
| **Method Blank** | ND | ND | ND |
| **BS040708-1** | ND | **25** | **120** |
| **BS040708-2** | ND | **130** | **420** |
| **Method:** | GC/FID | GC/FID | GC/FID |
| **Date Extracted:** | N/A | 07/13/04 | 07/13/04 |
| **Date Analyzed:** | 07/09/04 | 07/14-15/04 | 07/14-15/04 |

Centrum
Analytical
Laboratories, Inc.

# QC Sample Report - Volatile Hydrocarbons as Gasoline by GC/FID

Matrix: Soil
Batch Number: SH2GASS152

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Gasoline | 5.0 | **99** | 70 - 130 | **Pass** |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: 24666-18

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Gasoline | 4.61 | 4.89 | **6%** | 25% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Centrum
Analytical
Laboratories, Inc.

# QC Sample Report - Extractable Hydrocarbons as Diesel by GC/FID

Matrix: Soil
Batch Number: 8015DS3221

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Diesel | 100 | **100** | 70 - 130 | **Pass** |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: 24668-15

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Diesel | 104.7 | 112.2 | **7%** | 25% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

**Centrum Analytical Laboratories, Inc.**
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Riverside, CA 92507
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Fax: 909.779.0344

3299 Hill Street, Suite 305
Signal Hill, CA 90755
Voice: 562.498.7005
Fax: 562.498.8617

www.centrum-labs.com lab@centrum-labs.com

# Chain of Custody Record

Centrum Job # 24662



Project No:

Project Name: Fields Lease North

Project Manager: GBP

Phone:

Fax:

Client Name: (Report and Billing) Brycon, LLC

Address: (Report and Billing) 4570 Campus Dr. Newport Beach, Ca 92660

*Please Circle Analyses Requested

| Centrum ID (Lab use only) | Sample ID (As it should appear on report) | Date sampled | Time sampled | Sample matrix | Site location | Containers: # and type | LUFT Diesel, or EPA 8015B DRO | LUFT Gas, or EPA 8015B GRO | Fuel ID (TVH, TEH), Carbon Chain (specify ranges) | 8021B: BTEX/MtBE Only | VOCs: 8260B, or 624 | VOCs: BTEX/Oxygenates Only | SVOCs: 8270C, or 625 | 8081A/8082: Pesticides, or PCBs, or Pest/PCB | Metals: Title 22 (CAM), or RCRA, or PP | Metals: TCLP, STLC | pH, TDS, TSS | 418.1 (TRPH), or 413.2, or 1664 | Remarks/Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BS040708-1 | 7/8 | 1:15 | Soil | F.L.N. | 8oz. glass | | | X | | | | | | | | | | ~~C4-C40~~ C4-C40 |
| 2 | BS040708-2 | 1 | 1 | 1 | 1 | 1 | | | X | | | | | | | | | | * C6-C40 |

Turn-Around Time
- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☒ Normal TAT
- ☐ Other _____

*Requires PRIOR approval, additional charges apply

Requested due date: _____

| | Date | Time | | Date | Time |
|---|---|---|---|---|---|
| 1) Relinquished by: (Sampler's Signature) | 7/8 | 1420 | 3) Relinquished by: | | |
| 2) Received by: | | | 4) Received by: | | |
| | | | 5) Relinquished by: | | |
| | | | 6) Received for Laboratory by: | 7/8/4 | 1420 |

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

Laboratory Notes:

To be completed by Laboratory personnel:
- Samples chilled? ☐ Yes ☐ No ☒ From Field
- Custody seals? ☐ Yes ☒ No
- All sample containers intact? ☒ Yes ☐ No
- ☐ Courier ☐ UPS/Fed Ex ☒ Hand carried

Additional Report Formats:
- ☐ LARWQCB ☐ EDF (Geotracker)
- ☐ EDD (GISKEY) ☐ EDD (Other)*

Sample Disposal
- ☐ Client will pick up
- ☐ Return to client
- ☒ Lab disposal

Sample Locator No.

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Centrum duplicate Gold Copy - Client Copy

**Centrum Analytical Laboratories, Inc.**
CERTIFIED HAZARDOUS WASTE TESTING MOBILE & IN HOUSE LABORATORIES

Client: Brycon, LLC
4570 Campus Drive
Newport Beach, CA 92660

Date Sampled: 04/18-19/05
Date Received: 04/19/05
Job Number: 26142

Project: Field Lease North

## CASE NARRATIVE

The following information applies to samples which were received on 04/19/05:

The samples were received at the laboratory chilled and sample containers were intact.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested. The date of issue for this report is 04/26/05.

Report approved by:

Tom Wilson
Laboratory Director

ELAP Lab# 2419, 2479, 2527, 2373, 2562

RL: Reporting Limit -- The lowest level at which the compound can be reliably detected under normal laboratory conditions.
ND: Not Detected -- The compound was analyzed for, but was not found to be present at or above the Reporting Limit.
NA: Not Analyzed -- This compound was not on the list of compounds requested for analysis.



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Centrum Analytical Laboratories, Inc.

# C9 to C40 Hydrocarbons by GC/FID

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 04/18-19/05 |
| Project: | Field Lease North | Date Received: | 04/19/05 |
| Job No.: | 26142 | Batch Number: | 8015DS3448 |
| Matrix: | Soil | | |
| Analyst: | AW | | |

| Carbon Chain Length: | C9-C12 | C13-C22 | C23-C40 |
|---|---|---|---|
| Reporting Limits: | 10 | 10 | 20 |
| Units: | mg/Kg | mg/Kg | mg/Kg |
| **Method Blank** | ND | ND | ND |
| **GS0504181** | ND | ND | ND |
| **GS0504192** | ND | **110** | **520** |
| **GS0504193** | ND | ND | ND |
| **Method:** | GC/FID | GC/FID | GC/FID |
| **Date Extracted:** | 04/21/05 | 04/21/05 | 04/21/05 |
| **Date Analyzed:** | 04/21-22/05 | 04/21-22/05 | 04/21-22/05 |

Centrum
Analytical
Laboratories, Inc.

# QC Sample Report - Extractable Hydrocarbons as Diesel by GC/FID

Matrix: Soil
Batch Number: 8015DS3448

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Diesel | 100 | **106** | 70 - 130 | **Pass** |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: 26149-1

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Diesel | 92.6 | 93.7 | **1%** | 25% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

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# Chain of Custody Record

Centrum Job # 26142

Page 1 of 1

Project No:

Project Name: Field Lease North

Project Manager: GBP

Phone: 949 475 7749

Fax:

Client Name: (Report and Billing) Brycon, LLC

Address: (Report and Billing) 4570 Campos Dr. Newport Beach, CA

Please Circle Analyses Requested

| Centrum ID (Lab use only) | Sample ID (As it should appear on report) | Date sampled | Time sampled | Sample matrix | Site location | Containers: # and type | LUFT Diesel, or EPA 8015B DRO | LUFT Gas, or EPA 8015B GRO | Fuel ID (TVH, TEH), Carbon Chain (specify ranges) | 8021B: BTEX/MtBE Only | 8059 Cg-C40 | VOCs: 8260B, or 624 | VOCs: BTEX/Oxygenates Only | SVOCs: 8270C, or 625 | 8081A/8082: Pesticides, or PCBs, or Pest/PCB | | Metals: Title 22 (CAM), or RCRA, or PP | Metals: TCLP, STLC | pH, TDS, TSS | 418.1 (TRPH), or 413.2, or 1664 | | Remarks/Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | GS0504181 | 4/18/05 | 1125 | soil | | 4oz Jar | | | | | X | | | | | | | | | | | |
| 2 | GS0504192 | 4/19/05 | 730 | soil | | ↓ | | | | | X | | | | | | | | | | | |
| 3 | GS0504193 | 4/19/05 | 1052 | soil | | ↓ | | | | | X | | | | | | | | | | | |

Turn-Around Time
- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☒ Normal TAT
- ☐ Other _____

*Requires PRIOR approval, additional charges apply

Requested due date: _____

| | Date: | Time: |
|---|---|---|
| 1) Relinquished by: (Sampler's Signature) [signature] | 4/19/05 | 1210 |
| 2) Received by: | | |
| 3) Relinquished by: | | |
| 4) Received by: | | |
| 5) Relinquished by: | | |
| 6) Received for Laboratory by: [signature] | 4/19/5 | 1210 |

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

Laboratory Notes:

To be completed by Laboratory personnel:
- Samples chilled? ☒ Yes ☐ No ☒ ~~From Field~~
- Custody seals? ☐ Yes ☒ No
- All sample containers intact? ☒ Yes ☐ No
- ☐ Courier ☐ UPS/Fed Ex ☒ Hand carried

Additional Report Formats:
- ☐ LARWQCB ☐ EDF (Geotracker)
- ☐ EDD (GISKEY) ☐ EDD (Other)*

Sample Disposal
- ☐ Client will pick up
- ☐ Return to client
- ☒ Lab disposal

Sample Locator No. H

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Centrum duplicate Gold Copy - Client Copy

**Centrum Analytical Laboratories, Inc.**
CERTIFIED HAZARDOUS WASTE TESTING MOBILE & IN HOUSE LABORATORIES

Client: Brycon, LLC
4570 Campus Drive
Newport Beach, CA 92660

Date Sampled: 04/20/05
Date Received: 04/20/05
Job Number: 26149

Project: Field Lease North

## CASE NARRATIVE

The following information applies to samples which were received on 04/20/05:

The samples were received at the laboratory directly from the field and were cooled to 4°C upon arrival. The sample containers were intact.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested. The date of issue for this report is 04/26/05.

Report approved by:

Tom Wilson
Laboratory Director

ELAP Lab# 2419, 2479, 2527, 2373, 2562

RL: Reporting Limit -- The lowest level at which the compound can be reliably detected under normal laboratory conditions.
ND: Not Detected -- The compound was analyzed for, but was not found to be present at or above the Reporting Limit.
NA: Not Analyzed -- This compound was not on the list of compounds requested for analysis.



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Centrum Analytical Laboratories, Inc.

## C9 to C40 Hydrocarbons by GC/FID

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 04/20/05 |
| Project: | Field Lease North | Date Received: | 04/20/05 |
| Job No.: | 26149 | Batch Number: | 8015DS3448 |
| Matrix: | Soil | | |
| Analyst: | AW | | |

| Carbon Chain Length: | C9-C12 | C13-C22 | C23-C40 |
|---|---|---|---|
| Reporting Limits: | 10 | 10 | 20 |
| Units: | mg/Kg | mg/Kg | mg/Kg |
| **Method Blank** | ND | ND | ND |
| **GS0504204** | ND | ND | ND |
| **GS0504205** | ND | **22** | **120** |
| **Method:** | GC/FID | GC/FID | GC/FID |
| **Date Extracted:** | 04/21/05 | 04/21/05 | 04/21/05 |
| **Date Analyzed:** | 04/21-22/05 | 04/21-22/05 | 04/21-22/05 |

Centrum
Analytical
Laboratories, Inc.

# QC Sample Report - Extractable Hydrocarbons as Diesel by GC/FID

Matrix: Soil
Batch Number: 8015DS3448

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Diesel | 100 | **106** | 70 - 130 | **Pass** |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: GS0504204

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Diesel | 92.6 | 93.7 | **1%** | 25% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

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# Chain of Custody Record

Centrum Job # 26149

Page 1 of 1

Project No:

Project Name: Field Lease North

Project Manager: GBP

Phone: 949 475 7749

Fax:

Client Name: (Report and Billing) Brycon, LLC

Address: (Report and Billing) 4570 Campos Dr. Newport Beach, CA

Please Circle Analyses Requested

| Centrum ID (Lab use only) | Sample ID (As it should appear on report) | Date sampled | Time sampled | Sample matrix | Site location | Containers: # and type | LUFT Diesel, or EPA 8015B DRO | LUFT Gas, or EPA 8015B GRO | Fuel ID (TVH, TEH), Carbon Chain (specify ranges) | 8021B: BTEX/MtBE Only | 8015 C9 - C40 | VOCs: 8260B, or 624 | VOCs: BTEX/Oxygenates Only | SVOCs: 8270C, or 625 | 8081A/8082: Pesticides, or PCBs, or Pest/PCB | | Metals: Title 22 (CAM), or RCRA, or PP | Metals: TCLP, STLC | pH, TDS, TSS | 418.1 (TRPH), or 413.2, or 1664 | | Remarks/Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | GS0504204 | 4/20/05 | 1135 | soil | | 4oz Jars | | | | | X | | | | | | | | | | | |
| 2 | GS0504205 | 4/20/05 | 1140 | soil | | J | | | | | X | | | | | | | | | | | |

Turn-Around Time
- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☒ Normal TAT
- ☐ Other _____

*Requires PRIOR approval, additional charges apply

Requested due date: _____

| | Date: | Time: |
|---|---|---|
| 1) Relinquished by: (Sampler's Signature) [signature] | 4/20/05 | 1625 |
| 2) Received by: | | |
| 3) Relinquished by: | | |
| 4) Received by: | | |
| 5) Relinquished by: | | |
| 6) Received for Laboratory by: [signature] | 4/20/5 | 1625 |

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

Laboratory Notes: C9 - C12
C13 - C22
C23 - C40

To be completed by Laboratory personnel:
- Samples chilled? ☐ Yes ☐ No ☒ From Field
- Custody seals? ☐ Yes ☒ No
- All sample containers intact? ☒ Yes ☐ No
- ☐ Courier ☐ UPS/Fed Ex ☒ Hand carried

Additional Report Formats:
- ☐ LARWQCB ☐ EDF (Geotracker)
- ☐ EDD (GISKEY) ☐ EDD (Other)*

Sample Disposal
- ☐ Client will pick up
- ☐ Return to client
- ☒ Lab disposal

Sample Locator No. I

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Centrum duplicate Gold Copy - Client Copy

**Centrum Analytical Laboratories, Inc.**
CERTIFIED HAZARDOUS WASTE TESTING MOBILE & IN HOUSE LABORATORIES

Client: Brycon, LLC
4570 Campus Drive
Newport Beach, CA 92660

Date Sampled: 04/22/05
Date Received: 04/22/05
Job Number: 26165

Project: Field Lease North

## CASE NARRATIVE

The following information applies to samples which were received on 04/22/05:

The samples were received at the laboratory directly from the field and were cooled to 4ºC upon arrival. The sample containers were intact.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested. The date of issue for this report is 05/03/05.

Report approved by:

Tom Wilson

Tom Wilson
Laboratory Director

ELAP Lab# 2419, 2479, 2527, 2373, 2562

RL: Reporting Limit -- The lowest level at which the compound can be reliably detected under normal laboratory conditions.
ND: Not Detected -- The compound was analyzed for, but was not found to be present at or above the Reporting Limit.
NA: Not Analyzed -- This compound was not on the list of compounds requested for analysis.



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Centrum Analytical Laboratories, Inc.

## C9 to C40 Hydrocarbons by GC/FID

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 04/22/05 |
| Project: | Field Lease North | Date Received: | 04/22/05 |
| Job No.: | 26165 | Batch Number: | 8015DS3450 |
| Matrix: | Soil | | |
| Analyst: | AW | | |

| Carbon Chain Length: | C9-C12 | C13-C22 | C23-C40 |
|---|---|---|---|
| Reporting Limits: | 10 | 10 | 20 |
| Units: | mg/Kg | mg/Kg | mg/Kg |
| **Method Blank** | ND | ND | ND |
| **GS0504226** | ND | ND | **21** |
| **GS0504227** | ND | **32** | **140** |
| **Method:** | GC/FID | GC/FID | GC/FID |
| **Date Extracted:** | 04/25/05 | 04/25/05 | 04/25/05 |
| **Date Analyzed:** | 04/25-29/05 | 04/25-29/05 | 04/25-29/05 |

Centrum
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Laboratories, Inc.

# QC Sample Report - Extractable Hydrocarbons as Diesel by GC/FID

Matrix: Soil
Batch Number: 8015DS3450

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Diesel | 100 | **89** | 70 - 130 | **Pass** |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: 26166-2

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Diesel | 92.7 | 85.9 | **8%** | 25% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

**Centrum Analytical Laboratories, Inc.**

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# Chain of Custody Record

Centrum Job # 26165



| Project No: | Project Name: Field Lease North |
|---|---|
| Project Manager: GBP | Phone: 949 475 7749 Fax: |
| Client Name: (Report and Billing) Bycon, LLC | Address: (Report and Billing) 4570 Campus Dr Newport Beach, CA |

**Please Circle Analyses Requested**

| Centrum ID (Lab use only) | Sample ID (As it should appear on report) | Date sampled | Time sampled | Sample matrix | Site location | Containers: # and type | LUFT Diesel, or EPA 8015B DRO | LUFT Gas, or EPA 8015B GRO | Fuel ID (TVH, TEH), Carbon Chain (specify ranges) | 8021B: BTEX/MtBE Only | 8015 C9-C40 | VOCs: 8260B, or 624 | VOCs: BTEX/Oxygenates Only | SVOCs: 8270C, or 625 | 8081A/8082: Pesticides, or PCBs, or Pest/PCB | | Metals: Title 22 (CAM), or RCRA, or PP | Metals: TCLP, STLC | pH, TDS, TSS | 418.1 (TRPH), or 413.2, or 1664 | | Remarks/Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6S0504226 | 4/22/05 | 1035 | Soil | | 4oz Jar | | | | | X | | | | | | | | | | | |
| 2 | 6S0504227 | 4/22/05 | 1040 | Soil | | ↓ | | | | | X | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |

**Turn-Around Time**

- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☒ Normal TAT
- ☐ Other _____

*Requires PRIOR approval, additional charges apply

Requested due date: _____

| 1) Relinquished by: (Sampler's Signature) | Date: 4/22/05 | Time: 1420 | 3) Relinquished by: | Date: | Time: |
|---|---|---|---|---|---|
| 2) Received by: | Date: | Time: | 4) Received by: | Date: | Time: |
| | | | 5) Relinquished by: | Date: | Time: |
| The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof. | | | 6) Received for Laboratory by: [signature] | Date: 4/22/05 | Time: 1420 |

**To be completed by Laboratory personnel:**

Samples chilled? ☐ Yes ☐ No ☒ From Field

Custody seals? ☐ Yes ☒ No

All sample containers intact? ☒ Yes ☐ No

☐ Courier ☐ UPS/Fed Ex ☒ Hand carried

**Sample Disposal**

- ☐ Client will pick up
- ☐ Return to client
- ☒ Lab disposal

**Laboratory Notes:**

C9-C12
C13-C22
C23-C40

**Additional Report Formats:**

☐ LARWQCB ☐ EDF (Geotracker)
☐ EDD (GISKEY) ☐ EDD (Other)*

**Sample Locator No.**

I

**Centrum Analytical Laboratories, Inc.**
CERTIFIED HAZARDOUS WASTE TESTING MOBILE & IN HOUSE LABORATORIES

Client: Brycon, LLC
4570 Campus Drive
Newport Beach, CA 92660

Date Sampled: 04/25/05
Date Received: 04/25/05
Job Number: 26171

Project: Field Lease North

## CASE NARRATIVE

The following information applies to samples which were received on 04/25/05:

The samples were received at the laboratory directly from the field and were cooled to 4°C upon arrival. The sample containers were intact.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested. The date of issue for this report is 05/03/05.

Report approved by:

Tom Wilson

Tom Wilson
Laboratory Director

ELAP Lab# 2419, 2479, 2527, 2373, 2562

RL: Reporting Limit -- The lowest level at which the compound can be reliably detected under normal laboratory conditions.
ND: Not Detected -- The compound was analyzed for, but was not found to be present at or above the Reporting Limit.
NA: Not Analyzed -- This compound was not on the list of compounds requested for analysis.



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Centrum Analytical Laboratories, Inc.

## C9 to C40 Hydrocarbons by GC/FID

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 04/25/05 |
| Project: | Field Lease North | Date Received: | 04/25/05 |
| Job No.: | 26171 | Batch Number: | 8015DS3453 |
| Matrix: | Soil | | |
| Analyst: | AW | | |

| Carbon Chain Length: | C9-C12 | C13-C22 | C23-C40 |
|---|---|---|---|
| Reporting Limits: | 10 | 10 | 20 |
| Units: | mg/Kg | mg/Kg | mg/Kg |
| **Method Blank** | ND | ND | ND |
| **GS0504258** | ND | ND | **23** |
| **GS0504259** | ND | **56** | **110** |
| **Method:** | GC/FID | GC/FID | GC/FID |
| **Date Extracted:** | 04/28/05 | 04/28/05 | 04/28/05 |
| **Date Analyzed:** | 04/28-29/05 | 04/28-29/05 | 04/28-29/05 |

Centrum Analytical Laboratories, Inc.

# QC Sample Report - Extractable Hydrocarbons as Diesel by GC/FID

Matrix: Soil
Batch Number: 8015DS3453

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Diesel | 100 | **89** | 70 - 130 | **Pass** |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Diesel | 88.9 | 89.2 | **0%** | 25% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

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# Chain of Custody Record

Centrum Job # 26171



Please Circle Analyses Requested

| Project No: | Project Name: Field Lease North |
|---|---|
| Project Manager: GBP | Phone: 949 475 7749 Fax: |
| Client Name: (Report and Billing) Bycon, LLC | Address: (Report and Billing) 4570 Campos Dr. Newport Beach, CA |

| Centrum ID (Lab use only) | Sample ID (As it should appear on report) | Date sampled | Time sampled | Sample matrix | Site location | Containers: # and type | LUFT Diesel, or EPA 8015B DRO | LUFT Gas, or EPA 8015B GRO | Fuel ID (TVH, TEH), Carbon Chain (specify ranges) | 8021B: BTEX/MtBE Only | 8015 C9-C40 | VOCs: 8260B, or 624 | VOCs: BTEX/Oxygenates Only | SVOCs: 8270C, or 625 | 8081A/8082: Pesticides, or PCBs, or Pest/PCB | | Metals: Title 22 (CAM), or RCRA, or PP | Metals: TCLP, STLC | pH, TDS, TSS | 418.1 (TRPH), or 413.2, or 1664 | | Remarks/Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | GSO504258 | 4/25/05 | 915 | soil | | 4oz | | | | | X | | | | | | | | | | | |
| 2 | GSO504259 | 4/25/05 | 917 | soil | | | | | | | X | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
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Turn-Around Time
- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☒ Normal TAT
- ☐ Other _____

*Requires PRIOR approval, additional charges apply

Requested due date: _____

| 1) Relinquished by: (Sampler's Signature) | Date: 4/25/05 | Time: 1630 | 3) Relinquished by: | Date: | Time: |
|---|---|---|---|---|---|
| 2) Received by: | Date: | Time: | 4) Received by: | Date: | Time: |
| | | | 5) Relinquished by: | Date: | Time: |
| The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof. | | | 6) Received for Laboratory by: | Date: 4/25/05 | Time: 1630 |

Laboratory Notes:
C9-C12
C13-C22
C23-C40

To be completed by Laboratory personnel:
Samples chilled? ☐ Yes ☐ No ☒ From Field
Custody seals? ☐ Yes ☒ No
All sample containers intact? ☒ Yes ☐ No
☐ Courier ☐ UPS/Fed Ex ☒ Hand carried

Additional Report Formats:
☐ LARWQCB ☐ EDF (Geotracker)
☐ EDD (GISKEY) ☐ EDD (Other)*

Sample Disposal
- ☐ Client will pick up
- ☐ Return to client
- ☐ Lab disposal

Sample Locator No.

**Centrum Analytical Laboratories, Inc.**
CERTIFIED HAZARDOUS WASTE TESTING MOBILE & IN HOUSE LABORATORIES

Client: Brycon, LLC
4570 Campus Drive
Newport Beach, CA 92660

Date Sampled: 04/26/05
Date Received: 04/26/05
Job Number: 26185

Project: Field Lease North

## CASE NARRATIVE

The following information applies to samples which were received on 04/26/05:

The samples were received at the laboratory directly from the field and were cooled to 4ºC upon arrival. The sample containers were intact.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested. The date of issue for this report is 05/10/05.

Report approved by:

Tom Wilson
Laboratory Director

ELAP Lab# 2419, 2479, 2527, 2373, 2562

RL: Reporting Limit -- The lowest level at which the compound can be reliably detected under normal laboratory conditions.
ND: Not Detected -- The compound was analyzed for, but was not found to be present at or above the Reporting Limit.
NA: Not Analyzed -- This compound was not on the list of compounds requested for analysis.



951•779•0310 OR 800•798•9336 fax 951•779•0344
www.centrum-labs.com 1401 Research Park Drive, Suite 100, Riverside, CA 92507

Centrum Analytical Laboratories, Inc.

# Metals by EPA 6010B and EPA 7471A

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 04/26/05 |
| Project: | Field Lease North | Date Received: | 04/26/05 |
| Job No: | 26185 | Date Digested: | 04/28/05 |
| Matrix: | Soil | Date Analyzed: | 04/29/05 |
| Analyst: | TLB | Batch Number: | 6010S3327 |
| | | | 7471S1205 |

| | | Sample ID: | Blank | GS05042611 |
|---|---|---|---|---|
| **Metals** | **Method** | **RL** | mg/Kg | mg/Kg |
| Antimony | 6010B | 5.0 | ND | ND |
| Arsenic | 6010B | 1.0 | ND | **4.3** |
| Barium | 6010B | 0.50 | ND | **130** |
| Beryllium | 6010B | 0.50 | ND | ND |
| Cadmium | 6010B | 0.50 | ND | ND |
| Chromium | 6010B | 0.50 | ND | **11** |
| Cobalt | 6010B | 0.50 | ND | **4.7** |
| Copper | 6010B | 2.0 | ND | **6.4** |
| Lead | 6010B | 1.0 | ND | **7.9** |
| Molybdenum | 6010B | 5.0 | ND | ND |
| Nickel | 6010B | 1.0 | ND | **6.8** |
| Selenium | 6010B | 5.0 | ND | ND |
| Silver | 6010B | 2.0 | ND | ND |
| Thallium | 6010B | 5.0 | ND | ND |
| Vanadium | 6010B | 5.0 | ND | **18** |
| Zinc | 6010B | 10 | ND | **27** |
| Mercury | 7471A | 0.02 | ND | **0.02** |

Centrum Analytical Laboratories, Inc.

# QC Sample Report - Metals by EPA 6010B and EPA 7471A

Matrix: Soil

## Metals by EPA 6010B

Batch Number: 6010S3327
Spike Sample ID: Laboratory Control Sample
MS/MSD Sample ID: 26186-12

| | Batch Accuracy Results | | | | Batch Precision Results | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Compound** | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
| Antimony | 50 | **118** | 75 - 125 | **Pass** | 59.42 | 60.68 | **2%** | 20% | **Pass** |
| Arsenic | 50 | **107** | 75 - 125 | **Pass** | 59.94 | 69.28 | **14%** | 20% | **Pass** |
| Barium | 50 | **105** | 75 - 125 | **Pass** | 161.5 | 161.0 | **0%** | 20% | **Pass** |
| Beryllium | 50 | **101** | 75 - 125 | **Pass** | 51.80 | 51.49 | **1%** | 20% | **Pass** |
| Cadmium | 50 | **101** | 75 - 125 | **Pass** | 48.80 | 48.67 | **0%** | 20% | **Pass** |
| Chromium | 50 | **102** | 75 - 125 | **Pass** | 65.68 | 65.31 | **1%** | 20% | **Pass** |
| Cobalt | 50 | **103** | 75 - 125 | **Pass** | 54.43 | 55.16 | **1%** | 20% | **Pass** |
| Copper* | 50 | **102** | 75 - 125 | **Pass** | 51.15 | 53.38 | **4%** | 20% | **Pass** |
| Lead | 50 | **102** | 75 - 125 | **Pass** | 64.30 | 65.03 | **1%** | 20% | **Pass** |
| Molybdenum | 50 | **100** | 75 - 125 | **Pass** | 47.47 | 48.84 | **3%** | 20% | **Pass** |
| Nickel | 50 | **104** | 75 - 125 | **Pass** | 59.12 | 60.65 | **3%** | 20% | **Pass** |
| Selenium | 50 | **102** | 75 - 125 | **Pass** | 51.01 | 51.65 | **1%** | 20% | **Pass** |
| Silver** | 50 | **96** | 75 - 125 | **Pass** | 48.16 | 47.68 | **1%** | 20% | **Pass** |
| Thallium | 50 | **104** | 75 - 125 | **Pass** | 48.10 | 48.20 | **0%** | 20% | **Pass** |
| Vanadium | 50 | **101** | 75 - 125 | **Pass** | 83.28 | 90.44 | **8%** | 20% | **Pass** |
| Zinc | 50 | **104** | 75 - 125 | **Pass** | 146.4 | 146.5 | **0%** | 20% | **Pass** |

Analytical Notes:

*Unable to use the MS/MSD pair for this analyte due to sample matrix; the LCS/LCSD pair was used to provide precision data for this analytical batch.

**The MS Sample was used to provide accuracy data for this compound in this analytical batch.

## Mercury by EPA 7471A

Batch Number: 7471S1205
Spike Sample ID: Laboratory Control Sample
MS/MSD Sample ID: 26186-12

| | Batch Accuracy Results | | | | Batch Precision Results | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Compound** | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
| Mercury | 0.42 | **100** | 75 - 125 | **Pass** | 0.592 | 0.592 | **0%** | 20% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

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## C6 to C40 Hydrocarbons by GCMS and GC/FID

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 04/26/05 |
| Project: | Field Lease North | Date Received: | 04/26/05 |
| Job No.: | 26185 | Batch Number: | SH2GASS292 |
| Matrix: | Soil | | 8015DS3454 |
| Analyst: | RV / AW | | |

| Carbon Chain Length: | C6-C12 | C13-C22 | C23-C40 |
|---|---|---|---|
| Reporting Limits: | 0.50 | 10 | 20 |
| Units: | mg/Kg | mg/Kg | mg/Kg |
| **Method Blank** | ND | ND | ND |
| **GS0504269** | ND | ND | ND |
| **GS05042610** | ND | ND | ND |
| **GS05042611** | ND | **20** | **100** |
| **Method:** | GC/FID | GC/FID | GC/FID |
| **Date Extracted:** | N/A | 04/29/05 | 04/29/05 |
| **Date Analyzed:** | 04/27/05 | 04/29-30/05 | 04/29-30/05 |

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# QC Sample Report - Extractable Hydrocarbons as Diesel by GC/FID

Matrix: Soil
Batch Number: 8015DS3454

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Diesel | 100 | **84** | 70 - 130 | **Pass** |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: GS0504269

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Diesel | 93.4 | 86.7 | **7%** | 25% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

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# QC Sample Report - Volatile Hydrocarbons as Gasoline by GC/FID

Matrix: Soil
Batch Number: SH2GASS292

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Gasoline | 5.0 | **102** | 70 - 130 | **Pass** |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: GS05042611

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Gasoline | 5.25 | 5.36 | **2%** | 25% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories, Inc.

# Organochlorine Pesticides and PCB's by EPA 8081A/8082

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 04/26/05 |
| Project: | Field Lease North | Date Received: | 04/26/05 |
| Job No.: | 26185 | Date Extracted: | 04/28/05 |
| Matrix: | Soil | Date Analyzed: | 04/28-29/05 |
| Analyst: | SEC | Batch Number: | PESTS0873 |

| | Sample ID: | Blank | GS05042611 |
|---|---|---|---|
| **Pesticides** | **RL*** | mg/Kg | mg/Kg |
| Aldrin | 0.020 | ND | ND |
| Alpha-BHC | 0.020 | ND | ND |
| Beta-BHC | 0.020 | ND | ND |
| Delta-BHC | 0.020 | ND | ND |
| Gamma-BHC (Lindane) | 0.020 | ND | ND |
| Chlordane | 0.20 | ND | ND |
| 4,4'-DDD | 0.040 | ND | ND |
| 4,4'-DDE | 0.040 | ND | ND |
| 4,4'-DDT | 0.040 | ND | ND |
| Dieldrin | 0.040 | ND | ND |
| Endosulfan I | 0.020 | ND | ND |
| Endosulfan II | 0.040 | ND | ND |
| Endosulfan sulfate | 0.040 | ND | ND |
| Endrin | 0.040 | ND | ND |
| Endrin Aldehyde | 0.040 | ND | ND |
| Endrin Ketone | 0.20 | ND | ND |
| Heptachlor | 0.020 | ND | ND |
| Heptachlor Epoxide | 0.020 | ND | ND |
| Methoxychlor | 0.20 | ND | ND |
| Toxaphene | 0.40 | ND | ND |
| **PCB's** | | | |
| Aroclor-1016 | 1.0 | ND | ND |
| Aroclor-1221 | 1.0 | ND | ND |
| Aroclor-1232 | 1.0 | ND | ND |
| Aroclor-1242 | 1.0 | ND | ND |
| Aroclor-1248 | 1.0 | ND | ND |
| Aroclor-1254 | 1.0 | ND | ND |
| Aroclor-1260 | 1.0 | ND | ND |

*The sample was analyzed at a dilution due to sample matrix effects; consequently, Reporting Limits were raised.

**Surrogates in % Recovery** (Acceptance Limits: 50 - 150%)

| | Sample ID: | Blank | GS05042611 |
|---|---|---|---|
| Tetrachloro-m-xylene | | 75 | 100 |

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## QC Sample Report - Organochlorine Pesticides and PCBs by EPA 8081A/8082

Matrix: Soil
Batch Number: PESTS0873

### Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

Analytical Notes:

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Lindane | 0.0067 | **90** | 71 - 124 | **Pass** |
| Heptachlor | 0.0067 | **101** | 87 - 132 | **Pass** |
| Aldrin | 0.0067 | **101** | 78 - 125 | **Pass** |
| Dieldrin | 0.026 | **92** | 85 - 113 | **Pass** |
| Endrin | 0.026 | **96** | 84 - 125 | **Pass** |
| DDT | 0.026 | **93** | 88 - 119 | **Pass** |
| Aroclor 1016 | 0.133 | **82** | 70 - 130 | **Pass** |

### Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

Analytical Notes:

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Lindane | 0.0060 | 0.0056 | **7%** | 25% | **Pass** |
| Heptachlor | 0.0067 | 0.0061 | **9%** | 25% | **Pass** |
| Aldrin | 0.0067 | 0.0065 | **3%** | 25% | **Pass** |
| Dieldrin | 0.0244 | 0.0230 | **6%** | 25% | **Pass** |
| Endrin | 0.0256 | 0.0248 | **3%** | 25% | **Pass** |
| DDT | 0.0247 | 0.0238 | **4%** | 25% | **Pass** |
| Arolclor 1016 | 0.109 | 0.115 | **5%** | 25% | **Pass** |

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories, Inc.

# Volatile Organic Compounds by EPA 8260B

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 04/26/05 |
| Project: | Field Lease North | Date Received: | 04/26/05 |
| Job No.: | 26185 | Date Analyzed: | 05/02/05 |
| Matrix: | Soil | Batch Number: | SH18260S226 |
| Analyst: | RCG | | |

| | Sample ID: | Blank | GS05042611 |
|---|---|---|---|
| **Compounds** | **RL** | mg/Kg | mg/Kg |
| Acetone | 0.050 | ND | ND |
| tert-Amyl Methyl Ether (TAME) | 0.005 | ND | ND |
| Benzene | 0.001 | ND | ND |
| Bromobenzene | 0.005 | ND | ND |
| Bromochloromethane | 0.005 | ND | ND |
| Bromodichloromethane | 0.001 | ND | ND |
| Bromoform | 0.005 | ND | ND |
| Bromomethane | 0.005 | ND | ND |
| tert-Butanol (TBA) | 0.020 | ND | ND |
| 2-Butanone (MEK) | 0.010 | ND | ND |
| n-Butylbenzene | 0.002 | ND | ND |
| sec-Butylbenzene | 0.002 | ND | ND |
| tert-Butylbenzene | 0.002 | ND | ND |
| Carbon disulfide | 0.010 | ND | ND |
| Carbon tetrachloride | 0.001 | ND | ND |
| Chlorobenzene | 0.001 | ND | ND |
| Chloroethane | 0.005 | ND | ND |
| Chloroform | 0.002 | ND | ND |
| Chloromethane | 0.001 | ND | ND |
| 2-Chlorotoluene | 0.002 | ND | ND |
| 4-Chlorotoluene | 0.002 | ND | ND |
| Dibromochloromethane | 0.002 | ND | ND |
| 1,2-Dibromoethane | 0.002 | ND | ND |
| 1,2-Dibromo-3-chloropropane | 0.010 | ND | ND |
| Dibromomethane | 0.001 | ND | ND |
| 1,2-Dichlorobenzene | 0.001 | ND | ND |
| 1,3-Dichlorobenzene | 0.002 | ND | ND |
| 1,4-Dichlorobenzene | 0.002 | ND | ND |
| Dichlorodifluoromethane | 0.005 | ND | ND |
| 1,1-Dichloroethane | 0.001 | ND | ND |
| 1,2-Dichloroethane | 0.001 | ND | ND |
| 1,1-Dichloroethene | 0.005 | ND | ND |
| cis-1,2-Dichloroethene | 0.002 | ND | ND |
| trans-1,2-Dichloroethene | 0.002 | ND | ND |
| 1,2-Dichloropropane | 0.001 | ND | ND |
| 1,3-Dichloropropane | 0.001 | ND | ND |
| 2,2-Dichloropropane | 0.001 | ND | ND |
| 1,1-Dichloropropene | 0.001 | ND | ND |

Centrum Analytical Laboratories, Inc.

# Volatile Organic Compounds by EPA 8260B

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 04/26/05 |
| Project: | Field Lease North | Date Received: | 04/26/05 |
| Job No.: | 26185 | Date Analyzed: | 05/02/05 |
| Matrix: | Soil | Batch Number: | SH18260S226 |
| Analyst: | RCG | | |

| | Sample ID: | Blank | GS05042611 |
|---|---|---|---|
| **Compounds** | **RL** | mg/Kg | mg/Kg |
| cis-1,3-Dichloropropene | 0.001 | ND | ND |
| trans-1,3-Dichloropropene | 0.001 | ND | ND |
| Diisopropyl Ether (DIPE) | 0.005 | ND | ND |
| Ethylbenzene | 0.001 | ND | ND |
| Ethyl tert-Butyl Ether (EtBE) | 0.005 | ND | ND |
| Hexachlorobutadiene | 0.001 | ND | ND |
| 2-Hexanone | 0.010 | ND | ND |
| Isopropylbenzene | 0.001 | ND | ND |
| p-Isopropyltoluene | 0.002 | ND | ND |
| Methylene chloride | 0.050 | ND | ND |
| 4-Methyl-2-pentanone | 0.010 | ND | ND |
| Methyl tert-Butyl Ether (MtBE) | 0.005 | ND | ND |
| Naphthalene | 0.002 | ND | ND |
| n-Propylbenzene | 0.001 | ND | ND |
| Styrene | 0.001 | ND | ND |
| 1,1,1,2-Tetrachloroethane | 0.001 | ND | ND |
| 1,1,2,2-Tetrachloroethane | 0.002 | ND | ND |
| Tetrachloroethene | 0.001 | ND | ND |
| Toluene | 0.001 | ND | ND |
| 1,2,3-Trichlorobenzene | 0.002 | ND | ND |
| 1,2,4-Trichlorobenzene | 0.002 | ND | ND |
| 1,1,1-Trichloroethane | 0.001 | ND | ND |
| 1,1,2-Trichloroethane | 0.003 | ND | ND |
| Trichloroethene | 0.001 | ND | ND |
| 1,2,3-Trichloropropane | 0.003 | ND | ND |
| Trichlorofluoromethane | 0.001 | ND | ND |
| Trichlorotrifluoroethane | 0.005 | ND | ND |
| 1,2,4-Trimethylbenzene | 0.001 | ND | ND |
| 1,3,5-Trimethylbenzene | 0.001 | ND | ND |
| Vinyl chloride | 0.002 | ND | ND |
| Xylenes, m-,p- | 0.002 | ND | ND |
| Xylene, o- | 0.001 | ND | ND |

**Surrogates in % Recovery** (Acceptance Limits: 70 - 130%)

| | Sample ID: | Blank | GS05042611 |
|---|---|---|---|
| Dibromofluoromethane | | 102 | 115 |
| Toluene-d8 | | 104 | 95 |
| Bromofluorobenzene | | 102 | 86 |

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# QC Sample Report - Volatile Organic Compounds by EPA 8260B

Matrix: Soil
Batch Number: SH18260S226

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

Analytical Notes:

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| 1,1-Dichloroethene | 0.050 | **105** | 70 - 130 | **Pass** |
| Benzene | 0.050 | **86** | 70 - 130 | **Pass** |
| Trichloroethene | 0.050 | **95** | 70 - 130 | **Pass** |
| Toluene | 0.050 | **91** | 70 - 130 | **Pass** |
| Chlorobenzene | 0.050 | **95** | 70 - 130 | **Pass** |

## Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

Analytical Notes:

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 0.0526 | 0.0537 | **2%** | 25% | **Pass** |
| Benzene | 0.0435 | 0.0372 | **16%** | 25% | **Pass** |
| Trichloroethene | 0.0476 | 0.0409 | **15%** | 25% | **Pass** |
| Toluene | 0.0458 | 0.0401 | **13%** | 25% | **Pass** |
| Chlorobenzene | 0.0475 | 0.0402 | **17%** | 25% | **Pass** |

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories, Inc.

## Semivolatile Organic Compounds by EPA 8270C

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 04/26/05 |
| Project: | Field Lease North | Date Received: | 04/26/05 |
| Job No.: | 26185 | Date Extracted: | 05/05-06/05 |
| Matrix: | Soil | Date Analyzed: | 05/06-07/05 |
| Analyst: | SEC | Batch Number: | 8270S1028 |

| | Sample ID: | Blank | GS05042611 |
|---|---|---|---|
| **Compound** | **RL*** | mg/Kg | mg/Kg |
| Acenaphthene | 0.17 | ND | ND |
| Acenaphthylene | 0.17 | ND | ND |
| Anthracene | 0.17 | ND | ND |
| Benzo[a]anthracene | 0.33 | ND | ND |
| Benzo[a]pyrene | 0.17 | ND | ND |
| Benzo[b]fluoranthene | 0.17 | ND | ND |
| Benzo[g,h,i]perylene | 0.50 | ND | ND |
| Benzo[k]fluoranthene | 0.17 | ND | ND |
| Benzyl alcohol | 0.65 | ND | ND |
| bis(2-Chloroethoxy)methane | 0.33 | ND | ND |
| bis(2-Chloroethyl)ether | 0.33 | ND | ND |
| bis(2-Chloroisopropyl)ether | 0.50 | ND | ND |
| bis(2-Ethylhexyl)phthalate | 1.7 | ND | ND |
| 4-Bromophenylphenylether | 0.17 | ND | ND |
| Butylbenzylphthalate | 0.17 | ND | ND |
| 4-Chloro-3-methylphenol | 0.80 | ND | ND |
| 4-Chloroaniline | 0.80 | ND | ND |
| 2-Chloronaphthalene | 0.17 | ND | ND |
| 2-Chlorophenol | 0.65 | ND | ND |
| 4-Chlorophenylphenylether | 0.17 | ND | ND |
| Chrysene | 0.17 | ND | ND |
| Di-n-butylphthalate | 1.7 | ND | ND |
| Di-n-octylphthalate | 0.17 | ND | ND |
| Dibenzo[a,h]anthracene | 0.50 | ND | ND |
| Dibenzofuran | 0.17 | ND | ND |
| 1,2-Dichlorobenzene | 0.17 | ND | ND |
| 1,3-Dichlorobenzene | 0.17 | ND | ND |
| 1,4-Dichlorobenzene | 0.17 | ND | ND |
| 3,3-Dichlorobenzidine | 0.65 | ND | ND |
| 2,4-Dichlorophenol | 0.80 | ND | ND |
| Diethylphthalate | 1.7 | ND | ND |
| 2,4-Dimethylphenol | 0.50 | ND | ND |
| Dimethylphthalate | 0.17 | ND | ND |
| 4,6-Dinitro-2-methylphenol | 1.7 | ND | ND |
| 2,4-Dinitrophenol | 8.0 | ND | ND |
| 2,4-Dinitrotoluene | 0.17 | ND | ND |

*The sample was analyzed at a dilution due to sample matrix effects; consequently, Reporting Limits were raised.

Centrum Analytical Laboratories, Inc.

## Semivolatile Organic Compounds by EPA 8270C

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 04/26/05 |
| Project: | Field Lease North | Date Received: | 04/26/05 |
| Job No.: | 26185 | Date Extracted: | 05/05-06/05 |
| Matrix: | Soil | Date Analyzed: | 05/06-07/05 |
| Analyst: | SEC | Batch Number: | 8270S1028 |

| | Sample ID: | Blank | GS05042611 |
|---|---|---|---|
| **Compound** | **RL*** | mg/Kg | mg/Kg |
| 2,6-Dinitrotoluene | 0.50 | ND | ND |
| Fluoranthene | 0.17 | ND | ND |
| Fluorene | 0.17 | ND | ND |
| Hexachlorobenzene | 0.17 | ND | ND |
| Hexachlorobutadiene | 0.17 | ND | ND |
| Hexachlorocyclopentadiene | 8.0 | ND | ND |
| Hexachloroethane | 0.17 | ND | ND |
| Indeno[1,2,3-c,d]pyrene | 0.65 | ND | ND |
| Isophorone | 0.17 | ND | ND |
| 2-Methylnaphthalene | 0.17 | ND | ND |
| 2-Methylphenol | 0.80 | ND | ND |
| 4-Methylphenol | 0.80 | ND | ND |
| N-Nitrosodi-n-propylamine | 0.17 | ND | ND |
| N-Nitrosodiphenylamine | 0.17 | ND | ND |
| Naphthalene | 0.17 | ND | ND |
| 2-Nitroaniline | 0.50 | ND | ND |
| 3-Nitroaniline | 0.50 | ND | ND |
| 4-Nitroaniline | 1.7 | ND | ND |
| Nitrobenzene | 0.50 | ND | ND |
| 2-Nitrophenol | 0.65 | ND | ND |
| 4-Nitrophenol | 1.7 | ND | ND |
| Pentachlorophenol | 8.0 | ND | ND |
| Phenanthrene | 0.33 | ND | ND |
| Phenol | 0.65 | ND | ND |
| Pyrene | 0.17 | ND | ND |
| 1,2,4-Trichlorobenzene | 0.17 | ND | ND |
| 2,4,5-Trichlorophenol | 1.0 | ND | ND |
| 2,4,6-Trichlorophenol | 1.7 | ND | ND |

*The sample was analyzed at a dilution due to sample matrix effects; consequently, Reporting Limits were raised.

**Surrogates in % Recovery** (Acceptance Limits)

| Sample ID: | Blank | GS05042611 |
|---|---|---|
| 2-Fluorophenol (25 - 121%) | 90 | 84 |
| Phenol-D5 (24 - 113%) | 97 | 88 |
| Nitrobenzene-D5 (23 - 120%) | 87 | 72 |
| 2-Fluorobiphenyl (30 - 115%) | 90 | 91 |
| 2,4,6-Tribromophenol (19 - 122%) | 81 | 76 |
| p-Terphenyl-D14 (18 - 137%) | 101 | 108 |

Centrum Analytical Laboratories,

# QC Sample Report - Semivolatile Organic Compounds by EPA 8270C

Matrix: Soil
Batch Number: 8270S1028

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

Analytical Notes:

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Phenol | 2.66 | **91** | 5 - 112 | **Pass** |
| 2-Chlorophenol | 2.66 | **95** | 23 - 134 | **Pass** |
| 1,4-Dichlorobenzene | 1.33 | **92** | 20 - 124 | **Pass** |
| N-Nitrosodi-n-propylamine | 1.33 | **111** | 0 - 230 | **Pass** |
| 1,2,4-Trichlorobenzene | 1.33 | **89** | 44 - 142 | **Pass** |
| 4-Chloro-3-Methylphenol | 2.66 | **91** | 22 - 147 | **Pass** |
| Acenaphthene | 1.33 | **99** | 47 - 145 | **Pass** |
| 4-Nitrophenol | 2.66 | **89** | 0 - 132 | **Pass** |
| 2,4-Dinitrotoluene | 1.33 | **99** | 39 - 139 | **Pass** |
| Pentachlorophenol | 2.66 | **76** | 14 - 176 | **Pass** |
| Pyrene | 1.33 | **97** | 52 - 115 | **Pass** |

## Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

Analytical Notes:

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Phenol | 2.43 | 2.67 | **9%** | 35% | **Pass** |
| 2-Chlorophenol | 2.54 | 2.78 | **9%** | 50% | **Pass** |
| 1,4-Dichlorobenzene | 1.23 | 1.34 | **8%** | 27% | **Pass** |
| N-Nitrosodi-n-propylamine | 1.48 | 1.65 | **11%** | 38% | **Pass** |
| 1,2,4-Trichlorobenzene | 1.19 | 1.31 | **10%** | 28% | **Pass** |
| 4-Chloro-3-Methylphenol | 2.43 | 2.69 | **10%** | 33% | **Pass** |
| Acenaphthene | 1.32 | 1.47 | **10%** | 23% | **Pass** |
| 4-Nitrophenol | 2.37 | 2.56 | **8%** | 50% | **Pass** |
| 2,4-Dinitrotoluene | 1.32 | 1.44 | **8%** | 47% | **Pass** |
| Pentachlorophenol | 2.03 | 2.29 | **12%** | 47% | **Pass** |
| Pyrene | 1.30 | 1.42 | **9%** | 36% | **Pass** |

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

**Centrum Analytical Laboratories, Inc.**

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Signal Hill, CA 90755
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Fax: 562.498.8617

www.centrum-labs.com lab@centrum-labs.com

# Chain of Custody Record

Centrum Job # 26185



Project No:

Project Name: Field Lease North

Project Manager: GBP

Phone: 949 475 7749

Fax:

Client Name: (Report and Billing) Brycon, LLC

Address: (Report and Billing) 4570 Campus Dr. Newport Beach, CA

Please Circle Analyses Requested

| Centrum ID (Lab use only) | Sample ID (As it should appear on report) | Date sampled | Time sampled | Sample matrix | Site location | Containers: # and type | LUFT Diesel, or EPA 8015B DRO | LUFT Gas, or EPA 8015B GRO | Fuel ID (TVH, TEH), Carbon Chain (specify ranges) | 8021B: BTEX/MBE Only | | VOCs: 8260B or 624 | VOCs: BTEX/Oxygenates Only | SVOCs: 8270C or 625 | 8081A/8082: Pesticides, or PCBs, or Pest/PCB | | Metals: (Title 22 CAM), or RCRA, or PP | Metals: TCLP, STLC | pH, TDS, TSS | 418.1 (TRPH), or 413.2, or 1664 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | GSO504269 | 4/26/05 | 750 | soil | | 4oz | | | | | | | | | | X | | | | | |
| 2 | GSO504260 | 4/26/05 | 755 | Soil | | 4oz | | | | | | | | | | X | | | | | |
| 3 | GSO504261 | 4/26/05 | 1415 | soil | | 8oz | | | | | | X | | X | X | X | X | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

Turn-Around Time

- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☒ Normal TAT
- ☐ Other _____

*Requires PRIOR approval, additional charges apply

Requested due date: _____

Remarks/Special Instructions

| | Date: | Time: |
|---|---|---|
| 1) Relinquished by: (Sampler's Signature) | 4/26/05 | 1635 |
| 2) Received by: | | |
| 3) Relinquished by: | | |
| 4) Received by: | | |
| 5) Relinquished by: | | |
| 6) Received for Laboratory by: | 4/26/05 | 1635 |

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

Laboratory Notes:

To be completed by Laboratory personnel:

Samples chilled? ☐ Yes ☐ No ☒ From Field

Custody seals? ☐ Yes ☒ No

All sample containers intact? ☒ Yes ☐ No

☐ Courier ☐ UPS/Fed Ex ☒ Hand carried

Additional Report Formats:

☐ LARWQCB ☐ EDF (Geotracker)

☐ EDD (GISKEY) ☐ EDD (Other)*

Sample Disposal

- ☐ Client will pick up
- ☐ Return to client
- ☒ Lab disposal

Sample Locator No.

J

(Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Centrum duplicate Gold Copy - Client Copy

**Centrum Analytical Laboratories, Inc.**
CERTIFIED HAZARDOUS WASTE TESTING MOBILE & IN HOUSE LABORATORIES

Client: Brycon, LLC
4570 Campus Drive
Newport Beach, CA 92660

Date Sampled: 05/09/05
Date Received: 05/09/05
Job Number: 26255

Project: Fields Lease North

## CASE NARRATIVE

The following information applies to samples which were received on 05/09/05:

The samples were received at the laboratory directly from the field and were cooled to 4°C upon arrival. The sample containers were intact.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested. The date of issue for this report is 05/17/05.

Report approved by:

Tom Wilson

Tom Wilson
Laboratory Director

ELAP Lab# 2419, 2479, 2527, 2373, 2562

RL: Reporting Limit -- The lowest level at which the compound can be reliably detected under normal laboratory conditions.
ND: Not Detected -- The compound was analyzed for, but was not found to be present at or above the Reporting Limit.
NA: Not Analyzed -- This compound was not on the list of compounds requested for analysis.



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Centrum
Analytical
Laboratories, Inc.

## C9 to C40 Hydrocarbons by GC/FID

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 05/09/05 |
| Project: | Fields Lease North | Date Received: | 05/09/05 |
| Job No.: | 26255 | Batch Number: | 8015DS3461 |
| Matrix: | Soil | | |
| Analyst: | AW | | |

| Carbon Chain Length: | C9-C12 | C13-C22 | C23-C40 |
|---|---|---|---|
| Reporting Limits: | 10 | 10 | 20 |
| Units: | mg/Kg | mg/Kg | mg/Kg |
| **Method Blank** | ND | ND | ND |
| **CC0505091** | ND | **21** | **63** |
| **CC0505092** | ND | **64** | **240** |
| **CC0505093** | ND | **49** | **100** |
| **CC0505094** | ND | **35** | **120** |
| **CC0505095** | ND | **42** | **120** |
| **Method:** | GC/FID | GC/FID | GC/FID |
| **Date Extracted:** | 05/10/05 | 05/10/05 | 05/10/05 |
| **Date Analyzed:** | 05/13/05 | 05/13/05 | 05/13/05 |

Centrum
Analytical
Laboratories, Inc.

# QC Sample Report - Extractable Hydrocarbons as Diesel by GC/FID

Matrix: Soil
Batch Number: 8015DS3461

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Diesel | 100 | **92** | 70 - 130 | **Pass** |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Diesel | 92.0 | 90.1 | **2%** | 25% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

# Centrum Analytical Laboratories, Inc.

## Chain of Custody Record

Centrum Job # 26255

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Fax: 951.779.0344

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Signal Hill, CA 90755
Voice: 562.498.7005
Fax: 562.498.8617

www.centrum-labs.com lab@centrum-labs.com



Project No:

Project Name: FIELDS LEASE NORTH

Project Manager: GEORGE PASPALOF

Phone:

Fax:

Client Name: (Report and Billing) BEYCON

Address: (Report and Billing)

Please Circle Analyses Requested

| Centrum ID (Lab use only) | Sample ID (As it should appear on report) | Date sampled | Time sampled | Sample metrix | Site location | Containers: # and type | LUFT Diesel, or EPA 8015B DRO | LUFT Gas, or EPA 8015B GRO | Fuel ID (TVH, TEH), Carbon Chain (specify ranges) | 8021B: BTEX/MtBE Only | VOCs: 8260B, or 624 | VOCs: BTEX/Oxygenates Only | SVOCs: 8270C, or 625 | 8081A/8082: Pesticides, or PCBs, or Pest/PCB | Metals: Title 22 (CAM), or RCRA, or PP | Metals: TCLP, STLC | pH, TDS, TSS | 418.1 (TRPH), or 413.2, or 1664 | Remarks/Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CC0505091 | 5/9 | 0730 | S | F, L, N | 1, 40Z | | | X | | | | | | | | | | C9 - C12 |
| 2 | CC0505092 | 5/9 | 0745 | S | F, L, N | 1, 40Z | | | X | | | | | | | | | | C13 - C22 |
| 3 | CC0505093 | 5/9 | 0800 | S | F, L, N | 1, 40Z | | | X | | | | | | | | | | C23 - C40 |
| 4 | CC0505094 | 5/9 | 0830 | S | F, L, N | 1, 40Z | | | X | | | | | | | | | | |
| 5 | CC0505095 | 5/9 | 0845 | S | F, L, N | 1, 40Z | | | X | | | | | | | | | | |

Turn-Around Time

- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☑ Normal TAT
- ☐ Other _____

*Requires PRIOR approval, additional charges apply

Requested due date: _____

Remarks/Special Instructions

| | Date: | Time: |
|---|---|---|
| 1) Relinquished by: (Sampler's Signature) | 5/9 | 1000 |
| 2) Received by: | | |
| 3) Relinquished by: | | |
| 4) Received by: | | |
| 5) Relinquished by: | | |
| 6) Received for Laboratory by: | 5/9 | 1000 |

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

Laboratory Notes:

To be completed by Laboratory personnel:

Samples chilled? ☐ Yes ☐ No ☑ From Field

Custody seals? ☐ Yes ☒ No

All sample containers intact? ☑ Yes ☐ No

☐ Courier ☐ UPS/Fed Ex ☒ Hand carried

Additional Report Formats:

☐ LARWQCB ☐ EDF (Geotracker)

☐ EDD (GISKEY) ☐ EDD (Other)*

Sample Disposal

- ☐ Client will pick up
- ☐ Return to client
- ☒ Lab disposal

Sample Locator No.

N

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Centrum duplicate Gold Copy - Client Copy

v7.1 9/04 coc-temp-both-0904.xls

Centrum
Analytical
Laboratories, Inc.
CERTIFIED HAZARDOUS WASTE TESTING MOBILE & IN HOUSE LABORATORIES

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC<br>4570 Campus Drive<br>Newport Beach, CA 92660 | Date Sampled:<br>Date Received:<br>Job Number: | 01/17/08<br>01/17/08<br>30718 |
| Project: | Fields Lease North | | |

## CASE NARRATIVE

The following information applies to samples which were received on 01/17/08:

The samples were received at the laboratory directly from the field and were cooled to 4ºC upon arrival. The sample containers were intact.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested. The date of issue for this report is 01/25/08.

Report approved by:

Robert R. Clark, PhD
President

ELAP Lab# 2419, 2479, 2527, 2373, 2562

RL: Reporting Limit -- The lowest level at which the compound can be reliably detected under normal laboratory conditions.
ND: Not Detected -- The compound was analyzed for, but was not found to be present at or above the Reporting Limit.
NA: Not Analyzed -- This compound was not on the list of compounds requested for analysis.



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Centrum Analytical Laboratories, Inc.

# Metals by EPA 6010B and EPA 7471A

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 01/17/08 |
| Project: | Fields Lease North | Date Received: | 01/17/08 |
| Job No: | 30718 | Date Digested: | 07/23/08 |
| Matrix: | Soil | Date Analyzed: | 07/23/08 |
| Analyst: | TLB | Batch Number: | 6010S4194 |
| | | | 7471S1690 |

| | | Sample ID: | Blank | CS0801172 |
|---|---|---|---|---|
| **Metals** | **Method** | **RL** | mg/Kg | mg/Kg |
| Antimony | 6010B | 5.0 | ND | ND |
| Arsenic | 6010B | 1.0 | ND | **2.49** |
| Barium | 6010B | 0.50 | ND | **44.2** |
| Beryllium | 6010B | 0.50 | ND | ND |
| Cadmium | 6010B | 0.50 | ND | ND |
| Chromium | 6010B | 0.50 | ND | **10.7** |
| Cobalt | 6010B | 0.50 | ND | **4.33** |
| Copper | 6010B | 1.0 | ND | **6.60** |
| Lead | 6010B | 1.0 | ND | **2.44** |
| Molybdenum | 6010B | 5.0 | ND | ND |
| Nickel | 6010B | 1.0 | ND | **6.36** |
| Selenium | 6010B | 5.0 | ND | ND |
| Silver | 6010B | 2.0 | ND | ND |
| Thallium | 6010B | 10 | ND | ND |
| Vanadium | 6010B | 5.0 | ND | **18.2** |
| Zinc | 6010B | 10 | ND | **22.7** |
| | | | | |
| Mercury | 7471A | 0.02 | ND | ND |

Centrum Analytical Laboratories, Inc.

# QC Sample Report - Metals by EPA 6010B and EPA 7471A

Sample Matrix: Soil

## Metals by EPA 6010B

Analytical Batch #: 6010S4194
Spike Sample ID: Laboratory Control Sample
MS/MSD Sample ID: 30711-1

Analytical Notes:

| | Batch Accuracy Results: | | | | Batch Precision Results: | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Compound** | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limits | Pass/Fail |
| Antimony | 50.0 | **112** | 75 - 125 | **Pass** | 43.05 | 42.21 | **2%** | 20% | **Pass** |
| Arsenic | 50.0 | **99** | 75 - 125 | **Pass** | 42.22 | 41.97 | **1%** | 20% | **Pass** |
| Barium | 50.0 | **100** | 75 - 125 | **Pass** | 178.03 | 178.11 | **0%** | 20% | **Pass** |
| Beryllium | 50.0 | **104** | 75 - 125 | **Pass** | 42.57 | 41.25 | **3%** | 20% | **Pass** |
| Cadmium | 50.0 | **101** | 75 - 125 | **Pass** | 37.58 | 37.33 | **1%** | 20% | **Pass** |
| Chromium | 50.0 | **100** | 75 - 125 | **Pass** | 62.49 | 62.11 | **1%** | 20% | **Pass** |
| Cobalt | 50.0 | **100** | 75 - 125 | **Pass** | 45.64 | 44.73 | **2%** | 20% | **Pass** |
| Copper | 50.0 | **103** | 75 - 125 | **Pass** | 71.05 | 70.46 | **1%** | 20% | **Pass** |
| Lead | 50.0 | **99** | 75 - 125 | **Pass** | 40.76 | 39.97 | **2%** | 20% | **Pass** |
| Molybdenum | 50.0 | **100** | 75 - 125 | **Pass** | 38.36 | 37.61 | **2%** | 20% | **Pass** |
| Nickel | 50.0 | **101** | 75 - 125 | **Pass** | 52.65 | 52.53 | **0%** | 20% | **Pass** |
| Selenium | 50.0 | **106** | 75 - 125 | **Pass** | 42.44 | 41.55 | **2%** | 20% | **Pass** |
| Silver | 50.0 | **84** | 75 - 125 | **Pass** | 34.51 | 34.21 | **1%** | 20% | **Pass** |
| Thallium | 50.0 | **102** | 75 - 125 | **Pass** | 33.82 | 34.72 | **3%** | 20% | **Pass** |
| Vanadium | 50.0 | **100** | 75 - 125 | **Pass** | 77.39 | 76.87 | **1%** | 20% | **Pass** |
| Zinc | 50.0 | **109** | 75 - 125 | **Pass** | 109.57 | 108.75 | **1%** | 20% | **Pass** |

## Mercury by EPA 7471A

Batch Number: 7471S1690
Spike Sample ID: Laboratory Control Sample
MS/MSD Sample ID: 30711-1

Analytical Notes:

| | Batch Accuracy Results | | | | Batch Precision Results | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Compound** | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limit | Pass/Fail | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
| Mercury | 0.42 | **88** | 75 - 125 | **Pass** | 0.432 | 0.439 | **2%** | 20% | **Pass** |

MS: Matrix Spike LCS: Laboratory Control Sample
MSD: Matrix Spike Duplicate LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories, Inc.

# C6 to C40 Hydrocarbons by GC/FID

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 01/17/08 |
| Project: | Fields Lease North | Date Received: | 01/17/08 |
| Job No.: | 30718 | Batch Number: | SH2TPHGS603 |
| Matrix: | Soil | | 8015DS4257 |
| Analyst: | RV / AW | | |

| Carbon Chain Length: | C6-C12 | C12-C22 | C22-C40 |
|---|---|---|---|
| Reporting Limits: | 0.50 | 10 | 20 |
| Units: | mg/Kg | mg/Kg | mg/Kg |
| **Method Blank** | ND | ND | ND |
| **CS0801171** | ND | **26** | **87** |
| **CS0801172** | **0.54** | **190** | **120** |
| **CS0801173** | ND | **110** | **140** |
| **CS0801174** | ND | **70** | **78** |
| **Method:** | GC/FID | GC/FID | GC/FID |
| **Date Extracted:** | N/A | 01/21/08 | 01/21/08 |
| **Date Analyzed:** | 01/18-21/08 | 01/21-22/08 | 01/21-22/08 |

Centrum Analytical Laboratories, Inc.

# QC Sample Report - Extractable Hydrocarbons as Diesel by GC/FID

Matrix: Soil
Batch Number: 8015DS4257

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Diesel | 100 | **93** | 70 - 130 | **Pass** |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: 30715-1

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Diesel | 91.4 | 88.9 | **3%** | 25% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories, Inc.

# QC Sample Report - Volatile Hydrocarbons as Gasoline by GC/FID

Matrix: Soil
Batch Number: SH2TPHGS603

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Gasoline | 5.0 | **107** | 70 - 130 | **Pass** |

Analytical Notes:

## Batch Precision Results

MS/MSD Sample ID: CS0801174

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Gasoline | 4.26 | 4.21 | **1%** | 25% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories, Inc.

# Organochlorine Pesticides and PCB's by EPA 8081A/8082

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 01/17/08 |
| Project: | Fields Lease North | Date Received: | 01/17/08 |
| Job No.: | 30718 | Date Extracted: | 01/23/08 |
| Matrix: | Soil | Date Analyzed: | 01/23/08 |
| Analyst: | FSM | Batch Number: | PESTPCBS1265 |

| | Sample ID: | Blank | CS0801171 |
|---|---|---|---|
| **Pesticides** | **RL** | mg/Kg | mg/Kg |
| Aldrin | 0.005 | ND | ND |
| Alpha-BHC | 0.005 | ND | ND |
| Beta-BHC | 0.005 | ND | ND |
| Delta-BHC | 0.005 | ND | ND |
| Gamma-BHC (Lindane) | 0.005 | ND | ND |
| Chlordane | 0.050 | ND | ND |
| 4,4'-DDD | 0.010 | ND | ND |
| 4,4'-DDE | 0.010 | ND | ND |
| 4,4'-DDT | 0.010 | ND | ND |
| Dieldrin | 0.010 | ND | ND |
| Endosulfan I | 0.005 | ND | ND |
| Endosulfan II | 0.010 | ND | ND |
| Endosulfan sulfate | 0.010 | ND | ND |
| Endrin | 0.010 | ND | ND |
| Endrin Aldehyde | 0.010 | ND | ND |
| Endrin Ketone | 0.050 | ND | ND |
| Heptachlor | 0.005 | ND | ND |
| Heptachlor Epoxide | 0.005 | ND | ND |
| Methoxychlor | 0.050 | ND | ND |
| Toxaphene | 0.100 | ND | ND |
| **PCB's** | | | |
| Aroclor-1016 | 0.250 | ND | ND |
| Aroclor-1221 | 0.250 | ND | ND |
| Aroclor-1232 | 0.250 | ND | ND |
| Aroclor-1242 | 0.250 | ND | ND |
| Aroclor-1248 | 0.250 | ND | ND |
| Aroclor-1254 | 0.250 | ND | ND |
| Aroclor-1260 | 0.250 | ND | ND |

*The sample was analyzed at a dilution due to sample matrix effects; consequently, Reporting Limits were raised.

**Surrogates in % Recovery** (Acceptance Limits: 50 - 150%)

| | Sample ID: | Blank | CS0801171 |
|---|---|---|---|
| Tetrachloro-m-xylene | | 100 | 91 |

Centrum Analytical Laboratories, Inc.

## QC Sample Report - Organochlorine Pesticides and PCBs by EPA 8081A/8082

Matrix: Soil
Batch Number: PESTPCBS1265

### Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Lindane | 0.0067 | **89** | 61 - 114 | **Pass** |
| Heptachlor | 0.0067 | **92** | 78 - 129 | **Pass** |
| Aldrin | 0.0067 | **101** | 71 - 123 | **Pass** |
| Dieldrin | 0.027 | **89** | 73 - 123 | **Pass** |
| Endrin | 0.027 | **97** | 72 - 133 | **Pass** |
| DDT | 0.027 | **94** | 76 - 128 | **Pass** |
| Aroclor 1016 | 0.133 | **97** | 70 - 130 | **Pass** |

Analytical Notes:

### Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Lindane | 0.0059 | 0.0057 | **3%** | 25% | **Pass** |
| Heptachlor | 0.0061 | 0.0064 | **4%** | 25% | **Pass** |
| Aldrin | 0.0068 | 0.0065 | **4%** | 25% | **Pass** |
| Dieldrin | 0.0236 | 0.0250 | **6%** | 25% | **Pass** |
| Endrin | 0.0258 | 0.0236 | **9%** | 25% | **Pass** |
| DDT | 0.0251 | 0.0236 | **6%** | 25% | **Pass** |
| Aroclor 1016 | 0.130 | 0.130 | **0%** | 25% | **Pass** |

Analytical Notes:

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories, Inc.

# Volatile Organic Compounds by EPA 8260B

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 01/17/08 |
| Project: | Fields Lease North | Date Received: | 01/17/08 |
| Job No.: | 30718 | Date Analyzed: | 01/22/08 |
| Matrix: | Soil | Batch Number: | MS2TPHGS1180 |
| Analyst: | CMR | | |

| | Sample ID: | Blank | LS0801172 |
|---|---|---|---|
| **Compounds** | **RL** | mg/Kg | mg/Kg |
| Acetone | 0.25 | ND | ND |
| tert-Amyl Methyl Ether (TAME) | 0.010 | ND | ND |
| Benzene | 0.005 | ND | ND |
| Bromobenzene | 0.025 | ND | ND |
| Bromochloromethane | 0.025 | ND | ND |
| Bromodichloromethane | 0.005 | ND | ND |
| Bromoform | 0.025 | ND | ND |
| Bromomethane | 0.025 | ND | ND |
| tert-Butanol (TBA) | 0.10 | ND | ND |
| 2-Butanone (MEK) | 0.050 | ND | ND |
| n-Butylbenzene | 0.010 | ND | ND |
| sec-Butylbenzene | 0.010 | ND | ND |
| tert-Butylbenzene | 0.010 | ND | ND |
| Carbon disulfide | 0.050 | ND | ND |
| Carbon tetrachloride | 0.005 | ND | ND |
| Chlorobenzene | 0.005 | ND | ND |
| Chloroethane | 0.025 | ND | ND |
| Chloroform | 0.010 | ND | ND |
| Chloromethane | 0.005 | ND | ND |
| 2-Chlorotoluene | 0.010 | ND | ND |
| 4-Chlorotoluene | 0.010 | ND | ND |
| Dibromochloromethane | 0.010 | ND | ND |
| 1,2-Dibromoethane | 0.010 | ND | ND |
| 1,2-Dibromo-3-chloropropane | 0.050 | ND | ND |
| Dibromomethane | 0.005 | ND | ND |
| 1,2-Dichlorobenzene | 0.005 | ND | ND |
| 1,3-Dichlorobenzene | 0.010 | ND | ND |
| 1,4-Dichlorobenzene | 0.010 | ND | ND |
| Dichlorodifluoromethane | 0.025 | ND | ND |
| 1,1-Dichloroethane | 0.005 | ND | ND |
| 1,2-Dichloroethane | 0.005 | ND | ND |
| 1,1-Dichloroethene | 0.025 | ND | ND |
| cis-1,2-Dichloroethene | 0.010 | ND | ND |
| trans-1,2-Dichloroethene | 0.010 | ND | ND |
| 1,2-Dichloropropane | 0.005 | ND | ND |
| 1,3-Dichloropropane | 0.005 | ND | ND |
| 2,2-Dichloropropane | 0.005 | ND | ND |
| 1,1-Dichloropropene | 0.005 | ND | ND |

Centrum Analytical Laboratories, Inc.

# Volatile Organic Compounds by EPA 8260B

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 01/17/08 |
| Project: | Fields Lease North | Date Received: | 01/17/08 |
| Job No.: | 30718 | Date Analyzed: | 01/22/08 |
| Matrix: | Soil | Batch Number: | MS2TPHGS1180 |
| Analyst: | CMR | | |

| | Sample ID: | Blank | LS0801172 |
|---|---|---|---|
| **Compounds** | **RL** | mg/Kg | mg/Kg |
| cis-1,3-Dichloropropene | 0.005 | ND | ND |
| trans-1,3-Dichloropropene | 0.005 | ND | ND |
| Diisopropyl Ether (DIPE) | 0.010 | ND | ND |
| Ethylbenzene | 0.005 | ND | ND |
| Ethyl tert-Butyl Ether (EtBE) | 0.010 | ND | ND |
| Hexachlorobutadiene | 0.005 | ND | ND |
| 2-Hexanone | 0.050 | ND | ND |
| Isopropylbenzene | 0.005 | ND | ND |
| p-Isopropyltoluene | 0.010 | ND | ND |
| Methylene chloride | 0.25 | ND | ND |
| 4-Methyl-2-pentanone | 0.050 | ND | ND |
| Methyl tert-Butyl Ether (MtBE) | 0.010 | ND | ND |
| Naphthalene | 0.010 | ND | **0.062** |
| n-Propylbenzene | 0.005 | ND | **0.005** |
| Styrene | 0.005 | ND | ND |
| 1,1,1,2-Tetrachloroethane | 0.005 | ND | ND |
| 1,1,2,2-Tetrachloroethane | 0.010 | ND | ND |
| Tetrachloroethene | 0.005 | ND | ND |
| Toluene | 0.005 | ND | ND |
| 1,2,3-Trichlorobenzene | 0.010 | ND | ND |
| 1,2,4-Trichlorobenzene | 0.010 | ND | ND |
| 1,1,1-Trichloroethane | 0.005 | ND | ND |
| 1,1,2-Trichloroethane | 0.015 | ND | ND |
| Trichloroethene | 0.005 | ND | ND |
| 1,2,3-Trichloropropane | 0.015 | ND | ND |
| Trichlorofluoromethane | 0.005 | ND | ND |
| Trichlorotrifluoroethane | 0.025 | ND | ND |
| 1,2,4-Trimethylbenzene | 0.005 | ND | ND |
| 1,3,5-Trimethylbenzene | 0.005 | ND | ND |
| Vinyl chloride | 0.010 | ND | ND |
| Xylenes, m-,p- | 0.010 | ND | ND |
| Xylene, o- | 0.005 | ND | ND |

**Surrogates in % Recovery** (Acceptance Limits: 70 - 130%)

| | Sample ID: | Blank | LS0801172 |
|---|---|---|---|
| Dibromofluoromethane | | 115 | 117 |
| Toluene-d8 | | 96 | 110 |
| Bromofluorobenzene | | 101 | 118 |

Centrum Analytical Laboratories, Inc.

# QC Sample Report - Volatile Organic Compounds by EPA 8260B

Matrix: Soil
Batch Number: MS28260S1180

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

Analytical Notes:

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| 1,1-Dichloroethene | 0.050 | **100** | 70 - 130 | **Pass** |
| Benzene | 0.050 | **96** | 70 - 130 | **Pass** |
| Trichloroethene | 0.050 | **88** | 70 - 130 | **Pass** |
| Toluene | 0.050 | **87** | 70 - 130 | **Pass** |
| Chlorobenzene | 0.050 | **85** | 70 - 130 | **Pass** |

## Batch Precision Results

MS/MSD Sample ID: 30723-2

Analytical Notes:

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 0.0513 | 0.0504 | **2%** | 25% | **Pass** |
| Benzene | 0.0499 | 0.0480 | **4%** | 25% | **Pass** |
| Trichloroethene | 0.0529 | 0.0501 | **5%** | 25% | **Pass** |
| Toluene | 0.0445 | 0.0437 | **2%** | 25% | **Pass** |
| Chlorobenzene | 0.0411 | 0.0406 | **1%** | 25% | **Pass** |

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

Centrum Analytical Laboratories, Inc.

# Semivolatile Organic Compounds by EPA 8270C

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 01/17/08 |
| Project: | Fields Lease North | Date Received: | 01/17/08 |
| Job No.: | 30718 | Date Extracted: | 01/24/08 |
| Matrix: | Soil | Date Analyzed: | 01/24/08 |
| Analyst: | FSM | Batch Number: | 8270S1203 |

| | Sample ID: | Blank | CS0801172 |
|---|---|---|---|
| **Compound** | **RL** | mg/Kg | mg/Kg |
| Acenaphthene | 0.033 | ND | ND |
| Acenaphthylene | 0.033 | ND | ND |
| Anthracene | 0.033 | ND | ND |
| Benzo[a]anthracene | 0.066 | ND | ND |
| Benzo[a]pyrene | 0.033 | ND | ND |
| Benzo[b]fluoranthene | 0.033 | ND | ND |
| Benzo[g,h,i]perylene | 0.099 | ND | ND |
| Benzo[k]fluoranthene | 0.033 | ND | ND |
| Benzyl alcohol | 0.13 | ND | ND |
| bis(2-Chloroethoxy)methane | 0.066 | ND | ND |
| bis(2-Chloroethyl)ether | 0.066 | ND | ND |
| bis(2-Chloroisopropyl)ether | 0.099 | ND | ND |
| bis(2-Ethylhexyl)phthalate | 0.33 | ND | ND |
| 4-Bromophenylphenylether | 0.033 | ND | ND |
| Butylbenzylphthalate | 0.033 | ND | ND |
| 4-Chloro-3-methylphenol | 0.16 | ND | ND |
| 4-Chloroaniline | 0.16 | ND | ND |
| 2-Chloronaphthalene | 0.033 | ND | ND |
| 2-Chlorophenol | 0.13 | ND | ND |
| 4-Chlorophenylphenylether | 0.033 | ND | ND |
| Chrysene | 0.033 | ND | ND |
| Di-n-butylphthalate | 0.33 | ND | ND |
| Di-n-octylphthalate | 0.033 | ND | ND |
| Dibenzo[a,h]anthracene | 0.099 | ND | ND |
| Dibenzofuran | 0.033 | ND | ND |
| 1,2-Dichlorobenzene | 0.033 | ND | ND |
| 1,3-Dichlorobenzene | 0.033 | ND | ND |
| 1,4-Dichlorobenzene | 0.033 | ND | ND |
| 3,3-Dichlorobenzidine | 0.13 | ND | ND |
| 2,4-Dichlorophenol | 0.16 | ND | ND |
| Diethylphthalate | 0.33 | ND | ND |
| 2,4-Dimethylphenol | 0.099 | ND | ND |
| Dimethylphthalate | 0.033 | ND | ND |
| 4,6-Dinitro-2-methylphenol | 0.33 | ND | ND |
| 2,4-Dinitrophenol | 1.6 | ND | ND |
| 2,4-Dinitrotoluene | 0.033 | ND | ND |

Centrum Analytical Laboratories, Inc.

# Semivolatile Organic Compounds by EPA 8270C

| | | | |
|---|---|---|---|
| Client: | Brycon, LLC | Date Sampled: | 01/17/08 |
| Project: | Fields Lease North | Date Received: | 01/17/08 |
| Job No.: | 30718 | Date Extracted: | 01/24/08 |
| Matrix: | Soil | Date Analyzed: | 01/24/08 |
| Analyst: | FSM | Batch Number: | 8270S1203 |

| | Sample ID: | Blank | CS0801172 |
|---|---|---|---|
| **Compound** | **RL** | mg/Kg | mg/Kg |
| 2,6-Dinitrotoluene | 0.099 | ND | ND |
| Fluoranthene | 0.033 | ND | ND |
| Fluorene | 0.033 | ND | **0.057** |
| Hexachlorobenzene | 0.033 | ND | ND |
| Hexachlorobutadiene | 0.033 | ND | ND |
| Hexachlorocyclopentadiene | 1.6 | ND | ND |
| Hexachloroethane | 0.033 | ND | ND |
| Indeno[1,2,3-c,d]pyrene | 0.13 | ND | ND |
| Isophorone | 0.033 | ND | ND |
| 2-Methylnaphthalene | 0.033 | ND | **0.29** |
| 2-Methylphenol | 0.16 | ND | ND |
| 4-Methylphenol | 0.16 | ND | ND |
| N-Nitrosodi-n-propylamine | 0.033 | ND | ND |
| N-Nitrosodiphenylamine | 0.033 | ND | ND |
| Naphthalene | 0.033 | ND | ND |
| 2-Nitroaniline | 0.099 | ND | ND |
| 3-Nitroaniline | 0.099 | ND | ND |
| 4-Nitroaniline | 0.33 | ND | ND |
| Nitrobenzene | 0.099 | ND | ND |
| 2-Nitrophenol | 0.13 | ND | ND |
| 4-Nitrophenol | 0.33 | ND | ND |
| Pentachlorophenol | 1.6 | ND | ND |
| Phenanthrene | 0.066 | ND | ND |
| Phenol | 0.13 | ND | ND |
| Pyrene | 0.033 | ND | ND |
| 1,2,4-Trichlorobenzene | 0.033 | ND | ND |
| 2,4,5-Trichlorophenol | 0.20 | ND | ND |
| 2,4,6-Trichlorophenol | 0.33 | ND | ND |

**Surrogates in % Recovery** (Acceptance Limits)

| Sample ID: | Blank | CS0801172 |
|---|---|---|
| 2-Fluorophenol (25 - 121%) | 107 | 114 |
| Phenol-D5 (24 - 113%) | 110 | 109 |
| Nitrobenzene-D5 (23 - 120%) | 97 | 97 |
| 2-Fluorobiphenyl (30 - 115%) | 92 | 91 |
| 2,4,6-Tribromophenol (19 - 122%) | 82 | 88 |
| p-Terphenyl-D14 (18 - 137%) | 103 | 125 |

Centrum Analytical Laboratories, Inc.

# QC Sample Report - Semivolatile Organic Compounds by EPA 8270C

Matrix: Soil
Batch Number: 8270S1203

## Batch Accuracy Results

Spike Sample ID: Laboratory Control Sample

Analytical Notes:

| Compound | Spike Concentration (mg/Kg) | Spike Sample % Recovery | % Recovery Acceptance Limits | Pass/Fail |
|---|---|---|---|---|
| Phenol | 2.66 | **96** | 5 - 112 | **Pass** |
| 2-Chlorophenol | 2.66 | **87** | 23 - 134 | **Pass** |
| 1,4-Dichlorobenzene | 1.33 | **86** | 20 - 124 | **Pass** |
| N-Nitrosodi-n-propylamine | 1.33 | **115** | 0 - 230 | **Pass** |
| 1,2,4-Trichlorobenzene | 1.33 | **93** | 44 - 142 | **Pass** |
| 4-Chloro-3-Methylphenol | 2.66 | **96** | 22 - 147 | **Pass** |
| Acenaphthene | 1.33 | **88** | 47 - 145 | **Pass** |
| 4-Nitrophenol | 2.66 | **87** | 0 - 132 | **Pass** |
| 2,4-Dinitrotoluene | 1.33 | **87** | 39 - 139 | **Pass** |
| Pentachlorophenol | 2.66 | **84** | 14 - 176 | **Pass** |
| Pyrene | 1.33 | **109** | 52 - 115 | **Pass** |

## Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

Analytical Notes:

| Compound | MS Sample Result (mg/Kg) | MSD Sample Result (mg/Kg) | Relative Percent Difference (RPD) | RPD Acceptance Limit | Pass/Fail |
|---|---|---|---|---|---|
| Phenol | 2.56 | 2.68 | **5%** | 35% | **Pass** |
| 2-Chlorophenol | 2.33 | 2.45 | **5%** | 50% | **Pass** |
| 1,4-Dichlorobenzene | 1.15 | 1.21 | **6%** | 27% | **Pass** |
| N-Nitrosodi-n-propylamine | 1.53 | 1.61 | **5%** | 38% | **Pass** |
| 1,2,4-Trichlorobenzene | 1.25 | 1.32 | **6%** | 28% | **Pass** |
| 4-Chloro-3-Methylphenol | 2.56 | 2.69 | **5%** | 33% | **Pass** |
| Acenaphthene | 1.17 | 1.24 | **6%** | 23% | **Pass** |
| 4-Nitrophenol | 2.32 | 2.50 | **7%** | 50% | **Pass** |
| 2,4-Dinitrotoluene | 1.16 | 1.22 | **5%** | 47% | **Pass** |
| Pentachlorophenol | 2.25 | 2.47 | **9%** | 47% | **Pass** |
| Pyrene | 1.46 | 1.21 | **19%** | 36% | **Pass** |

MS: Matrix Spike
MSD: Matrix Spike Duplicate
LCS: Laboratory Control Sample
LCSD: Laboratory Control Sample Duplicate

# Chain of Custody Record

**Centrum Analytical Laboratories, Inc.**

Centrum Job # 30718

Page 1 of 1

1401 Research Park Drive, Suite 100
Riverside, CA 92507
Voice: 951.779.0310 ● 800.798.9336
Fax: 951.779.0344

3299 Hill Street, Suite 305
Signal Hill, CA 90755
Voice: 562.498.7005
Fax: 562.498.8617

www.centrum-labs.com lab@centrum-labs.com

Project No:

Project Name: FIELDS LEASE NORTH

Project Manager: GPASPALOF

Phone: 949 475-7749 Fax: 949 475-7750

email:

Client Name: (Report and Billing) BRIGHT, LLC

Address: (Report and Billing) 4570 CAMPUS DR. NEWPORT BEACH, CA 92660

Note: Reports and invoice will be sent here

Please Circle Analyses Requested

| Centrum ID (Lab use only) | Sample ID (As it should appear on report) | Date sampled | Time sampled | Sample matrix | Site location | Containers: # and type | LUFT Diesel, or EPA 8015B DRO | LUFT Gas, or EPA 8015B GRO | Fuel ID (TVH, TEH); Carbon Chain (specify ranges) C6-C40 | 8021B: BTEX/MtBE Only | VOCs: 8260B, or 624 | VOCs: BTEX/Oxygenates Only | SVOCs: 8270C or 625 | 8081A/8082: Pesticides, or PCBs, or Pest/PCB | Metals: Title 22 (CAM) or RCRA, or PP | Metals: TCLP, STLC | pH, TDS, TSS | 418.1 (TRPH), or 413.2, or 1664 | Remarks/Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CS0801171 | 11/7 | 11:00 | Soil | | 40z-GL | | | X | | | | | | | | | | C6-C40 |
| 2 | CS0801172 | 11 | 11:05 | 11 | | 11 | | | X | | X | | X | X | X | | | | |
| 3 | CS0801173 | 11 | 11:08 | 11 | | 11 | | | X | | | | | | | | | | |
| 4 | CS0801174 | 11 | 11:10 | 11 | | 11 | | | X | | | | | | | | | | |

**Turn-Around Time** see note *

- ☐ 24 Hr. RUSH *
- ☐ 48 Hr. RUSH *
- ☒ Normal TAT
- ☐ Other _____

* Requires PRIOR approval, additional charges apply

Requested due date: _____

Remarks/Special Instructions

1) Relinquished by: (Sampler's Signature) — Date: 11/7 Time: 1:15

2) Received by: — Date: Time:

3) Relinquished by: — Date: Time:

4) Received by: — Date: Time:

5) Relinquished by: — Date: Time:

6) Received for Laboratory by: Ryan Date: 11/7/08 Time: 1:15 pm

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.

Laboratory Notes:

To be completed by Laboratory personnel:

Chilled? ☐ Yes Temp ___C ☒ From Field

Custody seals? ☐ Yes ☒ No

All sample containers intact? ☒ Yes ☐ No

☐ Courier ☐ UPS/Fed Ex ☒ Hand carried

**Sample Disposal**

- ☐ Client will pick up
- ☐ Return to client
- ☒ Lab disposal

Sample Locator Number: _____

**Report Formats:** Check all applicable

☐ Paper report ☐ PDF report (include email address)

☐ LARWQCB ☐ EDF (include global ID) ☐ EDD (GISKEY) ☐ EDD (Other) *

* with prior approval only

v7.2 9/05

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Client Copy

# APPENDIX B

## Sierra Analytical Labs, Inc.
## Soil Matrix Analytical Data
## February 18, 2020

26 February 2020

Susan Mearns
Mearns Consulting LLC
738 Ashland Avenue
Santa Monica, CA 90405

RE:950 E. 33rd & 3177 California Ave.

Work Order No.: 2002212

Attached are the results of the analyses for samples received by the laboratory on 02/18/20 16:10.

The samples were received by Sierra Analytical Labs, Inc. with a chain of custody record attached or completed at the submittal of the samples.

The analyses were performed according to the prescribed method as outlined by EPA, Standard Methods, and A.S.T.M.

The remaining portions of the samples will be disposed of within 30 days from the date of this report.
If you require any additional retaining time, please advise us.

Sincerely,

Richard K. Forsyth

Richard K. Forsyth

Laboratory Director

Sierra Analytical Labs, Inc. is certified by the California Department of Health Services (DOHS),
Environmental Laboratory Accredidation Program (ELAP) No. 2320.

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

**ANALYTICAL REPORT FOR SAMPLES**

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| SB1-5 | 2002212-01 | Soil | 02/18/20 08:17 | 02/18/20 16:10 |
| SB1-10 | 2002212-02 | Soil | 02/18/20 08:17 | 02/18/20 16:10 |
| SB2-5 | 2002212-03 | Soil | 02/18/20 09:17 | 02/18/20 16:10 |
| SB2-10 | 2002212-04 | Soil | 02/18/20 09:24 | 02/18/20 16:10 |
| SB3-5 | 2002212-05 | Soil | 02/18/20 10:14 | 02/18/20 16:10 |
| SB3-10 | 2002212-06 | Soil | 02/18/20 10:21 | 02/18/20 16:10 |
| SB4-5 | 2002212-07 | Soil | 02/18/20 11:09 | 02/18/20 16:10 |
| SB4-10 | 2002212-08 | Soil | 02/18/20 11:16 | 02/18/20 16:10 |
| SB5-5 | 2002212-09 | Soil | 02/18/20 11:42 | 02/18/20 16:10 |
| SB5-10 | 2002212-10 | Soil | 02/18/20 11:49 | 02/18/20 16:10 |
| SB6-5 | 2002212-11 | Soil | 02/18/20 13:01 | 02/18/20 16:10 |
| SB6-10 | 2002212-12 | Soil | 02/18/20 13:10 | 02/18/20 16:10 |
| SB7-5 | 2002212-13 | Soil | 02/18/20 13:41 | 02/18/20 16:10 |
| SB7-10 | 2002212-14 | Soil | 02/18/20 13:48 | 02/18/20 16:10 |
| SB8-5 | 2002212-15 | Soil | 02/18/20 14:22 | 02/18/20 16:10 |
| SB8-10 | 2002212-16 | Soil | 02/18/20 14:35 | 02/18/20 16:10 |
| SB9-5 | 2002212-17 | Soil | 02/18/20 15:08 | 02/18/20 16:10 |
| SB9-10 | 2002212-18 | Soil | 02/18/20 15:19 | 02/18/20 16:10 |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

26052 MERIT CIRCLE SUITE 105, LAGUNA HILLS, CALIFORNIA 92653
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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **66** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **6.6** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **15** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **12** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.05 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **10** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **2.6** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **22** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **26** | 4.0 | " | " | " | " | " | " | |
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **44** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **4.7** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **10** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| Copper | ND | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Nickel | ND | 6.8 | " | " | " | " | " | " | |
| Lead | ND | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **16** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **23** | 4.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **42** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **5.0** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **16** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **7.3** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **7.5** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **3.0** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **34** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **21** | 4.0 | " | " | " | " | " | " | |
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **35** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **4.1** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **7.6** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| Copper | ND | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.05 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **7.4** | 6.8 | " | " | " | " | " | " | |
| Lead | ND | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **13** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **19** | 4.0 | " | " | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **53** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **7.9** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **21** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **11** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **16** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **3.5** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **28** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **35** | 4.0 | " | " | " | " | " | " | |
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **30** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **3.8** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **6.9** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| Copper | ND | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.05 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Nickel | ND | 6.8 | " | " | " | " | " | " | |
| Lead | ND | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **11** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **17** | 4.0 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.1** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **110** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **7.0** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **14** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **27** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Mercury** | **0.20** | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **10** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **33** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **23** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **110** | 4.0 | " | " | " | " | " | " | |
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.0** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **33** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **5.5** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **14** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **8.8** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **9.2** | 6.8 | " | " | " | " | " | " | |
| Lead | ND | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **23** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **29** | 4.0 | " | " | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.2** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **130** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **8.3** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **17** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **15** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Mercury** | **0.06** | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **12** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **13** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **28** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **76** | 4.0 | " | " | " | " | " | " | |
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.1** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **63** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **7.6** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **19** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **12** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.05 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **15** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **3.5** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **26** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **41** | 4.0 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **110** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **5.0** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **11** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **7.8** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **7.1** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **6.9** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **18** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **30** | 4.0 | " | " | " | " | " | " | |
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.5** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **74** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **7.7** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **24** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **11** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **11** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **5.4** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **32** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **44** | 4.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **85** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **4.5** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **9.8** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **7.0** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Mercury** | **0.09** | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Nickel | ND | 6.8 | " | " | " | " | " | " | |
| **Lead** | **8.4** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **17** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **36** | 4.0 | " | " | " | " | " | " | |
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.1** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **240** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **6.5** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **27** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **11** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **10** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **3.7** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **25** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **35** | 4.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **86** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **5.8** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **12** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **8.4** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **8.2** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **6.8** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **20** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **32** | 4.0 | " | " | " | " | " | " | |
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.1** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **87** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **10** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **28** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **19** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.05 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **22** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **5.7** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **34** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **57** | 4.0 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| Silver | ND | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **130** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **6.3** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **14** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.38 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **9.7** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Mercury** | **0.09** | 0.05 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **9.1** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **7.1** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **24** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **38** | 4.0 | " | " | " | " | " | " | |
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| **Silver** | **1.0** | 1.0 | mg/kg | 1 | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Arsenic | ND | 7.7 | " | " | " | " | " | " | |
| **Barium** | **64** | 3.0 | " | " | " | " | " | " | |
| Beryllium | ND | 1.3 | " | " | " | " | " | " | |
| Cadmium | ND | 1.4 | " | " | " | " | " | " | |
| **Cobalt** | **7.0** | 1.5 | " | " | " | " | " | " | |
| **Chromium** | **25** | 3.1 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.41 | " | " | B0B1913 | 02/19/20 | 02/20/20 20:06 | EPA 7199A | |
| **Copper** | **11** | 7.0 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| Mercury | ND | 0.06 | " | " | B0B1911 | 02/19/20 | 02/19/20 20:48 | EPA 7471A | |
| Molybdenum | ND | 4.2 | " | " | B0B1912 | 02/19/20 | 02/21/20 12:39 | EPA 6010B | |
| **Nickel** | **14** | 6.8 | " | " | " | " | " | " | |
| **Lead** | **4.6** | 2.6 | " | " | " | " | " | " | |
| Antimony | ND | 5.0 | " | " | " | " | " | " | |
| Selenium | ND | 7.6 | " | " | " | " | " | " | |
| Thallium | ND | 2.5 | " | " | " | " | " | " | |
| **Vanadium** | **38** | 3.0 | " | " | " | " | " | " | |
| **Zinc** | **39** | 4.0 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Volatile Petroleum Hydrocarbons (TVPH) by GC/FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.045 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *102 %* | *35-130* | | " | " | " | " | |
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *92.5 %* | *35-130* | | " | " | " | " | |
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.041 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.5 %* | *35-130* | | " | " | " | " | |
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *99.5 %* | *35-130* | | " | " | " | " | |
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.042 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *90.5 %* | *35-130* | | " | " | " | " | |
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *65.2 %* | *35-130* | | " | " | " | " | |
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.043 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *70.8 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Volatile Petroleum Hydrocarbons (TVPH) by GC/FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *98.5 %* | *35-130* | | " | " | " | " | |
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.035 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *36.8 %* | *35-130* | | " | " | " | " | |
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *39.5 %* | *35-130* | | " | " | " | " | |
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.043 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *98.8 %* | *35-130* | | " | " | " | " | |
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.041 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *95.8 %* | *35-130* | | " | " | " | " | |
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.042 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.7 %* | *35-130* | | " | " | " | " | |
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *66.7 %* | *35-130* | | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Volatile Petroleum Hydrocarbons (TVPH) by GC/FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.038 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *92.2 %* | *35-130* | | " | " | " | " | |
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.7 %* | *35-130* | | " | " | " | " | |
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.043 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *86.5 %* | *35-130* | | " | " | " | " | |
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | 1 | B0B2427 | 02/24/20 | 02/25/20 09:16 | EPA 8015B | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.4 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons (TPH) by GC/FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *128 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *128 %* | *60-175* | | " | " | " | " | |
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *140 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *140 %* | *60-175* | | " | " | " | " | |
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *98.4 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *98.4 %* | *60-175* | | " | " | " | " | |
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *70.0 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *70.0 %* | *60-175* | | " | " | " | " | |
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *158 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *158 %* | *60-175* | | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons (TPH) by GC/FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *101 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *101 %* | *60-175* | | " | " | " | " | |
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *87.6 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *87.6 %* | *60-175* | | " | " | " | " | |
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *74.4 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *74.4 %* | *60-175* | | " | " | " | " | |
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| **Diesel Range Organics (C10-C24)** | **48** | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *138 %* | *60-175* | | " | " | " | " | |
| **Oil Range Organics (C22-C36)** | **45** | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *138 %* | *60-175* | | " | " | " | " | |
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *97.6 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *97.6 %* | *60-175* | | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons (TPH) by GC/FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *63.2 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *63.2 %* | *60-175* | | " | " | " | " | |
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *72.8 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *72.8 %* | *60-175* | | " | " | " | " | |
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| **Diesel Range Organics (C10-C24)** | **69** | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *68.4 %* | *60-175* | | " | " | " | " | |
| **Oil Range Organics (C22-C36)** | **33** | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *68.4 %* | *60-175* | | " | " | " | " | |
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *70.4 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *70.4 %* | *60-175* | | " | " | " | " | |
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *73.6 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *73.6 %* | *60-175* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons (TPH) by GC/FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *60.0 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *60.0 %* | *60-175* | | " | " | " | " | |
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *75.2 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *75.2 %* | *60-175* | | " | " | " | " | |
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| *Surrogate: o-Terphenyl* | | *64.8 %* | *60-175* | | " | " | " | " | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *64.8 %* | *60-175* | | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *128 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0090 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0090 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0090 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0090 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0090 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0090 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0090 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0090 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.045 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *102 %* | *35-130* | | " | " | " | " | |

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *140 %* | | *60-175* | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *92.5 %* | | *35-130* | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *98.4 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0083 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0083 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0083 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0083 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0083 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0083 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0083 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0083 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.041 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.5 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *70.0 %* | | *60-175* | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *99.5 %* | | *35-130* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *158 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0084 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0084 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0084 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0084 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0084 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0084 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0084 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0084 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.042 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *90.5 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
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| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *101 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *65.2 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
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| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *87.6 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0085 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0085 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0085 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0085 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0085 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0085 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0085 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0085 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.043 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *70.8 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
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| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *74.4 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *98.5 %* | *35-130* | | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| **C16 <= HC < C18** | **8.0** | 1.0 | " | " | " | " | " | " | |
| **C18 <= HC < C20** | **9.9** | 1.0 | " | " | " | " | " | " | |
| **C20 <= HC < C24** | **19** | 1.0 | " | " | " | " | " | " | |
| **C24 <= HC < C28** | **15** | 1.0 | " | " | " | " | " | " | |
| **C28 <= HC < C32** | **8.3** | 1.0 | " | " | " | " | " | " | |
| **HC >= C32** | **3.9** | 1.0 | " | " | " | " | " | " | |
| **Total Petroleum Hydrocarbons (C7-C36)** | **64** | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *138 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0071 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0071 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0071 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0071 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0071 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0071 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0071 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0071 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.035 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *36.8 %* | *35-130* | | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *97.6 %* | | *60-175* | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *39.5 %* | | *35-130* | " | " | " | " | |

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|---|---|---|---|
| Mearns Consulting LLC | Project: | 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: | [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: | Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *63.2 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0085 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0085 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0085 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0085 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0085 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0085 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0085 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0085 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.043 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *98.8 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *72.8 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0083 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0083 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0083 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0083 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0083 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0083 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0083 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0083 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.041 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *95.8 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| **C14 <= HC < C16** | **33** | 1.0 | " | " | " | " | " | " | |
| **C16 <= HC < C18** | **8.2** | 1.0 | " | " | " | " | " | " | |
| **C18 <= HC < C20** | **9.5** | 1.0 | " | " | " | " | " | " | |
| **C20 <= HC < C24** | **16** | 1.0 | " | " | " | " | " | " | |
| **C24 <= HC < C28** | **12** | 1.0 | " | " | " | " | " | " | |
| **C28 <= HC < C32** | **5.8** | 1.0 | " | " | " | " | " | " | |
| **HC >= C32** | **2.3** | 1.0 | " | " | " | " | " | " | |
| **Total Petroleum Hydrocarbons (C7-C36)** | **87** | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *68.4 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0085 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0085 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0085 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0085 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0085 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0085 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0085 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0085 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.042 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.7 %* | *35-130* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *70.4 %* | | *60-175* | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *96.9 %* | | *35-130* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *73.6 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0076 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0076 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0076 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0076 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0076 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0076 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0076 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0076 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.038 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *92.2 %* | *35-130* | | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *60.0 %* | | *60-175* | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.7 %* | | *35-130* | " | " | " | " | |

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *75.2 %* | *60-175* | | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.0086 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.0086 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.0086 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.0086 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.0086 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.0086 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.0086 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.0086 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.043 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *86.5 %* | *35-130* | | " | " | " | " | |

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E-Mail: sierralabs @ sierralabs.net

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | 1 | B0B2440 | 02/24/20 | 02/25/20 13:31 | EPA 8015B | |
| C8 <= HC < C9 | ND | 1.0 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 1.0 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 1.0 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 1.0 | " | " | " | " | " | " | |
| C12 <= HC < C14 | ND | 1.0 | " | " | " | " | " | " | |
| C14 <= HC < C16 | ND | 1.0 | " | " | " | " | " | " | |
| C16 <= HC < C18 | ND | 1.0 | " | " | " | " | " | " | |
| C18 <= HC < C20 | ND | 1.0 | " | " | " | " | " | " | |
| C20 <= HC < C24 | ND | 1.0 | " | " | " | " | " | " | |
| C24 <= HC < C28 | ND | 1.0 | " | " | " | " | " | " | |
| C28 <= HC < C32 | ND | 1.0 | " | " | " | " | " | " | |
| HC >= C32 | ND | 1.0 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: o-Terphenyl* | | *64.8 %* | | *60-175* | " | " | " | " | |
| C5 <= HC < C6 | ND | 0.010 | " | " | B0B2427 | " | 02/25/20 09:16 | " | |
| C6 <= HC < C7 | ND | 0.010 | " | " | " | " | " | " | |
| C7 <= HC < C8 | ND | 0.010 | " | " | " | " | " | " | |
| C8 <= HC < C9 | ND | 0.010 | " | " | " | " | " | " | |
| C9 <= HC < C10 | ND | 0.010 | " | " | " | " | " | " | |
| C10 <= HC < C11 | ND | 0.010 | " | " | " | " | " | " | |
| C11 <= HC < C12 | ND | 0.010 | " | " | " | " | " | " | |
| HC >= C12 | ND | 0.010 | " | " | " | " | " | " | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | " | " | " | " | " | |
| *Surrogate: a,a,a-Trifluorotoluene* | | *94.4 %* | | *35-130* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.2 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.2 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.2 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.2 | " | " | " | " | " | " | |
| Bromoform | ND | 4.2 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.2 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.2 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.2 | " | " | " | " | " | " | |
| Chloroform | ND | 4.2 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.2 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.2 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.2 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 4.2 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.2 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.2 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 4.2 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.2 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.2 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.2 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.2 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Naphthalene | ND | 4.2 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| n-Propylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Styrene | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.2 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.2 | " | " | " | " | " | " | |
| Toluene | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.2 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 4.2 | " | " | " | " | " | " | |
| o-Xylene | ND | 4.2 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *117 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *114 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *117 %* | | *74-121* | " | " | " | " | |
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.6 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.6 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.6 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.6 | " | " | " | " | " | " | |
| Bromoform | ND | 5.6 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.6 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.6 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.6 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.6 | " | " | " | " | " | " | |
| Chloroform | ND | 5.6 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.6 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.6 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.6 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.6 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 5.6 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| 1,2-Dibromoethane (EDB) | ND | 5.6 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.6 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.6 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.6 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.6 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.6 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.6 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.6 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.6 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.6 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.6 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.6 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.6 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.6 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.6 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.6 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 5.6 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.6 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.6 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.6 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.6 | " | " | " | " | " | " | |
| Naphthalene | ND | 5.6 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| Styrene | ND | 5.6 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.6 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.6 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.6 | " | " | " | " | " | " | |
| Toluene | ND | 5.6 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.6 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.6 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.6 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.6 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.6 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.6 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.6 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.6 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.6 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| m,p-Xylene | ND | 5.6 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| o-Xylene | ND | 5.6 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *104 %* | | *80-120* | | " | " | " | |
| *Surrogate: Toluene-d8* | | *102 %* | | *81-117* | | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *116 %* | | *74-121* | | " | " | " | |
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.3 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.3 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.3 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.3 | " | " | " | " | " | " | |
| Bromoform | ND | 4.3 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.3 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.3 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.3 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.3 | " | " | " | " | " | " | |
| Chloroform | ND | 4.3 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.3 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.3 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.3 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 4.3 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 4.3 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.3 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.3 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.3 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.3 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.3 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.3 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.3 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.3 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.3 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.3 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.3 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 4.3 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Ethylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.3 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.3 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.3 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.3 | " | " | " | " | " | " | |
| Naphthalene | ND | 4.3 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| Styrene | ND | 4.3 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.3 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.3 | " | " | " | " | " | " | |
| Toluene | ND | 4.3 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.3 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.3 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.3 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.3 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.3 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.3 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.3 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.3 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 4.3 | " | " | " | " | " | " | |
| o-Xylene | ND | 4.3 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *119 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *103 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *112 %* | | *74-121* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromoform | ND | 5.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Chloroform | ND | 5.0 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| Naphthalene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| n-Propylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Styrene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Toluene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.0 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| o-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *109 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *99.6 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *111 %* | | *74-121* | " | " | " | " | |
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromoform | ND | 4.1 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.1 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.1 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Chloroform | ND | 4.1 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.1 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.1 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| 1,2-Dibromoethane (EDB) | ND | 4.1 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.1 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.1 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.1 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.1 | " | " | " | " | " | " | |
| Naphthalene | ND | 4.1 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Styrene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Toluene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.1 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| m,p-Xylene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| o-Xylene | ND | 4.1 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *116 %* | *80-120* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *108 %* | *81-117* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *98.3 %* | *74-121* | | " | " | " | " | |
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromoform | ND | 5.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Chloroform | ND | 5.0 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Ethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.0 | " | " | " | " | " | " | |
| Naphthalene | ND | 5.0 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Styrene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Toluene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.0 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| o-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *116 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *103 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *108 %* | | *74-121* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.2 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.2 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.2 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.2 | " | " | " | " | " | " | |
| Bromoform | ND | 4.2 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.2 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.2 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.2 | " | " | " | " | " | " | |
| Chloroform | ND | 4.2 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.2 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.2 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.2 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 4.2 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.2 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.2 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 4.2 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.2 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.2 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.2 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.2 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| Naphthalene | ND | 4.2 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| n-Propylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Styrene | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.2 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.2 | " | " | " | " | " | " | |
| Toluene | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.2 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.2 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.2 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.2 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.2 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 4.2 | " | " | " | " | " | " | |
| o-Xylene | ND | 4.2 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *117 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *114 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *118 %* | | *74-121* | " | " | " | " | |
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromoform | ND | 5.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Chloroform | ND | 5.0 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.0 | " | " | " | " | " | " | |
| Naphthalene | ND | 5.0 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Styrene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Toluene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| m,p-Xylene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| o-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *99.6 %* | | *80-120* | | " | " | " | |
| *Surrogate: Toluene-d8* | | *115 %* | | *81-117* | | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *109 %* | | *74-121* | | " | " | " | |
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 3.9 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 3.9 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 3.9 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 3.9 | " | " | " | " | " | " | |
| Bromoform | ND | 3.9 | " | " | " | " | " | " | |
| Bromomethane | ND | 3.9 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 3.9 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 3.9 | " | " | " | " | " | " | |
| Chloroethane | ND | 3.9 | " | " | " | " | " | " | |
| Chloroform | ND | 3.9 | " | " | " | " | " | " | |
| Chloromethane | ND | 3.9 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 3.9 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 3.9 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 3.9 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 3.9 | " | " | " | " | " | " | |
| Dibromomethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 3.9 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 3.9 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 3.9 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 3.9 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 3.9 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 3.9 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 3.9 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 3.9 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 3.9 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 3.9 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 3.9 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 3.9 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Ethylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 3.9 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 3.9 | " | " | " | " | " | " | |
| Methylene chloride | ND | 3.9 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 3.9 | " | " | " | " | " | " | |
| Naphthalene | ND | 3.9 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| Styrene | ND | 3.9 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 3.9 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 3.9 | " | " | " | " | " | " | |
| Toluene | ND | 3.9 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 3.9 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 3.9 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 3.9 | " | " | " | " | " | " | |
| Trichloroethene | ND | 3.9 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 3.9 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 3.9 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 3.9 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 3.9 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 3.9 | " | " | " | " | " | " | |
| o-Xylene | ND | 3.9 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *96.1 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *108 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *93.1 %* | | *74-121* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromoform | ND | 5.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Chloroform | ND | 5.0 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.0 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| Naphthalene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| n-Propylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Styrene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Toluene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.0 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| o-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *107 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *86.6 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *98.5 %* | | *74-121* | " | " | " | " | |
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromoform | ND | 4.1 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.1 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.1 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Chloroform | ND | 4.1 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.1 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.1 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| 1,2-Dibromoethane (EDB) | ND | 4.1 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.1 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.1 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.1 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.1 | " | " | " | " | " | " | |
| Naphthalene | ND | 4.1 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Styrene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Toluene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.1 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| m,p-Xylene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| o-Xylene | ND | 4.1 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *113 %* | *80-120* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *117 %* | *81-117* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *110 %* | *74-121* | | " | " | " | " | |
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.4 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.4 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.4 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.4 | " | " | " | " | " | " | |
| Bromoform | ND | 4.4 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.4 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.4 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.4 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.4 | " | " | " | " | " | " | |
| Chloroform | ND | 4.4 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.4 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.4 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.4 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 4.4 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 4.4 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.4 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.4 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.4 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.4 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.4 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.4 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.4 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.4 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.4 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.4 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.4 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 4.4 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Ethylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.4 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.4 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.4 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.4 | " | " | " | " | " | " | |
| Naphthalene | ND | 4.4 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| Styrene | ND | 4.4 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.4 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.4 | " | " | " | " | " | " | |
| Toluene | ND | 4.4 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.4 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.4 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.4 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.4 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.4 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.4 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.4 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.4 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 4.4 | " | " | " | " | " | " | |
| o-Xylene | ND | 4.4 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *112 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *108 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *119 %* | | *74-121* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromoform | ND | 5.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Chloroform | ND | 5.0 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| Naphthalene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| n-Propylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Styrene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Toluene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.0 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| o-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *108 %* | *80-120* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *117 %* | *81-117* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *102 %* | *74-121* | | " | " | " | " | |
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromoform | ND | 5.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Chloroform | ND | 5.0 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.0 | " | " | " | " | " | " | |
| Naphthalene | ND | 5.0 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Styrene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Toluene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| m,p-Xylene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| o-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *112 %* | | *80-120* | | " | " | " | |
| *Surrogate: Toluene-d8* | | *105 %* | | *81-117* | | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *88.2 %* | | *74-121* | | " | " | " | |
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromoform | ND | 4.1 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.1 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.1 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Chloroform | ND | 4.1 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.1 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 4.1 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Ethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.1 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.1 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.1 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.1 | " | " | " | " | " | " | |
| Naphthalene | ND | 4.1 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Styrene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Toluene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.1 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 4.1 | " | " | " | " | " | " | |
| o-Xylene | ND | 4.1 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *116 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *106 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *107 %* | | *74-121* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 5.0 | " | " | " | " | " | " | |
| Bromoform | ND | 5.0 | " | " | " | " | " | " | |
| Bromomethane | ND | 5.0 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 5.0 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Chloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Chloroform | ND | 5.0 | " | " | " | " | " | " | |
| Chloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 5.0 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | " | " | " | " | " | |
| Dibromomethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 5.0 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 5.0 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 5.0 | " | " | " | " | " | " | |
| Methylene chloride | ND | 5.0 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 5.0 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| Naphthalene | ND | 5.0 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| n-Propylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Styrene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Toluene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | " | " | " | " | " | |
| Trichloroethene | ND | 5.0 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.0 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| o-Xylene | ND | 5.0 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *110 %* | *80-120* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *105 %* | *81-117* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *114 %* | *74-121* | | " | " | " | " | |
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.5 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.5 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.5 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.5 | " | " | " | " | " | " | |
| Bromoform | ND | 4.5 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.5 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.5 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.5 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.5 | " | " | " | " | " | " | |
| Chloroform | ND | 4.5 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.5 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.5 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.5 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.5 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 4.5 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| 1,2-Dibromoethane (EDB) | ND | 4.5 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.5 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.5 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.5 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.5 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.5 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.5 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.5 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.5 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.5 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.5 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.5 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.5 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.5 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.5 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.5 | " | " | " | " | " | " | |
| trans-1,3-Dichloropropene | ND | 4.5 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.5 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.5 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.5 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.5 | " | " | " | " | " | " | |
| Naphthalene | ND | 4.5 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| Styrene | ND | 4.5 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.5 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.5 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.5 | " | " | " | " | " | " | |
| Toluene | ND | 4.5 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.5 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.5 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.5 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.5 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.5 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.5 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.5 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.5 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.5 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| m,p-Xylene | ND | 4.5 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| o-Xylene | ND | 4.5 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *106 %* | *80-120* | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *105 %* | *81-117* | | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *101 %* | *74-121* | | " | " | " | " | |
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| Benzene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Bromobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Bromochloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromodichloromethane | ND | 4.1 | " | " | " | " | " | " | |
| Bromoform | ND | 4.1 | " | " | " | " | " | " | |
| Bromomethane | ND | 4.1 | " | " | " | " | " | " | |
| n-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| sec-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Carbon tetrachloride | ND | 4.1 | " | " | " | " | " | " | |
| Chlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Chloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Chloroform | ND | 4.1 | " | " | " | " | " | " | |
| Chloromethane | ND | 4.1 | " | " | " | " | " | " | |
| 2-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| 4-Chlorotoluene | ND | 4.1 | " | " | " | " | " | " | |
| Dibromochloromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dibromoethane (EDB) | ND | 4.1 | " | " | " | " | " | " | |
| Dibromomethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| Dichlorodifluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| trans-1,2-Dichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,3-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 2,2-Dichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |
| cis-1,3-Dichloropropene | ND | 4.1 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 4.1 | µg/kg | 1 | B0B2001 | 02/20/20 | 02/21/20 08:22 | EPA 8260B | |
| Ethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 4.1 | " | " | " | " | " | " | |
| Isopropylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 4.1 | " | " | " | " | " | " | |
| Methylene chloride | ND | 4.1 | " | " | " | " | " | " | |
| Methyl tert-butyl ether | ND | 4.1 | " | " | " | " | " | " | |
| Naphthalene | ND | 4.1 | " | " | " | " | " | " | |
| n-Propylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Styrene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Tetrachloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Toluene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,1-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,1,2-Trichloroethane | ND | 4.1 | " | " | " | " | " | " | |
| Trichloroethene | ND | 4.1 | " | " | " | " | " | " | |
| Trichlorofluoromethane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,3-Trichloropropane | ND | 4.1 | " | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | ND | 4.1 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 4.1 | " | " | " | " | " | " | |
| m,p-Xylene | ND | 4.1 | " | " | " | " | " | " | |
| o-Xylene | ND | 4.1 | " | " | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *101 %* | | *80-120* | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *98.5 %* | | *81-117* | " | " | " | " | |
| *Surrogate: 4-Bromofluorobenzene* | | *119 %* | | *74-121* | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-5 (2002212-01) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *94.8 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *82.6 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *106 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *74.2 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *74.6 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *80.8 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB1-10 (2002212-02) Soil Sampled: 02/18/20 08:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *111 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *104 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *81.7 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *92.2 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *91.0 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *94.6 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-5 (2002212-03) Soil Sampled: 02/18/20 09:17 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *112 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *101 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *88.6 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *91.6 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *97.8 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *90.7 %* | *18-137* | | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB2-10 (2002212-04) Soil Sampled: 02/18/20 09:24 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *113 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *102 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *85.9 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *94.0 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *96.8 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *84.1 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-5 (2002212-05) Soil Sampled: 02/18/20 10:14 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *98.8 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *52.0 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *93.4 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *101 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *111 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *73.3 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB3-10 (2002212-06) Soil Sampled: 02/18/20 10:21 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *118 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *107 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *91.6 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *97.0 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *96.8 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *90.4 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-5 (2002212-07) Soil Sampled: 02/18/20 11:09 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *120 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *107 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *88.9 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *94.3 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *110 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *83.8 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB4-10 (2002212-08) Soil Sampled: 02/18/20 11:16 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *117 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *103 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *87.1 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *95.8 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *110 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *88.3 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-5 (2002212-09) Soil Sampled: 02/18/20 11:42 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *61.6 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *99.4 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *97.0 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *101 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *64.6 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *68.2 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB5-10 (2002212-10) Soil Sampled: 02/18/20 11:49 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *119 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *111 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *85.3 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *97.3 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *120 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *95.5 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-5 (2002212-11) Soil Sampled: 02/18/20 13:01 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *115 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *106 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *88.0 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *91.3 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *54.4 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *76.6 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB6-10 (2002212-12) Soil Sampled: 02/18/20 13:10 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *58.6 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *50.8 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *97.0 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *98.8 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *80.4 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *62.2 %* | *18-137* | | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| **Benzo (b) fluoranthene** | **0.67** | 0.33 | " | " | " | " | " | " | |
| **Benzo (k) fluoranthene** | **0.65** | 0.33 | " | " | " | " | " | " | |
| **Benzo (a) pyrene** | **0.53** | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| **Chrysene** | **0.70** | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| **Fluoranthene** | **1.1** | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-5 (2002212-13) Soil Sampled: 02/18/20 13:41 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| **Phenanthrene** | **0.63** | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| **Pyrene** | **2.5** | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *57.6 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *50.6 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *96.4 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *99.1 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *71.8 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *71.8 %* | *18-137* | | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB7-10 (2002212-14) Soil Sampled: 02/18/20 13:48 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *110 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *105 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *78.1 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *93.4 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *93.0 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *50.2 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-5 (2002212-15) Soil Sampled: 02/18/20 14:22 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *115 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *48.8 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *84.4 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *90.1 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *81.2 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *69.7 %* | *18-137* | | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB8-10 (2002212-16) Soil Sampled: 02/18/20 14:35 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *120 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *47.8 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *96.4 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *98.8 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *79.2 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *117 %* | *18-137* | | " | " | " | " | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-5 (2002212-17) Soil Sampled: 02/18/20 15:08 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *111 %* | *25-121* | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *102 %* | *24-113* | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *82.3 %* | *23-120* | | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *88.0 %* | *30-115* | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *90.0 %* | *19-122* | | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *90.1 %* | *18-137* | | " | " | " | " | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Acenaphthylene | ND | 0.33 | " | " | " | " | " | " | |
| Anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzidine | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (b) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (k) fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | " | " | " | " | " | |
| Chrysene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 0.33 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 0.33 | " | " | " | " | " | " | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | " | " | " | " | " | |
| Fluoranthene | ND | 0.33 | " | " | " | " | " | " | |
| Fluorene | ND | 0.33 | " | " | " | " | " | " | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **SB9-10 (2002212-18) Soil Sampled: 02/18/20 15:19 Received: 02/18/20 16:10** | | | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | mg/kg | 1 | B0B2102 | 02/21/20 | 02/24/20 08:32 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 0.33 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | " | " | " | " | " | |
| Isophorone | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 0.33 | " | " | " | " | " | " | |
| Naphthalene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 0.33 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 0.33 | " | " | " | " | " | " | |
| Diphenylamine | ND | 0.33 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| Phenanthrene | ND | 0.33 | " | " | " | " | " | " | |
| Phenol | ND | 0.33 | " | " | " | " | " | " | |
| Pyrene | ND | 0.33 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | " | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *92.2 %* | | *25-121* | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *94.0 %* | | *24-113* | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *111 %* | | *23-120* | " | " | " | " | |
| *Surrogate: 2-Fluorobiphenyl* | | *82.3 %* | | *30-115* | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *92.6 %* | | *19-122* | " | " | " | " | |
| *Surrogate: Terphenyl-d14* | | *84.1 %* | | *18-137* | " | " | " | " | |

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B1911 - EPA 7471A** | | | | | | | | | | |
| **Blank (B0B1911-BLK1)** | | | | Prepared & Analyzed: 02/19/20 | | | | | | |
| Mercury | ND | 0.06 | mg/kg | | | | | | | |
| **LCS (B0B1911-BS1)** | | | | Prepared & Analyzed: 02/19/20 | | | | | | |
| Mercury | 0.17 | 0.06 | mg/kg | 0.167 | | 102 | 70-130 | | | |
| **Matrix Spike (B0B1911-MS1)** | | **Source: 2002212-01** | | Prepared & Analyzed: 02/19/20 | | | | | | |
| Mercury | 0.19 | 0.06 | mg/kg | 0.165 | 0.009 | 110 | 70-130 | | | |
| **Matrix Spike Dup (B0B1911-MSD1)** | | **Source: 2002212-01** | | Prepared & Analyzed: 02/19/20 | | | | | | |
| Mercury | 0.20 | 0.06 | mg/kg | 0.166 | 0.009 | 115 | 70-130 | 5.13 | 30 | |
| **Batch B0B1912 - EPA 3050B** | | | | | | | | | | |
| **Blank (B0B1912-BLK1)** | | | | Prepared: 02/19/20 Analyzed: 02/21/20 | | | | | | |
| Antimony | ND | 5.0 | mg/kg | | | | | | | |
| Arsenic | ND | 7.7 | " | | | | | | | |
| Barium | ND | 3.0 | " | | | | | | | |
| Beryllium | ND | 1.3 | " | | | | | | | |
| Cadmium | ND | 1.4 | " | | | | | | | |
| Chromium | ND | 3.1 | " | | | | | | | |
| Cobalt | ND | 1.5 | " | | | | | | | |
| Copper | ND | 7.0 | " | | | | | | | |
| Lead | ND | 2.6 | " | | | | | | | |
| Molybdenum | ND | 4.2 | " | | | | | | | |
| Nickel | ND | 6.8 | " | | | | | | | |
| Selenium | ND | 7.6 | " | | | | | | | |
| Silver | ND | 1.0 | " | | | | | | | |
| Thallium | ND | 2.5 | " | | | | | | | |
| Vanadium | ND | 3.0 | " | | | | | | | |
| Zinc | ND | 4.0 | " | | | | | | | |

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|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B1912 - EPA 3050B** | | | | | | | | | | |
| **LCS (B0B1912-BS1)** | | | | Prepared: 02/19/20 Analyzed: 02/21/20 | | | | | | |
| Antimony | 109 | 5.0 | mg/kg | 100 | | 109 | 75-125 | | | |
| Arsenic | 97.3 | 7.7 | " | 100 | | 97.3 | 78-122 | | | |
| Barium | 102 | 3.0 | " | 100 | | 102 | 80-120 | | | |
| Beryllium | 106 | 1.3 | " | 100 | | 106 | 80-120 | | | |
| Cadmium | 102 | 1.4 | " | 100 | | 102 | 80-120 | | | |
| Chromium | 104 | 3.1 | " | 100 | | 104 | 80-120 | | | |
| Cobalt | 104 | 1.5 | " | 100 | | 104 | 80-120 | | | |
| Copper | 105 | 7.0 | " | 100 | | 105 | 78-122 | | | |
| Lead | 99.4 | 2.6 | " | 100 | | 99.4 | 80-120 | | | |
| Molybdenum | 97.3 | 4.2 | " | 100 | | 97.3 | 80-120 | | | |
| Nickel | 99.4 | 6.8 | " | 100 | | 99.4 | 80-120 | | | |
| Selenium | 101 | 7.6 | " | 100 | | 101 | 76-124 | | | |
| Silver | 92.1 | 1.0 | " | 100 | | 92.1 | 60-140 | | | |
| Thallium | 99.6 | 2.5 | " | 100 | | 99.6 | 80-120 | | | |
| Vanadium | 102 | 3.0 | " | 100 | | 102 | 80-120 | | | |
| Zinc | 100 | 4.0 | " | 100 | | 100 | 80-120 | | | |
| **LCS Dup (B0B1912-BSD1)** | | | | Prepared: 02/19/20 Analyzed: 02/21/20 | | | | | | |
| Antimony | 110 | 5.0 | mg/kg | 100 | | 110 | 75-125 | 0.913 | 20 | |
| Arsenic | 98.4 | 7.7 | " | 100 | | 98.4 | 78-122 | 1.12 | 20 | |
| Barium | 102 | 3.0 | " | 100 | | 102 | 80-120 | 0.00 | 20 | |
| Beryllium | 106 | 1.3 | " | 100 | | 106 | 80-120 | 0.00 | 20 | |
| Cadmium | 101 | 1.4 | " | 100 | | 101 | 80-120 | 0.985 | 20 | |
| Chromium | 107 | 3.1 | " | 100 | | 107 | 80-120 | 2.84 | 20 | |
| Cobalt | 104 | 1.5 | " | 100 | | 104 | 80-120 | 0.00 | 20 | |
| Copper | 104 | 7.0 | " | 100 | | 104 | 78-122 | 0.957 | 20 | |
| Lead | 100 | 2.6 | " | 100 | | 100 | 80-120 | 0.602 | 20 | |
| Molybdenum | 105 | 4.2 | " | 100 | | 105 | 80-120 | 7.61 | 20 | |
| Nickel | 100 | 6.8 | " | 100 | | 100 | 80-120 | 0.602 | 20 | |
| Selenium | 101 | 7.6 | " | 100 | | 101 | 76-124 | 0.00 | 20 | |
| Silver | 87.2 | 1.0 | " | 100 | | 87.2 | 60-140 | 5.47 | 40 | |
| Thallium | 101 | 2.5 | " | 100 | | 101 | 80-120 | 1.40 | 20 | |
| Vanadium | 102 | 3.0 | " | 100 | | 102 | 80-120 | 0.00 | 20 | |
| Zinc | 99.4 | 4.0 | " | 100 | | 99.4 | 80-120 | 0.602 | 20 | |

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B1912 - EPA 3050B** | | | | | | | | | | |
| **Matrix Spike (B0B1912-MS1)** | **Source: 2002212-01** | | | Prepared: 02/19/20 | Analyzed: 02/21/20 | | | | | |
| Antimony | 86.2 | 5.0 | mg/kg | 94.7 | 1.1 | 89.9 | 60-140 | | | |
| Arsenic | 90.3 | 7.7 | " | 94.7 | ND | 95.4 | 70-130 | | | |
| Barium | 163 | 3.0 | " | 94.7 | 66 | 102 | 70-130 | | | |
| Beryllium | 92.5 | 1.3 | " | 94.7 | 0.15 | 97.5 | 70-130 | | | |
| Cadmium | 91.3 | 1.4 | " | 94.7 | 0.17 | 96.2 | 70-130 | | | |
| Chromium | 111 | 3.1 | " | 94.7 | 15 | 101 | 70-130 | | | |
| Cobalt | 101 | 1.5 | " | 94.7 | 6.6 | 99.7 | 70-130 | | | |
| Copper | 113 | 7.0 | " | 94.7 | 12 | 107 | 70-130 | | | |
| Lead | 93.3 | 2.6 | " | 94.7 | 2.6 | 95.8 | 70-130 | | | |
| Molybdenum | 88.0 | 4.2 | " | 94.7 | 0.68 | 92.2 | 70-130 | | | |
| Nickel | 106 | 6.8 | " | 94.7 | 10 | 101 | 70-130 | | | |
| Selenium | 91.3 | 7.6 | " | 94.7 | ND | 96.4 | 70-130 | | | |
| Silver | 92.0 | 1.0 | " | 94.7 | 0.93 | 96.2 | 60-140 | | | |
| Thallium | 91.1 | 2.5 | " | 94.7 | 0.22 | 96.0 | 70-130 | | | |
| Vanadium | 115 | 3.0 | " | 94.7 | 22 | 98.2 | 70-130 | | | |
| Zinc | 114 | 4.0 | " | 94.7 | 26 | 92.9 | 70-130 | | | |
| **Matrix Spike Dup (B0B1912-MSD1)** | **Source: 2002212-01** | | | Prepared: 02/19/20 | Analyzed: 02/21/20 | | | | | |
| Antimony | 84.8 | 5.0 | mg/kg | 94.8 | 1.1 | 88.3 | 60-140 | 1.64 | 20 | |
| Arsenic | 88.1 | 7.7 | " | 94.8 | ND | 92.9 | 70-130 | 2.47 | 20 | |
| Barium | 158 | 3.0 | " | 94.8 | 66 | 97.0 | 70-130 | 3.12 | 20 | |
| Beryllium | 91.5 | 1.3 | " | 94.8 | 0.15 | 96.4 | 70-130 | 1.09 | 20 | |
| Cadmium | 88.4 | 1.4 | " | 94.8 | 0.17 | 93.1 | 70-130 | 3.23 | 20 | |
| Chromium | 108 | 3.1 | " | 94.8 | 15 | 98.1 | 70-130 | 2.74 | 20 | |
| Cobalt | 97.9 | 1.5 | " | 94.8 | 6.6 | 96.3 | 70-130 | 3.12 | 20 | |
| Copper | 108 | 7.0 | " | 94.8 | 12 | 101 | 70-130 | 4.52 | 30 | |
| Lead | 92.0 | 2.6 | " | 94.8 | 2.6 | 94.3 | 70-130 | 1.40 | 30 | |
| Molybdenum | 87.1 | 4.2 | " | 94.8 | 0.68 | 91.2 | 70-130 | 1.03 | 20 | |
| Nickel | 104 | 6.8 | " | 94.8 | 10 | 99.2 | 70-130 | 1.90 | 20 | |
| Selenium | 88.6 | 7.6 | " | 94.8 | ND | 93.5 | 70-130 | 3.00 | 20 | |
| Silver | 87.7 | 1.0 | " | 94.8 | 0.93 | 91.5 | 60-140 | 4.79 | 40 | |
| Thallium | 88.6 | 2.5 | " | 94.8 | 0.22 | 93.2 | 70-130 | 2.78 | 20 | |
| Vanadium | 112 | 3.0 | " | 94.8 | 22 | 94.9 | 70-130 | 2.64 | 20 | |
| Zinc | 109 | 4.0 | " | 94.8 | 26 | 87.6 | 70-130 | 4.48 | 20 | |

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B1913 - EPA 3060A** | | | | | | | | | | |
| **Blank (B0B1913-BLK1)** | | | | Prepared: 02/19/20 | | Analyzed: 02/20/20 | | | | |
| Hexavalent Chromium | ND | 0.41 | mg/kg | | | | | | | |
| **LCS (B0B1913-BS1)** | | | | Prepared: 02/19/20 | | Analyzed: 02/20/20 | | | | |
| Hexavalent Chromium | 0.162 | 0.41 | mg/kg | 0.150 | | 108 | 80-120 | | | |
| **Matrix Spike (B0B1913-MS1)** | | **Source: 2002212-01** | | Prepared: 02/19/20 | | Analyzed: 02/20/20 | | | | |
| Hexavalent Chromium | 0.141 | 0.41 | mg/kg | 0.141 | ND | 100 | 75-125 | | | |
| **Matrix Spike Dup (B0B1913-MSD1)** | | **Source: 2002212-01** | | Prepared: 02/19/20 | | Analyzed: 02/20/20 | | | | |
| Hexavalent Chromium | 0.138 | 0.41 | mg/kg | 0.141 | ND | 97.9 | 75-125 | 2.15 | 20 | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

**Total Volatile Petroleum Hydrocarbons (TVPH) by GC/FID - Quality Control**

**Sierra Analytical Labs, Inc.**

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2427 - EPA 5035 P & T** | | | | | | | | | | |
| **Blank (B0B2427-BLK1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | ND | 0.050 | mg/kg | | | | | | | |
| *Surrogate: a,a,a-Trifluorotoluene* | *0.0248* | | *"* | *0.0200* | | *124* | *35-130* | | | |
| **LCS (B0B2427-BS1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | 0.588 | 0.050 | mg/kg | 0.600 | | 98.0 | 85-115 | | | |
| **Matrix Spike (B0B2427-MS1)** | **Source: 2002212-01** | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | 0.492 | 0.050 | mg/kg | 0.600 | ND | 82.0 | 50-150 | | | |
| **Matrix Spike Dup (B0B2427-MSD1)** | **Source: 2002212-01** | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | 0.519 | 0.050 | mg/kg | 0.600 | ND | 86.5 | 50-150 | 5.34 | 30 | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| | | |
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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons (TPH) by GC/FID - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2440 - EPA 3550B Solid Ext** | | | | | | | | | | |
| **Blank (B0B2440-BLK1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Diesel Range Organics (C10-C24) | ND | 5.0 | mg/kg | | | | | | | |
| Oil Range Organics (C22-C36) | ND | 5.0 | " | | | | | | | |
| *Surrogate: o-Terphenyl* | *1.75* | | *"* | *2.50* | | *70.0* | *60-175* | | | |
| *Surrogate: o-Terphenyl* | *1.75* | | *"* | *2.50* | | *70.0* | *60-175* | | | |
| **LCS (B0B2440-BS1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Diesel Range Organics (C10-C24) | 5.75 | 5.0 | mg/kg | 5.00 | | 115 | 80-120 | | | |
| Diesel Range Organics (C10-C24) | 5.75 | 5.0 | " | 5.00 | | 115 | 80-120 | | | |
| **Matrix Spike (B0B2440-MS1)** | | **Source: 2002212-01** | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Diesel Range Organics (C10-C24) | 5.50 | 5.0 | mg/kg | 5.00 | ND | 110 | 50-150 | | | |
| Diesel Range Organics (C10-C24) | 5.50 | 5.0 | " | 5.00 | ND | 110 | 50-150 | | | |
| **Matrix Spike Dup (B0B2440-MSD1)** | | **Source: 2002212-01** | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Diesel Range Organics (C10-C24) | 5.24 | 5.0 | mg/kg | 5.00 | ND | 105 | 50-150 | 4.84 | 30 | |
| Diesel Range Organics (C10-C24) | 5.24 | 5.0 | " | 5.00 | ND | 105 | 50-150 | 4.84 | 30 | |

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| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2427 - EPA 5035 P & T** | | | | | | | | | | |
| **Blank (B0B2427-BLK1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| C5 <= HC < C6 | ND | 0.010 | mg/kg | | | | | | | |
| C6 <= HC < C7 | ND | 0.010 | " | | | | | | | |
| C7 <= HC < C8 | ND | 0.010 | " | | | | | | | |
| C8 <= HC < C9 | ND | 0.010 | " | | | | | | | |
| C9 <= HC < C10 | ND | 0.010 | " | | | | | | | |
| C10 <= HC < C11 | ND | 0.010 | " | | | | | | | |
| C11 <= HC < C12 | ND | 0.010 | " | | | | | | | |
| HC >= C12 | ND | 0.010 | " | | | | | | | |
| Total Petroleum Hydrocarbons (C4-C12) | ND | 0.050 | " | | | | | | | |
| *Surrogate: a,a,a-Trifluorotoluene* | *0.0248* | | *"* | *0.0200* | | *124* | *35-130* | | | |
| **LCS (B0B2427-BS1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | 0.588 | 0.050 | mg/kg | 0.600 | | 98.0 | 80-120 | | | |
| **Matrix Spike (B0B2427-MS1)** | **Source: 2002212-01** | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | 0.492 | 0.050 | mg/kg | 0.600 | ND | 82.0 | 50-150 | | | |
| **Matrix Spike Dup (B0B2427-MSD1)** | **Source: 2002212-01** | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Gasoline Range Hydrocarbons (C4-C12) | 0.519 | 0.050 | mg/kg | 0.600 | ND | 86.5 | 50-150 | 5.34 | 30 | |
| **Batch B0B2440 - EPA 3550B Solid Ext** | | | | | | | | | | |
| **Blank (B0B2440-BLK1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| HC < C8 | ND | 1.0 | mg/kg | | | | | | | |
| C8 <= HC < C9 | ND | 1.0 | " | | | | | | | |
| C9 <= HC < C10 | ND | 1.0 | " | | | | | | | |
| C10 <= HC < C11 | ND | 1.0 | " | | | | | | | |
| C11 <= HC < C12 | ND | 1.0 | " | | | | | | | |
| C12 <= HC < C14 | ND | 1.0 | " | | | | | | | |
| C14 <= HC < C16 | ND | 1.0 | " | | | | | | | |
| C16 <= HC < C18 | ND | 1.0 | " | | | | | | | |
| C18 <= HC < C20 | ND | 1.0 | " | | | | | | | |
| C20 <= HC < C24 | ND | 1.0 | " | | | | | | | |
| C24 <= HC < C28 | ND | 1.0 | " | | | | | | | |
| C28 <= HC < C32 | ND | 1.0 | " | | | | | | | |
| HC >= C32 | ND | 1.0 | " | | | | | | | |
| Total Petroleum Hydrocarbons (C7-C36) | ND | 5.0 | " | | | | | | | |
| *Surrogate: o-Terphenyl* | *1.75* | | *"* | *2.50* | | *70.0* | *60-175* | | | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Total Petroleum Hydrocarbons Carbon Range Analysis by GC-FID - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2440 - EPA 3550B Solid Ext** | | | | | | | | | | |
| **LCS (B0B2440-BS1)** | | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Diesel Range Organics (C10-C24) | 5.75 | 5.0 | mg/kg | 5.00 | | 115 | 80-120 | | | |
| **Matrix Spike (B0B2440-MS1)** | **Source: 2002212-01** | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Diesel Range Organics (C10-C24) | 5.50 | 5.0 | mg/kg | 5.00 | ND | 110 | 50-150 | | | |
| **Matrix Spike Dup (B0B2440-MSD1)** | **Source: 2002212-01** | | | Prepared: 02/24/20 Analyzed: 02/25/20 | | | | | | |
| Diesel Range Organics (C10-C24) | 5.24 | 5.0 | mg/kg | 5.00 | ND | 105 | 50-150 | 4.84 | 30 | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2001 - EPA 5035 P & T** | | | | | | | | | | |
| **Blank (B0B2001-BLK1)** | | | | Prepared: 02/20/20 Analyzed: 02/21/20 | | | | | | |
| Benzene | ND | 5.0 | µg/kg | | | | | | | |
| Bromobenzene | ND | 5.0 | " | | | | | | | |
| Bromochloromethane | ND | 5.0 | " | | | | | | | |
| Bromodichloromethane | ND | 5.0 | " | | | | | | | |
| Bromoform | ND | 5.0 | " | | | | | | | |
| Bromomethane | ND | 5.0 | " | | | | | | | |
| n-Butylbenzene | ND | 5.0 | " | | | | | | | |
| sec-Butylbenzene | ND | 5.0 | " | | | | | | | |
| tert-Butylbenzene | ND | 5.0 | " | | | | | | | |
| Carbon tetrachloride | ND | 5.0 | " | | | | | | | |
| Chlorobenzene | ND | 5.0 | " | | | | | | | |
| Chloroethane | ND | 5.0 | " | | | | | | | |
| Chloroform | ND | 5.0 | " | | | | | | | |
| Chloromethane | ND | 5.0 | " | | | | | | | |
| 2-Chlorotoluene | ND | 5.0 | " | | | | | | | |
| 4-Chlorotoluene | ND | 5.0 | " | | | | | | | |
| Dibromochloromethane | ND | 5.0 | " | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 | " | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | " | | | | | | | |
| Dibromomethane | ND | 5.0 | " | | | | | | | |
| 1,2-Dichlorobenzene | ND | 5.0 | " | | | | | | | |
| 1,3-Dichlorobenzene | ND | 5.0 | " | | | | | | | |
| 1,4-Dichlorobenzene | ND | 5.0 | " | | | | | | | |
| Dichlorodifluoromethane | ND | 5.0 | " | | | | | | | |
| 1,1-Dichloroethane | ND | 5.0 | " | | | | | | | |
| 1,2-Dichloroethane | ND | 5.0 | " | | | | | | | |
| 1,1-Dichloroethene | ND | 5.0 | " | | | | | | | |
| cis-1,2-Dichloroethene | ND | 5.0 | " | | | | | | | |
| trans-1,2-Dichloroethene | ND | 5.0 | " | | | | | | | |
| 1,2-Dichloropropane | ND | 5.0 | " | | | | | | | |
| 1,3-Dichloropropane | ND | 5.0 | " | | | | | | | |
| 2,2-Dichloropropane | ND | 5.0 | " | | | | | | | |
| 1,1-Dichloropropene | ND | 5.0 | " | | | | | | | |
| cis-1,3-Dichloropropene | ND | 5.0 | " | | | | | | | |
| trans-1,3-Dichloropropene | ND | 5.0 | " | | | | | | | |
| Ethylbenzene | ND | 5.0 | " | | | | | | | |
| Hexachlorobutadiene | ND | 5.0 | " | | | | | | | |

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## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2001 - EPA 5035 P & T** | | | | | | | | | | |
| **Blank (B0B2001-BLK1)** | | | | Prepared: 02/20/20 Analyzed: 02/21/20 | | | | | | |
| Isopropylbenzene | ND | 5.0 | µg/kg | | | | | | | |
| p-Isopropyltoluene | ND | 5.0 | " | | | | | | | |
| Methylene chloride | ND | 5.0 | " | | | | | | | |
| Methyl tert-butyl ether | ND | 5.0 | " | | | | | | | |
| Naphthalene | ND | 5.0 | " | | | | | | | |
| n-Propylbenzene | ND | 5.0 | " | | | | | | | |
| Styrene | ND | 5.0 | " | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | " | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | " | | | | | | | |
| Tetrachloroethene | ND | 5.0 | " | | | | | | | |
| Toluene | ND | 5.0 | " | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | " | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | " | | | | | | | |
| 1,1,1-Trichloroethane | ND | 5.0 | " | | | | | | | |
| 1,1,2-Trichloroethane | ND | 5.0 | " | | | | | | | |
| Trichloroethene | ND | 5.0 | " | | | | | | | |
| Trichlorofluoromethane | ND | 5.0 | " | | | | | | | |
| 1,2,3-Trichloropropane | ND | 5.0 | " | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | " | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | " | | | | | | | |
| Vinyl chloride | ND | 5.0 | " | | | | | | | |
| m,p-Xylene | ND | 5.0 | " | | | | | | | |
| o-Xylene | ND | 5.0 | " | | | | | | | |
| *Surrogate: Dibromofluoromethane* | *50.4* | | *"* | *50.0* | | *101* | *80-120* | | | |
| *Surrogate: Toluene-d8* | *47.7* | | *"* | *50.0* | | *95.4* | *81-117* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *57.7* | | *"* | *50.0* | | *115* | *74-121* | | | |
| **LCS (B0B2001-BS1)** | | | | Prepared: 02/20/20 Analyzed: 02/21/20 | | | | | | |
| Benzene | 51.2 | 5.0 | µg/kg | 50.0 | | 102 | 80-120 | | | |
| Chlorobenzene | 57.6 | 5.0 | " | 50.0 | | 115 | 80-120 | | | |
| 1,1-Dichloroethene | 56.6 | 5.0 | " | 50.0 | | 113 | 80-120 | | | |
| Toluene | 49.1 | 5.0 | " | 50.0 | | 98.2 | 80-120 | | | |
| Trichloroethene | 55.0 | 5.0 | " | 50.0 | | 110 | 80-120 | | | |

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## Volatile Organic Compounds by EPA Method 8260B - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2001 - EPA 5035 P & T** | | | | | | | | | | |
| **Matrix Spike (B0B2001-MS1)** | **Source: 2002212-18** | | | Prepared: 02/20/20 | Analyzed: 02/21/20 | | | | | |
| Benzene | 51.1 | 5.0 | µg/kg | 50.0 | ND | 102 | 37-151 | | | |
| Chlorobenzene | 53.9 | 5.0 | " | 50.0 | ND | 108 | 37-160 | | | |
| 1,1-Dichloroethene | 60.6 | 5.0 | " | 50.0 | ND | 121 | 50-150 | | | |
| Toluene | 47.0 | 5.0 | " | 50.0 | ND | 94.0 | 47-150 | | | |
| Trichloroethene | 49.6 | 5.0 | " | 50.0 | ND | 99.2 | 71-157 | | | |
| **Matrix Spike Dup (B0B2001-MSD1)** | **Source: 2002212-18** | | | Prepared: 02/20/20 | Analyzed: 02/21/20 | | | | | |
| Benzene | 58.7 | 5.0 | µg/kg | 50.0 | ND | 117 | 37-151 | 13.8 | 30 | |
| Chlorobenzene | 60.2 | 5.0 | " | 50.0 | ND | 120 | 37-160 | 11.0 | 30 | |
| 1,1-Dichloroethene | 52.7 | 5.0 | " | 50.0 | ND | 105 | 50-150 | 13.9 | 30 | |
| Toluene | 44.6 | 5.0 | " | 50.0 | ND | 89.2 | 47-150 | 5.24 | 30 | |
| Trichloroethene | 50.2 | 5.0 | " | 50.0 | ND | 100 | 71-157 | 1.20 | 30 | |

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|---|---|---|---|
| Mearns Consulting LLC | Project: | 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: | [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: | Susan Mearns | 02/26/20 11:36 |

**Semivolatile Organic Compounds by EPA Method 8270C - Quality Control**

**Sierra Analytical Labs, Inc.**

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2102 - EPA 3550B Solid Ext** | | | | | | | | | | |
| **Blank (B0B2102-BLK1)** | | | | Prepared: 02/21/20 Analyzed: 02/24/20 | | | | | | |
| Acenaphthene | ND | 0.33 | mg/kg | | | | | | | |
| Acenaphthylene | ND | 0.33 | " | | | | | | | |
| Anthracene | ND | 0.33 | " | | | | | | | |
| Benzidine | ND | 0.33 | " | | | | | | | |
| Benzo (a) anthracene | ND | 0.33 | " | | | | | | | |
| Benzo (b) fluoranthene | ND | 0.33 | " | | | | | | | |
| Benzo (k) fluoranthene | ND | 0.33 | " | | | | | | | |
| Benzo (a) pyrene | ND | 0.33 | " | | | | | | | |
| Benzo (g,h,i) perylene | ND | 0.33 | " | | | | | | | |
| Benzyl alcohol | ND | 0.33 | " | | | | | | | |
| Bis(2-chloroethyl)ether | ND | 0.33 | " | | | | | | | |
| Bis(2-chloroethoxy)methane | ND | 0.33 | " | | | | | | | |
| Bis(2-ethylhexyl)phthalate | ND | 0.33 | " | | | | | | | |
| Bis(2-chloroisopropyl)ether | ND | 0.33 | " | | | | | | | |
| 4-Bromophenyl phenyl ether | ND | 0.33 | " | | | | | | | |
| Butyl benzyl phthalate | ND | 0.33 | " | | | | | | | |
| 4-Chloroaniline | ND | 0.33 | " | | | | | | | |
| 2-Chlorophenol | ND | 0.33 | " | | | | | | | |
| 4-Chloro-3-methylphenol | ND | 0.33 | " | | | | | | | |
| 2-Chloronaphthalene | ND | 0.33 | " | | | | | | | |
| 4-Chlorophenyl phenyl ether | ND | 0.33 | " | | | | | | | |
| Chrysene | ND | 0.33 | " | | | | | | | |
| Dibenz (a,h) anthracene | ND | 0.33 | " | | | | | | | |
| Dibenzofuran | ND | 0.33 | " | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.33 | " | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.33 | " | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.33 | " | | | | | | | |
| 3,3´-Dichlorobenzidine | ND | 0.33 | " | | | | | | | |
| 2,4-Dichlorophenol | ND | 0.33 | " | | | | | | | |
| Diethyl phthalate | ND | 0.33 | " | | | | | | | |
| 2,4-Dimethylphenol | ND | 0.33 | " | | | | | | | |
| Dimethyl phthalate | ND | 0.33 | " | | | | | | | |
| Di-n-butyl phthalate | ND | 0.33 | " | | | | | | | |
| 2,4-Dinitrophenol | ND | 0.33 | " | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 0.33 | " | | | | | | | |
| 2,4-Dinitrotoluene | ND | 0.33 | " | | | | | | | |
| 2,6-Dinitrotoluene | ND | 0.33 | " | | | | | | | |

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| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2102 - EPA 3550B Solid Ext** | | | | | | | | | | |
| **Blank (B0B2102-BLK1)** | | | | Prepared: 02/21/20 Analyzed: 02/24/20 | | | | | | |
| Di-n-octyl phthalate | ND | 0.33 | mg/kg | | | | | | | |
| 1,2-Diphenylhydrazine | ND | 0.33 | " | | | | | | | |
| Fluoranthene | ND | 0.33 | " | | | | | | | |
| Fluorene | ND | 0.33 | " | | | | | | | |
| Hexachlorobenzene | ND | 0.33 | " | | | | | | | |
| Hexachlorobutadiene | ND | 0.33 | " | | | | | | | |
| Hexachlorocyclopentadiene | ND | 0.33 | " | | | | | | | |
| Hexachloroethane | ND | 0.33 | " | | | | | | | |
| Indeno (1,2,3-cd) pyrene | ND | 0.33 | " | | | | | | | |
| Isophorone | ND | 0.33 | " | | | | | | | |
| 2-Methylnaphthalene | ND | 0.33 | " | | | | | | | |
| 2-Methylphenol | ND | 0.33 | " | | | | | | | |
| 4-Methylphenol | ND | 0.33 | " | | | | | | | |
| Naphthalene | ND | 0.33 | " | | | | | | | |
| 2-Nitroaniline | ND | 0.33 | " | | | | | | | |
| 3-Nitroaniline | ND | 0.33 | " | | | | | | | |
| 4-Nitroaniline | ND | 0.33 | " | | | | | | | |
| Nitrobenzene | ND | 0.33 | " | | | | | | | |
| 2-Nitrophenol | ND | 0.33 | " | | | | | | | |
| 4-Nitrophenol | ND | 0.33 | " | | | | | | | |
| N-Nitrosodimethylamine | ND | 0.33 | " | | | | | | | |
| Diphenylamine | ND | 0.33 | " | | | | | | | |
| N-Nitrosodi-n-propylamine | ND | 0.33 | " | | | | | | | |
| Pentachlorophenol | ND | 0.33 | " | | | | | | | |
| Phenanthrene | ND | 0.33 | " | | | | | | | |
| Phenol | ND | 0.33 | " | | | | | | | |
| Pyrene | ND | 0.33 | " | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.33 | " | | | | | | | |
| 2,4,5-Trichlorophenol | ND | 0.33 | " | | | | | | | |
| 2,4,6-Trichlorophenol | ND | 0.33 | " | | | | | | | |
| *Surrogate: 2-Fluorophenol* | *0.410* | | " | *0.500* | | *82.0* | *25-121* | | | |
| *Surrogate: Phenol-d6* | *0.367* | | " | *0.500* | | *73.4* | *24-113* | | | |
| *Surrogate: Nitrobenzene-d5* | *0.333* | | " | *0.333* | | *100* | *23-120* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *0.235* | | " | *0.333* | | *70.6* | *30-115* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *0.368* | | " | *0.500* | | *73.6* | *19-122* | | | |
| *Surrogate: Terphenyl-d14* | *0.294* | | " | *0.333* | | *88.3* | *18-137* | | | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Mearns Consulting LLC | Project: 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: Susan Mearns | 02/26/20 11:36 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## Sierra Analytical Labs, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B0B2102 - EPA 3550B Solid Ext** | | | | | | | | | | |
| **LCS (B0B2102-BS1)** | | | | Prepared: 02/21/20 Analyzed: 02/24/20 | | | | | | |
| Acenaphthene | 0.270 | 0.33 | mg/kg | 0.333 | | 81.1 | 47-145 | | | |
| 2-Chlorophenol | 0.838 | 0.33 | " | 0.667 | | 126 | 23-134 | | | |
| 4-Chloro-3-methylphenol | 0.791 | 0.33 | " | 0.667 | | 119 | 22-147 | | | |
| 1,4-Dichlorobenzene | 0.357 | 0.33 | " | 0.333 | | 107 | 20-124 | | | |
| 2,4-Dinitrotoluene | 0.335 | 0.33 | " | 0.333 | | 101 | 39-139 | | | |
| 4-Nitrophenol | 0.772 | 0.33 | " | 0.667 | | 116 | 0-132 | | | |
| N-Nitrosodi-n-propylamine | 0.470 | 0.33 | " | 0.333 | | 141 | 0-230 | | | |
| Pentachlorophenol | 0.526 | 0.33 | " | 0.667 | | 78.9 | 14-176 | | | |
| Phenol | 0.578 | 0.33 | " | 0.667 | | 86.7 | 5-112 | | | |
| Pyrene | 0.283 | 0.33 | " | 0.333 | | 85.0 | 52-115 | | | |
| 1,2,4-Trichlorobenzene | 0.369 | 0.33 | " | 0.333 | | 111 | 44-142 | | | |
| **Matrix Spike (B0B2102-MS1)** | | **Source: 2002212-01** | | Prepared: 02/21/20 Analyzed: 02/24/20 | | | | | | |
| Acenaphthene | 0.255 | 0.33 | mg/kg | 0.333 | ND | 76.6 | 47-145 | | | |
| 2-Chlorophenol | 0.810 | 0.33 | " | 0.667 | ND | 121 | 23-134 | | | |
| 4-Chloro-3-methylphenol | 0.756 | 0.33 | " | 0.667 | ND | 113 | 22-147 | | | |
| 1,4-Dichlorobenzene | 0.314 | 0.33 | " | 0.333 | ND | 94.3 | 20-124 | | | |
| 2,4-Dinitrotoluene | 0.145 | 0.33 | " | 0.333 | ND | 43.5 | 39-139 | | | |
| 4-Nitrophenol | 0.595 | 0.33 | " | 0.667 | ND | 89.2 | 0-132 | | | |
| N-Nitrosodi-n-propylamine | 0.421 | 0.33 | " | 0.333 | ND | 126 | 0-230 | | | |
| Pentachlorophenol | 0.361 | 0.33 | " | 0.667 | ND | 54.1 | 14-176 | | | |
| Phenol | 0.537 | 0.33 | " | 0.667 | ND | 80.5 | 5-112 | | | |
| Pyrene | 0.318 | 0.33 | " | 0.333 | ND | 95.5 | 52-115 | | | |
| 1,2,4-Trichlorobenzene | 0.318 | 0.33 | " | 0.333 | ND | 95.5 | 44-142 | | | |
| **Matrix Spike Dup (B0B2102-MSD1)** | | **Source: 2002212-01** | | Prepared: 02/21/20 Analyzed: 02/24/20 | | | | | | |
| Acenaphthene | 0.292 | 0.33 | mg/kg | 0.333 | ND | 87.7 | 47-145 | 13.5 | 30 | |
| 2-Chlorophenol | 0.808 | 0.33 | " | 0.667 | ND | 121 | 23-134 | 0.247 | 30 | |
| 4-Chloro-3-methylphenol | 0.707 | 0.33 | " | 0.667 | ND | 106 | 22-147 | 6.70 | 30 | |
| 1,4-Dichlorobenzene | 0.347 | 0.33 | " | 0.333 | ND | 104 | 20-124 | 9.98 | 30 | |
| 2,4-Dinitrotoluene | 0.175 | 0.33 | " | 0.333 | ND | 52.6 | 39-139 | 18.8 | 30 | |
| 4-Nitrophenol | 0.773 | 0.33 | " | 0.667 | ND | 116 | 0-132 | 26.0 | 30 | |
| N-Nitrosodi-n-propylamine | 0.480 | 0.33 | " | 0.333 | ND | 144 | 0-230 | 13.1 | 30 | |
| Pentachlorophenol | 0.309 | 0.33 | " | 0.667 | ND | 46.3 | 14-176 | 15.5 | 30 | |
| Phenol | 0.555 | 0.33 | " | 0.667 | ND | 83.2 | 5-112 | 3.30 | 30 | |
| Pyrene | 0.349 | 0.33 | " | 0.333 | ND | 105 | 52-115 | 9.30 | 30 | |
| 1,2,4-Trichlorobenzene | 0.356 | 0.33 | " | 0.333 | ND | 107 | 44-142 | 11.3 | 30 | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | | |
|---|---|---|---|
| Mearns Consulting LLC | Project: | 950 E. 33rd & 3177 California Ave. | |
| 738 Ashland Avenue | Project Number: | [none] | **Reported:** |
| Santa Monica CA, 90405 | Project Manager: | Susan Mearns | 02/26/20 11:36 |

**Notes and Definitions**

| | |
|---|---|
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

**SIERRA ANALYTICAL**
TEL: 949 • 348 • 9389
FAX: 949 • 348 • 9115
26052 Merit Circle • Suite 104 • Laguna Hills, CA • 92653

# CHAIN OF CUSTODY RECORD

Date: 2 / 18 / 20 Page: 1 of 2

Lab Work Order No.: 2002212

Client: MEARNS CONSULTING CORP
Client Address: 738 ASHLAND AVE
SANTA MONICA CA 90405

Client Tel. No.: 310 403 1921
Client Fax. No.: 310 396 6878
Client Proj. Mgr.: SUSAN L MEARNS PHD

Client Project ID: 950 E 33rd & 3477 CALIFORNIA AVE

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☐ 5 Day ☒ Normal ☐ Mobile

Analyses Requested

Geotracker EDD Info:
Client LOGCODE
Site Global ID

| Client Sample ID. | Sierra No. | Date | Time | Matrix | Preservative | Container Type | No. of Containers | TPHg 8015B | TPHd 8015B | TPHo 8015B | SPECIATED CARBON CHAINS 8015B | VOCs 5035B / 8260B | SVOCs 8270 | TTLC METALS 6000/7000 | Cr+6 | | | | | Field Point Names / Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SB1-5 | 01 | 2-18-20 | 0817 | SOIL | 10E | 6" SLV 4 VOA VIALS | 1/4 | X | X | X | X | X | X | X | X | | | | | |
| SB1-10 | 02 | ↓ | 0817 | ↓ | ↓ | ↓ | ↓ | X | X | X | X | X | X | X | X | | | | | |
| SB2-5 | 03 | | 0917 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB2-10 | 04 | | 0924 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB3-5 | 05 | | 1014 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB3-10 | 06 | | 1021 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB4-5 | 07 | | 1109 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB4-10 | 08 | | 1116 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB5-5 | 09 | | 1142 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB5-10 | 10 | ↓ | 1149 | ↓ | ↓ | ↓ | ↓ | X | X | X | X | X | X | X | X | | | | | |

1 Sampler Signature: [signature] Scott Fagan
Printed Name: SUSAN MEARNS Scott Fagan
Shipped Via: HAND DELIVERED
(Carrier/Waybill No.)

50/80 Total Number of Containers Submitted to Laboratory

2 Relinquished By: [signature] Date: 2-18-20 Received By: [signature] Date: 2/18/20
Company: MEARNS CONSULTING Time: 1610 Company: SIERRA Time: 1610

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* - Samples determined to be hazardous by SIERRA will be returned to CLIENT.

3 Relinquished By: Date: Received By: Date:
Company: Time: Company: Time:

50/80 Total Number of Containers Received by Laboratory

4 Relinquished By: Date: Received By: Date:
Company: Time: Company: Time:

Special Instructions:

Sample Disposal:
☐ Return to Client
☐ Lab Disposal *
☐ Archive ____ mos.
☐ Other ____

FOR LABORATORY USE ONLY - Sample Receipt Conditions:
☑ Intact ☑ Chilled - Temp (°C) 40°
☐ Sample Seals ☐ Preservatives - Verified By
☑ Properly Labelled ☐ Other
☑ Appropriate Sample Container ☑ Storage Location R5-R1A2

Rev: 120321

DISTRIBUTION: White - To Accompany Samples, Yellow - Laboratory Copy, Pink - Field Personnel Copy

**SIERRA ANALYTICAL**
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FAX: 949 • 348 • 9115
26052 Merit Circle • Suite 104 • Laguna Hills, CA • 92653

# CHAIN OF CUSTODY RECORD

Date: 2 / 18 / 20 Page: 2 of 2

Lab Work Order No.: 2002212

Client: MEARNS CONSULTING CORP
Client Address: 738 ASHLAND AVE
SANTA MONICA CA 90405

Client Tel. No.: 310 403 1921
Client Fax. No.: 310 396 6878
Client Proj. Mgr.: SUSAN L MEARNS PHD

Client Project ID: 950 E33rd & 3177 CALIFORNIA

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☐ 5 Day ☒ Normal ☐ Mobile

Analyses Requested

Geotracker EDD Info:
Client LOGCODE
Site Global ID

| Client Sample ID. | Sierra No. | Date | Time | Matrix | Preservative | Container Type | No. of Containers | TPHg 8015B | TPHd 8015B | TPHo 8015B | Speciated Carbon Chains 8015B | VOCs 5035B/8260B | SVOCs 8270 | TLC Metals 6000/7000 | Cr+6 | | | | | Field Point Names / Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SB6-5 | 11 | 2-18-20 | 1301 | SOIL | ICE | 6" SDV VOA VIALS | 1/4 | X | X | X | X | X | X | X | X | | | | | |
| SB6-10 | 12 | ↓ | 1310 | ↓ | ↓ | ↓ | ↓ | X | X | X | X | X | X | X | X | | | | | |
| SB7-5 | 13 | | 1341 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB7-10 | 14 | | 1348 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB8-5 | 15 | | 1422 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB8-10 | 16 | | 1435 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB9-5 | 17 | | 1508 | | | | | X | X | X | X | X | X | X | X | | | | | |
| SB9-10 | 18 | ↓ | 1519 | ↓ | ↓ | ↓ | ↓ | X | X | X | X | X | X | X | X | | | | | |

1 Sampler Signature: [signature] Scott Fagan
Printed Name: SUSAN MEARNS Scott Fagan
Shipped Via: HAND DELIVERED
(Carrier/Waybill No.)

2 Relinquished By: [signature] Date: 2-18-20 Received By: [signature] Date: 2/18/20
Company: MEARNS CONSULTING Time: 1610 Company: Scott Fagan Time: 1610

3 Relinquished By: Date: Received By: Date:
Company: Time: Company: Time:

4 Relinquished By: Date: Received By: Date:
Company: Time: Company: Time:

Special Instructions:

40/80 Total Number of Containers Submitted to Laboratory

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* Samples determined to be hazardous by SIERRA will be returned to CLIENT.

40/80 Total Number of Containers Received by Laboratory

Sample Disposal:
☐ Return to Client
☐ Lab Disposal *
☐ Archive ____ mos.
☐ Other ____

FOR LABORATORY USE ONLY - Sample Receipt Conditions:
☑ Intact ☑ Chilled - Temp (°C) 40
☐ Sample Seals ☐ Preservatives - Verified By
☑ Properly Labelled ☐ Other
☑ Appropriate Sample Container ☑ Storage Location (RS-WCAH)

Rev: 120321

DISTRIBUTION: White - To Accompany Samples, Yellow - Laboratory Copy, Pink - Field Personnel Copy

# APPENDIX C

## Jones Environmental Inc.
## Soil Vapor Analytical Results
## February 21, 2020

JONES ENVIRONMENTAL, INC.

714-449-9937
562-646-1611
805-399-0060

11007 FOREST PLACE
SANTA FE SPRINGS, CA 90670
WWW.JONESENV.COM

# JONES ENVIRONMENTAL LABORATORY RESULTS

| | | | |
|---|---|---|---|
| **Client:** | Mearns Consulting Corp | **Report date:** | 2/21/2020 |
| **Client Address:** | 738 Ashland Avenue<br>Santa Monica, CA 90405 | **Jones Ref. No.:** | G-0094 |
| **Attn:** | Susan L Mearns | **Date Sampled:** | 2/21/2020 |
| | | **Date Received:** | 2/21/2020 |
| **Project:** | 950 E 33rd & 3177 California Ave | **Date Analyzed:** | 2/21/2020 |
| **Project Address:** | 950 E 33rd & 3177 California Ave<br>Signal Hill, CA 90755 | **Physical State:** | Soil Gas |

**ANALYSES REQUESTED**

1. EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

Sampling – Soil Gas samples were collected in glass gas-tight syringes equipped with Teflon plungers.

A tracer gas mixture of n-pentane, n-hexane, and n-heptane was placed at the tubing-surface interface before sampling. These compounds were analyzed during the 8260B analytical run to determine if there were surface leaks into the subsurface due to improper installation of the probe. No tracer was detected in any of the samples reported herein.

The sampling rate was approximately 200 cc/min, except when noted differently on the chain of custody record, using a glass gas-tight syringe. Purging was completed using a pump set at approximately 200 cc/min, except when noted differently on the chain of custody record. A default of 3 purge volumes was used as recommended by July 2015 DTSC/RWQCB guidance documents.

Prior to purging and sampling of soil gas at each point, a shut-in test was conducted to check for leaks in the above ground fittings. The shut-in test was performed on the above ground apparatus by evacuating the line to a vacuum of 100 inches of water, sealing the entire system and watching the vacuum for at least one minute. A vacuum gauge attached in parallel to the apparatus measured the vacuum. If there was any observable loss of vacuum, the fittings were adjusted as needed until the vacuum did not change noticeably. The soil gas sample was then taken.

No flow conditions occur when a sampling rate greater than 10 mL/min cannot be maintained without applying a vacuum greater than 100 inches of water to the sampling train. The sampling train is left at a vacuum for no less than three minutes. If the vacuum does not subside appreciably after three minutes, the sample location is determined to be a no flow sample.

Analytical – Soil Gas samples were analyzed using EPA Method 8260 that includes extra compounds required by DTSC/RWQCB (such as Freon 113). Instrument Continuing Calibration Verification, QC Reference Standards, Instrument Blanks and Sampling Blanks were analyzed every 12 hours as prescribed by the method. In addition, a Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (LCSD) were analyzed with each batch of Soil Gas samples. A duplicate/replicate sample was analyzed each day of the sampling activity. All samples were injected into the GC/MS system within 30 minutes of collection.

**Approval:**

Colby Wakeman
QA/QC Manager

JONES ENVIRONMENTAL, INC.
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562-646-1611
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11007 FOREST PLACE
SANTA FE SPRINGS, CA 90670
WWW.JONESENV.COM

# JONES ENVIRONMENTAL LABORATORY RESULTS

| | | | |
|---|---|---|---|
| **Client:** | Mearns Consulting Corp | **Report date:** | 2/21/2020 |
| **Client Address:** | 738 Ashland Avenue<br>Santa Monica, CA 90405 | **Jones Ref. No.:** | G-0094 |
| **Attn:** | Susan L Mearns | **Date Sampled:** | 2/21/2020 |
| | | **Date Received:** | 2/21/2020 |
| **Project:** | 950 E 33rd & 3177 California Ave | **Date Analyzed:** | 2/21/2020 |
| **Project Address:** | 950 E 33rd & 3177 California Ave<br>Signal Hill, CA 90755 | **Physical State:** | Soil Gas |

## EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV1-5'** | **SV1-10'** | **SV2-5'** | **SV2-10'** | **SV3-5'** | | |
|---|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-01** | **G-0094-02** | **G-0094-03** | **G-0094-04** | **G-0094-05** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | | |
| Benzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromobenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromodichloromethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromoform | ND | ND | ND | ND | ND | 8 | µg/m3 |
| n-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| sec-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| tert-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| Carbon tetrachloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Chlorobenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Chloroform | **12** | ND | ND | ND | ND | 8 | µg/m3 |
| 2-Chlorotoluene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| 4-Chlorotoluene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| Dibromochloromethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromo-3-chloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromoethane (EDB) | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Dibromomethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2- Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,3-Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,4-Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Dichlorodifluoromethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| cis-1,2-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,2-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,3-Dichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 2,2-Dichloropropane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloropropene | ND | ND | ND | ND | ND | 10 | µg/m3 |

## JONES ENVIRONMENTAL LABORATORY RESULTS

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV1-5'** | **SV1-10'** | **SV2-5'** | **SV2-10'** | **SV3-5'** | | |
|---|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-01** | **G-0094-02** | **G-0094-03** | **G-0094-04** | **G-0094-05** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | | |
| cis-1,3-Dichloropropene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,3-Dichloropropene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Ethylbenzene | **18** | ND | ND | ND | ND | 8 | µg/m3 |
| Freon 113 | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Hexachlorobutadiene | ND | ND | ND | ND | ND | 24 | µg/m3 |
| Isopropylbenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 4-Isopropyltoluene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Methylene chloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Naphthalene | ND | ND | ND | ND | ND | 40 | µg/m3 |
| n-Propylbenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Styrene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,1,2-Tetrachloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Tetrachloroethene | ND | ND | **8** | ND | ND | 8 | µg/m3 |
| Toluene | **21** | ND | **33** | **11** | **32** | 8 | µg/m3 |
| 1,2,3-Trichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,4-Trichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1,1-Trichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2-Trichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Trichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Trichlorofluoromethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,3-Trichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2,4-Trimethylbenzene | **8** | ND | **11** | ND | **11** | 8 | µg/m3 |
| 1,3,5-Trimethylbenzene | **9** | ND | ND | ND | ND | 8 | µg/m3 |
| Vinyl chloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| m,p-Xylene | **100** | ND | ND | ND | ND | 16 | µg/m3 |
| o-Xylene | **34** | ND | ND | ND | ND | 8 | µg/m3 |
| MTBE | ND | ND | ND | ND | ND | 40 | µg/m3 |
| Ethyl-tert-butylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| Di-isopropylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| tert-amylmethylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| tert-Butylalcohol | ND | ND | ND | ND | ND | 400 | µg/m3 |
| Gasoline Range Organics (C4-C12) | ND | ND | ND | ND | ND | 2000 | µg/m3 |
| **Tracer:** | | | | | | | |
| n-Pentane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| n-Hexane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| n-Heptane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| **Dilution Factor** | 1 | 1 | 1 | 1 | 1 | | |
| **Surrogate Recoveries:** | | | | | | **QC Limits** | |
| Dibromofluoromethane | 112% | 110% | 113% | 116% | 113% | 60 - 140 | |
| Toluene-$d_8$ | 95% | 103% | 97% | 98% | 98% | 60 - 140 | |
| 4-Bromofluorobenzene | 99% | 102% | 101% | 100% | 103% | 60 - 140 | |
| **Batch ID:** | G1-022120-01 | G1-022120-01 | G1-022120-01 | G1-022120-01 | G1-022120-01 | | |

ND = Value below reporting limit

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# JONES ENVIRONMENTAL LABORATORY RESULTS

| | | | |
|---|---|---|---|
| **Client:** | Mearns Consulting Corp | **Report date:** | 2/21/2020 |
| **Client Address:** | 738 Ashland Avenue<br>Santa Monica, CA 90405 | **Jones Ref. No.:** | G-0094 |
| **Attn:** | Susan L Mearns | **Date Sampled:** | 2/21/2020 |
| | | **Date Received:** | 2/21/2020 |
| **Project:** | 950 E 33rd & 3177 California Ave | **Date Analyzed:** | 2/21/2020 |
| **Project Address:** | 950 E 33rd & 3177 California Ave<br>Signal Hill, CA 90755 | **Physical State:** | Soil Gas |

## EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV3-10'** | **SV4-5'** | **SV4-10'** | **SV4-10' REP** | **SV5-5'** | | |
|---|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-06** | **G-0094-07** | **G-0094-08** | **G-0094-09** | **G-0094-10** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | | |
| Benzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromobenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromodichloromethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromoform | ND | ND | ND | ND | ND | 8 | µg/m3 |
| n-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| sec-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| tert-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| Carbon tetrachloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Chlorobenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Chloroform | ND | ND | ND | ND | **8** | 8 | µg/m3 |
| 2-Chlorotoluene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| 4-Chlorotoluene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| Dibromochloromethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromo-3-chloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromoethane (EDB) | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Dibromomethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2- Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,3-Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,4-Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Dichlorodifluoromethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| cis-1,2-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,2-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,3-Dichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 2,2-Dichloropropane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloropropene | ND | ND | ND | ND | ND | 10 | µg/m3 |

## JONES ENVIRONMENTAL LABORATORY RESULTS

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV3-10'** | **SV4-5'** | **SV4-10'** | **SV4-10' REP** | **SV5-5'** | | |
|---|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-06** | **G-0094-07** | **G-0094-08** | **G-0094-09** | **G-0094-10** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | | |
| cis-1,3-Dichloropropene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,3-Dichloropropene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Ethylbenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Freon 113 | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Hexachlorobutadiene | ND | ND | ND | ND | ND | 24 | µg/m3 |
| Isopropylbenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 4-Isopropyltoluene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Methylene chloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Naphthalene | ND | ND | ND | ND | ND | 40 | µg/m3 |
| n-Propylbenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Styrene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,1,2-Tetrachloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Tetrachloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Toluene | ND | **10** | ND | ND | ND | 8 | µg/m3 |
| 1,2,3-Trichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,4-Trichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1,1-Trichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2-Trichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Trichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Trichlorofluoromethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,3-Trichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2,4-Trimethylbenzene | ND | **16** | ND | ND | **13** | 8 | µg/m3 |
| 1,3,5-Trimethylbenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Vinyl chloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| m,p-Xylene | ND | ND | ND | ND | **19** | 16 | µg/m3 |
| o-Xylene | ND | ND | ND | ND | **9** | 8 | µg/m3 |
| MTBE | ND | ND | ND | ND | ND | 40 | µg/m3 |
| Ethyl-tert-butylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| Di-isopropylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| tert-amylmethylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| tert-Butylalcohol | ND | ND | ND | ND | ND | 400 | µg/m3 |
| Gasoline Range Organics (C4-C12) | ND | ND | ND | ND | ND | 2000 | µg/m3 |
| **Tracer:** | | | | | | | |
| n-Pentane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| n-Hexane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| n-Heptane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| **Dilution Factor** | 1 | 1 | 1 | 1 | 1 | | |
| **Surrogate Recoveries:** | | | | | | **QC Limits** | |
| Dibromofluoromethane | 113% | 107% | 115% | 115% | 110% | 60 - 140 | |
| Toluene-$d_8$ | 98% | 99% | 98% | 97% | 98% | 60 - 140 | |
| 4-Bromofluorobenzene | 104% | 101% | 100% | 97% | 100% | 60 - 140 | |
| **Batch ID:** | G1-022120-01 | G1-022120-01 | G1-022120-01 | G1-022120-01 | G1-022120-01 | | |

ND = Value below reporting limit

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# JONES ENVIRONMENTAL LABORATORY RESULTS

| | | | |
|---|---|---|---|
| **Client:** | Mearns Consulting Corp | **Report date:** | 2/21/2020 |
| **Client Address:** | 738 Ashland Avenue<br>Santa Monica, CA 90405 | **Jones Ref. No.:** | G-0094 |
| **Attn:** | Susan L Mearns | **Date Sampled:** | 2/21/2020 |
| | | **Date Received:** | 2/21/2020 |
| **Project:** | 950 E 33rd & 3177 California Ave | **Date Analyzed:** | 2/21/2020 |
| **Project Address:** | 950 E 33rd & 3177 California Ave<br>Signal Hill, CA 90755 | **Physical State:** | Soil Gas |

## EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV5-10'** | **SV6-5'** | **SV6-5' REP** | **SV7-5'** | **SV7-10'** | | |
|---|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-11** | **G-0094-12** | **G-0094-13** | **G-0094-15** | **G-0094-16** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | | |
| Benzene | ND | ND | ND | ND | **19** | 8 | µg/m3 |
| Bromobenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromodichloromethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Bromoform | ND | ND | ND | ND | ND | 8 | µg/m3 |
| n-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| sec-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| tert-Butylbenzene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| Carbon tetrachloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Chlorobenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Chloroform | ND | ND | ND | ND | **11** | 8 | µg/m3 |
| 2-Chlorotoluene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| 4-Chlorotoluene | ND | ND | ND | ND | ND | 12 | µg/m3 |
| Dibromochloromethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromo-3-chloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromoethane (EDB) | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Dibromomethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2- Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,3-Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,4-Dichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Dichlorodifluoromethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| cis-1,2-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,2-Dichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,3-Dichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 2,2-Dichloropropane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloropropene | ND | ND | ND | ND | ND | 10 | µg/m3 |

## JONES ENVIRONMENTAL LABORATORY RESULTS

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV5-10'** | **SV6-5'** | **SV6-5' REP** | **SV7-5'** | **SV7-10'** | | |
|---|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-11** | **G-0094-12** | **G-0094-13** | **G-0094-15** | **G-0094-16** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | | |
| cis-1,3-Dichloropropene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,3-Dichloropropene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Ethylbenzene | ND | ND | ND | ND | **23** | 8 | µg/m3 |
| Freon 113 | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Hexachlorobutadiene | ND | ND | ND | ND | ND | 24 | µg/m3 |
| Isopropylbenzene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 4-Isopropyltoluene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Methylene chloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Naphthalene | ND | ND | ND | ND | ND | 40 | µg/m3 |
| n-Propylbenzene | ND | ND | ND | ND | **20** | 8 | µg/m3 |
| Styrene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,1,2-Tetrachloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| Tetrachloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Toluene | ND | ND | ND | ND | **45** | 8 | µg/m3 |
| 1,2,3-Trichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,4-Trichlorobenzene | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1,1-Trichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2-Trichloroethane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Trichloroethene | ND | ND | ND | ND | ND | 8 | µg/m3 |
| Trichlorofluoromethane | ND | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,3-Trichloropropane | ND | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2,4-Trimethylbenzene | ND | ND | ND | ND | **123** | 8 | µg/m3 |
| 1,3,5-Trimethylbenzene | ND | ND | ND | ND | **40** | 8 | µg/m3 |
| Vinyl chloride | ND | ND | ND | ND | ND | 8 | µg/m3 |
| m,p-Xylene | ND | ND | ND | ND | **76** | 16 | µg/m3 |
| o-Xylene | ND | ND | ND | ND | **40** | 8 | µg/m3 |
| MTBE | ND | ND | ND | ND | ND | 40 | µg/m3 |
| Ethyl-tert-butylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| Di-isopropylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| tert-amylmethylether | ND | ND | ND | ND | ND | 40 | µg/m3 |
| tert-Butylalcohol | ND | ND | ND | ND | ND | 400 | µg/m3 |
| Gasoline Range Organics (C4-C12) | ND | ND | ND | ND | ND | 2000 | µg/m3 |
| **Tracer:** | | | | | | | |
| n-Pentane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| n-Hexane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| n-Heptane | ND | ND | ND | ND | ND | 80 | µg/m3 |
| **Dilution Factor** | 1 | 1 | 1 | 1 | 1 | | |
| **Surrogate Recoveries:** | | | | | | **QC Limits** | |
| Dibromofluoromethane | 113% | 113% | 109% | 108% | 111% | 60 - 140 | |
| Toluene-$d_8$ | 98% | 100% | 98% | 98% | 97% | 60 - 140 | |
| 4-Bromofluorobenzene | 99% | 101% | 104% | 102% | 101% | 60 - 140 | |
| **Batch ID:** | G1-022120-01 | G1-022120-01 | G1-022120-01 | G1-022120-01 | G1-022120-01 | | |

ND = Value below reporting limit

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# JONES ENVIRONMENTAL LABORATORY RESULTS

| | | | |
|---|---|---|---|
| **Client:** | Mearns Consulting Corp | **Report date:** | 2/21/2020 |
| **Client Address:** | 738 Ashland Avenue<br>Santa Monica, CA 90405 | **Jones Ref. No.:** | G-0094 |
| **Attn:** | Susan L Mearns | **Date Sampled:** | 2/21/2020 |
| | | **Date Received:** | 2/21/2020 |
| **Project:** | 950 E 33rd & 3177 California Ave | **Date Analyzed:** | 2/21/2020 |
| **Project Address:** | 950 E 33rd & 3177 California Ave<br>Signal Hill, CA 90755 | **Physical State:** | Soil Gas |

## EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV8-5'** | **SV8-10'** | **SV9-5'** | **SV9-10'** | | |
|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-17** | **G-0094-18** | **G-0094-19** | **G-0094-20** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | |
| Benzene | ND | ND | ND | **19** | 8 | µg/m3 |
| Bromobenzene | ND | ND | ND | ND | 8 | µg/m3 |
| Bromodichloromethane | ND | ND | ND | ND | 8 | µg/m3 |
| Bromoform | ND | ND | ND | ND | 8 | µg/m3 |
| n-Butylbenzene | ND | ND | ND | ND | 12 | µg/m3 |
| sec-Butylbenzene | ND | ND | ND | ND | 12 | µg/m3 |
| tert-Butylbenzene | ND | ND | ND | ND | 12 | µg/m3 |
| Carbon tetrachloride | ND | ND | ND | ND | 8 | µg/m3 |
| Chlorobenzene | ND | ND | ND | ND | 8 | µg/m3 |
| Chloroform | **34** | ND | ND | **20** | 8 | µg/m3 |
| 2-Chlorotoluene | ND | ND | ND | ND | 12 | µg/m3 |
| 4-Chlorotoluene | ND | ND | ND | ND | 12 | µg/m3 |
| Dibromochloromethane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromo-3-chloropropane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dibromoethane (EDB) | ND | ND | ND | ND | 8 | µg/m3 |
| Dibromomethane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2- Dichlorobenzene | ND | ND | ND | ND | 16 | µg/m3 |
| 1,3-Dichlorobenzene | ND | ND | ND | ND | 16 | µg/m3 |
| 1,4-Dichlorobenzene | ND | ND | ND | ND | 16 | µg/m3 |
| Dichlorodifluoromethane | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloroethane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloroethane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1-Dichloroethene | ND | ND | ND | ND | 8 | µg/m3 |
| cis-1,2-Dichloroethene | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,2-Dichloroethene | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2-Dichloropropane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,3-Dichloropropane | ND | ND | ND | ND | 8 | µg/m3 |
| 2,2-Dichloropropane | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1-Dichloropropene | ND | ND | ND | ND | 10 | µg/m3 |

## JONES ENVIRONMENTAL LABORATORY RESULTS

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **SV8-5'** | **SV8-10'** | **SV9-5'** | **SV9-10'** | | |
|---|---|---|---|---|---|---|
| **Jones ID:** | **G-0094-17** | **G-0094-18** | **G-0094-19** | **G-0094-20** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | | | |
| cis-1,3-Dichloropropene | ND | ND | ND | ND | 8 | µg/m3 |
| trans-1,3-Dichloropropene | ND | ND | ND | ND | 8 | µg/m3 |
| Ethylbenzene | ND | ND | ND | **99** | 8 | µg/m3 |
| Freon 113 | ND | ND | ND | ND | 16 | µg/m3 |
| Hexachlorobutadiene | ND | ND | ND | ND | 24 | µg/m3 |
| Isopropylbenzene | ND | ND | ND | ND | 8 | µg/m3 |
| 4-Isopropyltoluene | ND | ND | ND | ND | 8 | µg/m3 |
| Methylene chloride | ND | ND | ND | ND | 8 | µg/m3 |
| Naphthalene | ND | ND | ND | ND | 40 | µg/m3 |
| n-Propylbenzene | ND | ND | ND | ND | 8 | µg/m3 |
| Styrene | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,1,2-Tetrachloroethane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | ND | 16 | µg/m3 |
| Tetrachloroethene | ND | ND | ND | ND | 8 | µg/m3 |
| Toluene | ND | ND | ND | **27** | 8 | µg/m3 |
| 1,2,3-Trichlorobenzene | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,4-Trichlorobenzene | ND | ND | ND | ND | 16 | µg/m3 |
| 1,1,1-Trichloroethane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,1,2-Trichloroethane | ND | ND | ND | ND | 8 | µg/m3 |
| Trichloroethene | ND | ND | ND | ND | 8 | µg/m3 |
| Trichlorofluoromethane | ND | ND | ND | ND | 16 | µg/m3 |
| 1,2,3-Trichloropropane | ND | ND | ND | ND | 8 | µg/m3 |
| 1,2,4-Trimethylbenzene | ND | ND | ND | ND | 8 | µg/m3 |
| 1,3,5-Trimethylbenzene | ND | ND | ND | ND | 8 | µg/m3 |
| Vinyl chloride | ND | ND | ND | ND | 8 | µg/m3 |
| m,p-Xylene | ND | ND | ND | **322** | 16 | µg/m3 |
| o-Xylene | ND | ND | ND | **151** | 8 | µg/m3 |
| MTBE | ND | ND | ND | ND | 40 | µg/m3 |
| Ethyl-tert-butylether | ND | ND | ND | ND | 40 | µg/m3 |
| Di-isopropylether | ND | ND | ND | ND | 40 | µg/m3 |
| tert-amylmethylether | ND | ND | ND | ND | 40 | µg/m3 |
| tert-Butylalcohol | ND | ND | ND | ND | 400 | µg/m3 |
| Gasoline Range Organics (C4-C12) | ND | ND | ND | ND | 2000 | µg/m3 |
| **Tracer:** | | | | | | |
| n-Pentane | ND | ND | ND | ND | 80 | µg/m3 |
| n-Hexane | ND | ND | ND | ND | 80 | µg/m3 |
| n-Heptane | ND | ND | ND | ND | 80 | µg/m3 |
| **Dilution Factor** | 1 | 1 | 1 | 1 | | |
| **Surrogate Recoveries:** | | | | | **QC Limits** | |
| Dibromofluoromethane | 108% | 109% | 113% | 112% | 60 - 140 | |
| Toluene-$d_8$ | 99% | 96% | 95% | 96% | 60 - 140 | |
| 4-Bromofluorobenzene | 101% | 100% | 99% | 100% | 60 - 140 | |
| **Batch ID:** | G1-022120-01 | G1-022120-01 | G1-022120-01 | G1-022120-01 | | |

ND = Value below reporting limit

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SANTA FE SPRINGS, CA 90670
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## JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

| | | | |
|---|---|---|---|
| **Client:** | Mearns Consulting Corp | **Report date:** | 2/21/2020 |
| **Client Address:** | 738 Ashland Avenue<br>Santa Monica, CA 90405 | **Jones Ref. No.:** | G-0094 |
| **Attn:** | Susan L Mearns | **Date Sampled:** | 2/21/2020 |
| | | **Date Received:** | 2/21/2020 |
| **Project:** | 950 E 33rd & 3177 California Ave | **Date Analyzed:** | 2/21/2020 |
| **Project Address:** | 950 E 33rd & 3177 California Ave<br>Signal Hill, CA 90755 | **Physical State:** | Soil Gas |

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **METHOD BLANK** | **SAMPLING BLANK** | | |
|---|---|---|---|---|
| **Jones ID:** | **022120-G1MB1** | **022120-G1SB1** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | |
| Benzene | ND | ND | 8 | µg/m3 |
| Bromobenzene | ND | ND | 8 | µg/m3 |
| Bromodichloromethane | ND | ND | 8 | µg/m3 |
| Bromoform | ND | ND | 8 | µg/m3 |
| n-Butylbenzene | ND | ND | 12 | µg/m3 |
| sec-Butylbenzene | ND | ND | 12 | µg/m3 |
| tert-Butylbenzene | ND | ND | 12 | µg/m3 |
| Carbon tetrachloride | ND | ND | 8 | µg/m3 |
| Chlorobenzene | ND | ND | 8 | µg/m3 |
| Chloroform | ND | ND | 8 | µg/m3 |
| 2-Chlorotoluene | ND | ND | 12 | µg/m3 |
| 4-Chlorotoluene | ND | ND | 12 | µg/m3 |
| Dibromochloromethane | ND | ND | 8 | µg/m3 |
| 1,2-Dibromo-3-chloropropane | ND | ND | 8 | µg/m3 |
| 1,2-Dibromoethane (EDB) | ND | ND | 8 | µg/m3 |
| Dibromomethane | ND | ND | 8 | µg/m3 |
| 1,2- Dichlorobenzene | ND | ND | 16 | µg/m3 |
| 1,3-Dichlorobenzene | ND | ND | 16 | µg/m3 |
| 1,4-Dichlorobenzene | ND | ND | 16 | µg/m3 |
| Dichlorodifluoromethane | ND | ND | 16 | µg/m3 |
| 1,1-Dichloroethane | ND | ND | 8 | µg/m3 |
| 1,2-Dichloroethane | ND | ND | 8 | µg/m3 |
| 1,1-Dichloroethene | ND | ND | 8 | µg/m3 |
| cis-1,2-Dichloroethene | ND | ND | 8 | µg/m3 |
| trans-1,2-Dichloroethene | ND | ND | 8 | µg/m3 |
| 1,2-Dichloropropane | ND | ND | 8 | µg/m3 |
| 1,3-Dichloropropane | ND | ND | 8 | µg/m3 |
| 2,2-Dichloropropane | ND | ND | 16 | µg/m3 |
| 1,1-Dichloropropene | ND | ND | 10 | µg/m3 |

## JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

| **Sample ID:** | **METHOD BLANK** | **SAMPLING BLANK** | | |
|---|---|---|---|---|
| **Jones ID:** | **022120-G1MB1** | **022120-G1SB1** | **Reporting Limit** | **Units** |
| **Analytes:** | | | | |
| cis-1,3-Dichloropropene | ND | ND | 8 | µg/m3 |
| trans-1,3-Dichloropropene | ND | ND | 8 | µg/m3 |
| Ethylbenzene | ND | ND | 8 | µg/m3 |
| Freon 113 | ND | ND | 16 | µg/m3 |
| Hexachlorobutadiene | ND | ND | 24 | µg/m3 |
| Isopropylbenzene | ND | ND | 8 | µg/m3 |
| 4-Isopropyltoluene | ND | ND | 8 | µg/m3 |
| Methylene chloride | ND | ND | 8 | µg/m3 |
| Naphthalene | ND | ND | 40 | µg/m3 |
| n-Propylbenzene | ND | ND | 8 | µg/m3 |
| Styrene | ND | ND | 8 | µg/m3 |
| 1,1,1,2-Tetrachloroethane | ND | ND | 8 | µg/m3 |
| 1,1,2,2-Tetrachloroethane | ND | ND | 16 | µg/m3 |
| Tetrachloroethene | ND | ND | 8 | µg/m3 |
| Toluene | ND | ND | 8 | µg/m3 |
| 1,2,3-Trichlorobenzene | ND | ND | 16 | µg/m3 |
| 1,2,4-Trichlorobenzene | ND | ND | 16 | µg/m3 |
| 1,1,1-Trichloroethane | ND | ND | 8 | µg/m3 |
| 1,1,2-Trichloroethane | ND | ND | 8 | µg/m3 |
| Trichloroethene | ND | ND | 8 | µg/m3 |
| Trichlorofluoromethane | ND | ND | 16 | µg/m3 |
| 1,2,3-Trichloropropane | ND | ND | 8 | µg/m3 |
| 1,2,4-Trimethylbenzene | ND | ND | 8 | µg/m3 |
| 1,3,5-Trimethylbenzene | ND | ND | 8 | µg/m3 |
| Vinyl chloride | ND | ND | 8 | µg/m3 |
| m,p-Xylene | ND | ND | 16 | µg/m3 |
| o-Xylene | ND | ND | 8 | µg/m3 |
| MTBE | ND | ND | 40 | µg/m3 |
| Ethyl-tert-butylether | ND | ND | 40 | µg/m3 |
| Di-isopropylether | ND | ND | 40 | µg/m3 |
| tert-amylmethylether | ND | ND | 40 | µg/m3 |
| tert-Butylalcohol | ND | ND | 400 | µg/m3 |
| Gasoline Range Organics (C4-C12) | ND | ND | 2000 | µg/m3 |
| **Tracer:** | | | | |
| n-Pentane | ND | ND | 80 | µg/m3 |
| n-Hexane | ND | ND | 80 | µg/m3 |
| n-Heptane | ND | ND | 80 | µg/m3 |
| **Dilution Factor** | 1 | 1 | | |
| **Surrogate Recoveries:** | | | **QC Limits** | |
| Dibromofluoromethane | 114% | 110% | 60 - 140 | |
| Toluene-$d_8$ | 97% | 92% | 60 - 140 | |
| 4-Bromofluorobenzene | 105% | 97% | 60 - 140 | |
| **Batch ID:** | G1-022120-01 | G1-022120-01 | | |

ND = Value below reporting limit

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## JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

| | | | |
|---|---|---|---|
| **Client:** | Mearns Consulting Corp | **Report date:** | 2/21/2020 |
| **Client Address:** | 738 Ashland Avenue<br>Santa Monica, CA 90405 | **Jones Ref. No.:** | G-0094 |
| **Attn:** | Susan L Mearns | **Date Sampled:** | 2/21/2020 |
| | | **Date Received:** | 2/21/2020 |
| **Project:** | 950 E 33rd & 3177 California Ave | **Date Analyzed:** | 2/21/2020 |
| **Project Address:** | 950 E 33rd & 3177 California Ave<br>Signal Hill, CA 90755 | **Physical State:** | Soil Gas |

### EPA 8260B – Volatile Organics by GC/MS + Oxygenates/Gasoline Range Organics

**Batch ID:** G1-022120-01

| **Jones ID:** | **022120-G1LCS1** | **022120-G1LCSD1** | | | **022120-G1CCV1** | |
|---|---|---|---|---|---|---|
| Parameter | LCS Recovery (%) | LCSD Recovery (%) | RPD | Acceptability Range (%) | CCV | Acceptability Range (%) |
| Vinyl chloride | 58% | 58% | 0.3% | 60 - 140 | 80% | 80 - 120 |
| 1,1-Dichloroethene | 78% | 81% | 2.8% | 60 - 140 | 98% | 80 - 120 |
| Cis-1,2-Dichloroethene | 104% | 102% | 2.4% | 70 - 130 | 100% | 80 - 120 |
| 1,1,1-Trichloroethane | 100% | 93% | 6.9% | 70 - 130 | 107% | 80 - 120 |
| Benzene | 102% | 98% | 3.4% | 70 - 130 | 103% | 80 - 120 |
| Trichloroethene | 93% | 96% | 3.0% | 70 - 130 | 98% | 80 - 120 |
| Toluene | 105% | 100% | 5.0% | 70 - 130 | 105% | 80 - 120 |
| Tetrachloroethene | 97% | 95% | 2.3% | 70 - 130 | 109% | 80 - 120 |
| Chlorobenzene | 107% | 101% | 6.3% | 70 - 130 | 102% | 80 - 120 |
| Ethylbenzene | 116% | 110% | 5.0% | 70 - 130 | 112% | 80 - 120 |
| 1,2,4 Trimethylbenzene | 127% | 119% | 6.8% | 70 - 130 | 107% | 80 - 120 |
| Gasoline Range Organics (C4-C12) | 113% | 107% | 5.1% | 70 - 130 | 107% | 80 - 120 |
| **Surrogate Recovery:** | | | | | | |
| Dibromofluoromethane | 111% | 109% | | 60 - 140 | 104% | 60 - 140 |
| Toluene-$d_8$ | 96% | 96% | | 60 - 140 | 102% | 60 - 140 |
| 4-Bromofluorobenzene | 100% | 101% | | 60 - 140 | 106% | 60 - 140 |

LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
CCV = Continuing Calibration Verification
RPD = Relative Percent Difference; Acceptability range for RPD is ≤ 20%

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# Soil-Gas Chain-of-Custody Record

**Client:** Mearns Consulting Corp
**Project Name:** 950 E 33rd & 3177 California Ave
**Project Address:** 950 E 33rd & 3177 California Ave
Signal Hill, CA 90755
**Email:**
**Phone:** 310-403-1921
**Report To:** Susan L Mearns
**Sampler:** Casey Ellis

**Date:** 2/21/2020
**Client Project #:**

Purge Number: ☐ 1P ☒ 3P ☐ 7P ☐ 10P
Shut-In Test: (Y) / N

**Report Options**
EDD ____
EDF* - 10% Surcharge____
*Global ID _____

*LAB USE ONLY*
**Jones Project #** G-0094
Page 1 of 2
Sample Container: GASTIGHT GLASS SYRINGE
If different than above, see Notes.

**Turn Around Requested**
☐ Immediate Attention
☐ Rush 24 Hours
☐ Rush 48 Hours
☐ Rush 72 Hours
☐ Normal
☒ Mobile Lab

**Tracer**
☒ n-pentane
☒ n-hexane
☒ n-heptane
☐ Isopropyl Alchohol
☐ 1,1-DFA
☐ _____

**Reporting Limits**
☒ Standard ☐ Low Level* ☐ MDL*
*surcharge for these limits
**Units** ug/m³

**Analysis Requested**

| Sample ID | Purge Number | Purge Volume (mL) | Date | Sample Collection Time | Sample Analysis Time | Laboratory Sample ID | Purge Rate (mL/min) | Pump Used | Magnehelic | Sample Matrix: Soil Gas (SG), Air (A), Material (M) | EPA 8260B (VOCs) | Gasoline Range Organics | | | Magnehelic Vacuum (In/$H_2O$) | Number of Containers | Notes & Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SV1-5' | 3 | 1310 | 2/21/20 | 07:52 | 07:52 | G-0094-01 | 200 | CASEY.1 | 118007 | SG | X | X | | | <2 | 1 | |
| SV1-10' | 3 | 1390 | 2/21/20 | 08:09 | 08:09 | G-0094-02 | 200 | JOEL.1 | M100.102 | SG | X | X | | | <2 | 1 | |
| SV2-5' | 3 | 1310 | 2/21/20 | 08:28 | 08:28 | G-0094-03 | 200 | CASEY.1 | M100.107 | SG | X | X | | | <2 | 1 | |
| SV2-10' | 3 | 1390 | 2/21/20 | 08:43 | 08:44 | G-0094-04 | 200 | JOEL.1 | M100.155 | SG | X | X | | | <2 | 1 | |
| SV3-5' | 3 | 1,310 | 2/21/20 | 09:02 | 09:05 | G-0094-05 | 200 | CASEY.1 | 118007 | SG | X | X | | | <2 | 1 | |
| SV3-10' | 3 | 1,390 | 2/21/20 | 9:17 | 09:20 | G-0094-06 | 200 | JOEL.1 | M100.102 | SG | X | X | | | <2 | 1 | |
| SV4-5' | 3 | 1,310 | 2/21/20 | 9:37 | 09:38 | G-0094-07 | 200 | CASEY.1 | M100.107 | SG | X | X | | | <2 | 1 | |
| SV4-10' | 3 | 1390 | 2/21/20 | 09:56 | 09:57 | G-0094-08 | 200 | JOEL.1 | M100.155 | SG | X | X | | | <2 | 1 | |
| SV4-10' REP | 3 | 1390 | 2/21/20 | 10:06 | 10:12 | G-0094-09 | 200 | JOEL.1 | M100.155 | SG | X | X | | | <2 | 1 | |
| SV5-5' | 3 | 1310 | 2/21/20 | 10:28 | 10:30 | G-0094-10 | 200 | CASEY.1 | 118007 | SG | X | X | | | <2 | 1 | |

| Representative Signature | Printed Name | Laboratory Signature | Printed Name | | |
|---|---|---|---|---|---|
| [signature] | SUSAN MEARNS | [signature] | CASEY ELLIS | 10 | Total Number of Containers |
| **Company** | **Date** / **Time** | **Company** | **Date** / **Time** | | |
| MEARNS CONSULTING CORP | 2/21/2020 13:40 | JONES ENVIRONMENTAL, INC. | 2/21/2020 13:40 | | |
| **Representative Signature** | **Printed Name** | **Laboratory Signature** | **Printed Name** | | |
| | | | | | |
| **Company** | **Date** / **Time** | **Company** | **Date** / **Time** | | |
| | | | | | |

Client signature on this Chain of Custody form constitutes acknowledgement that the above analyses have been reqested, and the information provided herein is correct and accurate.

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# Soil-Gas Chain-of-Custody Record

**Client:** Mearns Consulting Corp

**Project Name:** 950 E 33rd & 3177 California Ave

**Project Address:** 950 E 33rd & 3177 California Ave

Signal Hill, CA 90755

**Email:**

**Phone:** 310-403-1921

**Report To:** Susan L Mearns

**Sampler:** Casey Ellis

**Date:** 2/21/2020

**Client Project #:** 0

**Purge Number:** □ 1P ☒ 3P □ 7P □ 10P

**Shut-In Test:** (Y) / N

**Report Options:** EDD ____ EDF* - 10% Surcharge____ *Global ID _____

**Turn Around Requested:**
- □ Immediate Attention
- □ Rush 24 Hours
- □ Rush 48 Hours
- □ Rush 72 Hours
- □ Normal
- ☒ Mobile Lab

**Tracer:**
- ☒ n-pentane
- ☒ n-hexane
- ☒ n-heptane
- □ Isopropyl Alchohol
- □ 1,1-DFA
- □ _____

**Reporting Limits:** ☒ Standard □ Low Level* □ MDL* (*surcharge for these limits)

**Units:** ug/m3

**Analysis Requested**

*LAB USE ONLY*

**Jones Project #:** G-0094

Page 2 of 2

Sample Container: GASTIGHT GLASS SYRINGE

If different than above, see Notes.

| Sample ID | Purge Number | Purge Volume (mL) | Date | Sample Collection Time | Sample Analysis Time | Laboratory Sample ID | Purge Rate (mL/min) | Pump Used | Magnehelic | Sample Matrix: Soil Gas (SG), Air (A), Material (M) | EPA 8260B (VOCs) | Gasoline Range Organics | | | Magnehelic Vacuum (In/$H_2O$) | Number of Containers | Notes & Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SV5-10' | 3 | 1390 | 2/21/20 | 10:43 | 10:47 | G-0094-11 | 200 | JOEL.1 | M100.102 | SG | X | X | | | <2 | 1 | |
| SV6-5' | 3 | 1310 | 2/21/20 | 11:05 | 11:06 | G-0094-12 | 200 | CASEY.1 | M100.107 | SG | X | X | | | <2 | 1 | |
| SV6-5' REP | 3 | 1310 | 2/21/20 | 11:12 | 11:21 | G-0094-13 | 200 | CASEY.1 | M100.107 | SG | X | X | | | <2 | 1 | |
| SV7-5' | 3 | 1310 | 2/21/20 | 11:45 | 11:45 | G-0094-15 | 200 | CASEY.1 | 118007 | SG | X | X | | | <2 | 1 | |
| SV7-10' | 3 | 1,390 | 2/21/20 | 11:53 | 12:00 | G-0094-16 | 200 | JOEL.1 | M100.102 | SG | X | X | | | 40 | 1 | |
| SV8-5' | 3 | 1,310 | 2/21/20 | 12:10 | 12:17 | G-0094-17 | 200 | CASEY.1 | M100.107 | SG | X | X | | | 20 | 1 | |
| SV8-10' | 3 | 1,390 | 2/21/20 | 12:36 | 12:39 | G-0094-18 | 200 | JOEL.1 | M100.155 | SG | X | X | | | <2 | 1 | |
| SV9-5' | 3 | 1310 | 2/21/20 | 12:55 | 12:57 | G-0094-19 | 200 | JOEL.1 | 118007 | SG | X | X | | | <2 | 1 | |
| SV9-10' | 3 | 1390 | 2/21/20 | 13:09 | 13:14 | G-0094-20 | 100 | CASEY.1 | M100.102 | SG | X | X | | | 50 | 1 | LOW FLOW |
| SV6-10' | - | - | 2/21/20 | 11:30 | - | - | - | - | M100.102 | - | - | - | | | >100 | - | NO FLOW |

9 Total Number of Containers

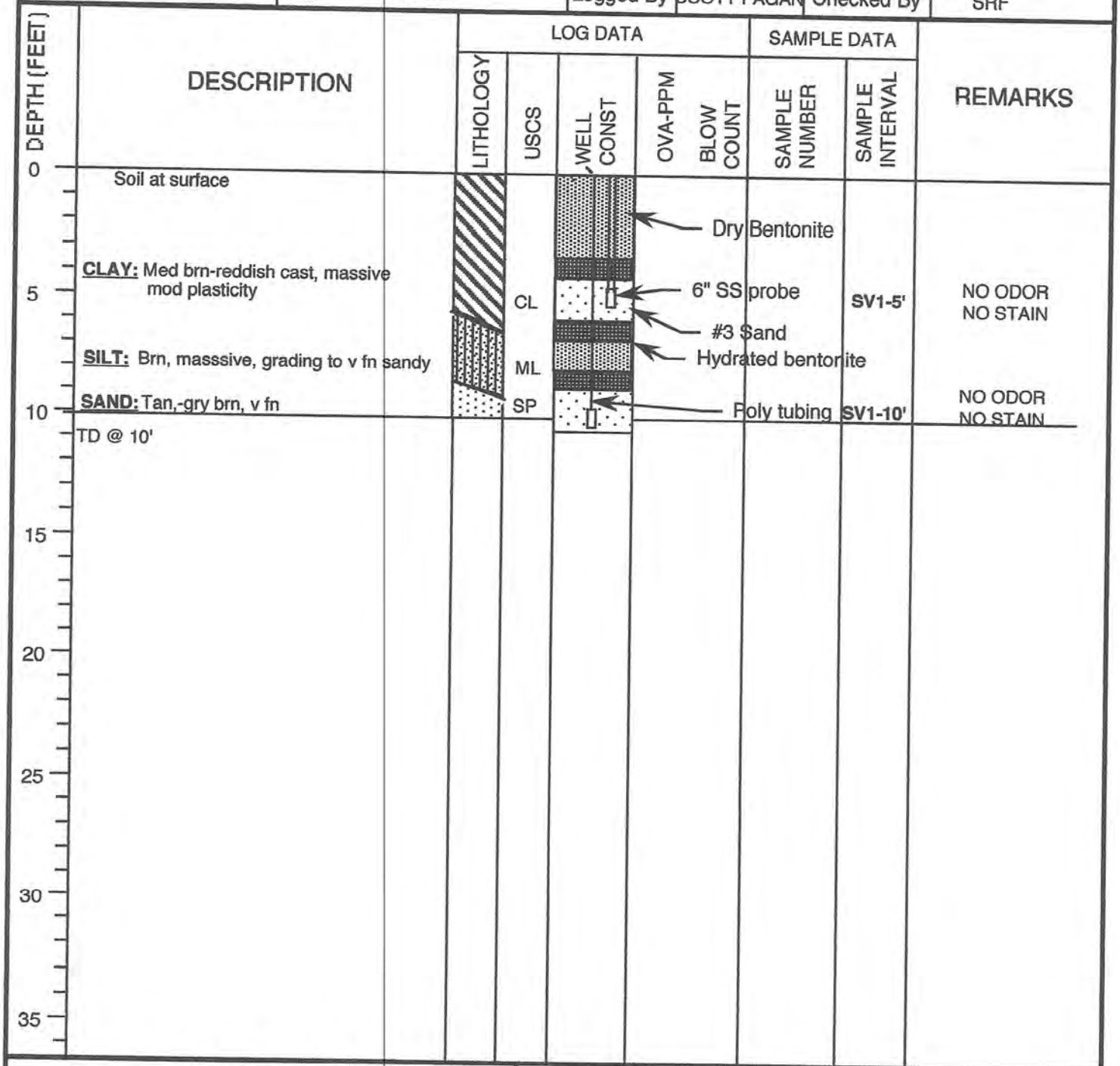
| | | | |
|---|---|---|---|
| **Representative Signature** | **Printed Name** SUSAN MEARNS | **Laboratory Signature** | **Printed Name** CASEY ELLIS |
| **Company** MEARNS CONSULTING CORP | **Date** 2/21/2020 **Time** 13:40 | **Company** JONES ENVIRONMENTAL, INC. | **Date** 2/21/2020 **Time** 13:40 |
| **Representative Signature** | **Printed Name** | **Laboratory Signature** | **Printed Name** |
| **Company** | **Date** **Time** | **Company** | **Date** **Time** |

Client signature on this Chain of Custody form constitutes acknowledgement that the above analyses have been reqested, and the information provided herein is correct and accurate.

# APPENDIX D

## Boring Logs

| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV1 | Elevation or Datum | grade | | |
| Drilling Company | Gregg Drilling | Completion Depth | 10 FEET | | |
| Drilling Equipment | Marl 25 DP | Number of Samples | 2 | | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | NA | | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | NA | | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |

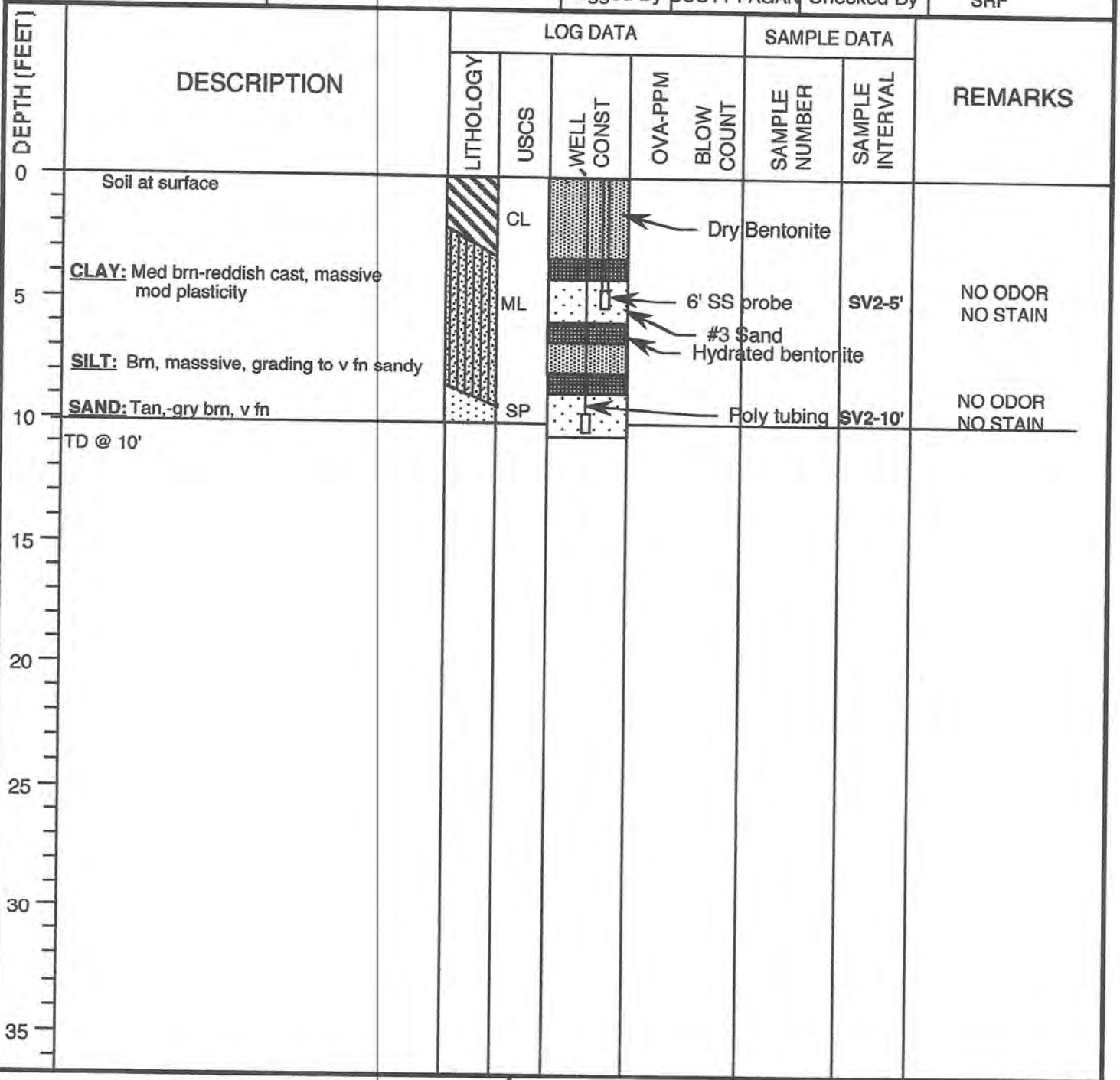



**MEARNS CONSULTING CORP.**

**BORING LOG SV1**
3177 California Ave
Signal Hill, California

| Project Number | Date | PM | Page |
|---|---|---|---|
| | 2/18/20 | SM | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV2 | Elevation or Datum | grade | | |
| Drilling Company | Gregg Drilling | Completion Depth | 10 FEET | | |
| Drilling Equipment | Marl 25 DP | Number of Samples | 2 | | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | NA | | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | NA | | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |

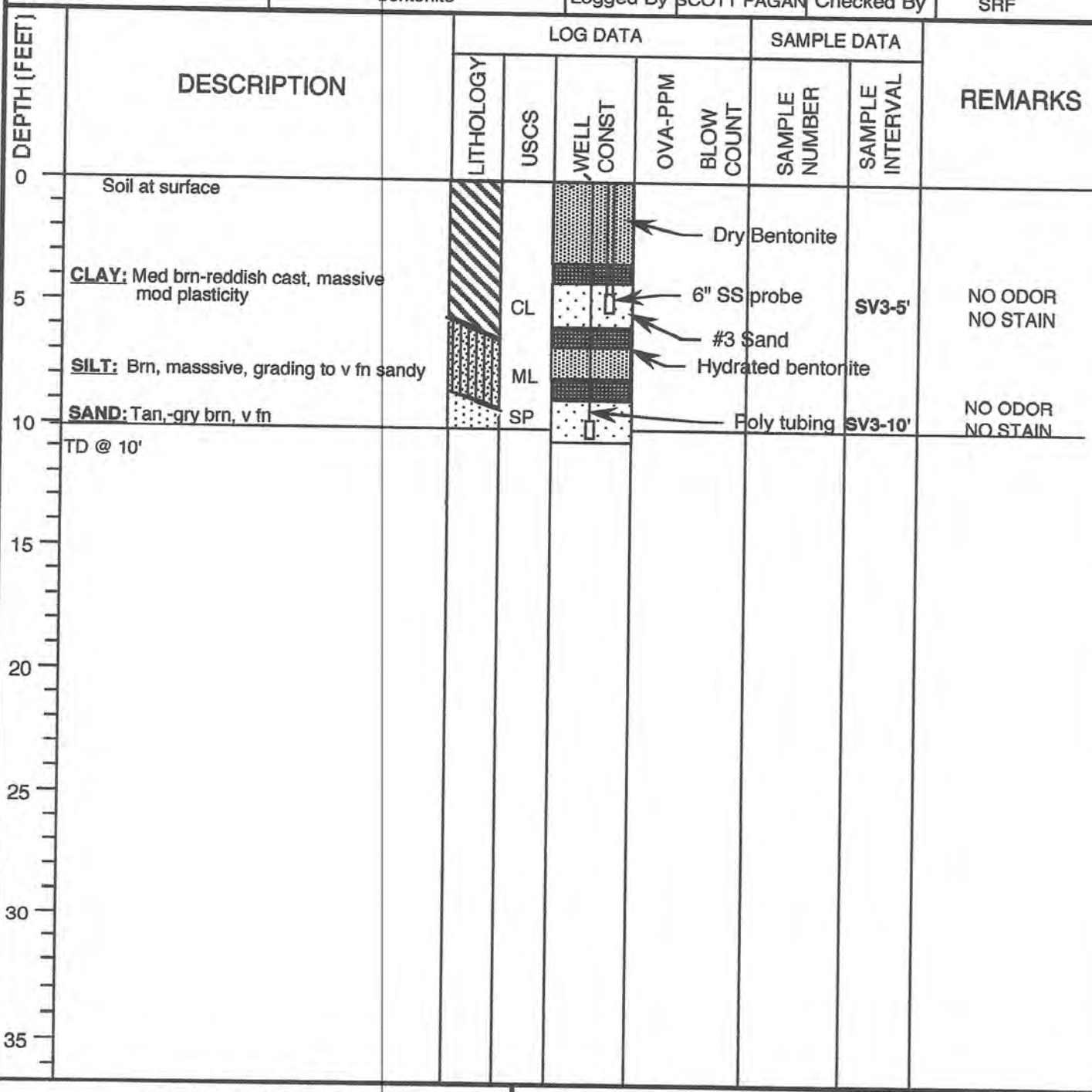



**MEARNS CONSULTING CORP.**

**BORING LOG SV2**
3177 California Ave
Signal Hill, California

| Project Number | Date | PM | Page |
|---|---|---|---|
| | 2/18/20 | SM | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV3 | Elevation or Datum | grade | | |
| Drilling Company | Gregg Drilling | Completion Depth | 10 FEET | | |
| Drilling Equipment | Marl 25 DP | Number of Samples | 2 | | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | NA | | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | NA | | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |

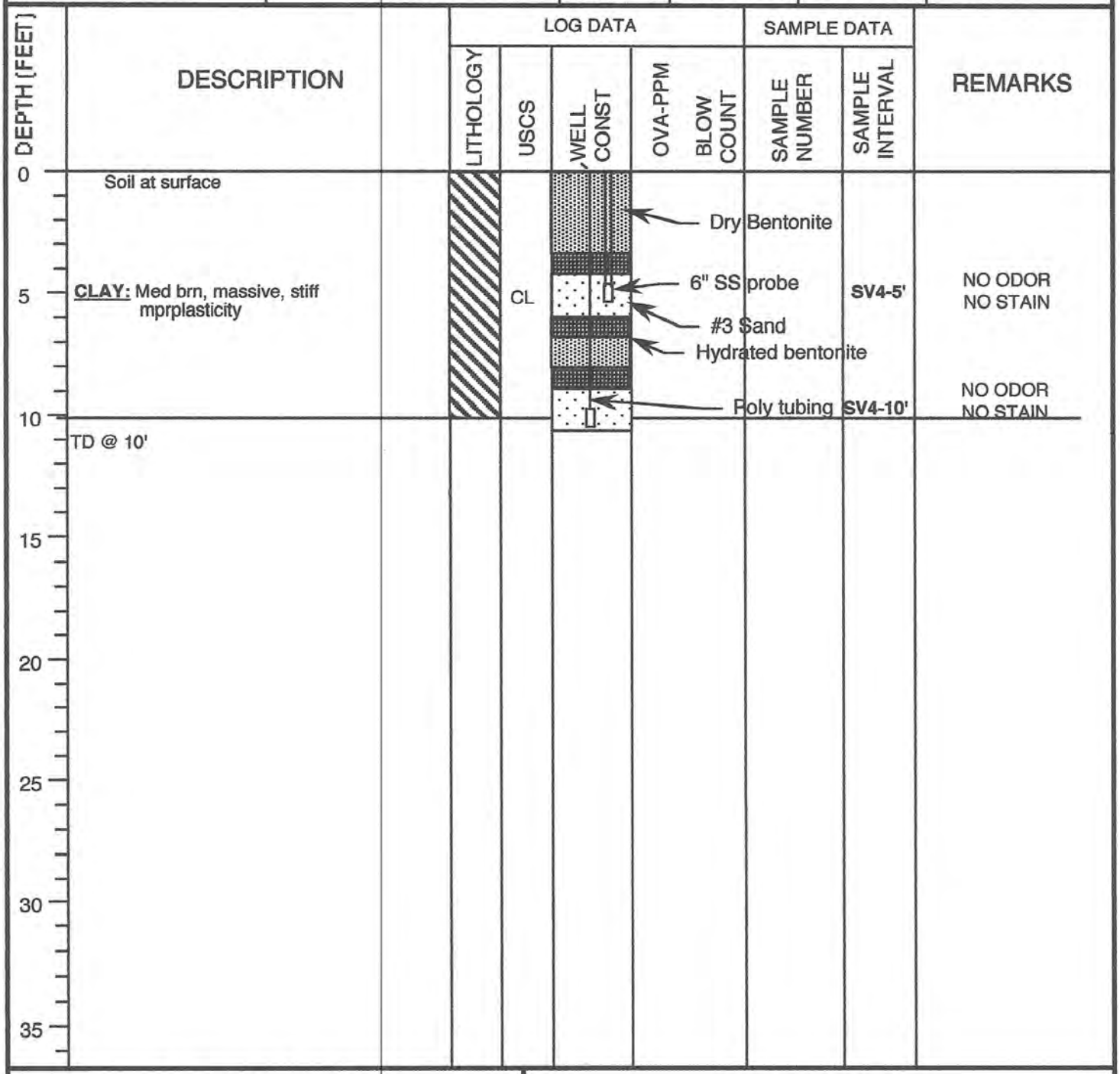



**MEARNS CONSULTING CORP.**

**BORING LOG SV3**
3177 California Ave
Signal Hill, California

| Project Number | Date | PM | Page |
|---|---|---|---|
| | 2/18/20 | SM | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV4 | Elevation or Datum | grade | | |
| Drilling Company | Gregg Drilling | Completion Depth | 10 FEET | | |
| Drilling Equipment | Marl 25 DP | Number of Samples | 2 | | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | NA | | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | NA | | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |

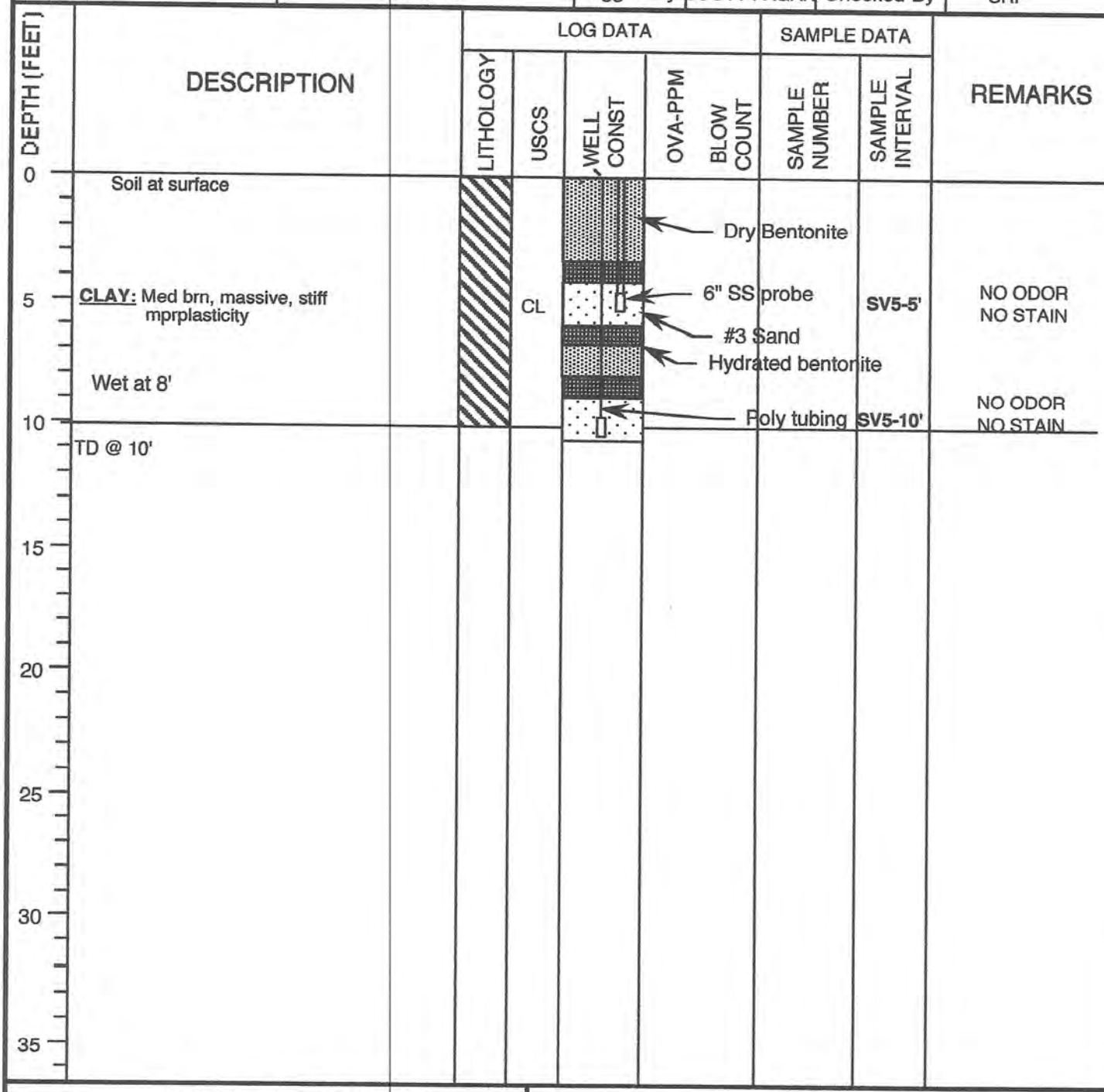



**MEARNS CONSULTING CORP.**

**BORING LOG SV4**
3177 California Ave
Signal Hill, California

| Project Number | Date | PM | Page |
|---|---|---|---|
| | 2/18/20 | SM | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV5 | Elevation or Datum | | grade | |
| Drilling Company | Gregg Drilling | Completion Depth | | 10 FEET | |
| Drilling Equipment | Marl 25 DP | Number of Samples | | 2 | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | | NA | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | | NA | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |

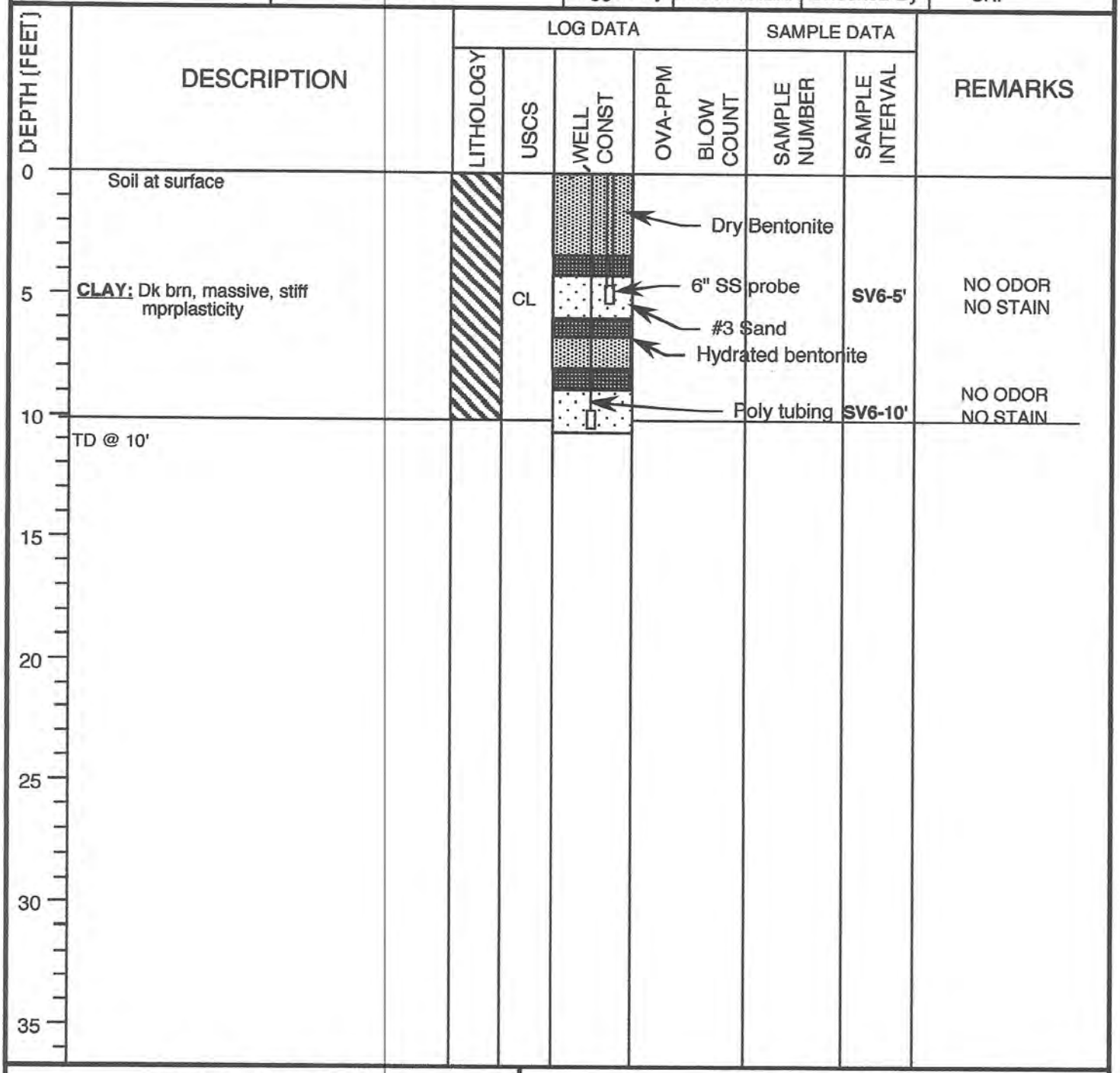



**MEARNS CONSULTING CORP.**

**BORING LOG SV5**
3177 California Ave
Signal Hill, California

| Project Number | Date | PM | Page |
|---|---|---|---|
| | 2/18/20 | SM | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV6 | Elevation or Datum | | grade | |
| Drilling Company | Gregg Drilling | Completion Depth | | 10 FEET | |
| Drilling Equipment | Marl 25 DP | Number of Samples | | 2 | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | | NA | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | | NA | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |

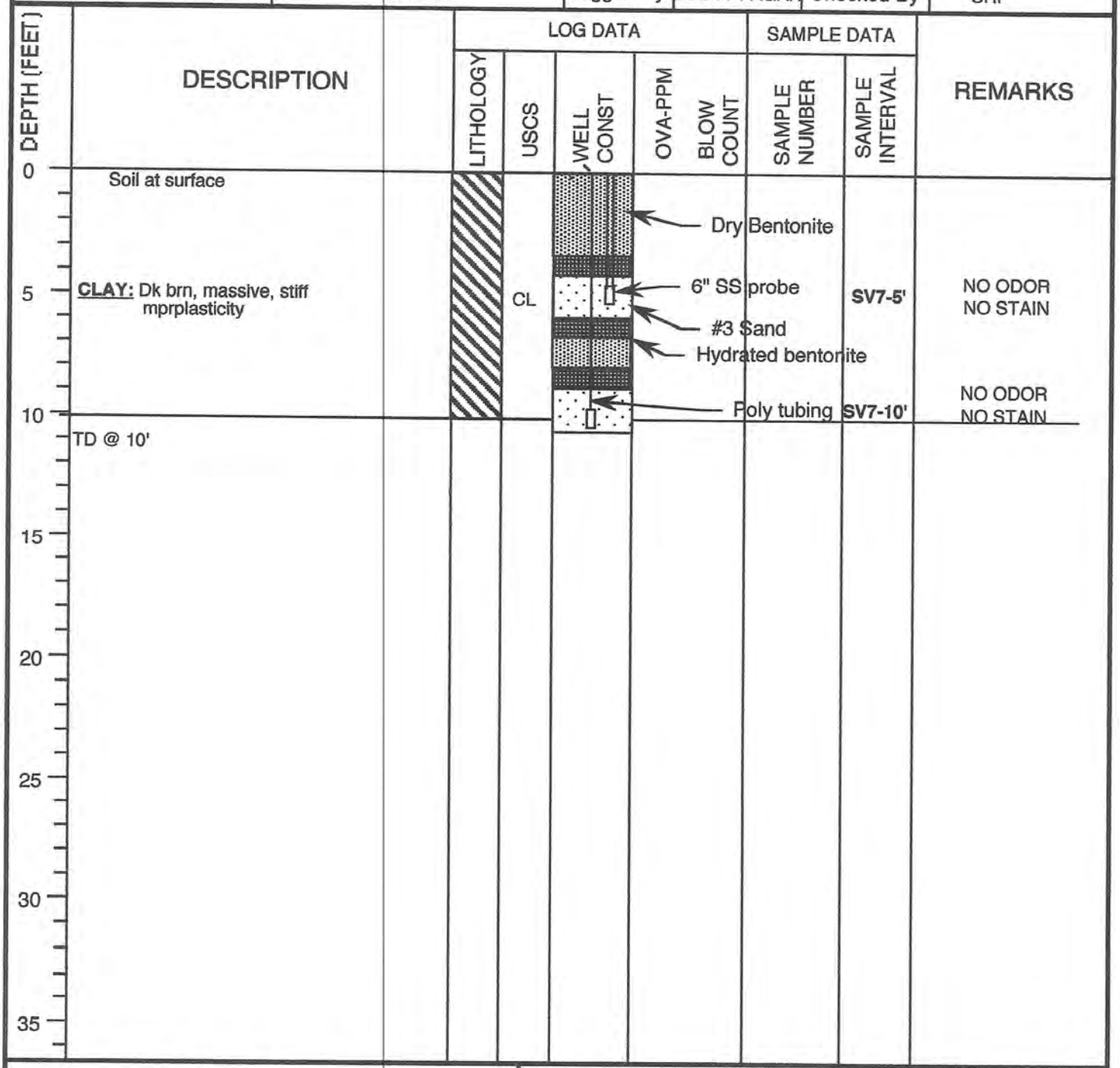



**MEARNS CONSULTING CORP.**

**BORING LOG SV6**
3177 California Ave
Signal Hill, California

| Project Number | Date | PM | Page |
|---|---|---|---|
| | 2/18/20 | SM | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV7 | Elevation or Datum | grade | | |
| Drilling Company | Gregg Drilling | Completion Depth | 10 FEET | | |
| Drilling Equipment | Marl 25 DP | Number of Samples | 2 | | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | NA | | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | NA | | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |

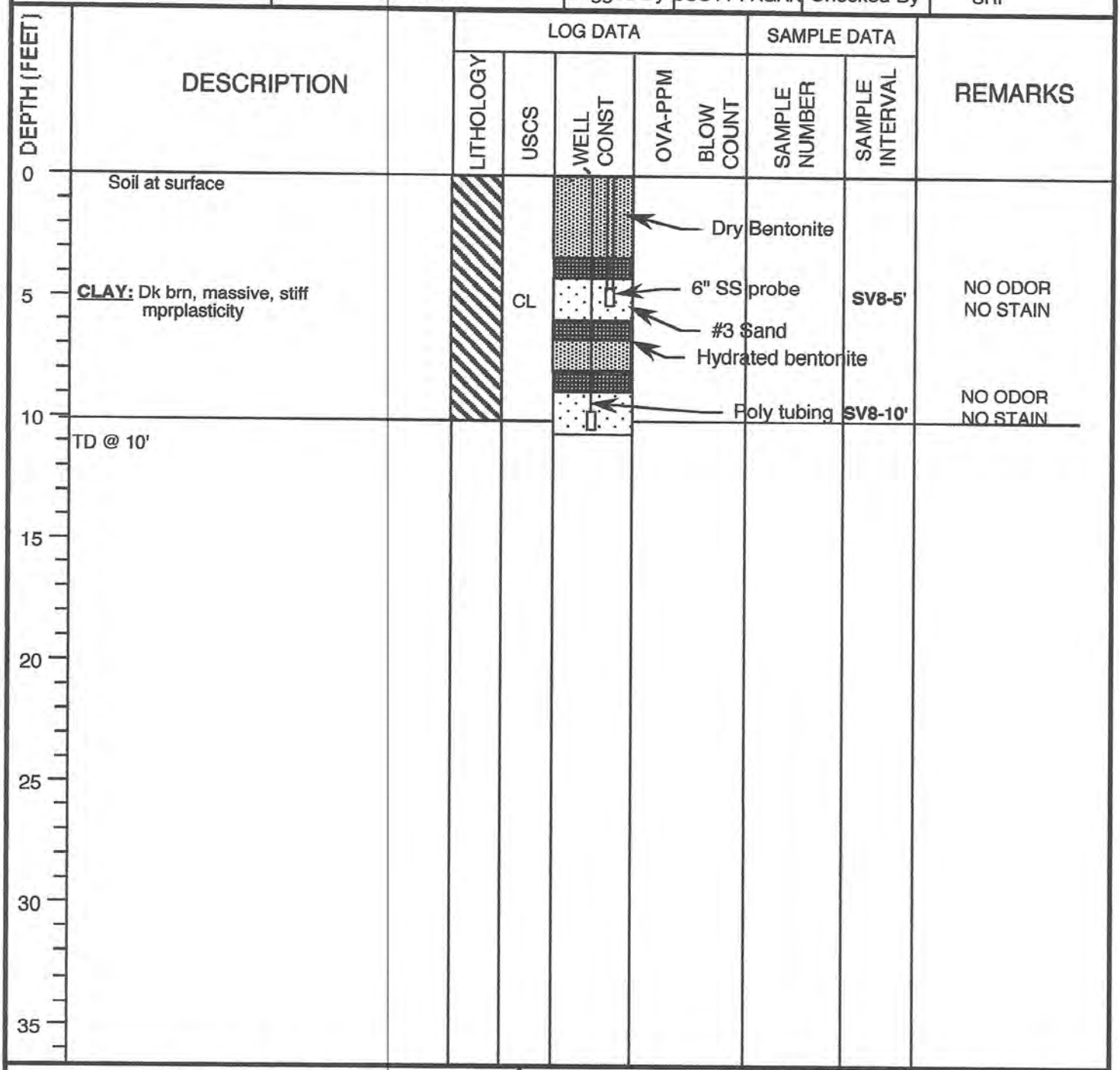



**MEARNS CONSULTING CORP.**

**BORING LOG SV7**
3177 California Ave
Signal Hill, California

| Project Number | Date | PM | Page |
|---|---|---|---|
| | 2/18/20 | SM | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV8 | Elevation or Datum | grade | | |
| Drilling Company | Gregg Drilling | Completion Depth | 10 FEET | | |
| Drilling Equipment | Marl 25 DP | Number of Samples | 2 | | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | NA | | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | NA | | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |

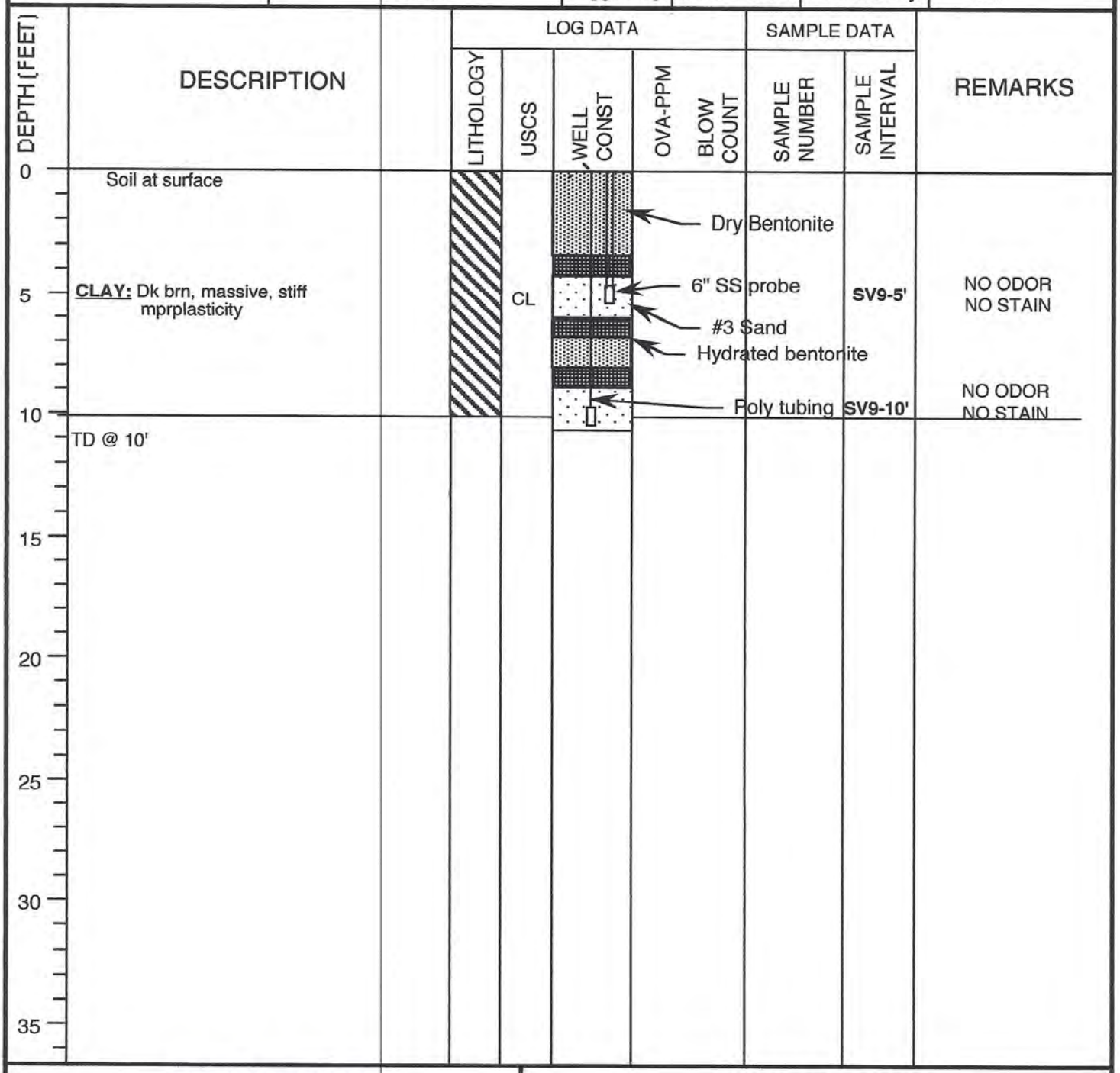



**MEARNS CONSULTING CORP.**

**BORING LOG SV8**
3177 California Ave
Signal Hill, California

| Project Number | Date | PM | Page |
|---|---|---|---|
| | 2/18/20 | SM | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Boring Location | SV9 | Elevation or Datum | | grade | |
| Drilling Company | Gregg Drilling | Completion Depth | | 10 FEET | |
| Drilling Equipment | Marl 25 DP | Number of Samples | | 2 | |
| Type/Diameter of Casing | NA | Water Depth at Date of Installation | | NA | |
| Type of Perforation | NA | Start Date | 2/18/20 | Completion Date | 2/18/20 |
| Type of Perforation Backfill | NA | Date Developed and Sampled | | NA | |
| Type of Seal | bentonite | Logged By | SCOTT FAGAN | Checked By | SRF |




# MEARNS CONSULTING CORP.

**BORING LOG SV9**
3177 California Ave
Signal Hill, California

| Project Number | Date | PM | Page |
|---|---|---|---|
| | 2/18/20 | SM | 1 |

# APPENDIX E

## Statistics Metals Background


Multiple Box Plots
Ordered Observations
1.50
1.40
1.30
1.20
1.10
1.00
0.90
0.80
Maximum Non-Detect Value 0.8
Ag
Offsite Ag

## Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 7:54:42 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Ag**

**Sample 2 Data: Offsite Ag**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 18 | 4 |
| Number of Non-Detects | 10 | 4 |
| Number of Detect Data | 8 | 0 |
| Minimum Non-Detect | 1 | 0.8 |
| Maximum Non-Detect | 1 | 0.8 |
| Percent Non-detects | 55.56% | 100.00% |
| Minimum Detect | 1 | N/A |
| Maximum Detect | 1.5 | N/A |
| Mean of Detects | 1.138 | N/A |
| Median of Detects | 1.1 | N/A |
| SD of Detects | 0.16 | N/A |
| KM Mean | 1.061 | N/A |
| KM SD | 0.121 | N/A |

**Sample 1 vs Sample 2 Gehan Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of background**

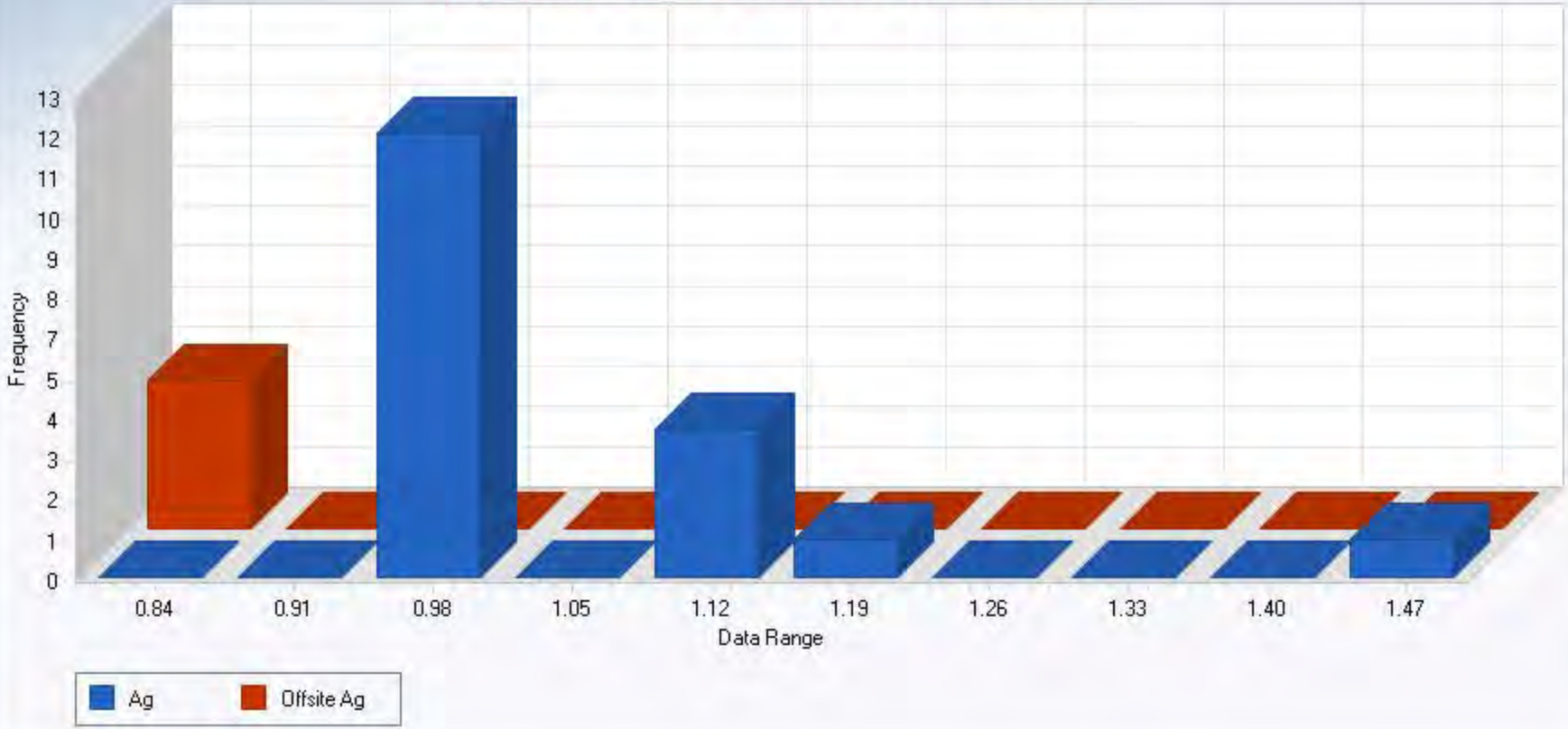
| | |
|---|---|
| Gehan z Test Value | 1.58 |
| Critical z (0.05) | 1.645 |
| P-Value | 0.0571 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

# Multiple Histogram
## Reported values used for nondetects




☐ Normal Distribution

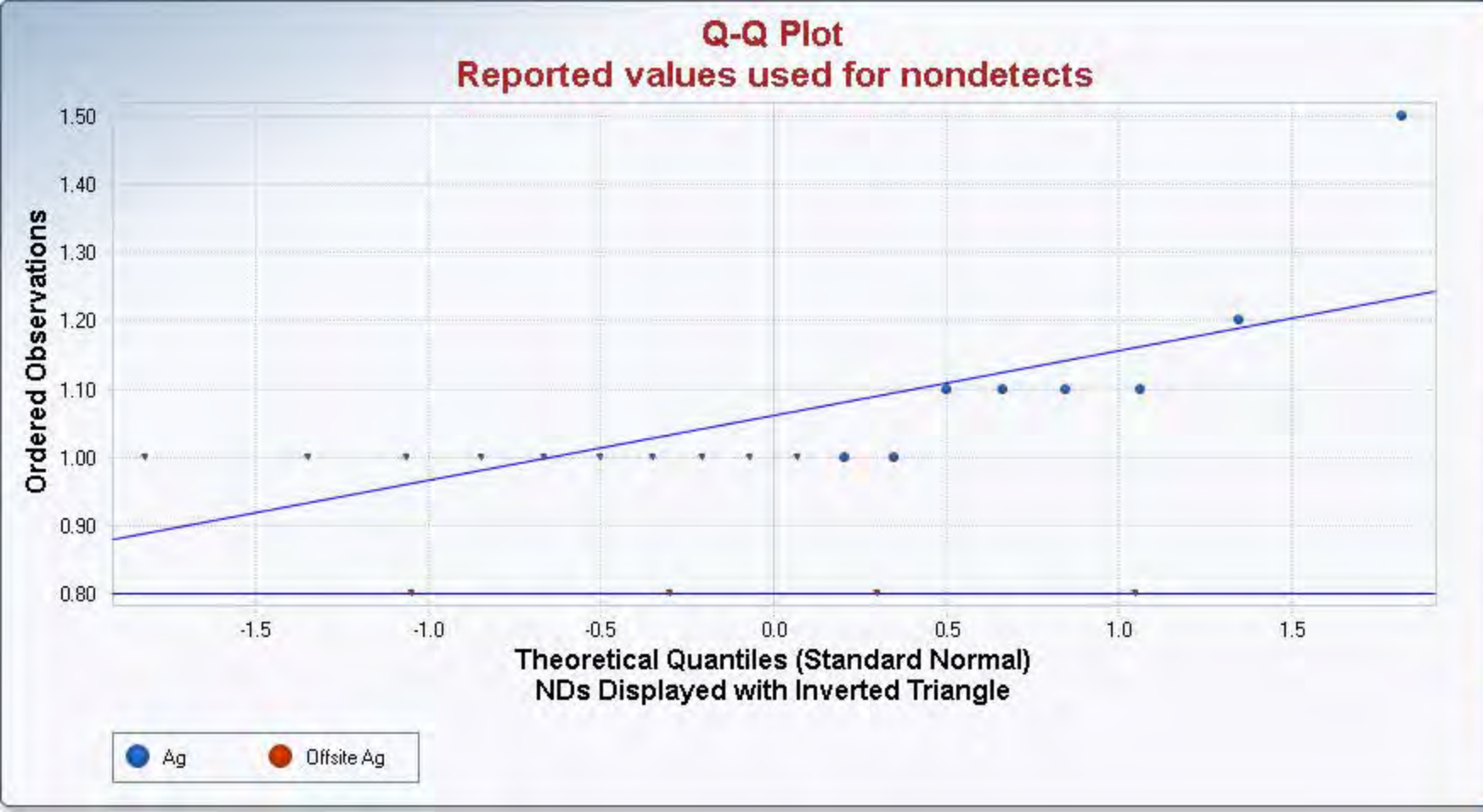
☐ Less Bins
☐ More Bins

**Ag**

| | |
|---|---|
| Number of Values | 18 |
| Number of Values | 18 |
| Mean | 1.06 |
| SD | 0.12 |

**Offsite Ag**

| | |
|---|---|
| Number of Values | 4 |
| Number of Values | 4 |
| Mean | 0.80 |
| SD | 0.00 |




**Ag**

Total Number of Data = 18
Number of Non-Detects = 10
Number of Detects = 8
Detected Mean = 1.138
Detected Sd = 0.16
Slope (displayed data) = 0.0949
Intercept (displayed data)= 1.061
Correlation, R = 0.733

**Offsite Ag**

Total Number of Data = 4
Number of Non-Detects = 4
Number of Detects = 0
Detected Mean = N/A
Detected Sd = N/A
Slope (displayed data) = 1.213E-16
Intercept (displayed data)= 0.8
Correlation, R = N/A

Best Fit Line

**Tarone-Ware Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 7:55:54 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Ag**

**Sample 2 Data: Offsite Ag**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 18 | 4 |
| Number of Non-Detects | 10 | 4 |
| Number of Detects | 8 | 0 |
| Minimum Non-Detect | 1 | 0.8 |
| Maximum Non-Detect | 1 | 0.8 |
| Percent Non-detects | 55.56% | 100.00% |
| Minimum Detect | 1 | N/A |
| Maximum Detect | 1.5 | N/A |
| Mean of Detects | 1.138 | N/A |
| Median of Detects | 1.1 | N/A |
| SD of Detects | 0.16 | N/A |
| KM Mean | 1.061 | N/A |
| KM SD | 0.121 | N/A |

**Sample 1 vs Sample 2 Tarone-Ware Test**

**There are no detects in at least on of the groups - no analysis will be performed!**

**Graphical displays may be helpful!**

| | |
|---|---|
| **Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects** | |
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 7:56:47 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Ag**

**Sample 2 Data: Offsite Ag**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 18 | 4 |
| Number of Non-Detects | 10 | 4 |
| Number of Detect Data | 8 | 0 |
| Minimum Non-Detect | 1 | 0.8 |
| Maximum Non-Detect | 1 | 0.8 |
| Percent Non-detects | 55.56% | 100.00% |
| Minimum Detect | 1 | N/A |
| Maximum Detect | 1.5 | N/A |
| Mean of Detects | 1.138 | N/A |
| Median of Detects | 1.1 | N/A |
| SD of Detects | 0.16 | N/A |

**WMW test is meant for a Single Detection Limit Case**

**Use of Gehan or T-W test is suggested when multiple detection limits are present**

**All observations <= 1 (Max DL) are ranked the same**

**Wilcoxon-Mann-Whitney (WMW) Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

**There are no detects in at least on of the groups - no analysis will be performed**

**Graphical displays may be helpful!**


Multiple Box Plots
Ordered Observations
21
18
15
12
9
6
3
As
Offsite As

**Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 7:57:37 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: As**

**Sample 2 Data: Offsite As**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 18 | 0 |
| Number of Detect Data | 4 | 4 |
| Minimum Non-Detect | 7.7 | N/A |
| Maximum Non-Detect | 7.7 | N/A |
| Percent Non-detects | 81.82% | 0.00% |
| Minimum Detect | 2.49 | 5.2 |
| Maximum Detect | 23 | 14 |
| Mean of Detects | 10.45 | 10.8 |
| Median of Detects | 8.15 | 12 |
| SD of Detects | 9.329 | 3.851 |
| KM Mean | 4.677 | 10.8 |
| KM SD | 4.465 | 3.851 |

**Sample 1 vs Sample 2 Gehan Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of background**

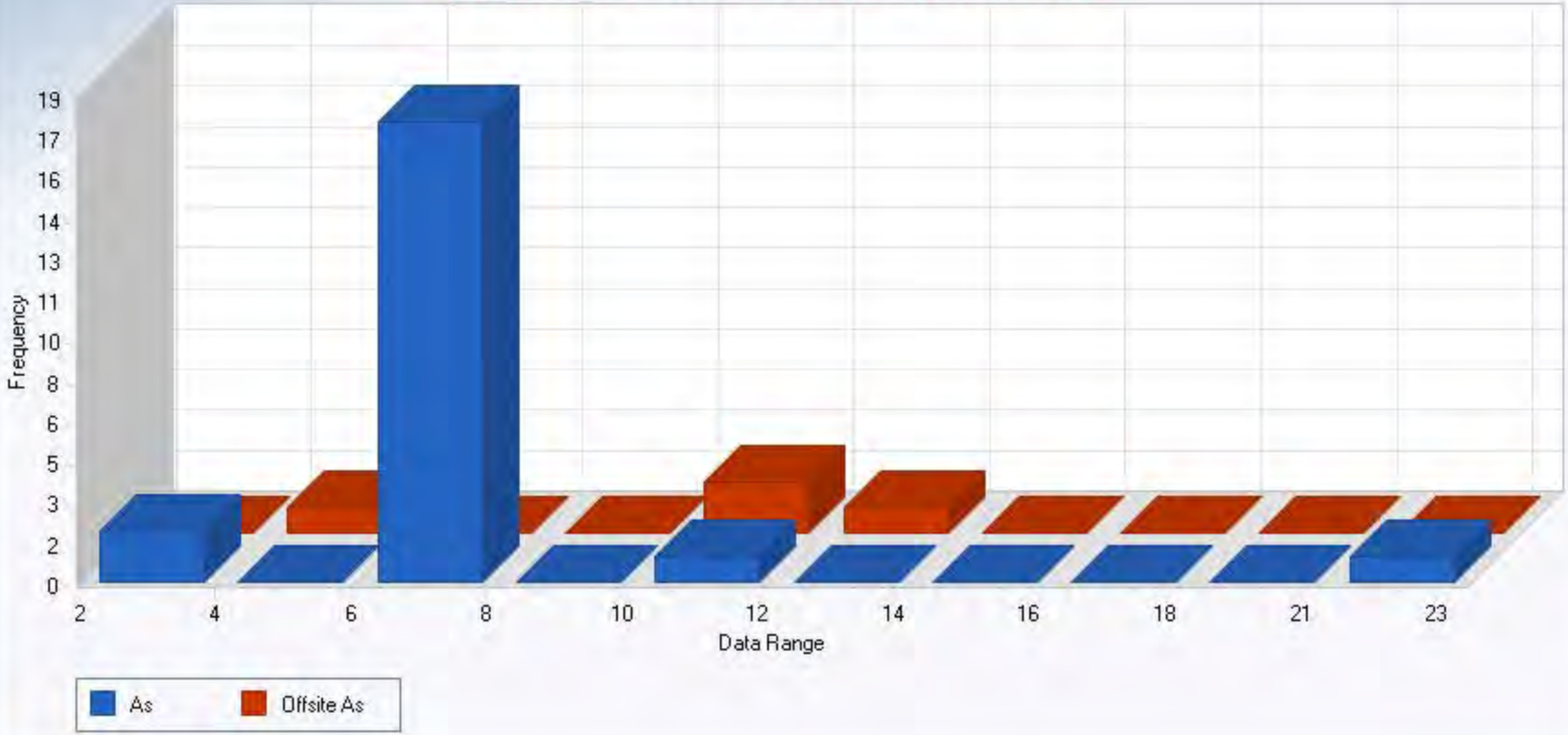
| | |
|---|---|
| Gehan z Test Value | -3.094 |
| Critical z (0.05) | 1.645 |
| P-Value | 0.999 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

# Multiple Histogram
## Reported values used for nondetects

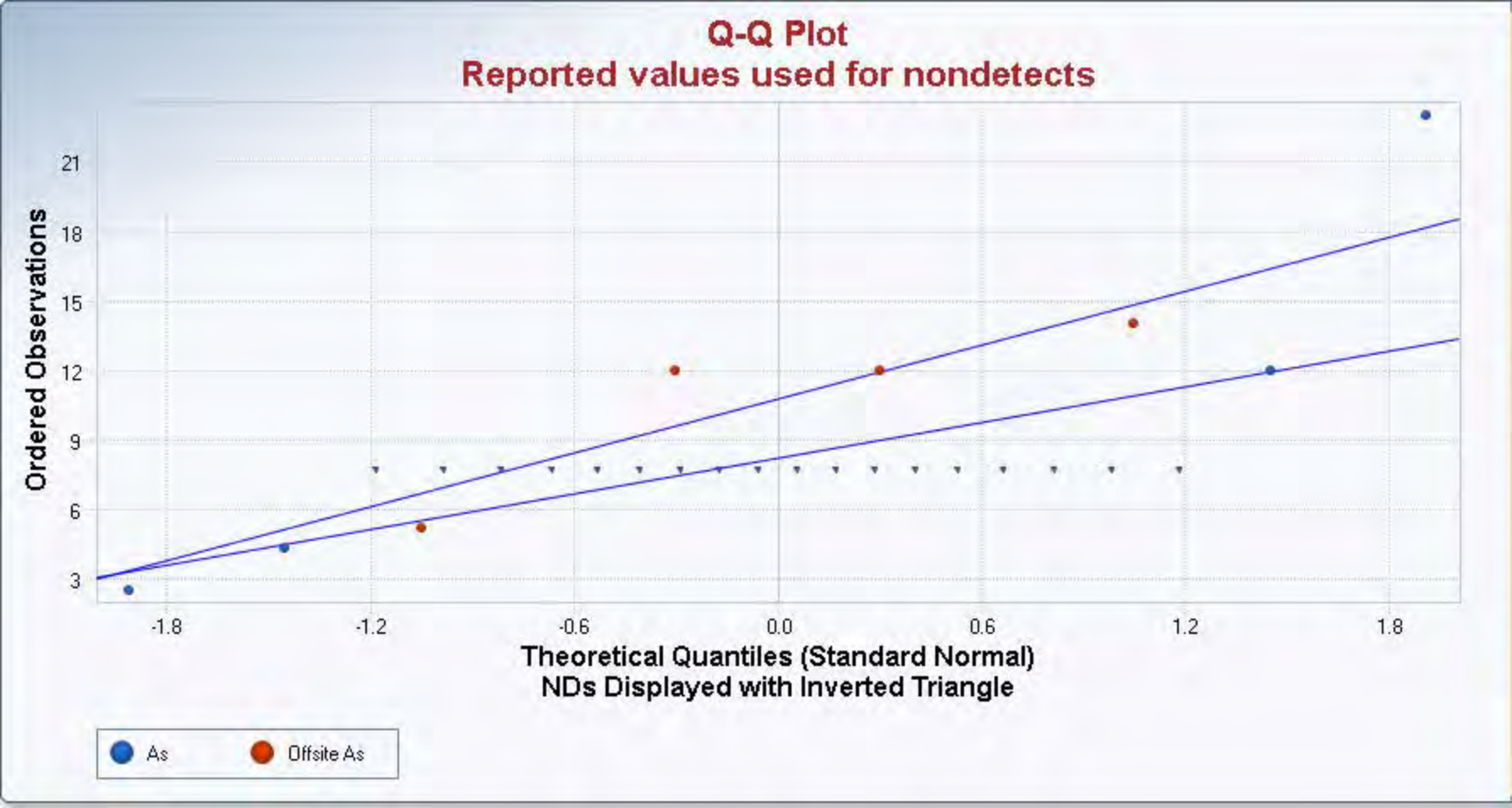



☐ Normal Distribution

☐ Less Bins

☐ More Bins

| | |
|---|---|
| **As** | |
| Number of Values | 22 |
| Number of Values | 22 |
| Mean | 8.20 |
| SD | 3.69 |
| **Offsite As** | |
| Number of Values | 4 |
| Number of Values | 4 |
| Mean | 10.80 |
| SD | 3.85 |




**As**

Total Number of Data = 22
Number of Non-Detects = 18
Number of Detects = 4
Detected Mean = 10.45
Detected Sd = 9.329
Slope (displayed data) = 2.571
Intercept (displayed data)= 8.2
Correlation, R = 0.673

**Offsite As**

Total Number of Data = 4
Number of Non-Detects = 0
Number of Detects = 4
Detected Mean = 10.8
Detected Sd = 3.851
Slope (displayed data) = 3.878
Intercept (displayed data)= 10.8
Correlation, R = 0.897

Best Fit Line

## Tarone-Ware Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 7:58:29 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: As**

**Sample 2 Data: Offsite As**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 18 | 0 |
| Number of Detects | 4 | 4 |
| Minimum Non-Detect | 7.7 | N/A |
| Maximum Non-Detect | 7.7 | N/A |
| Percent Non-detects | 81.82% | 0.00% |
| Minimum Detect | 2.49 | 5.2 |
| Maximum Detect | 23 | 14 |
| Mean of Detects | 10.45 | 10.8 |
| Median of Detects | 8.15 | 12 |
| SD of Detects | 9.329 | 3.851 |
| KM Mean | 4.677 | 10.8 |
| KM SD | 4.465 | 3.851 |

**Sample 1 vs Sample 2 Tarone-Ware Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| TW Statistic | -3.279 |
| TW Critical Value (0.05) | 1.645 |
| P-Value | 0.999 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

## Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 7:59:13 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: As**

**Sample 2 Data: Offsite As**

### Raw Statistics

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 18 | 0 |
| Number of Detect Data | 4 | 4 |
| Minimum Non-Detect | 7.7 | N/A |
| Maximum Non-Detect | 7.7 | N/A |
| Percent Non-detects | 81.82% | 0.00% |
| Minimum Detect | 2.49 | 5.2 |
| Maximum Detect | 23 | 14 |
| Mean of Detects | 10.45 | 10.8 |
| Median of Detects | 8.15 | 12 |
| SD of Detects | 9.329 | 3.851 |

### Wilcoxon-Mann-Whitney (WMW) Test

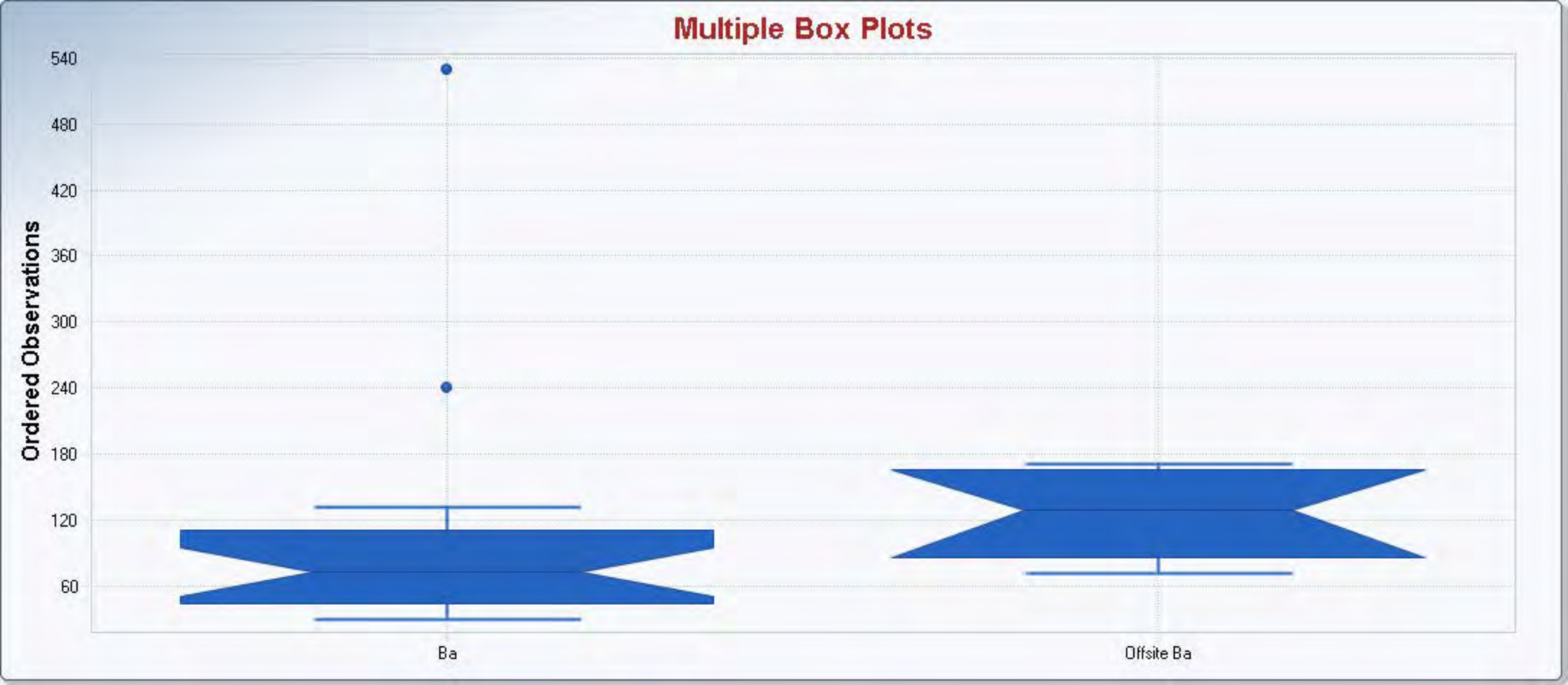
**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| Sample 1 Rank Sum W-Stat | 269 |
| Standardized WMW U-Stat | -2.948 |
| Mean (U) | 44 |
| SD(U) - Adj ties | 14.06 |
| Approximate U-Stat Critical Value (0.05) | 1.645 |
| P-Value (Adjusted for Ties) | 0.998 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**


Multiple Box Plots
Ordered Observations
540
480
420
360
300
240
180
120
60
Ba
Offsite Ba

**Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:07:51 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Ba**

**Sample 2 Data: Offsite Ba**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detect Data | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 30 | 73 |
| Maximum Detect | 530 | 170 |
| Mean of Detects | 102.6 | 125 |
| Median of Detects | 72 | 128.5 |
| SD of Detects | 106.6 | 47.39 |
| KM Mean | 102.6 | 125 |
| KM SD | 106.6 | 47.39 |

**Sample 1 vs Sample 2 Gehan Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of background**

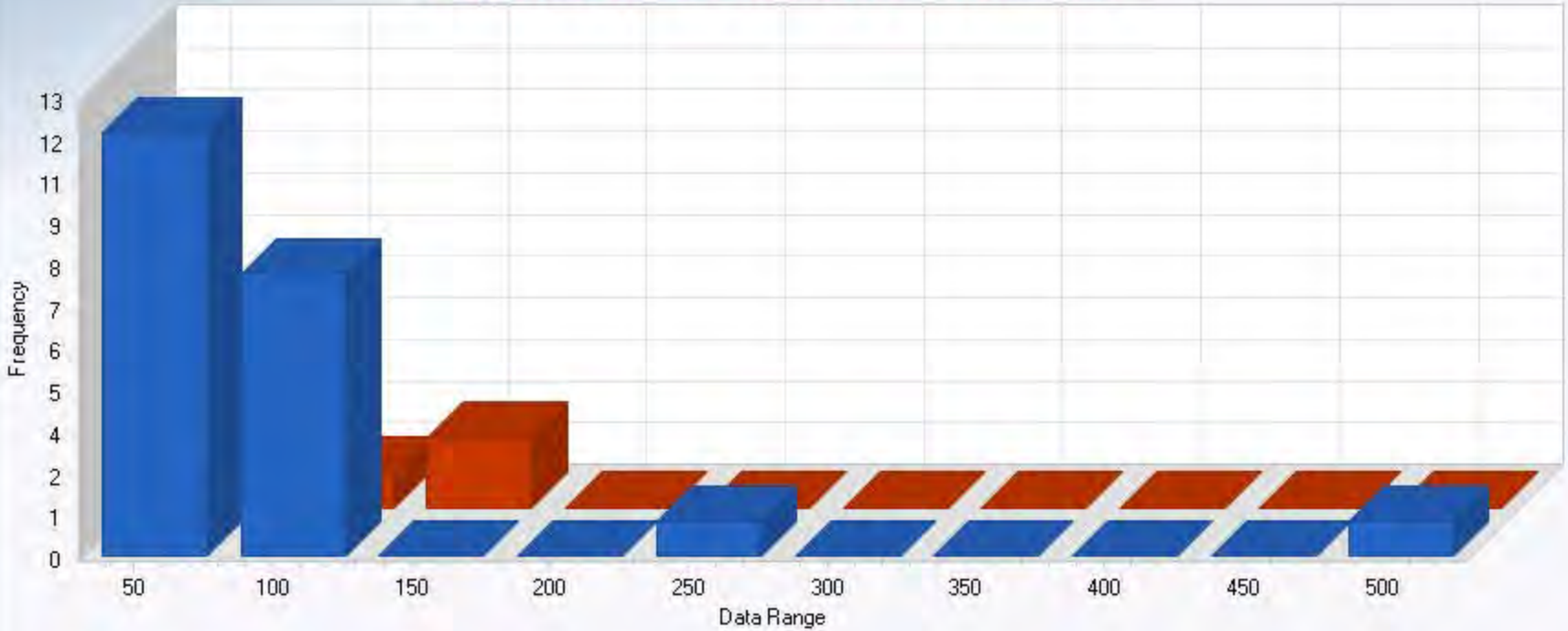
| | |
|---|---|
| Gehan z Test Value | -1.563 |
| Critical z (0.05) | 1.645 |
| P-Value | 0.941 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

# Multiple Histogram
## Reported values used for nondetects




☐ Normal Distribution

☐ Less Bins

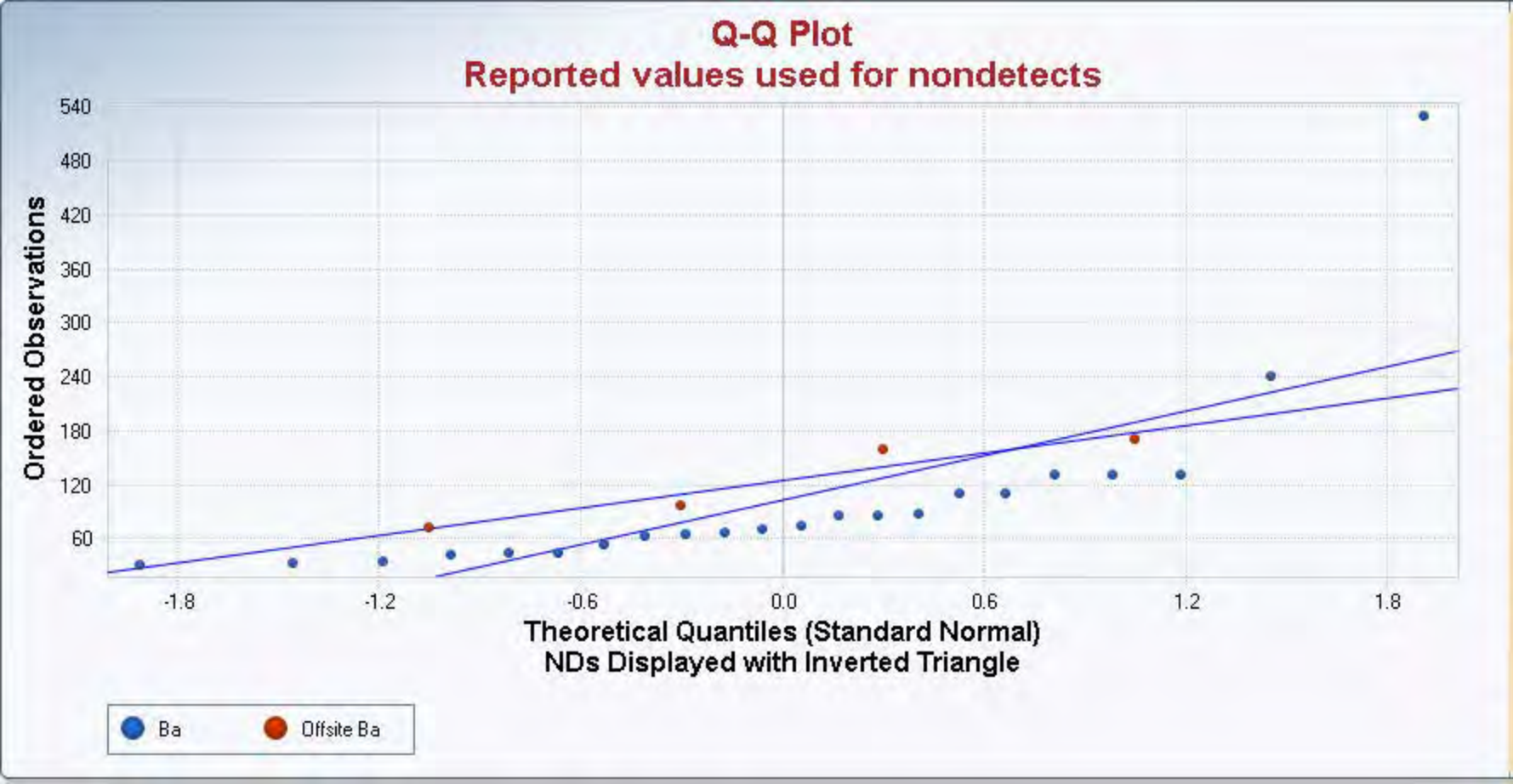
☐ More Bins

**Ba**

| | |
|---|---|
| Number of Values | 22 |
| Number of Values | 22 |
| Mean | 102.55 |
| SD | 106.61 |

**Offsite Ba**

| | |
|---|---|
| Number of Values | 4 |
| Number of Values | 4 |
| Mean | 125.00 |
| SD | 47.39 |


Q-Q Plot
Reported values used for nondetects
Ordered Observations
540
480
420
360
300
240
180
120
60
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Ba
Offsite Ba
Ba
Total Number of Data = 22
Number of Non-Detects = 0
Number of Detects = 22
Detected Mean = 102.6
Detected Sd = 106.6
Slope (displayed data) = 82.61
Intercept (displayed data)= 102.6
Correlation, R = 0.748
Offsite Ba
Total Number of Data = 4
Number of Non-Detects = 0
Number of Detects = 4
Detected Mean = 125
Detected Sd = 47.39
Slope (displayed data) = 50.67
Intercept (displayed data)= 125
Correlation, R = 0.952
Best Fit Line

**Tarone-Ware Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:08:38 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Ba**

**Sample 2 Data: Offsite Ba**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detects | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 30 | 73 |
| Maximum Detect | 530 | 170 |
| Mean of Detects | 102.6 | 125 |
| Median of Detects | 72 | 128.5 |
| SD of Detects | 106.6 | 47.39 |
| KM Mean | 102.6 | 125 |
| KM SD | 106.6 | 47.39 |

**Sample 1 vs Sample 2 Tarone-Ware Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| TW Statistic | -1.955 |
| TW Critical Value (0.05) | 1.645 |
| P-Value | 0.975 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

**Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:09:24 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Ba**

**Sample 2 Data: Offsite Ba**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detect Data | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 30 | 73 |
| Maximum Detect | 530 | 170 |
| Mean of Detects | 102.6 | 125 |
| Median of Detects | 72 | 128.5 |
| SD of Detects | 106.6 | 47.39 |

**Wilcoxon-Mann-Whitney (WMW) Test**

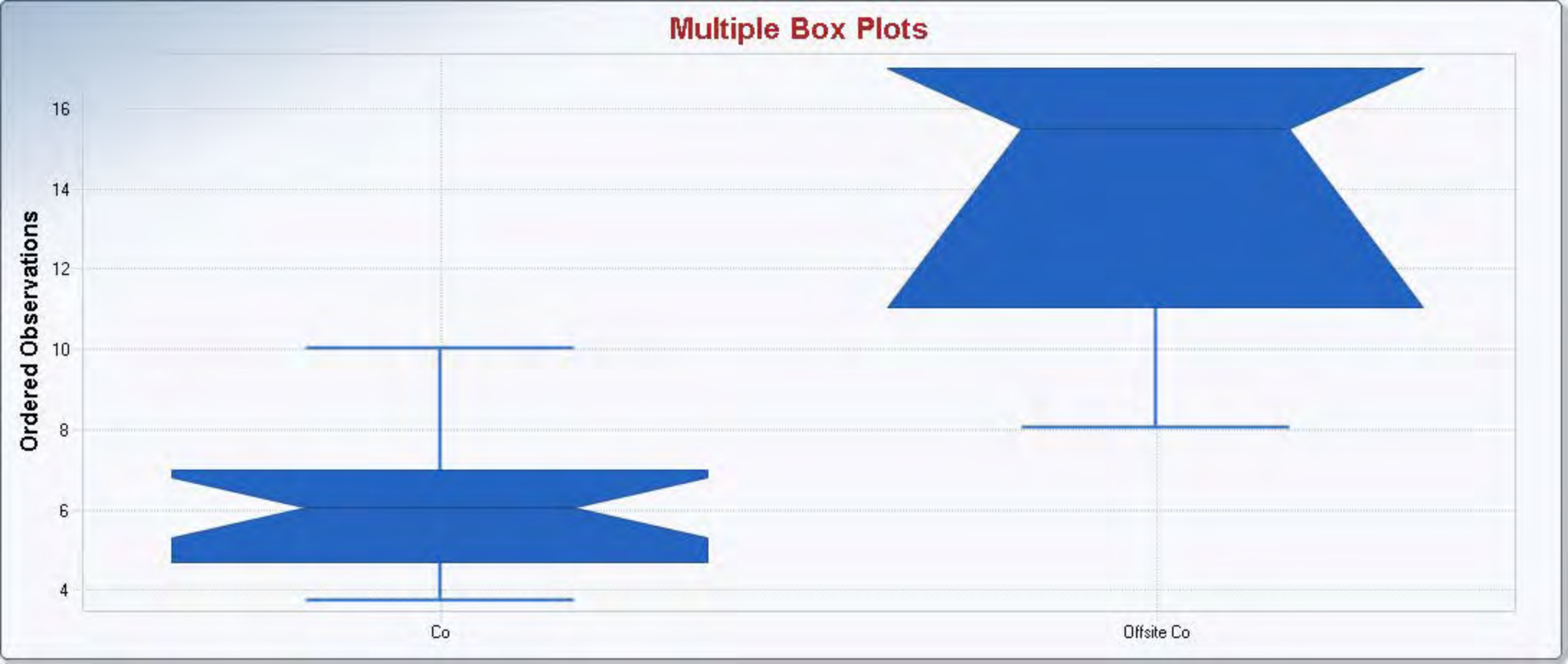
**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| Sample 1 Rank Sum W-Stat | 275 |
| Standardized WMW U-Stat | -1.6 |
| Mean (U) | 44 |
| SD(U) - Adj ties | 14.06 |
| Approximate U-Stat Critical Value (0.05) | 1.645 |
| P-Value (Adjusted for Ties) | 0.945 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**


Multiple Box Plots
Ordered Observations
16
14
12
10
8
6
4
Co
Offsite Co

**Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:10:15 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Co**

**Sample 2 Data: Offsite Co**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detect Data | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 3.8 | 8.1 |
| Maximum Detect | 10 | 17 |
| Mean of Detects | 6.129 | 14.03 |
| Median of Detects | 6.05 | 15.5 |
| SD of Detects | 1.586 | 4.196 |
| KM Mean | 6.129 | 14.03 |
| KM SD | 1.586 | 4.196 |

**Sample 1 vs Sample 2 Gehan Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of background**

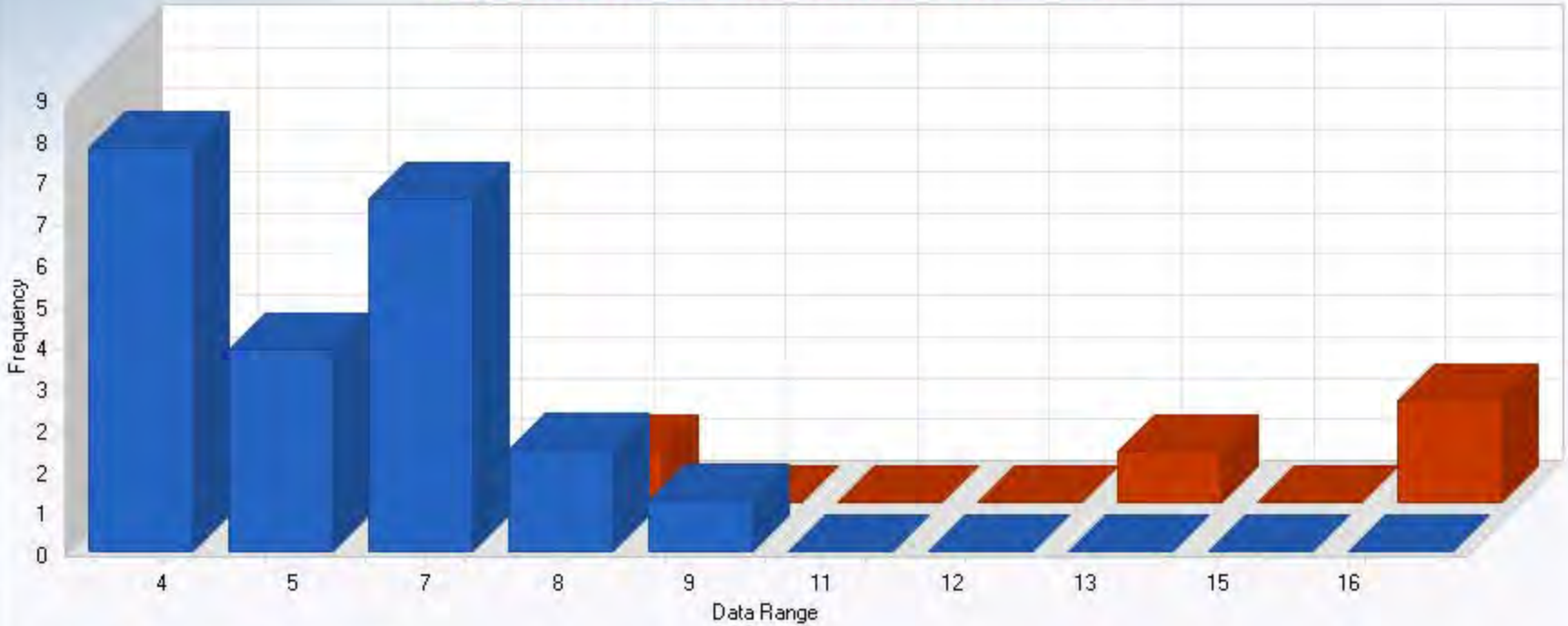
| | |
|---|---|
| Gehan z Test Value | -2.985 |
| Critical z (0.05) | 1.645 |
| P-Value | 0.999 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

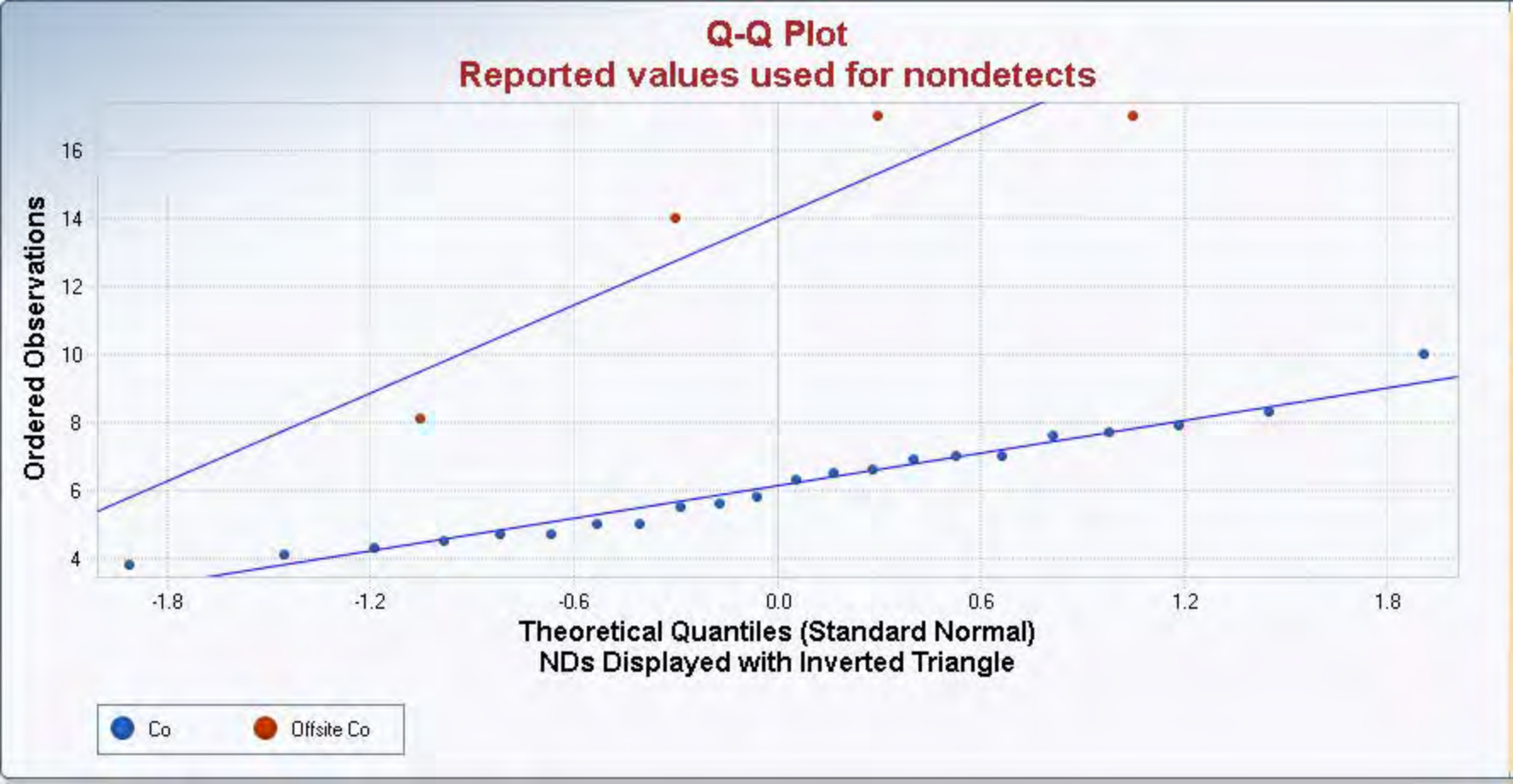
# Multiple Histogram
## Reported values used for nondetects




☐ Normal Distribution

☐ Less Bins
☐ More Bins

| | |
|---|---|
| **Co** | |
| Number of Values | 22 |
| Number of Values | 22 |
| Mean | 6.13 |
| SD | 1.59 |
| **Offsite Co** | |
| Number of Values | 4 |
| Number of Values | 4 |
| Mean | 14.03 |
| SD | 4.20 |


Q-Q Plot
Reported values used for nondetects
Ordered Observations
16
14
12
10
8
6
4
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Co
Offsite Co
Co
Total Number of Data = 22
Number of Non-Detects = 0
Number of Detects = 22
Detected Mean = 6.129
Detected Sd = 1.586
Slope (displayed data) = 1.61
Intercept (displayed data)= 6.129
Correlation, R = 0.98
Offsite Co
Total Number of Data = 4
Number of Non-Detects = 0
Number of Detects = 4
Detected Mean = 14.03
Detected Sd = 4.196
Slope (displayed data) = 4.3
Intercept (displayed data)= 14.03
Correlation, R = 0.913
Best Fit Line

## Tarone-Ware Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:11:09 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Co**

**Sample 2 Data: Offsite Co**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detects | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 3.8 | 8.1 |
| Maximum Detect | 10 | 17 |
| Mean of Detects | 6.129 | 14.03 |
| Median of Detects | 6.05 | 15.5 |
| SD of Detects | 1.586 | 4.196 |
| KM Mean | 6.129 | 14.03 |
| KM SD | 1.586 | 4.196 |

**Sample 1 vs Sample 2 Tarone-Ware Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| TW Statistic | -5.099 |
| TW Critical Value (0.05) | 1.645 |
| P-Value | 1 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

## Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:12:00 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Co**

**Sample 2 Data: Offsite Co**

### Raw Statistics

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detect Data | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 3.8 | 8.1 |
| Maximum Detect | 10 | 17 |
| Mean of Detects | 6.129 | 14.03 |
| Median of Detects | 6.05 | 15.5 |
| SD of Detects | 1.586 | 4.196 |

### Wilcoxon-Mann-Whitney (WMW) Test

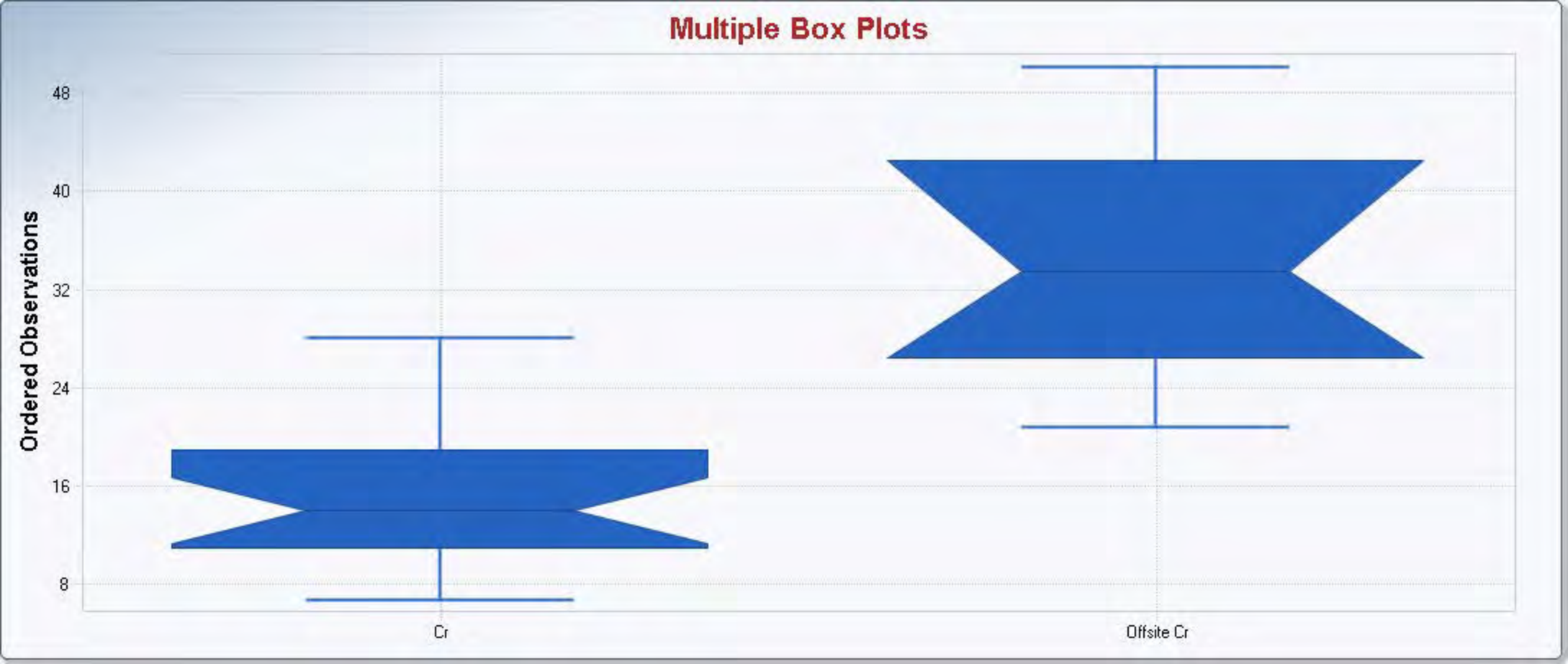
**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| Sample 1 Rank Sum W-Stat | 255 |
| Standardized WMW U-Stat | -3.022 |
| Mean (U) | 44 |
| SD(U) - Adj ties | 14.06 |
| Approximate U-Stat Critical Value (0.05) | 1.645 |
| P-Value (Adjusted for Ties) | 0.999 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**


Multiple Box Plots
Ordered Observations
48
40
32
24
16
8
Cr
Offsite Cr

**Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:20:10 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Cr**

**Sample 2 Data: Offsite Cr**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detect Data | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 6.9 | 21 |
| Maximum Detect | 28 | 50 |
| Mean of Detects | 15.32 | 34.5 |
| Median of Detects | 14 | 33.5 |
| SD of Detects | 6.179 | 11.96 |
| KM Mean | 15.32 | 34.5 |
| KM SD | 6.179 | 11.96 |

**Sample 1 vs Sample 2 Gehan Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of background**

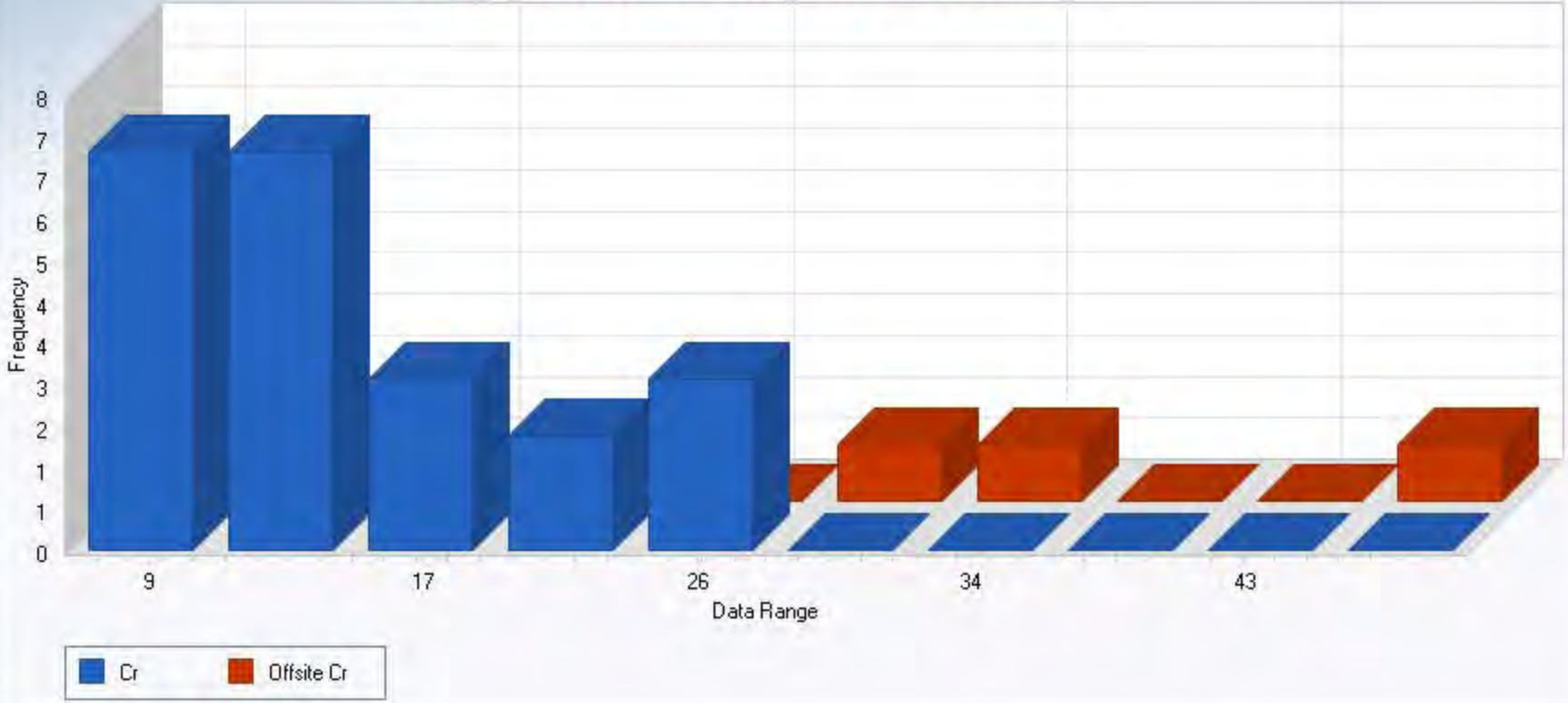
| | |
|---|---|
| Gehan z Test Value | -2.843 |
| Critical z (0.05) | 1.645 |
| P-Value | 0.998 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

# Multiple Histogram
## Reported values used for nondetects




☐ Normal Distribution

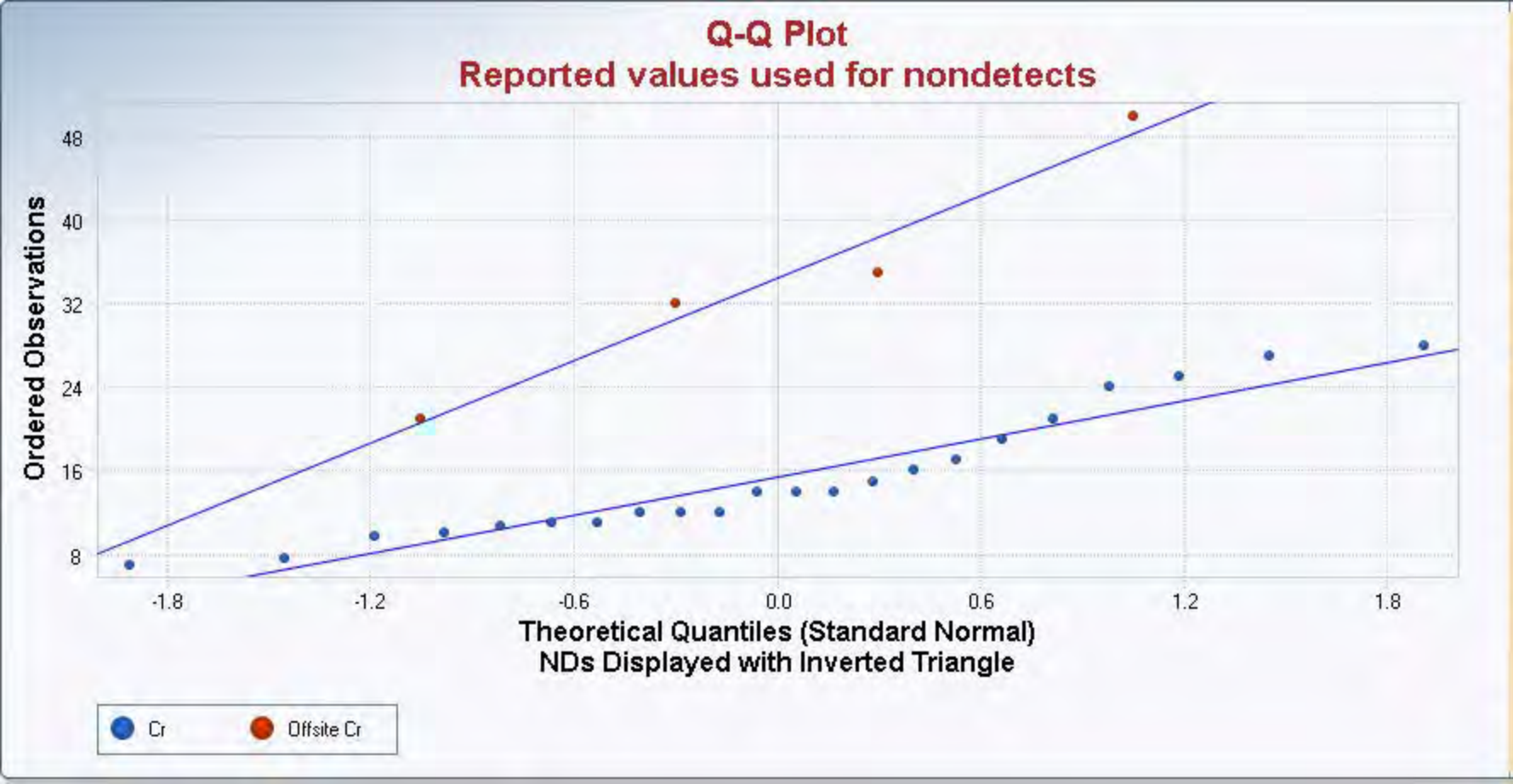
☐ Less Bins
☐ More Bins

**Cr**

| | |
|---|---|
| Number of Values | 22 |
| Number of Values | 22 |
| Mean | 15.32 |
| SD | 6.18 |

**Offsite Cr**

| | |
|---|---|
| Number of Values | 4 |
| Number of Values | 4 |
| Mean | 34.50 |
| SD | 11.96 |


Q-Q Plot
Reported values used for nondetects
Ordered Observations
48
40
32
24
16
8
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Cr
Offsite Cr
Cr
Total Number of Data = 22
Number of Non-Detects = 0
Number of Detects = 22
Detected Mean = 15.32
Detected Sd = 6.179
Slope (displayed data) = 6.124
Intercept (displayed data)= 15.32
Correlation, R = 0.957
Offsite Cr
Total Number of Data = 4
Number of Non-Detects = 0
Number of Detects = 4
Detected Mean = 34.5
Detected Sd = 11.96
Slope (displayed data) = 13.16
Intercept (displayed data)= 34.5
Correlation, R = 0.98
Best Fit Line

## Tarone-Ware Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:20:59 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Cr**

**Sample 2 Data: Offsite Cr**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detects | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 6.9 | 21 |
| Maximum Detect | 28 | 50 |
| Mean of Detects | 15.32 | 34.5 |
| Median of Detects | 14 | 33.5 |
| SD of Detects | 6.179 | 11.96 |
| KM Mean | 15.32 | 34.5 |
| KM SD | 6.179 | 11.96 |

**Sample 1 vs Sample 2 Tarone-Ware Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| TW Statistic | -4.427 |
| TW Critical Value (0.05) | 1.645 |
| P-Value | 1 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

## Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:21:43 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Cr**

**Sample 2 Data: Offsite Cr**

### Raw Statistics

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detect Data | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 6.9 | 21 |
| Maximum Detect | 28 | 50 |
| Mean of Detects | 15.32 | 34.5 |
| Median of Detects | 14 | 33.5 |
| SD of Detects | 6.179 | 11.96 |

### Wilcoxon-Mann-Whitney (WMW) Test

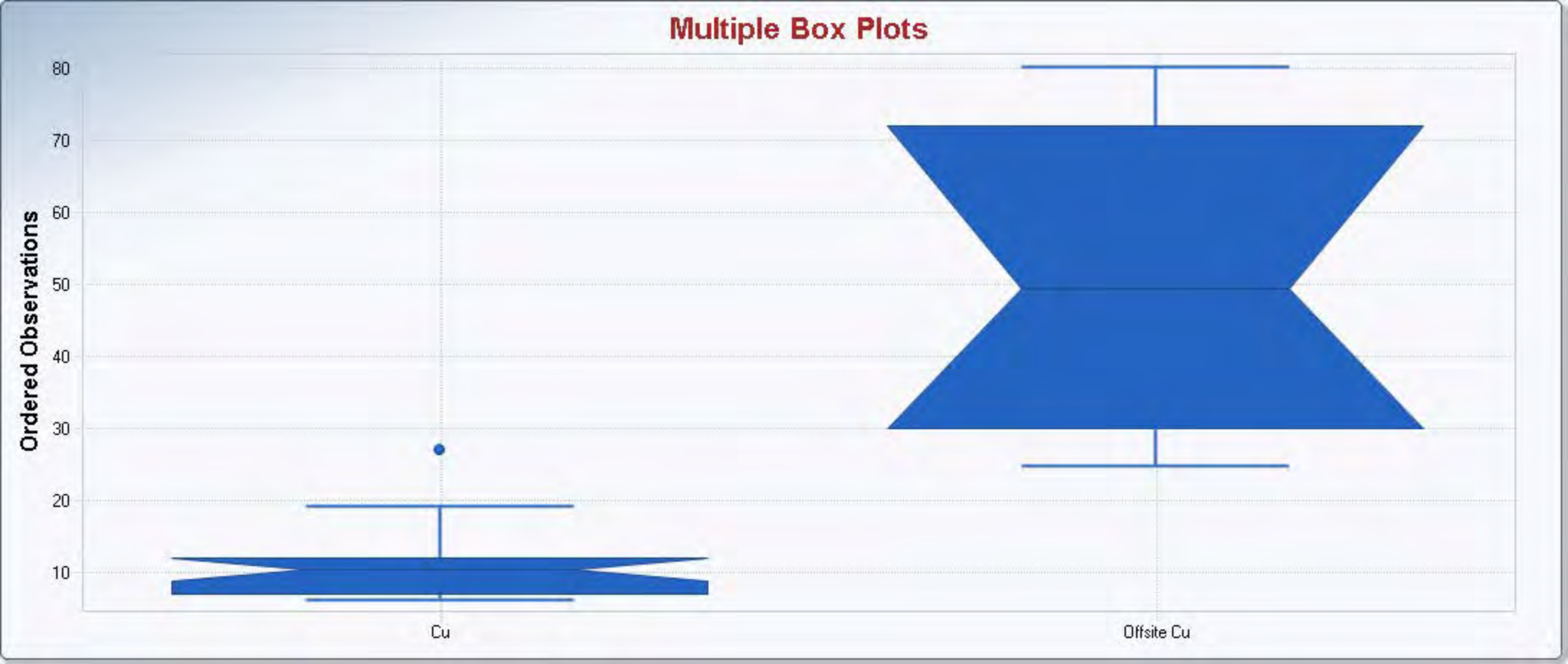
**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| Sample 1 Rank Sum W-Stat | 257.5 |
| Standardized WMW U-Stat | -2.848 |
| Mean (U) | 44 |
| SD(U) - Adj ties | 14.05 |
| Approximate U-Stat Critical Value (0.05) | 1.645 |
| P-Value (Adjusted for Ties) | 0.998 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**


Multiple Box Plots
Ordered Observations
80
70
60
50
40
30
20
10
Cu
Offsite Cu

**Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 9:22:20 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Cu**

**Sample 2 Data: Offsite Cu**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 3 | 0 |
| Number of Detect Data | 19 | 4 |
| Minimum Non-Detect | 7 | N/A |
| Maximum Non-Detect | 7 | N/A |
| Percent Non-detects | 13.64% | 0.00% |
| Minimum Detect | 6.4 | 25 |
| Maximum Detect | 27 | 80 |
| Mean of Detects | 11.32 | 51 |
| Median of Detects | 11 | 49.5 |
| SD of Detects | 4.909 | 25.44 |
| KM Mean | 10.66 | 51 |
| KM SD | 4.738 | 25.44 |

**Sample 1 vs Sample 2 Gehan Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of background**

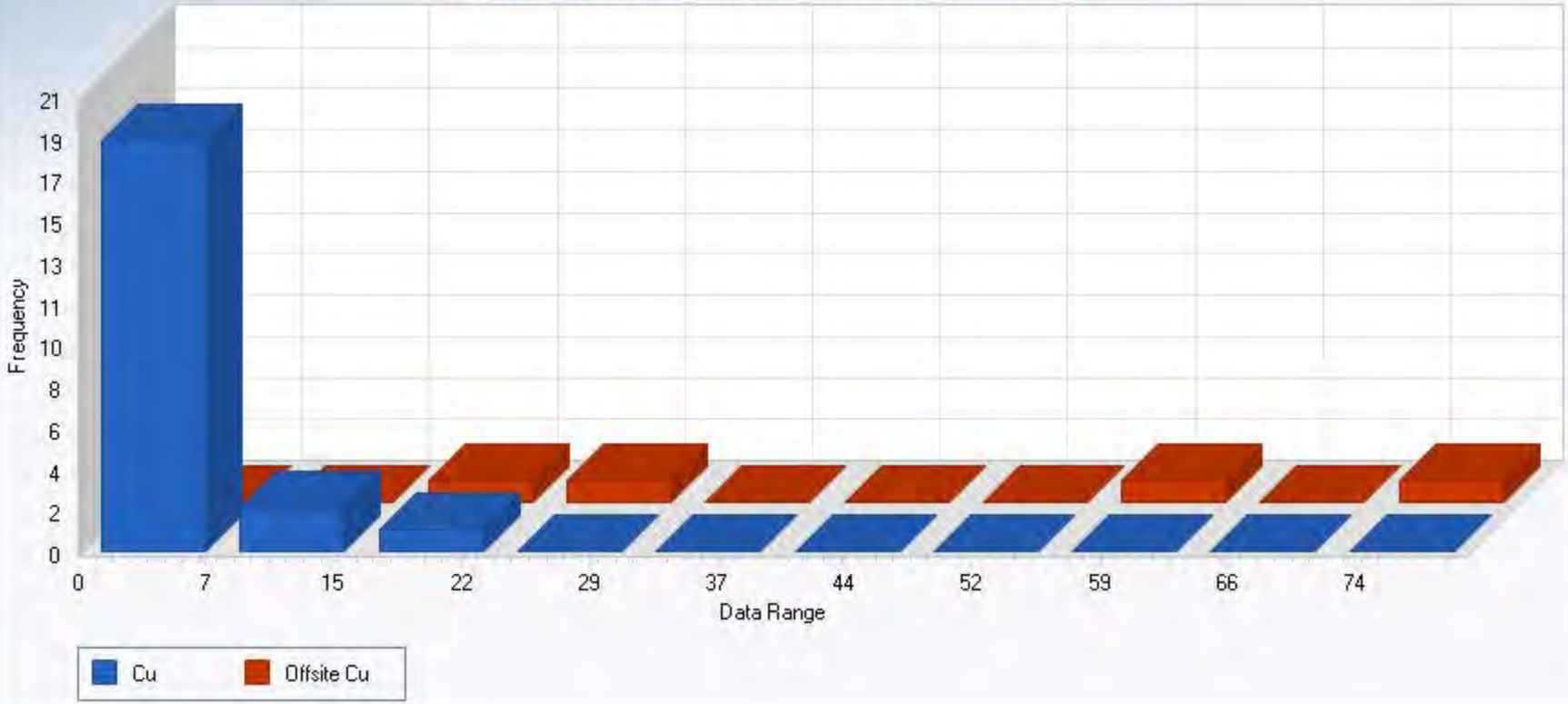
| | |
|---|---|
| Gehan z Test Value | -3.066 |
| Critical z (0.05) | 1.645 |
| P-Value | 0.999 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

# Multiple Histogram
## Reported values used for nondetects




☐ Normal Distribution

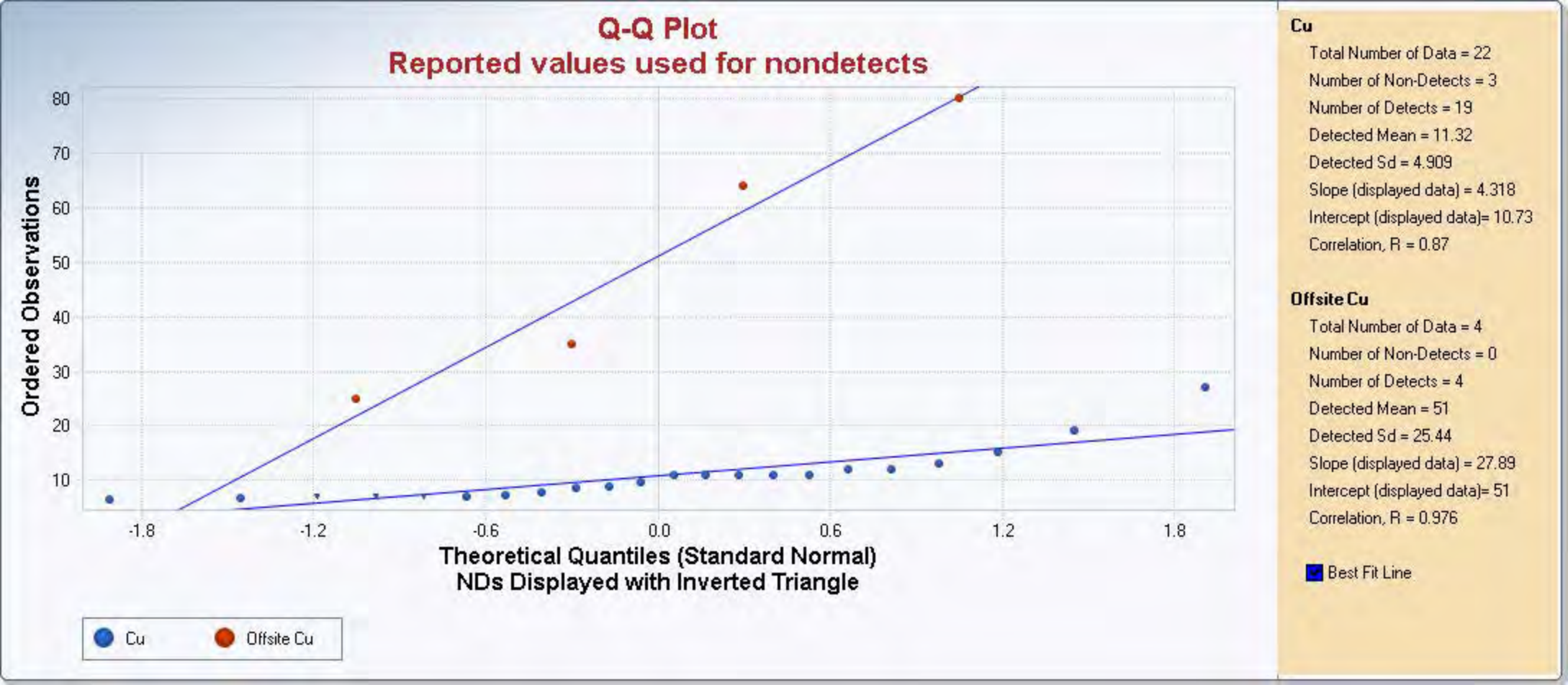
☐ Less Bins
☐ More Bins

**Cu**

| | |
|---|---|
| Number of Values | 22 |
| Number of Values | 22 |
| Mean | 10.73 |
| SD | 4.79 |

**Offsite Cu**

| | |
|---|---|
| Number of Values | 4 |
| Number of Values | 4 |
| Mean | 51.00 |
| SD | 25.44 |


Q-Q Plot
Reported values used for nondetects
Ordered Observations
80
70
60
50
40
30
20
10
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Cu
Offsite Cu
Cu
Total Number of Data = 22
Number of Non-Detects = 3
Number of Detects = 19
Detected Mean = 11.32
Detected Sd = 4.909
Slope (displayed data) = 4.318
Intercept (displayed data)= 10.73
Correlation, R = 0.87
Offsite Cu
Total Number of Data = 4
Number of Non-Detects = 0
Number of Detects = 4
Detected Mean = 51
Detected Sd = 25.44
Slope (displayed data) = 27.89
Intercept (displayed data)= 51
Correlation, R = 0.976
Best Fit Line

**Tarone-Ware Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 9:24:13 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Cu**

**Sample 2 Data: Offsite Cu**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 3 | 0 |
| Number of Detects | 19 | 4 |
| Minimum Non-Detect | 7 | N/A |
| Maximum Non-Detect | 7 | N/A |
| Percent Non-detects | 13.64% | 0.00% |
| Minimum Detect | 6.4 | 25 |
| Maximum Detect | 27 | 80 |
| Mean of Detects | 11.32 | 51 |
| Median of Detects | 11 | 49.5 |
| SD of Detects | 4.909 | 25.44 |
| KM Mean | 10.66 | 51 |
| KM SD | 4.738 | 25.44 |

**Sample 1 vs Sample 2 Tarone-Ware Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| TW Statistic | -5.591 |
| TW Critical Value (0.05) | 1.645 |
| P-Value | 1 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

**Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 9:25:30 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Cu**

**Sample 2 Data: Offsite Cu**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 3 | 0 |
| Number of Detect Data | 19 | 4 |
| Minimum Non-Detect | 7 | N/A |
| Maximum Non-Detect | 7 | N/A |
| Percent Non-detects | 13.64% | 0.00% |
| Minimum Detect | 6.4 | 25 |
| Maximum Detect | 27 | 80 |
| Mean of Detects | 11.32 | 51 |
| Median of Detects | 11 | 49.5 |
| SD of Detects | 4.909 | 25.44 |

**Wilcoxon-Mann-Whitney (WMW) Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| Sample 1 Rank Sum W-Stat | 254 |
| Standardized WMW U-Stat | -3.121 |
| Mean (U) | 44 |
| SD(U) - Adj ties | 14.02 |
| Approximate U-Stat Critical Value (0.05) | 1.645 |
| P-Value (Adjusted for Ties) | 0.999 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**


Multiple Box Plots
Ordered Observations
0.200
0.180
0.160
0.140
0.120
0.100
0.080
0.060
0.040
0.020
Maximum Non-Detect Value 0.18
Hg
Offsite Hg

**Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 9:30:51 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Hg**

**Sample 2 Data: Offsite Hg**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 16 | 4 |
| Number of Detect Data | 6 | 0 |
| Minimum Non-Detect | 0.02 | 0.15 |
| Maximum Non-Detect | 0.1 | 0.18 |
| Percent Non-detects | 72.73% | 100.00% |
| Minimum Detect | 0.02 | N/A |
| Maximum Detect | 0.2 | N/A |
| Mean of Detects | 0.108 | N/A |
| Median of Detects | 0.09 | N/A |
| SD of Detects | 0.0719 | N/A |
| KM Mean | 0.0445 | N/A |
| KM SD | 0.0523 | N/A |

**Sample 1 vs Sample 2 Gehan Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of background**

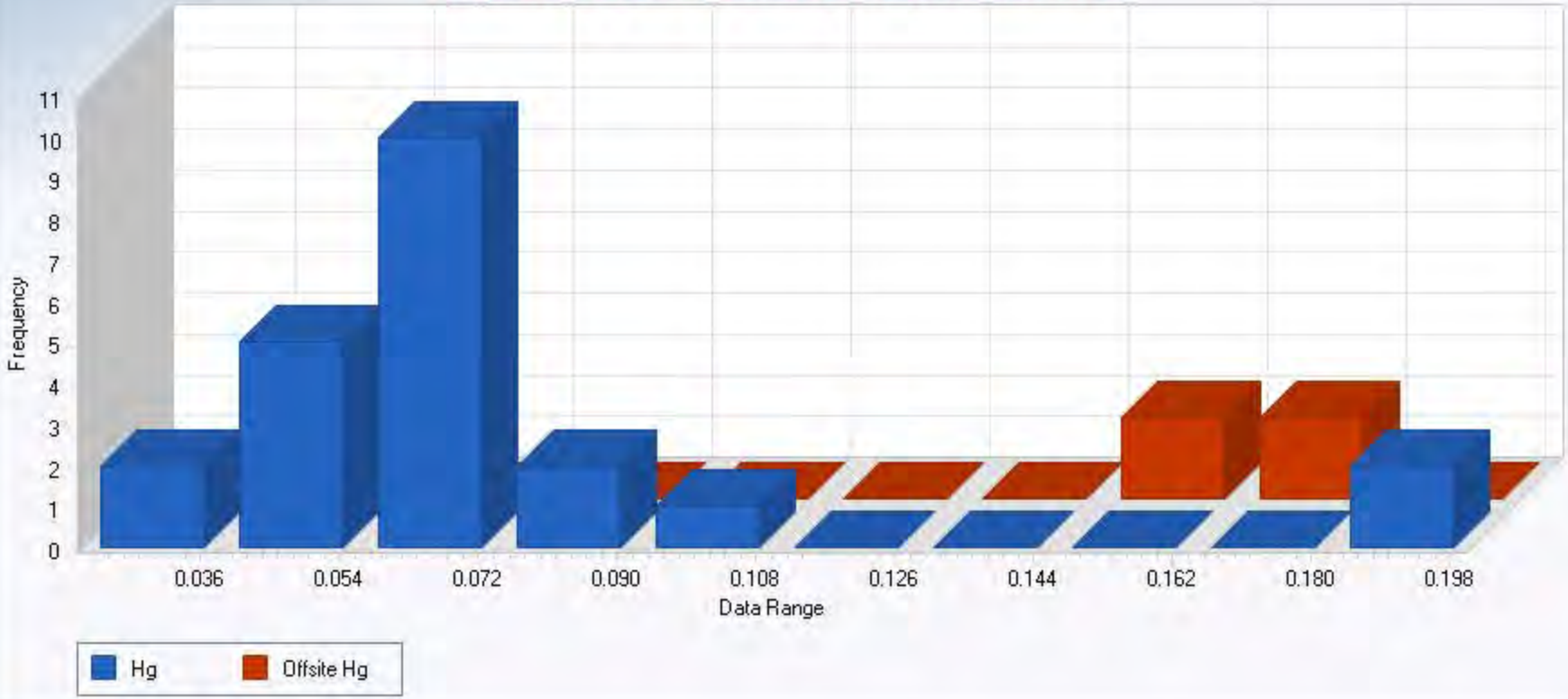
| | |
|---|---|
| Gehan z Test Value | 0.467 |
| Critical z (0.05) | 1.645 |
| P-Value | 0.32 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

# Multiple Histogram
## Reported values used for nondetects

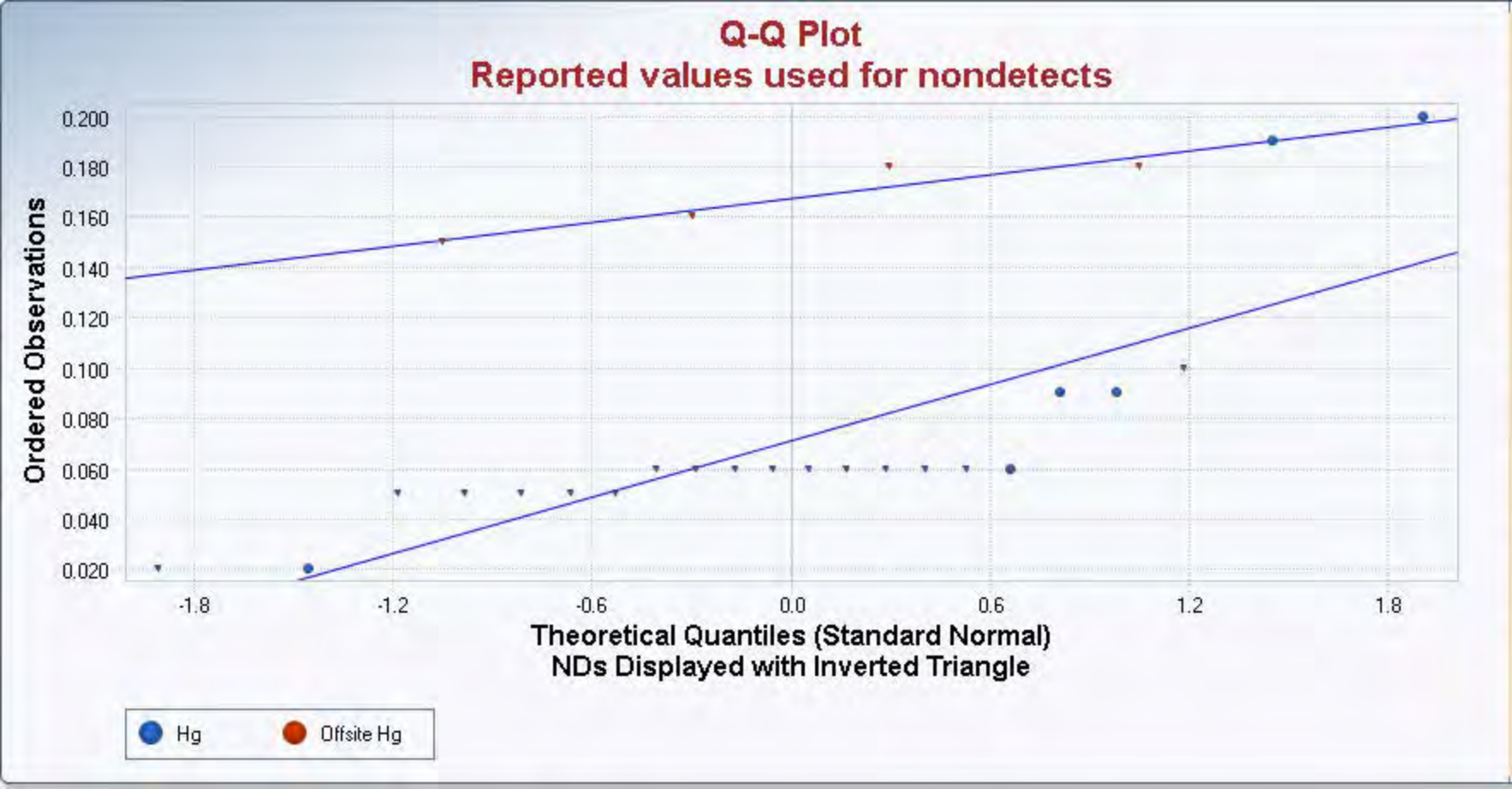



☐ Normal Distribution

☐ Less Bins

☐ More Bins

| | |
|---|---|
| **Hg** | |
| Number of Values | 22 |
| Number of Values | 22 |
| Mean | 0.07 |
| SD | 0.04 |
| **Offsite Hg** | |
| Number of Values | 4 |
| Number of Values | 4 |
| Mean | 0.17 |
| SD | 0.02 |




**Hg**

Total Number of Data = 22
Number of Non-Detects = 16
Number of Detects = 6
Detected Mean = 0.108
Detected Sd = 0.0719
Slope (displayed data) = 0.0375
Intercept (displayed data)= 0.0709
Correlation, R = 0.819

**Offsite Hg**

Total Number of Data = 4
Number of Non-Detects = 4
Number of Detects = 0
Detected Mean = N/A
Detected Sd = N/A
Slope (displayed data) = 0.0157
Intercept (displayed data)= 0.168
Correlation, R = 0.935

Best Fit Line

**Tarone-Ware Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 9:32:15 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Hg**

**Sample 2 Data: Offsite Hg**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 16 | 4 |
| Number of Detects | 6 | 0 |
| Minimum Non-Detect | 0.02 | 0.15 |
| Maximum Non-Detect | 0.1 | 0.18 |
| Percent Non-detects | 72.73% | 100.00% |
| Minimum Detect | 0.02 | N/A |
| Maximum Detect | 0.2 | N/A |
| Mean of Detects | 0.108 | N/A |
| Median of Detects | 0.09 | N/A |
| SD of Detects | 0.0719 | N/A |
| KM Mean | 0.0445 | N/A |
| KM SD | 0.0523 | N/A |

**Sample 1 vs Sample 2 Tarone-Ware Test**

**There are no detects in at least on of the groups - no analysis will be performed!**

**Graphical displays may be helpful!**

**Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 9:33:42 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Hg**

**Sample 2 Data: Offsite Hg**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 16 | 4 |
| Number of Detect Data | 6 | 0 |
| Minimum Non-Detect | 0.02 | 0.15 |
| Maximum Non-Detect | 0.1 | 0.18 |
| Percent Non-detects | 72.73% | 100.00% |
| Minimum Detect | 0.02 | N/A |
| Maximum Detect | 0.2 | N/A |
| Mean of Detects | 0.108 | N/A |
| Median of Detects | 0.09 | N/A |
| SD of Detects | 0.0719 | N/A |

**WMW test is meant for a Single Detection Limit Case**

**Use of Gehan or T-W test is suggested when multiple detection limits are present**

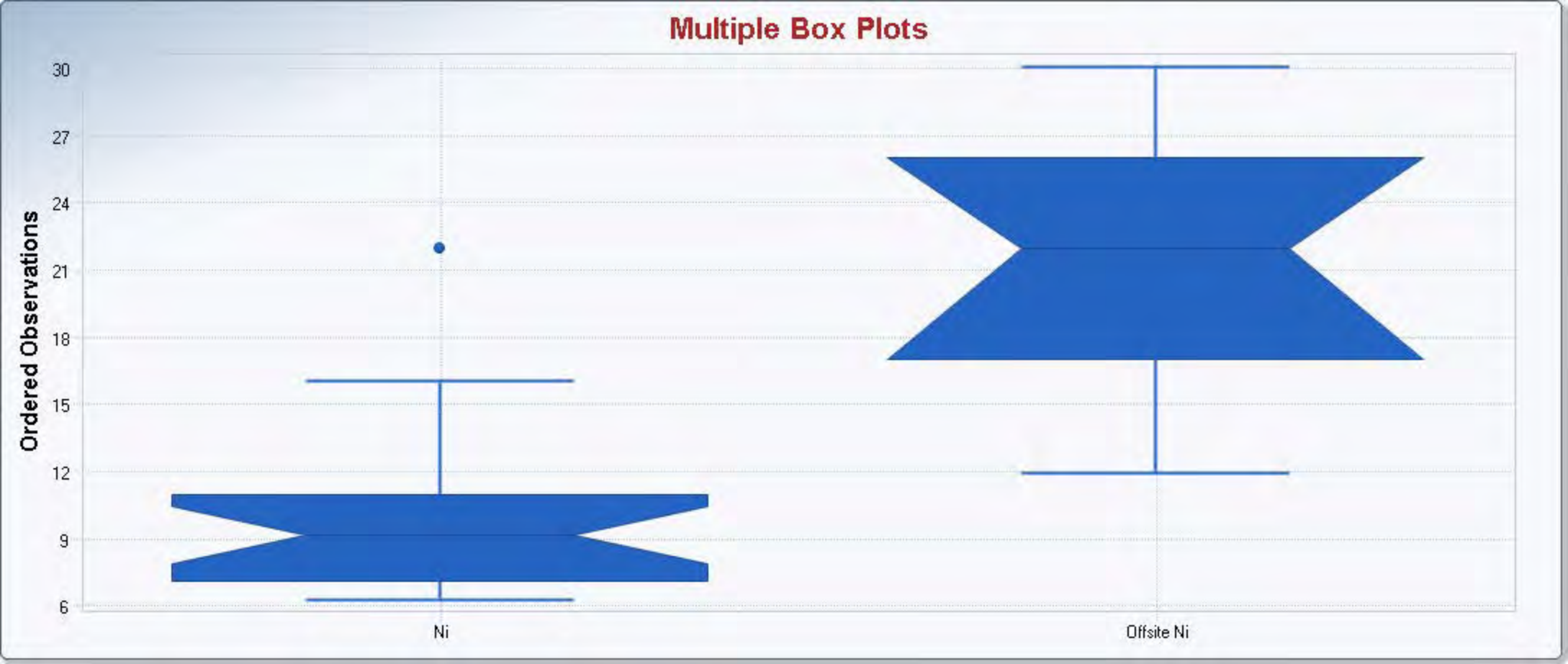
**All observations <= 0.18 (Max DL) are ranked the same**

**Wilcoxon-Mann-Whitney (WMW) Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

**There are no detects in at least on of the groups - no analysis will be performed**

**Graphical displays may be helpful!**


Multiple Box Plots
Ordered Observations
30
27
24
21
18
15
12
9
6
Ni
Offsite Ni

**Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:41:54 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Ni**

**Sample 2 Data: Offsite Ni**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 3 | 0 |
| Number of Detect Data | 19 | 4 |
| Minimum Non-Detect | 6.8 | N/A |
| Maximum Non-Detect | 6.8 | N/A |
| Percent Non-detects | 13.64% | 0.00% |
| Minimum Detect | 6.36 | 12 |
| Maximum Detect | 22 | 30 |
| Mean of Detects | 10.46 | 21.5 |
| Median of Detects | 9.2 | 22 |
| SD of Detects | 3.92 | 7.371 |
| KM Mean | 9.902 | 21.5 |
| KM SD | 3.815 | 7.371 |

**Sample 1 vs Sample 2 Gehan Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of background**

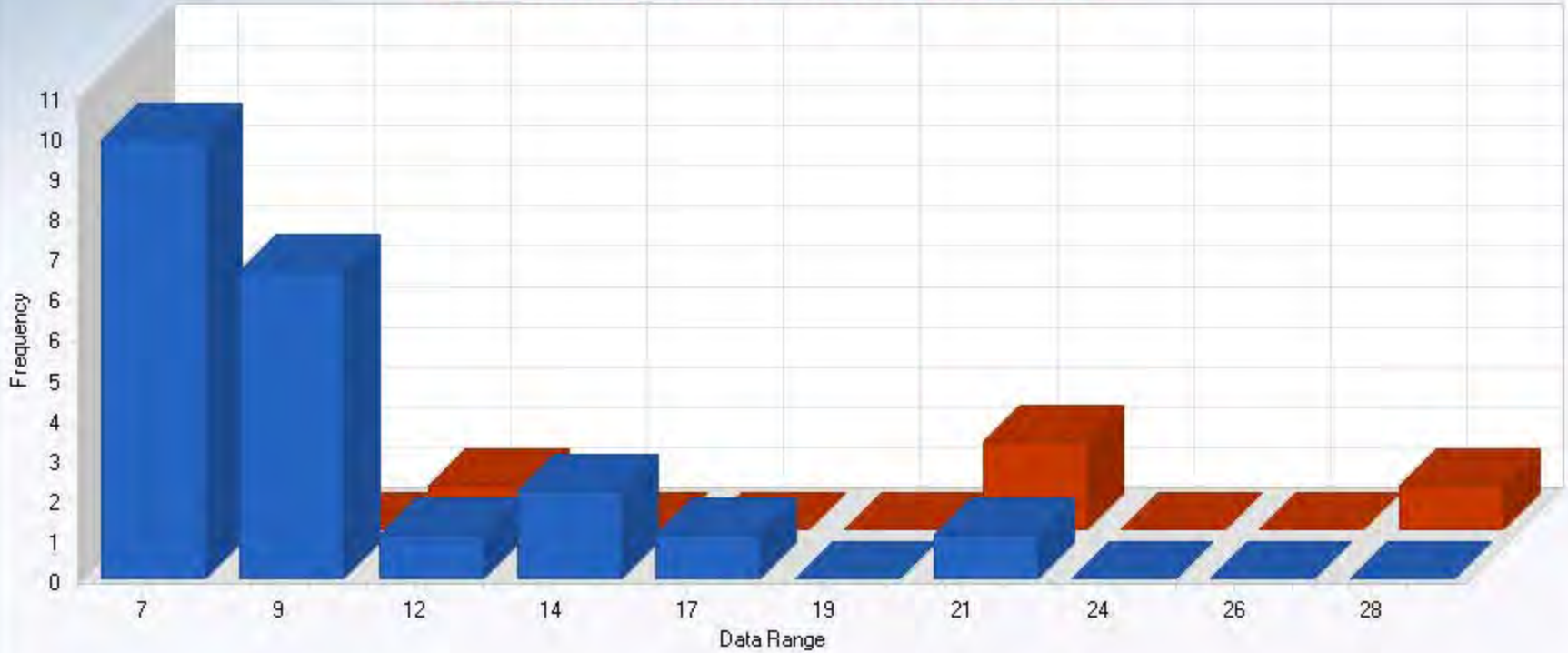
| | |
|---|---|
| Gehan z Test Value | -2.848 |
| Critical z (0.05) | 1.645 |
| P-Value | 0.998 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

# Multiple Histogram
## Reported values used for nondetects




☐ Normal Distribution

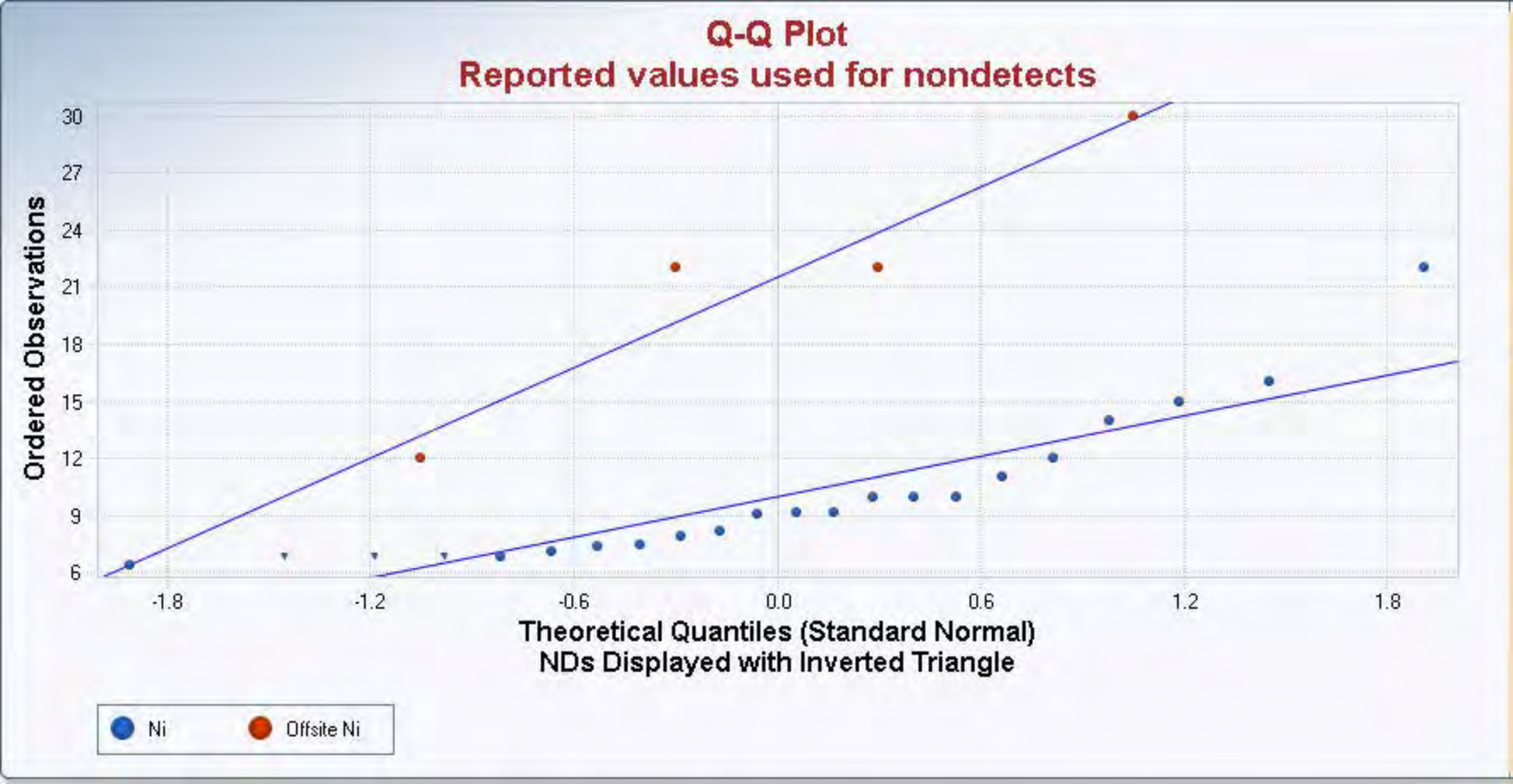
☐ Less Bins
☐ More Bins

**Ni**

| | |
|---|---|
| Number of Values | 22 |
| Number of Values | 22 |
| Mean | 9.96 |
| SD | 3.85 |

**Offsite Ni**

| | |
|---|---|
| Number of Values | 4 |
| Number of Values | 4 |
| Mean | 21.50 |
| SD | 7.37 |


Q-Q Plot
Reported values used for nondetects
Ordered Observations
30
27
24
21
18
15
12
9
6
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Ni
Offsite Ni
Ni
Total Number of Data = 22
Number of Non-Detects = 3
Number of Detects = 19
Detected Mean = 10.46
Detected Sd = 3.92
Slope (displayed data) = 3.575
Intercept (displayed data)= 9.962
Correlation, R = 0.897
Offsite Ni
Total Number of Data = 4
Number of Non-Detects = 0
Number of Detects = 4
Detected Mean = 21.5
Detected Sd = 7.371
Slope (displayed data) = 7.933
Intercept (displayed data)= 21.5
Correlation, R = 0.959
Best Fit Line

## Tarone-Ware Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:42:46 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Ni**

**Sample 2 Data: Offsite Ni**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 3 | 0 |
| Number of Detects | 19 | 4 |
| Minimum Non-Detect | 6.8 | N/A |
| Maximum Non-Detect | 6.8 | N/A |
| Percent Non-detects | 13.64% | 0.00% |
| Minimum Detect | 6.36 | 12 |
| Maximum Detect | 22 | 30 |
| Mean of Detects | 10.46 | 21.5 |
| Median of Detects | 9.2 | 22 |
| SD of Detects | 3.92 | 7.371 |
| KM Mean | 9.902 | 21.5 |
| KM SD | 3.815 | 7.371 |

**Sample 1 vs Sample 2 Tarone-Ware Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| TW Statistic | -4.03 |
| TW Critical Value (0.05) | 1.645 |
| P-Value | 1 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

## Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:43:29 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Ni**

**Sample 2 Data: Offsite Ni**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 3 | 0 |
| Number of Detect Data | 19 | 4 |
| Minimum Non-Detect | 6.8 | N/A |
| Maximum Non-Detect | 6.8 | N/A |
| Percent Non-detects | 13.64% | 0.00% |
| Minimum Detect | 6.36 | 12 |
| Maximum Detect | 22 | 30 |
| Mean of Detects | 10.46 | 21.5 |
| Median of Detects | 9.2 | 22 |
| SD of Detects | 3.92 | 7.371 |

**Wilcoxon-Mann-Whitney (WMW) Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| Sample 1 Rank Sum W-Stat | 258.5 |
| Standardized WMW U-Stat | -2.786 |
| Mean (U) | 44 |
| SD(U) - Adj ties | 14.05 |
| Approximate U-Stat Critical Value (0.05) | 1.645 |
| P-Value (Adjusted for Ties) | 0.997 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**


Multiple Box Plots
Ordered Observations
30
25
20
15
10
5
Pb
Offsite Pb

**Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 9:35:06 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Pb**

**Sample 2 Data: Offsite Pb**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 4 | 0 |
| Number of Detect Data | 18 | 4 |
| Minimum Non-Detect | 2.6 | N/A |
| Maximum Non-Detect | 2.6 | N/A |
| Percent Non-detects | 18.18% | 0.00% |
| Minimum Detect | 2.44 | 5.6 |
| Maximum Detect | 33 | 12 |
| Mean of Detects | 7.647 | 8.925 |
| Median of Detects | 5.55 | 9.05 |
| SD of Detects | 7.373 | 2.729 |
| KM Mean | 6.7 | 8.925 |
| KM SD | 6.785 | 2.729 |

**Sample 1 vs Sample 2 Gehan Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of background**

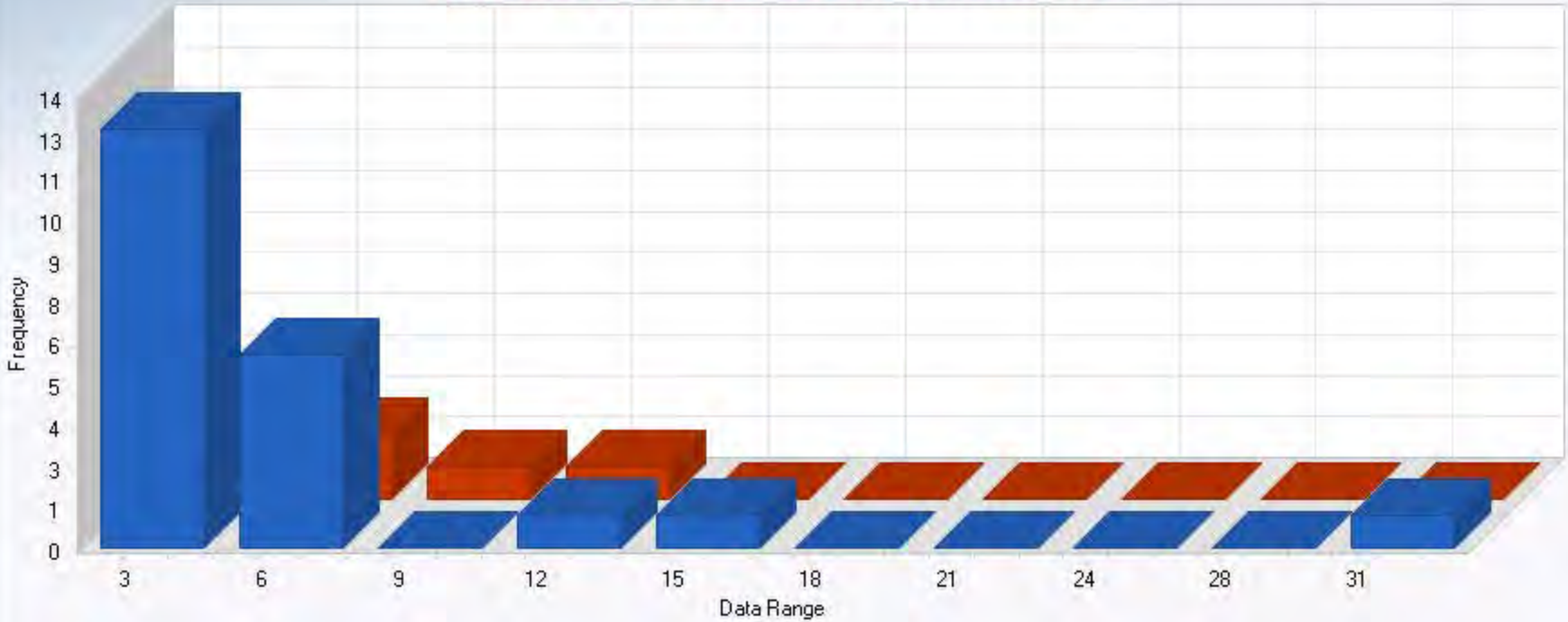
| | |
|---|---|
| Gehan z Test Value | -1.783 |
| Critical z (0.05) | 1.645 |
| P-Value | 0.963 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

# Multiple Histogram
## Reported values used for nondetects




☐ Normal Distribution

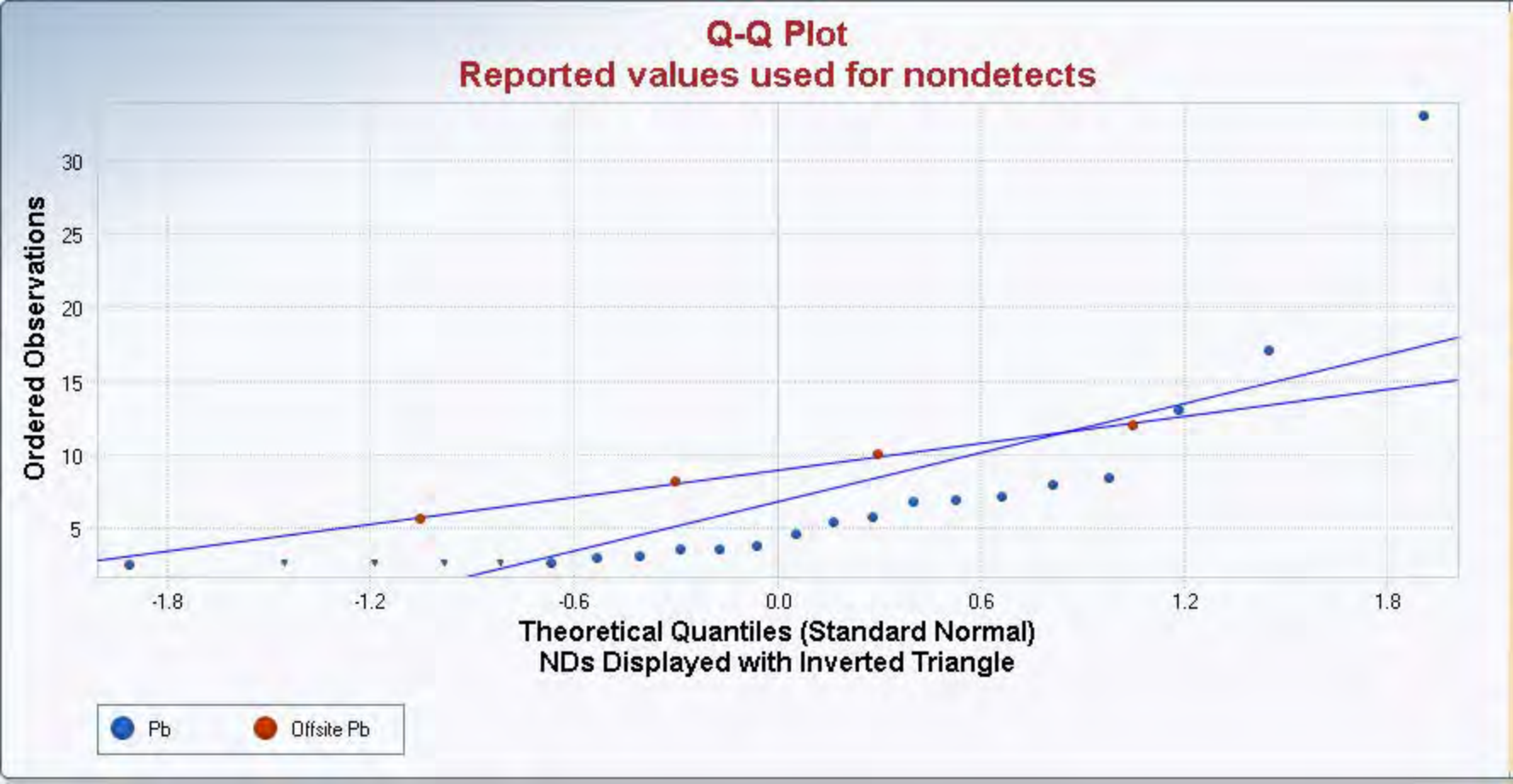
☐ Less Bins
☐ More Bins

**Pb**

| | |
|---|---|
| Number of Values | 22 |
| Number of Values | 22 |
| Mean | 6.73 |
| SD | 6.93 |

**Offsite Pb**

| | |
|---|---|
| Number of Values | 4 |
| Number of Values | 4 |
| Mean | 8.93 |
| SD | 2.73 |


Q-Q Plot
Reported values used for nondetects
Ordered Observations
30
25
20
15
10
5
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Pb
Offsite Pb
Pb
Total Number of Data = 22
Number of Non-Detects = 4
Number of Detects = 18
Detected Mean = 7.647
Detected Sd = 7.373
Slope (displayed data) = 5.574
Intercept (displayed data)= 6.729
Correlation, R = 0.777
Offsite Pb
Total Number of Data = 4
Number of Non-Detects = 0
Number of Detects = 4
Detected Mean = 8.925
Detected Sd = 2.729
Slope (displayed data) = 3.059
Intercept (displayed data)= 8.925
Correlation, R = 0.999
Best Fit Line

**Tarone-Ware Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 9:36:33 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Pb**

**Sample 2 Data: Offsite Pb**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 4 | 0 |
| Number of Detects | 18 | 4 |
| Minimum Non-Detect | 2.6 | N/A |
| Maximum Non-Detect | 2.6 | N/A |
| Percent Non-detects | 18.18% | 0.00% |
| Minimum Detect | 2.44 | 5.6 |
| Maximum Detect | 33 | 12 |
| Mean of Detects | 7.647 | 8.925 |
| Median of Detects | 5.55 | 9.05 |
| SD of Detects | 7.373 | 2.729 |
| KM Mean | 6.7 | 8.925 |
| KM SD | 6.785 | 2.729 |

**Sample 1 vs Sample 2 Tarone-Ware Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| TW Statistic | -2.282 |
| TW Critical Value (0.05) | 1.645 |
| P-Value | 0.989 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

**Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 9:39:43 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Pb**

**Sample 2 Data: Offsite Pb**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 4 | 0 |
| Number of Detect Data | 18 | 4 |
| Minimum Non-Detect | 2.6 | N/A |
| Maximum Non-Detect | 2.6 | N/A |
| Percent Non-detects | 18.18% | 0.00% |
| Minimum Detect | 2.44 | 5.6 |
| Maximum Detect | 33 | 12 |
| Mean of Detects | 7.647 | 8.925 |
| Median of Detects | 5.55 | 9.05 |
| SD of Detects | 7.373 | 2.729 |

**Wilcoxon-Mann-Whitney (WMW) Test**

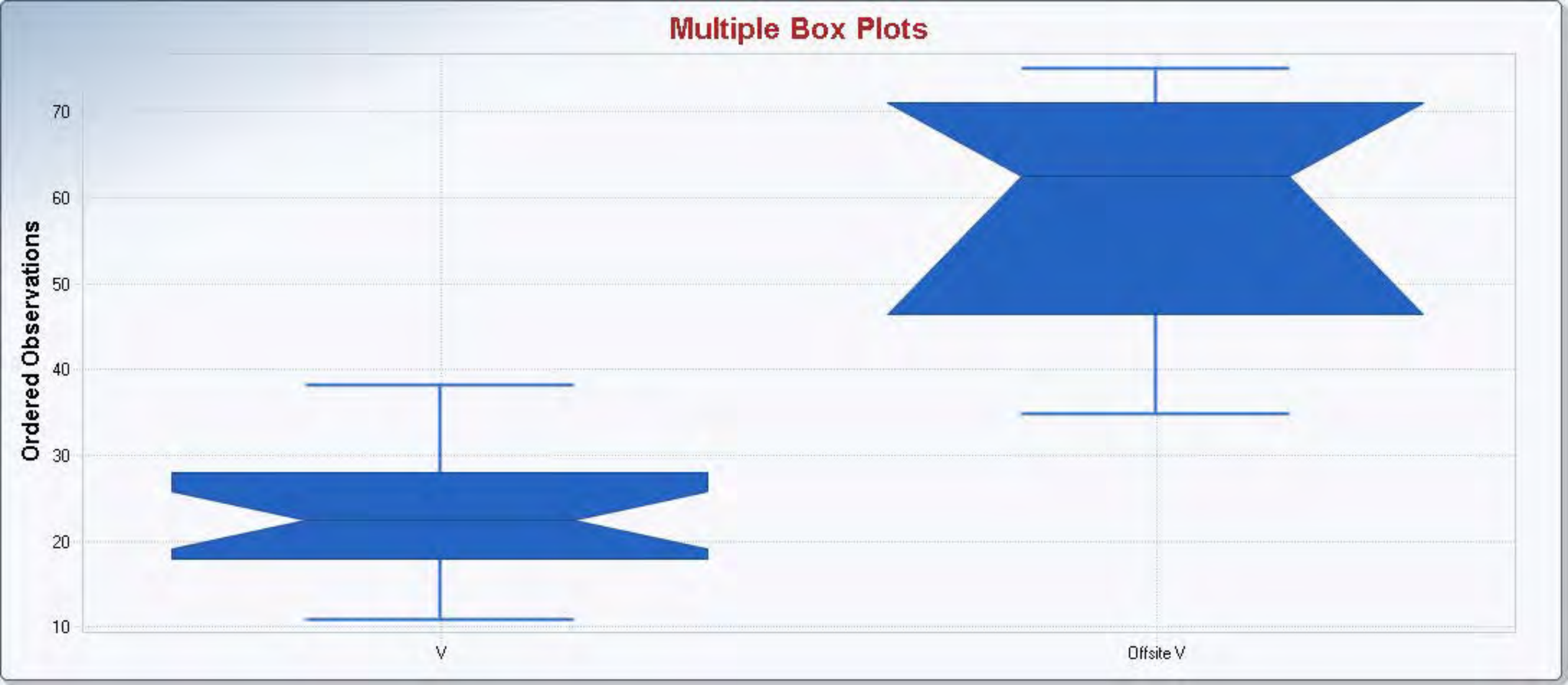
**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| Sample 1 Rank Sum W-Stat | 272 |
| Standardized WMW U-Stat | -1.823 |
| Mean (U) | 44 |
| SD(U) - Adj ties | 14.07 |
| Approximate U-Stat Critical Value (0.05) | 1.645 |
| P-Value (Adjusted for Ties) | 0.966 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**


Multiple Box Plots
Ordered Observations
70
60
50
40
30
20
10
V
Offsite V

**Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:35:59 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: V**

**Sample 2 Data: Offsite V**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detect Data | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 11 | 35 |
| Maximum Detect | 38 | 75 |
| Mean of Detects | 23.19 | 58.75 |
| Median of Detects | 22.5 | 62.5 |
| SD of Detects | 7.014 | 17.29 |
| KM Mean | 23.19 | 58.75 |
| KM SD | 7.014 | 17.29 |

**Sample 1 vs Sample 2 Gehan Test**

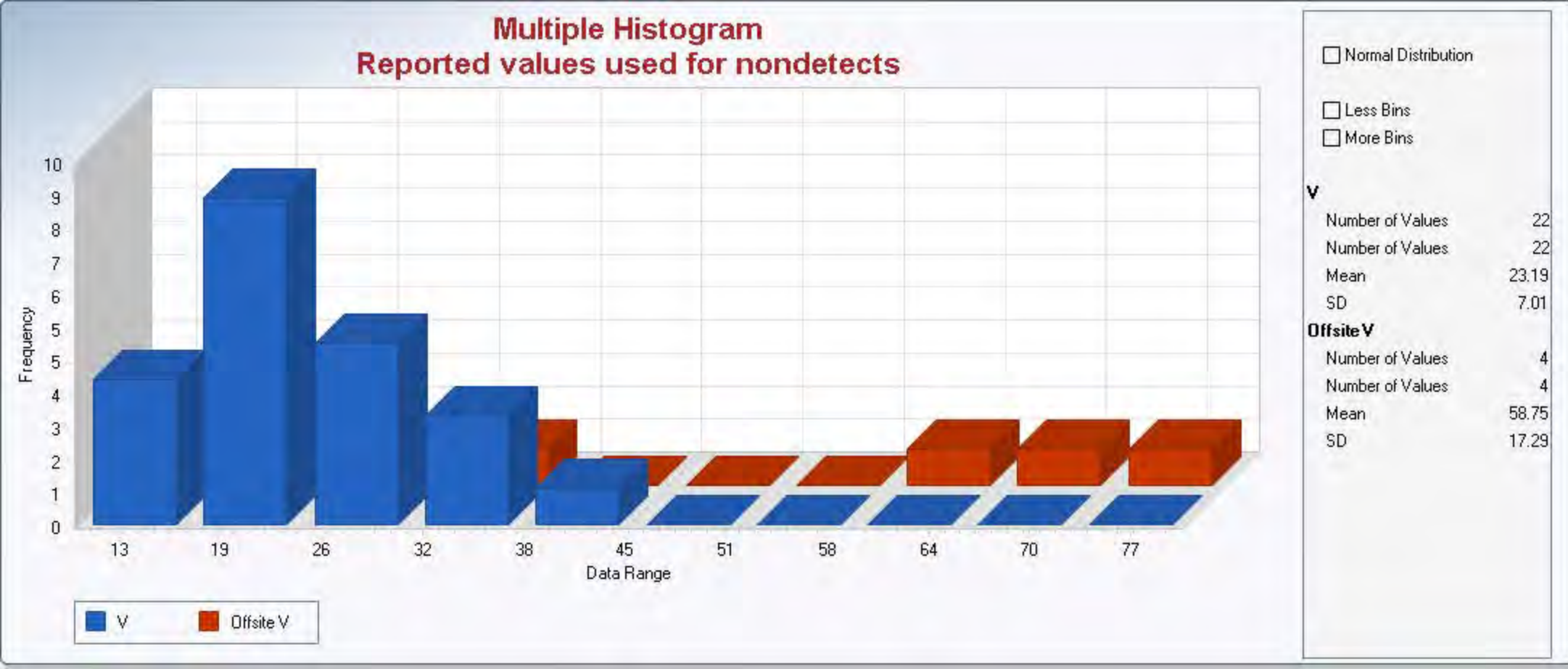
**H0: Mean/Median of Sample 1 <= Mean/Median of background**

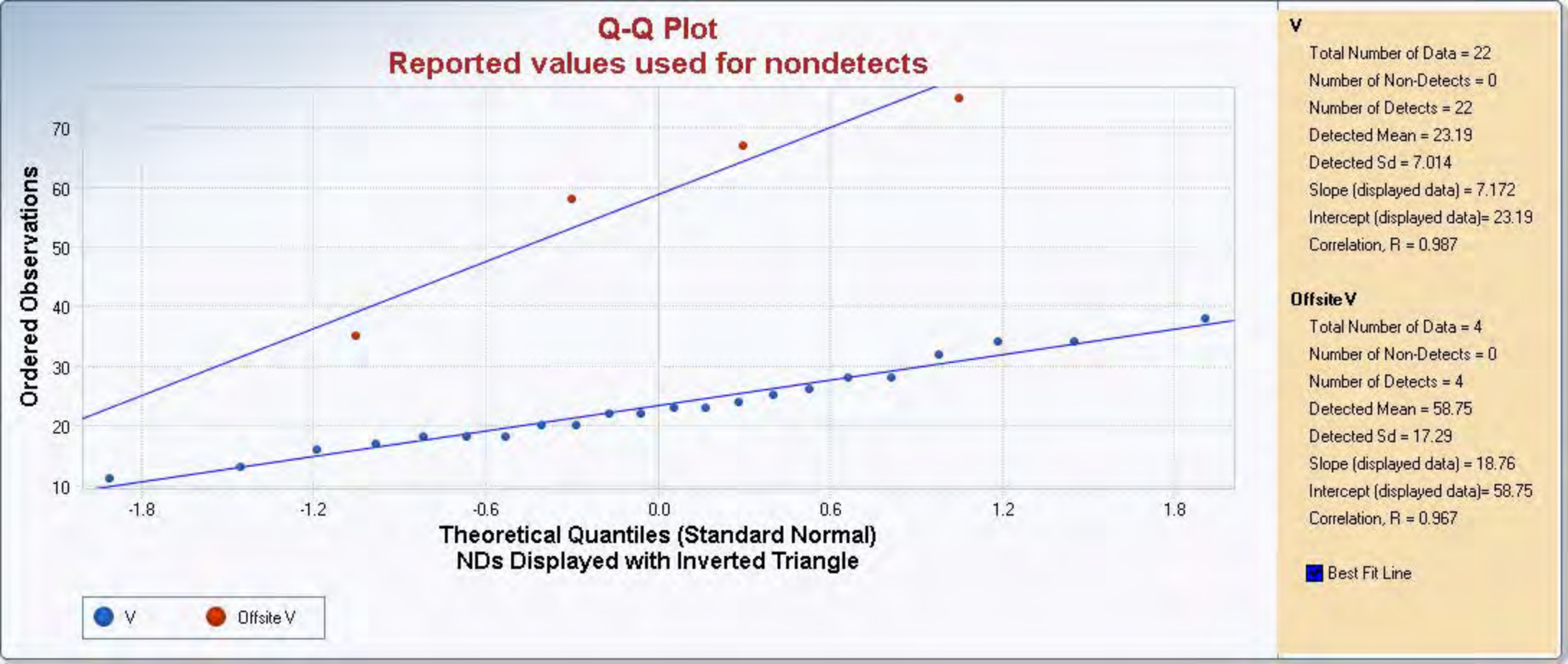
| | |
|---|---|
| Gehan z Test Value | -3.056 |
| Critical z (0.05) | 1.645 |
| P-Value | 0.999 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**


Multiple Histogram
Reported values used for nondetects
Normal Distribution
Less Bins
More Bins
V
Number of Values 22
Number of Values 22
Mean 23.19
SD 7.01
Offsite V
Number of Values 4
Number of Values 4
Mean 58.75
SD 17.29
Frequency
0
1
2
3
4
5
6
7
8
9
10
13
19
26
32
38
45
51
58
64
70
77
Data Range
V
Offsite V


Q-Q Plot
Reported values used for nondetects
Ordered Observations
70
60
50
40
30
20
10
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
V
Offsite V
V
Total Number of Data = 22
Number of Non-Detects = 0
Number of Detects = 22
Detected Mean = 23.19
Detected Sd = 7.014
Slope (displayed data) = 7.172
Intercept (displayed data)= 23.19
Correlation, R = 0.987
Offsite V
Total Number of Data = 4
Number of Non-Detects = 0
Number of Detects = 4
Detected Mean = 58.75
Detected Sd = 17.29
Slope (displayed data) = 18.76
Intercept (displayed data)= 58.75
Correlation, R = 0.967
Best Fit Line

## Tarone-Ware Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:36:46 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: V**

**Sample 2 Data: Offsite V**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detects | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 11 | 35 |
| Maximum Detect | 38 | 75 |
| Mean of Detects | 23.19 | 58.75 |
| Median of Detects | 22.5 | 62.5 |
| SD of Detects | 7.014 | 17.29 |
| KM Mean | 23.19 | 58.75 |
| KM SD | 7.014 | 17.29 |

**Sample 1 vs Sample 2 Tarone-Ware Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| TW Statistic | -5.591 |
| TW Critical Value (0.05) | 1.645 |
| P-Value | 1 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

## Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:37:30 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: V**

**Sample 2 Data: Offsite V**

### Raw Statistics

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detect Data | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 11 | 35 |
| Maximum Detect | 38 | 75 |
| Mean of Detects | 23.19 | 58.75 |
| Median of Detects | 22.5 | 62.5 |
| SD of Detects | 7.014 | 17.29 |

### Wilcoxon-Mann-Whitney (WMW) Test

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| Sample 1 Rank Sum W-Stat | 254 |
| Standardized WMW U-Stat | -3.095 |
| Mean (U) | 44 |
| SD(U) - Adj ties | 14.06 |
| Approximate U-Stat Critical Value (0.05) | 1.645 |
| P-Value (Adjusted for Ties) | 0.999 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**


Multiple Box Plots
Ordered Observations
100
80
60
40
20
Zn
Offsite Zn

**Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:25:45 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Zn**

**Sample 2 Data: Offsite Zn**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detect Data | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 17 | 62 |
| Maximum Detect | 110 | 99 |
| Mean of Detects | 38.58 | 80.75 |
| Median of Detects | 35 | 81 |
| SD of Detects | 20.95 | 18.95 |
| KM Mean | 38.58 | 80.75 |
| KM SD | 20.95 | 18.95 |

**Sample 1 vs Sample 2 Gehan Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of background**

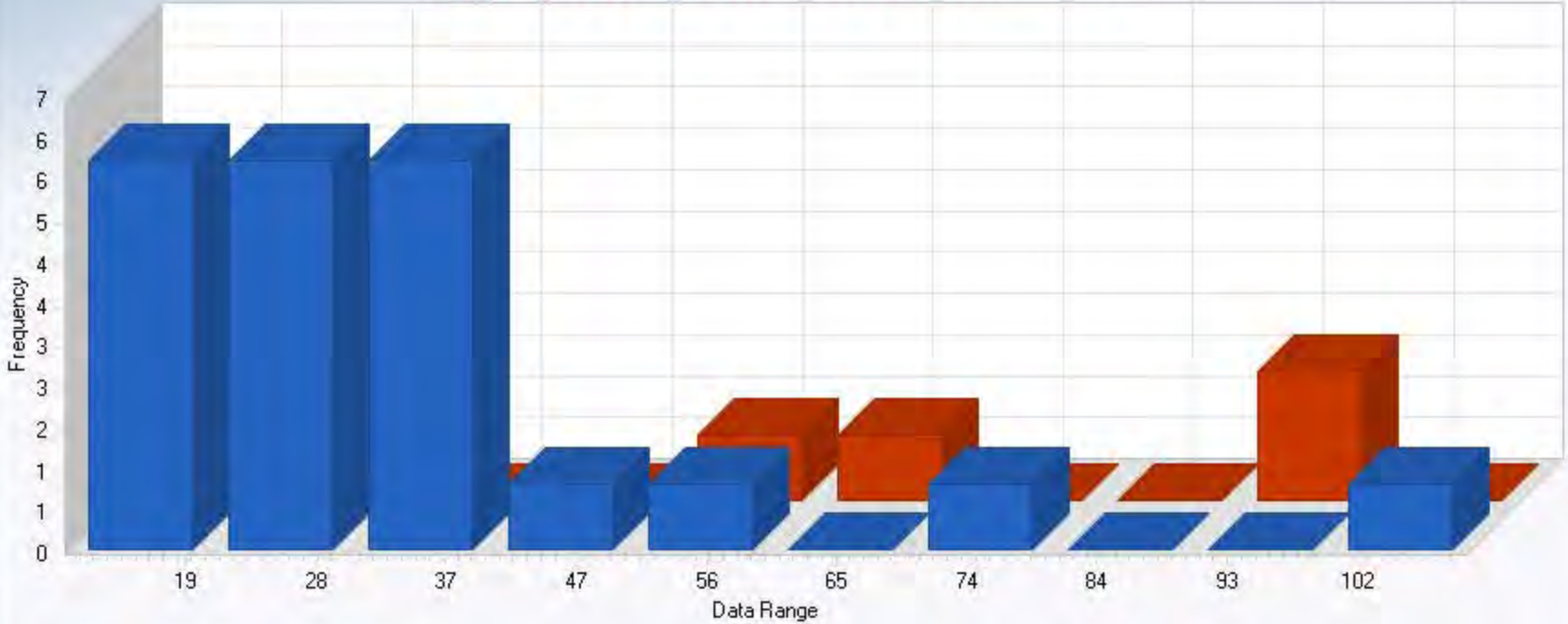
| | |
|---|---|
| Gehan z Test Value | -2.701 |
| Critical z (0.05) | 1.645 |
| P-Value | 0.997 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

# Multiple Histogram
## Reported values used for nondetects

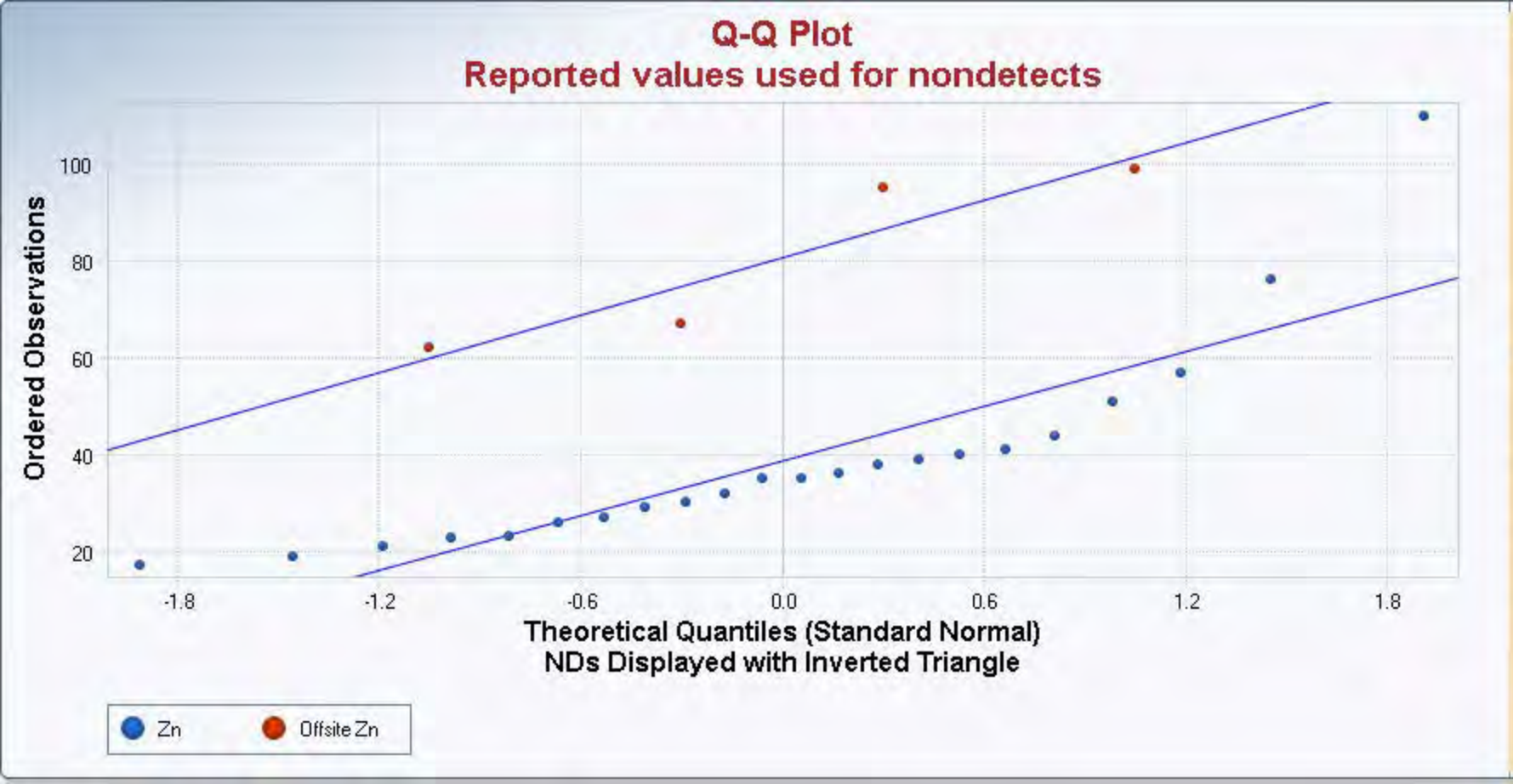



☐ Normal Distribution

☐ Less Bins

☐ More Bins

| | |
|---|---|
| **Zn** | |
| Number of Values | 22 |
| Number of Values | 22 |
| Mean | 38.58 |
| SD | 20.95 |
| **Offsite Zn** | |
| Number of Values | 4 |
| Number of Values | 4 |
| Mean | 80.75 |
| SD | 18.95 |


Q-Q Plot
Reported values used for nondetects
Ordered Observations
100
80
60
40
20
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Zn
Offsite Zn
Zn
Total Number of Data = 22
Number of Non-Detects = 0
Number of Detects = 22
Detected Mean = 38.58
Detected Sd = 20.95
Slope (displayed data) = 18.99
Intercept (displayed data)= 38.58
Correlation, R = 0.875
Offsite Zn
Total Number of Data = 4
Number of Non-Detects = 0
Number of Detects = 4
Detected Mean = 80.75
Detected Sd = 18.95
Slope (displayed data) = 19.83
Intercept (displayed data)= 80.75
Correlation, R = 0.932
Best Fit Line

**Tarone-Ware Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:26:33 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Zn**

**Sample 2 Data: Offsite Zn**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detects | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 17 | 62 |
| Maximum Detect | 110 | 99 |
| Mean of Detects | 38.58 | 80.75 |
| Median of Detects | 35 | 81 |
| SD of Detects | 20.95 | 18.95 |
| KM Mean | 38.58 | 80.75 |
| KM SD | 20.95 | 18.95 |

**Sample 1 vs Sample 2 Tarone-Ware Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| TW Statistic | -4.258 |
| TW Critical Value (0.05) | 1.645 |
| P-Value | 1 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

**Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects**

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/13/2020 8:31:46 AM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Selected Null Hypothesis | Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1) |
| Alternative Hypothesis | Sample 1 Mean/Median > Sample 2 Mean/Median |

**Sample 1 Data: Zn**

**Sample 2 Data: Offsite Zn**

**Raw Statistics**

| | Sample 1 | Sample 2 |
|---|---|---|
| Number of Valid Data | 22 | 4 |
| Number of Non-Detects | 0 | 0 |
| Number of Detect Data | 22 | 4 |
| Minimum Non-Detect | N/A | N/A |
| Maximum Non-Detect | N/A | N/A |
| Percent Non-detects | 0.00% | 0.00% |
| Minimum Detect | 17 | 62 |
| Maximum Detect | 110 | 99 |
| Mean of Detects | 38.58 | 80.75 |
| Median of Detects | 35 | 81 |
| SD of Detects | 20.95 | 18.95 |

**Wilcoxon-Mann-Whitney (WMW) Test**

**H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2**

| | |
|---|---|
| Sample 1 Rank Sum W-Stat | 259 |
| Standardized WMW U-Stat | -2.737 |
| Mean (U) | 44 |
| SD(U) - Adj ties | 14.07 |
| Approximate U-Stat Critical Value (0.05) | 1.645 |
| P-Value (Adjusted for Ties) | 0.997 |

**Conclusion with Alpha = 0.05**

**Do Not Reject H0, Conclude Sample 1 <= Sample 2**

**P-Value >= alpha (0.05)**

# APPENDIX F

## ProUCL Statistics
## Soil Matrix & Soil Vapor

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | ProUCL 5.14/6/2020 2:59:55 PM | | | | | | | | |
| 5 | From File | | | TPH in Soil.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **Aliphatic C5-C8** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | | | | 35 | | Number of Distinct Observations | | | | 3 | |
| 14 | Number of Detects | | | | 1 | | Number of Non-Detects | | | | 34 | |
| 15 | Number of Distinct Detects | | | | 1 | | Number of Distinct Non-Detects | | | | 2 | |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable Aliphatic C5-C8 was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

## UCL Statistics for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/6/2020 3:02:06 PM |
| From File | TPH in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Aliphatic C9-C18**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 47 | Number of Distinct Observations | 23 |
| Number of Detects | 23 | Number of Non-Detects | 24 |
| Number of Distinct Detects | 22 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 11 | Minimum Non-Detect | 10 |
| Maximum Detect | 2720 | Maximum Non-Detect | 10 |
| Variance Detects | 520019 | Percent Non-Detects | 51.06% |
| Mean Detects | 285.5 | SD Detects | 721.1 |
| Median Detects | 56 | CV Detects | 2.526 |
| Skewness Detects | 3.138 | Kurtosis Detects | 8.732 |
| Mean of Logged Detects | 4.282 | SD of Logged Detects | 1.358 |

### Normal GOF Test on Detects Only

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.388 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.914 | Detected Data Not Normal at 5% Significance Level |
| Lilliefors Test Statistic | 0.466 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.18 | Detected Data Not Normal at 5% Significance Level |

**Detected Data Not Normal at 5% Significance Level**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 144.8 | KM Standard Error of Mean | 76.4 |
| KM SD | 512.2 | 95% KM (BCA) UCL | 302.4 |
| 95% KM (t) UCL | 273.1 | 95% KM (Percentile Bootstrap) UCL | 289.7 |
| 95% KM (z) UCL | 270.5 | 95% KM Bootstrap t UCL | 1492 |
| 90% KM Chebyshev UCL | 374 | 95% KM Chebyshev UCL | 477.8 |
| 97.5% KM Chebyshev UCL | 621.9 | 99% KM Chebyshev UCL | 905 |

### Gamma GOF Tests on Detected Observations Only

| | | |
|---|---|---|
| A-D Test Statistic | 3.33 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.812 | Detected Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.318 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.193 | Detected Data Not Gamma Distributed at 5% Significance Level |

**Detected Data Not Gamma Distributed at 5% Significance Level**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 0.468 | k star (bias corrected MLE) | 0.436 |
| Theta hat (MLE) | 610.6 | Theta star (bias corrected MLE) | 655.4 |
| nu hat (MLE) | 21.51 | nu star (bias corrected) | 20.04 |
| Mean (detects) | 285.5 | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | | | | | | | |
| 52 | **Gamma ROS Statistics using Imputed Non-Detects** | | | | | | | | | | |
| 53 | GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | | | | | | | | |
| 54 | GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | | | |
| 55 | For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | | | | | | | | |
| 56 | This is especially true when the sample size is small. | | | | | | | | | | |
| 57 | For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | | | | | | | | |
| 58 | | | | Minimum | 0.01 | | | Mean | 139.7 | | |
| 59 | | | | Maximum | 2720 | | | Median | 0.01 | | |
| 60 | | | | SD | 519.2 | | | CV | 3.715 | | |
| 61 | | | | k hat (MLE) | 0.148 | | | k star (bias corrected MLE) | 0.153 | | |
| 62 | | | | Theta hat (MLE) | 943 | | | Theta star (bias corrected MLE) | 913.8 | | |
| 63 | | | | nu hat (MLE) | 13.93 | | | nu star (bias corrected) | 14.37 | | |
| 64 | | | | Adjusted Level of Significance (β) | 0.0449 | | | | | | |
| 65 | | | | Approximate Chi Square Value (14.37, α) | 6.828 | | | Adjusted Chi Square Value (14.37, β) | 6.663 | | |
| 66 | | | | 95% Gamma Approximate UCL (use when n>=50) | 294.1 | | | 95% Gamma Adjusted UCL (use when n<50) | 301.4 | | |
| 67 | | | | | | | | | | | |
| 68 | **Estimates of Gamma Parameters using KM Estimates** | | | | | | | | | | |
| 69 | | | | Mean (KM) | 144.8 | | | SD (KM) | 512.2 | | |
| 70 | | | | Variance (KM) | 262382 | | | SE of Mean (KM) | 76.4 | | |
| 71 | | | | k hat (KM) | 0.0799 | | | k star (KM) | 0.089 | | |
| 72 | | | | nu hat (KM) | 7.515 | | | nu star (KM) | 8.368 | | |
| 73 | | | | theta hat (KM) | 1812 | | | theta star (KM) | 1627 | | |
| 74 | | | | 80% gamma percentile (KM) | 83.73 | | | 90% gamma percentile (KM) | 365.1 | | |
| 75 | | | | 95% gamma percentile (KM) | 843.9 | | | 99% gamma percentile (KM) | 2437 | | |
| 76 | | | | | | | | | | | |
| 77 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | |
| 78 | | | | Approximate Chi Square Value (8.37, α) | 2.95 | | | Adjusted Chi Square Value (8.37, β) | 2.849 | | |
| 79 | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 410.8 | | | 95% Gamma Adjusted KM-UCL (use when n<50) | 425.4 | | |
| 80 | 95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50) | | | | | | | | | | |
| 81 | | | | | | | | | | | |
| 82 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | |
| 83 | | | | Shapiro Wilk Test Statistic | 0.851 | | | **Shapiro Wilk GOF Test** | | | |
| 84 | | | | 5% Shapiro Wilk Critical Value | 0.914 | | | Detected Data Not Lognormal at 5% Significance Level | | | |
| 85 | | | | Lilliefors Test Statistic | 0.155 | | | **Lilliefors GOF Test** | | | |
| 86 | | | | 5% Lilliefors Critical Value | 0.18 | | | Detected Data appear Lognormal at 5% Significance Level | | | |
| 87 | **Detected Data appear Approximate Lognormal at 5% Significance Level** | | | | | | | | | | |
| 88 | | | | | | | | | | | |
| 89 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | |
| 90 | | | | Mean in Original Scale | 141.4 | | | Mean in Log Scale | 2.388 | | |
| 91 | | | | SD in Original Scale | 518.7 | | | SD in Log Scale | 2.295 | | |
| 92 | | | | 95% t UCL (assumes normality of ROS data) | 268.4 | | | 95% Percentile Bootstrap UCL | 273.3 | | |
| 93 | | | | 95% BCA Bootstrap UCL | 355.4 | | | 95% Bootstrap t UCL | 1331 | | |
| 94 | | | | 95% H-UCL (Log ROS) | 588.9 | | | | | | |
| 95 | | | | | | | | | | | |
| 96 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | |
| 97 | | | | KM Mean (logged) | 3.271 | | | KM Geo Mean | 26.34 | | |
| 98 | | | | KM SD (logged) | 1.357 | | | 95% Critical H Value (KM-Log) | 2.742 | | |
| 99 | | | | KM Standard Error of Mean (logged) | 0.202 | | | 95% H-UCL (KM -Log) | 114.6 | | |
| 100 | | | | KM SD (logged) | 1.357 | | | 95% Critical H Value (KM-Log) | 2.742 | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | KM Standard Error of Mean (logged) | | | | | 0.202 | | | | | | |
| 102 | | | | | | | | | | | | |
| 103 | **DL/2 Statistics** | | | | | | | | | | | |
| 104 | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | | | | | |
| 105 | Mean in Original Scale | | | | | 142.3 | Mean in Log Scale | | | | | 2.917 |
| 106 | SD in Original Scale | | | | | 518.5 | SD in Log Scale | | | | | 1.645 |
| 107 | 95% t UCL (Assumes normality) | | | | | 269.2 | 95% H-Stat UCL | | | | | 152 |
| 108 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 109 | | | | | | | | | | | | |
| 110 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 111 | **Detected Data appear Approximate Lognormal Distributed at 5% Significance Level** | | | | | | | | | | | |
| 112 | | | | | | | | | | | | |
| 113 | **Suggested UCL to Use** | | | | | | | | | | | |
| 114 | KM H-UCL | | | | | 114.6 | | | | | | |
| 115 | | | | | | | | | | | | |
| 116 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 117 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 118 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 119 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 120 | | | | | | | | | | | | |

## UCL Statistics for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/6/2020 3:02:47 PM |
| From File | TPH in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Aliphatic C19-C32**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 47 | Number of Distinct Observations | 20 |
| Number of Detects | 25 | Number of Non-Detects | 22 |
| Number of Distinct Detects | 19 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 21 | Minimum Non-Detect | 10 |
| Maximum Detect | 1390 | Maximum Non-Detect | 10 |
| Variance Detects | 117528 | Percent Non-Detects | 46.81% |
| Mean Detects | 256.4 | SD Detects | 342.8 |
| Median Detects | 120 | CV Detects | 1.337 |
| Skewness Detects | 2.645 | Kurtosis Detects | 6.691 |
| Mean of Logged Detects | 5.006 | SD of Logged Detects | 1.012 |

### Normal GOF Test on Detects Only

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.605 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.918 | Detected Data Not Normal at 5% Significance Level |
| Lilliefors Test Statistic | 0.304 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.173 | Detected Data Not Normal at 5% Significance Level |

**Detected Data Not Normal at 5% Significance Level**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 141.1 | KM Standard Error of Mean | 40.81 |
| KM SD | 274.1 | 95% KM (BCA) UCL | 216.4 |
| 95% KM (t) UCL | 209.6 | 95% KM (Percentile Bootstrap) UCL | 211.1 |
| 95% KM (z) UCL | 208.2 | 95% KM Bootstrap t UCL | 287.5 |
| 90% KM Chebyshev UCL | 263.5 | 95% KM Chebyshev UCL | 318.9 |
| 97.5% KM Chebyshev UCL | 395.9 | 99% KM Chebyshev UCL | 547.1 |

### Gamma GOF Tests on Detected Observations Only

| | | |
|---|---|---|
| A-D Test Statistic | 1.373 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.772 | Detected Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.251 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.179 | Detected Data Not Gamma Distributed at 5% Significance Level |

**Detected Data Not Gamma Distributed at 5% Significance Level**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 1.06 | k star (bias corrected MLE) | 0.959 |
| Theta hat (MLE) | 241.9 | Theta star (bias corrected MLE) | 267.3 |
| nu hat (MLE) | 52.99 | nu star (bias corrected) | 47.97 |
| Mean (detects) | 256.4 | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | | | | | | | | |
| 52 | **Gamma ROS Statistics using Imputed Non-Detects** | | | | | | | | | | | |
| 53 | GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | | | | | | | | | |
| 54 | GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | | | | |
| 55 | For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | | | | | | | | | |
| 56 | This is especially true when the sample size is small. | | | | | | | | | | | |
| 57 | For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | | | | | | | | | |
| 58 | | | | Minimum | 0.01 | | | | Mean | 136.4 | | |
| 59 | | | | Maximum | 1390 | | | | Median | 23 | | |
| 60 | | | | SD | 279.4 | | | | CV | 2.048 | | |
| 61 | | | | k hat (MLE) | 0.171 | | | | k star (bias corrected MLE) | 0.174 | | |
| 62 | | | | Theta hat (MLE) | 797.6 | | | | Theta star (bias corrected MLE) | 782.7 | | |
| 63 | | | | nu hat (MLE) | 16.07 | | | | nu star (bias corrected) | 16.38 | | |
| 64 | | | | Adjusted Level of Significance (β) | 0.0449 | | | | | | | |
| 65 | | | | Approximate Chi Square Value (16.38, α) | 8.231 | | | | Adjusted Chi Square Value (16.38, β) | 8.048 | | |
| 66 | | | | 95% Gamma Approximate UCL (use when n>=50) | 271.4 | | | | 95% Gamma Adjusted UCL (use when n<50) | 277.6 | | |
| 67 | | | | | | | | | | | | |
| 68 | **Estimates of Gamma Parameters using KM Estimates** | | | | | | | | | | | |
| 69 | | | | Mean (KM) | 141.1 | | | | SD (KM) | 274.1 | | |
| 70 | | | | Variance (KM) | 75131 | | | | SE of Mean (KM) | 40.81 | | |
| 71 | | | | k hat (KM) | 0.265 | | | | k star (KM) | 0.262 | | |
| 72 | | | | nu hat (KM) | 24.9 | | | | nu star (KM) | 24.64 | | |
| 73 | | | | theta hat (KM) | 532.6 | | | | theta star (KM) | 538.1 | | |
| 74 | | | | 80% gamma percentile (KM) | 208.2 | | | | 90% gamma percentile (KM) | 421.9 | | |
| 75 | | | | 95% gamma percentile (KM) | 673.1 | | | | 99% gamma percentile (KM) | 1338 | | |
| 76 | | | | | | | | | | | | |
| 77 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | | |
| 78 | | | | Approximate Chi Square Value (24.64, α) | 14.34 | | | | Adjusted Chi Square Value (24.64, β) | 14.09 | | |
| 79 | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 242.4 | | | | 95% Gamma Adjusted KM-UCL (use when n<50) | 246.7 | | |
| 80 | | | | | | | | | | | | |
| 81 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | | |
| 82 | | | | Shapiro Wilk Test Statistic | 0.944 | | | | **Shapiro Wilk GOF Test** | | | |
| 83 | | | | 5% Shapiro Wilk Critical Value | 0.918 | | | | Detected Data appear Lognormal at 5% Significance Level | | | |
| 84 | | | | Lilliefors Test Statistic | 0.183 | | | | **Lilliefors GOF Test** | | | |
| 85 | | | | 5% Lilliefors Critical Value | 0.173 | | | | Detected Data Not Lognormal at 5% Significance Level | | | |
| 86 | **Detected Data appear Approximate Lognormal at 5% Significance Level** | | | | | | | | | | | |
| 87 | | | | | | | | | | | | |
| 88 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | | |
| 89 | | | | Mean in Original Scale | 143 | | | | Mean in Log Scale | 3.753 | | |
| 90 | | | | SD in Original Scale | 276.2 | | | | SD in Log Scale | 1.655 | | |
| 91 | | | | 95% t UCL (assumes normality of ROS data) | 210.6 | | | | 95% Percentile Bootstrap UCL | 212.2 | | |
| 92 | | | | 95% BCA Bootstrap UCL | 237.8 | | | | 95% Bootstrap t UCL | 287.1 | | |
| 93 | | | | 95% H-UCL (Log ROS) | 359.4 | | | | | | | |
| 94 | | | | | | | | | | | | |
| 95 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | | |
| 96 | | | | KM Mean (logged) | 3.74 | | | | KM Geo Mean | 42.12 | | |
| 97 | | | | KM SD (logged) | 1.53 | | | | 95% Critical H Value (KM-Log) | 2.961 | | |
| 98 | | | | KM Standard Error of Mean (logged) | 0.228 | | | | 95% H-UCL (KM -Log) | 264.9 | | |
| 99 | | | | KM SD (logged) | 1.53 | | | | 95% Critical H Value (KM-Log) | 2.961 | | |
| 100 | | | | KM Standard Error of Mean (logged) | 0.228 | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | | | | | |
| 102 | **DL/2 Statistics** | | | | | | | | | | | |
| 103 | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | | | | | |
| 104 | Mean in Original Scale | | | | | 138.7 | Mean in Log Scale | | | | | 3.416 |
| 105 | SD in Original Scale | | | | | 278.2 | SD in Log Scale | | | | | 1.862 |
| 106 | 95% t UCL (Assumes normality) | | | | | 206.8 | 95% H-Stat UCL | | | | | 438.8 |
| 107 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 108 | | | | | | | | | | | | |
| 109 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 110 | **Detected Data appear Approximate Lognormal Distributed at 5% Significance Level** | | | | | | | | | | | |
| 111 | | | | | | | | | | | | |
| 112 | **Suggested UCL to Use** | | | | | | | | | | | |
| 113 | KM H-UCL | | | | | 264.9 | | | | | | |
| 114 | | | | | | | | | | | | |
| 115 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 116 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 117 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 118 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 119 | | | | | | | | | | | | |

## UCL Statistics for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/6/2020 3:04:35 PM |
| From File | TPH in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**aromatic C9-C18**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 108 | Number of Distinct Observations | 4 |
| Number of Detects | 3 | Number of Non-Detects | 105 |
| Number of Distinct Detects | 3 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 8 | Minimum Non-Detect | 1 |
| Maximum Detect | 33 | Maximum Non-Detect | 1 |
| Variance Detects | 206.7 | Percent Non-Detects | 97.22% |
| Mean Detects | 16.4 | SD Detects | 14.38 |
| Median Detects | 8.2 | CV Detects | 0.877 |
| Skewness Detects | 1.732 | Kurtosis Detects | N/A |
| Mean of Logged Detects | 2.56 | SD of Logged Detects | 0.811 |

**Warning: Data set has only 3 Detected Values.**

**This is not enough to compute meaningful or reliable statistics and estimates.**

### Normal GOF Test on Detects Only

| | | | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.756 | **Shapiro Wilk GOF Test** | |
| 5% Shapiro Wilk Critical Value | 0.767 | Detected Data Not Normal at 5% Significance Level | |
| Lilliefors Test Statistic | 0.382 | **Lilliefors GOF Test** | |
| 5% Lilliefors Critical Value | 0.425 | Detected Data appear Normal at 5% Significance Level | |

**Detected Data appear Approximate Normal at 5% Significance Level**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 1.428 | KM Standard Error of Mean | 0.377 |
| KM SD | 3.199 | 95% KM (BCA) UCL | N/A |
| 95% KM (t) UCL | 2.053 | 95% KM (Percentile Bootstrap) UCL | N/A |
| 95% KM (z) UCL | 2.048 | 95% KM Bootstrap t UCL | N/A |
| 90% KM Chebyshev UCL | 2.559 | 95% KM Chebyshev UCL | 3.071 |
| 97.5% KM Chebyshev UCL | 3.782 | 99% KM Chebyshev UCL | 5.179 |

### Gamma GOF Tests on Detected Observations Only

**Not Enough Data to Perform GOF Test**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 2.26 | k star (bias corrected MLE) | N/A |
| Theta hat (MLE) | 7.256 | Theta star (bias corrected MLE) | N/A |
| nu hat (MLE) | 13.56 | nu star (bias corrected) | N/A |
| Mean (detects) | 16.4 | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | | | | | | | | |
| 52 | **Gamma ROS Statistics using Imputed Non-Detects** | | | | | | | | | | | |
| 53 | GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | | | | | | | | | |
| 54 | GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | | | | |
| 55 | For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | | | | | | | | | |
| 56 | This is especially true when the sample size is small. | | | | | | | | | | | |
| 57 | For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | | | | | | | | | |
| 58 | | | | | Minimum | 0.01 | | | | Mean | 0.465 | |
| 59 | | | | | Maximum | 33 | | | | Median | 0.01 | |
| 60 | | | | | SD | 3.345 | | | | CV | 7.188 | |
| 61 | | | | | k hat (MLE) | 0.202 | | | | k star (bias corrected MLE) | 0.202 | |
| 62 | | | | | Theta hat (MLE) | 2.305 | | | | Theta star (bias corrected MLE) | 2.299 | |
| 63 | | | | | nu hat (MLE) | 43.6 | | | | nu star (bias corrected) | 43.72 | |
| 64 | | | | | Adjusted Level of Significance (β) | 0.0478 | | | | | | |
| 65 | | | | | Approximate Chi Square Value (43.72, α) | 29.56 | | | | Adjusted Chi Square Value (43.72, β) | 29.4 | |
| 66 | | | | | 95% Gamma Approximate UCL (use when n>=50) | 0.688 | | | | 95% Gamma Adjusted UCL (use when n<50) | N/A | |
| 67 | | | | | | | | | | | | |
| 68 | **Estimates of Gamma Parameters using KM Estimates** | | | | | | | | | | | |
| 69 | | | | | Mean (KM) | 1.428 | | | | SD (KM) | 3.199 | |
| 70 | | | | | Variance (KM) | 10.23 | | | | SE of Mean (KM) | 0.377 | |
| 71 | | | | | k hat (KM) | 0.199 | | | | k star (KM) | 0.2 | |
| 72 | | | | | nu hat (KM) | 43.03 | | | | nu star (KM) | 43.17 | |
| 73 | | | | | theta hat (KM) | 7.167 | | | | theta star (KM) | 7.144 | |
| 74 | | | | | 80% gamma percentile (KM) | 1.881 | | | | 90% gamma percentile (KM) | 4.318 | |
| 75 | | | | | 95% gamma percentile (KM) | 7.358 | | | | 99% gamma percentile (KM) | 15.73 | |
| 76 | | | | | | | | | | | | |
| 77 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | | |
| 78 | | | | | Approximate Chi Square Value (43.17, α) | 29.11 | | | | Adjusted Chi Square Value (43.17, β) | 28.95 | |
| 79 | | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 2.118 | | | | 95% Gamma Adjusted KM-UCL (use when n<50) | 2.129 | |
| 80 | | | | | | | | | | | | |
| 81 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | | |
| 82 | | | | | Shapiro Wilk Test Statistic | 0.763 | | | | **Shapiro Wilk GOF Test** | | |
| 83 | | | | | 5% Shapiro Wilk Critical Value | 0.767 | | | | Detected Data Not Lognormal at 5% Significance Level | | |
| 84 | | | | | Lilliefors Test Statistic | 0.38 | | | | **Lilliefors GOF Test** | | |
| 85 | | | | | 5% Lilliefors Critical Value | 0.425 | | | | Detected Data appear Lognormal at 5% Significance Level | | |
| 86 | **Detected Data appear Approximate Lognormal at 5% Significance Level** | | | | | | | | | | | |
| 87 | | | | | | | | | | | | |
| 88 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | | |
| 89 | | | | | Mean in Original Scale | 0.571 | | | | Mean in Log Scale | -5.315 | |
| 90 | | | | | SD in Original Scale | 3.35 | | | | SD in Log Scale | 3.44 | |
| 91 | | | | | 95% t UCL (assumes normality of ROS data) | 1.106 | | | | 95% Percentile Bootstrap UCL | 1.151 | |
| 92 | | | | | 95% BCA Bootstrap UCL | 1.578 | | | | 95% Bootstrap t UCL | 2.397 | |
| 93 | | | | | 95% H-UCL (Log ROS) | 10.22 | | | | | | |
| 94 | | | | | | | | | | | | |
| 95 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | | |
| 96 | | | | | KM Mean (logged) | 0.0711 | | | | KM Geo Mean | 1.074 | |
| 97 | | | | | KM SD (logged) | 0.435 | | | | 95% Critical H Value (KM-Log) | 1.797 | |
| 98 | | | | | KM Standard Error of Mean (logged) | 0.0513 | | | | 95% H-UCL (KM -Log) | 1.273 | |
| 99 | | | | | KM SD (logged) | 0.435 | | | | 95% Critical H Value (KM-Log) | 1.797 | |
| 100 | | | | | KM Standard Error of Mean (logged) | 0.0513 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | | | | | |
| 102 | **DL/2 Statistics** | | | | | | | | | | | |
| 103 | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | | | | | |
| 104 | Mean in Original Scale | | | | | 0.942 | Mean in Log Scale | | | | | -0.603 |
| 105 | SD in Original Scale | | | | | 3.279 | SD in Log Scale | | | | | 0.548 |
| 106 | 95% t UCL (Assumes normality) | | | | | 1.465 | 95% H-Stat UCL | | | | | 0.702 |
| 107 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 108 | | | | | | | | | | | | |
| 109 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 110 | **Detected Data appear Approximate Normal Distributed at 5% Significance Level** | | | | | | | | | | | |
| 111 | | | | | | | | | | | | |
| 112 | **Suggested UCL to Use** | | | | | | | | | | | |
| 113 | 95% KM (t) UCL | | | | | 2.053 | | | | | | |
| 114 | | | | | | | | | | | | |
| 115 | When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test | | | | | | | | | | | |
| 116 | When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL | | | | | | | | | | | |
| 117 | | | | | | | | | | | | |
| 118 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 119 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 120 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 121 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 122 | | | | | | | | | | | | |

## UCL Statistics for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/6/2020 3:05:17 PM |
| From File | TPH in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Aromtic C19-C32**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 90 | Number of Distinct Observations | 11 |
| Number of Detects | 10 | Number of Non-Detects | 80 |
| Number of Distinct Detects | 10 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 2.3 | Minimum Non-Detect | 1 |
| Maximum Detect | 19 | Maximum Non-Detect | 1 |
| Variance Detects | 29.22 | Percent Non-Detects | 88.89% |
| Mean Detects | 10.17 | SD Detects | 5.406 |
| Median Detects | 9.7 | CV Detects | 0.532 |
| Skewness Detects | 0.159 | Kurtosis Detects | -0.876 |
| Mean of Logged Detects | 2.152 | SD of Logged Detects | 0.665 |

### Normal GOF Test on Detects Only

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.974 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.842 | Detected Data appear Normal at 5% Significance Level |
| Lilliefors Test Statistic | 0.12 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.262 | Detected Data appear Normal at 5% Significance Level |

**Detected Data appear Normal at 5% Significance Level**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 2.019 | KM Standard Error of Mean | 0.372 |
| KM SD | 3.351 | 95% KM (BCA) UCL | 2.652 |
| 95% KM (t) UCL | 2.638 | 95% KM (Percentile Bootstrap) UCL | 2.614 |
| 95% KM (z) UCL | 2.631 | 95% KM Bootstrap t UCL | 2.799 |
| 90% KM Chebyshev UCL | 3.136 | 95% KM Chebyshev UCL | 3.642 |
| 97.5% KM Chebyshev UCL | 4.344 | 99% KM Chebyshev UCL | 5.723 |

### Gamma GOF Tests on Detected Observations Only

| | | |
|---|---|---|
| A-D Test Statistic | 0.221 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.732 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.138 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.268 | Detected data appear Gamma Distributed at 5% Significance Level |

**Detected data appear Gamma Distributed at 5% Significance Level**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 3.146 | k star (bias corrected MLE) | 2.269 |
| Theta hat (MLE) | 3.233 | Theta star (bias corrected MLE) | 4.482 |
| nu hat (MLE) | 62.92 | nu star (bias corrected) | 45.38 |
| Mean (detects) | 10.17 | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | | | | | | | | |
| 52 | **Gamma ROS Statistics using Imputed Non-Detects** | | | | | | | | | | | |
| 53 | GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | | | | | | | | | |
| 54 | GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | | | | |
| 55 | For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | | | | | | | | | |
| 56 | This is especially true when the sample size is small. | | | | | | | | | | | |
| 57 | For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | | | | | | | | | |
| 58 | | | | Minimum | 0.01 | | | Mean | 1.228 | | | |
| 59 | | | | Maximum | 19 | | | Median | 0.01 | | | |
| 60 | | | | SD | 3.639 | | | CV | 2.963 | | | |
| 61 | | | | k hat (MLE) | 0.195 | | | k star (bias corrected MLE) | 0.196 | | | |
| 62 | | | | Theta hat (MLE) | 6.296 | | | Theta star (bias corrected MLE) | 6.267 | | | |
| 63 | | | | nu hat (MLE) | 35.11 | | | nu star (bias corrected) | 35.27 | | | |
| 64 | | | | Adjusted Level of Significance (β) | 0.0473 | | | | | | | |
| 65 | | | | Approximate Chi Square Value (35.27, α) | 22.68 | | | Adjusted Chi Square Value (35.27, β) | 22.52 | | | |
| 66 | | | | 95% Gamma Approximate UCL (use when n>=50) | 1.909 | | | 95% Gamma Adjusted UCL (use when n<50) | 1.923 | | | |
| 67 | | | | | | | | | | | | |
| 68 | **Estimates of Gamma Parameters using KM Estimates** | | | | | | | | | | | |
| 69 | | | | Mean (KM) | 2.019 | | | SD (KM) | 3.351 | | | |
| 70 | | | | Variance (KM) | 11.23 | | | SE of Mean (KM) | 0.372 | | | |
| 71 | | | | k hat (KM) | 0.363 | | | k star (KM) | 0.358 | | | |
| 72 | | | | nu hat (KM) | 65.35 | | | nu star (KM) | 64.5 | | | |
| 73 | | | | theta hat (KM) | 5.561 | | | theta star (KM) | 5.634 | | | |
| 74 | | | | 80% gamma percentile (KM) | 3.209 | | | 90% gamma percentile (KM) | 5.809 | | | |
| 75 | | | | 95% gamma percentile (KM) | 8.71 | | | 99% gamma percentile (KM) | 16.09 | | | |
| 76 | | | | | | | | | | | | |
| 77 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | | |
| 78 | | | | Approximate Chi Square Value (64.50, α) | 47.02 | | | Adjusted Chi Square Value (64.50, β) | 46.78 | | | |
| 79 | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 2.769 | | | 95% Gamma Adjusted KM-UCL (use when n<50) | 2.784 | | | |
| 80 | | | | | | | | | | | | |
| 81 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | | |
| 82 | | | | Shapiro Wilk Test Statistic | 0.931 | | | **Shapiro Wilk GOF Test** | | | | |
| 83 | | | | 5% Shapiro Wilk Critical Value | 0.842 | | | Detected Data appear Lognormal at 5% Significance Level | | | | |
| 84 | | | | Lilliefors Test Statistic | 0.178 | | | **Lilliefors GOF Test** | | | | |
| 85 | | | | 5% Lilliefors Critical Value | 0.262 | | | Detected Data appear Lognormal at 5% Significance Level | | | | |
| 86 | **Detected Data appear Lognormal at 5% Significance Level** | | | | | | | | | | | |
| 87 | | | | | | | | | | | | |
| 88 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | | |
| 89 | | | | Mean in Original Scale | 1.758 | | | Mean in Log Scale | -0.76 | | | |
| 90 | | | | SD in Original Scale | 3.537 | | | SD in Log Scale | 1.701 | | | |
| 91 | | | | 95% t UCL (assumes normality of ROS data) | 2.378 | | | 95% Percentile Bootstrap UCL | 2.4 | | | |
| 92 | | | | 95% BCA Bootstrap UCL | 2.531 | | | 95% Bootstrap t UCL | 2.573 | | | |
| 93 | | | | 95% H-UCL (Log ROS) | 3.421 | | | | | | | |
| 94 | | | | | | | | | | | | |
| 95 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | | |
| 96 | | | | KM Mean (logged) | 0.239 | | | KM Geo Mean | 1.27 | | | |
| 97 | | | | KM SD (logged) | 0.708 | | | 95% Critical H Value (KM-Log) | 2.02 | | | |
| 98 | | | | KM Standard Error of Mean (logged) | 0.0787 | | | 95% H-UCL (KM -Log) | 1.9 | | | |
| 99 | | | | KM SD (logged) | 0.708 | | | 95% Critical H Value (KM-Log) | 2.02 | | | |
| 100 | | | | KM Standard Error of Mean (logged) | 0.0787 | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | | | | | |
| 102 | **DL/2 Statistics** | | | | | | | | | | | |
| 103 | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | | | | | |
| 104 | Mean in Original Scale | | | | | 1.574 | Mean in Log Scale | | | | | -0.377 |
| 105 | SD in Original Scale | | | | | 3.506 | SD in Log Scale | | | | | 0.924 |
| 106 | 95% t UCL (Assumes normality) | | | | | 2.189 | 95% H-Stat UCL | | | | | 1.3 |
| 107 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 108 | | | | | | | | | | | | |
| 109 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 110 | **Detected Data appear Normal Distributed at 5% Significance Level** | | | | | | | | | | | |
| 111 | | | | | | | | | | | | |
| 112 | **Suggested UCL to Use** | | | | | | | | | | | |
| 113 | 95% KM (t) UCL | | | | | 2.638 | | | | | | |
| 114 | | | | | | | | | | | | |
| 115 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 116 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 117 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 118 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 119 | | | | | | | | | | | | |

## UCL Statistics for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/14/2020 11:39:48 AM |
| From File | TPH in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**TPHd**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 18 | Number of Distinct Observations | 3 |
| Number of Detects | 2 | Number of Non-Detects | 16 |
| Number of Distinct Detects | 2 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 48 | Minimum Non-Detect | 5 |
| Maximum Detect | 69 | Maximum Non-Detect | 5 |
| Variance Detects | 220.5 | Percent Non-Detects | 88.89% |
| Mean Detects | 58.5 | SD Detects | 14.85 |
| Median Detects | 58.5 | CV Detects | 0.254 |
| Skewness Detects | N/A | Kurtosis Detects | N/A |
| Mean of Logged Detects | 4.053 | SD of Logged Detects | 0.257 |

**Warning: Data set has only 2 Detected Values.**

**This is not enough to compute meaningful or reliable statistics and estimates.**

### Normal GOF Test on Detects Only

**Not Enough Data to Perform GOF Test**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 10.94 | KM Standard Error of Mean | 5.725 |
| KM SD | 17.17 | 95% KM (BCA) UCL | N/A |
| 95% KM (t) UCL | 20.9 | 95% KM (Percentile Bootstrap) UCL | N/A |
| 95% KM (z) UCL | 20.36 | 95% KM Bootstrap t UCL | N/A |
| 90% KM Chebyshev UCL | 28.12 | 95% KM Chebyshev UCL | 35.9 |
| 97.5% KM Chebyshev UCL | 46.69 | 99% KM Chebyshev UCL | 67.9 |

### Gamma GOF Tests on Detected Observations Only

**Not Enough Data to Perform GOF Test**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 30.7 | k star (bias corrected MLE) | N/A |
| Theta hat (MLE) | 1.905 | Theta star (bias corrected MLE) | N/A |
| nu hat (MLE) | 122.8 | nu star (bias corrected) | N/A |
| Mean (detects) | 58.5 | | |

### Estimates of Gamma Parameters using KM Estimates

| | | | |
|---|---|---|---|
| Mean (KM) | 10.94 | SD (KM) | 17.17 |
| Variance (KM) | 294.9 | SE of Mean (KM) | 5.725 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | k hat (KM) | 0.406 | | | | | k star (KM) | 0.375 |
| 52 | | | | | nu hat (KM) | 14.62 | | | | | nu star (KM) | 13.52 |
| 53 | | | | | theta hat (KM) | 26.95 | | | | | theta star (KM) | 29.15 |
| 54 | | | | | 80% gamma percentile (KM) | 17.52 | | | | | 90% gamma percentile (KM) | 31.25 |
| 55 | | | | | 95% gamma percentile (KM) | 46.47 | | | | | 99% gamma percentile (KM) | 85.01 |
| 56 | | | | | | | | | | | | |
| 57 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | | |
| 58 | | | | | | | | | | | Adjusted Level of Significance (β) | 0.0357 |
| 59 | | | | | Approximate Chi Square Value (13.52, α) | 6.242 | | | | | Adjusted Chi Square Value (13.52, β) | 5.772 |
| 60 | | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 23.7 | | | | | 95% Gamma Adjusted KM-UCL (use when n<50) | 25.63 |
| 61 | | | | | | | | | | | | |
| 62 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | | |
| 63 | **Not Enough Data to Perform GOF Test** | | | | | | | | | | | |
| 64 | | | | | | | | | | | | |
| 65 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | | |
| 66 | | | | | Mean in Original Scale | 16.28 | | | | | Mean in Log Scale | 2.341 |
| 67 | | | | | SD in Original Scale | 17.47 | | | | | SD in Log Scale | 0.979 |
| 68 | | | | | 95% t UCL (assumes normality of ROS data) | 23.45 | | | | | 95% Percentile Bootstrap UCL | 23.71 |
| 69 | | | | | 95% BCA Bootstrap UCL | 25.51 | | | | | 95% Bootstrap t UCL | 29.53 |
| 70 | | | | | 95% H-UCL (Log ROS) | 31.14 | | | | | | |
| 71 | | | | | | | | | | | | |
| 72 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | | |
| 73 | | | | | KM Mean (logged) | 1.881 | | | | | KM Geo Mean | 6.559 |
| 74 | | | | | KM SD (logged) | 0.77 | | | | | 95% Critical H Value (KM-Log) | 2.324 |
| 75 | | | | | KM Standard Error of Mean (logged) | 0.257 | | | | | 95% H-UCL (KM -Log) | 13.62 |
| 76 | | | | | KM SD (logged) | 0.77 | | | | | 95% Critical H Value (KM-Log) | 2.324 |
| 77 | | | | | KM Standard Error of Mean (logged) | 0.257 | | | | | | |
| 78 | | | | | | | | | | | | |
| 79 | **DL/2 Statistics** | | | | | | | | | | | |
| 80 | **DL/2 Normal** | | | | | | | | | | **DL/2 Log-Transformed** | |
| 81 | | | | | Mean in Original Scale | 8.722 | | | | | Mean in Log Scale | 1.265 |
| 82 | | | | | SD in Original Scale | 18.46 | | | | | SD in Log Scale | 1.016 |
| 83 | | | | | 95% t UCL (Assumes normality) | 16.29 | | | | | 95% H-Stat UCL | 11.44 |
| 84 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 85 | | | | | | | | | | | | |
| 86 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 87 | **Data do not follow a Discernible Distribution at 5% Significance Level** | | | | | | | | | | | |
| 88 | | | | | | | | | | | | |
| 89 | **Suggested UCL to Use** | | | | | | | | | | | |
| 90 | | | | | 95% KM (t) UCL | 20.9 | | | | | KM H-UCL | 13.62 |
| 91 | | | | | 95% KM (BCA) UCL | N/A | | | | | | |
| 92 | **Warning: One or more Recommended UCL(s) not available!** | | | | | | | | | | | |
| 93 | | | | | | | | | | | | |
| 94 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 95 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 96 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 97 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 98 | | | | | | | | | | | | |

## UCL Statistics for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/14/2020 11:40:25 AM |
| From File | TPH in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**TPHo**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 18 | Number of Distinct Observations | 3 |
| Number of Detects | 2 | Number of Non-Detects | 16 |
| Number of Distinct Detects | 2 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 33 | Minimum Non-Detect | 5 |
| Maximum Detect | 45 | Maximum Non-Detect | 5 |
| Variance Detects | 72 | Percent Non-Detects | 88.89% |
| Mean Detects | 39 | SD Detects | 8.485 |
| Median Detects | 39 | CV Detects | 0.218 |
| Skewness Detects | N/A | Kurtosis Detects | N/A |
| Mean of Logged Detects | 3.652 | SD of Logged Detects | 0.219 |

**Warning: Data set has only 2 Detected Values.**

**This is not enough to compute meaningful or reliable statistics and estimates.**

### Normal GOF Test on Detects Only

**Not Enough Data to Perform GOF Test**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 8.778 | KM Standard Error of Mean | 3.624 |
| KM SD | 10.87 | 95% KM (BCA) UCL | N/A |
| 95% KM (t) UCL | 15.08 | 95% KM (Percentile Bootstrap) UCL | N/A |
| 95% KM (z) UCL | 14.74 | 95% KM Bootstrap t UCL | N/A |
| 90% KM Chebyshev UCL | 19.65 | 95% KM Chebyshev UCL | 24.57 |
| 97.5% KM Chebyshev UCL | 31.41 | 99% KM Chebyshev UCL | 44.83 |

### Gamma GOF Tests on Detected Observations Only

**Not Enough Data to Perform GOF Test**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 41.91 | k star (bias corrected MLE) | N/A |
| Theta hat (MLE) | 0.93 | Theta star (bias corrected MLE) | N/A |
| nu hat (MLE) | 167.7 | nu star (bias corrected) | N/A |
| Mean (detects) | 39 | | |

### Estimates of Gamma Parameters using KM Estimates

| | | | |
|---|---|---|---|
| Mean (KM) | 8.778 | SD (KM) | 10.87 |
| Variance (KM) | 118.2 | SE of Mean (KM) | 3.624 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | k hat (KM) | 0.652 | | | | | k star (KM) | 0.58 |
| 52 | | | | | nu hat (KM) | 23.47 | | | | | nu star (KM) | 20.89 |
| 53 | | | | | theta hat (KM) | 13.46 | | | | | theta star (KM) | 15.12 |
| 54 | | | | | 80% gamma percentile (KM) | 14.47 | | | | | 90% gamma percentile (KM) | 23 |
| 55 | | | | | 95% gamma percentile (KM) | 31.97 | | | | | 99% gamma percentile (KM) | 53.72 |
| 56 | | | | | | | | | | | | |
| 57 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | | |
| 58 | | | | | | | | | | | Adjusted Level of Significance (β) | 0.0357 |
| 59 | | | | | Approximate Chi Square Value (20.89, α) | 11.51 | | | | | Adjusted Chi Square Value (20.89, β) | 10.85 |
| 60 | | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 15.93 | | | | | 95% Gamma Adjusted KM-UCL (use when n<50) | 16.91 |
| 61 | | | | | | | | | | | | |
| 62 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | | |
| 63 | **Not Enough Data to Perform GOF Test** | | | | | | | | | | | |
| 64 | | | | | | | | | | | | |
| 65 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | | |
| 66 | | | | | Mean in Original Scale | 12.42 | | | | | Mean in Log Scale | 2.188 |
| 67 | | | | | SD in Original Scale | 11.26 | | | | | SD in Log Scale | 0.836 |
| 68 | | | | | 95% t UCL (assumes normality of ROS data) | 17.03 | | | | | 95% Percentile Bootstrap UCL | 17.01 |
| 69 | | | | | 95% BCA Bootstrap UCL | 18.4 | | | | | 95% Bootstrap t UCL | 20.31 |
| 70 | | | | | 95% H-UCL (Log ROS) | 20.64 | | | | | | |
| 71 | | | | | | | | | | | | |
| 72 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | | |
| 73 | | | | | KM Mean (logged) | 1.836 | | | | | KM Geo Mean | 6.274 |
| 74 | | | | | KM SD (logged) | 0.644 | | | | | 95% Critical H Value (KM-Log) | 2.173 |
| 75 | | | | | KM Standard Error of Mean (logged) | 0.215 | | | | | 95% H-UCL (KM -Log) | 10.84 |
| 76 | | | | | KM SD (logged) | 0.644 | | | | | 95% Critical H Value (KM-Log) | 2.173 |
| 77 | | | | | KM Standard Error of Mean (logged) | 0.215 | | | | | | |
| 78 | | | | | | | | | | | | |
| 79 | **DL/2 Statistics** | | | | | | | | | | | |
| 80 | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | | | | | |
| 81 | | | | | Mean in Original Scale | 6.556 | | | | | Mean in Log Scale | 1.22 |
| 82 | | | | | SD in Original Scale | 11.98 | | | | | SD in Log Scale | 0.886 |
| 83 | | | | | 95% t UCL (Assumes normality) | 11.47 | | | | | 95% H-Stat UCL | 8.543 |
| 84 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 85 | | | | | | | | | | | | |
| 86 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 87 | **Data do not follow a Discernible Distribution at 5% Significance Level** | | | | | | | | | | | |
| 88 | | | | | | | | | | | | |
| 89 | **Suggested UCL to Use** | | | | | | | | | | | |
| 90 | | | | | 95% KM (t) UCL | 15.08 | | | | | KM H-UCL | 10.84 |
| 91 | | | | | 95% KM (BCA) UCL | N/A | | | | | | |
| 92 | **Warning: One or more Recommended UCL(s) not available!** | | | | | | | | | | | |
| 93 | | | | | | | | | | | | |
| 94 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 95 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 96 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 97 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 98 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | ProUCL 5.14/6/2020 4:35:53 PM | | | | | | | | |
| 5 | From File | | | VOCs in Soil.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **Naphthalene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | | | | | 4 | Number of Distinct Observations | | | | | 2 |
| 14 | Number of Detects | | | | | 1 | Number of Non-Detects | | | | | 3 |
| 15 | Number of Distinct Detects | | | | | 1 | Number of Distinct Non-Detects | | | | | 1 |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable Naphthalene was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | ProUCL 5.14/6/2020 4:36:43 PM | | | | | | | | |
| 5 | From File | | | VOCs in Soil.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **n-Propylbenzene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | | | 4 | | | Number of Distinct Observations | | | 2 | | |
| 14 | Number of Detects | | | 1 | | | Number of Non-Detects | | | 3 | | |
| 15 | Number of Distinct Detects | | | 1 | | | Number of Distinct Non-Detects | | | 1 | | |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable n-Propylbenzene was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | ProUCL 5.14/6/2020 4:29:31 PM | | | | | | | | |
| 5 | From File | | | SVOCs in Soil.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **2-Methylnaphthalene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | | | | 4 | | Number of Distinct Observations | | | | 3 | |
| 14 | Number of Detects | | | | 1 | | Number of Non-Detects | | | | 3 | |
| 15 | Number of Distinct Detects | | | | 1 | | Number of Distinct Non-Detects | | | | 2 | |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable 2-Methylnaphthalene was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | ProUCL 5.14/6/2020 4:31:54 PM | | | | | | | | |
| 5 | From File | | | SVOCs in Soil.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **Benzo(a)pyrene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | | | | | 18 | Number of Distinct Observations | | | | | 2 |
| 14 | Number of Detects | | | | | 1 | Number of Non-Detects | | | | | 17 |
| 15 | Number of Distinct Detects | | | | | 1 | Number of Distinct Non-Detects | | | | | 1 |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable Benzo(a)pyrene was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | ProUCL 5.14/6/2020 4:30:26 PM | | | | | | | | | | |
| 5 | From File | SVOCs in Soil.xls | | | | | | | | | | |
| 6 | Full Precision | OFF | | | | | | | | | | |
| 7 | Confidence Coefficient | 95% | | | | | | | | | | |
| 8 | Number of Bootstrap Operations | 2000 | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **Benzo(b)fluoranthene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | 18 | Number of Distinct Observations | 2 | | | | | | | | |
| 14 | Number of Detects | 1 | Number of Non-Detects | 17 | | | | | | | | |
| 15 | Number of Distinct Detects | 1 | Number of Distinct Non-Detects | 1 | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable Benzo(b)fluoranthene was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | ProUCL 5.14/6/2020 4:31:12 PM | | | | | | | | |
| 5 | From File | | | SVOCs in Soil.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **Benzo(k)fluoranthene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | | | | | 18 | Number of Distinct Observations | | | | | 2 |
| 14 | Number of Detects | | | | | 1 | Number of Non-Detects | | | | | 17 |
| 15 | Number of Distinct Detects | | | | | 1 | Number of Distinct Non-Detects | | | | | 1 |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable Benzo(k)fluoranthene was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | ProUCL 5.14/6/2020 4:32:40 PM | | | | | | | | |
| 5 | From File | | | SVOCs in Soil.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **Chrysene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | | | 18 | | Number of Distinct Observations | | | 2 | | | |
| 14 | Number of Detects | | | 1 | | Number of Non-Detects | | | 17 | | | |
| 15 | Number of Distinct Detects | | | 1 | | Number of Distinct Non-Detects | | | 1 | | | |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable Chrysene was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | ProUCL 5.14/6/2020 4:33:14 PM | | | | | | | | | | |
| 5 | From File | SVOCs in Soil.xls | | | | | | | | | | |
| 6 | Full Precision | OFF | | | | | | | | | | |
| 7 | Confidence Coefficient | 95% | | | | | | | | | | |
| 8 | Number of Bootstrap Operations | 2000 | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **Fluoranthene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | 18 | Number of Distinct Observations | 2 | | | | | | | | |
| 14 | Number of Detects | 1 | Number of Non-Detects | 17 | | | | | | | | |
| 15 | Number of Distinct Detects | 1 | Number of Distinct Non-Detects | 1 | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable Fluoranthene was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | ProUCL 5.14/6/2020 4:28:36 PM | | | | | | | | |
| 5 | From File | | | SVOCs in Soil.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **Fluorene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | | | | 4 | | Number of Distinct Observations | | | | 3 | |
| 14 | Number of Detects | | | | 1 | | Number of Non-Detects | | | | 3 | |
| 15 | Number of Distinct Detects | | | | 1 | | Number of Distinct Non-Detects | | | | 2 | |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable Fluorene was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | ProUCL 5.14/6/2020 4:33:53 PM | | | | | | | | |
| 5 | From File | | | SVOCs in Soil.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **Phenanthrene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | | | | | 18 | Number of Distinct Observations | | | | | 2 |
| 14 | Number of Detects | | | | | 1 | Number of Non-Detects | | | | | 17 |
| 15 | Number of Distinct Detects | | | | | 1 | Number of Distinct Non-Detects | | | | | 1 |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable Phenanthrene was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | ProUCL 5.14/6/2020 4:34:30 PM | | | | | | | | |
| 5 | From File | | | SVOCs in Soil.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **Pyrene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | | | | | 18 | Number of Distinct Observations | | | | | 2 |
| 14 | Number of Detects | | | | | 1 | Number of Non-Detects | | | | | 17 |
| 15 | Number of Distinct Detects | | | | | 1 | Number of Distinct Non-Detects | | | | | 1 |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable Pyrene was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

## UCL Statistics for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/14/2020 12:10:29 PM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Pb**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 22 | Number of Distinct Observations | 17 |
| Number of Detects | 18 | Number of Non-Detects | 4 |
| Number of Distinct Detects | 17 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 2.44 | Minimum Non-Detect | 2.6 |
| Maximum Detect | 33 | Maximum Non-Detect | 2.6 |
| Variance Detects | 54.36 | Percent Non-Detects | 18.18% |
| Mean Detects | 7.647 | SD Detects | 7.373 |
| Median Detects | 5.55 | CV Detects | 0.964 |
| Skewness Detects | 2.733 | Kurtosis Detects | 8.442 |
| Mean of Logged Detects | 1.763 | SD of Logged Detects | 0.692 |

### Normal GOF Test on Detects Only

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.663 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.897 | Detected Data Not Normal at 5% Significance Level |
| Lilliefors Test Statistic | 0.293 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.202 | Detected Data Not Normal at 5% Significance Level |

**Detected Data Not Normal at 5% Significance Level**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 6.7 | KM Standard Error of Mean | 1.488 |
| KM SD | 6.785 | 95% KM (BCA) UCL | 9.314 |
| 95% KM (t) UCL | 9.261 | 95% KM (Percentile Bootstrap) UCL | 9.265 |
| 95% KM (z) UCL | 9.148 | 95% KM Bootstrap t UCL | 12.26 |
| 90% KM Chebyshev UCL | 11.17 | 95% KM Chebyshev UCL | 13.19 |
| 97.5% KM Chebyshev UCL | 16 | 99% KM Chebyshev UCL | 21.51 |

### Gamma GOF Tests on Detected Observations Only

| | | |
|---|---|---|
| A-D Test Statistic | 0.855 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.753 | Detected Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.189 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.206 | Detected data appear Gamma Distributed at 5% Significance Level |

**Detected data follow Appr. Gamma Distribution at 5% Significance Level**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 1.997 | k star (bias corrected MLE) | 1.701 |
| Theta hat (MLE) | 3.829 | Theta star (bias corrected MLE) | 4.495 |
| nu hat (MLE) | 71.89 | nu star (bias corrected) | 61.24 |
| Mean (detects) | 7.647 | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | | | | | | | |
| 52 | **Gamma ROS Statistics using Imputed Non-Detects** | | | | | | | | | | |
| 53 | GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | | | | | | | | |
| 54 | GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | | | |
| 55 | For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | | | | | | | | |
| 56 | This is especially true when the sample size is small. | | | | | | | | | | |
| 57 | For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | | | | | | | | |
| 58 | | | | | Minimum | 0.01 | | | Mean | 6.258 | |
| 59 | | | | | Maximum | 33 | | | Median | 4.15 | |
| 60 | | | | | SD | 7.286 | | | CV | 1.164 | |
| 61 | | | | | k hat (MLE) | 0.515 | | | k star (bias corrected MLE) | 0.475 | |
| 62 | | | | | Theta hat (MLE) | 12.16 | | | Theta star (bias corrected MLE) | 13.18 | |
| 63 | | | | | nu hat (MLE) | 22.65 | | | nu star (bias corrected) | 20.89 | |
| 64 | | | | | Adjusted Level of Significance (β) | 0.0386 | | | | | |
| 65 | | | | | Approximate Chi Square Value (20.89, α) | 11.51 | | | Adjusted Chi Square Value (20.89, β) | 10.99 | |
| 66 | | | | | 95% Gamma Approximate UCL (use when n>=50) | 11.36 | | | 95% Gamma Adjusted UCL (use when n<50) | 11.89 | |
| 67 | | | | | | | | | | | |
| 68 | **Estimates of Gamma Parameters using KM Estimates** | | | | | | | | | | |
| 69 | | | | | Mean (KM) | 6.7 | | | SD (KM) | 6.785 | |
| 70 | | | | | Variance (KM) | 46.04 | | | SE of Mean (KM) | 1.488 | |
| 71 | | | | | k hat (KM) | 0.975 | | | k star (KM) | 0.872 | |
| 72 | | | | | nu hat (KM) | 42.9 | | | nu star (KM) | 38.39 | |
| 73 | | | | | theta hat (KM) | 6.871 | | | theta star (KM) | 7.68 | |
| 74 | | | | | 80% gamma percentile (KM) | 10.89 | | | 90% gamma percentile (KM) | 15.95 | |
| 75 | | | | | 95% gamma percentile (KM) | 21.07 | | | 99% gamma percentile (KM) | 33.07 | |
| 76 | | | | | | | | | | | |
| 77 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | |
| 78 | | | | | Approximate Chi Square Value (38.39, α) | 25.2 | | | Adjusted Chi Square Value (38.39, β) | 24.4 | |
| 79 | | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 10.21 | | | 95% Gamma Adjusted KM-UCL (use when n<50) | 10.54 | |
| 80 | | | | | | | | | | | |
| 81 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | |
| 82 | | | | | Shapiro Wilk Test Statistic | 0.925 | | | **Shapiro Wilk GOF Test** | | |
| 83 | | | | | 5% Shapiro Wilk Critical Value | 0.897 | | | Detected Data appear Lognormal at 5% Significance Level | | |
| 84 | | | | | Lilliefors Test Statistic | 0.133 | | | **Lilliefors GOF Test** | | |
| 85 | | | | | 5% Lilliefors Critical Value | 0.202 | | | Detected Data appear Lognormal at 5% Significance Level | | |
| 86 | **Detected Data appear Lognormal at 5% Significance Level** | | | | | | | | | | |
| 87 | | | | | | | | | | | |
| 88 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | |
| 89 | | | | | Mean in Original Scale | 6.536 | | | Mean in Log Scale | 1.515 | |
| 90 | | | | | SD in Original Scale | 7.06 | | | SD in Log Scale | 0.832 | |
| 91 | | | | | 95% t UCL (assumes normality of ROS data) | 9.126 | | | 95% Percentile Bootstrap UCL | 9.214 | |
| 92 | | | | | 95% BCA Bootstrap UCL | 10.18 | | | 95% Bootstrap t UCL | 11.69 | |
| 93 | | | | | 95% H-UCL (Log ROS) | 9.871 | | | | | |
| 94 | | | | | | | | | | | |
| 95 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | |
| 96 | | | | | KM Mean (logged) | 1.605 | | | KM Geo Mean | 4.978 | |
| 97 | | | | | KM SD (logged) | 0.695 | | | 95% Critical H Value (KM-Log) | 2.198 | |
| 98 | | | | | KM Standard Error of Mean (logged) | 0.153 | | | 95% H-UCL (KM -Log) | 8.848 | |
| 99 | | | | | KM SD (logged) | 0.695 | | | 95% Critical H Value (KM-Log) | 2.198 | |
| 100 | | | | | KM Standard Error of Mean (logged) | 0.153 | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | | | | | |
| 102 | **DL/2 Statistics** | | | | | | | | | | | |
| 103 | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | | | | | |
| 104 | Mean in Original Scale | | | | | 6.493 | Mean in Log Scale | | | | | 1.491 |
| 105 | SD in Original Scale | | | | | 7.091 | SD in Log Scale | | | | | 0.86 |
| 106 | 95% t UCL (Assumes normality) | | | | | 9.094 | 95% H-Stat UCL | | | | | 10.07 |
| 107 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 108 | | | | | | | | | | | | |
| 109 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 110 | **Detected Data appear Approximate Gamma Distributed at 5% Significance Level** | | | | | | | | | | | |
| 111 | | | | | | | | | | | | |
| 112 | **Suggested UCL to Use** | | | | | | | | | | | |
| 113 | 95% KM Adjusted Gamma UCL | | | | | 10.54 | 95% GROS Adjusted Gamma UCL | | | | | 11.89 |
| 114 | | | | | | | | | | | | |
| 115 | When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test | | | | | | | | | | | |
| 116 | When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL | | | | | | | | | | | |
| 117 | | | | | | | | | | | | |
| 118 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 119 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 120 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 121 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 122 | | | | | | | | | | | | |

## UCL Statistics for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/14/2020 12:09:41 PM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Hg**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 22 | Number of Distinct Observations | 7 |
| Number of Detects | 6 | Number of Non-Detects | 16 |
| Number of Distinct Detects | 5 | Number of Distinct Non-Detects | 4 |
| Minimum Detect | 0.02 | Minimum Non-Detect | 0.02 |
| Maximum Detect | 0.2 | Maximum Non-Detect | 0.1 |
| Variance Detects | 0.00518 | Percent Non-Detects | 72.73% |
| Mean Detects | 0.108 | SD Detects | 0.0719 |
| Median Detects | 0.09 | CV Detects | 0.664 |
| Skewness Detects | 0.403 | Kurtosis Detects | -1.505 |
| Mean of Logged Detects | -2.469 | SD of Logged Detects | 0.849 |

### Normal GOF Test on Detects Only

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.895 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.788 | Detected Data appear Normal at 5% Significance Level |
| Lilliefors Test Statistic | 0.267 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.325 | Detected Data appear Normal at 5% Significance Level |

**Detected Data appear Normal at 5% Significance Level**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 0.0445 | KM Standard Error of Mean | 0.0123 |
| KM SD | 0.0523 | 95% KM (BCA) UCL | 0.0792 |
| 95% KM (t) UCL | 0.0656 | 95% KM (Percentile Bootstrap) UCL | 0.0718 |
| 95% KM (z) UCL | 0.0647 | 95% KM Bootstrap t UCL | 0.0714 |
| 90% KM Chebyshev UCL | 0.0813 | 95% KM Chebyshev UCL | 0.098 |
| 97.5% KM Chebyshev UCL | 0.121 | 99% KM Chebyshev UCL | 0.166 |

### Gamma GOF Tests on Detected Observations Only

| | | |
|---|---|---|
| A-D Test Statistic | 0.323 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.704 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.205 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.336 | Detected data appear Gamma Distributed at 5% Significance Level |

**Detected data appear Gamma Distributed at 5% Significance Level**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 2.184 | k star (bias corrected MLE) | 1.203 |
| Theta hat (MLE) | 0.0496 | Theta star (bias corrected MLE) | 0.09 |
| nu hat (MLE) | 26.21 | nu star (bias corrected) | 14.44 |
| Mean (detects) | 0.108 | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | | | | | | | | |
| 52 | **Gamma ROS Statistics using Imputed Non-Detects** | | | | | | | | | | | |
| 53 | GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | | | | | | | | | |
| 54 | GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | | | | |
| 55 | For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | | | | | | | | | |
| 56 | This is especially true when the sample size is small. | | | | | | | | | | | |
| 57 | For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | | | | | | | | | |
| 58 | | | | | Minimum | 0.01 | | | Mean | 0.0391 | | |
| 59 | | | | | Maximum | 0.2 | | | Median | 0.01 | | |
| 60 | | | | | SD | 0.0562 | | | CV | 1.439 | | |
| 61 | | | | | k hat (MLE) | 0.896 | | | k star (bias corrected MLE) | 0.804 | | |
| 62 | | | | | Theta hat (MLE) | 0.0436 | | | Theta star (bias corrected MLE) | 0.0486 | | |
| 63 | | | | | nu hat (MLE) | 39.41 | | | nu star (bias corrected) | 35.37 | | |
| 64 | | | | | Adjusted Level of Significance (β) | 0.0386 | | | | | | |
| 65 | | | | | Approximate Chi Square Value (35.37, α) | 22.76 | | | Adjusted Chi Square Value (35.37, β) | 22 | | |
| 66 | | | | | 95% Gamma Approximate UCL (use when n>=50) | 0.0607 | | | 95% Gamma Adjusted UCL (use when n<50) | 0.0628 | | |
| 67 | | | | | | | | | | | | |
| 68 | **Estimates of Gamma Parameters using KM Estimates** | | | | | | | | | | | |
| 69 | | | | | Mean (KM) | 0.0445 | | | SD (KM) | 0.0523 | | |
| 70 | | | | | Variance (KM) | 0.00273 | | | SE of Mean (KM) | 0.0123 | | |
| 71 | | | | | k hat (KM) | 0.726 | | | k star (KM) | 0.657 | | |
| 72 | | | | | nu hat (KM) | 31.94 | | | nu star (KM) | 28.92 | | |
| 73 | | | | | theta hat (KM) | 0.0613 | | | theta star (KM) | 0.0677 | | |
| 74 | | | | | 80% gamma percentile (KM) | 0.0733 | | | 90% gamma percentile (KM) | 0.113 | | |
| 75 | | | | | 95% gamma percentile (KM) | 0.155 | | | 99% gamma percentile (KM) | 0.255 | | |
| 76 | | | | | | | | | | | | |
| 77 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | | |
| 78 | | | | | Approximate Chi Square Value (28.92, α) | 17.64 | | | Adjusted Chi Square Value (28.92, β) | 16.99 | | |
| 79 | | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 0.073 | | | 95% Gamma Adjusted KM-UCL (use when n<50) | 0.0758 | | |
| 80 | | | | | | | | | | | | |
| 81 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | | |
| 82 | | | | | Shapiro Wilk Test Statistic | 0.904 | | | **Shapiro Wilk GOF Test** | | | |
| 83 | | | | | 5% Shapiro Wilk Critical Value | 0.788 | | | Detected Data appear Lognormal at 5% Significance Level | | | |
| 84 | | | | | Lilliefors Test Statistic | 0.195 | | | **Lilliefors GOF Test** | | | |
| 85 | | | | | 5% Lilliefors Critical Value | 0.325 | | | Detected Data appear Lognormal at 5% Significance Level | | | |
| 86 | **Detected Data appear Lognormal at 5% Significance Level** | | | | | | | | | | | |
| 87 | | | | | | | | | | | | |
| 88 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | | |
| 89 | | | | | Mean in Original Scale | 0.0397 | | | Mean in Log Scale | -3.98 | | |
| 90 | | | | | SD in Original Scale | 0.0562 | | | SD in Log Scale | 1.237 | | |
| 91 | | | | | 95% t UCL (assumes normality of ROS data) | 0.0603 | | | 95% Percentile Bootstrap UCL | 0.06 | | |
| 92 | | | | | 95% BCA Bootstrap UCL | 0.064 | | | 95% Bootstrap t UCL | 0.0763 | | |
| 93 | | | | | 95% H-UCL (Log ROS) | 0.0885 | | | | | | |
| 94 | | | | | | | | | | | | |
| 95 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | | |
| 96 | | | | | KM Mean (logged) | -3.509 | | | KM Geo Mean | 0.0299 | | |
| 97 | | | | | KM SD (logged) | 0.763 | | | 95% Critical H Value (KM-Log) | 2.277 | | |
| 98 | | | | | KM Standard Error of Mean (logged) | 0.18 | | | 95% H-UCL (KM -Log) | 0.0586 | | |
| 99 | | | | | KM SD (logged) | 0.763 | | | 95% Critical H Value (KM-Log) | 2.277 | | |
| 100 | | | | | KM Standard Error of Mean (logged) | 0.18 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | | | | | |
| 102 | **DL/2 Statistics** | | | | | | | | | | | |
| 103 | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | | | | | |
| 104 | Mean in Original Scale | | | | | 0.0502 | Mean in Log Scale | | | | | -3.292 |
| 105 | SD in Original Scale | | | | | 0.051 | SD in Log Scale | | | | | 0.713 |
| 106 | 95% t UCL (Assumes normality) | | | | | 0.0689 | 95% H-Stat UCL | | | | | 0.0677 |
| 107 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 108 | | | | | | | | | | | | |
| 109 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 110 | **Detected Data appear Normal Distributed at 5% Significance Level** | | | | | | | | | | | |
| 111 | | | | | | | | | | | | |
| 112 | **Suggested UCL to Use** | | | | | | | | | | | |
| 113 | 95% KM (t) UCL | | | | | 0.0656 | | | | | | |
| 114 | | | | | | | | | | | | |
| 115 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 116 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 117 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 118 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 119 | | | | | | | | | | | | |

## UCL Statistics for Data Sets with Non-Detects

| User Selected Options | |
|---|---|
| Date/Time of Computation | ProUCL 5.14/14/2020 12:11:04 PM |
| From File | Metals in Soil.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Ag**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 18 | Number of Distinct Observations | 4 |
| Number of Detects | 8 | Number of Non-Detects | 10 |
| Number of Distinct Detects | 4 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 1 | Minimum Non-Detect | 1 |
| Maximum Detect | 1.5 | Maximum Non-Detect | 1 |
| Variance Detects | 0.0255 | Percent Non-Detects | 55.56% |
| Mean Detects | 1.138 | SD Detects | 0.16 |
| Median Detects | 1.1 | CV Detects | 0.14 |
| Skewness Detects | 1.982 | Kurtosis Detects | 4.567 |
| Mean of Logged Detects | 0.121 | SD of Logged Detects | 0.129 |

### Normal GOF Test on Detects Only

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.749 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.818 | Detected Data Not Normal at 5% Significance Level |
| Lilliefors Test Statistic | 0.343 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.283 | Detected Data Not Normal at 5% Significance Level |

**Detected Data Not Normal at 5% Significance Level**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 1.061 | KM Standard Error of Mean | 0.0304 |
| KM SD | 0.121 | 95% KM (BCA) UCL | N/A |
| 95% KM (t) UCL | 1.114 | 95% KM (Percentile Bootstrap) UCL | N/A |
| 95% KM (z) UCL | 1.111 | 95% KM Bootstrap t UCL | N/A |
| 90% KM Chebyshev UCL | 1.152 | 95% KM Chebyshev UCL | 1.194 |
| 97.5% KM Chebyshev UCL | 1.251 | 99% KM Chebyshev UCL | 1.364 |

### Gamma GOF Tests on Detected Observations Only

| | | |
|---|---|---|
| A-D Test Statistic | 0.868 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.715 | Detected Data Not Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.34 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.293 | Detected Data Not Gamma Distributed at 5% Significance Level |

**Detected Data Not Gamma Distributed at 5% Significance Level**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 65.06 | k star (bias corrected MLE) | 40.75 |
| Theta hat (MLE) | 0.0175 | Theta star (bias corrected MLE) | 0.0279 |
| nu hat (MLE) | 1041 | nu star (bias corrected) | 652 |
| Mean (detects) | 1.138 | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | | | | | | | | |
| 52 | **Gamma ROS Statistics using Imputed Non-Detects** | | | | | | | | | | | |
| 53 | GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | | | | | | | | | |
| 54 | GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | | | | |
| 55 | For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | | | | | | | | | |
| 56 | This is especially true when the sample size is small. | | | | | | | | | | | |
| 57 | For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | | | | | | | | | |
| 58 | | | | | Minimum | 0.453 | | | | Mean | | 0.898 |
| 59 | | | | | Maximum | 1.5 | | | | Median | | 0.874 |
| 60 | | | | | SD | 0.264 | | | | CV | | 0.294 |
| 61 | | | | | k hat (MLE) | 11.88 | | | | k star (bias corrected MLE) | | 9.934 |
| 62 | | | | | Theta hat (MLE) | 0.0756 | | | | Theta star (bias corrected MLE) | | 0.0904 |
| 63 | | | | | nu hat (MLE) | 427.5 | | | | nu star (bias corrected) | | 357.6 |
| 64 | | | | | Adjusted Level of Significance (β) | 0.0357 | | | | | | |
| 65 | | | | | Approximate Chi Square Value (357.61, α) | 314.8 | | | | Adjusted Chi Square Value (357.61, β) | | 310.9 |
| 66 | | | | | 95% Gamma Approximate UCL (use when n>=50) | 1.02 | | | | 95% Gamma Adjusted UCL (use when n<50) | | 1.033 |
| 67 | | | | | | | | | | | | |
| 68 | **Estimates of Gamma Parameters using KM Estimates** | | | | | | | | | | | |
| 69 | | | | | Mean (KM) | 1.061 | | | | SD (KM) | | 0.121 |
| 70 | | | | | Variance (KM) | 0.0146 | | | | SE of Mean (KM) | | 0.0304 |
| 71 | | | | | k hat (KM) | 77.13 | | | | k star (KM) | | 64.31 |
| 72 | | | | | nu hat (KM) | 2777 | | | | nu star (KM) | | 2315 |
| 73 | | | | | theta hat (KM) | 0.0138 | | | | theta star (KM) | | 0.0165 |
| 74 | | | | | 80% gamma percentile (KM) | 1.171 | | | | 90% gamma percentile (KM) | | 1.234 |
| 75 | | | | | 95% gamma percentile (KM) | 1.288 | | | | 99% gamma percentile (KM) | | 1.393 |
| 76 | | | | | | | | | | | | |
| 77 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | | |
| 78 | | | | | Approximate Chi Square Value (N/A, α) | 2204 | | | | Adjusted Chi Square Value (N/A, β) | | 2194 |
| 79 | | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 1.114 | | | | 95% Gamma Adjusted KM-UCL (use when n<50) | | 1.12 |
| 80 | | | | | | | | | | | | |
| 81 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | | |
| 82 | | | | | Shapiro Wilk Test Statistic | 0.788 | | | | **Shapiro Wilk GOF Test** | | |
| 83 | | | | | 5% Shapiro Wilk Critical Value | 0.818 | | | | Detected Data Not Lognormal at 5% Significance Level | | |
| 84 | | | | | Lilliefors Test Statistic | 0.329 | | | | **Lilliefors GOF Test** | | |
| 85 | | | | | 5% Lilliefors Critical Value | 0.283 | | | | Detected Data Not Lognormal at 5% Significance Level | | |
| 86 | **Detected Data Not Lognormal at 5% Significance Level** | | | | | | | | | | | |
| 87 | | | | | | | | | | | | |
| 88 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | | |
| 89 | | | | | Mean in Original Scale | 0.938 | | | | Mean in Log Scale | | -0.0892 |
| 90 | | | | | SD in Original Scale | 0.222 | | | | SD in Log Scale | | 0.232 |
| 91 | | | | | 95% t UCL (assumes normality of ROS data) | 1.03 | | | | 95% Percentile Bootstrap UCL | | 1.027 |
| 92 | | | | | 95% BCA Bootstrap UCL | 1.034 | | | | 95% Bootstrap t UCL | | 1.041 |
| 93 | | | | | 95% H-UCL (Log ROS) | 1.04 | | | | | | |
| 94 | | | | | | | | | | | | |
| 95 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | | |
| 96 | | | | | KM Mean (logged) | 0.0538 | | | | KM Geo Mean | | 1.055 |
| 97 | | | | | KM SD (logged) | 0.101 | | | | 95% Critical H Value (KM-Log) | | 1.733 |
| 98 | | | | | KM Standard Error of Mean (logged) | 0.0253 | | | | 95% H-UCL (KM -Log) | | 1.106 |
| 99 | | | | | KM SD (logged) | 0.101 | | | | 95% Critical H Value (KM-Log) | | 1.733 |
| 100 | | | | | KM Standard Error of Mean (logged) | 0.0253 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | | | | | |
| 102 | **DL/2 Statistics** | | | | | | | | | | | |
| 103 | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | | | | | |
| 104 | Mean in Original Scale | | | | | 0.783 | Mean in Log Scale | | | | | -0.331 |
| 105 | SD in Original Scale | | | | | 0.342 | SD in Log Scale | | | | | 0.425 |
| 106 | 95% t UCL (Assumes normality) | | | | | 0.923 | 95% H-Stat UCL | | | | | 0.961 |
| 107 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 108 | | | | | | | | | | | | |
| 109 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 110 | **Data do not follow a Discernible Distribution at 5% Significance Level** | | | | | | | | | | | |
| 111 | | | | | | | | | | | | |
| 112 | **Suggested UCL to Use** | | | | | | | | | | | |
| 113 | 95% KM (t) UCL | | | | | 1.114 | KM H-UCL | | | | | 1.106 |
| 114 | 95% KM (BCA) UCL | | | | | N/A | | | | | | |
| 115 | **Warning: One or more Recommended UCL(s) not available!** | | | | | | | | | | | |
| 116 | | | | | | | | | | | | |
| 117 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 118 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 119 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 120 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 121 | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | ProUCL 5.14/6/2020 4:18:03 PM | | | | | | | | | | |
| 5 | From File | Soil Vapor.xls | | | | | | | | | | |
| 6 | Full Precision | OFF | | | | | | | | | | |
| 7 | Confidence Coefficient | 95% | | | | | | | | | | |
| 8 | Number of Bootstrap Operations | 2000 | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **1,2,4-Trimethylbenzene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | 20 | | | | | Number of Distinct Observations | 5 | | | | |
| 14 | Number of Detects | 6 | | | | | Number of Non-Detects | 14 | | | | |
| 15 | Number of Distinct Detects | 5 | | | | | Number of Distinct Non-Detects | 1 | | | | |
| 16 | Minimum Detect | 8 | | | | | Minimum Non-Detect | 8 | | | | |
| 17 | Maximum Detect | 123 | | | | | Maximum Non-Detect | 8 | | | | |
| 18 | Variance Detects | 2068 | | | | | Percent Non-Detects | 70% | | | | |
| 19 | Mean Detects | 30.33 | | | | | SD Detects | 45.47 | | | | |
| 20 | Median Detects | 12 | | | | | CV Detects | 1.499 | | | | |
| 21 | Skewness Detects | 2.431 | | | | | Kurtosis Detects | 5.929 | | | | |
| 22 | Mean of Logged Detects | 2.837 | | | | | SD of Logged Detects | 0.994 | | | | |
| 23 | | | | | | | | | | | | |
| 24 | **Normal GOF Test on Detects Only** | | | | | | | | | | | |
| 25 | Shapiro Wilk Test Statistic | 0.552 | | | | | **Shapiro Wilk GOF Test** | | | | | |
| 26 | 5% Shapiro Wilk Critical Value | 0.788 | | | | | Detected Data Not Normal at 5% Significance Level | | | | | |
| 27 | Lilliefors Test Statistic | 0.457 | | | | | **Lilliefors GOF Test** | | | | | |
| 28 | 5% Lilliefors Critical Value | 0.325 | | | | | Detected Data Not Normal at 5% Significance Level | | | | | |
| 29 | **Detected Data Not Normal at 5% Significance Level** | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 31 | **Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs** | | | | | | | | | | | |
| 32 | KM Mean | 14.7 | | | | | KM Standard Error of Mean | 6.108 | | | | |
| 33 | KM SD | 24.93 | | | | | 95% KM (BCA) UCL | 26.2 | | | | |
| 34 | 95% KM (t) UCL | 25.26 | | | | | 95% KM (Percentile Bootstrap) UCL | 25.95 | | | | |
| 35 | 95% KM (z) UCL | 24.75 | | | | | 95% KM Bootstrap t UCL | 112.5 | | | | |
| 36 | 90% KM Chebyshev UCL | 33.02 | | | | | 95% KM Chebyshev UCL | 41.32 | | | | |
| 37 | 97.5% KM Chebyshev UCL | 52.84 | | | | | 99% KM Chebyshev UCL | 75.47 | | | | |
| 38 | | | | | | | | | | | | |
| 39 | **Gamma GOF Tests on Detected Observations Only** | | | | | | | | | | | |
| 40 | A-D Test Statistic | 1.181 | | | | | **Anderson-Darling GOF Test** | | | | | |
| 41 | 5% A-D Critical Value | 0.715 | | | | | Detected Data Not Gamma Distributed at 5% Significance Level | | | | | |
| 42 | K-S Test Statistic | 0.424 | | | | | **Kolmogorov-Smirnov GOF** | | | | | |
| 43 | 5% K-S Critical Value | 0.341 | | | | | Detected Data Not Gamma Distributed at 5% Significance Level | | | | | |
| 44 | **Detected Data Not Gamma Distributed at 5% Significance Level** | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |
| 46 | **Gamma Statistics on Detected Data Only** | | | | | | | | | | | |
| 47 | k hat (MLE) | 1.004 | | | | | k star (bias corrected MLE) | 0.613 | | | | |
| 48 | Theta hat (MLE) | 30.22 | | | | | Theta star (bias corrected MLE) | 49.48 | | | | |
| 49 | nu hat (MLE) | 12.05 | | | | | nu star (bias corrected) | 7.356 | | | | |
| 50 | Mean (detects) | 30.33 | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | | | | | | | | |
| 52 | **Gamma ROS Statistics using Imputed Non-Detects** | | | | | | | | | | | |
| 53 | GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | | | | | | | | | |
| 54 | GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | | | | |
| 55 | For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | | | | | | | | | |
| 56 | This is especially true when the sample size is small. | | | | | | | | | | | |
| 57 | For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | | | | | | | | | |
| 58 | | | | Minimum | 0.01 | | | Mean | 9.107 | | | |
| 59 | | | | Maximum | 123 | | | Median | 0.01 | | | |
| 60 | | | | SD | 27.34 | | | CV | 3.002 | | | |
| 61 | | | | k hat (MLE) | 0.165 | | | k star (bias corrected MLE) | 0.174 | | | |
| 62 | | | | Theta hat (MLE) | 55.07 | | | Theta star (bias corrected MLE) | 52.37 | | | |
| 63 | | | | nu hat (MLE) | 6.615 | | | nu star (bias corrected) | 6.956 | | | |
| 64 | | | | Adjusted Level of Significance (β) | 0.038 | | | | | | | |
| 65 | | | | Approximate Chi Square Value (6.96, α) | 2.146 | | | Adjusted Chi Square Value (6.96, β) | 1.942 | | | |
| 66 | | | | 95% Gamma Approximate UCL (use when n>=50) | 29.51 | | | 95% Gamma Adjusted UCL (use when n<50) | 32.63 | | | |
| 67 | | | | | | | | | | | | |
| 68 | **Estimates of Gamma Parameters using KM Estimates** | | | | | | | | | | | |
| 69 | | | | Mean (KM) | 14.7 | | | SD (KM) | 24.93 | | | |
| 70 | | | | Variance (KM) | 621.7 | | | SE of Mean (KM) | 6.108 | | | |
| 71 | | | | k hat (KM) | 0.348 | | | k star (KM) | 0.329 | | | |
| 72 | | | | nu hat (KM) | 13.9 | | | nu star (KM) | 13.15 | | | |
| 73 | | | | theta hat (KM) | 42.29 | | | theta star (KM) | 44.71 | | | |
| 74 | | | | 80% gamma percentile (KM) | 23.01 | | | 90% gamma percentile (KM) | 42.84 | | | |
| 75 | | | | 95% gamma percentile (KM) | 65.27 | | | 99% gamma percentile (KM) | 122.9 | | | |
| 76 | | | | | | | | | | | | |
| 77 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | | |
| 78 | | | | Approximate Chi Square Value (13.15, α) | 5.994 | | | Adjusted Chi Square Value (13.15, β) | 5.615 | | | |
| 79 | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 32.25 | | | 95% Gamma Adjusted KM-UCL (use when n<50) | 34.43 | | | |
| 80 | | | | | | | | | | | | |
| 81 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | | |
| 82 | | | | Shapiro Wilk Test Statistic | 0.713 | | | **Shapiro Wilk GOF Test** | | | | |
| 83 | | | | 5% Shapiro Wilk Critical Value | 0.788 | | | Detected Data Not Lognormal at 5% Significance Level | | | | |
| 84 | | | | Lilliefors Test Statistic | 0.359 | | | **Lilliefors GOF Test** | | | | |
| 85 | | | | 5% Lilliefors Critical Value | 0.325 | | | Detected Data Not Lognormal at 5% Significance Level | | | | |
| 86 | **Detected Data Not Lognormal at 5% Significance Level** | | | | | | | | | | | |
| 87 | | | | | | | | | | | | |
| 88 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | | |
| 89 | | | | Mean in Original Scale | 9.807 | | | Mean in Log Scale | 0.378 | | | |
| 90 | | | | SD in Original Scale | 27.11 | | | SD in Log Scale | 2.076 | | | |
| 91 | | | | 95% t UCL (assumes normality of ROS data) | 20.29 | | | 95% Percentile Bootstrap UCL | 21.51 | | | |
| 92 | | | | 95% BCA Bootstrap UCL | 28.76 | | | 95% Bootstrap t UCL | 56.38 | | | |
| 93 | | | | 95% H-UCL (Log ROS) | 104.6 | | | | | | | |
| 94 | | | | | | | | | | | | |
| 95 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | | |
| 96 | | | | KM Mean (logged) | 2.307 | | | KM Geo Mean | 10.04 | | | |
| 97 | | | | KM SD (logged) | 0.606 | | | 95% Critical H Value (KM-Log) | 2.129 | | | |
| 98 | | | | KM Standard Error of Mean (logged) | 0.149 | | | 95% H-UCL (KM -Log) | 16.23 | | | |
| 99 | | | | KM SD (logged) | 0.606 | | | 95% Critical H Value (KM-Log) | 2.129 | | | |
| 100 | | | | KM Standard Error of Mean (logged) | 0.149 | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | | | | | |
| 102 | **DL/2 Statistics** | | | | | | | | | | | |
| 103 | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | | | | | |
| 104 | Mean in Original Scale | | | | | 11.9 | Mean in Log Scale | | | | | 1.822 |
| 105 | SD in Original Scale | | | | | 26.41 | SD in Log Scale | | | | | 0.852 |
| 106 | 95% t UCL (Assumes normality) | | | | | 22.11 | 95% H-Stat UCL | | | | | 14.28 |
| 107 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 108 | | | | | | | | | | | | |
| 109 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 110 | **Data do not follow a Discernible Distribution at 5% Significance Level** | | | | | | | | | | | |
| 111 | | | | | | | | | | | | |
| 112 | **Suggested UCL to Use** | | | | | | | | | | | |
| 113 | 95% KM (Chebyshev) UCL | | | | | 41.32 | | | | | | |
| 114 | | | | | | | | | | | | |
| 115 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 116 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 117 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 118 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 119 | | | | | | | | | | | | |

## UCL Statistics for Data Sets with Non-Detects

| User Selected Options | |
|---|---|
| Date/Time of Computation | ProUCL 5.14/6/2020 4:18:47 PM |
| From File | Soil Vapor.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**1,3,5-Trimethylbenzene**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 20 | Number of Distinct Observations | 3 |
| Number of Detects | 2 | Number of Non-Detects | 18 |
| Number of Distinct Detects | 2 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 9 | Minimum Non-Detect | 8 |
| Maximum Detect | 40 | Maximum Non-Detect | 8 |
| Variance Detects | 480.5 | Percent Non-Detects | 90% |
| Mean Detects | 24.5 | SD Detects | 21.92 |
| Median Detects | 24.5 | CV Detects | 0.895 |
| Skewness Detects | N/A | Kurtosis Detects | N/A |
| Mean of Logged Detects | 2.943 | SD of Logged Detects | 1.055 |

**Warning: Data set has only 2 Detected Values.**

**This is not enough to compute meaningful or reliable statistics and estimates.**

### Normal GOF Test on Detects Only

**Not Enough Data to Perform GOF Test**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 9.65 | KM Standard Error of Mean | 2.203 |
| KM SD | 6.966 | 95% KM (BCA) UCL | N/A |
| 95% KM (t) UCL | 13.46 | 95% KM (Percentile Bootstrap) UCL | N/A |
| 95% KM (z) UCL | 13.27 | 95% KM Bootstrap t UCL | N/A |
| 90% KM Chebyshev UCL | 16.26 | 95% KM Chebyshev UCL | 19.25 |
| 97.5% KM Chebyshev UCL | 23.41 | 99% KM Chebyshev UCL | 31.57 |

### Gamma GOF Tests on Detected Observations Only

**Not Enough Data to Perform GOF Test**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 2.108 | k star (bias corrected MLE) | N/A |
| Theta hat (MLE) | 11.62 | Theta star (bias corrected MLE) | N/A |
| nu hat (MLE) | 8.43 | nu star (bias corrected) | N/A |
| Mean (detects) | 24.5 | | |

### Estimates of Gamma Parameters using KM Estimates

| | | | |
|---|---|---|---|
| Mean (KM) | 9.65 | SD (KM) | 6.966 |
| Variance (KM) | 48.53 | SE of Mean (KM) | 2.203 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | k hat (KM) | 1.919 | | | | | k star (KM) | 1.664 |
| 52 | | | | | nu hat (KM) | 76.76 | | | | | nu star (KM) | 66.58 |
| 53 | | | | | theta hat (KM) | 5.029 | | | | | theta star (KM) | 5.798 |
| 54 | | | | | 80% gamma percentile (KM) | 14.76 | | | | | 90% gamma percentile (KM) | 19.61 |
| 55 | | | | | 95% gamma percentile (KM) | 24.29 | | | | | 99% gamma percentile (KM) | 34.78 |
| 56 | | | | | | | | | | | | |
| 57 | | | | | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | |
| 58 | | | | | | | | | | | Adjusted Level of Significance (β) | 0.038 |
| 59 | | | | | Approximate Chi Square Value (66.58, α) | 48.8 | | | | | Adjusted Chi Square Value (66.58, β) | 47.6 |
| 60 | | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 13.17 | | | | | 95% Gamma Adjusted KM-UCL (use when n<50) | 13.5 |
| 61 | | | | | | | | | | | | |
| 62 | | | | | **Lognormal GOF Test on Detected Observations Only** | | | | | | | |
| 63 | | | | | **Not Enough Data to Perform GOF Test** | | | | | | | |
| 64 | | | | | | | | | | | | |
| 65 | | | | | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | |
| 66 | | | | | Mean in Original Scale | 2.562 | | | | | Mean in Log Scale | -4.48 |
| 67 | | | | | SD in Original Scale | 9.036 | | | | | SD in Log Scale | 4.131 |
| 68 | | | | | 95% t UCL (assumes normality of ROS data) | 6.056 | | | | | 95% Percentile Bootstrap UCL | 6.16 |
| 69 | | | | | 95% BCA Bootstrap UCL | 8.999 | | | | | 95% Bootstrap t UCL | 87.26 |
| 70 | | | | | 95% H-UCL (Log ROS) | 108239 | | | | | | |
| 71 | | | | | | | | | | | | |
| 72 | | | | | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | |
| 73 | | | | | KM Mean (logged) | 2.166 | | | | | KM Geo Mean | 8.722 |
| 74 | | | | | KM SD (logged) | 0.35 | | | | | 95% Critical H Value (KM-Log) | 1.889 |
| 75 | | | | | KM Standard Error of Mean (logged) | 0.111 | | | | | 95% H-UCL (KM -Log) | 10.79 |
| 76 | | | | | KM SD (logged) | 0.35 | | | | | 95% Critical H Value (KM-Log) | 1.889 |
| 77 | | | | | KM Standard Error of Mean (logged) | 0.111 | | | | | | |
| 78 | | | | | | | | | | | | |
| 79 | | | | | **DL/2 Statistics** | | | | | | | |
| 80 | | | | | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | |
| 81 | | | | | Mean in Original Scale | 6.05 | | | | | Mean in Log Scale | 1.542 |
| 82 | | | | | SD in Original Scale | 8.069 | | | | | SD in Log Scale | 0.537 |
| 83 | | | | | 95% t UCL (Assumes normality) | 9.17 | | | | | 95% H-Stat UCL | 6.953 |
| 84 | | | | | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | |
| 85 | | | | | | | | | | | | |
| 86 | | | | | **Nonparametric Distribution Free UCL Statistics** | | | | | | | |
| 87 | | | | | **Data do not follow a Discernible Distribution at 5% Significance Level** | | | | | | | |
| 88 | | | | | | | | | | | | |
| 89 | | | | | **Suggested UCL to Use** | | | | | | | |
| 90 | | | | | 95% KM (Chebyshev) UCL | 19.25 | | | | | | |
| 91 | | | | | | | | | | | | |
| 92 | | | | | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | |
| 93 | | | | | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | |
| 94 | | | | | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | |
| 95 | | | | | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | |
| 96 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | ProUCL 5.14/6/2020 4:13:41 PM | | | | | | | | |
| 5 | From File | | | Soil Vapor.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **Benzene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | | | | | 20 | Number of Distinct Observations | | | | | 2 |
| 14 | Number of Detects | | | | | 2 | Number of Non-Detects | | | | | 18 |
| 15 | Number of Distinct Detects | | | | | 1 | Number of Distinct Non-Detects | | | | | 1 |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable Benzene was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

## UCL Statistics for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/6/2020 4:14:29 PM |
| From File | Soil Vapor.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Chloroform**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 20 | Number of Distinct Observations | 5 |
| Number of Detects | 5 | Number of Non-Detects | 15 |
| Number of Distinct Detects | 5 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 8 | Minimum Non-Detect | 8 |
| Maximum Detect | 34 | Maximum Non-Detect | 8 |
| Variance Detects | 110 | Percent Non-Detects | 75% |
| Mean Detects | 17 | SD Detects | 10.49 |
| Median Detects | 12 | CV Detects | 0.617 |
| Skewness Detects | 1.398 | Kurtosis Detects | 1.513 |
| Mean of Logged Detects | 2.697 | SD of Logged Detects | 0.569 |

### Normal GOF Test on Detects Only

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.86 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.762 | Detected Data appear Normal at 5% Significance Level |
| Lilliefors Test Statistic | 0.283 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.343 | Detected Data appear Normal at 5% Significance Level |

**Detected Data appear Normal at 5% Significance Level**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 10.25 | KM Standard Error of Mean | 1.525 |
| KM SD | 6.098 | 95% KM (BCA) UCL | 13 |
| 95% KM (t) UCL | 12.89 | 95% KM (Percentile Bootstrap) UCL | 12.9 |
| 95% KM (z) UCL | 12.76 | 95% KM Bootstrap t UCL | 17.44 |
| 90% KM Chebyshev UCL | 14.82 | 95% KM Chebyshev UCL | 16.9 |
| 97.5% KM Chebyshev UCL | 19.77 | 99% KM Chebyshev UCL | 25.42 |

### Gamma GOF Tests on Detected Observations Only

| | | |
|---|---|---|
| A-D Test Statistic | 0.335 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.681 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.28 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.359 | Detected data appear Gamma Distributed at 5% Significance Level |

**Detected data appear Gamma Distributed at 5% Significance Level**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 3.826 | k star (bias corrected MLE) | 1.664 |
| Theta hat (MLE) | 4.443 | Theta star (bias corrected MLE) | 10.22 |
| nu hat (MLE) | 38.26 | nu star (bias corrected) | 16.64 |
| Mean (detects) | 17 | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | | | | | | | | |
| 52 | **Gamma ROS Statistics using Imputed Non-Detects** | | | | | | | | | | | |
| 53 | GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | | | | | | | | | |
| 54 | GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | | | | |
| 55 | For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | | | | | | | | | |
| 56 | This is especially true when the sample size is small. | | | | | | | | | | | |
| 57 | For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | | | | | | | | | |
| 58 | | | | Minimum | 0.01 | | | Mean | 4.258 | | | |
| 59 | | | | Maximum | 34 | | | Median | 0.01 | | | |
| 60 | | | | SD | 8.952 | | | CV | 2.103 | | | |
| 61 | | | | k hat (MLE) | 0.177 | | | k star (bias corrected MLE) | 0.184 | | | |
| 62 | | | | Theta hat (MLE) | 24.01 | | | Theta star (bias corrected MLE) | 23.13 | | | |
| 63 | | | | nu hat (MLE) | 7.092 | | | nu star (bias corrected) | 7.362 | | | |
| 64 | | | | Adjusted Level of Significance (β) | 0.038 | | | | | | | |
| 65 | | | | Approximate Chi Square Value (7.36, α) | 2.371 | | | Adjusted Chi Square Value (7.36, β) | 2.153 | | | |
| 66 | | | | 95% Gamma Approximate UCL (use when n>=50) | 13.22 | | | 95% Gamma Adjusted UCL (use when n<50) | 14.55 | | | |
| 67 | | | | | | | | | | | | |
| 68 | **Estimates of Gamma Parameters using KM Estimates** | | | | | | | | | | | |
| 69 | | | | Mean (KM) | 10.25 | | | SD (KM) | 6.098 | | | |
| 70 | | | | Variance (KM) | 37.19 | | | SE of Mean (KM) | 1.525 | | | |
| 71 | | | | k hat (KM) | 2.825 | | | k star (KM) | 2.435 | | | |
| 72 | | | | nu hat (KM) | 113 | | | nu star (KM) | 97.39 | | | |
| 73 | | | | theta hat (KM) | 3.628 | | | theta star (KM) | 4.21 | | | |
| 74 | | | | 80% gamma percentile (KM) | 14.99 | | | 90% gamma percentile (KM) | 19.05 | | | |
| 75 | | | | 95% gamma percentile (KM) | 22.88 | | | 99% gamma percentile (KM) | 31.27 | | | |
| 76 | | | | | | | | | | | | |
| 77 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | | |
| 78 | | | | Approximate Chi Square Value (97.39, α) | 75.63 | | | Adjusted Chi Square Value (97.39, β) | 74.11 | | | |
| 79 | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 13.2 | | | 95% Gamma Adjusted KM-UCL (use when n<50) | 13.47 | | | |
| 80 | | | | | | | | | | | | |
| 81 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | | |
| 82 | | | | Shapiro Wilk Test Statistic | 0.946 | | | **Shapiro Wilk GOF Test** | | | | |
| 83 | | | | 5% Shapiro Wilk Critical Value | 0.762 | | | Detected Data appear Lognormal at 5% Significance Level | | | | |
| 84 | | | | Lilliefors Test Statistic | 0.245 | | | **Lilliefors GOF Test** | | | | |
| 85 | | | | 5% Lilliefors Critical Value | 0.343 | | | Detected Data appear Lognormal at 5% Significance Level | | | | |
| 86 | **Detected Data appear Lognormal at 5% Significance Level** | | | | | | | | | | | |
| 87 | | | | | | | | | | | | |
| 88 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | | |
| 89 | | | | Mean in Original Scale | 5.617 | | | Mean in Log Scale | 0.823 | | | |
| 90 | | | | SD in Original Scale | 8.386 | | | SD in Log Scale | 1.435 | | | |
| 91 | | | | 95% t UCL (assumes normality of ROS data) | 8.86 | | | 95% Percentile Bootstrap UCL | 8.631 | | | |
| 92 | | | | 95% BCA Bootstrap UCL | 9.814 | | | 95% Bootstrap t UCL | 12.06 | | | |
| 93 | | | | 95% H-UCL (Log ROS) | 19.01 | | | | | | | |
| 94 | | | | | | | | | | | | |
| 95 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | | |
| 96 | | | | KM Mean (logged) | 2.234 | | | KM Geo Mean | 9.335 | | | |
| 97 | | | | KM SD (logged) | 0.369 | | | 95% Critical H Value (KM-Log) | 1.903 | | | |
| 98 | | | | KM Standard Error of Mean (logged) | 0.0922 | | | 95% H-UCL (KM -Log) | 11.74 | | | |
| 99 | | | | KM SD (logged) | 0.369 | | | 95% Critical H Value (KM-Log) | 1.903 | | | |
| 100 | | | | KM Standard Error of Mean (logged) | 0.0922 | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | | | | | |
| 102 | **DL/2 Statistics** | | | | | | | | | | | |
| 103 | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | | | | | |
| 104 | Mean in Original Scale | | | | | 7.25 | Mean in Log Scale | | | | | 1.714 |
| 105 | SD in Original Scale | | | | | 7.518 | SD in Log Scale | | | | | 0.638 |
| 106 | 95% t UCL (Assumes normality) | | | | | 10.16 | 95% H-Stat UCL | | | | | 9.34 |
| 107 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 108 | | | | | | | | | | | | |
| 109 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 110 | **Detected Data appear Normal Distributed at 5% Significance Level** | | | | | | | | | | | |
| 111 | | | | | | | | | | | | |
| 112 | **Suggested UCL to Use** | | | | | | | | | | | |
| 113 | 95% KM (t) UCL | | | | | 12.89 | | | | | | |
| 114 | | | | | | | | | | | | |
| 115 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 116 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 117 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 118 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 119 | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | ProUCL 5.14/6/2020 4:15:11 PM | | | | | | | | | | |
| 5 | From File | Soil Vapor.xls | | | | | | | | | | |
| 6 | Full Precision | OFF | | | | | | | | | | |
| 7 | Confidence Coefficient | 95% | | | | | | | | | | |
| 8 | Number of Bootstrap Operations | 2000 | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **Ethylbenzene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | 20 | | | | | Number of Distinct Observations | 4 | | | | |
| 14 | Number of Detects | 3 | | | | | Number of Non-Detects | 17 | | | | |
| 15 | Number of Distinct Detects | 3 | | | | | Number of Distinct Non-Detects | 1 | | | | |
| 16 | Minimum Detect | 18 | | | | | Minimum Non-Detect | 8 | | | | |
| 17 | Maximum Detect | 99 | | | | | Maximum Non-Detect | 8 | | | | |
| 18 | Variance Detects | 2060 | | | | | Percent Non-Detects | 85% | | | | |
| 19 | Mean Detects | 46.67 | | | | | SD Detects | 45.39 | | | | |
| 20 | Median Detects | 23 | | | | | CV Detects | 0.973 | | | | |
| 21 | Skewness Detects | 1.708 | | | | | Kurtosis Detects | N/A | | | | |
| 22 | Mean of Logged Detects | 3.54 | | | | | SD of Logged Detects | 0.922 | | | | |
| 23 | | | | | | | | | | | | |
| 24 | **Warning: Data set has only 3 Detected Values.** | | | | | | | | | | | |
| 25 | **This is not enough to compute meaningful or reliable statistics and estimates.** | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | |
| 28 | **Normal GOF Test on Detects Only** | | | | | | | | | | | |
| 29 | Shapiro Wilk Test Statistic | 0.796 | | | | | **Shapiro Wilk GOF Test** | | | | | |
| 30 | 5% Shapiro Wilk Critical Value | 0.767 | | | | | Detected Data appear Normal at 5% Significance Level | | | | | |
| 31 | Lilliefors Test Statistic | 0.366 | | | | | **Lilliefors GOF Test** | | | | | |
| 32 | 5% Lilliefors Critical Value | 0.425 | | | | | Detected Data appear Normal at 5% Significance Level | | | | | |
| 33 | **Detected Data appear Normal at 5% Significance Level** | | | | | | | | | | | |
| 34 | | | | | | | | | | | | |
| 35 | **Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs** | | | | | | | | | | | |
| 36 | KM Mean | 13.8 | | | | | KM Standard Error of Mean | 5.454 | | | | |
| 37 | KM SD | 19.92 | | | | | 95% KM (BCA) UCL | N/A | | | | |
| 38 | 95% KM (t) UCL | 23.23 | | | | | 95% KM (Percentile Bootstrap) UCL | N/A | | | | |
| 39 | 95% KM (z) UCL | 22.77 | | | | | 95% KM Bootstrap t UCL | N/A | | | | |
| 40 | 90% KM Chebyshev UCL | 30.16 | | | | | 95% KM Chebyshev UCL | 37.57 | | | | |
| 41 | 97.5% KM Chebyshev UCL | 47.86 | | | | | 99% KM Chebyshev UCL | 68.07 | | | | |
| 42 | | | | | | | | | | | | |
| 43 | **Gamma GOF Tests on Detected Observations Only** | | | | | | | | | | | |
| 44 | **Not Enough Data to Perform GOF Test** | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |
| 46 | **Gamma Statistics on Detected Data Only** | | | | | | | | | | | |
| 47 | k hat (MLE) | 1.801 | | | | | k star (bias corrected MLE) | N/A | | | | |
| 48 | Theta hat (MLE) | 25.92 | | | | | Theta star (bias corrected MLE) | N/A | | | | |
| 49 | nu hat (MLE) | 10.8 | | | | | nu star (bias corrected) | N/A | | | | |
| 50 | Mean (detects) | 46.67 | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | | | | | | | | |
| 52 | **Gamma ROS Statistics using Imputed Non-Detects** | | | | | | | | | | | |
| 53 | GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | | | | | | | | | |
| 54 | GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | | | | |
| 55 | For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | | | | | | | | | |
| 56 | This is especially true when the sample size is small. | | | | | | | | | | | |
| 57 | For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | | | | | | | | | |
| 58 | | | | Minimum | 0.01 | | | Mean | 7.009 | | | |
| 59 | | | | Maximum | 99 | | | Median | 0.01 | | | |
| 60 | | | | SD | 22.56 | | | CV | 3.219 | | | |
| 61 | | | | k hat (MLE) | 0.145 | | | k star (bias corrected MLE) | 0.157 | | | |
| 62 | | | | Theta hat (MLE) | 48.37 | | | Theta star (bias corrected MLE) | 44.78 | | | |
| 63 | | | | nu hat (MLE) | 5.796 | | | nu star (bias corrected) | 6.26 | | | |
| 64 | | | | Adjusted Level of Significance (β) | 0.038 | | | | | | | |
| 65 | | | | Approximate Chi Square Value (6.26, α) | 1.774 | | | Adjusted Chi Square Value (6.26, β) | 1.593 | | | |
| 66 | | | | 95% Gamma Approximate UCL (use when n>=50) | 24.73 | | | 95% Gamma Adjusted UCL (use when n<50) | N/A | | | |
| 67 | | | | | | | | | | | | |
| 68 | **Estimates of Gamma Parameters using KM Estimates** | | | | | | | | | | | |
| 69 | | | | Mean (KM) | 13.8 | | | SD (KM) | 19.92 | | | |
| 70 | | | | Variance (KM) | 396.7 | | | SE of Mean (KM) | 5.454 | | | |
| 71 | | | | k hat (KM) | 0.48 | | | k star (KM) | 0.441 | | | |
| 72 | | | | nu hat (KM) | 19.2 | | | nu star (KM) | 17.66 | | | |
| 73 | | | | theta hat (KM) | 28.74 | | | theta star (KM) | 31.26 | | | |
| 74 | | | | 80% gamma percentile (KM) | 22.49 | | | 90% gamma percentile (KM) | 38.28 | | | |
| 75 | | | | 95% gamma percentile (KM) | 55.4 | | | 99% gamma percentile (KM) | 98.03 | | | |
| 76 | | | | | | | | | | | | |
| 77 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | | |
| 78 | | | | Approximate Chi Square Value (17.66, α) | 9.143 | | | Adjusted Chi Square Value (17.66, β) | 8.661 | | | |
| 79 | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 26.65 | | | 95% Gamma Adjusted KM-UCL (use when n<50) | 28.13 | | | |
| 80 | | | | | | | | | | | | |
| 81 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | | |
| 82 | | | | Shapiro Wilk Test Statistic | 0.855 | | | **Shapiro Wilk GOF Test** | | | | |
| 83 | | | | 5% Shapiro Wilk Critical Value | 0.767 | | | Detected Data appear Lognormal at 5% Significance Level | | | | |
| 84 | | | | Lilliefors Test Statistic | 0.336 | | | **Lilliefors GOF Test** | | | | |
| 85 | | | | 5% Lilliefors Critical Value | 0.425 | | | Detected Data appear Lognormal at 5% Significance Level | | | | |
| 86 | **Detected Data appear Lognormal at 5% Significance Level** | | | | | | | | | | | |
| 87 | | | | | | | | | | | | |
| 88 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | | |
| 89 | | | | Mean in Original Scale | 7.69 | | | Mean in Log Scale | -1.021 | | | |
| 90 | | | | SD in Original Scale | 22.37 | | | SD in Log Scale | 2.865 | | | |
| 91 | | | | 95% t UCL (assumes normality of ROS data) | 16.34 | | | 95% Percentile Bootstrap UCL | 16.72 | | | |
| 92 | | | | 95% BCA Bootstrap UCL | 23.54 | | | 95% Bootstrap t UCL | 42.61 | | | |
| 93 | | | | 95% H-UCL (Log ROS) | 1060 | | | | | | | |
| 94 | | | | | | | | | | | | |
| 95 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | | |
| 96 | | | | KM Mean (logged) | 2.299 | | | KM Geo Mean | 9.96 | | | |
| 97 | | | | KM SD (logged) | 0.598 | | | 95% Critical H Value (KM-Log) | 2.12 | | | |
| 98 | | | | KM Standard Error of Mean (logged) | 0.164 | | | 95% H-UCL (KM -Log) | 15.92 | | | |
| 99 | | | | KM SD (logged) | 0.598 | | | 95% Critical H Value (KM-Log) | 2.12 | | | |
| 100 | | | | KM Standard Error of Mean (logged) | 0.164 | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | | | | | |
| 102 | **DL/2 Statistics** | | | | | | | | | | | |
| 103 | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | | | | | |
| 104 | Mean in Original Scale | | | | | 10.4 | Mean in Log Scale | | | | | 1.709 |
| 105 | SD in Original Scale | | | | | 21.48 | SD in Log Scale | | | | | 0.844 |
| 106 | 95% t UCL (Assumes normality) | | | | | 18.7 | 95% H-Stat UCL | | | | | 12.6 |
| 107 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 108 | | | | | | | | | | | | |
| 109 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 110 | **Detected Data appear Normal Distributed at 5% Significance Level** | | | | | | | | | | | |
| 111 | | | | | | | | | | | | |
| 112 | **Suggested UCL to Use** | | | | | | | | | | | |
| 113 | 95% KM (t) UCL | | | | | 23.23 | | | | | | |
| 114 | | | | | | | | | | | | |
| 115 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 116 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 117 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 118 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 119 | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | ProUCL 5.14/6/2020 4:19:29 PM | | | | | | | | | | |
| 5 | From File | Soil Vapor.xls | | | | | | | | | | |
| 6 | Full Precision | OFF | | | | | | | | | | |
| 7 | Confidence Coefficient | 95% | | | | | | | | | | |
| 8 | Number of Bootstrap Operations | 2000 | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **m,p-xylenes** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | 20 | | | | | Number of Distinct Observations | 5 | | | | |
| 14 | Number of Detects | 4 | | | | | Number of Non-Detects | 16 | | | | |
| 15 | Number of Distinct Detects | 4 | | | | | Number of Distinct Non-Detects | 1 | | | | |
| 16 | Minimum Detect | 19 | | | | | Minimum Non-Detect | 16 | | | | |
| 17 | Maximum Detect | 322 | | | | | Maximum Non-Detect | 16 | | | | |
| 18 | Variance Detects | 17666 | | | | | Percent Non-Detects | 80% | | | | |
| 19 | Mean Detects | 129.3 | | | | | SD Detects | 132.9 | | | | |
| 20 | Median Detects | 88 | | | | | CV Detects | 1.028 | | | | |
| 21 | Skewness Detects | 1.603 | | | | | Kurtosis Detects | 2.914 | | | | |
| 22 | Mean of Logged Detects | 4.414 | | | | | SD of Logged Detects | 1.162 | | | | |
| 23 | | | | | | | | | | | | |
| 24 | **Normal GOF Test on Detects Only** | | | | | | | | | | | |
| 25 | Shapiro Wilk Test Statistic | 0.85 | | | | | **Shapiro Wilk GOF Test** | | | | | |
| 26 | 5% Shapiro Wilk Critical Value | 0.748 | | | | | Detected Data appear Normal at 5% Significance Level | | | | | |
| 27 | Lilliefors Test Statistic | 0.337 | | | | | **Lilliefors GOF Test** | | | | | |
| 28 | 5% Lilliefors Critical Value | 0.375 | | | | | Detected Data appear Normal at 5% Significance Level | | | | | |
| 29 | **Detected Data appear Normal at 5% Significance Level** | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 31 | **Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs** | | | | | | | | | | | |
| 32 | KM Mean | 38.65 | | | | | KM Standard Error of Mean | 17.71 | | | | |
| 33 | KM SD | 68.57 | | | | | 95% KM (BCA) UCL | N/A | | | | |
| 34 | 95% KM (t) UCL | 69.26 | | | | | 95% KM (Percentile Bootstrap) UCL | N/A | | | | |
| 35 | 95% KM (z) UCL | 67.77 | | | | | 95% KM Bootstrap t UCL | N/A | | | | |
| 36 | 90% KM Chebyshev UCL | 91.77 | | | | | 95% KM Chebyshev UCL | 115.8 | | | | |
| 37 | 97.5% KM Chebyshev UCL | 149.2 | | | | | 99% KM Chebyshev UCL | 214.8 | | | | |
| 38 | | | | | | | | | | | | |
| 39 | **Gamma GOF Tests on Detected Observations Only** | | | | | | | | | | | |
| 40 | A-D Test Statistic | 0.258 | | | | | **Anderson-Darling GOF Test** | | | | | |
| 41 | 5% A-D Critical Value | 0.664 | | | | | Detected data appear Gamma Distributed at 5% Significance Level | | | | | |
| 42 | K-S Test Statistic | 0.238 | | | | | **Kolmogorov-Smirnov GOF** | | | | | |
| 43 | 5% K-S Critical Value | 0.401 | | | | | Detected data appear Gamma Distributed at 5% Significance Level | | | | | |
| 44 | **Detected data appear Gamma Distributed at 5% Significance Level** | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |
| 46 | **Gamma Statistics on Detected Data Only** | | | | | | | | | | | |
| 47 | k hat (MLE) | 1.257 | | | | | k star (bias corrected MLE) | 0.481 | | | | |
| 48 | Theta hat (MLE) | 102.9 | | | | | Theta star (bias corrected MLE) | 268.8 | | | | |
| 49 | nu hat (MLE) | 10.05 | | | | | nu star (bias corrected) | 3.846 | | | | |
| 50 | Mean (detects) | 129.3 | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | | | | | | | | |
| 52 | **Gamma ROS Statistics using Imputed Non-Detects** | | | | | | | | | | | |
| 53 | GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | | | | | | | | | |
| 54 | GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | | | | |
| 55 | For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | | | | | | | | | |
| 56 | This is especially true when the sample size is small. | | | | | | | | | | | |
| 57 | For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | | | | | | | | | |
| 58 | | | | | Minimum | 0.01 | | | | Mean | | 25.86 |
| 59 | | | | | Maximum | 322 | | | | Median | | 0.01 |
| 60 | | | | | SD | 74.85 | | | | CV | | 2.895 |
| 61 | | | | | k hat (MLE) | 0.13 | | | | k star (bias corrected MLE) | | 0.144 |
| 62 | | | | | Theta hat (MLE) | 199.5 | | | | Theta star (bias corrected MLE) | | 180.2 |
| 63 | | | | | nu hat (MLE) | 5.185 | | | | nu star (bias corrected) | | 5.74 |
| 64 | | | | | Adjusted Level of Significance (β) | 0.038 | | | | | | |
| 65 | | | | | Approximate Chi Square Value (5.74, α) | 1.509 | | | | Adjusted Chi Square Value (5.74, β) | | 1.345 |
| 66 | | | | | 95% Gamma Approximate UCL (use when n>=50) | 98.39 | | | | 95% Gamma Adjusted UCL (use when n<50) | | N/A |
| 67 | | | | | | | | | | | | |
| 68 | **Estimates of Gamma Parameters using KM Estimates** | | | | | | | | | | | |
| 69 | | | | | Mean (KM) | 38.65 | | | | SD (KM) | | 68.57 |
| 70 | | | | | Variance (KM) | 4702 | | | | SE of Mean (KM) | | 17.71 |
| 71 | | | | | k hat (KM) | 0.318 | | | | k star (KM) | | 0.303 |
| 72 | | | | | nu hat (KM) | 12.71 | | | | nu star (KM) | | 12.14 |
| 73 | | | | | theta hat (KM) | 121.7 | | | | theta star (KM) | | 127.4 |
| 74 | | | | | 80% gamma percentile (KM) | 59.43 | | | | 90% gamma percentile (KM) | | 113.8 |
| 75 | | | | | 95% gamma percentile (KM) | 176.2 | | | | 99% gamma percentile (KM) | | 337.9 |
| 76 | | | | | | | | | | | | |
| 77 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | | |
| 78 | | | | | Approximate Chi Square Value (12.14, α) | 5.316 | | | | Adjusted Chi Square Value (12.14, β) | | 4.963 |
| 79 | | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 88.23 | | | | 95% Gamma Adjusted KM-UCL (use when n<50) | | 94.51 |
| 80 | | | | | | | | | | | | |
| 81 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | | |
| 82 | | | | | Shapiro Wilk Test Statistic | 0.978 | | | | **Shapiro Wilk GOF Test** | | |
| 83 | | | | | 5% Shapiro Wilk Critical Value | 0.748 | | | | Detected Data appear Lognormal at 5% Significance Level | | |
| 84 | | | | | Lilliefors Test Statistic | 0.222 | | | | **Lilliefors GOF Test** | | |
| 85 | | | | | 5% Lilliefors Critical Value | 0.375 | | | | Detected Data appear Lognormal at 5% Significance Level | | |
| 86 | **Detected Data appear Lognormal at 5% Significance Level** | | | | | | | | | | | |
| 87 | | | | | | | | | | | | |
| 88 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | | |
| 89 | | | | | Mean in Original Scale | 27.09 | | | | Mean in Log Scale | | -0.112 |
| 90 | | | | | SD in Original Scale | 74.44 | | | | SD in Log Scale | | 3.154 |
| 91 | | | | | 95% t UCL (assumes normality of ROS data) | 55.87 | | | | 95% Percentile Bootstrap UCL | | 57.63 |
| 92 | | | | | 95% BCA Bootstrap UCL | 71.44 | | | | 95% Bootstrap t UCL | | 125.3 |
| 93 | | | | | 95% H-UCL (Log ROS) | 13814 | | | | | | |
| 94 | | | | | | | | | | | | |
| 95 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | | |
| 96 | | | | | KM Mean (logged) | 3.101 | | | | KM Geo Mean | | 22.22 |
| 97 | | | | | KM SD (logged) | 0.796 | | | | 95% Critical H Value (KM-Log) | | 2.354 |
| 98 | | | | | KM Standard Error of Mean (logged) | 0.206 | | | | 95% H-UCL (KM -Log) | | 46.88 |
| 99 | | | | | KM SD (logged) | 0.796 | | | | 95% Critical H Value (KM-Log) | | 2.354 |
| 100 | | | | | KM Standard Error of Mean (logged) | 0.206 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | | | | | |
| 102 | **DL/2 Statistics** | | | | | | | | | | | |
| 103 | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | | | | | |
| 104 | Mean in Original Scale | | | | | 32.25 | Mean in Log Scale | | | | | 2.546 |
| 105 | SD in Original Scale | | | | | 72.56 | SD in Log Scale | | | | | 1.064 |
| 106 | 95% t UCL (Assumes normality) | | | | | 60.31 | 95% H-Stat UCL | | | | | 43.7 |
| 107 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 108 | | | | | | | | | | | | |
| 109 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 110 | **Detected Data appear Normal Distributed at 5% Significance Level** | | | | | | | | | | | |
| 111 | | | | | | | | | | | | |
| 112 | **Suggested UCL to Use** | | | | | | | | | | | |
| 113 | 95% KM (t) UCL | | | | | 69.26 | | | | | | |
| 114 | | | | | | | | | | | | |
| 115 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 116 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 117 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 118 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 119 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | ProUCL 5.14/6/2020 4:15:56 PM | | | | | | | | |
| 5 | From File | | | Soil Vapor.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **n-Propylbenzene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | | | | | 20 | Number of Distinct Observations | | | | | 2 |
| 14 | Number of Detects | | | | | 1 | Number of Non-Detects | | | | | 19 |
| 15 | Number of Distinct Detects | | | | | 1 | Number of Distinct Non-Detects | | | | | 1 |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable n-Propylbenzene was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

## UCL Statistics for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/6/2020 4:20:06 PM |
| From File | Soil Vapor.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**o-xylene**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 20 | Number of Distinct Observations | 5 |
| Number of Detects | 4 | Number of Non-Detects | 16 |
| Number of Distinct Detects | 4 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 9 | Minimum Non-Detect | 8 |
| Maximum Detect | 151 | Maximum Non-Detect | 8 |
| Variance Detects | 3983 | Percent Non-Detects | 80% |
| Mean Detects | 58.5 | SD Detects | 63.11 |
| Median Detects | 37 | CV Detects | 1.079 |
| Skewness Detects | 1.722 | Kurtosis Detects | 3.244 |
| Mean of Logged Detects | 3.607 | SD of Logged Detects | 1.153 |

### Normal GOF Test on Detects Only

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.813 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.748 | Detected Data appear Normal at 5% Significance Level |
| Lilliefors Test Statistic | 0.365 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.375 | Detected Data appear Normal at 5% Significance Level |

**Detected Data appear Normal at 5% Significance Level**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 18.1 | KM Standard Error of Mean | 8.187 |
| KM SD | 31.71 | 95% KM (BCA) UCL | N/A |
| 95% KM (t) UCL | 32.26 | 95% KM (Percentile Bootstrap) UCL | N/A |
| 95% KM (z) UCL | 31.57 | 95% KM Bootstrap t UCL | N/A |
| 90% KM Chebyshev UCL | 42.66 | 95% KM Chebyshev UCL | 53.79 |
| 97.5% KM Chebyshev UCL | 69.23 | 99% KM Chebyshev UCL | 99.56 |

### Gamma GOF Tests on Detected Observations Only

| | | |
|---|---|---|
| A-D Test Statistic | 0.312 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.665 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.283 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.401 | Detected data appear Gamma Distributed at 5% Significance Level |

**Detected data appear Gamma Distributed at 5% Significance Level**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 1.223 | k star (bias corrected MLE) | 0.472 |
| Theta hat (MLE) | 47.83 | Theta star (bias corrected MLE) | 123.8 |
| nu hat (MLE) | 9.784 | nu star (bias corrected) | 3.779 |
| Mean (detects) | 58.5 | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | | | | | | | | |
| 52 | **Gamma ROS Statistics using Imputed Non-Detects** | | | | | | | | | | | |
| 53 | GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | | | | | | | | | |
| 54 | GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | | | | |
| 55 | For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | | | | | | | | | |
| 56 | This is especially true when the sample size is small. | | | | | | | | | | | |
| 57 | For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | | | | | | | | | |
| 58 | | | | | Minimum | 0.01 | | | | Mean | | 11.71 |
| 59 | | | | | Maximum | 151 | | | | Median | | 0.01 |
| 60 | | | | | SD | 34.71 | | | | CV | | 2.965 |
| 61 | | | | | k hat (MLE) | 0.143 | | | | k star (bias corrected MLE) | | 0.155 |
| 62 | | | | | Theta hat (MLE) | 82.02 | | | | Theta star (bias corrected MLE) | | 75.7 |
| 63 | | | | | nu hat (MLE) | 5.71 | | | | nu star (bias corrected) | | 6.187 |
| 64 | | | | | Adjusted Level of Significance (β) | 0.038 | | | | | | |
| 65 | | | | | Approximate Chi Square Value (6.19, α) | 1.736 | | | | Adjusted Chi Square Value (6.19, β) | | 1.557 |
| 66 | | | | | 95% Gamma Approximate UCL (use when n>=50) | 41.72 | | | | 95% Gamma Adjusted UCL (use when n<50) | | N/A |
| 67 | | | | | | | | | | | | |
| 68 | **Estimates of Gamma Parameters using KM Estimates** | | | | | | | | | | | |
| 69 | | | | | Mean (KM) | 18.1 | | | | SD (KM) | | 31.71 |
| 70 | | | | | Variance (KM) | 1005 | | | | SE of Mean (KM) | | 8.187 |
| 71 | | | | | k hat (KM) | 0.326 | | | | k star (KM) | | 0.31 |
| 72 | | | | | nu hat (KM) | 13.03 | | | | nu star (KM) | | 12.41 |
| 73 | | | | | theta hat (KM) | 55.55 | | | | theta star (KM) | | 58.33 |
| 74 | | | | | 80% gamma percentile (KM) | 27.98 | | | | 90% gamma percentile (KM) | | 53.16 |
| 75 | | | | | 95% gamma percentile (KM) | 81.9 | | | | 99% gamma percentile (KM) | | 156.3 |
| 76 | | | | | | | | | | | | |
| 77 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | | |
| 78 | | | | | Approximate Chi Square Value (12.41, α) | 5.499 | | | | Adjusted Chi Square Value (12.41, β) | | 5.139 |
| 79 | | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 40.85 | | | | 95% Gamma Adjusted KM-UCL (use when n<50) | | 43.72 |
| 80 | | | | | | | | | | | | |
| 81 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | | |
| 82 | | | | | Shapiro Wilk Test Statistic | 0.968 | | | | **Shapiro Wilk GOF Test** | | |
| 83 | | | | | 5% Shapiro Wilk Critical Value | 0.748 | | | | Detected Data appear Lognormal at 5% Significance Level | | |
| 84 | | | | | Lilliefors Test Statistic | 0.222 | | | | **Lilliefors GOF Test** | | |
| 85 | | | | | 5% Lilliefors Critical Value | 0.375 | | | | Detected Data appear Lognormal at 5% Significance Level | | |
| 86 | **Detected Data appear Lognormal at 5% Significance Level** | | | | | | | | | | | |
| 87 | | | | | | | | | | | | |
| 88 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | | |
| 89 | | | | | Mean in Original Scale | 12.26 | | | | Mean in Log Scale | | -0.887 |
| 90 | | | | | SD in Original Scale | 34.53 | | | | SD in Log Scale | | 3.132 |
| 91 | | | | | 95% t UCL (assumes normality of ROS data) | 25.62 | | | | 95% Percentile Bootstrap UCL | | 26.37 |
| 92 | | | | | 95% BCA Bootstrap UCL | 32.99 | | | | 95% Bootstrap t UCL | | 123.2 |
| 93 | | | | | 95% H-UCL (Log ROS) | 5568 | | | | | | |
| 94 | | | | | | | | | | | | |
| 95 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | | |
| 96 | | | | | KM Mean (logged) | 2.385 | | | | KM Geo Mean | | 10.86 |
| 97 | | | | | KM SD (logged) | 0.757 | | | | 95% Critical H Value (KM-Log) | | 2.305 |
| 98 | | | | | KM Standard Error of Mean (logged) | 0.195 | | | | 95% H-UCL (KM -Log) | | 21.58 |
| 99 | | | | | KM SD (logged) | 0.757 | | | | 95% Critical H Value (KM-Log) | | 2.305 |
| 100 | | | | | KM Standard Error of Mean (logged) | 0.195 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | | | | | |
| 102 | **DL/2 Statistics** | | | | | | | | | | | |
| 103 | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | | | | | |
| 104 | Mean in Original Scale | | | | | 14.9 | Mean in Log Scale | | | | | 1.831 |
| 105 | SD in Original Scale | | | | | 33.6 | SD in Log Scale | | | | | 1.02 |
| 106 | 95% t UCL (Assumes normality) | | | | | 27.89 | 95% H-Stat UCL | | | | | 19.58 |
| 107 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 108 | | | | | | | | | | | | |
| 109 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 110 | **Detected Data appear Normal Distributed at 5% Significance Level** | | | | | | | | | | | |
| 111 | | | | | | | | | | | | |
| 112 | **Suggested UCL to Use** | | | | | | | | | | | |
| 113 | 95% KM (t) UCL | | | | | 32.26 | | | | | | |
| 114 | | | | | | | | | | | | |
| 115 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 116 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 117 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 118 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 119 | | | | | | | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **UCL Statistics for Data Sets with Non-Detects** | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | User Selected Options | | | | | | | | | | | |
| 4 | Date/Time of Computation | | | ProUCL 5.14/6/2020 4:16:43 PM | | | | | | | | |
| 5 | From File | | | Soil Vapor.xls | | | | | | | | |
| 6 | Full Precision | | | OFF | | | | | | | | |
| 7 | Confidence Coefficient | | | 95% | | | | | | | | |
| 8 | Number of Bootstrap Operations | | | 2000 | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | **Tetrachloroethene** | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | **General Statistics** | | | | | | | | | | | |
| 13 | Total Number of Observations | | | | | 20 | Number of Distinct Observations | | | | | 1 |
| 14 | Number of Detects | | | | | 1 | Number of Non-Detects | | | | | 19 |
| 15 | Number of Distinct Detects | | | | | 1 | Number of Distinct Non-Detects | | | | | 1 |
| 16 | | | | | | | | | | | | |
| 17 | **Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!** | | | | | | | | | | | |
| 18 | **It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).** | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | **The data set for variable Tetrachloroethene was not processed!** | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |

## UCL Statistics for Data Sets with Non-Detects

| | |
|---|---|
| User Selected Options | |
| Date/Time of Computation | ProUCL 5.14/6/2020 4:17:26 PM |
| From File | Soil Vapor.xls |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Toluene**

### General Statistics

| | | | |
|---|---|---|---|
| Total Number of Observations | 20 | Number of Distinct Observations | 8 |
| Number of Detects | 7 | Number of Non-Detects | 13 |
| Number of Distinct Detects | 7 | Number of Distinct Non-Detects | 1 |
| Minimum Detect | 10 | Minimum Non-Detect | 8 |
| Maximum Detect | 45 | Maximum Non-Detect | 8 |
| Variance Detects | 158.6 | Percent Non-Detects | 65% |
| Mean Detects | 25.57 | SD Detects | 12.59 |
| Median Detects | 27 | CV Detects | 0.493 |
| Skewness Detects | 0.122 | Kurtosis Detects | -0.734 |
| Mean of Logged Detects | 3.116 | SD of Logged Detects | 0.571 |

### Normal GOF Test on Detects Only

| | | |
|---|---|---|
| Shapiro Wilk Test Statistic | 0.947 | **Shapiro Wilk GOF Test** |
| 5% Shapiro Wilk Critical Value | 0.803 | Detected Data appear Normal at 5% Significance Level |
| Lilliefors Test Statistic | 0.162 | **Lilliefors GOF Test** |
| 5% Lilliefors Critical Value | 0.304 | Detected Data appear Normal at 5% Significance Level |

**Detected Data appear Normal at 5% Significance Level**

### Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

| | | | |
|---|---|---|---|
| KM Mean | 14.15 | KM Standard Error of Mean | 2.622 |
| KM SD | 10.85 | 95% KM (BCA) UCL | 18.35 |
| 95% KM (t) UCL | 18.68 | 95% KM (Percentile Bootstrap) UCL | 18.5 |
| 95% KM (z) UCL | 18.46 | 95% KM Bootstrap t UCL | 18.95 |
| 90% KM Chebyshev UCL | 22.02 | 95% KM Chebyshev UCL | 25.58 |
| 97.5% KM Chebyshev UCL | 30.52 | 99% KM Chebyshev UCL | 40.24 |

### Gamma GOF Tests on Detected Observations Only

| | | |
|---|---|---|
| A-D Test Statistic | 0.346 | **Anderson-Darling GOF Test** |
| 5% A-D Critical Value | 0.71 | Detected data appear Gamma Distributed at 5% Significance Level |
| K-S Test Statistic | 0.194 | **Kolmogorov-Smirnov GOF** |
| 5% K-S Critical Value | 0.313 | Detected data appear Gamma Distributed at 5% Significance Level |

**Detected data appear Gamma Distributed at 5% Significance Level**

### Gamma Statistics on Detected Data Only

| | | | |
|---|---|---|---|
| k hat (MLE) | 4.134 | k star (bias corrected MLE) | 2.458 |
| Theta hat (MLE) | 6.186 | Theta star (bias corrected MLE) | 10.41 |
| nu hat (MLE) | 57.88 | nu star (bias corrected) | 34.41 |
| Mean (detects) | 25.57 | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | | | | | | | | | | | | |
| 52 | **Gamma ROS Statistics using Imputed Non-Detects** | | | | | | | | | | | |
| 53 | GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs | | | | | | | | | | | |
| 54 | GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) | | | | | | | | | | | |
| 55 | For such situations, GROS method may yield incorrect values of UCLs and BTVs | | | | | | | | | | | |
| 56 | This is especially true when the sample size is small. | | | | | | | | | | | |
| 57 | For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates | | | | | | | | | | | |
| 58 | | | | | Minimum | 0.01 | | | | Mean | 9.52 | |
| 59 | | | | | Maximum | 45 | | | | Median | 0.632 | |
| 60 | | | | | SD | 14.09 | | | | CV | 1.48 | |
| 61 | | | | | k hat (MLE) | 0.22 | | | | k star (bias corrected MLE) | 0.22 | |
| 62 | | | | | Theta hat (MLE) | 43.28 | | | | Theta star (bias corrected MLE) | 43.21 | |
| 63 | | | | | nu hat (MLE) | 8.798 | | | | nu star (bias corrected) | 8.811 | |
| 64 | | | | | Adjusted Level of Significance (β) | 0.038 | | | | | | |
| 65 | | | | | Approximate Chi Square Value (8.81, α) | 3.213 | | | | Adjusted Chi Square Value (8.81, β) | 2.951 | |
| 66 | | | | | 95% Gamma Approximate UCL (use when n>=50) | 26.1 | | | | 95% Gamma Adjusted UCL (use when n<50) | 28.42 | |
| 67 | | | | | | | | | | | | |
| 68 | **Estimates of Gamma Parameters using KM Estimates** | | | | | | | | | | | |
| 69 | | | | | Mean (KM) | 14.15 | | | | SD (KM) | 10.85 | |
| 70 | | | | | Variance (KM) | 117.8 | | | | SE of Mean (KM) | 2.622 | |
| 71 | | | | | k hat (KM) | 1.699 | | | | k star (KM) | 1.478 | |
| 72 | | | | | nu hat (KM) | 67.97 | | | | nu star (KM) | 59.11 | |
| 73 | | | | | theta hat (KM) | 8.327 | | | | theta star (KM) | 9.576 | |
| 74 | | | | | 80% gamma percentile (KM) | 21.93 | | | | 90% gamma percentile (KM) | 29.59 | |
| 75 | | | | | 95% gamma percentile (KM) | 37.04 | | | | 99% gamma percentile (KM) | 53.89 | |
| 76 | | | | | | | | | | | | |
| 77 | **Gamma Kaplan-Meier (KM) Statistics** | | | | | | | | | | | |
| 78 | | | | | Approximate Chi Square Value (59.11, α) | 42.43 | | | | Adjusted Chi Square Value (59.11, β) | 41.32 | |
| 79 | | | | | 95% Gamma Approximate KM-UCL (use when n>=50) | 19.71 | | | | 95% Gamma Adjusted KM-UCL (use when n<50) | 20.24 | |
| 80 | | | | | | | | | | | | |
| 81 | **Lognormal GOF Test on Detected Observations Only** | | | | | | | | | | | |
| 82 | | | | | Shapiro Wilk Test Statistic | 0.902 | | | | **Shapiro Wilk GOF Test** | | |
| 83 | | | | | 5% Shapiro Wilk Critical Value | 0.803 | | | | Detected Data appear Lognormal at 5% Significance Level | | |
| 84 | | | | | Lilliefors Test Statistic | 0.195 | | | | **Lilliefors GOF Test** | | |
| 85 | | | | | 5% Lilliefors Critical Value | 0.304 | | | | Detected Data appear Lognormal at 5% Significance Level | | |
| 86 | **Detected Data appear Lognormal at 5% Significance Level** | | | | | | | | | | | |
| 87 | | | | | | | | | | | | |
| 88 | **Lognormal ROS Statistics Using Imputed Non-Detects** | | | | | | | | | | | |
| 89 | | | | | Mean in Original Scale | 11.64 | | | | Mean in Log Scale | 1.872 | |
| 90 | | | | | SD in Original Scale | 12.82 | | | | SD in Log Scale | 1.148 | |
| 91 | | | | | 95% t UCL (assumes normality of ROS data) | 16.59 | | | | 95% Percentile Bootstrap UCL | 16.26 | |
| 92 | | | | | 95% BCA Bootstrap UCL | 17.11 | | | | 95% Bootstrap t UCL | 18.66 | |
| 93 | | | | | 95% H-UCL (Log ROS) | 26.68 | | | | | | |
| 94 | | | | | | | | | | | | |
| 95 | **Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution** | | | | | | | | | | | |
| 96 | | | | | KM Mean (logged) | 2.442 | | | | KM Geo Mean | 11.5 | |
| 97 | | | | | KM SD (logged) | 0.585 | | | | 95% Critical H Value (KM-Log) | 2.106 | |
| 98 | | | | | KM Standard Error of Mean (logged) | 0.141 | | | | 95% H-UCL (KM -Log) | 18.1 | |
| 99 | | | | | KM SD (logged) | 0.585 | | | | 95% Critical H Value (KM-Log) | 2.106 | |
| 100 | | | | | KM Standard Error of Mean (logged) | 0.141 | | | | | | |

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | | | | | |
| 102 | **DL/2 Statistics** | | | | | | | | | | | |
| 103 | **DL/2 Normal** | | | | | | **DL/2 Log-Transformed** | | | | | |
| 104 | Mean in Original Scale | | | | | 11.55 | Mean in Log Scale | | | | | 1.992 |
| 105 | SD in Original Scale | | | | | 12.71 | SD in Log Scale | | | | | 0.905 |
| 106 | 95% t UCL (Assumes normality) | | | | | 16.46 | 95% H-Stat UCL | | | | | 18.54 |
| 107 | **DL/2 is not a recommended method, provided for comparisons and historical reasons** | | | | | | | | | | | |
| 108 | | | | | | | | | | | | |
| 109 | **Nonparametric Distribution Free UCL Statistics** | | | | | | | | | | | |
| 110 | **Detected Data appear Normal Distributed at 5% Significance Level** | | | | | | | | | | | |
| 111 | | | | | | | | | | | | |
| 112 | **Suggested UCL to Use** | | | | | | | | | | | |
| 113 | 95% KM (t) UCL | | | | | 18.68 | | | | | | |
| 114 | | | | | | | | | | | | |
| 115 | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. | | | | | | | | | | | |
| 116 | Recommendations are based upon data size, data distribution, and skewness. | | | | | | | | | | | |
| 117 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). | | | | | | | | | | | |
| 118 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. | | | | | | | | | | | |
| 119 | | | | | | | | | | | | |

# APPENDIX G

## ESL Model Residential
## AF 0.03 & AF 0.001

| 2019 (Rev. 2) | Table T2-1: Tier 2 ESLs<br>Site-Specific Input and Output |
|---|---|

**Click in cell and use pull-down boxes to make selection.**

**Tier 2 Scenario Toggles**

| | |
|---|---|
| Land Use: | Residential |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority over Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth:<br>(Shallow ≤ 10ft bgs < Deep) | Shallow Soil |

California Water Boards

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

Gavin Newsom, Governor

Jared Blumenfeld, Secretary for Environmental Protection

| Select Site Contaminants: | Contaminant 1 | Contaminant 2 | Contaminant 3 | Contaminant 4 | Contaminant 5 |
|---|---|---|---|---|---|
| | Benzene | Chloroform | Ethylbenzene | Tetrachloroethene | Toluene |

| Tier 2 ESLs: | ESL | Basis | ESL | Basis | ESL | Basis | ESL | Basis | ESL | Basis |
|---|---|---|---|---|---|---|---|---|---|---|
| Soil (mg/kg): | 2.5E-02 | Leaching | 2.3E-02 | Leaching | 4.3E-01 | Leaching | 8.0E-02 | Leaching | 1.0E+01 | Leaching |
| Groundwater (µg/L): | 4.2E-01 | VI HHR | 8.1E-01 | VI HHR | 3.5E+00 | VI HHR | 6.4E-01 | VI HHR | 4.0E+02 | Odor/Nuis |
| Subslab/ Soil Gas (µg/m³): | 3.2E+00 | VI HHR | 4.1E+00 | VI HHR | 3.7E+01 | VI HHR | 1.5E+01 | VI HHR | 1.0E+04 | VI HHR |
| Indoor Air (µg/m³): | 9.7E-02 | Dir Exp | 1.2E-01 | Dir Exp | 1.1E+00 | Dir Exp | 4.6E-01 | Dir Exp | 3.1E+02 | Dir Exp |

**Note:**
Groundwater depth is no longer a toggle for evaluating vapor intrusion. See the notes in Workbook Table GW-3 and the User's Guide Chapter 5 for further information.

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

| 2019 (Rev. 2) | Table T2-2: Tier 2 – Site-Specific Cumulative Risk and Hazard Calculator |
|---|---|

**Enter Site Data (Leave blank when no data exits)**

| | Contaminant 1 | Contaminant 2 | Contaminant 3 | Contaminant 4 | Contaminant 5 |
|---|---|---|---|---|---|
| **Contaminant inputs from T2-1:** | **Benzene** | **Chloroform** | **Ethylbenzene** | **Tetrachloroethene** | **Toluene** |
| Soil Concentration (mg/kg) - dry weight: | | | | | |
| Groundwater Concentration (µg/L): | | | | | |
| Subslab/ Soil Gas Concentration (µg/m$^3$): | 19.00 | 13 | 23 | 8 | 19 |
| Indoor Air Concentration (µg/m$^3$): | | | | | |

**Soil Gas VI Attenuation Factor (Use 0.03 for Screening):** 0.0300

**Selected Site Scenario (from T2-1)**

| | |
|---|---|
| Land Use: | Residential |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority vs Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth: | Shallow Soil |

| **Cancer Risk:** | Benzene | Chloroform | Ethylbenzene | Tetrachloroethene | Toluene | Cumulative Risk |
|---|---|---|---|---|---|---|
| Soil Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Tapwater Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Current* Vapor Intrusion Exposure Risk: | 5.9E-06 | 3.2E-06 | 6.2E-07 | 5.2E-07 | -- | 1.0E-05 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Risk: | 5.9E-06 | 3.2E-06 | 6.2E-07 | 5.2E-07 | -- | 1.0E-05 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |

| **Noncancer Hazard:** | Benzene | Chloroform | Ethylbenzene | Tetrachloroethene | Toluene | Cumulative Hazard |
|---|---|---|---|---|---|---|
| Soil Exposure Hazard: | -- | -- | -- | -- | -- | -- |
| Tap Water Exposure Hazard: | -- | -- | -- | -- | -- | -- |
| Current* Vapor Intrusion Exposure Hazard: | 1.8E-01 | 3.8E-03 | 6.7E-04 | 5.8E-03 | 1.8E-03 | 1.9E-01 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Hazard: | 1.8E-01 | 3.8E-03 | 6.7E-04 | 5.8E-03 | 1.8E-03 | 1.9E-01 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |

**Notes:**

Cumulative cancer risk and noncancer hazard are not automatically calculated across pathways because exposure via multiple pathways typically is not simultaneous. This may be performed separately as part of a site-specific evaluation. See the User's Guide Section 3.3 (Addressing Cumulative Risk and Hazard).

* **Current** (VI exposure to current occupants of existing buildings) – Primarily based on indoor air data. See User's Guide Chapter 5 for further information.
In the absence of indoor air data, subslab/soil gas or groundwater data is used to predict current indoor air concentrations.
Subslab/soil gas data is given priority over groundwater data for current exposure calculations. The cumulative risk calculation follows the same hierarchy.

** **Future** (VI exposure to future occupants of existing or future buildings) – Primarily based on subslab/soil gas data. See User's Guide Chapter 5 for further information.
In the absence of subslab/soil gas data, groundwater data is used to predict future indoor air concentrations. The cumulative risk calculation follows the same hierarchy.

| 2019 (Rev. 2) | Table T2-1: Tier 2 ESLs<br>Site-Specific Input and Output |
|---|---|

**Click in cell and use pull-down boxes to make selection.**

**Tier 2 Scenario Toggles**

| | |
|---|---|
| Land Use: | Residential |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority over Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth:<br>(Shallow ≤ 10ft bgs < Deep) | Shallow Soil |

California Water Boards

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

Gavin Newsom, Governor

Jared Blumenfeld, Secretary for Environmental Protection

| Select Site Contaminants: | Contaminant 1 | Contaminant 2 | Contaminant 3 | Contaminant 4 | Contaminant 5 |
|---|---|---|---|---|---|
| | Xylenes | | | | |

| Tier 2 ESLs: | ESL | Basis | ESL | Basis | ESL | Basis | ESL | Basis | ESL | Basis |
|---|---|---|---|---|---|---|---|---|---|---|
| Soil (mg/kg): | 1.0E+01 | Leaching | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| Groundwater (µg/L): | 3.9E+02 | VI HHR | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| Subslab/ Soil Gas (µg/m³): | 3.5E+03 | VI HHR | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| Indoor Air (µg/m³): | 1.0E+02 | Dir Exp | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |

**Note:**
Groundwater depth is no longer a toggle for evaluating vapor intrusion. See the notes in Workbook Table GW-3 and the User's Guide Chapter 5 for further information.

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

**2019 (Rev. 2)** | **Table T2-2: Tier 2 – Site-Specific Cumulative Risk and Hazard Calculator**

**Enter Site Data (Leave blank when no data exits)**

| | Contaminant 1 | Contaminant 2 | Contaminant 3 | Contaminant 4 | Contaminant 5 |
|---|---|---|---|---|---|
| **Contaminant inputs from T2-1:** | Xylenes | 0 | 0 | 0 | 0 |
| Soil Concentration (mg/kg) - dry weight: | | | | | |
| Groundwater Concentration (µg/L): | | | | | |
| Subslab/ Soil Gas Concentration (µg/m$^3$): | 101.52 | | | | |
| Indoor Air Concentration (µg/m$^3$): | | | | | |
| **Soil Gas VI Attenuation Factor (Use 0.03 for Screening):** | | | | | 0.0300 |

**Selected Site Scenario (from T2-1)**

| | |
|---|---|
| Land Use: | Residential |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority vs Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth: | Shallow Soil |

**Cancer Risk:**

| | Xylenes | 0.00 | 0.00 | 0.00 | 0.00 | Cumulative Risk |
|---|---|---|---|---|---|---|
| Soil Exposure Risk: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Tapwater Exposure Risk: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Current* Vapor Intrusion Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |

**Noncancer Hazard:**

| | Xylenes | 0 | 0 | 0 | 0 | Cumulative Hazard |
|---|---|---|---|---|---|---|
| Soil Exposure Hazard: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Tap Water Exposure Hazard: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Current* Vapor Intrusion Exposure Hazard: | 2.9E-02 | -- | -- | -- | -- | 2.9E-02 |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Hazard: | 2.9E-02 | -- | -- | -- | -- | 2.9E-02 |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |

**Notes:**

Cumulative cancer risk and noncancer hazard are not automatically calculated across pathways because exposure via multiple pathways typically is not simultaneous. This may be performed separately as part of a site-specific evaluation. See the User's Guide Section 3.3 (Addressing Cumulative Risk and Hazard).

* **Current** (VI exposure to current occupants of existing buildings) – Primarily based on indoor air data. See User's Guide Chapter 5 for further information.
In the absence of indoor air data, subslab/soil gas or groundwater data is used to predict current indoor air concentrations.
Subslab/soil gas data is given priority over groundwater data for current exposure calculations. The cumulative risk calculation follows the same hierarchy.

** **Future** (VI exposure to future occupants of existing or future buildings) – Primarily based on subslab/soil gas data. See User's Guide Chapter 5 for further information.
In the absence of subslab/soil gas data, groundwater data is used to predict future indoor air concentrations. The cumulative risk calculation follows the same hierarchy.

| 2019 (Rev. 2) | Table T2-1: Tier 2 ESLs<br>Site-Specific Input and Output |
|---|---|

**Click in cell and use pull-down boxes to make selection.**

**Tier 2 Scenario Toggles**

| | |
|---|---|
| Land Use: | Residential |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority over Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth:<br>(Shallow ≤ 10ft bgs < Deep) | Shallow Soil |

California Water Boards

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

Gavin Newsom, Governor

Jared Blumenfeld, Secretary for Environmental Protection

| Select Site Contaminants: | Contaminant 1 | Contaminant 2 | Contaminant 3 | Contaminant 4 | Contaminant 5 |
|---|---|---|---|---|---|
| | Benzene | Chloroform | Ethylbenzene | Tetrachloroethene | Toluene |

| Tier 2 ESLs: | ESL | Basis | ESL | Basis | ESL | Basis | ESL | Basis | ESL | Basis |
|---|---|---|---|---|---|---|---|---|---|---|
| Soil (mg/kg): | 2.5E-02 | Leaching | 2.3E-02 | Leaching | 4.3E-01 | Leaching | 8.0E-02 | Leaching | 1.0E+01 | Leaching |
| Groundwater (µg/L): | 4.2E-01 | VI HHR | 8.1E-01 | VI HHR | 3.5E+00 | VI HHR | 6.4E-01 | VI HHR | 4.0E+02 | Odor/Nuis |
| Subslab/ Soil Gas (µg/m³): | 3.2E+00 | VI HHR | 4.1E+00 | VI HHR | 3.7E+01 | VI HHR | 1.5E+01 | VI HHR | 1.0E+04 | VI HHR |
| Indoor Air (µg/m³): | 9.7E-02 | Dir Exp | 1.2E-01 | Dir Exp | 1.1E+00 | Dir Exp | 4.6E-01 | Dir Exp | 3.1E+02 | Dir Exp |

**Note:**
Groundwater depth is no longer a toggle for evaluating vapor intrusion. See the notes in Workbook Table GW-3 and the User's Guide Chapter 5 for further information.

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

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## 2019 (Rev. 2) — Table T2-2: Tier 2 – Site-Specific Cumulative Risk and Hazard Calculator

**Selected Site Scenario (from T2-1)**

| | |
|---|---|
| Land Use: | Residential |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority vs Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth: | Shallow Soil |

**Enter Site Data (Leave blank when no data exits)**

| | Contaminant 1 | Contaminant 2 | Contaminant 3 | Contaminant 4 | Contaminant 5 |
|---|---|---|---|---|---|
| **Contaminant inputs from T2-1:** | **Benzene** | **Chloroform** | **Ethylbenzene** | **Tetrachloroethene** | **Toluene** |
| Soil Concentration (mg/kg) - dry weight: | | | | | |
| Groundwater Concentration (µg/L): | | | | | |
| Subslab/ Soil Gas Concentration (µg/m$^3$): | 19.00 | 13 | 23 | 8 | 19 |
| Indoor Air Concentration (µg/m$^3$): | | | | | |

**Soil Gas VI Attenuation Factor (Use 0.03 for Screening):** 0.0010

| **Cancer Risk:** | Benzene | Chloroform | Ethylbenzene | Tetrachloroethene | Toluene | Cumulative Risk |
|---|---|---|---|---|---|---|
| Soil Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Tapwater Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Current* Vapor Intrusion Exposure Risk: | 2.0E-07 | 1.1E-07 | 2.1E-08 | 1.7E-08 | -- | 3.4E-07 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Risk: | 2.0E-07 | 1.1E-07 | 2.1E-08 | 1.7E-08 | -- | 3.4E-07 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |

| **Noncancer Hazard:** | Benzene | Chloroform | Ethylbenzene | Tetrachloroethene | Toluene | Cumulative Hazard |
|---|---|---|---|---|---|---|
| Soil Exposure Hazard: | -- | -- | -- | -- | -- | -- |
| Tap Water Exposure Hazard: | -- | -- | -- | -- | -- | -- |
| Current* Vapor Intrusion Exposure Hazard: | 6.1E-03 | 1.3E-04 | 2.2E-05 | 1.9E-04 | 6.0E-05 | 6.5E-03 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Hazard: | 6.1E-03 | 1.3E-04 | 2.2E-05 | 1.9E-04 | 6.0E-05 | 6.5E-03 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |

**Notes:**

Cumulative cancer risk and noncancer hazard are not automatically calculated across pathways because exposure via multiple pathways typically is not simultaneous. This may be performed separately as part of a site-specific evaluation. See the User's Guide Section 3.3 (Addressing Cumulative Risk and Hazard).

* **Current** (VI exposure to current occupants of existing buildings) – Primarily based on indoor air data. See User's Guide Chapter 5 for further information.
In the absence of indoor air data, subslab/soil gas or groundwater data is used to predict current indoor air concentrations.
Subslab/soil gas data is given priority over groundwater data for current exposure calculations. The cumulative risk calculation follows the same hierarchy.

** **Future** (VI exposure to future occupants of existing or future buildings) – Primarily based on subslab/soil gas data. See User's Guide Chapter 5 for further information.
In the absence of subslab/soil gas data, groundwater data is used to predict future indoor air concentrations. The cumulative risk calculation follows the same hierarchy.

| 2019 (Rev. 2) | Table T2-1: Tier 2 ESLs<br>Site-Specific Input and Output |
|---|---|

**Click in cell and use pull-down boxes to make selection.**

**Tier 2 Scenario Toggles**

| | |
|---|---|
| Land Use: | Residential |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority over Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth:<br>(Shallow ≤ 10ft bgs < Deep) | Shallow Soil |

California Water Boards

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

Gavin Newsom, Governor

Jared Blumenfeld, Secretary for Environmental Protection

| Select Site Contaminants: | Contaminant 1 | Contaminant 2 | Contaminant 3 | Contaminant 4 | Contaminant 5 |
|---|---|---|---|---|---|
| | Xylenes | | | | |

| Tier 2 ESLs: | ESL | Basis | ESL | Basis | ESL | Basis | ESL | Basis | ESL | Basis |
|---|---|---|---|---|---|---|---|---|---|---|
| Soil (mg/kg): | 1.0E+01 | Leaching | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| Groundwater (µg/L): | 3.9E+02 | VI HHR | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| Subslab/ Soil Gas (µg/m³): | 3.5E+03 | VI HHR | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| Indoor Air (µg/m³): | 1.0E+02 | Dir Exp | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |

**Note:**
Groundwater depth is no longer a toggle for evaluating vapor intrusion. See the notes in Workbook Table GW-3 and the User's Guide Chapter 5 for further information.

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

| 2019 (Rev. 2) | Table T2-2: Tier 2 – Site-Specific Cumulative Risk and Hazard Calculator |
|---|---|

**Enter Site Data (Leave blank when no data exits)**

| | Contaminant 1 | Contaminant 2 | Contaminant 3 | Contaminant 4 | Contaminant 5 |
|---|---|---|---|---|---|
| **Contaminant inputs from T2-1:** | Xylenes | 0 | 0 | 0 | 0 |
| Soil Concentration (mg/kg) - dry weight: | | | | | |
| Groundwater Concentration (µg/L): | | | | | |
| Subslab/ Soil Gas Concentration (µg/m$^3$): | 101.52 | | | | |
| Indoor Air Concentration (µg/m$^3$): | | | | | |

**Soil Gas VI Attenuation Factor (Use 0.03 for Screening):** 0.0010

**Selected Site Scenario (from T2-1)**

| | |
|---|---|
| Land Use: | Residential |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority vs Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth: | Shallow Soil |

**Cancer Risk:**

| | Xylenes | 0.00 | 0.00 | 0.00 | 0.00 | Cumulative Risk |
|---|---|---|---|---|---|---|
| Soil Exposure Risk: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Tapwater Exposure Risk: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Current* Vapor Intrusion Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |

**Noncancer Hazard:**

| | Xylenes | 0 | 0 | 0 | 0 | Cumulative Hazard |
|---|---|---|---|---|---|---|
| Soil Exposure Hazard: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Tap Water Exposure Hazard: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Current* Vapor Intrusion Exposure Hazard: | 9.7E-04 | -- | -- | -- | -- | 9.7E-04 |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Hazard: | 9.7E-04 | -- | -- | -- | -- | 9.7E-04 |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |

**Notes:**

Cumulative cancer risk and noncancer hazard are not automatically calculated across pathways because exposure via multiple pathways typically is not simultaneous. This may be performed separately as part of a site-specific evaluation. See the User's Guide Section 3.3 (Addressing Cumulative Risk and Hazard).

* **Current** (VI exposure to current occupants of existing buildings) – Primarily based on indoor air data. See User's Guide Chapter 5 for further information.
In the absence of indoor air data, subslab/soil gas or groundwater data is used to predict current indoor air concentrations.
Subslab/soil gas data is given priority over groundwater data for current exposure calculations. The cumulative risk calculation follows the same hierarchy.

** **Future** (VI exposure to future occupants of existing or future buildings) – Primarily based on subslab/soil gas data. See User's Guide Chapter 5 for further information.
In the absence of subslab/soil gas data, groundwater data is used to predict future indoor air concentrations. The cumulative risk calculation follows the same hierarchy.

# APPENDIX H

## ESL Model Commercial
## AF 0.03 & AF 0.001

| 2019 (Rev. 2) | Table T2-1: Tier 2 ESLs<br>Site-Specific Input and Output |
|---|---|

**Click in cell and use pull-down boxes to make selection.**

**Tier 2 Scenario Toggles**

| | |
|---|---|
| Land Use: | Commercial or Industrial |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority over Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth:<br>(Shallow ≤ 10ft bgs < Deep) | Shallow Soil |

California Water Boards

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

Gavin Newsom, Governor

Jared Blumenfeld, Secretary for Environmental Protection

| Select Site Contaminants: | Contaminant 1 | | Contaminant 2 | | Contaminant 3 | | Contaminant 4 | | Contaminant 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Benzene | | Chloroform | | Ethylbenzene | | Tetrachloroethene | | Toluene | |
| **Tier 2 ESLs:** | **ESL** | **Basis** | **ESL** | **Basis** | **ESL** | **Basis** | **ESL** | **Basis** | **ESL** | **Basis** |
| Soil (mg/kg): | 2.5E-02 | Leaching | 2.3E-02 | Leaching | 4.3E-01 | Leaching | 8.0E-02 | Leaching | 1.0E+01 | Leaching |
| Groundwater (µg/L): | 1.8E+00 | VI HHR | 3.6E+00 | VI HHR | 1.5E+01 | VI HHR | 2.8E+00 | VI HHR | 4.0E+02 | Odor/Nuis |
| Subslab/ Soil Gas (µg/m³): | 1.4E+01 | VI HHR | 1.8E+01 | VI HHR | 1.6E+02 | VI HHR | 6.7E+01 | VI HHR | 4.4E+04 | VI HHR |
| Indoor Air (µg/m³): | 4.2E-01 | Dir Exp | 5.3E-01 | Dir Exp | 4.9E+00 | Dir Exp | 2.0E+00 | Dir Exp | 1.3E+03 | Dir Exp |

**Note:**
Groundwater depth is no longer a toggle for evaluating vapor intrusion. See the notes in Workbook Table GW-3 and the User's Guide Chapter 5 for further information.

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

| 2019 (Rev. 2) | Table T2-2: Tier 2 – Site-Specific Cumulative Risk and Hazard Calculator |
|---|---|

**Enter Site Data (Leave blank when no data exits)**

| Contaminant inputs from T2-1: | Contaminant 1<br>Benzene | Contaminant 2<br>Chloroform | Contaminant 3<br>Ethylbenzene | Contaminant 4<br>Tetrachloroethene | Contaminant 5<br>Toluene |
|---|---|---|---|---|---|
| Soil Concentration (mg/kg) - dry weight: | | | | | |
| Groundwater Concentration (µg/L): | | | | | |
| Subslab/ Soil Gas Concentration (µg/m$^3$): | 19.00 | 13 | 23 | 8 | 19 |
| Indoor Air Concentration (µg/m$^3$): | | | | | |

**Soil Gas VI Attenuation Factor (Use 0.03 for Screening):** 0.0300

**Selected Site Scenario (from T2-1)**

| | |
|---|---|
| Land Use: | Commercial or Industrial |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority vs Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth: | Shallow Soil |

**Cancer Risk:**

| | Benzene | Chloroform | Ethylbenzene | Tetrachloroethene | Toluene | Cumulative Risk |
|---|---|---|---|---|---|---|
| Soil Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Tapwater Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Current* Vapor Intrusion Exposure Risk: | 1.3E-06 | 7.3E-07 | 1.4E-07 | 1.2E-07 | -- | 2.3E-06 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Risk: | 1.3E-06 | 7.3E-07 | 1.4E-07 | 1.2E-07 | -- | 2.3E-06 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |

**Noncancer Hazard:**

| | Benzene | Chloroform | Ethylbenzene | Tetrachloroethene | Toluene | Cumulative Hazard |
|---|---|---|---|---|---|---|
| Soil Exposure Hazard: | -- | -- | -- | -- | -- | -- |
| Tap Water Exposure Hazard: | -- | -- | -- | -- | -- | -- |
| Current* Vapor Intrusion Exposure Hazard: | 4.3E-02 | 9.0E-04 | 1.6E-04 | 1.4E-03 | 4.3E-04 | 4.6E-02 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Hazard: | 4.3E-02 | 9.0E-04 | 1.6E-04 | 1.4E-03 | 4.3E-04 | 4.6E-02 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |

**Notes:**

Cumulative cancer risk and noncancer hazard are not automatically calculated across pathways because exposure via multiple pathways typically is not simultaneous. This may be performed separately as part of a site-specific evaluation. See the User's Guide Section 3.3 (Addressing Cumulative Risk and Hazard).

* **Current** (VI exposure to current occupants of existing buildings) – Primarily based on indoor air data. See User's Guide Chapter 5 for further information.
In the absence of indoor air data, subslab/soil gas or groundwater data is used to predict current indoor air concentrations.
Subslab/soil gas data is given priority over groundwater data for current exposure calculations. The cumulative risk calculation follows the same hierarchy.

** **Future** (VI exposure to future occupants of existing or future buildings) – Primarily based on subslab/soil gas data. See User's Guide Chapter 5 for further information.
In the absence of subslab/soil gas data, groundwater data is used to predict future indoor air concentrations. The cumulative risk calculation follows the same hierarchy.

| 2019 (Rev. 2) | Table T2-1: Tier 2 ESLs<br>Site-Specific Input and Output |
|---|---|

**Click in cell and use pull-down boxes to make selection.**

**Tier 2 Scenario Toggles**

| | |
|---|---|
| Land Use: | Commercial or Industrial |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority over Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth:<br>(Shallow ≤ 10ft bgs < Deep) | Shallow Soil |

California Water Boards

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

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Jared Blumenfeld, Secretary for Environmental Protection

| Select Site Contaminants: | Contaminant 1 | Contaminant 2 | Contaminant 3 | Contaminant 4 | Contaminant 5 |
|---|---|---|---|---|---|
| | Xylenes | | | | |

| Tier 2 ESLs: | ESL | Basis | ESL | Basis | ESL | Basis | ESL | Basis | ESL | Basis |
|---|---|---|---|---|---|---|---|---|---|---|
| Soil (mg/kg): | 1.0E+01 | Leaching | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| Groundwater (µg/L): | 1.6E+03 | VI HHR | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| Subslab/ Soil Gas (µg/m³): | 1.5E+04 | VI HHR | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| Indoor Air (µg/m³): | 4.4E+02 | Dir Exp | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |

**Note:**
Groundwater depth is no longer a toggle for evaluating vapor intrusion. See the notes in Workbook Table GW-3 and the User's Guide Chapter 5 for further information.

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

**2019 (Rev. 2)** | **Table T2-2: Tier 2 – Site-Specific Cumulative Risk and Hazard Calculator**

**Enter Site Data (Leave blank when no data exits)**

| | Contaminant 1 | Contaminant 2 | Contaminant 3 | Contaminant 4 | Contaminant 5 |
|---|---|---|---|---|---|
| **Contaminant inputs from T2-1:** | Xylenes | 0 | 0 | 0 | 0 |
| Soil Concentration (mg/kg) - dry weight: | | | | | |
| Groundwater Concentration (µg/L): | | | | | |
| Subslab/ Soil Gas Concentration (µg/m$^3$): | 101.52 | | | | |
| Indoor Air Concentration (µg/m$^3$): | | | | | |

**Soil Gas VI Attenuation Factor (Use 0.03 for Screening):** 0.0300

**Selected Site Scenario (from T2-1)**

| | |
|---|---|
| Land Use: | Commercial or Industrial |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority vs Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth: | Shallow Soil |

**Cancer Risk:**

| | Xylenes | 0.00 | 0.00 | 0.00 | 0.00 | Cumulative Risk |
|---|---|---|---|---|---|---|
| Soil Exposure Risk: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Tapwater Exposure Risk: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Current* Vapor Intrusion Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |

**Noncancer Hazard:**

| | Xylenes | 0 | 0 | 0 | 0 | Cumulative Hazard |
|---|---|---|---|---|---|---|
| Soil Exposure Hazard: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Tap Water Exposure Hazard: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Current* Vapor Intrusion Exposure Hazard: | 7.0E-03 | -- | -- | -- | -- | 7.0E-03 |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Hazard: | 7.0E-03 | -- | -- | -- | -- | 7.0E-03 |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |

**Notes:**

Cumulative cancer risk and noncancer hazard are not automatically calculated across pathways because exposure via multiple pathways typically is not simultaneous. This may be performed separately as part of a site-specific evaluation. See the User's Guide Section 3.3 (Addressing Cumulative Risk and Hazard).

* **Current** (VI exposure to current occupants of existing buildings) – Primarily based on indoor air data. See User's Guide Chapter 5 for further information.
In the absence of indoor air data, subslab/soil gas or groundwater data is used to predict current indoor air concentrations.
Subslab/soil gas data is given priority over groundwater data for current exposure calculations. The cumulative risk calculation follows the same hierarchy.

** **Future** (VI exposure to future occupants of existing or future buildings) – Primarily based on subslab/soil gas data. See User's Guide Chapter 5 for further information.
In the absence of subslab/soil gas data, groundwater data is used to predict future indoor air concentrations. The cumulative risk calculation follows the same hierarchy.

| 2019 (Rev. 2) | Table T2-1: Tier 2 ESLs<br>Site-Specific Input and Output |
|---|---|

**Click in cell and use pull-down boxes to make selection.**

**Tier 2 Scenario Toggles**

| | |
|---|---|
| Land Use: | Commercial or Industrial |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority over Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth:<br>(Shallow ≤ 10ft bgs < Deep) | Shallow Soil |

California Water Boards

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

Gavin Newsom, Governor

Jared Blumenfeld, Secretary for Environmental Protection

| Select Site Contaminants: | Contaminant 1 | | Contaminant 2 | | Contaminant 3 | | Contaminant 4 | | Contaminant 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Benzene | | Chloroform | | Ethylbenzene | | Tetrachloroethene | | Toluene | |
| **Tier 2 ESLs:** | **ESL** | **Basis** | **ESL** | **Basis** | **ESL** | **Basis** | **ESL** | **Basis** | **ESL** | **Basis** |
| Soil (mg/kg): | 2.5E-02 | Leaching | 2.3E-02 | Leaching | 4.3E-01 | Leaching | 8.0E-02 | Leaching | 1.0E+01 | Leaching |
| Groundwater (µg/L): | 1.8E+00 | VI HHR | 3.6E+00 | VI HHR | 1.5E+01 | VI HHR | 2.8E+00 | VI HHR | 4.0E+02 | Odor/Nuis |
| Subslab/ Soil Gas (µg/m³): | 1.4E+01 | VI HHR | 1.8E+01 | VI HHR | 1.6E+02 | VI HHR | 6.7E+01 | VI HHR | 4.4E+04 | VI HHR |
| Indoor Air (µg/m³): | 4.2E-01 | Dir Exp | 5.3E-01 | Dir Exp | 4.9E+00 | Dir Exp | 2.0E+00 | Dir Exp | 1.3E+03 | Dir Exp |

**Note:**
Groundwater depth is no longer a toggle for evaluating vapor intrusion. See the notes in Workbook Table GW-3 and the User's Guide Chapter 5 for further information.

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

| 2019 (Rev. 2) | Table T2-2: Tier 2 – Site-Specific Cumulative Risk and Hazard Calculator |
|---|---|

**Enter Site Data (Leave blank when no data exits)**

| Contaminant inputs from T2-1: | Contaminant 1<br>Benzene | Contaminant 2<br>Chloroform | Contaminant 3<br>Ethylbenzene | Contaminant 4<br>Tetrachloroethene | Contaminant 5<br>Toluene |
|---|---|---|---|---|---|
| Soil Concentration (mg/kg) - dry weight: | | | | | |
| Groundwater Concentration (µg/L): | | | | | |
| Subslab/ Soil Gas Concentration (µg/m$^3$): | 19.00 | 13 | 23 | 8 | 19 |
| Indoor Air Concentration (µg/m$^3$): | | | | | |

**Soil Gas VI Attenuation Factor (Use 0.03 for Screening):** 0.0010

**Selected Site Scenario (from T2-1)**

| | |
|---|---|
| Land Use: | Commercial or Industrial |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority vs Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth: | Shallow Soil |

**Cancer Risk:**

| | Benzene | Chloroform | Ethylbenzene | Tetrachloroethene | Toluene | Cumulative Risk |
|---|---|---|---|---|---|---|
| Soil Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Tapwater Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Current* Vapor Intrusion Exposure Risk: | 4.5E-08 | 2.4E-08 | 4.7E-09 | 4.0E-09 | -- | 7.8E-08 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Risk: | 4.5E-08 | 2.4E-08 | 4.7E-09 | 4.0E-09 | -- | 7.8E-08 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |

**Noncancer Hazard:**

| | Benzene | Chloroform | Ethylbenzene | Tetrachloroethene | Toluene | Cumulative Hazard |
|---|---|---|---|---|---|---|
| Soil Exposure Hazard: | -- | -- | -- | -- | -- | -- |
| Tap Water Exposure Hazard: | -- | -- | -- | -- | -- | -- |
| Current* Vapor Intrusion Exposure Hazard: | 1.4E-03 | 3.0E-05 | 5.3E-06 | 4.6E-05 | 1.4E-05 | 1.5E-03 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Hazard: | 1.4E-03 | 3.0E-05 | 5.3E-06 | 4.6E-05 | 1.4E-05 | 1.5E-03 |
| Basis: | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI | Subslab/Soil Gas VI |

**Notes:**

Cumulative cancer risk and noncancer hazard are not automatically calculated across pathways because exposure via multiple pathways typically is not simultaneous. This may be performed separately as part of a site-specific evaluation. See the User's Guide Section 3.3 (Addressing Cumulative Risk and Hazard).

* **Current** (VI exposure to current occupants of existing buildings) – Primarily based on indoor air data. See User's Guide Chapter 5 for further information.
In the absence of indoor air data, subslab/soil gas or groundwater data is used to predict current indoor air concentrations.
Subslab/soil gas data is given priority over groundwater data for current exposure calculations. The cumulative risk calculation follows the same hierarchy.

** **Future** (VI exposure to future occupants of existing or future buildings) – Primarily based on subslab/soil gas data. See User's Guide Chapter 5 for further information.
In the absence of subslab/soil gas data, groundwater data is used to predict future indoor air concentrations. The cumulative risk calculation follows the same hierarchy.

| 2019 (Rev. 2) | Table T2-1: Tier 2 ESLs<br>Site-Specific Input and Output |
|---|---|

**Click in cell and use pull-down boxes to make selection.**

**Tier 2 Scenario Toggles**

| | |
|---|---|
| Land Use: | Commercial or Industrial |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority over Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth:<br>(Shallow ≤ 10ft bgs < Deep) | Shallow Soil |

California Water Boards

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

Gavin Newsom, Governor

Jared Blumenfeld, Secretary for Environmental Protection

| Select Site Contaminants: | Contaminant 1 | Contaminant 2 | Contaminant 3 | Contaminant 4 | Contaminant 5 |
|---|---|---|---|---|---|
| | Xylenes | | | | |

| Tier 2 ESLs: | ESL | Basis | ESL | Basis | ESL | Basis | ESL | Basis | ESL | Basis |
|---|---|---|---|---|---|---|---|---|---|---|
| Soil (mg/kg): | 1.0E+01 | Leaching | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| Groundwater (µg/L): | 1.6E+03 | VI HHR | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| Subslab/ Soil Gas (µg/m³): | 1.5E+04 | VI HHR | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |
| Indoor Air (µg/m³): | 4.4E+02 | Dir Exp | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A |

**Note:**
Groundwater depth is no longer a toggle for evaluating vapor intrusion. See the notes in Workbook Table GW-3 and the User's Guide Chapter 5 for further information.

# Environmental Screening Levels

San Francisco Bay Regional Water Quality Control Board

## 2019 (Rev. 2) — Table T2-2: Tier 2 – Site-Specific Cumulative Risk and Hazard Calculator

**Enter Site Data (Leave blank when no data exits)**

| | Contaminant 1 | Contaminant 2 | Contaminant 3 | Contaminant 4 | Contaminant 5 |
|---|---|---|---|---|---|
| **Contaminant inputs from T2-1:** | Xylenes | 0 | 0 | 0 | 0 |
| Soil Concentration (mg/kg) - dry weight: | | | | | |
| Groundwater Concentration (µg/L): | | | | | |
| Subslab/ Soil Gas Concentration (µg/m$^3$): | 101.52 | | | | |
| Indoor Air Concentration (µg/m$^3$): | | | | | |

**Soil Gas VI Attenuation Factor (Use 0.03 for Screening):** 0.0010

**Selected Site Scenario (from T2-1)**

| | |
|---|---|
| Land Use: | Commercial or Industrial |
| Vegetation Level: | Minimal |
| Groundwater Use: | Nondrinking Water Resource |
| MCL Priority vs Risk-Based: | No |
| Discharge to Surface Water: | No Discharge Expected |
| Soil Contamination Depth: | Shallow Soil |

**Cancer Risk:**

| | Xylenes | 0.00 | 0.00 | 0.00 | 0.00 | Cumulative Risk |
|---|---|---|---|---|---|---|
| Soil Exposure Risk: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Tapwater Exposure Risk: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Current* Vapor Intrusion Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Risk: | -- | -- | -- | -- | -- | -- |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |

**Noncancer Hazard:**

| | Xylenes | 0 | 0 | 0 | 0 | Cumulative Hazard |
|---|---|---|---|---|---|---|
| Soil Exposure Hazard: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Tap Water Exposure Hazard: | -- | #N/A | #N/A | #N/A | #N/A | #N/A |
| Current* Vapor Intrusion Exposure Hazard: | 2.3E-04 | -- | -- | -- | -- | 2.3E-04 |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |
| Future** Vapor Intrusion Exposure Hazard: | 2.3E-04 | -- | -- | -- | -- | 2.3E-04 |
| Basis: | Subslab/Soil Gas VI | -- | -- | -- | -- | Subslab/Soil Gas VI |

**Notes:**

Cumulative cancer risk and noncancer hazard are not automatically calculated across pathways because exposure via multiple pathways typically is not simultaneous. This may be performed separately as part of a site-specific evaluation. See the User's Guide Section 3.3 (Addressing Cumulative Risk and Hazard).

* **Current** (VI exposure to current occupants of existing buildings) – Primarily based on indoor air data. See User's Guide Chapter 5 for further information.
In the absence of indoor air data, subslab/soil gas or groundwater data is used to predict current indoor air concentrations.
Subslab/soil gas data is given priority over groundwater data for current exposure calculations. The cumulative risk calculation follows the same hierarchy.

** **Future** (VI exposure to future occupants of existing or future buildings) – Primarily based on subslab/soil gas data. See User's Guide Chapter 5 for further information.
In the absence of subslab/soil gas data, groundwater data is used to predict future indoor air concentrations. The cumulative risk calculation follows the same hierarchy.

# APPENDIX I

## VURAM Model

## Virginia Department of Environmental Quality

# VURAM

## Virginia Unified Risk Assessment Model

**VERSION: 2.1.1**

## Construction Worker Quantitative Risk Assessment Report

## Site Name: 950 E 33rd St & 3177 California Ave

## Program: Voluntary Remediation Program

### Total Hazard Index/Risk for All Media

| Non-Cancer Adult | Cancer |
|---|---|
| Total: 2.46E-03 | Total: 6.56E-09 |
| *does not exceed hazard index* | *does not exceed cumulative risk* |

### Risk Based Performance Criteria

| Default Hazard Index | Default Cumulative Risk-All Chemicals |
|---|---|
| 1 | 1.00E-04 |

**All Report Pages are Required for Risk Assessment Submission**
**DETAILED REPORT FOLLOWS**

Risk Based Performance Criteria

| Default Hazard Index | Default Risk Individual Chemical | Default Cumulative Risk-All Chemicals |
|---|---|---|
| 1 | 1.00E-06 | 1.00E-05 |

# Air

**Analyte: Benzene**
**CAS: 71-43-2**

| | |
|---|---|
| Concentration ug/m3: | 1.90E+01 |
| RfDo: | |
| RfCi: | 8.00E-02 |
| SFO: | |
| IUR: | 7.80E-06 |
| Mutagen: | |
| VOC: | Y |

**Calculated Hazard Quotient/Risk**

| Non-Cancer Adult | | Cancer | |
|---|---|---|---|
| Ingestion: | | Ingestion: | |
| Dermal: | | Dermal: | |
| Inhalation: | 2.53E-04 | Inhalation: | 2.17E-09 |
| **Total:** | **2.53E-04** | **Total:** | **2.17E-09** |

*% Contribution to Media Risk* 10.31% 33.04%

**Analyte: Chloroform**
**CAS: 67-66-3**

| | |
|---|---|
| Concentration ug/m3: | 1.29E+01 |
| RfDo: | |
| RfCi: | 2.44E-01 |
| SFO: | |
| IUR: | 2.30E-05 |
| Mutagen: | |
| VOC: | Y |

**Calculated Hazard Quotient/Risk**

| Non-Cancer Adult | | Cancer | |
|---|---|---|---|
| Ingestion: | | Ingestion: | |
| Dermal: | | Dermal: | |
| Inhalation: | 4.84E-05 | Inhalation: | 3.72E-09 |
| **Total:** | **4.84E-05** | **Total:** | **3.72E-09** |

*% Contribution to Media Risk* 1.97% 56.79%

**Analyte: Ethylbenzene**
**CAS: 100-41-4**

| | |
|---|---|
| Concentration ug/m3: | 2.32E+01 |
| RfDo: | |
| RfCi: | 9.00E+00 |
| SFO: | |
| IUR: | 2.50E-06 |
| Mutagen: | |
| VOC: | Y |

**Calculated Hazard Quotient/Risk**

| Non-Cancer Adult | | Cancer | |
|---|---|---|---|
| Ingestion: | | Ingestion: | |
| Dermal: | | Dermal: | |
| Inhalation: | 2.11E-06 | Inhalation: | 6.49E-10 |
| **Total:** | **2.11E-06** | **Total:** | **6.49E-10** |

*% Contribution to Media Risk* 0.09% 9.90%

Risk Based Performance Criteria

| Default Hazard Index | Default Risk Individual Chemical | Default Cumulative Risk-All Chemicals |
|---|---|---|
| 1 | 1.00E-06 | 1.00E-05 |

# Air

**Analyte: Propyl benzene**
**CAS: 103-65-1**

| | | |
|---|---|---|
| Concentration | ug/m3: | 2.00E+01 |
| RfDo: | | |
| RfCi: | | 1.00E+00 |
| SFO: | | |
| IUR: | | |
| Mutagen: | | |
| VOC: | | Y |

**Calculated Hazard Quotient/Risk**

| Non-Cancer Adult | | Cancer | |
|---|---|---|---|
| Ingestion: | | Ingestion: | |
| Dermal: | | Dermal: | |
| Inhalation: | 1.43E-05 | Inhalation: | |
| **Total:** | **1.43E-05** | **Total:** | **0.00E+00** |

*% Contribution to Media Risk* 0.58% 0.00%

**Analyte: Tetrachloroethylene**
**CAS: 127-18-4**

| | | |
|---|---|---|
| Concentration | ug/m3: | 8.00E+00 |
| RfDo: | | |
| RfCi: | | 4.00E-02 |
| SFO: | | |
| IUR: | | 2.60E-07 |
| Mutagen: | | |
| VOC: | | Y |

**Calculated Hazard Quotient/Risk**

| Non-Cancer Adult | | Cancer | |
|---|---|---|---|
| Ingestion: | | Ingestion: | |
| Dermal: | | Dermal: | |
| Inhalation: | 1.20E-04 | Inhalation: | 1.71E-11 |
| **Total:** | **1.20E-04** | **Total:** | **1.71E-11** |

*% Contribution to Media Risk* 4.89% 0.26%

**Analyte: Toluene**
**CAS: 108-88-3**

| | | |
|---|---|---|
| Concentration | ug/m3: | 1.87E+01 |
| RfDo: | | |
| RfCi: | | 5.00E+00 |
| SFO: | | |
| IUR: | | |
| Mutagen: | | |
| VOC: | | Y |

**Calculated Hazard Quotient/Risk**

| Non-Cancer Adult | | Cancer | |
|---|---|---|---|
| Ingestion: | | Ingestion: | |
| Dermal: | | Dermal: | |
| Inhalation: | 3.46E-06 | Inhalation: | |
| **Total:** | **3.46E-06** | **Total:** | **0.00E+00** |

*% Contribution to Media Risk* 0.14% 0.00%

Risk Based Performance Criteria

| Default Hazard Index | Default Risk Individual Chemical | Default Cumulative Risk-All Chemicals |
|---|---|---|
| 1 | 1.00E-06 | 1.00E-05 |

# Air

**Analyte: Trimethylbenzene, 1,2,4-**
**CAS: 95-63-6**

| | |
|---|---|
| Concentration ug/m3: | 4.13E+01 |
| RfDo: | |
| RfCi: | 7.00E-02 |
| SFO: | |
| IUR: | |
| Mutagen: | |
| VOC: | Y |

**Calculated Hazard Quotient/Risk**

| Non-Cancer Adult | | Cancer | |
|---|---|---|---|
| Ingestion: | | Ingestion: | |
| Dermal: | | Dermal: | |
| Inhalation: | 4.27E-04 | Inhalation: | |
| **Total:** | **4.27E-04** | **Total:** | **0.00E+00** |

*% Contribution to Media Risk* 17.37% 0.00%

**Analyte: Trimethylbenzene, 1,3,5-**
**CAS: 108-67-8**

| | |
|---|---|
| Concentration ug/m3: | 1.93E+01 |
| RfDo: | |
| RfCi: | 1.00E-02 |
| SFO: | |
| IUR: | |
| Mutagen: | |
| VOC: | Y |

**Calculated Hazard Quotient/Risk**

| Non-Cancer Adult | | Cancer | |
|---|---|---|---|
| Ingestion: | | Ingestion: | |
| Dermal: | | Dermal: | |
| Inhalation: | 1.38E-03 | Inhalation: | |
| **Total:** | **1.38E-03** | **Total:** | **0.00E+00** |

*% Contribution to Media Risk* 56.22% 0.00%

**Analyte: Xylenes**
**CAS: 1330-20-7**

| | |
|---|---|
| Concentration ug/m3: | 1.02E+02 |
| RfDo: | |
| RfCi: | 4.00E-01 |
| SFO: | |
| IUR: | |
| Mutagen: | |
| VOC: | Y |

**Calculated Hazard Quotient/Risk**

| Non-Cancer Adult | | Cancer | |
|---|---|---|---|
| Ingestion: | | Ingestion: | |
| Dermal: | | Dermal: | |
| Inhalation: | 2.07E-04 | Inhalation: | |
| **Total:** | **2.07E-04** | **Total:** | **0.00E+00** |

*% Contribution to Media Risk* 8.43% 0.00%

Risk Based Performance Criteria

| Default Hazard Index | Default Risk Individual Chemical | Default Cumulative Risk-All Chemicals |
|---|---|---|
| 1 | 1.00E-06 | 1.00E-05 |

# Air

## Total Calculated Hazard Index/Risk For Media: Air

| Non-Cancer Adult | |
|---|---|
| Ingestion: | 0.00E+00 |
| Dermal: | 0.00E+00 |
| Inhalation: | 2.46E-03 |
| **Total:** | **2.46E-03** |

| Cancer | |
|---|---|
| Ingestion: | 0.00E+00 |
| Dermal: | 0.00E+00 |
| Inhalation: | 6.56E-09 |
| **Total:** | **6.56E-09** |

Risk Based Performance Criteria

| Default Hazard Index | Default Risk Individual Chemical | Default Cumulative Risk-All Chemicals |
|---|---|---|
| 1 | 1.00E-06 | 1.00E-05 |

# Total Hazard Index/Risk for All Media

## Non-Cancer Adult

| | |
|---|---|
| Ingestion: | 0.00E+00 |
| Dermal: | 0.00E+00 |
| Inhalation: | 2.46E-03 |
| **Total:** | **2.46E-03** |

***does not exceed hazard index***

## Cancer

| | |
|---|---|
| Ingestion: | 0.00E+00 |
| Dermal: | 0.00E+00 |
| Inhalation: | 6.56E-09 |
| **Total:** | **6.56E-09** |

***does not exceed cumulative risk***

Risk Based Performance Criteria

| Default Hazard Index | Default Risk Individual Chemical | Default Cumulative Risk-All Chemicals |
|---|---|---|
| 1 | 1.00E-06 | 1.00E-05 |

# Construction Exposure Default Values

| Symbol | Description | Value | Units |
|---|---|---|---|
| A | Construction Worker Soil Inhalation Dispersion Constant - Virginia DEQ | 14.0111 | (unitless) |
| AFcw | Construction Worker Soil Adherence Factor | 0.3 | (mg/cm2) |
| As | Areal extent of the site or contamination | 0.5 | (acres) |
| ATcw | Construction Worker Averaging Time: 365 x LT | 25550 | (days) |
| ATcw-a | Construction Worker Averaging Time: EWcw x 7 x EDcw | 350 | (days) |
| B | Construction Worker Soil Inhalation Dispersion Constant - Virginia DEQ | 19.6154 | (unitless) |
| BWcw | Construction Worker Body Weight | 80 | (kg) |
| C | Construction Worker Soil Inhalation Dispersion Constant - Virginia DEQ | 225.3397 | (unitless) |
| DWcw | Construction Worker Days Worked | 5 | (days/week) |
| EDcw | Construction Worker Exposure Duration | 1 | (yrs) |
| EFcw | Construction Worker Exposure Frequency | 250 | (days/yrs) |
| EFcw-vrp | Construction Worker Soil Exposure Frequency - VRP ONLY - Virginia DEQ | 125 | (days/yr) |
| ETcw | Construction Worker Exposure Time | 8 | (hrs/day) |
| EWcw | Construction Worker Weeks Worked | 50 | (weeks/yr) |
| F(x) | Function Dependent on 0.886 × (Ut/Um) | 0.194 | (unitless) |
| Fd | Dispersion Correction Factor | 0.185 | (unitless) |
| IRcw | Construction Worker Soil Ingestion Rate | 330 | (mg/day) |
| n | Total soil porosity: 1-(ρb/ρs) | 0.433962264150943 | (unitless) |
| PEFsc | Particulate Emission Factor Subchronic - Virginia DEQ calculated | 3339236953.22437 | (m3/kg) |
| RfCsc | Subchronic Inhalation Reference Concentration | | (mg/m3) |
| RfDosc | Subchronic Oral Reference Dose | | (mg/kg-day) |
| SAcw | Construction Worker Surface Area | 3527 | (cm2/day) |
| Tc | Total time over which construction occurs: EDcw*EWcw*7days/wk*24hrs/day*3600s/hr | 30240000 | (s) |

Risk Based Performance Criteria

| Default Hazard Index | Default Risk Individual Chemical | Default Cumulative Risk-All Chemicals |
|---|---|---|
| 1 | 1.00E-06 | 1.00E-05 |

| | | | |
|---|---|---|---|
| TR-ACH | Trench Air Changes per Hour - Virginia DEQ | 2 | (h)-1 |
| TR-ACvad | Trench Advection Coefficient Groundwater greater than 15ft - Virginia DEQ | 0.25 | (cm3/cm3) |
| TR-D-dir | Trench Depth - groundwater less Than 15ft - Virginia DEQ | 2.44 | (m) |
| TR-D-ind | Trench Depth - groundwater greater than 15ft - Virginia DEQ | 4.57 | (m) |
| TR-Dsg | Trench - Depth to soil gas vapor source - Virginia DEQ | 1 | (cm) |
| TR-EFcw | Trench Construction Worker Exposure Frequency - Virginia DEQ | 125 | (days/yr) |
| TR-ETcw | Trench Construction Worker Exposure Time - Virginia DEQ | 4 | (hrs/day) |
| TR-EVcw | Trench Construction Worker Events - Virginia DEQ | 1 | (events/day) |
| TR-F | Trench Fraction of floor through which contaminant can enter - Virginia DEQ | 1 | (unitless) |
| TR-HV | Trench Thickness of Vadose Zone - groundwater greater than 15 ft - Virginia DEQ | 30 | (cm) |
| TR-IRcw | Trench Construction Worker Groundwater Ingestion Rate - Virginia DEQ | 0.02 | (L/day) |
| TR-KGH2O | Trench Gas-phase mass transfer coefficient of water vapor at 25deg C - Virginia DEQ | 0.833 | (cm/s) |
| TR-KLO2 | Trench Liquid-phase mass transfer coefficient of oxygen at 25deg C - Virginia DEQ | 0.002 | (cm/s) |
| TR-L | Trench Length - Virginia DEQ | 2.44 | (m) |
| TR-Lgw | Trench Depth to groundwater - Virginia DEQ | 488 | (cm) |
| TR-MWH2O | Trench Molecular Weight of Water - Virginia DEQ | 18 | (unitless) |
| TR-MWO2 | Trench Molecular Weight of Oxygen - Virginia DEQ | 32 | (unitless) |
| TR-Porvad | Trench Porosity in Vadose Zone - groundwater greater than 15ft - Virginia DEQ | 0.44 | (cm3/cm3) |
| TR-R | Trench Ideal Gas Constant - Virginia DEQ | 0.000082 | (atm-m3/mol-K) |
| TR-Temp-F | Trench Temperature Fahrenheit - Virginia DEQ | 77 | (F) |
| TR-Temp-K | Trench Temperature - Virginia DEQ | 298 | (K) |
| TR-W | Trench Width - Virginia DEQ | 0.91 | (m) |
| TR-W/D | Trench Width to Depth Ratio - Virginia DEQ | 0.38 | (unitless) |
| Um | Mean Annual Wind Speed | 4.69 | (m/s) |
| Ut | Equivalent Threshold Value of Wind Speed at 7m | 11.32 | (m/s) |
| V | V Fraction of Vegetative Cover | 0.5 | (unitless) |

Risk Based Performance Criteria

| Default Hazard Index | Default Risk Individual Chemical | Default Cumulative Risk-All Chemicals |
|---|---|---|
| 1 | 1.00E-06 | 1.00E-05 |

| | | | |
|---|---|---|---|
| Θa | Air filled soil porosity: n-Θw | 0.133962264150943 | (unitless) |
| Θw | Water filled soil porosity | 0.3 | (unitless) |
| ρb | Dry soil bulk density | 1.5 | (kg/L) |
| ρs | Soil particle density | 2.65 | (kg/L) |

END OF REPORT

# APPENDIX J

## LeadSpread Model

# CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

**Click here for ABBREVIATED INSTRUCTIONS FOR LEADSPREAD 8**

| INPUT | |
|---|---|
| MEDIUM | LEVEL |
| Lead in Soil/Dust (ug/g) | 33.0 |
| Respirable Dust (ug/$m^3$) | 1.5 |

| OUTPUT | | | | | | |
|---|---|---|---|---|---|---|
| Percentile Estimate of Blood Pb (ug/dl) | | | | | | PRG-90 |
| | 50th | 90th | 95th | 98th | 99th | (ug/g) |
| BLOOD Pb, CHILD | 0.2 | 0.4 | 0.5 | 0.6 | 0.7 | 77 |
| BLOOD Pb, PICA CHILD | 0.5 | 0.9 | 1.0 | 1.2 | 1.4 | 39 |

| EXPOSURE PARAMETERS | | |
|---|---|---|
| | units | children |
| Days per week | days/wk | 7 |
| Geometric Standard Deviation | | 1.6 |
| Blood lead level of concern (ug/dl) | | 1 |
| Skin area, residential | $cm^2$ | 2900 |
| Soil adherence | $ug/cm^2$ | 200 |
| Dermal uptake constant | (ug/dl)/(ug/day | 0.0001 |
| Soil ingestion | mg/day | 100 |
| Soil ingestion, pica | mg/day | 200 |
| Ingestion constant | (ug/dl)/(ug/day | 0.16 |
| Bioavailability | unitless | 0.44 |
| Breathing rate | $m^3$/day | 6.8 |
| Inhalation constant | (ug/dl)/(ug/day | 0.192 |

**Click here for REFERENCES**

| PATHWAYS | | | | | | |
|---|---|---|---|---|---|---|
| **CHILDREN** | typical | | | with pica | | |
| | Pathway contribution | | | Pathway contribution | | |
| Pathway | PEF | ug/dl | percent | PEF | ug/dl | percent |
| Soil Contact | 5.8E-5 | 0.00 | 1% | | 0.00 | 0% |
| Soil Ingestion | 7.0E-3 | 0.23 | 99% | 1.4E-2 | 0.46 | 100% |
| Inhalation | 2.0E-6 | 0.00 | 0% | | 0.00 | 0% |

# MODIFIED VERSION OF USEPA ADULT LEAD MODEL

## CALCULATIONS OF BLOOD LEAD CONCENTRATIONS (PbBs) AND PRELMIINARY REMEDIATION GOAL (PRG)

**EDIT RED CELL**

| Variable | Description of Variable | Units | |
|---|---|---|---|
| PbS | Soil lead concentration | ug/g or ppm | 33 |
| $R_{fetal/maternal}$ | Fetal/maternal PbB ratio | -- | 0.9 |
| BKSF | Biokinetic Slope Factor | ug/dL per ug/day | 0.4 |
| $GSD_i$ | Geometric standard deviation PbB | -- | 1.8 |
| $PbB_0$ | Baseline PbB | ug/dL | 0.0 |
| $IR_S$ | Soil ingestion rate (including soil-derived indoor dust) | g/day | 0.050 |
| $AF_{S, D}$ | Absorption fraction (same for soil and dust) | -- | 0.12 |
| $EF_{S, D}$ | Exposure frequency (same for soil and dust) | days/yr | 250 |
| $AT_{S, D}$ | Averaging time (same for soil and dust) | days/yr | 365 |
| **$PbB_{adult}$** | **PbB of adult worker, geometric mean** | **ug/dL** | **0.1** |
| $PbB_{fetal, 0.90}$ | 90th percentile PbB among fetuses of adult workers | ug/dL | 0.1 |
| $PbB_t$ | Target PbB level of concern (e.g., 10 ug/dL) | ug/dL | **1.0** |
| **$P(PbB_{fetal} > PbB_t)$** | **Probability that fetal PbB > $PbB_t$, assuming lognormal distributio** | **%** | **0.0%** |

**PRG90** **318**

**Click here for REFERENCES**

# CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

**Click here for ABBREVIATED INSTRUCTIONS FOR LEADSPREAD 8**

| INPUT | |
|---|---|
| MEDIUM | LEVEL |
| Lead in Soil/Dust (ug/g) | 10.5 |
| Respirable Dust (ug/$m^3$) | 1.5 |

| OUTPUT | | | | | | |
|---|---|---|---|---|---|---|
| Percentile Estimate of Blood Pb (ug/dl) | | | | | | PRG-90 |
| | 50th | 90th | 95th | 98th | 99th | (ug/g) |
| BLOOD Pb, CHILD | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 77 |
| BLOOD Pb, PICA CHILD | 0.1 | 0.3 | 0.3 | 0.4 | 0.4 | 39 |

| EXPOSURE PARAMETERS | | |
|---|---|---|
| | units | children |
| Days per week | days/wk | 7 |
| Geometric Standard Deviation | | 1.6 |
| Blood lead level of concern (ug/dl) | | 1 |
| Skin area, residential | $cm^2$ | 2900 |
| Soil adherence | $ug/cm^2$ | 200 |
| Dermal uptake constant | (ug/dl)/(ug/day | 0.0001 |
| Soil ingestion | mg/day | 100 |
| Soil ingestion, pica | mg/day | 200 |
| Ingestion constant | (ug/dl)/(ug/day | 0.16 |
| Bioavailability | unitless | 0.44 |
| Breathing rate | $m^3$/day | 6.8 |
| Inhalation constant | (ug/dl)/(ug/day | 0.192 |

**Click here for REFERENCES**

| PATHWAYS | | | | | | |
|---|---|---|---|---|---|---|
| **CHILDREN** | typical | | | with pica | | |
| | Pathway contribution | | | Pathway contribution | | |
| Pathway | PEF | ug/dl | percent | PEF | ug/dl | percent |
| Soil Contact | 5.8E-5 | 0.00 | 1% | | 0.00 | 0% |
| Soil Ingestion | 7.0E-3 | 0.07 | 99% | 1.4E-2 | 0.15 | 100% |
| Inhalation | 2.0E-6 | 0.00 | 0% | | 0.00 | 0% |

# MODIFIED VERSION OF USEPA ADULT LEAD MODEL

## CALCULATIONS OF BLOOD LEAD CONCENTRATIONS (PbBs) AND PRELMIINARY REMEDIATION GOAL (PRG)

**EDIT RED CELL**

| Variable | Description of Variable | Units | |
|---|---|---|---|
| PbS | Soil lead concentration | ug/g or ppm | 10.54 |
| $R_{fetal/maternal}$ | Fetal/maternal PbB ratio | -- | 0.9 |
| BKSF | Biokinetic Slope Factor | ug/dL per ug/day | 0.4 |
| $GSD_i$ | Geometric standard deviation PbB | -- | 1.8 |
| $PbB_0$ | Baseline PbB | ug/dL | 0.0 |
| $IR_S$ | Soil ingestion rate (including soil-derived indoor dust) | g/day | 0.050 |
| $AF_{S, D}$ | Absorption fraction (same for soil and dust) | -- | 0.12 |
| $EF_{S, D}$ | Exposure frequency (same for soil and dust) | days/yr | 250 |
| $AT_{S, D}$ | Averaging time (same for soil and dust) | days/yr | 365 |
| **$PbB_{adult}$** | **PbB of adult worker, geometric mean** | **ug/dL** | **0.0** |
| $PbB_{fetal, 0.90}$ | 90th percentile PbB among fetuses of adult workers | ug/dL | 0.0 |
| $PbB_t$ | Target PbB level of concern (e.g., 10 ug/dL) | ug/dL | **1.0** |
| **$P(PbB_{fetal} > PbB_t)$** | **Probability that fetal PbB > $PbB_t$, assuming lognormal distributio** | **%** | **0.0%** |

**PRG90** **318**

**Click here for REFERENCES**

# Methane Gas Leak Test Report

MEARNS CONSULTING LLC
ENVIRONMENTAL CONSULTANTS
RISK ASSESSORS

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Cell 310.403.1921
Tel 310.396.9606 Fax310.396.6878
Mearns@MearnsConsulting.com
www.MearnsConsulting.com

April 13, 2020

***via email***

Mr. Kevin Laney
Vice President of Business Development
Signal Hill Petroleum, Inc.
2633 Cherry Avenue
Signal Hill, California 90755

Messrs. Tom Lee and John Clement
Venture Point, Inc.
2865 MacArthur Court
Newport Beach, California 92660

RE: **Methane Gas Leak Test Report**
**950 East 33rd Street and**
**3177 California Avenue, Signal Hill, California 90755**

Dear Messrs. Laney, Lee and Clement:

I am pleased to present this Methane Gas Leak Test Report on five previously abandoned oil wells located at 950 East 33rd Street and 3177 California Avenue in Signal Hill, California 90755. Three of these oil wells were methane gas leak tested on March 26, 2020 in the presence of Mr. Jackson Ethier the City of Signal Hill Oil Services Coordinator. Methane gas leak tests of the two previously abandoned oil wells located on the 950 East 33rd Street portion of the project were not required pursuant to the City of Signal Hill Oil and Gas Code §16.24.010(B).

The methane gas leak tests were performed in accordance with the City of Signal Hill Oil and Gas Code §16.24.040 and the City of Signal Hill Project Development Guide (February 28, 2019).

**CalGEM Oil Well Files**
According to the State of California Department of Conservation, Division of Geologic Energy Management (CalGEM), formerly the Division of Oil, Gas and Geothermal Resources (DOGGR), oil wells files, these oil wells were abandoned in either 2007, 2004 or 1971. These oil wells are within Section 19, Township 4S, Range 12West, S.B. B & M., Long Beach Field, Los Angeles County. The oil well files are attached.

***950 East 33rd Street***
*Chevron U.S.A. Inc. "Field" 24, A.P.I. No. 037-11549* – the total depth of this oil well is 5050'. The April 18, 2007 CalGEM (formerly DOGGR) Report on Operations reports the 10 ¾" casing was cemented at 20'; the 5 ½" casing was cemented at 5050', cut and pulled from 727' and 1845', perforated at 4242' water shut-off, perforated at 4255'-4300', and at intervals from 4470' to 4825'. Junk below 4100'. Cement plugs are at 3892'-3864', 3730'-3600', 1845'-1591', 740'-588' and 100'-6'. The operations were performed in 2007 for the purpose of reabandonment to current CalGEM specifications as the Target Store onsite was expanded. The location of "Field" 24 was recorded as 370' south along centerline of California Avenue from the centerline of 33rd Street and 260' westerly at 90°. The location of "Field" 24 is mapped in the SubSurface Surveys February 6, 2020 geophysical report and is approximately 5' south of the southern wall of the Target Store in the parking lot with below ground horizontal vent

piping connected to a vertical vent riser attached to the southern wall of the Target Store terminating on top of the Target Store roof (Figure 2).

*Chevron U.S.A. Inc. "Field" 18, A.P.I. No. 037-11543* – the total depth of this oil well (present hole) is 7483'. The April 12, 2007 CalGEM (formerly DOGGR) Report on Operations reports the 13" casing was cemented at 788'; the 8 ¼" casing was cemented at 4230' water shut-off, shot and pulled from 764'; the 5 ¾" casing was cemented at 6210' water shut-off, cut and pulled from 4730' and 4870', perforated at intervals 4230'-4830', shot 4051', 4100' and 4170', pulled from 4051'; 4 ¾" casing was landed 6120'-6366', perforated at 6120'-6366'. Junk below 4051' and 4828'. Cement plugs are at 7483'-6828', 6500'-6106', 4848'-4776', 4560'-4385', 4375'-41285', 4048'-4021' and 627'-5'. The operations were performed in 2007 for the purpose of reabandonment to current CalGEM specifications as the Target Store onsite was expanded. CalGEM recommended not building over this well as it could not be reabandoned in 2007 to meet current CalGEM specifications. The location of "Field" 18 was recorded as 160' south of northern property line and 660' east from intersection centerline of Atlantic Avenue and Crest Drive, distance parallel and at right angles to centerline streets. The location of "Field" 18 is mapped in the SubSurface Surveys February 6, 2020 geophysical report and is in the parking lot east of the Target Store with below ground horizontal vent piping connected to a vertical vent riser in a landscaped parking island (Figure 2).

***3177 California Avenue***

*AW-1, A.P.I. No. 037-00338* – the total depth of this oil well is 5100'. The May 13, 2004 CalGEM (formerly DOGGR) Report on Operations reports the 10 ¾" casing was cemented at 100'; the 7" casing was cemented at 5100', perforated at intervals 4260'-5001', holes 24' and 4225'. Junk below 4345'. Cement plugs are at 5100'-5090', 4343'-4090', 1920'-1680' and 100'-0'. The operations were performed in 2007 for the purpose of reabandonment. In 1976 "Field" 37 was converted to an injection well (or water flood), AW-1. The location of AW-1 was recorded as 1225' east along section line and 890' south at right angles to said line from northwest corner of section 19, T.4S, R.12W, S.B. B&M. The location of AW-1 is mapped in the SubSurface Surveys February 6, 2020 geophysical report and depicted on Figure 2.

*"Field" 36, A.P.I. No. 037-00410* – the total depth of this well is 5160'. The September 9, 1971 CalGEM (formerly DOGGR) History of Oil or Gas Well reports the well never produced and served as a water injector. The CalGEM Special Report on Operations Witnessed (July 29, 1971) reports the 13 ⅜" x 10 ¾" casing string was cemented at 2012'; the 2 ⅞" casing was cemented at 5146', perforated 4590'-4738', bridge plug 4749'; plugged with cement 2500' +/- to surface; the 2 ⅞" casing was cemented at 5126', cut and pulled from 4210', 4432', 4560' and 4749', perforated at 4240'-4415', plugged with cement 4240 +/- to surface; the 2 ⅞" casing was cemented at 5133', perforated at 4780'-5060'. Junk 1 ¼" tubing 4793'-4928', plugged with cement 4780' +/- to surface; the 2 ⅞" casing was cemented at 4771', perforated at 4450'-4556', plugged with cement 1038' to surface. The location of "Field" 36 was recorded as 500' southerly along property line and 370' westerly at right angles to said line from the northwesterly corner of the property which also is 500' southerly along the centerline of California Avenue from the centerline of 33rd Street and 400' westerly at right angles. The location of "Field" 36 is mapped in the SubSurface Surveys February 6, 2020 geophysical report and depicted on Figure 2.

*A-19, A.P.I. No. 037-11552* – the total depth of this oil well is 4830'. The November 16, 2004 CalGEM (formerly DOGGR) Report on Operations reports the 11 ¾" casing was cemented at63', the 5 ½" casing was landed at 4805', cut and pulled from 805' and 4227', perforated 4190' water shut-off, perforated at intervals 4236'-4805', holes 3872', 4037' and 4067', cavity shot at 1880'. Junk below 4058'. Cement plugs are at 4058'-3235', 1890'-1661' and 810'-5'. The operations were performed in 2004 for the purpose of reabandonment. This well originally was "Field" 27 (1953) and produced. The location of A-19 was recorded as 500' southerly and 300' westerly from the centerline of 33rd Street and California Avenue. The location of A-19 is mapped in the SubSurface Surveys February 6, 2020 geophysical report and depicted on Figure 2.

**Methane Gas Leak Test**
The required leak test of the surface plugs was performed on March 26, 2020 in the presence of Jackson Ethier (City of Signal Hill, Oil Services Coordinator). The methane gas leak test consisted of testing the interior and exterior of the exposed casings for methane using a RKI GX2012 methane detection meter (serial number 489020162) calibrated on March 10, 2020 (Certificate of Calibration is attached) pursuant to the City of Signal Hill Oil Code §16.24.040 and the *CalGEM Construction-Site Review Program, Conducting Gas Tests on Wells* guidelines.

1. A.P.I. No. 037-00338, AW-1 – 7" OD casing, 200ppmv interior and 400ppmv exterior; 10 ¾" OD casing, 400ppmv interior and 400ppmv exterior. The top of the casing was approximately 16' 3" below surface elevation.
2. A.P.I. No. 037-00410, "Field" 36 – 14" OD casing 300ppmv interior and 300ppmv exterior; 16" OD casing, 300ppmv interior and 300ppmv exterior. The top of the casing was approximately 14' 2" below surface elevation.
3. A.P.I. No. 037-11552, A-19 – 5 ⅞" OD casing 200ppmv interior and 200ppmv exterior; 11 ¾" OD casing 200ppmv interior and 300ppmv exterior. The top of the casing was approximately 14' 5" below surface elevation.

The visible surface plugs and casings were found not to be leaking methane in concentrations exceeding the threshold of 500ppmv on March 26, 2020.

The competency of the surface plugs was tested as development is proposed at this property address.

**California Code of Regulations, Title 14, Division 2, §1723.5 Surface Plugging**
1723.5. Surface Plugging.
"The hole and all annuli shall be plugged at the surface with at least a 25-foot cement plug. The district deputy may require that inner strings of uncemented casing be removed to at least the base of the surface plug prior to placement of the plug. All well casing shall be cut off at least 5 feet but no more than 10 feet below the surface of the ground. The district deputy may approve a different cut-off depth, as conditions warrant, including but not limited to excavation or grading operations for construction purposes. As defined in Section 1760(j), a steel plate at least as thick as the outer well casing shall be welded around the circumference of the casing at the top of the casing, after Division approval of the surface plug. The steel plate shall show the well's identification, indicated by the last five digits of the API well number."

**Conclusions**
The top of the casings of the three oil wells that were methane gas leak tested on March 26, 2020 are not in compliance with CCR §1723.5; however they will be in compliance once between 6-feet to 8-feet of fill is removed from the property pursuant to the final elevation plan.

Please do not hesitate to contact me should you have any questions.

Sincerely,

x Susan Mearns

Susan L. Mearns, Ph.D.

**Mearns Consulting LLC**

ENCLOSURES: Site Location
Site Map
Final Elevation Plan
CALGEM Oil Well Files
Photos
Certificate of Calibration

# SITE LOCATION




EXPLANATION

Previously abandoned oil wells

A12, A17, AW-2, and A22 are operating oil wells

N

0 500 feet

Base map: Google Earth Pro, 2019

**Figure 1: Site Location Map**
950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC

# SITE MAP




EXPLANATION

Previously abandoned oil wells

A12, A17, AW-2, and A22 are operating oil wells

N

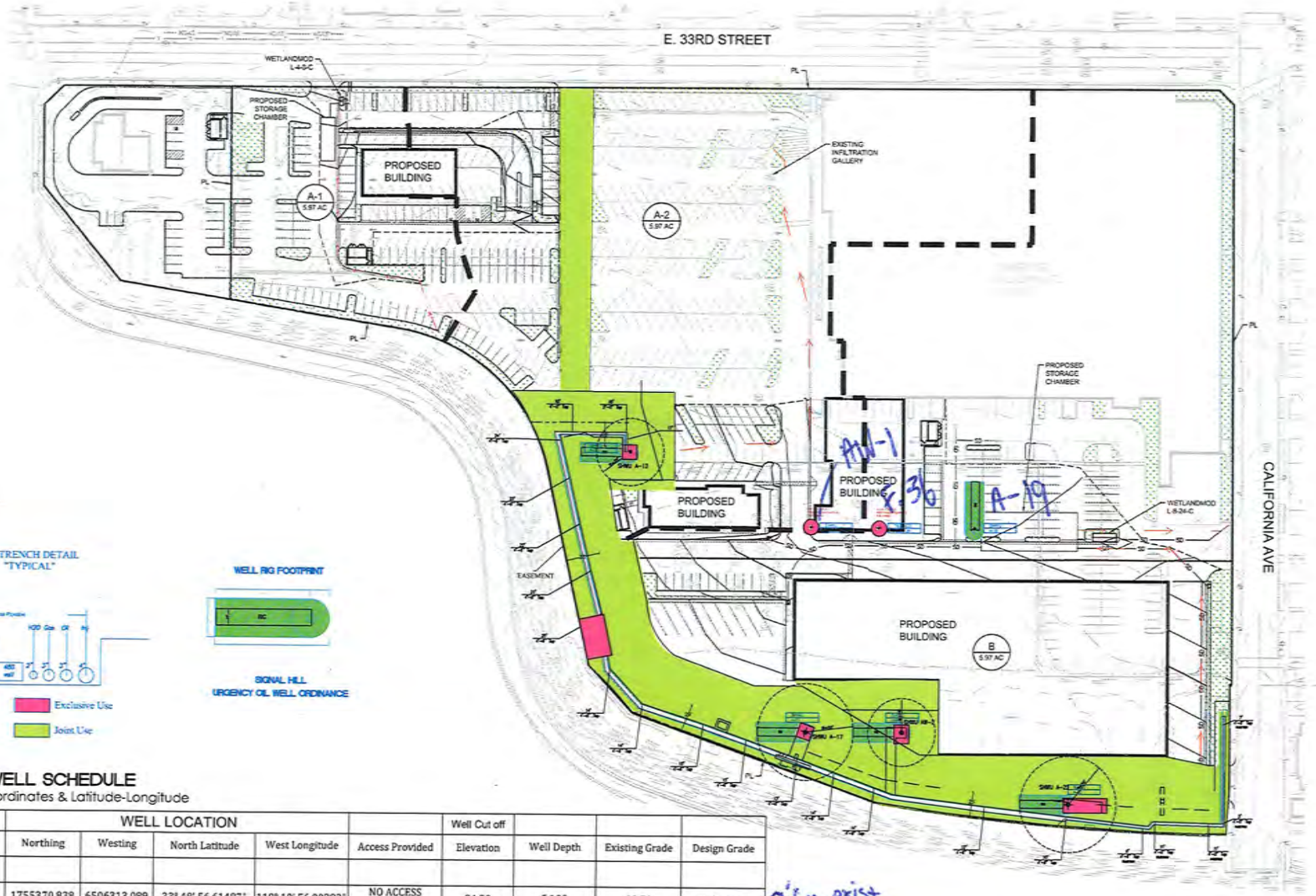
0 200 feet

Base map: Google Earth Pro, 2019

**Figure 2: Site Map**
950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC

# Final Elevation Plan




## SIGNAL FIELDS NORTH WELL SCHEDULE

California Zone 5 NAD83 Grid Coordinates & Latitude-Longitude

| | | | WELL LOCATION | | | | | Well Cut off | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Operator | Well Name | API No. | Northing | Westing | North Latitude | West Longitude | Access Provided | Elevation | Well Depth | Existing Grade | Design Grade |
| Abandoned Wells | | | | | | | | | | | |
| SHWU | AW-1 | 037-00338 | 1755370.838 | 6506313.089 | 33° 48' 56.61487" | 118° 10' 56.00282" | NO ACCESS PROVIDED | 84.30 | 5,100 | 93.70 | Unknown |
| Texaco | Field 36 | 037-00410 | 1755370.514 | 6506383.495 | 33° 48' 56.61292" | 118° 10' 55.16842" | NO ACCESS PROVIDED | 79.72 | 5,160 | 93.00 | Unknown |
| SHWU | A-19 | 037-11552 | 1755370.518 | 6506483.469 | 33° 48' 56.61475" | 118° 10' 53.98362" | ACCESS PROVIDED | 88.31 | 4,380 | 93.41 | Unknown |
| | | | | | | | | | | | |
| Operating Wells | | | | | | | | | | | |
| SHWU | A-12 | 037-11547 | 1755450.550 | 6506126.990 | 33° 48' 57.40" | 118° 10' 58.21" | ACCESS PROVIDED | | | | |
| SHWU | AW-2 | 037-11555 | 1755159.900 | 6506408.300 | 33° 48' 54.53" | 118° 10' 54.87" | ACCESS PROVIDED | | | | |
| SHWU | A-17 | 037-11557 | 1755161.090 | 6506311.260 | 33° 48' 54.54" | 118° 10' 56.02" | ACCESS PROVIDED | | | | |
| SHWU | A-22 | 037-11548 | 1755087.780 | 6506584.520 | 33° 48' 53.79" | 118° 10' 52.78" | ACCESS PROVIDED | | | | |

9' from exist
14' from exist
5' from exist

LEGEND
DMA BOUNDARY
FLOW PATH LENGTH

SCALE: 1" = 50'

ADJ. ALL to 79.00 T/O/Well

WARE MALCOMB
CIVIL ENGINEERING & SURVEYING
990 south broadway
suite 230
denver, co 80209
p 303.561.3333
waremalcomb.com

No. 72588 CIVIL STATE OF CALIFORNIA
Jan 10, 2020
FOR AND ON BEHALF OF WARE MALCOMB

VENTURE POINT

PRELIMINARY LID PLAN

| NO | DATE | REMARKS |
|---|---|---|

| | |
|---|---|
| JOB NO.: | IRV16-0211 |
| PA / PM: | BS |
| DRAWN BY: | JP |
| DATE: | 12/18/2019 |
| PLOT DATE: | |

SHEET LID-1
Sheet 7 of 8

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY AND COPYRIGHT OF WARE MALCOMB AND SHALL NOT BE USED ON ANY OTHER WORK EXCEPT BY AGREEMENT WITH WARE MALCOMB. VERIFIED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS AND SHALL BE VERIFIED ON THE JOB SITE. ANY DISCREPANCY SHALL BE BROUGHT TO THE NOTICE OF WARE MALCOMB PRIOR TO THE COMMENCEMENT OF ANY

# CalGEM Oil Well Files
# API 037-11549
# “Field” 24

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

## DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# REPORT OF WELL PLUGGING AND ABANDONMENT

Cypress, California
May 4, 2007

Target Dept. Stores
c/o M.E. Wright
16531 Bolsa Chica St. #301
Huntington Beach, CA 92649

Your report of the plugging and **reabandonment** of well **Chevron U.S.A. Inc./"Field" 24**, A.P.I. No. **037-11549**, Section **19**, T. **4**S, R. **12**W, S.B. B & M., **Long Beach** Field, **Los Angeles** County, dated **02-21-07**, received **04-16-07**, has been examined in conjunction with operations witnessed and records filed in this office.

We have determined that all of the requirements of this Division have been fulfilled relative to plugging and **reabandonment** of the well, removal of well equipment and junk, and the filing of well records.

**NOTE:**

1. Surface plugging completed on **03-30-07**.
2. Surface inspection made and approved on **05-02-07**.

Hal Bopp
*State Oil and Gas Supervisor*

**By:** _____
**For:** R. K. Baker, *Deputy Supervisor*

INDIVIDUAL BOND

cc: Update
Los Angeles County Assessor
Los Angeles County Fire Prevention Bureau
Long Beach Department of Building & Planning
Department of Oil Properties
Chevron U.S.A. Inc.

KMC:dw

DIVIS OF OIL, GAS, AND GEOTHERMAL RE IRCES

# CHECK LIST – RECORDS RECEIVED AND WELL STATUS

| | | |
|---|---|---|
| Company: | **Target Dept. Stores** | Well: **Chevron U.S.A. Inc./"Fields" 24** |
| API#: | **037-11549** | Sec. **19**, T. **4S**, R.**12W**. S. B. B. & M. |
| County: | **Los Angeles** | Field: **Long Beach** |

| RECORDS RECEIVED | DATE |
|---|---|
| Well Summary (Form OG100) | |
| History (Form OG103) | **4/18/07** |
| Core Record (Form OG101) | |
| Directional Survey | |
| Sidewall Samples | |
| Date final records received. | |
| Electric Logs: | |
| Other: | |

| STATUS | | | |
|---|---|---|---|
| Producing | ☐ | Drilling | ☐ |
| Abandoned | ☐ | Idle | ☐ |
| Reabandoned | ☐ | Other | ☐ |

| WELL TYPE | | | |
|---|---|---|---|
| Oil | ☐ | Waterflood | ☐ |
| Gas | ☐ | Water Disposal | ☐ |
| Water Source | ☐ | Cyclic Steam | ☐ |
| Observation | ☐ | Steam Flood | ☐ |
| Exploratory | ☐ | Fire Flood | ☐ |
| Dry Hole | ☐ | Other | ☐ |

EFFECTIVE DATE:

REMARKS:

| | ENGINEERS CHECK LIST |
|---|---|
| ☐ | Summary, History & Core Record (Dupl.) |
| ☐ | Electric Log |
| ☐ | Operator's Name |
| ☐ | Signature |
| ☐ | Well Designation |
| ☐ | Location |
| ☐ | Elevation |
| ☐ | Notices |
| ☐ | "T" Reports |
| ☐ | Casing Record |
| ☐ | Plugs |
| ☐ | Directional Survey |
| ☐ | Production/Injection (FAP Codes: ) |
| ☐ | E Well on Prod., enter EDP |
| ☐ | Surface Inspection Required |
| ☐ | Surface inspection Waived (Island) |
| ☐ | Well site restoration deferred (common cellar) |
| ☐ | Final Letter Required AB: ☐ REAB: ☐ |
| ☐ | Other: |

| CLERICAL CHECK LIST |
|---|
| Location change |
| Elevation change |
| Form OGD121 |
| Form OGD150b (Release of Bond) |
| Duplicate logs to archives |
| Notice of Records Due |
| EDP |
| District Date Base |
| Final Letter (OG159) |
| Update Center |
| |
| |
| |
| **FIELD CHECK LIST** |
| Date Surface Inspection Completed: |
| Other: |
| |
| |
| |

| RECORDS NOT APPROVED | RECORDS APPROVED |
|---|---|
| *(Reason:)* | *(Signature)* |
| | RELEASE BOND |
| | Date Eligible |
| | *(Use date last needed records received.)* |
| | MAP AND MAP BOOK |
| | |

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# HISTORY OF OIL OR GAS WELL

Operator Target Dept. Stores. Field LONG BEACH County LOS ANGELES

Well Target-Chevron-Texaco "FIELDS" 24 Sec. 19 T. 4S R. 12 S.B. B.&M.

A.P.I. No. 037-11549 Name M. E. WRIGHT Title CONSULTANT
(Person submitting report) (President, Secretary, or Agent)

Date 2-21-07
(Month, day, year)

Signature M. E. Wright

Address 3350 - 6th St, CC 3425, Minneapolis, MN 55402 Telephone Number 612-204-0214

History must be complete in all detail. Use this form to report all operations during drilling and testing of the well or during redrilling or altering the casing, plugging, or abandonment, with the dates thereof. Include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, and initial production data.

| Date 2007 | |
|---|---|
| 3-21 | Hauled in and spotted mud pump, pipe trailer, drilling mat and BOPE on location. Moved in and spotted rig. RU mast. Sank marsh anchors and put out guy lines. Installed, nippled up and function tested BOPE. Set up working platform. Secured rig and well. |
| 3-22 | Drove to location. Serviced rig and equipment. RU and filled mud pump with mud. RU power swivel. Picked up one 3-1/2" drill collar and made up 4-3/4" bit on bottom. Started drilling on cement at surface. Unable to get bit past 5-1/2" csg stub at surface. Replaced 4-3/4" bit with 4-3/8" bit and continued trying to drill cmt, still couldn't get bit through 5-1/2" csg stub. Pulled bit and removed BOPE. Found lip on csg stub to be rolled over, restricting inside diameter of stub. Secured rig and well. |
| 3-23 | Drove to location. Serviced rig and equipment. Removed work floor and BOPE. Used chisels to chip out concrete from inside 5-1/2" csg stub down to about 1'. Used cutting torch to remove rolled over lip from top of csg stub. Re-installed BOPE and set up work floor. Picked up one 3-1/2" drill collar, made up 4-5/8" bit. Hooked up power swivel, mud pump and circulating equipment. Drilled out cmt plug from 0' to 50', cleaned out fill from 50' to 70'±. Continued running in hole with bit and two 3-1/2" drill collars, picking up 97 joints 2-7/8" tbg from trailer. Broke circulation with bit at 3060'. Circulated hole clean. Secured rig and well. |
| 3-26 | Drove to location. Serviced rig and equipment. Continued running in hole with 4-5/8" bit and two 3-1/2" drill collars, after hauling to location and picking up 23 joints 2-7/8" tbg, tagged TOC plug at 3662'. Hooked up mud pump. Broke circulation and circulated hole clean at 3662'. POOH. Laying down 117 joints 2-7/8" tbg, two 3-1/2" drill collars and 4-5/8" bit. Picked up and ran in hole with 117 joints 2-7/8" tbg with saw toothed collar on bottom. Secured rig and well. |
| 3-27 | Drove to location. Serviced rig and equipment. Continued running in hole with 2-7/8" saw tooth collar and tagged TOC plug at 3662'. RU Ausburn Cementers. Ausburn mixed, pumped and displaced 11 sx (13 cu. ft.) class "G" neat cement with 2% CaCl2. Pulled tubing up to 3300'± with calculated TOC at 3562'±. Cement in place at 9:12 AM. Waited on cement until 1:30 PM. Checked cement sample and found cement still too soft to tag.<br>DOGGR A. B. Gorashi inspected BOPE Class 2.<br>DOGGR A. B. Gorashi witnessed bottom plug, 13 cu. ft. Est. TOC at 3562'.<br>Secured rig and well. |

REC'D APR 18 2007

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# HISTORY OF OIL OR GAS WELL

3-28 Drove to location. Serviced rig and equipment. Ran in with 2-7/8" saw toothed collar and tagged TOC plug at 3600'. Pumped 46 bbls, 73# clay base mud to mud hole from 3600' to 1845'. POOH, laying down excess tbg. RU Tiger Wireline Service. Tiger made 1 run and shot eight ½" holes in 5-1/2" csg from 1845' to 1847'. RIH and hung tbg at 1850'. RU Ausburn Cementers. Mixed, pumped and displaced 49 sx "G" neat cmt. Pulled 10 stands, filled hole and shut well in. Squeezed away total of 22 cu. ft. at 600 # max and final shut in pressure. Calc TOC @ 1600'. Witness BFW SQZ @, 56 cu. ft.
DOGGR A. B. Gorashi witnessed cmt tag at 3600'. DOGGR E. Moser witnessed mudding from 3600' to 1845±.

3-29 Drove to location. Serviced rig and equipment. RIH with tbg and tagged TOC plug at 1591'. Hung tbg at 1588' and pumped 22 bbls, 73# clay based P & A mud to mud hole up to 730'. Pulled and LD 28 jnts excess tbg. RU Ausburn Cementers with bottom of tbg at 740'. Ausburn filled hole, shut well in and attempted to pressure test 5-1/2" csg to 600# psi, would not hold pressure. Bleeds off slowly, no low pressure checked. Ausburn mixed, pumped and displaced 16 sx (18 cu. ft) "G" neat cmt with 3% CaCl2, pulled tbg up to 430'. Calc TOC at 605'. CIP at 10:00 AM. Waited on cmt until 2:00 PM. Ran in and tagged at 680'. Hung btm of tbg at 678'. Mixed, pumped and displaced 10 sx "G" neat cmt. Pulled tbg up to 400'. Calc TOC at 596'. CIP at 2:27 PM. Secured rig and well.
DOGGR E. Moser witnessed cmt tag at 1,591, mudding from 1591 to 750, tag TOC @ 680. DOGGR E. Moser witnessed placement of cmt @ 680', est TOC 596.

3-30 Drove to location. Serviced rig and equipment. Ran in with 2-7/8" saw toothed collar and tagged TOC plug at 588' (calc TOC at 596'). Hung tbg at 586' and hooked up mud pump, pumped 20 bbls, 73# clay based P & A mud to fill 5-1/2" csg from 588' to surface. Pulled and LD remainder of tbg. Removed work floor and BOPE. RIH with tbg to 100'. Hooked up Ausburn Cementers. Ausburn mixed and pumped 21 sx "G" neat cmt (24 cu. ft). Pulled and LD tbg. Loaded out tools and equipment. Took down guy lines. Rigged down mast. Cleaned location and moved rig off.
DOGGR A. B. Gorashi witnessed port sleeve plug tag at 588'.
DOGGR A. B. Gorashi witnessed mudding (588' to surface), 14 bbls.

4-3 Drove to location. Backhoe dug down, removed cellar ring. Dug down around well csg. Cut csg 6' below grade. Got ready for gas test. Made location safe.
Gas test approved by DOG.

REC'D APR 18 2007

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# CHECK LIST – RECORDS RECEIVED AND WELL STATUS

| | | |
|---|---|---|
| Company: | **Target Dept. Stores** | Well: **Chevron U.S.A. Inc./"Fields" 24** |
| API#: | **037-11549** | Sec. **19**, T. **4S**, R.**12W**. S. B. B. & M. |
| County: | **Los Angeles** | Field: **Long Beach** |

| RECORDS RECEIVED | DATE |
|---|---|
| Well Summary (Form OG100) | |
| History (Form OG103) | **4/16/07** |
| Core Record (Form OG101) | |
| Directional Survey | |
| Sidewall Samples | |
| Date final records received. | |
| Electric Logs: | |
| Other: | |

| STATUS | | | |
|---|---|---|---|
| Producing | ☐ | Drilling | ☐ |
| Abandoned | ☐ | Idle | ☐ |
| Reabandoned | ☒ | Other | ☐ |

| WELL TYPE | | | |
|---|---|---|---|
| Oil | ☒ | Waterflood | ☐ |
| Gas | ☐ | Water Disposal | ☐ |
| Water Source | ☐ | Cyclic Steam | ☐ |
| Observation | ☐ | Steam Flood | ☐ |
| Exploratory | ☐ | Fire Flood | ☐ |
| Dry Hole | ☐ | Other | ☐ |

EFFECTIVE DATE: 3/30/07

REMARKS: Reabd

| | ENGINEERS CHECK LIST | CLERICAL CHECK LIST |
|---|---|---|
| ☒ | Summary, History & Core Record (Dupl.) | Location change |
| ☐ | Electric Log | Elevation change |
| ☒ | Operator's Name | Form OGD121 |
| ☒ | Signature | Form OGD150b (Release of Bond) |
| ☒ | Well Designation | Duplicate logs to archives |
| ☐ | Location | Notice of Records Due |
| ☐ | Elevation | EDP 5.15.07 um |
| ☒ | Notices | District Date Base |
| ☒ | "T" Reports | Final Letter (OG159) 5/10/07 JL |
| ☒ | Casing Record | Update Center 5.15.07 um |
| ☒ | Plugs | |
| ☐ | Directional Survey | |
| ☐ | Production/Injection (FAP Codes: ) | |
| ☐ | E Well on Prod., enter EDP | **FIELD CHECK LIST** |
| ☒ | Surface Inspection Required | Date Surface Inspection Completed: 5-2-07 GBRL |
| ☐ | Surface inspection Waived (Island) | Other: |
| ☐ | Well site restoration deferred (common cellar) | |
| ☒ | Final Letter Required AB: ☐ REAB: ☒ 5-4-07 DW | |
| ☐ | Other: | |

| RECORDS NOT APPROVED | RECORDS APPROVED Mm 4/07 |
|---|---|
| *(Reason:)* | *(Signature)* |
| | RELEASE BOND |
| | Date Eligible |
| | *(Use date last needed records received.)* |
| | MAP AND MAP BOOK |
| | N/C |

Need surf insp.

OGD2 5/16/01 CYPRESS

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# HISTORY OF OIL OR GAS WELL

Operator Target Dept. Stores, Field LONG BEACH County LOS ANGELES
Well Target-Chevron-Texaco "FIELDS" 24 Sec. 19 T. 4S R. 12 S.B. B.&M.
A.P.I. No. 037-11549 Name M. E. WRIGHT Title CONSULTANT
(Person submitting report) (President, Secretary, or Agent)

Date 2-21-07
(Month, day, year)

Signature M. E. Wright

Address 3350 - 6th St, CC 3425, Minneapolis, MN 55402 Telephone Number 612-204-0214

History must be complete in all detail. Use this form to report all operations during drilling and testing of the well or during redrilling or altering the casing, plugging, or abandonment, with the dates thereof. Include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, and initial production data.

| Date 2007 | |
|---|---|
| 3-21 | Hauled in and spotted mud pump, pipe trailer, drilling mat and BOPE on location. Moved in and spotted rig. RU mast. Sank marsh anchors and put out guy lines. Installed, nippled up and function tested BOPE. Set up working platform. Secured rig and well. |
| 3-22 | Drove to location. Serviced rig and equipment. RU and filled mud pump with mud. RU power swivel. Picked up one 3-1/2" drill collar and made up 4-3/4" bit on bottom. Started drilling on cement at surface. Unable to get bit past 5-1/2" csg stub at surface. Replaced 4-3/4" bit with 4-3/8" bit and continued trying to drill cmt, still couldn't get bit through 5-1/2" csg stub. Pulled bit and removed BOPE. Found lip on csg stub to be rolled over, restricting inside diameter of stub. Secured rig and well. |
| 3-23 | Drove to location. Serviced rig and equipment. Removed work floor and BOPE. Used chisels to chip out concrete from inside 5-1/2" csg stub down to about 1'. Used cutting torch to remove rolled over lip from top of csg stub. Re-installed BOPE and set up work floor. Picked up one 3-1/2" drill collar, made up 4-5/8" bit. Hooked up power swivel, mud pump and circulating equipment. Drilled out cmt plug from 0' to 50', cleaned out fill from 50' to 70'±. Continued running in hole with bit and two 3-1/2" drill collars, picking up 97 joints 2-7/8" tbg from trailer. Broke circulation with bit at 3060'. Circulated hole clean. Secured rig and well. |
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RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# HISTORY OF OIL OR GAS WELL

3-28 Drove to location. Serviced rig and equipment. Ran in with 2-7/8" saw toothed collar and tagged TOC plug at 3600'. Pumped 46 bbls, 73# clay base mud to mud hole from 3600' to 1845'. POOH, laying down excess tbg. RU Tiger Wireline Service. Tiger made 1 run and shot eight ½" holes in 5-1/2" csg from 1845' to 1847'. RIH and hung tbg at 1850'. RU Ausburn Cementers. Mixed, pumped and displaced 49 sx "G" neat cmt. Pulled 10 stands, filled hole and shut well in. Squeezed away total of 22 cu. ft. at 600 # max and final shut in pressure. Calc TOC @ 1600'. Witness BFW SQZ @, 56 cu. ft.
DOGGR A. ~~B. Gorashi witnessed cmt tag~~ E-MOSGR at 3600'. DOGGR E. Moser witnessed mudding from 3600' to 1845±.

3-29 Drove to location. Serviced rig and equipment. RIH with tbg and tagged TOC plug at 1591'. Hung tbg at 1588' and pumped 22 bbls, 73# clay based P & A mud to mud hole up to 730'. Pulled and LD 28 jnts excess tbg. RU Ausburn Cementers with bottom of tbg at 740'. Ausburn filled hole, shut well in and attempted to pressure test 5-1/2" csg to 600# psi, would not hold pressure. Bleeds off slowly, no low pressure checked. Ausburn mixed, pumped and displaced 16 sx (18 cu. ft) "G" neat cmt with 3% CaCl2, pulled tbg up to 430'. Calc TOC at 605'. CIP at 10:00 AM. Waited on cmt until 2:00 PM. Ran in and tagged at 680'. Hung btm of tbg at 678'. Mixed, pumped and displaced 10 sx "G" neat cmt. Pulled tbg up to 400'. Calc TOC at 596'. CIP at 2:27 PM. Secured rig and well.
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DOGGR A. B. Gorashi witnessed port sleeve plug tag at 588'.
DOGGR A. B. Gorashi witnessed mudding (588' to surface), 14 bbls.

4-3 Drove to location. Backhoe dug down, removed cellar ring. Dug down around well csg. Cut csg 6' below grade. Got ready for gas test. Made location safe.
Gas test approved by DOG.

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# CONSTRUCTION SITE WELL INSPECTION

District Ref. No. _____

Field: Long Beach City/County Long Beach Sec. 19 T. 4S R. 12W S.BB.&M.

Location (major cross streets): Atlantic Ave and 33rd Street

Development representative: Mick Beyer Phone: (310) 505-9787

Describe the exact location of the excavation or well at the building site (from a reference point on a Division Map):

How the location was determined: Measured ☒ Surveyed ☐ Other ☐

Describe: _____

Well designation: "Field" 24 , API No. 03711549

Operator: Target Dept. Stores

## SAFETY PRECAUTIONS AND UNSAFE EXCAVATIONS

**CAUTION!** Oil and gas wells may produce hydrogen sulfide gas, which is highly poisonous and will accumulate and concentrate in low areas such as excavations. Before entering an excavation area, test to ensure that there is sufficient oxygen and that the flammable/toxic gas readings are within safe limits.

| INSPECTIONS | 1 | Initials Date | 2 | Initials Date | 3 | Initials Date | 4 | Initials Date |
|---|---|---|---|---|---|---|---|---|
| Excavation size | 6'X6' 6' down | 4/5/07 AB | | | | | | |
| Picture No. | | | | | | | | |
| Picture direction | | | | | | | | |
| Metal detector (Y/N) | N | | | | | | | |
| Visible casing size(s) (or comment) | 103/4" & 51/2" | | | | | | | |
| Fluid leaks (Y/N)* | N | | | | | | | |
| Amount (est.) | | | | | | | | |
| Gas leaks (Y/N)* | N | | | | | | | |
| Amount (est.) | | | | | | | | |
| Gas detector (N/Y) | Y | | | | | | | |
| Bubble test (Y/N) | Y | | | | | | | |

*Leak location(s): N/A

Describe hazardous or damaged well condition(s): N/A

Report finalized by: AB Gorashi A., Division of Oil, Gas & Geothermal Res. Date: 4/5/07

Abdulm



OG190A (12/00/GSR1/1M)

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

**No. T 107-0401**

# REPORT ON OPERATIONS

Cypress, California
April 18, 2007

Target Dept. Stores
C/O M.E. Wright
16531 Bolsa Chica St. #301
Huntington Beach, CA 92649

Your operations at well **Chevron U.S.A. Inc./"Field" 24,** A.P.I. No. **037-11549**, Sec. **19**, T. **4**S., R. **12**W, S.B. B. & M., **Long Beach** Field, **Los Angeles** County, were witnessed on **04-05-07**. **AB Gorashi**, representative of the supervisor, was present from **0830** to **1000**. There was also present **Mick Beyer**, Supervisor.

Present condition of well: **10 3/4" cem 20'; 5 1/2" cem 5050', cp 727' & 1845', perf 4242' WSO, perf 4255'-4300', @ int 4470'-4825'. Junk below 4100'. TD 5050'. Plugged w/cem 3892'-3864', 3730'-3600', 1845'-1591', 740'-588' & 100'-6'.**

The operations were performed for the purpose of witnessing the plugging operations in the process of reabandonment.

**DECISION:** APPROVED.

NOTE: The required Class II2M blowout prevention equipment was inspected and approved on **03-27-07**.

DEFICIENCIES: None.

CONTRACTOR: Allenco

Witness Inspection Approved 5-2-07 GB

KMC:dw

cc: Update
Chevron U.S.A. Inc.

Hal Bopp
*State Oil and Gas Supervisor*

**By:** _____
**For:** R. K. Baker, *Deputy Supervisor*

T107-0401

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# CEMENTING/PLUGGING MEMO

Operator TARGET DEPT. STORES Well No. CHEVRON U.S.A. INC. / "FIELD" 24
API No. 037-11549 Sec. 19 T. 4S R. 12W , B&M
Field LONG BEACH , County LOS ANGELES. On 4/05/07 ,
Mr. / Ms. AB GORASHI A , representative of the supervisor, was present from 830 to 1000 .

There were also present MICK BEYER, SUPERVISOR

Casing record of well: 10 3/4" CEM 20'; 5-1/2" CEM 5050', CP 727' & 1845', perfs 4242' WSO, perf 4255'-4300', & int 4470'-4825'. Junk below 4100'. TD 5050. plugged w/CEM 3892'-3864', 3730'-3600', 1845'-1591', 746'-588', 100'-6'.

The operations were performed for the purpose of: REABANDON

☒ The plugging/cementing operations as witnessed and reported are approved.

☐ The location and hardness of the cement plug @ _____ ' are approved.

Hole size: _____ " fr. _____ ' to _____ ', _____ " to _____ ' & _____ " to _____ '

| Casing | | | | Cemented | | | Top of Fill | | Squeezed Away | Final Pressure | Perforations |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | Wt. | Top | Bottom | Date | MO-Depth | Volume | Annulus | Casing | | | |
| 5 1/2 | 15.5# | 0 | 5050 | 3/28/07 | TD 1845 | 56 cf | 1745 | 1614' | 24 cf | 400 psi | CP 1847-1845 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Casing/tubing recovered: _____ " Shot/cut at _____ ', _____ ', _____ ', Pulled fr. _____ ';
_____ " Shot/cut at _____ ', _____ ', _____ ', Pulled fr. _____ '.

Junk (in hole):

Hole fluid (bailed to) at _____ '. Witnessed by _____

| Mudding | Date | bbls | Displaced | Poured | Fill | Engineer |
|---|---|---|---|---|---|---|
| 73# | 3/28/07 | 46 BBLS | 3600' | | 1845' | E-MOSER |
| 73# | 3/29/07 | 22 BBLS | 1591' | | 750 | E. MOSER |
| 73# | 3/30/07 | 14 BBLS | 588' | | SURFACE | AB. GORASHI |

NOTE (K) #2M, 3/27/07 C/O DEPTH 3662'

| Cement Plugs | | Placing | Placing Witnessed | | Top Witnessed | | | |
|---|---|---|---|---|---|---|---|---|
| Date | Sx./cf | MO & Depth | Time | Engineer | Depth | Wt/Sample | Date & Time | Engineer |
| 3/27/07 | 13 cf | TD 3662 | 900 | AB GORASHI | 3600' 3562' | ATW | 3/28/07 800 | E. MOSER |
| 3/28/07 | 56 cf | TD 1845 | 1400 | AB GORASHI | 1591' 1614' | ATW | 3/29/07 | E MOSER |
| 3/29/07 | 18 cf | TD 740' | 1400 | E. MOSER | 588' 596' | ATW | 3/30/07 730 | AB GORASHI |
| 3/30/07 | 24 cf | TD 100' | | RPT | 6' 5' | VISUAL | 4/5/07 | AB GORASHI |

API No. 037-11549 D...ON OF OIL, GAS, AND GEOTHERMAL RESOURCES T_____

# BLOWOUT PREVENTION EQUIPMENT MEMO

Operator TARGET DEPT. STORES Well CHEVRON U-S-A. INC / FIG 24 Sec. 19 T. 4S R. 12W

Field LONG BEACH County L-A Spud Date _____

| VISITS: | Date | Engineer | Time | Operator's Rep. | Title |
|---|---|---|---|---|---|
| 1st | 3/27/07 | AB GORASHI A. | (800 to 1100) | | |
| 2nd | | | ( to ) | | |

Contractor ALLENCO Rig# 5 Contractor's Rep. & Title CECIL GLENN, RIG SUPERVISOR

Casing record of well: MEMO

**OPERATION:** Testing (inspecting) the blowout prevention equipment and installation. Critical well? Y____ N____

**DECISION:** The blowout prevention equipment and its installation on the 10 3/4" casing are approved.

Proposed Well Opns: _____. MACP: _____ psi

Hole size: _____" fr. _____' to _____', _____" to _____' & _____" to _____'

**REQUIRED BOPE CLASS:** II 2M

## CASING RECORD OF BOPE ANCHOR STRING

| Size | Weight(s) | Grade(s) | Shoe at | CP at | Cement Details | Top of Cement: Casing | Top of Cement: Annulus |
|---|---|---|---|---|---|---|---|
| CD | | | | | | | |
| | | | | | | | |

## BOP STACK

| API Symb. | Ram Size (in.) | Manufacturer | Model or Type | Vert. Bore Size (in.) | Press. Rtg. | Date Last Overhaul |
|---|---|---|---|---|---|---|
| RD | 27/8" | TOWNSON | | 9" | 3000 | |
| RD | CSO | TOWNSON | | 9" | 3000 | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

## TEST DATA

| Gal. to Close | Recovery Time (Min.) | Calc. GPM Output | psi Drop to Close | Secs. to Close | Test Date | Test Press. |
|---|---|---|---|---|---|---|
| 0-68 | | | | | | |
| 0-68 | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

TOTAL: 1.36

## ACTUATING SYSTEM

Accumulator Unit(s) Working Pressure 1500 psi

Total Rated Pump Output _____ gpm Fluid Level OK

Distance From Well Bore _____ ft.

| | Accum. Manufacturer | Capacity | Precharge |
|---|---|---|---|
| 1 | HAND PUMP | 10 gal. | — psi |
| 2 | | gal. | psi |

| | CONTROL STATIONS | Elec. | Hyd. | Pneu. |
|---|---|---|---|---|
| | Manifold at accumulator unit | | | |
| | Remote at Driller's station | | | |
| | Other: HAND PUMP | | X | |

| | EMERG. BACKUP SYSTEM | | | Press. | Wkg. Fluid |
|---|---|---|---|---|---|
| X | $N_2$ Cylinders | 1 | L=51" | 2600 | 5-5 gal. |
| | Other: | 2 | L= " | | gal. |
| | | 3 | L= " | | gal. |
| | | 4 | L= " | | gal. |
| | | 5 | L= " | | gal. |
| | | 6 | L= " | | gal. |
| | | | TOTAL: | | 5-5 gal. |

## AUXILIARY EQUIPMENT

| | | No. | Size (in.) | Rated Press. | Connections: Weld | Connections: Flange | Connections: Thread | Test Press. |
|---|---|---|---|---|---|---|---|---|
| | Fill-up Line | | | | | | | |
| X | Kill Line | | 2" | 3000 | | | | |
| X | Control Valve(s) | 3 | | 3000 | | | | |
| | Check Valve(s) | | | | | | | |
| | Aux. Pump Connect. | | | | | | | |
| | Choke Line | | | | | | | |
| | Control Valve(s) | | | | | | | |
| | Pressure Gauge | | | | | | | |
| | Adjustable Choke(s) | | | | | | | |
| | Bleed Line | | | | | | | |
| | Upper Kelly Cock | | | | | | | |
| | Lower Kelly Cock | | | | | | | |
| | Standpipe Valve | | | | | | | |
| | Standpipe Press. Gauge | | | | | | | |
| X | Pipe Safety Valve | | 2 7/8 | 3000 | | | | |
| | Internal Preventer | | | | | | | |

| | HOLE FLUID MONITORING EQUIPMENT | Alarm Type: Audible | Alarm Type: Visual | Class |
|---|---|---|---|---|
| | Calibrated Mud Pit | | | A |
| | Pit Level Indicator | | | B |
| | Pump Stroke Counter | | | B |
| | Pit Level Recorder | | | B |
| | Flow Sensor | | | C |
| | Mud Totalizer | | | C |
| | Calibrated Trip Tank | | | C |
| | Other: | | | C |

| Hole Fluid Type | Weight | Storage Pits (Type & Size) |
|---|---|---|
| WATER + MUD | 9-24/GAL | 100 BBLS |

**REMARKS AND DEFICIENCIES:**

CONTRACTOR: ALLENCO

UNCORRECTABLE DEFICIENCIES:

DEFICIENCIES NOTED AND TO BE CORRECTED:

DEFICIENCIES NOTED AND CORRECTED:



RESOURCES AGENCY OF CALIFORNIA
**DEPARTMENT OF CONSERVATION**
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

No. P 107-0114

412 (Field Code)

06 (Area Code)

-- (New Pool Code)

-- (Old Pool Code)

# PERMIT TO CONDUCT WELL OPERATIONS

Target Dept. Stores
C/O M.E. Wright
16531 Bolsa Chica St. #301
Huntington Beach CA 92649

Cypress, California
February 22, 2007

Your proposal to **reabandon** well **Chevron U.S.A. Inc./"Field" 24**, A.P.I. No. **037-11549**, Section **19**, T. **4S**, R. **12W**, **S.B.** B. & M., **Long Beach** Field, **Old** area, **--** pool, **Los Angeles** County, dated **02/08/07**, received **02/08/07** has been examined in conjunction with records filed in this office.

**THE PROPOSAL IS APPROVED PROVIDED:**

1. Blowout prevention equipment with hydraulic controls, equivalent to this Division's Class **II2M** requirements, or better, shall be installed and maintained in operating condition.
2. Well killing fluid of a quality and in sufficient quantity to control all subsurface conditions in order to prevent blowouts shall be used.
3. At least **360'** of surface casing shall be cemented in the well, if the surface casing is not competent.
4. The well shall be plugged with cement from **730'** to **630'**.
5. All portions of the well not plugged with cement shall be filled with clay base mud having a minimum density of 72 lb/cu ft and a minimum gel-shear strength of 25 lb/100 sq ft.
6. This Division shall be consulted and a Supplementary Notice may be required before making any changes in the proposed program.
7. **THIS DIVISION SHALL BE NOTIFIED TO:**
   a. Inspect the installed blowout prevention equipment prior to commencing downhole operations.
   b. Witness the clean-out depth.
   c. Witness the mudding of the hole.
   d. Witness the placing, location and hardness of the cement plug from **3662'** to **3605'**.
   e. Witness the squeeze cementing of the **5 1/2"** casing through the **perforations** at **1845'**.
   f. Witness the placing, location and hardness of the cement plug from **1845'** to **1745'**, inside and outside the **5 1/2"** casing.
   g. Witness the placing, location and hardness of the cement plug from **730'** to **630'**.
   h. Witness the placing, location and hardness of the cement plug from **100'** to **5'**, inside and outside **all** casings.
   i. Inspect and approve the cleanup of the well site within 60 days after placement of the surface plug.

**NOTE:**

1. A crew drill may be required at the time of the blowout prevention equipment inspection.
2. This Division does not pass upon your right to enter the property, but merely approves the proposal as conforming to our requirements.
3. The proposed surface plug shall not contain rock or gravel.
4. The base of the freshwater sands is at **1845'±**.

KMC:kc
cc: Update
Chevron U.S.A. Inc.
INDIVIDUAL BOND

Engineer: Kenneth Carlson

Phone: 714/816-6847

Hal Bopp
*State Oil and Gas Supervisor*

By _____
For R. K. Baker, *Deputy Supervisor*

**A copy of this permit and the proposal must be posted at the well site prior to commencing operations. Records for work done under this permit are due within 60 days after the work has been completed or the operations have been suspended.** OG 111

09/KC

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## Notice of ~~Intention to~~ RE Abandon Well

R# 1070114

| FOR DIVISION USE ONLY | | | |
|---|---|---|---|
| CARDS | BOND | FORMS OGD114 | FORMS OGD121 |
| | | 2/10/07 KG | 2/9/07 KG |

DIVISION OF OIL AND GAS

In compliance with Section 3229, Division 3, Public Resources Code, notice is hereby given that it is our intention to ~~abandon~~ RE abandon well TARGET-CHEVRON-TEXACO Chevron U.S.A. Inc. FIELDS "N" 24, API No. 037-11549

Sec. 19, T. 4S, R. 12W, SB B. & M., Long Beach Field, Los Angeles County.

commencing work on FEB 21, ~~19~~ 2007

The present condition of the well is:

1. Total depth 5050 (Plug 5045)
2. Complete casing record, including plugs and perforations (present hole) See Attached Diagram
3. Last produced Nov '46 3 — 3 (Date) (Oil, B/D) (Gas, Mcf/D) (Water, B/D)

or

4. Last injected (Date) (Water, B/D) (Gas, Mcf/D) (Surface pressure)

Additional data for dry hole (show depths):

5. Oil or gas shows
6. Stratigraphic markers
7. Formation and age at total depth
8. Base of fresh water sands 1750 (Dog, Map)

9. Is this a critical well according to the definition on the reverse side of this form? ☐ Yes ☒ No

The proposed work is as follows:

See attached program

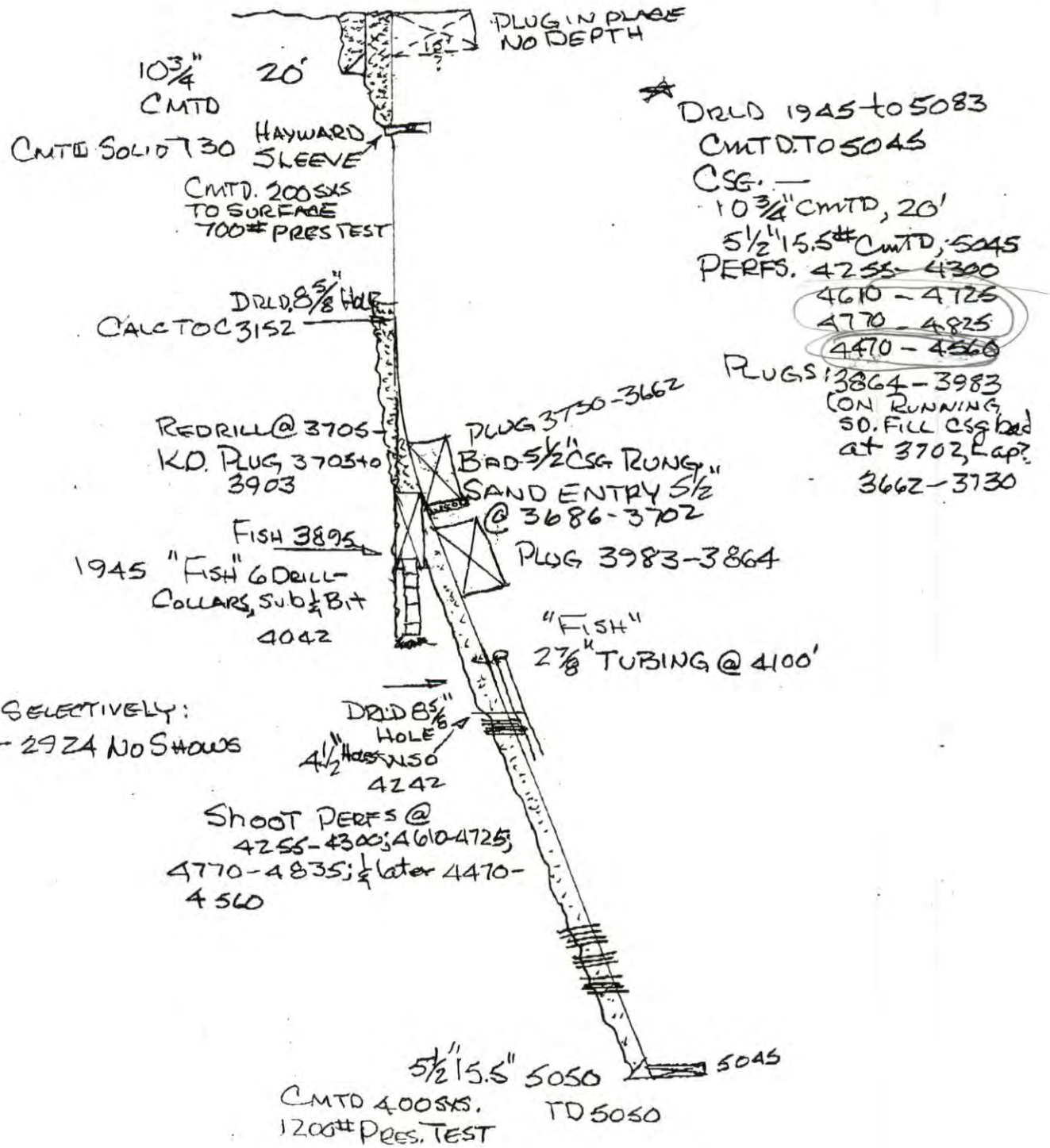
It is understood that if changes in this plan become necessary, we are to notify you immediately.

Address 33506th St. CC.3425 (Street)
Minneapolis MN 55402 (City) (State) (Zip)
Telephone Number (612) 304-0214 (Area Code) (Number)

TARGET DEPT STORES (Name of Operator)
By B. Ullery - M.E. WRIGHT (C.O. Below) (Print Name)
M.E. Wright (714) 3779234 2/08/07 (Signature) (Date)
C.O. 16531 Bolsa Chica St #301
HUNTINGTON BEACH CA 92649

OG108 (2/84/DWRR/5M)

# TARGET - CHEVRON TEXACO
# WELL DIAGRAM FIELDS 24
# API # 037-11549




MEW 2-05-07

**ABANDONMENT PROGRAM**
**CHEVRON-TEXACO "FIELDS" 24**

**API 037-11549 LONG BEACH FIELD -Sec 19 - T4S - R12W -**

PROGRAM

1. MIRU - Install BOP equipment on the 5 1/2' csg. 20' long 10 3/4" is too short to support equipment.
2. Fill hole with water.
3. Drill out and clean out surface plug to 3662 raise plug too 3605. Can't drill out below, 5 1/2" casing bad 3686 and has running sand entry.
4. Shoot eight 1/2" holes at 1845, base of fresh water.
5. Squeeze cement 1845 to 1745. Tag TOC.
6. Fill hole with spec mud to 100 feet.
7. Cement surface plug 100 feet to surface. 5 1/2" is cemented from 730 to surface.
8. Gas test and weld on a ID plate.

MEW 2/08/07

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

# REPORT OF PROPERTY AND WELL TRANSFER

| Field or County | District |
|---|---|
| Imperial Co., Wilmington, L.A. Co., W. Coyote, Montebello, Beverly Hills, Seal Beach, El Segundo, Inglewood, Rosecrans, Venice Beach, Las Cienegas, S. Salt Lake, Dominguez, Hyperion, Lawndale, Leffingwell, Long Beach, Los Angeles Downtown, Potrero, Salt Lake, Santa Fe Springs, Cheviot Hills, Sherman, Torrance, Whittier, Howard Townsite, Huntington Beach, Yorba Linda, Orange Co., Richfield, Kraemer, W. Newport, Sunset Beach, Belmont Offshore | District 1 (Cypress, California) |
| Former owner: ChevronTexaco Exploration & Production Co. C5680 | Date: 9/23/2005 |

| Well Name | API Number | Section Township Range |
|---|---|---|
| See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA | See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA | See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA |

Description of the land upon which the well (s) is (are) located.
Various

| Date of transfer | New owner | | Type of organization |
|---|---|---|---|
| 7/11/2005 | | Chevron U.S.A. Inc.<br>**C5640** | Corp. |
| | Address: | 9525 Camino Media<br>Bakersfield, CA 93311 | Telephone: 661/654-7065 |

| | |
|---|---|
| Reported by | OG30A received in Sacramento 9/2005 |
| Confirmed by | Same as above |
| New operator new status: **PA** | Designation of Agent: Greg Leyendecker, Agent |
| Old operator new status: **AB** | Remarks: For further information see Operator file (C5640) Chevron U.S.A. Inc. |

| OPERATOR STATUS ABBREVIATIONS |
|---|
| *PA – Producing Active* |
| *NPA- No potential, Active* |
| *PI- Potential Inactive* |
| *NPI-No potential, Inactive* |
| *AB-Abandoned or No More Wells* |

cc: Update; Envir Desk (2); File
Conservation Committee
Harold W. Bertholf, Inc.
L.A. & Orange County Assessors
WellStats – Cypress Dist. 1
WellStats – Sacrament HQS

Deputy Supervisor: R. K. Baker

Signature: Richard K. Baker, District Deputy

**FORM AND RECORD CHECK LIST**

| Form or Record | Initials | Date | Form or Record | Initials | Date |
|---|---|---|---|---|---|
| Form OGD121 | — | — | Map and Book | | |
| Operator Card | CC | 9-23-05 | Notice cancellations | — | — |
| Well Records | CC | 9/26/05 | Bond Status BB | CC | 9-23-05 |
| Log Records | CC | 9/26/05 | EDP HQS | J.C | 7-11-05 |
| Production Reports | — | — | Data Base Pdoy D1 | GM | 9-26-05 |

# WELL TRANSFER NOTICE

Effective August 22, 2002

**Chevron USA Inc.**
**Texaco California Inc.**
**And**
**Texaco Exploration and Production, Inc.**

Transferred ALL THEIR WELLS
To

## ChevronTexaco Exploration & Production Company

*See OGD156 dated October 18, 2002 in Operator File for ChevronTexaco Exploration & Production Company (C5680) for details*

1015 West Olympic Blvd.,
Los Angeles 15, California,
May 27, 1947.

Mr. W. H. Loomis,
P. O. Box 320,
Long Beach 1, California.

Agent for The Texas Company.

Dear Sir:

Your report of abandonment of well No. "Field" 24, Sec. 19, T. 4 S., R. 12 W., S. B. B. & M., Long Beach oil field, Los Angeles County, dated May 20, 1947, and submitted to this division on our form No. 103, has been examined in conjunction with records filed in this office.

A review of the reports and records shows that the requirements of this division, which are based on all information filed with it, have been fulfilled.

Yours truly,

R. D. BUSH,
State Oil and Gas Supervisor,

By C H Wasser
Deputy Supervisor.

my
cc - Mr. R. D. Bush
- Long Beach
- Mr. W. A. Clark

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| 20 | 5-28-47 P.W.B. | | Blanket | | ✓ |

FORM 103. 36346 7-44 37,500
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
MAY 22 1947
LOS ANGELES, CALIFORNIA

## History of Oil or Gas Well

OPERATOR THE TEXAS COMPANY FIELD Signal Hill

Well No. Field #24, Sec. 19, T. 4-S, R. 12-W, S.B. B. & M.

Signed

Date May 20, 1947 Title Division Engineer
(President, Secretary or Agent)

**Use this form in reporting all important operations at the well, together with the dates thereof, in the order of their performance.** Such operations include drilling, redrilling, deepening, plugging, or altering casing as by perforating, shooting, or pulling. Include in your report size of hole drilled, redrilled, or deepened; size, weight and length of casing landed, cemented, or removed, amount and location of perforations; number of sacks of cement used in cementing or plugging operations, number of feet of cement drilled out of casing, location of top and bottom of cement plugs. If the well was dynamited, give date, dimensions and weight of all shots. If tests were made give interval tested and results of tests, such as, amount and nature of fluids recovered.

| Date | |
|---|---|
| 1946 | |
| 10/30 | Well sanded up. Tubing stuck. Bottom of tubing 4823'. |
| 10/31 | Could not work tubing loose. |
| 11/ 1 | Fishing rods with left hand rods. 73 rods out. |
| 11/ 2 | " " " " " " . 137 " " |
| 11/ 3 | " " " " " " . 142 " " |
| 11/ 4 | " " " " " " . 156 " " |
| 11/ 5 | Left one rod and pump in hole. |
| 11/ 6 | Cut tubing at 4763'. The bottom piece dropped, but could not pull tubing loose. McCullough Magna-Tector showed tubing stuck at 3800'. |
| 11/ 8 | Re-ran Magna-Tector. Found tubing stuck at 4025'. Relanded tubing. Ran pump and rods with an Ardmore anchor set at 4325'. |
| 11/ 9 | Pumped 8 barrels and pumped off. |
| 11/10 | Not producing. |
| | Idle. |
| 11/16 | Fished parted rods and lowered tubing to 4435'. |
| 11/17 | Pumped 9 barrels. |
| 11/18 | " 7 " |
| 11/19 | " 5 " |
| 11/20 | " 2 " |
| 11/21 | " 10 " . Off 10 hours, lowered pump to 4600'. |
| 11/22 | " 10 " |
| 11/23 | " 5 " |
| 11/24 | Pump sanded up. Could not work pump loose. |
| 11/25 | Recovered 112 rods with left hand rods. |
| 11/26 | Recovered 30 rods. |
| 11/27 | Recovered 4 rods for a total of 146. Left 4, 3/4" rods, pump and Ardmore anchor at 4600'. |
| | Idle. |
| 12/16 | Checked fluid level in tubing at 870'. |
| 12/17 | Bailed mud from 4418' to 4462'. Rod box up at 4462'. |
| 12/18 | Bailed mud. |
| 12/23 | Recovered rod box with left hand rods. |
| 12/24 | Could not recover rods. |
| 12/26 | Cut tubing at 4200'. Not loose. |
| 12/27 | Cut tubing at 4100'. |
| 12/30 | Bailed sand inside of tubing from 4002' to 4091'. |

FORM 103. 54705 2-46 50M
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
MAY 22 1947
LOS ANGELES, CALIFORNIA

## History of Oil or Gas Well

OPERATOR THE TEXAS COMPANY FIELD Signal Hill

Well No. Field #24, Sec. 19, T. 4-S, R. 12-W, S.B. B. & M.

Signed W. A. Clark

Date May 20, 1947 Title Division Engineer
(President, Secretary or Agent)

**Use this form in reporting all important operations at the well, together with the dates thereof, in the order of their performance.** Such operations include drilling, redrilling, deepening, plugging, or altering casing as by perforating, shooting, or pulling. Include in your report size of hole drilled, redrilled, or deepened; size, weight and length of casing landed, cemented, or removed, amount and location of perforations; number of sacks of cement used in cementing or plugging operations, number of feet of cement drilled out of casing, location of top and bottom of cement plugs. If the well was dynamited, give date, dimensions and weight of all shots. If tests were made give interval tested and results of tests, such as, amount and nature of fluids recovered.

| Date | |
|---|---|
| 1946 | |
| 12/31 | Cleaned out inside of tubing at 4040'. After bailing for a time, the tubing could be pulled a short distance. Recovered 5 joints of tubing. |
| 1947 | |
| 1/ 2 | Cleaned out inside of tubing from 3715' to 3825'. Pulled out 15' of tubing. |
| 1/ 3 | Cleaned out inside of tubing and recovered a total of 4100' of tubing. |
| 1/ 4 | Checked fluid at 1425', top mud 3670' and top of sand 3736'. Cleaned out to 3820'. |
| 1/ 6 | Cleaned out to 3855'. Recovered mud and sand at 3815' and coarse sand at 3855'. |
| 1/ 7 | Cleaned out to 3870'. Coarse gravel at 3870'. |
| 1/ 8 | Cleaned out to 3878'. |
| | Idle. |
| 4/30 | Found fluid at 1180' and sand at 3690'. Cleaned out to 3715'. |
| 5/ 1 | Cleaned out to 3855'. |
| 5/ 2 | Cleaned out to 3885'. |
| 5/ 3 | Cleaned out to 3893'. Dumped 3-1/2 sacks of cement at 3893'. D.O.G. representative witnessed and approved location and hardness of plug at 3864'. |
| 5/ 5 | Dumped 9 sacks cement in stages starting at 3730'. |
| 5/ 6 | Dumped 1-1/2 sacks cement at 3674'. D.O.G. representative witnessed and approved location and hardness of plug at 3662'. Set wood plug at 32' and dumped 3 sacks cement. Top of plug 6 feet below surface. Abandoned well. |

RFC:tg

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| | | | | | |

FORM 109-D

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

DIVISION OF OIL AND GAS
RECEIVED
MAY 17 1947
LOS ANGELES, CALIFORNIA

No. T_____

_____ Calif. _____ 19____

Mr._____

_____ Calif.

Agent for The Texas Company

DEAR SIR:

Operations at your well No. "Field" 29 Sec. 19, T. 4S, R. 12W, S.B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by A. Pfeil - Inspector, representative of the supervisor, on May 13, 1947. There was also present _____

| Casing Record | Junk |
|---|---|
| Nema. | |
| | |
| | |
| | |
| | |

The operations were performed for the purpose of _____

The inspector arrived at the well at _____ and Mr. _____ reported:

1. The 5½" casing is plugged with cement at the surface.
2. There is no evidence of Oil or gas escaping at the surface.

R. D. BUSH
State Oil and Gas Supervisor

By _____ Deputy

43395 3-45 15M
STATE PRINTING OFFICE

FORM 109-D

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T 1-46720

Los Angeles 15, Calif. May 13, 1947

Mr. W. H. Loomis
Long Beach 1, Calif.
Agent for THE TEXAS COMPANY

171

DEAR SIR:

Operations at your well No. "Field" 24 Sec. 19, T. 4 S., R. 12W, S.B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by John M. Carls, Inspector, representative of the supervisor, on May 6, 1947. There was also present J. R. Flum, Driller; C. C. Jackson, Helper.

Casing Record 10-3/4" cem. 20'; 5-1/2" cem. 5050', c.p. 730', four test holes at 4242', W. S. O., perf. 4835'-4770', 4725'-4610', 4300'-4255', bad at 3686'-3702'. Junk (in hole) 2-1/2" tubing, 4100'-4763'. T. D. (present hole) 5047', plugged with cement 3893'-3864' and 3730'-3662'.

Junk (1st hole) drill collar and bit, 3792'-3939'; T. D. 3939', plugged with cement 3939'-3792'.

The operations were performed for the purpose of testing the location and hardness of a cement plug placed from 3730' to 3662' in the process of abandonment.

The inspector arrived at the well at 10:45 a.m. and Mr. Flum reported:
On May 5, 1947, 10-1/2 sacks of cement was dumped in the hole on a wooden plug at 3730'.

THE INSPECTOR NOTED THAT the bailer could not be spudded below 3662' and brought up a sample of set cement.

The test was completed at 11:15 a.m.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 3663' ARE APPROVED.

JMC:OH

cc- Company
Long Beach

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Musser Deputy

59352 6-46 15M
STATE PRINTING OFFICE

FORM 109-D

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T1-46719

Los Angeles 15, Calif. May 13, 1947

Mr. W. H. Loomis
Long Beach 1, Calif.
Agent for THE TEXAS COMPANY

DEAR SIR:

Operations at your well No. "Field" 24 Sec. 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by John M. Carls, Inspector, representative of the supervisor, on May 5, 1947. There was also present J. R. Flum, Driller; C. C. Jackson, Helper.

Casing Record 10-3/4" cem. 20'; 5-1/2" cem. 5050', c.p. 730', four test holes at 4242', W. S. O., perf. 4835'-4770', 4725'-4610', 4300'-4255', bad 3686'-3702'; Junk (in hole) 2-1/2" tubing 4100'-4763'; T. D. (present hole) 5047', plugged with cement 3893'-3864'.

Junk(1st hole) drill collar and bit, 3792'-3939'; T. D. 3939', plugged with cement 3939'-3792'.

The operations were performed for the purpose of testing the location and hardness of a cement plug placed from 3893' to 3864' in the process of abandonment.

The inspector arrived at the well at 2:30 p.m. and Mr. Flum reported:

1. The hole could not be cleaned out below 3893'.
2. On May 5, 1947, 3-1/2 sacks of cement was dumped in the hole at 3893'.

THE INSPECTOR NOTED THAT the bailer could not be spudded below 3864' and brought up a sample of set cement.

The test was completed at 3:15 p.m.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 3864' ARE APPROVED.

JMC:OH

cc- Company
Long Beach

B/W

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Meesen Deputy

59352 6-46 15M
STATE PRINTING OFFICE

FORM 111.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Proposed Operations

No. P 1-43026

Los Angeles 14, Calif. February 7, 1947

Mr. W. H. Loomis

Long Beach 1, Calif.

Agent for THE TEXAS COMPANY

Dear Sir:

Your proposal to abandon Well No. "Field" 24,

Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, Los Angeles County,

dated Jan. 30, 1947, received Feb. 5, 1947, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

RECORDS IN ADDITION TO, OR AT VARIANCE WITH, THOSE SHOWN IN THE NOTICE:

Junk (1st hole) drill collar and bit 3792'-3939', T. D. 3939', plugged with cement 3939'-3792'.

THE NOTICE STATES:

"The present condition of the well is as follows:

1. Complete casing record.

5-1/2", 15.5# - 5050' cmt'd. w/400 sacks, CTP at 730' w/200 sacks. W. S. O. on 4, 1/2" holes at 4242'. Gun perforated 4835'-4770', 4725'-4610', 4300'-4255'. 2-1/2" tubing stuck at 4823', cut at 4763' and bottom piece dropped approximately 30' with tubing still stuck. Cut at 4200'- not loose. Cut and recovered from 4100'. Top sand in 5-1/2" casing found at 3736'. Cleaned out to 3878'; casing bad and sand running in at 3686' to 3702'.

October 1946 Ave. : 27 B/D, 18° gravity oil with 27 B/D water.

November 1946 Ave.: 3 B/D oil, 3 B/D water."

PROPOSAL:

"PROPOSED WORK:

1. Clean out below bad place in 5-1/2" casing at 3686'-3702' by running fluid in hole to hold back sand, if possible.
2. Place 20' cement bridge in solid blank casing below bad place and continue plug up above 3666'.
3. Cap surface and abandon well."

DECISION:

THE PROPOSAL IS APPROVED PROVIDED THAT

1. If possible the hole should be cleaned out to 4100' and a 20' cement plug placed on the stub of the junk tubing.
2. THIS DIVISION SHALL BE NOTIFIED AS FOLLOWS:
   (a) To witness the location and hardness of cement plugs at 4080' and 3666'.
   (b) To inspect the completed surface cap or plug.

Hist. of abnd. 5/22/47 SHR

SHR:OH

cc- Company
Long Beach

R. D. BUSH
State Oil and Gas Supervisor

By H. Mueller Deputy

Blanket bond.

FORM 108. 20296 1-43 5M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
FEB 5 1947
LOS ANGELES, CALIFORNIA

## Notice of Intention to Abandon Well

This notice must be given at least five days before work is to begin

Long Beach, Calif. January 30, 1 19 47

DIVISION OF OIL AND GAS

Los Angeles 14, Calif.

In compliance with Sec. 3228, 3229, 3230, 3231 and 3232, Ch. 93, Stat. 1939, notice is hereby given that it is our intention to abandon well No. Field #24

Sec. 19, T. 4-S, R. 12-W, S.B. B. & M. Long Beach Field, Los Angeles County, commencing work on the day of 19.

The present condition of the well is as follows:

1. Complete casing record.

5-1/2", 15.5# - 5050' cmt'd. w/400 sacks, CTP at 730' w/200 sacks. W.S.O. on 4, 1/2" holes at 4242'. Gun perforated 4835'-4770', 4725'-4610', 4300'-4255'. 2-1/2" tubing stuck at 4823', cut at 4763' and bottom piece dropped approximately 30' with tubing still stuck. Cut at 4200' - not loose. Cut and recovered from 4100'. Top sand in 5-1/2" casing found at 3736'. Cleaned out to 3878'; casing bad and sand running in at 3686' to 3702'.

2. Last produced.

| Date | Net oil | Gravity | Cut |
|---|---|---|---|
| October 1946 Ave. : | 27 B/D, 18° gravity oil with 27 B/D water. | | |
| November 1946 Ave.: | 3 B/D oil, 3 B/D water. | | |

~~The proposed work is as follows:~~

PROPOSED WORK:

1. Clean out below bad place in 5-1/2" casing at 3686'-3702' by running fluid in hole to hold back sand, if possible.
2. Place 20' cement bridge in solid blank casing below bad place and continue plug up above 3666'.
3. Cap surface and abandon well.

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| | | Cmt | Blanket | Cmt | Cmt |

HOW:tg

abandon

THE TEXAS COMPANY
(Name of Operator)

By H. O. Woodruff
District Engineer

ADDRESS NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

STENOGRAPHER

Forms Filed 100-101-103-elec. log

Date Rec'd. 9-28-45

Electric Log 25-5048 (1)

Location ✓

Elevation ✓

ENGINEER

Form Needed —

Map Correction producing

Form 150b (Date of Release)

At Request of Operator Blankut

Because Abandoned

Because Request by Oper.

Remarks log last core record

elec log (1)

ERma

SUBMIT LOG IN DUPLICATE

FILL IN BLANK IN WITH TYPEWRITER. WRITE ON ONE SIDE OF P ONLY

STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
SEP 28 1945
LOS ANGELES, CALIFORNIA

## WELL SUMMARY REPORT

Operator The Texas Company Field Long Beach

Well No. Field #24 Sec. 19, T. 4S, R. 12W, S.B. B. & M.

Location 370' Sly. on C/L California Ave. from C/L 33rd St. thence Wly. 260' at 90° Elevation of derrick floor / ground above sea level KB 96.52 Floor 93.42 Mat 86.94 feet.

In compliance with the provisions of Chapter 93, Statutes of 1939, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date 9-17-45 Signed W. A. Clark
W. A. Clark

H. O. Woodruff (Engineer or Geologist) W. H. Loomis (Superintendent) Title Division Engineer (President, Secretary or Agent)

Commenced drilling 8-19-44 Completed drilling 9-28-44 Drilling tools Cable / Rotary

Total depth 5050 Plugged depth 5045

Junk Bit, and 6 drill collars from 3895 to 4042 in sidetracked hole.

| GEOLOGICAL MARKERS | DEPTH |
|---|---|
| Top Brown Zone | 4252 |

Commenced producing October 1, 1944 (date) Flowing / gas lift / pumping (cross out unnecessary words)

| | Clean Oil bbl. per day | Gravity Clean Oil | Per Cent Water including emulsion | Gas Mcf. per day | Tubing Pressure | Casing Pressure |
|---|---|---|---|---|---|---|
| Initial production | 30 | 17.1 | 66% | - | - | - |
| Production after 30 days | 36 | 17.1 | 34.0% | | | |

### Casing Record (Present Hole)

| Size of Casing (A. P. I.) | Depth of Shoe | Top of Casing | Weight of Casing | New or Second Hand | Seamless or Lapweld | Grade of Casing | Size of Hole Casing landed in | Number of Sacks of Cement | Depth of Cementing if through perforations |
|---|---|---|---|---|---|---|---|---|---|
| 5½ | 5050 | 0 | 15.5 | New | Smles. | J-55 cmt'd thru Hayward sleeve at 730 ft B with 200. | 6-5/8 | 400 | |

### Perforations

| Size of Casing | From | To | Size of Perforations | Number of Rows | Distance Between Centers | Method of Perforations |
|---|---|---|---|---|---|---|
| 5½ | 4255 ft. | 4300 ft. | ½" holes | | 6" | Gun perforations |
| | 4610 ft. | 4725 ft. | | | | |
| | 4770 ft. | 4835 ft. | | | | |
| | ft. | ft. | | | | |
| | ft. | ft. | | | | |

MAP | MAP BOOK | CARDS | BOND | FORMS 114 121

Electrical Log Depths 25 - 5048 (Attach Copy of Log)

DIVISION OF OIL AND GAS
RECEIVED
SEP 28 1945
LOS ANGELES, CALIFORNIA

The Texas Company — Long Beach

Field #24 — 19 — 4S — 12W — S.B.

W. A. Clark

W. A. Clark
Division Engineer

9-17-45

1944

8-19 Spudded in at 5:00 P.M., drilling an 8-5/8" hole.

8-21 Drilled an 8-5/8" hole to 2527 and started coring in an 8-5/8" hole.

8-27 Cored in 8-5/8" hole to 2924 and drilled ahead in 8-5/8" hole.

8-30 Drilled an 8-5/8" hole to 4042. Pulled out kelly and one stand pipe, then drill pipe backed off while rotating. Dropped 36 stands, 6 drill collars and bit. Top of fish 664. Recovered 5 stands of drill pipe leaving top of fish at 1123.

8-31 Took hold of fish, established circulation and spotted oil. Could not jar fish loose. Backed off leaving sub on top of fish. Ran socket on left hand drill pipe. Backed off drill pipe at top of drill collars, leaving bit, 6 drill collars and sub in hole. Top of fish 3895.

9-1 Took hold of drill collars with socket but could not jar fish loose. Reamed hole.

9-2 Reamed to top of fish. Washed over fish to 3897.

9-3 Washed over fish to 3945.

9-4 Repaired equipment.

9-5 Washed over fish to 3967.

9-6 Washed over fish to 3946.

9-7 Washed over fish to 4042.

9-8 Took hold of fish with socket. Could not jar fish loose. Washed over fish to 4042.

9-9 Could not jar fish loose. Could not drill by top of fish.

9-10 Could not drill by fish. Washed over fish to 3903.

DIVISION OF OIL AND GAS
RECEIVED
SEP 28 1945
LOS ANGELES, CALIFORNIA

The Texas Company
Field #24

Long Beach
19 4S 12W S.B.

9-11 Could not wash over fish below 3903. Ran Halliburton hole caliper log. Pumped in 75 sacks of Victor construction cement through drill pipe hung at 3891. Displaced cement with 150 cu. ft. of mud and pulled out. M.T. 6 min., D.T. 3 min.

9-12 Drilled out cement from 3655 to 3705.

9-13 Reamed hole and conditioned mud. Whipstock would not go to bottom.

9-14 Ran removable whipstock and started redrilling at 3705.

9-23 Drilled and 8-5/8" hole to 5050 and ran Schlumberger electric log. Ran and cemented 113 joints, 5083.83' of 5½", 15.5#, J-55, seamless, 8 round thread, new, National Tube Co. casing at 5050 K.B. Used Baker guide shoe on bottom and Baker float collar one joint, 41.69', up. Hayward collar at 730'. Used 3 B & W scratchers at each of the following points: 5040, 4830, 4748, 4619, 4533, 4494, 4316 and 4273. Cemented shoe with 400 sacks of Victor construction cement using one top plug. Bumped plug at 1200# final pressure. M.T. 47 min., D.T. 18 min., T.T. 1 hr. 12 min. Cemented Hayward sleeve at 730' K.B. with 200 sacks of Victor construction cement. M.T. 17 min., D.T. 3 min., T.T. 22 min. ave. Slurry Wt. 118#/cu.ft. Closed Hayward sleeve and tested at 700# pressure for 10 minutes without loss. Surface cementing operations were witnessed and approved by a D.O.G. representative.

9-24 Landed casing and laid down drill pipe.

9-25 Drilled out cement from 667 to 733.

9-26 Drilled out cement from 5005 to 5045. Perforated 4½" holes at 4242' K.B. using a McCullough gun. Ran Halliburton tester on 2-7/8" O.D. tubing with packer set at 4220 with tailpipe extending to 4240. Tailpipe included 2 pressure bombs, 5' perforated and 3/8" choke. Used no cushion. Valve open at 1:20 P.M., closed valve at 1:51 P.M. Valve open 31 min. Had a good puff then dead. Recovered 27' of medium drilling fluid. Both bombs showed testor open. D.O.G. representative witnessed and approved water shut off. Changed mud to oil.

9-27 Perforated 4255-4300, 4610-4725, 4770-4835 with 450 ½" holes, using a McCullough gun.

9-28 Hung 2-7/8" O.D. tubing at 4239.

9-29 Moved out drilling equipment.

9-30 Moved out drilling equipment.

DIVISION OF OIL AND GAS
RECEIVED
SEP 28 1945
LOS ANGELES, CALIFORNIA

The Texas Company
Field #24

Long Beach
19 4S 12W S.B.

10-1 30 Bbls. net, 66% LLCut
25 " " 36% "
28 " " 28% "
33 " " 16% "
22 " " 30% "
25 " " 30% "
18 " " 46% "
32 " " 24% "
39 " " 9.6% "

12-29 Pulled rods and tubing. Lane Wells Gun perforated the 5½" casing 4470-4560 with 180 - ½" holes, 6" centers. Stuck gun at 4465'.

12-30 Ran Bowen socket and fished for perforating gun.

12-31 Recovered gun.

1945

1-1 Cleaned out to 5036.

1-2 Landed 2⅛" tubing at 4450'.

1-3 53 Bbls. net, 32% cut

1-4 31 " " 56% "

1-5 31 " " 48% "

1-6 25 " " 57% "

1-7 36 " " 34% "

1-8 20 " " 57% "

1-9 16 " " 71% "

Produced 873 barrels net oil during 30 days in January 1945 for an average of 29 B/D net, 15.9° gravity, 47.7% cut.

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| | | | | | |

FORM 101
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
SEP 28 1945
LOS ANGELES, CALIFORNIA

## LOG AND CORE RECORD OF OIL OR GAS WELL

Operator The Texas Company Field Long Beach

Well No. Field #24 Sec. 19, T. 4S, R. 12W, S.B. B. & M.

## FORMATIONS PENETRATED BY WELL

| DEPTH TO Top of Formation | DEPTH TO Bottom of Formation | Thickness | Drilled or Cored | Recovery | DESCRIPTION |
|---|---|---|---|---|---|
| 0 | 391 | | Drilled | | Surface conglomerate |
| 391 | 2527 | | " | | Sand and shale |
| 2527 | 2547 | | Core #1 | 12' | ½' Soft black organic shale<br>1' Soft coarse gray sand<br>2½' Soft black sandy organic shale<br>8' Soft coarse gray sand becoming silty toward bottom. |
| 2547 | 2567 | | Core #2 | 5' | 1/6' Soft silty gray sand<br>1/6' Hard sandstone shell<br>1/6' Soft sandy black organic shale<br>2½' Soft mushy coarse gray sand. |
| 2567 | 2587 | | Core #3 | 6' | Soft silty gray sand. |
| 2587 | 2607 | | Core #4 | 14' | 1' Soft coarse gray sand<br>1' Soft black organic shale<br>3' Soft coarse gray sand<br>4' Soft black organic shale<br>1' Soft coarse gray sand<br>2' Soft black organic shale<br>2' Soft coarse gray sand |
| 2607 | 2627 | | Core #5 | 0 | No recovery. |
| 2627 | 2647 | | Core #6 | 3½' | ½' Medium hard, dark gray sandy shale<br>3' Fine soft gray sand. |
| 2647 | 2667 | | Core #7 | 12' | 6' Medium hard, dark gray shale. Forams No dips<br>2' Fine, loose, soft, gray sand<br>½' Medium hard dark gray shale<br>3' Fine, loose, soft, gray sand. Increasingly silty to bottom.<br>½' Very sandy, soft, dark gray shale |
| 2667 | 2687 | | Core #8 | 18' | Medium hard sand, micaceous medium gray shale. Forams. |

DIVISION OF OIL AND GAS
RECEIVED
SEP 28 1945

The Texas Company
Field #24

Long Beach LOS ANGELES, CALIFORNIA
19 4S 12W S.B.

| | | | | |
|---|---|---|---|---|
| 2687 | 2703 | Core #9 | 3' | Soft, fine, loose, gray sand. |
| 2703 | 2723 | Core #10 | 18' | Soft, coarse, loose, gray sand. Silty in parts. |
| 2723 | 2744 | Core #11 | 12' | Soft, coarse, loose, gray sand. |
| 2744 | 2765 | Core #12 | 12' | 3½' Coarse, mushy, gray sand .<br>½' Soft, dark gray, sandy shale.<br>3½' Coarse, mushy, gray sand.<br>4½' Soft, gray, sandy, micaceous shale. |
| 2765 | 2786 | Core #13 | 14' | 3' Soft, very sandy, dark gray, micaceous shale. Forams Wafery. Dips ∔ 20°.<br>4' Soft black, micaceous shale with good partings. Forams.<br>1' Soft, interbedded black shale and gray sand.<br>2' Medium to soft, micaceous shale with partings. Forams.<br>4' Soft, silty, gray sand. |
| 2786 | 2803 | Core #14 | 12' | Hard, massive, micaceous, sandy shale with a few irregular enclosures of gray sand. No dips. |
| 2803 | 2823 | Core #15 | 18' | ½' Massive, dark gray, sandy, micaceous shale<br>1' Medium grained soft gray sand.<br>9½' Massive, soft, sandy micaceous dark gray shale with irregular inclusions of coarse gray sand on bottom.<br>1' Coarse, soft, gray sand.<br>½' Massive shale as above.<br>5½' Coarse, soft, gray sand. |
| 2823 | 2844 | Core #16 | 13' | Medium hard, massive, sandy, micaceous gray shale. Forams. No dips. |
| 2844 | 2864 | Core #17 | 13' | 5' Shale as above.<br>4' Coarse, soft, gray sand.<br>1½' Shale as above.<br>¼' Coarse, soft, gray sand.<br>1' Shale as above.<br>1¼' Coarse, soft, gray sand. |
| 2864 | 2885 | Core #18 | 12' | 4' Massive, dark gray, micaceous shale. Forams. Very sandy.<br>1' Fine, loose, gray sand.<br>1' Shale as above.<br>2' Gray sand and shale. Crushed in core bbl.<br>1' Massive, hard, dark gray, micaceous shale. Forams.<br>1½' Fine, loose, gray sand.<br>1½' Massive, sandy, dark gray, micaceous shale. Forams. |

DIVISION OF OIL AND GAS
RECEIVED
SEP 28 1945
LOS ANGELES, CALIFORNIA

The Texas Company
Field #24

Long Beach
19 4S 12W S.B.

| | | | | |
|---|---|---|---|---|
| 2885 | 2906 | Core #19 | 8' | 1' Fine, loose, gray sand.<br>2' Very sandy, medium hard, gray shale.<br>1½' Medium mushy, gray sand.<br>1½' Sandy, gray shale with irregular inclusions of fine gray sand.<br>2' Coarse, loose, gray sand. |
| 2906 | 2924 | Core #20 | 12' | Hard, light gray, massive, sandy, micaceous shale. Forams. |
| 2924 | 5050 | Drilled | | Sand and shale. |

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| | | | | | |

DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL AND GAS

No. 782

La Calif. 10-23 1944

The Texas Co.
Name of Operator

Address

*This is to acknowledge the receipt of logs and similar records of wells on* Sec. 19 T. 4S R. 12W, SB B. & M., *as herewith enumerated by well numbers.*

*Logs* Field 24 Long Beach

*History*

*Core record*

*Subsequent work* electric log 9-23-44

R. D. BUSH, *State Oil and Gas Supervisor*

FORM 127
36195 7-44 3500 TRIP SPO

By E. B. Spencer *Deputy*

FORM 109-A

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Test of Water Shut-off
(FORMATION TESTER)

No. T 1-43277

Los Angeles 14, Calif. October 9, 1944

Mr. W. H. Loomis
Long Beach 1, Calif.
Agent for THE TEXAS COMPANY

DEAR SIR:

Your well No. "Field" 24, Sec. 19, T. 4 S., R. 12 W., S. B. B. & M. Long Beach Field, in Los Angeles County, was tested for water shut-off on September 26, 1944. Mr. Chas. Corwin, Inspector, designated by the supervisor, was present as prescribed in Sec. 3222 and 3223, Ch. 93, Stat. 1939; there were also present R. F. Cory, Engineer, and R. D. Crum, Driller.

Shut-off data: 5-1/2 in. 15.5 lb. casing was cemented at 5047 ft. on September 24, 1944 in 8-5/8" hole with 400 sacks of cement of which 5 sacks was left in casing. Casing record of well: 10-3/4" cem. 20'; 5-1/2" cem. 5047', c.p. 727', perf. 4 test holes at 4242', W.S.O. Junk (1st hole) drill collar and bit 3792'-3939'. T.D. 3939', plugged with cement 3939'-3792'.

Reported total depth present hole 5047 ft. Bridged with cement from 5047 ft. to 5042 ft. Cleaned out to 5042 ft. for this test. A pressure of xxx lb. was applied to the inside of casing for xxx min. without loss after cleaning out to xxx ft. A Halliburton tester was run into the hole on 2-1/2 in. drill pipe, with xxx ft. of water cushion, and packer set at 4220 ft. with tailpiece to 4240 ft. Tester valve, with 3/8" bean, was opened at 1:20 p.m. and remained open for xxx hr. and 30 min. During this interval there was an initial puff and no blow for the balance of the test.

THE INSPECTOR ARRIVED AT THE WELL AT 3:00 P.M. AND MR. CORY REPORTED:

1. The 5-1/2" casing was perforated with four, 1/2" holes at 4242'.
2. A Halliburton tester was run into the hole as noted above.

THE INSPECTOR NOTED:

1. When the drill pipe was removed 27' of medium drilling fluid was found in the drill pipe above the tester, equivalent to 0.2 bbl.
2. The recording pressure bomb chart showed that the tester valve was open 30 minutes.

The test was completed at 3:40 p.m.

THE SHUT-OFF ABOVE 4242' IS APPROVED.

CC:OK

cc- Company
Long Beach

W/L

R. D. BUSH, State Oil and Gas Supervisor

By E. H. Musser, Deputy

36194 7-44 7500
STATE PRINTING OFFICE

FORM 109-D

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T 1-43258

Los Angeles 14, Calif. October 2, 1944

Mr. W. H. Loomis
Long Beach 1, Calif.
Agent for THE TEXAS COMPANY

DEAR SIR:

Operations at your well No. "Field" 24 Sec. 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by A. Pfeil, Inspector, representative of the supervisor, on September 23, 1944. There was also present D. M. Smith, Engineer, and M. M. French, Drilling Foreman.

Casing Record 10-3/4" cem. 20'; 5-1/2" cem. 5047', c.p. 727'; T.D. 5047'.

Junk (1st hole) drill collar and bit 3792'-3939'; T.D. 3939', plugged with cement 3939'-3792'.

The operations were performed for the purpose of demonstrating that the known surface waters are adequately protected.

The inspector arrived at the well at 9:10 p.m and Mr. Smith reported:

1. An 8-5/8" rotary hole was drilled from 20' to 5047'.
2. Electrical core readings showed the top of the Brown zone 4252'.
3. On September 24, 1944, the 5-1/2", 15.5 lb. casing with a Hayward collar at 727', was cemented with 400 sacks of cement.

THE INSPECTOR NOTED:

1. The 5-1/2" casing was cemented through ports at 727' with 200 sacks of cement.
2. The cement was displaced from the casing with 98 cubic feet of drilling fluid.
3. The final pressure was 200 lb.
4. After closing the cementing ports, a pressure of 700 lb. was applied and held for 10 minutes without loss.

The cementing operations were completed at 11:30 p.m.

THE CEMENTING OPERATIONS AS WITNESSED AND REPORTED ARE APPROVED AS INDICATING THAT THE KNOWN SURFACE WATERS ARE ADEQUATELY PROTECTED.

AP:OH

cc- Company
Long Beach

R/C 213

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Wiesser Deputy

28381 10-43 15M
STATE PRINTING OFFICE

FORM 111.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Proposed Operations

No. P 1-39926

Los Angeles 14, Calif. August 17, 1944

MR. W. H. Loomis

Long Beach 1, Calif.

121

Agent for THE TEXAS COMPANY

DEAR SIR:

Your proposal to drill Well No. "Field" 24,

Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, Los Angeles County,

dated Aug. 10, 1944, received Aug. 14, 1944, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES:

"The well is 370' S. along ℄ Calif. Ave. from ℄ 33rd St. and 260' W'ly at 90°
The elevation of the derrick floor / ground above sea level is * feet.
We estimate that the first productive oil or gas sand should be encountered at a depth of about 4250 feet."

* See Form 100

PROPOSAL:

"We propose to use the following strings of casing, either cementing or landing them as herein indicated:

| Size of Casing | Weight | Grade and Type | Depth | Landed or Cemented |
|---|---|---|---|---|
| 5-1/2" | 15.5 | J-55 Seamless cmtd. through Hayward collar | 5050<br>700 | Cmtd. w/400<br>w/200 |

Well is to be drilled with rotary tools.
It is understood that if changes in this plan become necessary we are to notify you before cementing or landing casing."

DECISION:

THE PROPOSAL IS APPROVED PROVIDED THAT:

1. Mud fluid consistent with good drilling practice shall be used and the column of mud fluid maintained at all times to the surface, particularly while pulling the drill pipe.
2. Any hole to be sidetracked in any oil zone shall be filled with cement, if possible.
3. This division shall be consulted before running the 5-1/2" casing.
4. THIS DIVISION SHALL BE NOTIFIED TO WITNESS:
   (a) The cementing of the 5-1/2" casing through the upper ports. Any subsequent testing required will be specified at that time.
   (b) A test of the effectiveness of the 5-1/2" shut-off through holes opposite the Brown zone shale.

ERMA:OH

cc- P. A. W.
Company
Long Beach

R. D. BUSH
State Oil and Gas Supervisor

By E. H. Musser Deputy
EHB

Blanket bond No. 130253-C

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL & GAS
RECEIVED
AUG 14 1944
LOS ANGELES, CALIFORNIA

## Notice of Intention to Drill New Well

This notice must be given and surety bond filed before drilling begins

037-11549

TEXACO INC.

Long Beach 1, Calif. August 10, 1944

DIVISION OF OIL AND GAS

Los Angeles 14, Calif.

"Field "24

In compliance with Section 3203, Chapter 93, Statutes of 1939, notice is hereby given that it is our intention to commence the work of drilling well No. "Field" #24, Sec. 19, T. 4-S, R. 12-W, S.B. B. & M., Long Beach Field, Los Angeles County.

Lease consists of

The well is 370' S. along ℄ Calif. Ave. from ℄ 33rd St. and 260' W'ly at 90° feet N. or S., and feet E. or W. from

(Give location in distance from section corners or other corners of legal subdivision)

The elevation of the derrick floor / ground above sea level is * 96.52 feet. * see form 100

We estimate that the first productive oil or gas sand should be encountered at a depth of about 4250 feet.

We propose to use the following strings of casing, either cementing or landing them as herein indicated:

| Size of Casing, Inches | Weight, Lb. Per Foot | Grade and Type | Depth | Landed or Cemented |
|---|---|---|---|---|
| 5-1/2" | 15.5 | J-55 Seamless | 5050 | Cmtd. w/400 |
| | | cmtd. through Hayward collar | 700 | w/200 |
| | | | | |
| | | | | |

Well is to be drilled with rotary ~~xxxxx~~ tools.

It is understood that if changes in this plan become necessary we are to notify you before cementing or landing casing.

Address Box 320, Long Beach 1, Calif. THE TEXAS COMPANY
(Name of Operator)

Telephone number 416-21 By H. O. Woodruff
District Engineer

ADDRESS NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

PAW

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| 20 | | | | | |
| Aug 14 1944 G.L. | 8-14-44 G.L. | Ents | Blanket 130253-C | Ents | Ents |

# CalGEM Oil Well Files
# API 037-11543
# “Field” 18

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

## DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# REPORT OF WELL PLUGGING AND ABANDONMENT

Cypress, California
May 4, 2007

Target Dept. Stores
c/o M.E. WRIGHT
16531 Bolsa Chica Street #301
Huntington Beach, CA 92649

Your report of the plugging and **reabandonment** of well **Chevron U.S.A. Inc./"Field" 18**, A.P.I. No. **037-11543**, Section **19**, T. **4**S, R. **12**W, S.B. B & M., **Long Beach** Field, **Los Angeles** County, dated **02-18-07**, received **04-18-07**, has been examined in conjunction with operations witnessed and records filed in this office. We have determined that the requirements of this Division **COULD NOT** be fulfilled.

**NOTE:**

1. Surface plugging completed on **03-20-07**.
2. Surface inspection made and approved on **05-02-07**.
3. This well is NOT to be built over without further consideration.
4. Deficiencies:
   1. Plug from 4021'-3950' not placed.
   2. Unable to cavity shot @ 1850' or plug 1850'-1750'.
   3. Unable to place plug from 764'-660'.

Hal Bopp
*State Oil and Gas Supervisor*

**By:** _____
**For:** R. K. Baker, *Deputy Supervisor*

INDIVIDUAL BOND

cc: Update
Los Angeles County Assessor
Los Angeles County Fire Prevention Bureau
Long Beach Department of Building & Planning
Department of Oil Properties
Chevron U.S.A. Inc.

KMC:dw

DIVISI )F OIL, GAS, AND GEOTHERMAL RES RCES

# CHECK LIST – RECORDS RECEIVED AND WELL STATUS

| | | |
|---|---|---|
| Company: | **Target Dept. Stores** | Well: **Chevron U.S.A. Inc./"Fields" 18** |
| API#: | **037-11543** | Sec. **19**, T. **4S**, R.**12W**. S. B. B. & M. |
| County: | **Los Angeles** | Field: **Long Beach** |

| RECORDS RECEIVED | DATE |
|---|---|
| Well Summary (Form OG100) | |
| History (Form OG103) | **4/18/07** |
| Core Record (Form OG101) | |
| Directional Survey | |
| Sidewall Samples | |
| Date final records received. | |
| Electric Logs: | |
| Other: | |

**STATUS**

| | | | |
|---|---|---|---|
| Producing | ☐ | Drilling | ☐ |
| Abandoned | ☐ | Idle | ☐ |
| Reabandoned | ☒ | Other | ☐ |

**WELL TYPE**

| | | | |
|---|---|---|---|
| Oil | ☒ | Waterflood | ☐ |
| Gas | ☐ | Water Disposal | ☐ |
| Water Source | ☐ | Cyclic Steam | ☐ |
| Observation | ☐ | Steam Flood | ☐ |
| Exploratory | ☐ | Fire Flood | ☐ |
| Dry Hole | ☐ | Other | ☐ |

EFFECTIVE DATE: 3/20/07

REMARKS: Reabd

| | ENGINEERS CHECK LIST | CLERICAL CHECK LIST |
|---|---|---|
| ☒ | Summary, History & Core Record (Dupl.) | Location change |
| ☐ | Electric Log | Elevation change |
| ☒ | Operator's Name | Form OGD121 |
| ☒ | Signature | Form OGD150b (Release of Bond) |
| ☒ | Well Designation | Duplicate logs to archives |
| ☐ | Location | Notice of Records Due |
| ☐ | Elevation | EDP 5.15.07 vm |
| ☒ | Notices | District Date Base |
| ☒ | "T" Reports | Final Letter (OG159) 5/10/07 sr |
| ☐ | Casing Record | Update Center 5.15.07 vm |
| ☒ | Plugs | |
| ☐ | Directional Survey | |
| ☐ | Production/Injection (FAP Codes: ) | |
| ☐ | E Well on Prod., enter EDP | **FIELD CHECK LIST** |
| ☒ | Surface Inspection Required | Date Surface Inspection Completed: 5/2/07 GBOK |
| ☐ | Surface inspection Waived (Island) | Other: |
| ☐ | Well site restoration deferred (common cellar) | |
| ☒ | Final Letter Required AB: ☐ REAB: ☒ 5-4-07 DW | |
| ☐ | Other: | |

Note: Also to state "This well is not to be built over with out further consideration" JM 5/07

| RECORDS NOT APPROVED | RECORDS APPROVED |
|---|---|
| *(Reason:)* Need Surf Insp | *(Signature)* |
| | RELEASE BOND |
| | Date Eligible |
| | *(Use date last needed records received.)* |
| | MAP AND MAP BOOK N/C |

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# HISTORY OF OIL OR GAS WELL

Operator Target Dept. Stores. Field LONG BEACH County LOS ANGELES

Well Chevron-Texaco E & P Co. "FIELDS" 18-Rd Sec. 19 T. 4S R. 12 S.B. B.&M.

A.P.I. No. 037-11543 Name M. E. WRIGHT Title CONSULTANT

(Person submitting report) (President, Secretary, or Agent)

Date 2-18-07
(Month, day, year)

Signature M. E. Wright

Address 3350 - 6th St, CC 3425, Minneapolis, MN 55402 Telephone Number 612-204-0214

History must be complete in all detail. Use this form to report all operations during drilling and testing of the well or during redrilling or altering the casing, plugging, or abandonment, with the dates thereof. Include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, and initial production data.

| Date 2007 | |
|---|---|
| 3-5 | Drove rig and equipment to location. Set drilling mat in place. Moved rig in, RU mast. Had backhoe dig holes through asphalt. Sank marsh anchors and put out guy lines. Had welder welding wellhead, flange and riser onto 8-5/8" csg stub. Unloaded equipment. Hooked up hoses on mud pump. Secured rig and well. |
| 3-6 | Drove to location. Serviced rig and equipment. Installed, nippled up and function tested BOPE. RU working platform, mud pump and circulating equipment, tbg equipment, and power swivel. Made up 6-1/4" bit on one 4-3/4" drill collar, unable to get bit deeper than 16' due to bend in surface csg. LD 4-3/4" drill collar. Made 6-1/4" bit up on 1 joint 2-7/8" tbg. Drilled wood from 16' to 33', circulating with mud. Started getting returns coming up through cellar floor from outside 9" surface pipe. Pulled out with bit. Secured rig and well until A.M. |
| 3-7 | Drove to location. Serviced rig and equipment. Ran back in hole with 6-1/4" bit on 2-7/8" tbg. Continued drilling up wooden plug and circulating out coarse sand from 33' to 246'. Pulled out with bit. Found bit plugged and balled up clay. Secured rig and well until A.M. |
| 3-8 | Drove to location. Serviced rig and equipment. Made up good, used 6 -1/4" bit and ran in hole. Bit stopped on fill at 40'. Drilled and cleaned out sand and gravel from 40' to 310'. Circulated hole clean at 310'. Pulled out with bit. Secured rig and well until A.M. |
| 3-9 | Drove to location. Serviced rig and equipment. Checked and re-ran same 6-1/4" bit and stopped on hard fill at 180'. Continued drilling and cleaning out wood, sand and gravel from 180' to 465'. Circulated hole clean at 465'. POOH with bit. Secured rig and well.<br>*NOTE: Vacuum truck hauled in 2 loads (120 bbls) mud from Allenco yard. |
| 3-12 | Drove to location. Serviced rig and equipment. Made up good 6-1/4" bit and ran on 2-7/8" tbg. Bit stopped at 120' on hard fill. Drilled and cleaned out sand, gravel and wood from 120' to 559'. Circulated hole clean at 559'. POOH with bit. Secured rig and well until A.M.<br>*NOTE: Vacuum truck hauled in 2 loads (120 bbls) of mud from Allenco yard. |
| 3-13 | Drove to location. Serviced rig and equipment. Picked up two 3-1/2" drill collars and made up good 6-1/4" bit on bottom. RIH to top of fill at 120'. Circulated and drilled out sand and gravel down to 624'. Circulated hole clean at 625'.<br>*NOTE: Vacuum truck hauled in 2 loads (120 bbls) mud from Allenco yard. |
| 3-14 | Drove to location. Serviced rig and equipment. Replaced worn 6-1/4" bit with good 6-1/4" bit and ran in hole on two 3-1/2" drill collars and 1 joint 2-1/3" tbg to tag top of fill at 98'. Drilled and cleaned out sand and gravel from 98' to 565'. POOH with bit. Secured rig and well until A.M.<br>*NOTE: Vacuum truck hauled in 1 load (60 bbls) mud from Allenco yard. |

REC'D APR 18 2007

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# HISTORY OF OIL OR GAS WELL

| | |
|---|---|
| 3-15 | Drove to location. Serviced rig and equipment. Checked and ran in with same 6-1/4" bit with two 3-1/2" drill collars and 2-7/8" tbg. Continued drilling and cleaning out sand and gravel from 65' to 565'. Circulated hole clean at 565'. POOH with tbg, drill collars and bit. RU Tiger Wireline Service. Ran 1 Gamma Ray log from surface down to 565', and 1 Casing Caliper Profile log on 8-5/8" from surface to bottom of 8-5/8" stub at 39'. Rigged down Tiger Wireline Service. Secured rig and well until A.M.<br>*NOTE: Vacuum truck hauled in 1 load (60 bbls) mud. |
| 3-16 | Drove to location. Serviced rig and equipment. Ran same 6-1/4" bit on 3-1/2" drill collars and 2-7/8" tbg. Drilled and cleaned out sand from 192' to TOC plug at 625'. Circulated hole clean at 625'. POOH with tbg, drill collars and bit. Secured rig and well until A.M. DOGGR Mr. K. Carlson & Mr. M. Kratovil approved cmt plugging from 625' to surface.<br>*NOTE: Vacuum truck hauled in 1 load (60 bbls) mud. |
| 3-19 | Drove to location. Serviced rig and equipment. Ran in with 2-7/8" saw-toothed collar. Drilled and cleaned out sand and gravel from 95' to top of cement plug at 625'. RU Ausburn Cementers, with bottom of tubing at 625', Ausburn mixed, pumped and displaced 195 sx (225 cu. ft.) Class "G" neat cement to leave calc TOC at 383'. Hole size unknown. Pulled out with tubing. Secured rig and well until A.M. DOGGR witnessed plug from 627'. By A. B. Gorashia |
| 3-20 | Drove to location. Serviced rig and equipment. Ran in with tbg and tagged TOC plug at 40'. Hung bottom of tbg at 38' and RU Ausburn Cementing. Ausburn mixed and pumped 11 sx (12 cu. ft) "G" neat cmt to bring cmt to surface. Rigged down cementers. LD tbg. RD work floor and BOPE. Loaded out tbg equipment, took down guy lines and rigged down mast. Started cleaning out solids from mud pump tank. Secured rig and well.<br>DOGGR A. B. Gorashia witnessed surface plug (Phase 1 tag), 40'<br>DOGGR A. B. Gorashia witnessed surface plug (up grade) 12 cf. |
| 3-21 | Drove to location. Serviced rig and equipment. Finished loading out tools and equipment and cleaning out mud pump. Helped stinger crane load out drilling mat and BOPE. Moved pipe trailer, mud pump and rig off location. Cleaned location. Set up fences, moved off. |
| 4-3 | Drove to location. Cut csg 5' below surface. Chipped away cmt, got ready for gas test. Steel I. D. plate. Gas test approved. |

REC'D APR 18 2007

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# CONSTRUCTION SITE WELL INSPECTION

District Ref. No. _____

Field: Long Beach City/County Long Beach Sec. 19 T. 4S R. 12W S.BB.&M.

Location (major cross streets): Atlantic Ave and 33rd Street

Development representative: Mick Beyer Phone: (310) 505-9787

Describe the exact location of the excavation or well at the building site (from a reference point on a Division Map):

How the location was determined: Measured ☒ Surveyed ☐ Other ☐

Describe: _____

Well designation: "Field" 18 , API No. 03711543

Operator: Target Dept. Stores

## SAFETY PRECAUTIONS AND UNSAFE EXCAVATIONS

**CAUTION!** Oil and gas wells may produce hydrogen sulfide gas, which is highly poisonous and will accumulate and concentrate in low areas such as excavations. Before entering an excavation area, test to ensure that there is sufficient oxygen and that the flammable/toxic gas readings are within safe limits.

| INSPECTIONS | 1 | Initials Date | 2 | Initials Date | 3 | Initials Date | 4 | Initials Date |
|---|---|---|---|---|---|---|---|---|
| Excavation size | 6'X6' 5' down | 5/4/07 AB | | | | | | |
| Picture No. | | | | | | | | |
| Picture direction | | | | | | | | |
| Metal detector (Y/N) | N | | | | | | | |
| Visible casing size(s) (or comment) | 81/4" | | | | | | | |
| Fluid leaks (Y/N)* | N | | | | | | | |
| Amount (est.) | | | | | | | | |
| Gas leaks (Y/N)* | N | | | | | | | |
| Amount (est.) | | | | | | | | |
| Gas detector (N/Y) | Y | | | | | | | |
| Bubble test (Y/N) | Y | | | | | | | |

*Leak location(s): N/A

Describe hazardous or damaged well condition(s): N/A

Report finalized by: AB Gorashi A., Division of Oil, Gas & Geothermal Res. Date: 5/4/07



OG190A (12/00/GSR1/1M)

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

4e

**No. T 107-0380**

# REPORT ON OPERATIONS

Cypress, California
April 12, 2007

Target Department Stores
c/o M.E. WRIGHT
16531 Bolsa Chica Street #301
Huntington Beach, CA 92649

Your operations at well **Chevron U.S.A. Inc./"Field" 18,** A.P.I. No. **037-11543**, Sec. **19**, T. **4**S., R. **12**W, S.B. B. & M., **Long Beach** Field, **Los Angeles** County, were witnessed on **4/5/07**. **AB Gorashi**, representative of the supervisor, was present from **0800** to **1000**. There was also present **Mick Beyer**, **Allenco Supervisor**.

Present condition of well: **13" cem 788'; 8 1/4" cem 4230' WSO, shot & pulled fr 764'; 5 3/4" cem 6210' WSO, cp 4730' & 4870', perfs @ int 4230'-4830', shot 4051', 4100' & 4170', pulled fr 4051'; 4 3/4" ld 6120'-6366', perfs 6120'-6366'. Junk below 4051' & 4828'. TD (present hole) 7483'. Plugged w/ cem 7483'-6828', 6500'-6106', 4848'-4776', 4560'-4385', 4375'-4185', 4048'-4021' & 627'-5'.**

The operations were performed for the purpose of witnessing the plugging operations in the process of reabandonment.

**DECISION:** APPROVED.

NOTE: The required Class II2M blowout prevention equipment was inspected and approved on **3/14/07**.

DEFICIENCIES:
1. Plug from 4021'-3950' not placed.
2. Unable to cavity shot @ 1850' or plug 1850'-1750'.
3. Unable to place plug from 764'-660'.

CONTRACTOR: Allenco.

KMC:sjl

[redacted] Approved 5-2-07 GBA

cc: Update
Chevron U.S.A. Inc.

Hal Bopp
*State Oil and Gas Supervisor*

**By:**
**For:** R. K. Baker, *Deputy Supervisor*

OG109 3-16-99

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# CEMENTING/PLUGGING MEMO

T107-0380

Operator Target Dept. Stores c/o M.E Wright Well No. Chevron USA. Inc. / "Field" 18

API No. 037-11543 Sec. 19 T. 4S R. 12W , SB B&M

Field Long Beach , County Los Angeles . On 4-5-2007 ,

Mr. / Ms. AB GORASHI A representative of the supervisor, was present from 800 to 1000 .

There were also present MICK BEYER, ALLENCO, SUPERVISOR

Casing record of well: 13" cem 788'; 8¼" cem 4230' WSO, Shot & pulled fr 764'; 5¾" cem 6210' WSO, cp 4730' & 4870', perfs @ int 4830'-4230', Shot 4170', 4100' & 4051', pulled fr 4051', Junk below 4828' & 4051'; 4¾" ld 6120'-6366', perfs 6120'-6366'. TD (Present Hole) 7483'. Plugged w/ cem 7483'-6828', 6500'-6106', 4848'-4776', 4560'-4385', 4375'-4185', 4048'-4021', 627'.

The operations were performed for the purpose of: (N) Reabandonment

☐ The plugging/cementing operations as witnessed and reported are approved.

☐ The location and hardness of the cement plug @ _____ ' are approved.

Hole size: _____ " fr. 0 ' to 788 ', 12 " to 4235 ' & _____ " to _____ '

| Casing | | | | Cemented | | | Top of Fill | | Squeezed Away | Final Pressure | Perforations |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | Wt. | Top | Bottom | Date | MO-Depth | Volume | Annulus | Casing | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Casing/tubing recovered: _____ " Shot/cut at _____ ', _____ ', _____ ', Pulled fr. _____ ';

_____ " Shot/cut at _____ ', _____ ', _____ ', Pulled fr. _____ '.

Junk (in hole): _____

Hole fluid (bailed to) at _____ '. Witnessed by _____

| Mudding | Date | bbls | Displaced | Poured | Fill | Engineer |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |

Note: (K) II2M 3/14/07 (Q) Gas Leak 4/5/07 AGA C/O = 627'

| Cement Plugs | | Placing | Placing Witnessed | | Top Witnessed | | | |
|---|---|---|---|---|---|---|---|---|
| Date | Sx./cf | MO & Depth | Time | Engineer | Depth | Wt/Sample | Date & Time | Engineer |
| 3/19/07 | 225 cf | TO 627' | 1330 | AB GORASHI | 40'/285' | ATW | 3/20/07 830 | AB GORASHI A |
| 3/20/07 | 12 cf | TO 38' | 1000 | AB GORASHI | 5'/5' | VISUAL | 4/05/07 900 | AB GORASHI A |
| | | | | | | | | |
| | | | | | | | | |

CONTRACTOR:

Allenco

UNCORRECTABLE DEFICIENCIES:

None

DEFICIENCIES NOTED AND TO BE CORRECTED:

None

DEFICIENCIES NOTED AND CORRECTED:

None.

API No. 037-11543 DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES T_____

# BLOWOUT PREVENTION EQUIPMENT MEMO

Operator Target Dept. Stores c/o M.E. Wright Well Chevron U.S.A, Inc. / "Field" 18 Sec. 19 T. 4S R. 12W

Field Long Beach County Los Angeles Spud Date_____

| VISITS: | Date | Engineer | Time | Operator's Rep. | Title |
|---|---|---|---|---|---|
| 1st | 3-14-07 | W. Chen | (1015 to 1045) | | |
| 2nd | | | ( to ) | | |

Contractor Allenco Rig# 5 Contractor's Rep. & Title Mike Russell, operation manager

Casing record of well: Memo

**OPERATION:** ~~Testing~~ (inspecting) the blowout prevention equipment and installation. Critical well? Y ✓ N___

**DECISION:** The blowout prevention equipment and its installation on the 8 5/8 " casing are approved.

Proposed Well Opns: Reabandon . MACP:_____psi

Hole size:_____" fr._____' to_____' ,_____" to_____' &_____" to_____'

**REQUIRED BOPE CLASS:**

| CASING RECORD OF BOPE ANCHOR STRING | | | | | Cement Details | Top of Cement | |
|---|---|---|---|---|---|---|---|
| Size | Weight(s) | Grade(s) | Shoe at | CP at | | Casing | Annulus |
| | | | | | | | |
| | | | | | | | |

| BOP STACK | | | | | | | TEST DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| API Symb. | Ram Size (in.) | Manufacturer | Model or Type | Vert. Bore Size (in.) | Press. Rtg. | Date Last Overhaul | Gal. to Close | Recovery Time (Min.) | Calc. GPM Output | psi Drop to Close | Secs. to Close | Test Date | Test Press. |
| Rd | 2 7/8" | WSI | Duke | 9" | 3000 | | 0.72 | | | | | | |
| Rd | CSO | WSI | Duke | 9" | 3000 | | 0.72 | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

TOTAL: 1.44

**ACTUATING SYSTEM**

Accumulator Unit(s) Working Pressure — psi

Total Rated Pump Output_____gpm Fluid Level

Distance From Well Bore 25 ft. OK

| | Accum. Manufacturer | Capacity | Precharge |
|---|---|---|---|
| 1 | Hand pump | 10 gal. | psi |
| 2 | | gal. | psi |

| CONTROL STATIONS | Elec. | Hyd. | Pneu. |
|---|---|---|---|
| ✓ Manifold at accumulator unit | | ✓ | |
| Remote at Driller's station | | | |
| Other: | | | |

| EMERG. BACKUP SYSTEM | | | Press. | Wkg. Fluid |
|---|---|---|---|---|
| ✓ $N_2$ Cylinders | 1 | L= 51" | 2700 | 9.10 gal. |
| Other: | 2 | L= " | | gal. |
| | 3 | L= " | | gal. |
| | 4 | L= " | | gal. |
| | 5 | L= " | | gal. |
| | 6 | L= " | | gal. |
| | | TOTAL: | | 9.10 gal. |

**AUXILIARY EQUIPMENT**

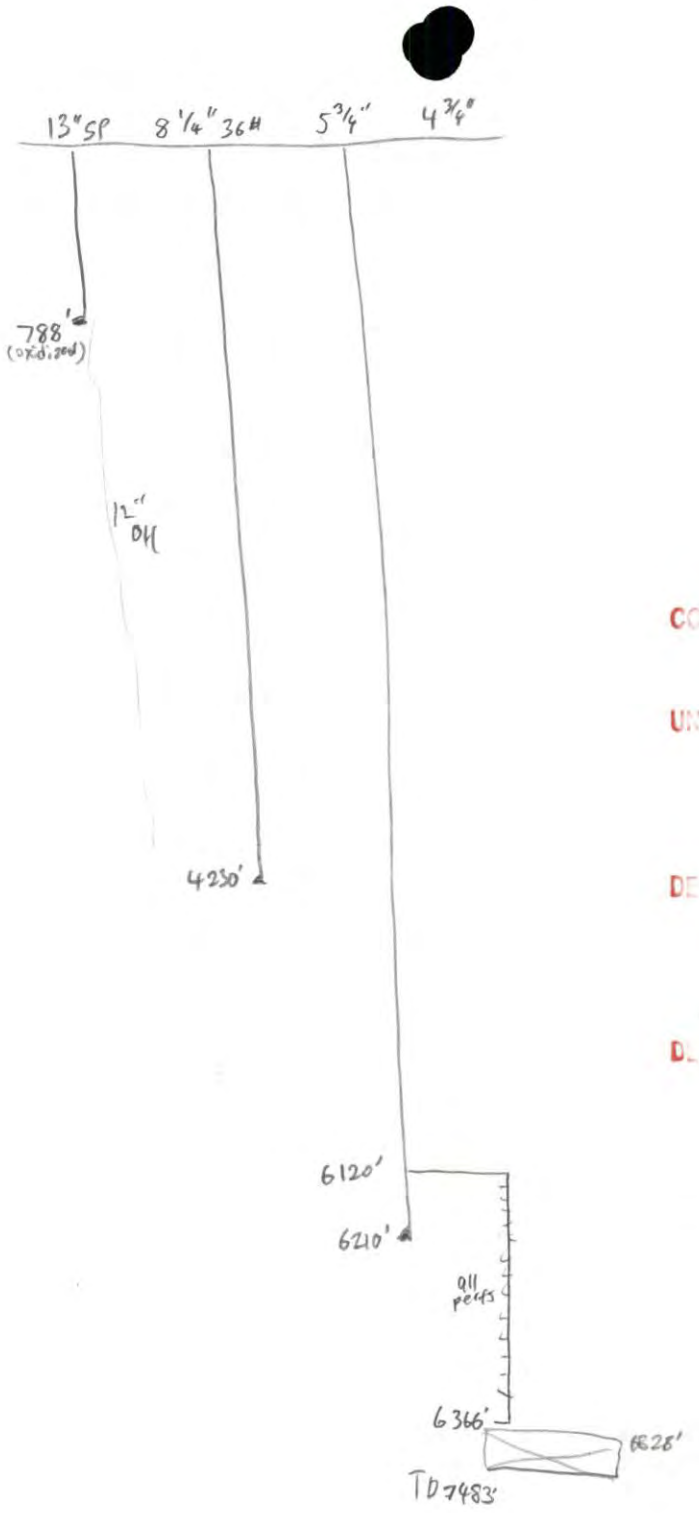
| | | No. | Size (in.) | Rated Press. | Connections: Weld | Flange | Thread | Test Press. |
|---|---|---|---|---|---|---|---|---|
| | Fill-up Line | | | | | | | |
| ✓ | Kill Line | | 2" | 3000 | | | ✓ | |
| ✓ | Control Valve(s) | 3 | | 3000 | | | ✓ | |
| | Check Valve(s) | | | | | | | |
| | Aux. Pump Connect. | | | | | | | |
| | Choke Line | | | | | | | |
| | Control Valve(s) | | | | | | | |
| | Pressure Gauge | | | | | | | |
| | Adjustable Choke(s) | | | | | | | |
| | Bleed Line | | | | | | | |
| | Upper Kelly Cock | | | | | | | |
| | Lower Kelly Cock | | | | | | | |
| | Standpipe Valve | | | | | | | |
| | Standpipe Press. Gauge | | | | | | | |
| ✓ | Pipe Safety Valve | | 2 7/8" | 3000 | | | | |
| | Internal Preventer | | | | | | | |

| HOLE FLUID MONITORING EQUIPMENT | Alarm Type: Audible | Visual | Class |
|---|---|---|---|
| Calibrated Mud Pit | | | A |
| Pit Level Indicator | | | B |
| Pump Stroke Counter | | | |
| Pit Level Recorder | | | C |
| Flow Sensor | | | |
| Mud Totalizer | | | |
| Calibrated Trip Tank | | | |
| Other: | | | |

| Hole Fluid Type | Weight | Storage Pits (Type & Size) |
|---|---|---|
| Drilling Mud | 12 # | pump tanks 110 + 60 vac truck bbls |
| | | |

**REMARKS AND DEFICIENCIES:**

OGD8 (4/03/LICP/3M)




BOPE Insp

C/O Depth

Mud

PLH 4021'-3950'

Set 8 1/4" csg cmt shoe 1850'

PLH 1850'-1750' in + out 8 1/4" csg

PLH 764'-660'

PLH 100'-5' all csgs in out

Surf Insp

BFW 1850'±

CONTRACTOR:

Allenco

UNCORRECTABLE DEFICIENCIES:

None

DEFICIENCIES NOT CORRECTED:

None

DEFICIENCIES CORRECTED:

None.

M.E. Wright
16531 Bolsa Chica St
Suite 301
Huntington Beach, CA 92649

Chevron USA
Field 28
Long Beach

SANTA ANA
19 MAR 2007










DIVISION of OIL & GAS & G. R.
5816 CORPORATE AVE
CYPRESS CA 90630

037-11543

ATTN: K. CARLSON

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

No. P 107-0098

412
(Field Code)

# PERMIT TO CONDUCT WELL OPERATIONS

06
(Area Code)

--
(New Pool Code)

--
(Old Pool Code)

Target Dept. Stores
C/O M.E. Wright
16531 Bolsa Chica St. #301
Huntington Beach CA 92649

Cypress, California
March 2, 2007

Your proposal to **reabandon** well **Chevron U.S.A. Inc./"Field" 18**, A.P.I. No. **037-11543**, Section **19**, T. **4S**, R. **12W**, **S.B.** B. & M., **Long Beach** Field, **Old** area, -- pool, **Los Angeles** County, dated **01/31/07**, received **02/02/07** has been examined in conjunction with records filed in this office.

**THE PROPOSAL IS APPROVED PROVIDED:**

1. Blowout prevention equipment with hydraulic controls, equivalent to this Division's Class **II2M** requirements, or better, shall be installed and maintained in operating condition.
2. Well killing fluid of a quality and in sufficient quantity to control all subsurface conditions in order to prevent blowouts shall be used.
3. At least **400′** of surface casing shall be cemented in the well, if the surface casing is not competent.
4. All portions of the well not plugged with cement shall be filled with clay base mud having a minimum density of 72 lb/cu ft and a minimum gel-shear strength of 25 lb/100 sq ft.
5. This Division shall be consulted and a Supplementary Notice may be required before making any changes in the proposed program.
6. **THIS DIVISION SHALL BE NOTIFIED TO:**
   a. Inspect the installed blowout prevention equipment prior to commencing downhole operations.
   b. Witness the clean-out depth.
   c. Witness the mudding of the hole.
   d. Witness the placing, location and hardness of the cement plug from **4021′** to **3950′**.
   e. Witness the squeeze cementing of the **8 1/4"** casing through the **cavity shot** at **1850′**.
   f. Witness the placing, location and hardness of the cement plug from **1850′** to **1750′**, inside and outside the **8 1/4"** casing.
   g. Witness the placing, location and hardness of the cement plug from **764′** to **660′**.
   h. Witness the placing, location and hardness of the cement plug from **100′** to **5′**, inside and outside **all** casings.
   i. Inspect and approve the cleanup of the well site within 60 days after placement of the surface plug.

**NOTE:**

1. A crew drill may be required at the time of the blowout prevention equipment inspection.
2. This Division does not pass upon your right to enter the property, but merely approves the proposal as conforming to our requirements.
3. Issuance of this report was delayed pending receipt of additional information.
4. The proposed surface plug shall not contain rock or gravel.
5. The base of the freshwater sands is at **1850′±**.

3/16/07 Carlson/Mel Wright (in office)
Need letter from target that they will never be able to build w/in proximity of well. Need all Caliper + E logs.

KMC:kc
cc: Update
Chevron U.S.A. Inc.
INDIVIDUAL BOND

Engineer: Kenneth Carlson

Phone: 714/816-6847

OK to cem 627'± to surface
DOG to wit cem. + Tag ops,
+ Bope insp.

Hal Bopp
*State Oil and Gas Supervisor*

By [signature]
For R. K. Baker, *Deputy Supervisor*

**A copy of this permit and the proposal must be posted at the well site prior to commencing operations. Records for work done under this permit are due within 60 days after the work has been completed or the operations have been suspended.** OG 111

OG/KC

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

Re-

## Notice of Intention to Abandon Well

P# 1070098

| FOR DIVISION USE ONLY | | | |
|---|---|---|---|
| CARDS | BOND | FORMS OGD114 | OGD121 |
| | | 2/3/07 KJ | 2/2/07 KJ |

DIVISION OF OIL AND GAS

In compliance with Section 3229, Division 3, Public Resources Code, notice is hereby given that it is our intention to abandon well Chevron USA, Inc / Chevron Texaco E&P Co "Fields" 18 Rd, API No. 037-11543, Sec. 19, T. 4S, R. 12W, SB B. & M., Long Beach Field, Los Angeles County.

commencing work on FEB. 18, 2007, 19

The present condition of the well is:

1. Total depth 7483 (Plugged to 6828) Pulled 5¾" @ 4051, 8¼" @ 764 (only 29 jts range 1)
2. Complete casing record, including plugs and perforations (present hole) 13" S.P. Cem. 788 (oxidized) 8¼" Cem 4230, 5¾" Cem. 6210, 4¾" liner 6120 to 6366 Perfs - 6120 to 6366; 4880 to 70, 4740 to 30, 4650 to 40, 4770 to 45, 4650 to 10, 4784 to 4830, 4550 to 25, 4435 to 04, 4350 to 4230, W/SO 6210 - Plugs below #9
3. Last produced Jan. 1938 - 14 (Date) (Oil, B/D) (Gas, Mcf/D) (Water, B/D)

or

4. Last injected (Date) (Water, B/D) (Gas, Mcf/D) (Surface pressure)

Additional data for dry hole (show depths):

5. Oil or gas shows
6. Stratigraphic markers
7. Formation and age at total depth
8. Base of fresh water sands 1800± (See "Fields" 24) LOG

9. Is this a critical well according to the definition on the reverse side of this form? ☐ Yes ☐ No

The proposed work is as follows: (Plugs continued from above) 7483 to 6828, 6500 to 6442, 6366 to 6190, 6120 to 6106, 4848 to 4776, 4550 to 4385, 4375 to 4185, 4048 to 4021 (good plug), 670 (Fill on 8') to 627, 75 sks @ surface on mud filled csg.

— See attached program —

1750
92
BFW 1842 1850'± OK

It is understood that if changes in this plan become necessary, we are to notify you immediately.

Address 3350 6th St. CC3425 (Street)
Minneapolis, MN 55402 (City) (State) (Zip)
Telephone Number (612) 304-0214 (Area Code) (Number)

Target Dept Stores (Name of Operator)
By B. Ullery - M.E. Wright (Print Name)
M.E. Wright (Signature) 1-31-07 (Date)

C/O M. Wright
16531 Bolsa Chica St. #301
Huntington Beach CA 92649
(714) 377-9234

OG108 (2/84/DWRR/5M)

**ABANDONMENT PROGRAM**
**CHEVRON-TEXACO "FIELDS" 18 RD.**

**API 037-11543 LONG BEACH FIELD -Sec 19 - T4S - R12W -**

Well is in a planned parking lot 200 feet from bldg. & 160' so. of intersection of Olive Ave and 33rd Sts. 13" stove pipe csg. is rusted away and unknown length of stuck, bent 8 5/8" is exposed 3.5' below ground surface.

**PROGRAM**

1. Remediate well head. MIRU - Install BOP equipment on the 8 5/8" csg. determine strength, length, and usefullness of the 8 5/8" csg. Cmt. if necessary. (90 to 180 feet may be in place)
2. Fill hole with DOG spec mud. Try to circulate. Cmt. csg if necessary.
3. Drill with, extreme care, 6 1/4" hole to top of highest plug at 627. Wood plug is below cement. 100' of fill is under the wood plug.
4. If able to drill and circulate drill out plug, be careful not to tear up 13" SP. Enter 8 5/8" cmt lap if running sand is a problem.
5. Clean out fill to 4021, cmt 4021 to 3950.
6. Condition mud to DOG spec. 72# mud.
7. Shoot cavity shot at 1850.
8. Squeeze cement 8 5/8" casing from 1850 to 1750 inside and out. Tag TOC.
9. Condition mud to DOG specs. Cmt 8 5/8" stub at 764 up to 660.
10. Condition mud to DOG specs. Cmt all csg, 100 feet to the surface.
11. Gas test and weld on a ID plate.

MEW 2/1/07

Department of Oil Properties

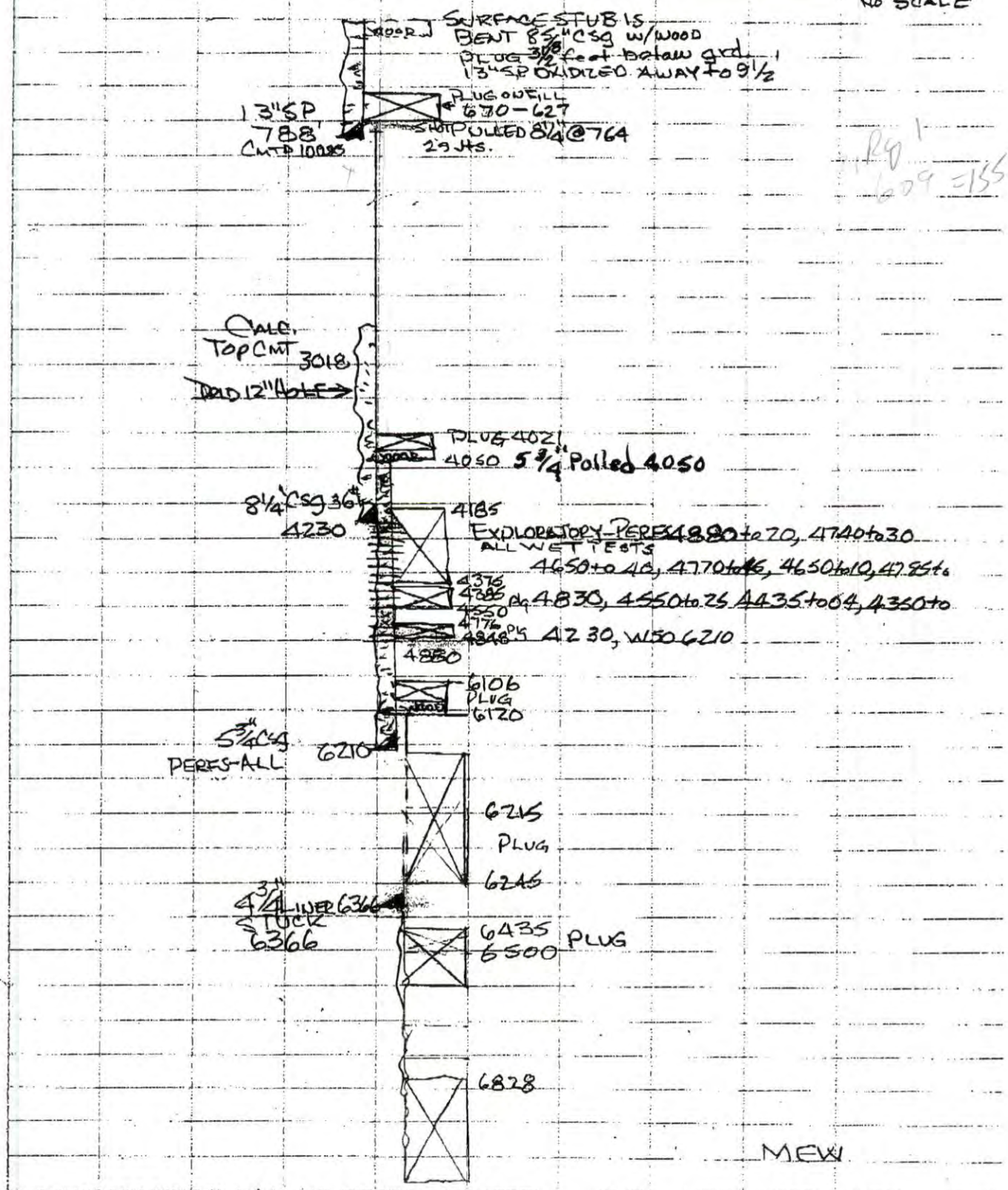
# CHEVRON-TEXACO FIELDS #18 Rd.

API# 037_11543

1-1

1-25-0°

MEWright
NO SCALE




MEW

DPNG. & PERMIT I.D. 7483

TELECOPIER TRANSMISSION RECORD

DATE: 2-2-07 HUNTINGTON BEACH, CALIF TIME: 730 A.M. ~~P.M.~~

FOR: 3 PAGES FOLLOWING THIS PAGE.

TO

NAME: Ken Carlson

COMPANY NAME: DOGGR

ADDRESS: CYPRESS

Ken: Fields 18Rd the "Krataville-Target" well Program — well is in parking lot distant from any Buildings. See Bob's Plans.

NAME OF SENDER: Mel Wright

City of Long Beach

Department of Oil Properties

PAGE NO 1 - 1

DATE

TEXACO FIELD 18

Mel - 1-25-07

Surface Plug
NO FENCE
7 SXS
8 5/8 @ SURFACE

180'

670 CANNOT CLEAN OUT FILL

13 3/8 @ 788
Cmtd 100 SXS

670 PLUG

Shot 8 5/8 @ 764 PULL 29 JTS. (8 5/8 @ SURFACE)

CALCTO CMT. 3018'

12" DRLD. HOLE

MUDDED HOLE 45T

PLUG 4051-4021

WOOD

8 5/8 @ 4230
Cmtd. 400 SXS.
TESTED WSO

PERFS 4222-4529
LINER 6 1/4 @

1ST HOLE, Orig. TD 4529

5 3/4 CZ 10K

DEPTH BREAK

No 13" Csg. Get in hole with hose or Pipe & fill up with enough Cmt to make 200' plug at 670 & mud to 100' & Cmt to Surface.

REDRILL TO TD 7483

NOTE:
DRLD 1926
DPN - REDRILLED 1930
PLUGD 1938 to 6106
- 1938-39 WELL TEST
PERFD 4880-4876
4740-4730, 4650-4640
4770-4745, 4650-4610
4785-4830 CMTD 4848 to 4776 & 4560 to 4540 CMTD. out to 4550 PERF 4550 TO 4525, Cmt to 4466, PERF. 4435-4405, Cmtd 4466 to 4385, PERFD. 4350 to 4230,
1939 ABN. WELL; CO to 4375 Cmt to 4185, PULL 5 3/4 @ 4051
Cmt to 4021 on WOODEN PLUG; PULL 8 5/8 FILL @ 670 Cmt to 627, 5 SXS @ SURFACE)
SHOOT 5 3/4 @ 4170, 4100, 4051 PULL @ 4051
WSO 4230
1931 RD. PULLED 6 1/4" 4273
PLUGGED 4529 to 4280
40 SXS.
6106 PLUG GN 4 3/4" CO 20
6245-6215
3 3/4" 2465 TOC 4636 TOP 6120
6500-6435
SQUEEZE PLUGGED 7483-6828

Post-it® Fax Note 7671
Date 1-31 # of pages ▶ 1
To Ken Cantor
From Mel
Co./Dept.
Co.
Phone # Phone #
Fax # Fax #
Fred 18 Gve to Nuno Please

Mel Wright

"Field" 18

Need

Bot. Plug 4021-3921

combo plug 1942-1742' { UH2 Plug.

BFW Plug 1842-1742

Stub Plug 620' 570'

Surf. Plug 55' 5'

must have competent surface casing.

1750
92
1842

1050 AM

1/31/07

Carlson / Kratovil

Mel needs to (re)abd Field
18 he has "touched" it

Target is expecting him (mel) to
submit paperwork & use rig that
is on Carson property to abd this
well.

called Mel Wright left him
message on ans. machine ≈ 10:55 AM
Kr

Carlson / mel wright
11:10 AM
positively
not
leaking

oxidized 43"
S.P.

754

85/8

90' - 29 jts 180' 85/8"

43'
670




FIELD: LONG BEACH
SITE: CHEVRON U.S.A. INC. "FIELD" 18

API # 037-11543




FIELD: LONG BEACH
SITE: CHEVRON U.S.A. INC. "FIELD" 18
API # 037-11543

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

# REPORT OF PROPERTY AND WELL TRANSFER

| Field or County | District |
|---|---|
| Imperial Co., Wilmington, L.A. Co., W. Coyote, Montebello, Beverly Hills, Seal Beach, El Segundo, Inglewood, Rosecrans, Venice Beach, Las Cienegas, S. Salt Lake, Dominguez, Hyperion, Lawndale, Leffingwell, Long Beach, Los Angeles Downtown, Potrero, Salt Lake, Santa Fe Springs, Cheviot Hills, Sherman, Torrance, Whittier, Howard Townsite, Huntington Beach, Yorba Linda, Orange Co., Richfield, Kraemer, W. Newport, Sunset Beach, Belmont Offshore | District 1 (Cypress, California) |
| Former owner: ChevronTexaco Exploration & Production Co. \| C5680 | Date: 9/23/2005 |

| Well Name | API Number | Section Township Range |
|---|---|---|
| See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA | See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA | See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA |

Description of the land upon which the well (s) is (are) located.
Various

| Date of transfer | New owner | | Type of organization |
|---|---|---|---|
| 7/11/2005 | | Chevron U.S.A. Inc.<br>**C5640** | Corp. |
| | Address: | 9525 Camino Media<br>Bakersfield, CA 93311 | Telephone: 661/654-7065 |
| Reported by | OG30A received in Sacramento 9/2005 | | |
| Confirmed by | Same as above | | |
| New operator new status: **PA** | Designation of Agent: Greg Leyendecker, Agent | | |
| Old operator new status: **AB** | Remarks: For further information see Operator file (C5640) Chevron U.S.A. Inc. | | |

| OPERATOR STATUS ABBREVIATIONS |
|---|
| *PA – Producing Active* |
| *NPA- No potential, Active* |
| *PI- Potential Inactive* |
| *NPI-No potential, Inactive* |
| *AB-Abandoned or No More Wells* |

cc: Update; Envir Desk (2); File
Conservation Committee
Harold W. Bertholf, Inc.
L.A. & Orange County Assessors
WellStats – Cypress Dist. 1
WellStats – Sacrament HQS

Deputy Supervisor: R. K. Baker

Signature: Richard K. Baker, District Deputy

**FORM AND RECORD CHECK LIST**

| Form or Record | Initials | Date | Form or Record | Initials | Date |
|---|---|---|---|---|---|
| Form OGD121 | — | — | Map and Book | | |
| Operator Card | (initials) | 9-23-05 | Notice cancellations | — | — |
| Well Records | (initials) | 9/26/05 — | Bond Status BB | (initials) | 9-23-05 |
| Log Records | (initials) | 9/26/05 — | EDP HQS | J.C | 7-11-05 |
| Production Reports | — | — | Data Base Poly DI | GM | 9-26-05 |
| | | | | | |

# WELL TRANSFER NOTICE

Effective August 22, 2002

**Chevron USA Inc.**
**Texaco California Inc.**
**And**
**Texaco Exploration and Production, Inc.**

Transferred ALL THEIR WELLS
To

## ChevronTexaco Exploration & Production Company

*See OGD156 dated October 18, 2002 in Operator File for ChevronTexaco Exploration & Production Company (C5680) for details*

629 South Hill Street,
Los Angeles, California,
March 4, 1940

Mr. V. H. Wilhelm,
929 South Broadway,
Los Angeles, Calif.

Agent for The Texas Company

Dear Sir:

Your report of abandonment of well No. "Field" 18, Sec. 19, T. 4 S., R. 12 W., S. B. B. & M., Long Beach oil field, Los Angeles County, dated February 16, 1940, and submitted to this division on our form 102, has been examined in conjunction with records filed in this office.

A review of the reports and records shows that the requirements of this division, which are based on all information filed with it, have now been fulfilled.

Yours truly,

R. D. Bush
State Oil and Gas Supervisor

By E. Higginson

cc- Company
Mr. R. D. Bush
WJC:G
Long Beach

Reference to file of data

| No. | | | | Forms | |
|---|---|---|---|---|---|
| 20 | | | | | 121 |
| CS | | | | | ✓ |

Book
3-5-40
CS

FORM 102.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE
STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Subsequent Work Report

OPERATOR The Texas Company FIELD Long Beach

Well No. Field #18, Sec. 19, T. 4-S., R. 12-W., S.B. B. & M.

In compliance with the provisions of Chapter 718, Statutes 1915, as amended, the information given herewith is a complete and correct record of all work done on the well since the previous record, dated 7/25/39, was filed.

SIGNED [signature]

Date February 16, 1940

Title Chief Petroleum Engineer
(President, Secretary or Agent)

Outline in the order of performance, together with the dates thereof, all important operations which alter the condition of the well. Include such information as depth at which redrilling operations were started, size of hole redrilled or deepened; size of pipe, amount of perforations in casing, weight and length of casing landed or cemented or removed; number of sacks of cement used in cementing or plugging operations and exact position thereof. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

| 1940 Date | |
|---|---|
| 12/1 | Rigging up to abandon. Pumps all salt water at 50 B/D rate. |
| 12/2 | Cleaned out to 4375'. Dumped 20 sacks of cement in stages beginning at 4375'. |
| 12/3 | Your Division witnessed and approved plug at 4185'. |
| 12/4 | Shot 5-3/4" casing at 4170', 4100', and 4051'. |
| 12/8 | Pulled a total of 166 joints, 4051'. Dumped 6 sacks of cement on top of three foot wooden plug driven into stub of 5-3/4" casing. Your Division witnessed and approved plug at 4021'. |
| 12/9 | Shot 8-5/8" casing at 764' and pulled a total of 29 joints. |
| 12/10 | Could not clean out below 670'. Dumped 15 sacks of Riverside cement at 670'. |
| 12/11 | Your Division witnessed and approved plug at 627'. Filled to surface with heavy mud, capped casing with 7 sacks of cement. Abandonment complete. |

DIVISION OF OIL AND GAS
RECEIVED
FEB 20 1940
LOS ANGELES, CALIFORNIA

M 109-D.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T1-37001

Los Angeles, Calif. December 27, 1939.

Mr. V. H. Wilhelm,
Los Angeles, Calif.

Agent for THE TEXAS COMPANY

DEAR SIR:

Operations at your well No. "FIELD" 18 Sec. 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by Frank J. Karmelich, Inspector, representative of the supervisor, on December 11, 1939. There was also present A. Nightingale, Driller, and L. Owens, Contractor.

Casing Record 13" cem. 788'; 8¼" cem. 4230', W.S.O., pulled from 764'; 5-3/4" cem. 6210', perf. 4880'-4870', 4830'-4785', 4770'-4745', 4740'-4730', 4650'-4610', 4525'-4485', 4435'-4405', 4350'-4230', pulled from 4051'. T. D. 7483', plugged with cement 7483'-6828', 6500'-6442', 6366'-6190', 6120'-6106', 4848'-4776', 4550'-4385' *

Junk (1st hole) 6¼", 4273'-4529'. T.D. 4529', plugged with cement 4529'-4280'.

The operations were performed for the purpose of testing the location and hardness of a cement plug placed from 670' to 627' in the process of abandonment,

and the data and conclusions are as follows:

*4375'-4185', 4048'-4021', and 670'-627'.

INSPECTOR CORWIN VISITED THE WELL AT 11:30 A. M., DECEMBER 9, 1939, AND NOTED THAT the 8¼" casing was shot loose at 764'.

ENGINEER PEIRCE VISITED THE WELL AT 11:00 A. M., DECEMBER 10, 1939, AND MR. NIGHTINGALE REPORTED THAT the 8¼" casing was pulled from 764'.
THE ENGINEER NOTED THE FOLLOWING:
1. Sand had filled to 624' and could not be cleaned out below 670'.
2. 15 sacks of Riverside cement was dumped at 670'.

INSPECTOR KARMELICH VISITED THE WELL AT 9:00 A. M., AND NOTED THAT the bailer could not be spudded below 627' and brought up a sample of set cement.

The test was completed at 9:30 a. m.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 627' ARE APPROVED.

cc- Company
Long Beach
FJK:OH

R. D. BUSH
State Oil and Gas Supervisor

By E. Hagenbuch Deputy

FORM 109-D.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T 1-36981

Los Angeles, Calif. December 21, 1939.

Mr. V. H. Wilhelm,
Los Angeles, Calif.
Agent for THE TEXAS COMPANY

DEAR SIR:

Operations at your well No. "FIELD" 18 Sec. 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by Chas. Corwin, Inspector, representative of the supervisor, on December 9, 1939. There was also present A. Nightengale, Driller, and R. Rooker, Helper.

Casing Record 13" cem. 788'; 8¼" cem. 4230', W.S.O.; 5-3/4" cem. 6210'; perf. 4880'-4870', 4830'-4785', 4770'-4745', 4740'-4730', 4650'-4610', 4525'-4485', 4435'-4405', 4350'-4230', pulled from 4051'; 4-3/4" perf. liner 6120'-6366'. T.D. 7483', plugged with cement 7483'-6828', 6500'-6442', 6366'-6190', 6120'-6106', *

Junk (1st hole) 6¼", 4273'-4529'; T.D. 4529', plugged with cement 4529'-4280'.

The operations were performed for the purpose of testing the location and hardness of a cement plug placed from 4048' to 4021' in the process of abandonment,

and the data and conclusions are as follows:

*4848'-4776', 4550'-4385', 4375'-4185' and 4048'-4021'.

INSPECTOR KARMELICH ARRIVED AT THE WELL AT 3:00 P. M., DECEMBER 8, 1939, AND MR. NIGHTENGALE REPORTED THAT the 5-3/4" casing was shot at 4170', 4100' and 4051' and pulled from 4051'.

THE INSPECTOR NOTED THAT 6 sacks of Victor cement was dumped on a wooden plug driven in the stub of the 5-3/4" casing at 4048'.

INSPECTOR CORWIN ARRIVED AT THE WELL AT 10:00 A. M., DECEMBER 9, 1939, AND NOTED THAT the bailer could not be spudded below 4021' and brought up a sample of set cement.

The test was completed at 10:45 a. m.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 4021' ARE APPROVED.

cc- Company
Long Beach
CC:OH
CJB

R. D. BUSH
State Oil and Gas Supervisor

By E. Karmelich Deputy

FORM 109-D.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T 1-36980

Los Angeles, Calif. December 21, 1939.

Mr. V. H. Wilhelm,
Los Angeles, Calif.
Agent for THE TEXAS COMPANY

DEAR SIR:

Operations at your well No. "FIELD" 18 Sec. 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by Frank J. Karmelich, Inspector, representative of the supervisor, on December 3, 1939. There was also present L. Owens, Contractor, and A. Nightengale, Driller.

| | |
|---|---|
| Casing Record 13" cem. 788'; 8¼" cem. 4230', W.S.O.; 5-3/4" cem. 6210', perf. 4880'-4870', 4830'-4785', 4770'-4745', 4740'-4730', 4650'-4610', 4525'-4485', 4435'-4405' and 4350'-4230'; 4-3/4" perf. liner 6120'-6366'. T.D. 7483', plugged with cement 7483'-6828', 6500'-6442', 6366'-6190', 6120'-6106', 4848'-4776', 4550'-4385', and * | Junk (1st hole) 6¼", 4273'-4529'; T.D. 4529', plugged with cement 4529'-4280'. |

The operations were performed for the purpose of testing the location and hardness of a cement plug proposed to be placed from 4385' to 4210' in the process of abandonment,

and the data and conclusions are as follows:

* 4375'-4185'.

THE INSPECTOR ARRIVED AT THE WELL AT 2:30 P. M., DECEMBER 1, 1939, AND NOTED THE FOLLOWING:
1. The hole was cleaned out to 4375'.
2. The cementing operations were started at 4375'.

THE INSPECTOR ARRIVED AT THE WELL AT 1:00 P. M., DECEMBER 3, 1939, AND MR. NIGHTENGALE REPORTED THAT on December 1 and 2, 1939, 20 sacks of Victor cement was dumped in stages beginning at 4375'.

THE INSPECTOR NOTED THAT the bailer could not be spudded below 4185' and brought up a sample of set cement.

The test was completed at 2:00 p. m.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 4185' ARE APPROVED.

cc- Company
Long Beach
FJK:OH

R. D. BUSH
State Oil and Gas Supervisor

By E. Hagenbuch Deputy

FORM 111.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Proposed Operations

No. P 1-34346

Los Angeles, Calif. October 23, 1939.

Mr. V. H. Wilhelm,
Los Angeles, Calif.
Agent for THE TEXAS COMPANY

121

Dear Sir:

Your proposal to abandon Well No. "FIELD" 18, Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, Los Angeles County, dated Oct. 17, 1939, received Oct. 19, 1939, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

Records in addition to, or at variance with those shown in the notice:
The hole is plugged with cement 7483'-6828', 6500'-6442', 6366'-6190', 6120'-6106', 4848'-4776', and 4550'-4385'.
T. D. (old hole) 4529'.

THE NOTICE STATES:
"The present condition of the well is as follows:
13" cemented at 788'.
8-1/4" cemented at 4230', W. S. O.
5-3/4" cemented at 6210', W.S.O., perf. in hole 4870-4880', 4785-4830', 4745-4770', 4730-4740', 4610-4650', 4485-4525', 4435-4405', 4350-4230'.
Total depth 7483'.
Plugged depth 4385'.
Well pumps all salt water at 50 B/D rate."

PROPOSAL:
"The proposed work is as follows:
Clean out to 4385' and plug solid with cement to 4210'.
Cut and pull 5-3/4" casing from 4210'.
Cut and pull 8-1/4" casing from 768' and cap stub with 20' of cement.
Fill all voids with heavy mud.
Cap 13" at surface and abandon."

DECISION:
THE PROPOSAL IS APPROVED PROVIDED THAT THIS DIVISION SHALL BE NOTIFIED TO WITNESS the location and hardness of cement plugs at 4210' and 748'.

NOTE: In the event the proposed work is done by a contractor, this division shall be consulted regarding additional requirements.

cc- Company
Long Beach
WJC:OH
CM

R. D. BUSH
State Oil and Gas Supervisor

By E. Hugenin Deputy

FORM 108. 61558 8-38 5M.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
OCT 19 1939
LOS ANGELES, CALIFORNIA

## Notice of Intention to Abandon Well

**This notice must be given at least five days before work is to begin**

Los Angeles, Calif. October 17, 1939

DIVISION OF OIL AND GAS

Los Angeles, Calif.

In compliance with Section 16, Chapter 718, Statutes of 1915, as amended, notice is hereby given that it is our intention to abandon well No. Field #18

Sec. 19, T. 4-S., R. 12-W., S.B. B. & M. Long Beach Field,

Los Angeles County, commencing work on the 22nd day

of October, 1939.

The present condition of the well is as follows:

13" cemented at 788'.
8-1/4" cemented at 4230', W.S.O.
5-3/4" cemented at 6210', W.S.O., perf. in hole 4870-4880', 4785-4830', 4745-4770', 4730-4740', 4610-4650', 4485-4525', 4435-4405', 4350-4230'.
Total depth 7483'.
Plugged depth 4385'.
Well pumps all salt water at 50 B/D rate.

The proposed work is as follows:

Clean out to 4385' and plug solid with cement to 4210'.

Cut and pull 5-3/4" casing from 4210'.

Cut and pull 8-1/4" casing from 768' and cap stub with 20' of cement.

Fill all voids with heavy mud.

Cap 13" at surface and abandon.

aband

| Name | | | Cards | Forms | |
|---|---|---|---|---|---|
| | | | | ✓ | 21 |

THE TEXAS COMPANY
(Name of Operator)

By [signature]
Chief Petroleum Engineer

ADDRESS NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

FORM 102.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE
STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
AUG 4 - 1939
LOS ANGELES, CALIFORNIA

## Subsequent Work Report

OPERATOR The Texas Company FIELD Long Beach

Well No. Field #18, Sec. 19, T. 4-S., R. 12-W., S.B. B. & M.

In compliance with the provisions of Chapter 718, Statutes 1915, as amended, the information given herewith is a complete and correct record of all work done on the well since the previous record, dated June 22,1931, was filed.

SIGNED [signature]

Date July 25, 1939 Title Chief Petroleum Engineer
(President, Secretary or Agent)

Outline in the order of performance, together with the dates thereof, all important operations which alter the condition of the well. Include such information as depth at which redrilling operations were started, size of hole redrilled or deepened; size of pipe, amount of perforations in casing, weight and length of casing landed or cemented or removed; number of sacks of cement used in cementing or plugging operations and exact position thereof. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

| Date | |
|---|---|
| 1938 | |
| 2-16 | Cleaned out to 6366' |
| 2-17 | Dumped in 12-1/2 sacks of cement at 6366', filling to 6191'. |
| 2-18 | Your Division witnessed and approved top of plug at 6190'. |
| 2-19 | Set wood bridging plug on top of the 4-3/4" liner at 6120'. Dumped in 2 sacks cement, filling to 6106'. Filled hole to 3075' with water and perforated 4870-4880' with twenty shots. |
| 2-21 | Pumped 36 barrels of water in six hours. |
| 2-22 to 2-28 | Averaged 150 to 200 B/D water. |
| 3-4 | Pumped in 50 sacks cement through retainer set at 4848', final pressure 1900#. Estimated forty sacks away. |
| 3-10 | Bailed fluid in casing down to 3500' - no rise. Filled hole with fluid to 2100'. Perforated 4640-4650', 4730-4740' with twenty 1/2" holes. |
| 3-11 to 3-16 | Pumping 75 to 175 B/D water. |
| 3-18 | Cemented through Baker retainer at 4715' with 45 sacks, final pressure 2800#. Estimated 43 sacks away. |
| 3-24 | No fluid entering hole. |
| 3-31 | Found top of cement at 4724'. Drilled out retainer. |
| 4-2 | Drilled out cement to 4746' and cleaned out to 4852'. |
| 4-5 | Pumped 101 barrels salt water. |

FORM 102.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA

DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Subsequent Work Report

OPERATOR The Texas Company FIELD Long Beach

Well No. Field #18, Sec. 19, T. 4-S., R. 12-W., S.B. B. & M.

In compliance with the provisions of Chapter 718, Statutes 1915, as amended, the information given herewith is a complete and correct record of all work done on the well since the previous record, dated June 22, 1931, was filed.

SIGNED [signature]

Date July 25, 1939 Title Chief Petroleum Engineer

(President, Secretary or Agent)

Outline in the order of performance, together with the dates thereof, all important operations which alter the condition of the well. Include such information as depth at which redrilling operations were started, size of hole redrilled or deepened; size of pipe, amount of perforations in casing, weight and length of casing landed or cemented or removed; number of sacks of cement used in cementing or plugging operations and exact position thereof. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

| Date | |
|---|---|
| 1938 | |
| 4-6 | Perforated with McCullough gun from 4745-4770' with fifty 1/2" holes. |
| 4-7 | Perforated 4610-4650' with eighty 1/2" holes; 4485-4550' with one hundred and thirty 1/2" holes. Bailing fluid at 3300'. |
| 4-10 to 4-19 | Pumping 85 to 124 B/D water. |
| 4-21 | Perforated 4785-4830' with ninety 1/2" holes. |
| 4-23 to 4-29 | Pumping 150 to 170 B/D water. |
| 5-4 | Cleaned out to 4848'. Dumped in eight sacks cement, filling to 4776'. |
| 5-12 to 5-27 | Pumping 180 B/D water. |
| 5-28 | Cleaned out to 4776'. Ran water witch and located entry at 4546-4550'. |
| 6-19 | Filled with sand to 4560'. Dumped in two sacks of cement at 4560'. |
| 6-20 | Dumped in 1/2 sack cement, filling to 4540'. |
| 6-25 to 7-20 | Intermittently pumping 80 to 180 B/D salt water. |
| 1939 | |
| 2-27 | Drilled out to 4550'. |
| 2-28 | Reperforated 4550-4525' with thirty 1/2" holes. Fluid level dropped from 3050 to 3350'. |
| 3-14 | Cleaned out to 4550' and dumped 3-1/2 sacks of cement, filling to 4531'. |
| 3-19 to 4-3 | Pumping 65 to 97 B/D, with 98% cut. |
| 5-13 | Cleaned out to 4531'. |
| 5-14 | Dumped in fifteen sacks cement, filling from 4531 to 4466'. |

FORM 102.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE
STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Subsequent Work Report

OPERATOR The Texas Company FIELD Long Beach

Well No. Field #18, Sec. 19, T. 4-S., R. 12-W., S.B. B. & M.

In compliance with the provisions of Chapter 718, Statutes 1915, as amended, the information given herewith is a complete and correct record of all work done on the well since the previous record, dated June 22, 1931, was filed.

SIGNED [signature]

Date July 25, 1939 Title Chief Petroleum Engineer
(President, Secretary or Agent)

Outline in the order of performance, together with the dates thereof, all important operations which alter the condition of the well. Include such information as depth at which redrilling operations were started, size of hole redrilled or deepened; size of pipe, amount of perforations in casing, weight and length of casing landed or cemented or removed; number of sacks of cement used in cementing or plugging operations and exact position thereof. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

| Date | |
|---|---|
| 1939 | |
| 5-23 | Perforated with McCullough gun 4435-4405' with thirty 1/2" holes. |
| 5-26 to 6-5 | Pumped 60 to 90 B/D water. |
| 6-8 | Cleaned out to 4466' and dumped in 11 sacks cement, filling to 4385'. Perforated 4350-4230' with one hundred and twenty 5/8" holes. Fluid level dropped from 2560-3566'. |
| 6-12 to 6-25 | Pumping salt water - 40 to 60 B/D. |

FORM 109-D. 47172 7-37 15M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T 1-33890

Los Angeles, Calif. March 4 1938

Mr. V. H. Wilhelm,
Los Angeles, Calif.
Agent for THE TEXAS COMPANY

DEAR SIR:

Operations at your well No. "FIELD" 18 Sec. 19, T. 4S., R. 12W. S. B. B. & M., Long Beach Field, in Los Angeles County, were witnessed by F.J. Karmelich, Inspector, representative of the supervisor, on February 18, 1938. There was also present H. O. Woodruff, Engineer, and I. N. Truesce, Driller.

| Casing Record | Junk |
|---|---|
| 13" cem. 788'; 8½" cem. 4230', W. S. O.; 5-3/4" cem. 6210' W. S. O.; 4-3/4" perf. liner 6120'-6366'. T. D. 7483', plugged with cement 7483'-6828', 6500'-6442' and 6366'-6190'. | (1st hole) 6½" 4273'-4529'. T. D. 4529', plugged with cement 4529'-4280'. |

The operations were performed for the purpose of testing the location and hardness of a cement plug proposed to be placed from 6366' to 6190' in the process of plugging back,

and the data and conclusions are as follows:

THE INSPECTOR ARRIVED AT THE WELL AT 3:00 P. M. AND MR. WOODRUFF REPORTED THE FOLLOWING:

1. The 4-3/4" liner was cleaned out to 6366'.
2. On February 17, 1938, 12½ sacks of Colton's Portland cement was dumped at 6366'.

THE INSPECTOR NOTED THAT the bailer could not be spudded below 6190' and brought up a sample of set cement.

The test was completed at 4:00 p. m.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 6190' ARE APPROVED.

cc- Company
Long Beach
FJK:G

R. D. BUSH
State Oil and Gas Supervisor

By E. Hugenin Deputy

FORM 111. 46011 6-37 20M.
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Proposed Operations

No. P 1-32056

Los Angeles, Calif. February 23, 1938.

Mr. V. H. Wilhelm,
Los Angeles, Calif.
Agent for THE TEXAS COMPANY

121

Dear Sir:

Your proposal to plug & alter casing Well No. "FIELD" 18, Section 19, T. 4 S., R 12 W., S.B. B. & M., Long Beach Field, Los Angeles County, dated Feb. 18, 1938, received Feb. 21, 1938, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

RECORDS: The condition of the well is as stated in the notice.

THE NOTICE STATES:
"The present condition of the well is as follows:
13" cemented at 788'.
8-1/4" " " 4230', W. S. O.
5-3/4" " " 6210', W. S. O.
246' of 4-3/4" perf. liner froze at 6366'.
Total depth 7483'.
Plug depth 6366'.

Junk: 6-1/4" csg. s. t. 4273-4529'.

Average daily production for January, 1938, 14 barrels of oil and 1 barrel of water."

PROPOSAL:
"The proposed work is as follows:
Clean out to bottom and plug solid with cement to 6190'.
Set cement bridge 4900-4920'.
Gun perforate intervals 4485-4880'
Test for production."

DECISION:
THE PROPOSAL IS APPROVED PROVIDED THAT THIS DIVISION SHALL BE NOTIFIED TO WITNESS the location and hardness of cement plug at 6190'.

cc- Company
Long Beach
WJC:OH

J.P.

R. D. BUSH
State Oil and Gas Supervisor

By E. Higginbotham Deputy

FORM 107. 42649 3-37 10M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
FEB 21 1938
LOS ANGELES, CALIFORNIA

## Notice of Intention to Deepen, Redrill, Plug or Alter Casing in Well

This notice must be given fifteen days before work begins when possible

Los Angeles, Calif. February 18, 1938

DIVISION OF OIL AND GAS

Los Angeles, Calif.

In compliance with Section 17, Chapter 718, Statutes of 1915, as amended, notice is hereby given that it is our intention to commence the work of ~~deepening, redrilling~~, plugging or altering casing at well No. Field #18
(Cross out unnecessary words)

, Sec. 19, T. 4-S., R. 12-W., S. B. B. & M.

Long Beach Field, Los Angeles County.

The present condition of the well is as follows:

13" cemented at 788'.
8-1/4" " " 4230', W.S.O.
5-3/4" " " 6210', W.S.O.
246' of 4-3/4" perf. liner froze at 6366'.
Total depth 7483'.
Plug depth 6366'.

Junk: 6-1/4" csg. s.t. 4273-4529'.

Average daily production for January, 1938, 14 barrels of oil and 1 barrel of water.

The proposed work is as follows:

Clean out to bottom and plug solid with cement to 6190'.

Set cement bridge 4900-4920'.

Gun perforate intervals 4485-4880'.

Test for production.

pl + alt csg

Reference to file of date

| Name | | | | Terms | |
|---|---|---|---|---|---|
| | | | | ✓ | ✓ |

The Texas Company
(Name of Operator)

By [signature]
Chief Petroleum Engineer

ADDRESS NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

MEMORANDUM FOR WELL RECORD.

Letter to R. D. Bush, dated July 27, 1932, making typographical corrections in the designations of a number of The Texas Company wells, is filed with record of well No. "Isaac" 1, Richfield field.

FORM 102. 80626 11-30 10M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
JUN 26 1931
LOS ANGELES, CALIFORNIA

## LOG OF OIL OR GAS WELL

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M., Well No. FIELDS #18

In compliance with the provisions of Chapter 718, Statutes 1915, as amended, the information given herewith is a complete and correct record of all work done on the well since the previous record, dated 7-8-26, was filed.

SIGNED O. J. Wilkinson

Date June 22nd, 1931

Title Chief Petroleum Engr.
Reference to file of data
(President, Secretary or Agent)

| Maps | Model | Cross Section | Cards | Forms 114 | Forms 121 |
|---|---|---|---|---|---|
| | | | | | |

Rigged up to redrill and deepen 11-10-30.

Cleaned out to 4529' and pumped in 40 sax cement.
Cut and pulled 4274' of 6-1/4" casing.
Milled up 6-1/4" casing to 4278' and shot hole at this depth w/ 50# shell.
Sidetracked 6-1/4" casing to 4529'.
Drilled to 7483' and due to unfavorable showings we plugged the well to 6828' under pressure, with 170 sax Victor cement.
Your Division witnessed and approved plug at 6828'.

Filled hole w/ mud to 6500' and pumped in 35 sax Victor cmt. Top cmt. at 6435'.
Bridged hole 6245-10' w/ 15 sax Victor cmt.
Your Division witnessed and approved mudding operations.

Cemented 5-3/4" 22½# casing at 6210' w/ 75 sax cement.
Drilled out 35' of cement and cleaned out to 6215'.
Swabbed to 3,000' and fluid rose 40' in 19 hours.
Your Division witnessed and approved the shut-off.

Cleaned out to 6500' and pumped in 35 sax cement. Cement did not set, so cleaned out to 6486' and pumped in 35 sax cement under 250# pressure.
Your Division witnessed and approved plug at 6442'.

Ran 246' of 4-3/4" casing which stuck at 6366'.
A production test showed all salt water, and during the process of swabbing, about 800' of heavy rotary mud heaved up into the tubing, which suggested the failing of the plug at 6442'.
Cleaned out sand bridge 6271-6366' and milled out bull nose on bottom of liner. Cleaned out to 6442' and plug supported weight of drill pipe, indicating entry of water above the plug.
Four runs of the water witch indicated bottom water.
Plugged hole 6441-6366' w/ 7 sax cement.
Swabbed well, but it would not flow.
Put well on pump 5-12-31 and it pumped water until 5-22-31 when it produced 52 barrels gross, 50% cut.
5-23-31 Well produced 46 bbls., 27.0 grav., 11% cut.
5-28-31 Shut well in account curtailment.

M 101. 80629 11-30 30M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## LOG OF OIL OR GAS WELL—CONTINUED

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M. Well No. FIELD #18

## FORMATIONS PENETRATED BY WELL

| DEPTH TO Top of Formation | DEPTH TO Bottom of Formation | Thickness | Name of Formation |
|---|---|---|---|
| 4529 | 4577 | 48 | Sandy Shale |
| | 4611 | 34 | Sand w/ stks. sh. |
| | 4621 | 10 | Shale and sand |
| | 4622 | 1 | Shell |
| | 4630 | 8 | Hard sand. |
| | 4751 | 21 | Sdy. sh. and shale |
| | 4785 | 34 | Sdy. sh. w/ stks. hd. sh. |
| | 4797 | 12 | Hard sand |
| | 4800 | 3 | Shell |
| | 4809 | 9 | Hard sand |
| | 4848 | 39 | Sdy. sh. and hd. sd. |
| | 4861 | 13 | Hard sand. |
| | 4875 | 14 | Sdy. sh. and shells |
| | 4923 | 48 | Sandy shale |
| | 4925 | 2 | Hard shell |
| | 4989 | 64 | Sdy. sh. and shells |
| | 5058 | 69 | Sand and shale |
| | 5078 | 20 | Sh., w/ thin stks. hd. sd. |
| | 5086 | 8 | Hard sand |
| | 5106 | 20 | Sand and shale |
| | 5109 | 3 | Hard sand |
| | 5119 | 10 | Sand and shale |
| | 5133 | 14 | Hard sand |
| | 5199 | 66 | Sandy shale |
| | 5206 | 7 | Sand and shale |
| | 5232 | 26 | Sand, sh., and shell |
| | 5259 | 27 | Hard sd. and shale |
| | 5322 | 63 | Sandy shale |
| | 5370 | 48 | Sand and shale |
| | 5395 | 25 | Sdy. sh. w/ stks. hd. sh. |
| | 5422 | 27 | Hard sd. and shale |
| | 5428 | 6 | Hard sand |
| | 5431 | 3 | Sand and shells |
| | 5458 | 27 | Tough shale |
| | 5472 | 14 | Shale and shell |
| | 5490 | 18 | Sand and shale |
| | 5492 | 2 | Shell |
| | 5498 | 6 | Sand and shale |
| | 5508 | 10 | Tough shale |
| | 5521 | 13 | Sdy. sh. and shells |
| | 5536 | 15 | Sand and shale |
| | 5548 | 12 | Tough shale |
| | 5563 | 15 | Sh. and stks. sand |
| | 5577 | 14 | Sand and shale |

M 101. 80629 11-30 30M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## LOG OF OIL OR GAS WELL—CONTINUED

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M. Well No. FIELD #18

## FORMATIONS PENETRATED BY WELL

| DEPTH TO Top of Formation | DEPTH TO Bottom of Formation | Thickness | Name of Formation |
|---|---|---|---|
| 5577 | 5611 | 34 | Tough shale |
| | 5632 | 21 | Sdy. sh. and shells |
| | 5655 | 23 | Sand and Shale |
| | 5694 | 39 | Shale |
| | 5712 | 18 | Shale and shell |
| | 5721 | 9 | Shale and hd. sand |
| | 5731 | 10 | Tough shale |
| | 5754 | 23 | Shale and shell |
| | 5764 | 10 | Sd. and stks. tgh. sh. |
| | 5777 | 13 | Shells and shale |
| | 5801 | 24 | Shale w/ stks. sand |
| | 5817 | 16 | Tough shale |
| | 5819 | 2 | Shell |
| | 5839 | 20 | Tough shale |
| | 5842 | 3 | Shell |
| | 5846 | 4 | Shale and shell |
| | 5878 | 32 | Shale |
| | 5888 | 10 | Shale and shell |
| | 5910 | 22 | Sandy shale |
| | 5924 | 14 | Shale and hd. sd. |
| | 5982 | 58 | Sandy shale |
| | 6125 | 143 | Sand and shale |
| | 6150 | 25 | Shale |
| | 6151 | 1 | Gray sd. |
| | 6155 | 4 | Hd. sh. w/ thin stks. oil sd. |
| | 6157 | 2 | Oil sd. and shale |
| | 6163 | 6 | Hard shale |
| | 6166 | 3 | Gray sand |
| | 6169 | 3 | Hard shale |
| | 6172 | 3 | Oil sd. and shale |
| | 6193 | 21 | Br. fract. sh. w/ few small stks. oil sd. |
| | 6214 | 21 | Fract. br. and black sh. |
| | 6234 | 20 | Oil sd. and shale |
| | 6237 | 3 | Hd. sandstone shell |
| | 6252 | 15 | Oil sand |
| | 6253 | 1 | Shale |
| | 6255 | 2 | Oil sand |
| | 6256 | 1 | Shale |
| | 6261 | 5 | Oil sd. w/ few stks. sh. |
| | 6271 | 10 | Oil sand |
| | 6284 | 13 | Oil sd. w/ stks. shale |
| | 6285 | 1 | Sandstone shell |

M 101. 80629 11-30 30M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## LOG OF OIL OR GAS WELL—CONTINUED

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M. Well No. FIELD #18

## FORMATIONS PENETRATED BY WELL

| DEPTH TO Top of Formation | DEPTH TO Bottom of Formation | Thickness | Name of Formation |
|---|---|---|---|
| 6285 | 6286 | 1 | Oil sand |
| | 6287 | 1 | Shell and shale |
| | 6290 | 3 | Oil sand |
| | 6392 | 2 | Shell and shale |
| | 6301 | 9 | Sand |
| | 6308 | 7 | Oil sand |
| | 6311 | 3 | Hd. br. shale |
| | 6317 | 6 | Oil sand |
| | 6318 | 1 | Shell |
| | 6364 | 46 | Oil sand |
| | 6365 | 1 | Shell |
| | 6384 | 19 | Oil sand |
| | 6387 | 3 | Hd. sandstone shell |
| | 6458 | 71 | Oil sd. w/ 3" shell on bottom |
| | 6542 | 84 | Sand and shell |
| | 6545 | 3 | Shell |
| | 6548 | 3 | Sand and shale |
| | 6550 | 2 | Hard sand |
| | 6553 | 3 | Br. sdy. shale |
| | 6560 | 7 | Br. sh. w/ stks. med. grained water sd. |
| | 6570 | 10 | Gray water sd. w/ few small stks. sdy. sh. |
| | 6571 | 1 | Hd. sdstone shell. |
| | 6580 | 9 | Gray water sand |
| | 6611 | 31 | Sand w/ hd. stks. |
| | 6626 | 15 | Sand |
| | 6640 | 14 | Sd. and stks. hd. sd. |
| | 6650 | 10 | Sand |
| | 6652 | 2 | Poor oil sd. and stks. sh. |
| | 6654 | 2 | Brown shale |
| | 6660 | 6 | Br. sh. w/ stks. gr. sd. |
| | 6749 | 89 | Sand and shale |
| | 6750 | 1 | Hd. sandstone shell |
| | 6752 | 2 | Fract. black shale |
| | 6759 | 7 | Gr. sh. stkd. w/ oil sd. |
| | 6845 | 86 | Sand and shale |
| | 6847 | 2 | Sandstone shell |
| | 6854 | 7 | Poor Oil sd. stks. gray |
| | 6866 | 12 | Firm gray sd., stks. poor oil sd. |
| | 6877 | 11 | Br. sh. w/ stks. good oil sd. |
| | 6882 | 5 | Fract. br. sh., showing oil |
| | 6910 | 28 | Oil sand |
| | 6911 | 1 | Sdy. br. shale |
| | 6926 | 15 | Oil sand |
| | 6928 | 2 | Sandstone shell |
| | 6931 | 3 | Oil sand |

FORM 101. 80629 11-30 30M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## LOG OF OIL OR GAS WELL—CONTINUED

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M. Well No. FIELD #18

## FORMATIONS PENETRATED BY WELL

| DEPTH TO Top of Formation | DEPTH TO Bottom of Formation | Thickness | Name of Formation |
|---|---|---|---|
| 6931 | 6932 | 1 | Sandy shale |
| | 6940 | 8 | Poor oil sand |
| | 6942 | 2 | Oil sd., w/ 3" shell on top |
| | 6951 | 9 | Br. sh. and oil sd. |
| | 6953 | 2 | Gray water sd. and black sdy. shale |
| | 6956 | 3 | Poor oil sd. |
| | 6962 | 6 | "ater sd. and sdy. sh. |
| | 7018 | 56 | Shell, shale and gr. water sd. |
| | 7021 | 3 | Hard shale |
| | 7022 | 1 | Br. sdy. shale |
| | 7053 | 31 | Gr. water sd., shell and shale |
| | 7056 | 3 | Brown shale, free oil in fract. planes |
| | 7068 | 12 | Hd. sdy. sh. w/ 6" oil sd. on top |
| | 7077 | 9 | Br. sh. and sdy. br. sh. |
| | 7083 | 11 | Soft gray sd. |
| | 7089 | 1 | Br. sh. and gray sd. |
| | 7105 | 16 | Gray water sand w/ shell on bottom |
| | 7107 | 2 | Shell |
| | 7111 | 4 | Gray sand |
| | 7113 | 2 | Shell |
| | 7122 | 9 | Gray water sand |
| | 7125 | 3 | Br. sdy. sh. and gr. sd. |
| | 7135 | 10 | Gray water sd. |
| | 7153 | 18 | Br. sh. and gray sd. |
| | 7159 | 6 | Hd. br. sdy. shale |
| | 7161 | 2 | Soft gray sd. |
| | 7167 | 6 | Br. sh. w/ stks. gr. sd. |
| | 7169 | 2 | Soft oil sand |
| | 7171 | 2 | Hd. br. shale |
| | 7187 | 16 | Soft oil sd. w/ stks. sh. |
| | 7193 | 6 | Hd. br. shale |
| | 7207 | 14 | Gr. water sd. w/ small stks. sh. |
| | 7227 | 20 | Hd. br. sh. w/ few thin stks. gray sd. |
| | 7276 | 49 | Sand and shale |
| | 7283 | 7 | Poor oil sd. |
| | 7296 | 13 | Sh. w/ stks. soft fair oil sd. |
| | 7300 | 4 | Soft fair oil sd. |
| | 7308 | 8 | Oil sd. and sdy. sh. |
| | 7319 | 11 | Hd. br. sh. w/ small lense gr. sd. near bottom |
| | 7349 | 30 | Oil sd. and shale |
| | 7352 | 3 | Br. sh. and sand |
| | 7371 | 19 | Oil sand |
| | 7404 | 33 | Br. sh. w/ stks. oil sd. |

FORM 101. 80629 11-30 30M
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STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## LOG OF OIL OR GAS WELL—CONTINUED

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M. Well No. FIELD #18

## FORMATIONS PENETRATED BY WELL

| DEPTH TO | | Thickness | Name of Formation |
|---|---|---|---|
| Top of Formation | Bottom of Formation | | |
| 7404 | 7424 | 20 | Oil sd. and stks. shale |
| | 7427 | 3 | Oil sand |
| | 7430 | 3 | Hd. sandstone shell |
| | 7443 | 13 | Oil sand |
| | 7463 | 20 | Oil sd., w/ thin hd. gr. stks. |
| | 7483 | 20 | Gray water sd. w/ stks. oil sd. |

FORM 101-A. 82953 2-31 20M
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STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL AND GAS
RECEIVED
JUN 26 1931
LOS ANGELES, CALIFORNIA

# DIVISION OF OIL AND GAS

## CORE RECORD OF OIL OR GAS WELL

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M., Elevation 92. Well No. FIELDS #18

In compliance with the provisions of Section 18, Chapter 718, Statutes of 1915, as amended, the information given herewith is a complete and correct record of all cores taken in this well to the depth on the accompanying log.

Signed [signature]

Date June 23rd, 1931. Title Chief Petroleum Engr.
(President, Secretary or Agent)

Reference to file of data
Maps | Model | Cross section | Cards | Forms 121

| DATE | MAKE OF BARREL | SIZE OF BARREL | FROM (DEPTH) | TO (DEPTH) | CORE RECOVERED | DESCRIPTION OF CORE | ETHER TEST | CONDITION OF CORE |
|---|---|---|---|---|---|---|---|---|
| | | | 6150 | 6172 | 21' | 6" soft gray sd., 4' hd. shale, w/ thin stks. firm fair oil sd., & one stk. fine gray., 2" oil sd., 8" hd. shale, 8" fine good oil sd., 6' hard shale w/ one thin stk. oil sd., 1' fine gray sd., 5° dip., 2' fine firm gray sd., 3' hd. shale, 6" oil sd., 6" sh., 1' oil sd., 1' shale, 1' firm fair oil sd. | ✓ | |
| | | | 6172 | 6193 | 15' | Slightly fract. brown shale w/ a few small stks. oil sd. | | |
| | | | 6193 | 6214 | 12' | 3' hd. br. sh., 1½' fract. fossile black shale, 3½' hd. br. sh., 4' very fract. brown & black shale. | | |
| | | | 6214 | 6234 | 10½' | 1'8" hd. sh., 4" fine firm oil sd., 2" shale, 2' fine firm oil sd., 6" hd. sh.,1' fine good oil sd., 1' hd. sh., 3'10" fine firm good oil sd., w/ 3" stk. shale. | | |
| | | | 6234 | 6251 | 3' | 2½' very hd. sandstone shell, 6" med. fine fair oil sd. | | |
| | | | 6251 | 6271 | 19½' | 1'3" fine firm good oil sd., 9" shale, 2' fine firm good oil sd., 8" shale, 4'10" fine firm fair oil sd., w/ few 2" stks. sh., 10' hd. cse. fair to poor oil sd. | | |
| | | | 6271 | 6284 | 6' | 3' fine firm good oil sd., 6" hd. shale, 1½' med. to fine fair oil sd., 4" shale, 8" fine oil sd. | | |
| | | | 6284 | 6301 | 6' | 1' sandstone shell, 1' fine good oil sd., 1' hd. sh.,3" sandstone shell, 1'3" fine firm fair oil sd., 1' sandstone shell, 6" sh. | | |
| | | | 6301 | 6321 | 18' | 3" shell, 5' fine firm good oil sd., 2'9" hd. br. sh., 5'8" fine firm good oil sd.,1'4" sandstone shell, 3' fine firm good oil sd. | | |

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DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## CORE RECORD OF OIL OR GAS WELL

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M., Elevation 92. Well No. FIELD #18

In compliance with the provisions of Section 18, Chapter 718, Statutes of 1915, as amended, the information given herewith is a complete and correct record of all cores taken in this well to the depth on the accompanying log.

Signed [signature]

Date June 23rd, 1931 Title Chief Petroleum Engr.
(President, Secretary or Agent)

| DATE | MAKE OF BARREL | SIZE OF BARREL | FROM (DEPTH) | TO (DEPTH) | CORE RECOVERED | DESCRIPTION OF CORE | ETHER TEST | CONDITION OF CORE |
|---|---|---|---|---|---|---|---|---|
| | | | 6321 | 6341 | 20' | 13½' med. fine hard rich oil sd., 6" slickensided br. shale, 6' med. fine hard rich oil sand. | | |
| | | | 6341 | 6361 | 4' | 1' firm fine rich oil sd., 3' soft fine good oil sd. | | |
| | | | 6361 | 6381 | 9' | 3' fine firm rich oil sd., w/one 2" stk. shale, 1' hd. shell, 5' fine firm good oil sd. | | |
| | | | 6381 | 6401 | 9½' | 2'8" hd. cse. good oil sd., 4" sandstone shell, 3' hd. cse. good oil sd., 2½' hd. sandstone shell, 1' fine fairly soft good oil sd. | | |
| | | | 6401 | 6421 | 5' | 4'8" hd. med. fine oil sd., 4" hd. sdy. sh. | | |
| | | | 6421 | 6441 | 6' | Fine firm soft good oil sd. | | |
| | | | 6441 | 6458 | 4'3" | 4' hd. med. fine good oil sd., 3" hard dark sandstone shell. | | |
| | | | 6550 | 6560 | 5' | 2½' br. sdy. sh., 5-6° dips., 2½' br. sh. w/ stks. med. gray water sd. | | |
| | | | 6560 | 6570 | 7½' | Med. grained gray water sd., w/ few small stks. sdy. shale | | |
| | | | 6570 | 6580 | 7½' | 1' hd. sdstone shell, 6" fine gray sd., and br. sh. & 6' med. grained soft gray water sand. | | |
| | | | 6650 | 6660 | 6' | 6" br. sh., 4" fine poor oil sd., 4" br. sh., 7" fine poor oil sd., 2' br. shale, some slickensiding, 3" hd. dark gray sd., 2' br. sh., stks. fine gray sd. | | |
| | | | 6749 | 6759 | 3'8" | 1'2" hd. sandstone shell, 1'6" fract. black shale, 1' fine firm gray sd., stkd. w/ oil sd. | | |
| | | | 6846 | 6854 | 2½' | 1' hd. sandstone shell, 1½' cse. poor oil sd., stks. gray sd.,wet. | | |
| | | | 6854 | 6866 | 4' | Med. fine firm gray sd., stkd. w/ poor oil sd. | | |
| | | | 6866 | 6877 | 11' | Br. sh., stks. fine good oil sd., 90-95% shale, dip 19°. | | |

FORM 101-A. 82953 2-31 20M
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STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## CORE RECORD OF OIL OR GAS WELL

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M., Elevation 92. Well No. FIELD #18

In compliance with the provisions of Section 18, Chapter 718, Statutes of 1915, as amended, the information given herewith is a complete and correct record of all cores taken in this well to the depth on the accompanying log.

Signed [signature]

Date June 23rd, 1931

Title Chief Petroleum Engr.
(President, Secretary or Agent)

| DATE | MAKE OF BARREL | SIZE OF BARREL | FROM (DEPTH) | TO (DEPTH) | CORE RECOVERED | DESCRIPTION OF CORE | ETHER TEST | CONDITION OF CORE |
|---|---|---|---|---|---|---|---|---|
| | | | 6877 | 6887 | 9½' | 5'4" firm brown shale w/ one 2" stk. fine good oil sd., free oil in fractures. Dip 19°, 4'2" soft good oil sd. | | |
| | | | 6887 | 6898 | 9½' | 4" hd. oil sd., 5'2" fine firm good oil sd., 6" hd. sdy. sh., 3½' fine soft good oil sd. | | |
| | | | 6898 | 6909 | 8' | fine firm good oil sand. | | |
| | | | 6909 | 6920 | 3'4" | 10" fine good oil sd., 1' sdy. br. sh., 1½' fine firm good oil sd. | | |
| | | | 6920 | 6930 | 8' | 6" hd. br. sh., 5½' fine good oil sd., 1½' hd. sdstone shell, 6" fine soft good oil sand. | | |
| | | | 6930 | 6940 | 6' | 1' fine good oil sd., 6" sdy. sh., 4½' fine fair oil sd., does not look rich. | | |
| | | | 6940 | 6951 | 3' | 3" very hard shell, 1½' fine soft good oil sd., 1' stks. br. sh. & oil sd. | | |
| | | | 6951 | 6962 | 11' | 4" black sdy. sh., 1'8" water sd., 3' med. coarse poor oil sd., 6" sdy. sh., 2'6" water sd., 1½' sdy. black sh., 1½' water sand | | |
| | | | 6962 | 6970 | 2' | 8" hd. sh., 10" gray water sd., 6" hd. sandstone shell. | | |
| | | | 6970 | 6981 | 10' | 1' sandstone shell, 6' med. fine gray water sd.,,couple thin stks. shale, 2' hard br. shale, 1' soft gray sand. | | |
| | | | 6981 | 7001 | 13' | 6' br. sh., couple thin stks. fine gray sand, 7' soft gray water sd., couple thin stks. shale, Dip 20°. | | |
| | | | 7001 | 7006 | 1-1/3' | 3" hard shale, 13" firm gr. water sand. | | |
| | | | 7006 | 7018 | 3½' | 2" gray water sd., 1'4" hard sh., 2' hard sandstone shell. | | |
| | | | 7018 | 7038 | 9' | 3' hard shale, 1' br. sdy. sh., 1½' gr. water sd., & wet oil sd., 3" sh., 6" soft gr. sd., 9" hd. sh., 2' soft fine gr. sd., | | |

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STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## CORE RECORD OF OIL OR GAS WELL

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M., Elevation 92. Well No. FIELD #18

In compliance with the provisions of Section 18, Chapter 718, Statutes of 1915, as amended, the information given herewith is a complete and correct record of all cores taken in this well to the depth on the accompanying log.

Signed [signature]

Date June 23rd, 1931 Title Chief Petroleum Engr.
(President, Secretary or Agent)

| DATE | MAKE OF BARREL | SIZE OF BARREL | FROM (DEPTH) | TO (DEPTH) | CORE RECOVERED | DESCRIPTION OF CORE | ETHER TEST | CONDITION OF CORE |
|---|---|---|---|---|---|---|---|---|
| | | | | | | couple 2" stks. sh., Dip about 20°. | | |
| | | | 7038 | 7053 | 11' | 1' soft gray sd., 6" sandstone shell, 9½' soft gray water sd., couple 2" stks. br. sh. | | |
| | | | 7053 | 7068 | 4' | 2½" br. sh., free oil in planes, 6" fine rich oil sd., 1' hd. sdy. sh. | | |
| | | | 7068 | 7088 | 10' | 8½' br. shale and sdy. br. shale w/ one 2" stk. oil sd., 1½' fine soft gr. sd. | | |
| | | | 7088 | 7105 | 10½' | 1' br. sh., soft gr. sd., 9' firm and soft gr. water sd., 6" hd. sandstone shell. | | |
| | | | 7105 | 7122 | 12' | 1½' hd. sandstone shell, 3½' med. gr. sd., 1½' hd. sandstone shell, 5½' med. soft gr. water sand. | | |
| | | | 7122 | 7135 | 6' | 3" sandstone shell, 2'9" br. sdy. sh. & fine gr. sd., 3' soft gr. water sd., little oil staining, but all wet. | | |
| | | | 7135 | 7153 | 7'3" | 5" stky hd. sh., sdy. br. sh., couple stks. firm gr. sd., 6" soft gr. sd., 9" br. shale, stks. fine gr. sd., 1' fine soft gr. sand. | | |
| | | | 7153 | 7167 | 7'4" | 5'3" hd. br. sdy. sh., 1½' fine soft gr. sd., 7" br. sh., stks. gr. sd. | | |
| | | | 7167 | 7187 | 7'3" | 2'9" soft med. fine good oil sd., good cut, 1½' hd. br. sh., 6" soft fine oil sd., 3" br. sh., 2'3" fine soft & firm oil sd., good cut, 2" sh. on bottom. | | |
| | | | 7187 | 7207 | 9' | 5½" hd. br. sh., 3½' fine soft gr. water sd., couple 2" stks. sh., Dip about 15°. | | |
| | | | 7207 | 7227 | 20' | Hd. br. sh., few thin stks. gr. sd. | | |

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DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## CORE RECORD OF OIL OR GAS WELL

FIELD LONG BEACH COMPANY THE TEXAS COMPANY

Sec. 19, T. 4S, R. 12W, S.B. B. & M., Elevation 92. Well No. FIELD #18

In compliance with the provisions of Section 18, Chapter 718, Statutes of 1915, as amended, the information given herewith is a complete and correct record of all cores taken in this well to the depth on the accompanying log.

Signed J. J. Wilbur Jr.

Date June 23rd, 1931 Title Chief Petroleum Engr.
(President, Secretary or Agent)

| DATE | MAKE OF BARREL | SIZE OF BARREL | FROM (DEPTH) | TO (DEPTH) | CORE RECOVERED | DESCRIPTION OF CORE | ETHER TEST | CONDITION OF CORE |
|---|---|---|---|---|---|---|---|---|
| | | | 7276 | 7296 | 9½' | 5' firm poor oil sd., w/ 1-2" and 1-4" shell, 1' fine soft poor oil sand, 6" sandstone shell, 3' hd. sh., stks. soft fair oil sd. | | |
| | | | 7296 | 7308 | 5½' | 4' fine soft fair oil sd., 4" sandstone shell, 1'2" soft fine oil sd., & sdy. shale. | | |
| | | | 7308 | 7319 | 6' | hd. br. sh., w/ one thin lense gr. sd., near bottom, Dip 30°. | | |
| | | | 7319 | 7329 | 5' | 4'8" fine oil sd. & br. sh., all mixed up, 4" hd. shale. | | |
| | | | 7329 | 7349 | 9' | 1½' firm rich oil sd., 2' hd. sh., 2½' hd. oil sd., 3' fine soft good oil sd., w/ 4" stk. sh. near bottom. | | |
| | | | 7349 | 7367 | 6' | 3' hd. dk. br. shale w/ little sand, 3' fine good oil sd., stks. shale, 75% sd. - 29° dip. | | |
| | | | 7367 | 7386 | 8' 4' | Med. fine good oil sd., 4' br. shale, thin stks. fine good oil sd., 95% sh. | | |
| | | | 7386 | 7404 | 6' | 8" hd. shale, 1' med. fine good oil sd., 4'10" br. sh., couple thin stks. oil sd. at top. | | |
| | | | 7404 | 7424 | 12' | 2' hard good oil sd., 1' hd. sh. 3½' fine hd. fair oil sd., stks. hd. sh., 2½' med. hd. oil sd., w/ one stk. shale, 4" sandstone shell, 2'8" soft and firm good oil sd. | | |
| | | | 7424 | 7443 | 9' | 3' med. fine good oil sd., 3' hd. sandstone shell, 3' fine soft good oil sd. | | |
| | | | 7443 | 7463 | 15" | Fine hard good oil sd., w/ thin hd. gray stk. | | |
| | | | 7463 | 7483 | 13' | Med. fine soft & firm gr. water sd., w/ stks. showing oil, couple 1" stks. sdy. shale near bottom. | | |

FORM 109-A. 81365 12-30 20M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T -1-22929

Los Angeles, Cal. April 17, 1931.

Mr. V. E. Wilhelm,
Los Angeles, Cal.

121

Agent for THE TEXAS Company

DEAR SIR:

Operations at your well No. "FIELDS" 18 Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Oil Field, in Los Angeles County, were witnessed by F. C. Hodges, representative of the supervisor, on April 14, 1931. There was also present D. K. Weaver, Engineer, and C. W. Sweet, Foreman.

Casing Record 13" S.P. cem. 788'; 8¼" cem. 4230', W.S.O.; 5¾" cem. 6210', W.S.O.; T.D. present hole 7483'; plugged with cement 7483'-6825'; and 6500'-6442'; Junk: (1st hole) 6¼" perf. 4273'-4529'; T.D. (1st hole) 4529', plugged with cement 4529'-4280'.

The operations were performed for the purpose of testing the location and hardness of a cement plug proposed to be placed from 6500' to 6435' in the process of plugging off bottom water.

and the data and conclusions are as follows:

MR. WEAVER REPORTED THE FOLLOWING:

1. The hole was cleaned out to 6500'.
2. On April 7, 1931, 35 sacks of Victor cement was pumped in thru 2½" drill pipe hung at 6500'. The top of the cement was located at 6260' and the hole was cleaned out to 6486'.
3. On April 11, 1931, 35 sacks of Victor cement was pumped in thru 2½" tubing hung at 6436' and a pressure of 250 lb. was applied.

THE INSPECTOR NOTED THAT the cement plug at the reported depth of 6442' supported part of the weight of the drill pipe.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 6442' ARE APPROVED.

cc-Company 2
Long Beach
FCH:OH

R. D. BUSH
State Oil and Gas Supervisor

By E. Huguenin Deputy

FORM 109-B. 82427 1-31 6M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Test of Water Shut-off
(BAILING)

No. T -1-22899

Los Angeles, Cal. April 9, 1931.

Mr. V. H. Wilhelm,
Los Angeles, Cal.

Agent for THE TEXAS Company

DEAR SIR:

Your well No. "FIELDS" 18, Sec. 19, T. 4 S., R. 12 W., S.B. B. & M.,
Long Beach Oil Field, in Los Angeles County, was tested for
shut-off of water on April 6 (Time and date), 1931. Mr F. C. Hodges,
designated by the supervisor, was present as prescribed in Section 19, Chapter 718, Statutes 1915, as amended, and there were also present D. K. Weaver, Engineer, and
E. J. McEuen, Driller.

Location of water tested between 4230'-6210' and normal fluid level Not reported.

Depth and manner of water shut-off: { 6210 ft. of 5¾ in. 22.5 lb. / xft. of xxxxx in xxxxx lb.x } casing was { cemented / 3/28/31 / xlanded } in Shale Formation
at 6210 ft. with 150 sacks Victor cement by Casing method.

Water string was landed in 7-5/8" rotary (Size, rotary or cable tool) hole.

Casing record of well 13" S.P. cem. 788'; 8¼" cem. 4230', W.S.O.; 5¾" as above; 2½" tubing hung at 6089' for this test only. Junk: (1st hole) 6¼" perf. 4273'-4529'; T.D. (1st hole) 4529', plugged with cement 4529'-4280'.

Reported total depth of hole 7483 ft. Hole ~~bridged~~ plugged w/c 7483'-6828', 6500'-6435' and bridged w/c present from 6245 ft. to 6210 ft. Hole cleaned out to 6215 ft. for this test.

At time of test depth of hole measured 6213 ft. and bailer brought up sample of shale, sand and set cement.

At 3:00 p.m., April 5, 1931 (Time and date) oil bailed to showing ft., drilling fluid { ~~bailed~~ / swabbed } to 3000 ft.

At 10:00 a.m., April 6, 1931 (Time and date) top of oil found at showing ft., top of fluid found at 2960 ft.

Result of test:

MR. WEAVER REPORTED THE FOLLOWING:

1. A casing test was made by applying a pressure of 500 lb. to the inside of the casing for 1 hr. without loss.
2. 35' of set cement was drilled out of the 5¾" casing, equivalent to 4 sacks.

THE INSPECTOR NOTED THE FOLLOWING:

1. Gas was issuing from the 5¾" casing during the test.
2. The fluid rose 40' in 19 hr., equivalent to 1.2 bbl. per 24 hr.
3. A fluid sample from 6213' consisted of medium gas-cut, oily mud that tasted fresh.

THE SHUT-OFF IS APPROVED.

cc-Company 2
Long Beach
FCH:CH

R. D. BUSH
State Oil and Gas Supervisor

By E. Huguenin Deputy

FORM 109-A. 81365 12-30 20M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T -1-22870

Los Angeles, Cal. March 30, 1931.

Mr. V. H. Wilhelm,
Los Angeles, Cal.

Agent for THE TEXAS Company

DEAR SIR:

Operations at your well No. "FIELDS" 18 Section 19, T. 4 S., R. 12 W., S. B. B. & M., Long Beach Oil Field, in Los Angeles County, were witnessed by Paul J. Howard, representative of the supervisor, on March 27, 1931. There was also present D. K. WEAVER, Engineer, and E. J. McEuen, Driller.

Casing Record 13" S.P. cem. 788'; 8¼" cem. 4230', W.S.O.; T.D. 7483'; plugged with cement 7483' to 6828' and 6500' to 6435'. Junk: (1st hole) 6¼" perf. 4273'-4529'; T.D. 4529'; plugged with cement 4529' to 4280'.

The operations were performed for the purpose of demonstrating that the formations between 4230' and 6210' were mudded until the loss was not more than 4 bbl. per hr.

and the data and conclusions are as follows:

MR. WEAVER REPORTED THE FOLLOWING:

1. A 7-5/8" rotary hole was drilled from 4230' to 7483'.
2. The hole was filled with heavy mud from 6828' to 6500'.
3. Cement bridges were placed in the hole from 6500' to 6435' and from 6245' to 6210'. The latter bridge was placed for the sole purpose of aiding in securing a test of shut-off.
4. Mud fluid was circulated for 28 hr. prior to the test.
5. No record was kept of the loss of mud fluid prior to the test.
6. The drill pipe was hanging at 6200' during the test.
7. Cores were taken from the following important depth:
   6170' - 6220' Shale with a few thin streaks of oil sand.

THE INSPECTOR NOTED THE FOLLOWING:

1. During a circulation test from 9:00 a. m. to 9:30 a. m. mud fluid was loss from the pit at the rate of 3.0 bbl. per hr.
2. The cement bridge at 6210' supported 9 points of the weight of the drill pipe.

THE MUDDING OPERATIONS AS WITNESSED AND REPORTED ARE APPROVED.

Oral approval given to cement 5¾" casing at 6210' is hereby confirmed.

cc-Company 2
Long Beach
PJH:OH

R. D. BUSH
State Oil and Gas Supervisor

By E. Hugenin Deputy

FORM 109-A. 81365 12-30 20M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T -1-22856

Los Angeles, Cal. March 27, 1931.

Mr. V. H. Wilhelm,
Los Angeles, Cal.

Agent for THE TEXAS Company

DEAR SIR:

Operations at your well No. "FIELDS" 18 Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Oil Field, in Los Angeles County, were witnessed by Paul J. Howard, representative of the supervisor, on March 25, 1931. There was also present D. K. Weaver, Engineer, and E. J. McEuen, Driller.

Casing Record 13" S.P. cem. 788'; 8¼" cem. 4230', W.S.O.; T.D. 7483'; plugged with cement 7483'-6828'; Junk: 6¼" landed 4529'. perf. 4273'-4529', pulled from 4273'; T.D. 4529'; plugged with cement 4529'-4280'.

The operations were performed for the purpose of testing the location and hardness of a cement plug proposed to be placed from 7483' to 6850' in the process of plugging.

and the data and conclusions are as follows:

MR. WEAVER REPORTED THE FOLLOWING:

1. On March 21, 1931, 170 sacks Victor cement was pumped into the hole thru 4" drill pipe hung at 7481'.
2. The top of the cement was located at 6828'.

THE INSPECTOR NOTED THAT The plug at 6828' supported 6 points of the weight of the drill pipe.

THE LOCATION AND HARDNESS OF THE CEMENT PLUG AT 6828' ARE APPROVED.

cc-Company 2
Long Beach
PJH:OH
CRB

R. D. BUSH
State Oil and Gas Supervisor

By E. Huguenin Deputy

FORM 111. 79322 9-30 20M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Proposed Operations

No. P-1-23170

Los Angeles, Cal. March 27, 1931.

Mr. V. H. Wilhelm,
Los Angeles, Cal.
Agent for THE TEXAS Company

Dear Sir:

Your supplementary proposal to redrill oil string and deepen Well No. "FIELDS" 18,
Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Oil Field, Los Angeles County,
dated March 25, 1931, received March 26, 1931, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

Records in addition to, or at variance with those shown in the notice:
The 8½" shut-off was approved.

THE NOTICE STATES:
"The new conditions are as follows:
13" S.P. cem. 788'
8-1/4" cem. 4230'
6-1/4" landed 4529' incl. 307' perfs. Pulled from 4273'. Plugged w/ 40 sacks cement under pressure 4529-4280.
Total depth 7483'
Cored shale 6170-6220'
" oil zone 6220-6450'
" water sands 6550-6650/6750 and continuous 6850 to 7319. Cored oil zone 7319-7440 and water sands to 7483'."

PROPOSAL:
"We now propose
Plug hole w/ cement under pressure 7483' to 6850' and have plug witnessed. Fill with heavy mud to 6500'. Put in cement plug 6500-6435'. Cement solid string of 5-3/4" casing 6215'. Test shoe, and set 4-3/4" flush joint perf. liner 6210 to 6435 and attempt to produce."

DECISION:
THE PROPOSAL IS APPROVED PROVIDED THAT THIS DIVISION SHALL BE NOTIFIED TO WITNESS the location and hardness of the cement plug at 6435'.

cc-Company 2
Long Beach
WJC:OH

GFB

R. D. BUSH
State Oil and Gas Supervisor
By E. H. Guerin Deputy

FORM 123. 66215 6-29 5M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
MAR 26 1931
LOS ANGELES, CALIFORNIA

## Supplementary Notice

Long Beach, Cal. March 25, 1931

MR. E. Huguenin

Deputy State Oil and Gas Supervisor

Los Angeles, Cal.

DEAR SIR:

Please be advised that our notice to you dated November 7, 1930,

stating our intention to redrill and deepen well No. "Fields" 18,
(Drill, deepen, redrill, abandon)

Sec. 19, T. 4 S, R. 12 W, S.B. B. & M. Long Beach Oil Field

Los Angeles County, must be amended on account of changed or recently discovered conditions.

The new conditions are as follows:

13" S.P. cem. 788'
8-1/4" cem. 4230'
6-1/4" landed 4529' incl. 307' perfs. Pulled from 4273'. Plugged w/ 40 sacks cement under pressure 4529-4280.
Total depth 7483'
Cored shale 6170-6220'
" oil zone 6220-6450'
" water sands 6550-6650-6750 and continuous 6850 to 7319. Cored oil zone 7319-7440 and water sands to 7483'.

We now propose

Plug hole w/ cement under pressure 7483' to 6850' and have plug witnessed. Fill with heavy mud to 6500'. Put in cement plug 6500-6435'. Cement solid string of 5-3/4" casing 6215'. Test shoe, and set 4-3/4" flush joint perf. liner 6210 to 6435 and attempt to produce.

Reference to file of data

| Maps | Field | Cross Section | Cards | Forms | |
|---|---|---|---|---|---|
| | | | | | ✓ |

Respectfully yours

(Name of Company)

By The Texas Co.

FORM 111. 79322 9-30 20M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Report on Proposed Operations

No. P-1-22652

Los Angeles, Cal. November 12, 1930.

Mr. V. H. Wilhelm,

Los Angeles, Cal.

121

Agent for THE TEXAS Company

Dear Sir:

Your proposal to redrill and deepen oil string/ Well No. "FIELDS" 18,

Section 19, T. 4-S., R. 12-W. S.B. B. & M., Long Beach Oil Field, Los Angeles County,

dated Nov. 7, 1930, received Nov. 8, 1930, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

Records in addition to or at variance with those shown in the notice:
The 8¼" shut-off was approved.
Total depth 4529'.

THE NOTICE STATES:
"The present condition of the well is as follows:
13" S.P. cemented at 788'
8¼" Casing " at 4230'
6¼" Casing landed at 4529' including 307' Perforations
Produced before curtailment
35 barrels oil - 10 barrels water daily."

PROPOSAL:
"The proposed work is as follows:
To plug 6¼" solid of cement 4280'-4529'.
Pull 6¼" from 4280, redrill and deepen to 7500', cementing 6-5/8" casing at 6500' with 5" oil string on bottom."

DECISION:
THE PROPOSAL IS APPROVED PROVIDED THAT:

1. The proposed cement plug from 4529' to 4280' shall be placed under a minimum pressure of 500 lb.
2. Adequate blow-out prevention equipment shall be provided and ready for operation at all times.
3. Any hole to be sidetracked at any time during the drilling of this well shall be completely filled with cement.
4. The formations to be left back of the 6-5/8" casing shall be mudded by open circulation until the loss is not more than 2.0 bbl. per hr.
5. The exact cementing depth for the 6-5/8" casing shall be determined by careful coring, beginning not lower than 6150'.
6. Sufficient cement shall be used to fill back of the 6-5/8" casing to reach to at least 1000' above the shoe.
7. The column of mud fluid back of the 6-5/8" casing shall be maintained to the surface for at least 30 days after cementing this casing.
8. THIS DIVISION SHALL BE NOTIFIED TO WITNESS:
   (a) Final mudding operations before cementing the 6-5/8" casing.
   (b) Bailing test of the 6-5/8" shut-Off.

cc-Company 2
Long Beach

GP:GH

R. D. BUSH
State Oil and Gas Supervisor

By [signature] Deputy

FORM 107. 68217 6-29 10M
CALIFORNIA STATE PRINTING OFFICE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
NOV 8 - 1930
LOS ANGELES, CALIFORNIA

## Notice of Intention to Deepen, Redrill, Plug or Alter Casing in Well

This notice must be given fifteen days before work begins when possible

Los Angeles, Cal. November 7th, 19 30

MR. E. Huguenin,

Deputy State Oil and Gas Supervisor

Los Angeles, Cal.

DEAR SIR:

In compliance with Section 17, Chapter 718, Statutes of 1915, as amended, notice is hereby given that it is our intention to commence the work of deepening, redrilling, plugging or altering casing at well No. Fields #18
(Cross out unnecessary words)
, Sec. 19, T. 4-S, R. 12-W, S.B. B. & M.
Long Beach Oil Field, Los Angeles County.

The present condition of the well is as follows:

13" S.P. cemented at 788'
8¼"Casing " "4230'
6¼"Casing landed "4529' including 307' Perforations

Produced before curtailment

35 barrels oil - 10 barrels water daily

The proposed work is as follows:

To plug 6¼" solid of cement 4280' - 4529'.

Pull 6¼" from 4280, redrill and deepen to 7500', cementing 6 5/8" casing at 6500' with 5" oil string on bottom.

redrill o.s. & deepen

Reference to file of data

| Maps | Model | Cross section | Cards | Forms | |
|---|---|---|---|---|---|
| | | | | ✓ | ✓ |

Respectfully yours

The Texas Company
Name of Company or Operator

By V. H. Wilhelm
Chief Petroleum Engineer R

ADDRESS NOTICE TO DEPUTY STATE OIL AND GAS SUPERVISOR IN CHARGE OF DISTRICT WHERE WELL IS LOCATED

Form 100.

Fill th ink in with typewriter. Write on one side of p only

# CALIFORNIA STATE MINING BUREAU

FERRY BUILDING, SAN FRANCISCO

## LOG OF OIL OR GAS WELL

CALIFORNIA STATE MINING BUREAU
RECEIVED
JUL 10 1926
Department of Petroleum and Gas
LOS ANGELES, CALIFORNIA

FIELD Long Beach COMPANY California Petroleum Corp. of Cal.

Township 4S Range 12W Section 19 Elevation 92' Number of Well Fields #18

In compliance with the provisions of Chapter 718, Statutes 1915, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Signed J. P. Thomas

Date July 8, 1926 Title Engineer.
(President, Secretary or Agent)

Reference to file of data

| | Cross Section | Cards | |
|---|---|---|---|
| | | | ✓ |

The summary on this page is for the ORIGINAL condition of the well

### OIL SANDS

1st sand from 4232 to 4235 4th sand from ____ to ____
2d sand from 4525 to 4529 5th sand from ____ to ____
3d sand from ____ to ____ 6th sand from ____ to ____

### IMPORTANT WATER SANDS

1st sand from ____ to ____ 3d sand from ____ to ____
2d sand from ____ to ____ 4th sand from ____ to ____

### CASING RECORD

| Size of Casing | Where Landed | Where Cut | Weight Per Foot | Threads Per Inch | Kind of Shoe | Make of Casing | Cemented Yes | Cemented No | Number Sacks |
|---|---|---|---|---|---|---|---|---|---|
| 13" | 788 | | S.P. | | | Here. | x | | 100 |
| 8¼" | 4230 | | 36# | 8 | | Std.Seam. | x | | 400 |
| 6¼" | 4529 | | 26# | 10 | | " " | | x | |
| | | | | | | | | | |
| | | | | | | | | | |

### CEMENTING OR OTHER SHUT-OFF RECORD

| Casing, Size | Sacks | Time Set | Method | Test and Result (Give water level and bailing results) |
|---|---|---|---|---|
| 8¼" | 400 | 5 days | Perkins | Bailed to 2000. No fluid entered well in 12 hrs. WSOOK |
| | | | | |
| | | | | |

### PLUGS AND ADAPTERS

Heaving Plug—Material ____ Length ____ Where set ____

Adapters —Material ____ Size ____

### TOOLS

Rotary Tools were used from 0 ft. to 4529 ft.

Cable Tools were used from ____ ft. to ____ ft.

### PERFORATIONS

State clearly whether a machine was used or casing was drilled in shop

| From | To | Size of Holes | Number of Rows | Holes Per Foot | Machine—Shop |
|---|---|---|---|---|---|
| 4222 ft. | 4529 ft. | EMS Screen | | | |
| ft. | ft. | | | | |
| ft. | ft. | | | | |
| ft. | ft. | | | | |
| ft. | ft. | | | | |

Thirty days after completion well produced 67 barrels of oil per day.

The gravity of oil was 17.6 degrees Baumé. Water in oil amounted to 23.3 per cent.

FORM 103. 43286 1-26 10M

# CALIFORNIA STATE MINING BUREAU

DEPARTMENT OF PETROLEUM AND GAS

## HISTORY OF OIL OR GAS WELL

CALIFORNIA STATE MINING BUREAU
RECEIVED
Department of Petroleum and Gas

FIELD Long Beach COMPANY California Petroleum Corp. of Cal.

*Township* 4S, *Range* 12W, *Section* 19, *Number of well* Fields #18

Signed J P Thomas

Date July 8, 1926 Title Engineer.

(*President, Secretary or Agent*)

It is of the greatest importance to have a complete history of the well. Please state in detail the dates of redrilling, together with the reasons for the work and its results. If there were any changes made in the casing, state fully, and if any casing was "sidetracked" or left in the well, give its size and location. If the well has been dynamited, give date, size, position, and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position, and results of pumping or bailing.

| | Cross Section | Cards |
|---|---|---|
| | | |

Spudded well in 2-4-26.

Drilled to 788' and cemented 13" S.P. at 788' w/100 sax McDuffy treated cement, by Perkins.

Drilled to 4235' and took mud test, which was witnessed and approved by your Department.

Cemented 4230' of 8¼" 36# Standard Seamless csg. at 4230' w/400 sax McDuffy treated cement, under 800# pressure, by Perkins.

Drilled out cement 4194-4235.

Bailed to 2000'. No fluid entered well in 12 hrs. Your Department witnessed and approved the shut-off.

Drilled to 4829' and landed 6¼" 26# Standard Seamless csg. incl. 307' EMS Screen on bottom.

Swabbed and bailed well. Pumped to sump 4-5-25

4-6-26 Produced 80 bbl. 15.8 grav. 16% water, 18% emulsion.

NAMES OF DRILLERS

A. L. Anders

F. C. Brown

Homer Batson

NAMES OF TOOL DRESSERS

S. G. Vanzant

F. N. Bakers

F. Camp

Date drilling started 2-4-26

Date well was completed 4-6-26

FORMATIONS PENETRATED BY WELL

| DEPTH TO | | Thickness | Name of Formation |
|---|---|---|---|
| Top of Formation | Bottom of Formation | | |
| 0 | 500 | 500 | Sand & gravel |
| | 735 | 235 | Sand, gravel & shale |
| | 760 | 25 | Hard sand |
| | 788 | 28 | Shale |
| | 858 | 70 | Sand & shale |
| | 1155 | 247 | Sandy shale |
| | 1225 | 70 | Sticky shale |
| | 1235 | 10 | Hard sand |
| | 1388 | 153 | Sand & gravel |
| | 1658 | 270 | Sand & shale |
| | 1700 | 42 | Sandy shale |
| | 1800 | 100 | Sand & stks. hard sand |
| | 1820 | 20 | Sticky shale |
| | 1900 | 80 | Sand |
| | 1930 | 30 | Sticky shale |
| | 2015 | 85 | Stky.sh. & stks. hard sand |
| | 2165 | 150 | Sticky shale |
| | 2185 | 20 | Sandy shale |
| | 2230 | 45 | Sticky shale |
| | 2305 | 75 | Sandy shale |
| | 2425 | 120 | Sticky shale |
| | 2435 | 10 | Sandy shale |
| | 2455 | 20 | Sticky shale |
| | 2550 | 95 | Sticky shale & stks. sand |
| | 2635 | 85 | Hard sandy shale |
| | 2665 | 30 | Sticky shale |
| | 2675 | 10 | Hard sand |
| | 2760 | 85 | Sandy shale |
| | 2875 | 115 | Stky.sh. & stks. hard sand |
| | 2890 | 15 | Sandy shale |
| | 3003 | 113 | Sticky sh. & stks. hard sd. |
| | 3015 | 12 | Hard sand |
| | 3038 | 23 | Sticky shale |
| | 3065 | 27 | Hard sand & stky.shale |
| | 3110 | 45 | Stky.sh. w/stks. sand |
| | 3135 | 25 | Tough shale |
| | 3185 | 50 | Sandy shale |
| | 3195 | 10 | Hard sand |
| | 3215 | 20 | Hard sandy shale |
| | 3275 | 60 | Hard sand |
| | 3300 | 25 | Stky.sh. w/stks. hard sand |
| | 3306 | 6 | Sticky shale |
| | 3331 | 25 | Stky.sh. w/stks. hard sand |

Form 101. 32282 4-24 15M

# CALIFORNIA STATE MINING BUREAU

DEPARTMENT OF PETROLEUM AND GAS

CALIFORNIA STATE MINING BUREAU
RECEIVED
JUL 10 1926
Department of Petroleum

## LOG OF OIL OR GAS WELL—Continued

FIELD Long Beach COMPANY California Petroleum Corp. of Cal.

*Township* 4S, *Range* 12W, *Section* 19, *Number of well* Fields #18

## FORMATIONS PENETRATED BY WELL

| DEPTH TO | | Thickness | Name of Formation |
|---|---|---|---|
| Top of Formation | Bottom of Formation | | |
| 3331 | 3336 | 5 | Hard sand |
| | 3368 | 32 | Sticky shale |
| | 3378 | 10 | Hard sand |
| | 3408 | 30 | Stky. sh. & hard sand |
| | 3500 | 92 | Sandy shale |
| | 3515 | 15 | Hard sandy shale |
| | 3555 | 40 | Sticky shale |
| | 3570 | 15 | Sandy sh. stks. hard sand |
| | 3618 | 48 | Sandy shale |
| | 3665 | 47 | Sandy sh. stks. hard sand |
| | 3738 | 73 | Hard sand |
| | 3756 | 18 | Hard sand & stks. shale |
| | 3771 | 15 | Tough shale |
| | 3818 | 47 | Hard sand |
| | 3851 | 33 | Sticky shale |
| | 3933 | 82 | Hard sand |
| | 3935 | 2 | Sticky shale |
| | 3940 | 5 | Hard sand |
| | 3963 | 23 | Sandy sh. w/stks. hard sand |
| | 4000 | 37 | Sandy shale |
| | 4013 | 13 | Sticky shale |
| | 4033 | 20 | Sandy shale |
| | 4060 | 27 | Sandy sh. w/stks. hard sand |
| | 4070 | 10 | Hard sand |
| | 4072 | 2 | Shell |
| | 4073 | 1 | Sand |
| | 4096 | 23 | Hard sand |
| | 4110 | 14 | Sticky shale |
| | 4120 | 10 | Sandy shale |
| | 4150 | 30 | Hard sand |
| | 4170 | 20 | Hard sandy shale |
| | 4232 | 62 | Brown shale, continuous core 4200-4235 |
| | 4235 | 3 | Brown shale stkd. w/oil sand |
| | 4239 | 4 | Sandy shale |
| | 4258 | 19 | Hard sand |
| | 4275 | 17 | Sandy shale w/stks. hard sand |
| | 4295 | 20 | Hard sand & sandy shale |
| | 4320 | 25 | Sandy shell & stks. sand |
| | 4321 | 1 | Hard sand & shell |
| | 4382 | 61 | Hard sand stks. shale |
| | 4443 | 61 | Hard sand |
| | 4450 | 7 | Sticky shale |
| | 4465 | 15 | Hard sand & sandy shale |
| | 4525 | 60 | Sandy shale |
| | 4529 | 4 | Oil sand, cored |

FORM 109-B. 39807 7-25 10M

# CALI_ _RNIA STATE MINING B[ ]EAU

DEPARTMENT OF PETROLEUM AND GAS

## Report on Test of Water Shut-off

(BAILING)

No. T-1-10178

Los Angeles, Cal. March 30, 1926

Mr. J. R. Thomas

Montebello, Cal.

Agent for CALIFORNIA PETROLEUM CORPORATION OF ~~CALIFORNIA~~ Company CALIFORNIA.

DEAR SIR:

Your well No. "FIELDS" 18, Sec. 19, T. 4 S, R. 12 W, S.B. B. & M., Long Beach Oil Field, in Los Angeles County, was tested for shut-off of water on March 17, Time and date 1926. Mr. V. AUSTIN, designated by the supervisor, was present as prescribed in Section 19, Chapter 718, Statutes 1915, as amended, and there were also present Frank Halfen, Foreman and R. R. Crandall, Engineer

Location of water tested above 4230 and normal fluid level not determined

Depth and manner of water shut-off: { 4230 ft. of 8¼ in. 36 lb. / ____ ft. of ____ in. ____ lb. } casing was { cemented / ~~landed~~ } 4-11-26 in brown shale Formation

at 4230 ft. with 400 sacks Santa Cruz cement by Perkins method; 12" Rotary Size and kind tools were used in landing water string. The last 100 sacks of cement was treated with quick setting chemical.

Casing record of well 13" S. P. cemented at 788', 8¼" as above

Reported total depth of hole 4235 ft. Hole bridged from - ft. to - ft. Hole cleaned out to 4235 ft. for this test.

At time of test depth of hole measured 4232 ft. and bailer brought up sample of sand

At 4:30 a.m. Mar. 17, 1926, Time and date oil bailed to - ft., ~~water~~ fluid bailed to 2000 ft.

At 4:30 p.m. Mar. 17, 1926 Time and date top of oil found at - ft., top of ~~water~~ fluid found at 2000 ft.

**Result of bailing test:**

MR. HALFEN REPORTED THE FOLLOWING:
1. No casing test was made.
2. 36' of set cement was drilled out of the 8¼" casing.

THE INSPECTOR NOTED THE FOLLOWING:
1. No fluid entered the well while standing 12 hrs. for test.
2. The fluid samples taken were as follows:
   from the top - heavy mud fluid
   " "bottom - " " " showing some gas.

THE SHUT OFF IS APPROVED.

cc-J.R.Thomas
Long Beach

VA:LH

R. D. BUSH,
*State Oil and Gas Supervisor*

By E. Haguenin Deputy

106. 32204 4-24 10M

CALIFORNIA STATE MINING BUREAU
RECEIVED
MAR 18 1926
Department of Petroleum and Gas
LOS ANGELES, CAL.

# CALIF[ ]NIA STATE MINING BU[ ]AU

DEPARTMENT OF PETROLEUM AND GAS

## Notice of Test of Water Shut-off

**This notice must be given at least five days before the test, and a longer time is desirable**

Montebello, Cal. March 15, 1926

MR. E. Huguenin,
*Deputy State Oil and Gas Supervisor*

Los Angeles, Cal.

DEAR SIR:

In compliance with Section 19, Chapter 718, Statutes of 1915, as amended, notice is hereby given that it is our intention to test the shut-off of water in well number Fields #18, Sec. 19, T. 4S, R. 12W, S.B. B. & M., Long Beach Oil Field, Los Angeles County, on the 16th day of March 1926

8¼ inch 36 lb. casing was ~~landed~~/cemented in brown shale (Formation) at 4230 (Depth)

on March 11, (Date) 1926

400 sacks S.C. (Kind) of cement were used.

The Perkins method was used in placing cement.

Fluid level will be bailed to a depth of 2000 feet and left undisturbed for at least 12 hours before your inspection.

The well is 4235 feet deep. There ~~is~~/is not a plug or bridge from x feet to x feet.

Respectfully yours,

California Petroleum Corp. of Cal.
(Name of Company or Operator)

By J. R. Thomas
Engineer.

Address notice to Deputy State Oil and Gas Supervisor in charge of district where well is located

Reference to file of data

| Maps | Model | Cross Section | Cards | Logs | |
|---|---|---|---|---|---|
| | 3/24/26 | | | 114 | ✓ |

FORM 109-A. 39906 7-25 1M

# CALI RNIA STATE MINING BU EAU
DEPARTMENT OF PETROLEUM AND GAS

## Special Report on Operations Witnessed

No. T-1-10126

Los Angeles Cal. March 18 1926

Mr. J. R. Thomas

Montebello Cal.

Agent for CALIFORNIA PETROLEUM CORPORATION OF ~~CALIFORNIA~~ Company CALIFORNIA

DEAR SIR:

Operations at your well No. "FIELDS" 18 Section 19, T. 4 S, R. 12 W, S.B. B. & M.,

Long Beach Oil Field, in Los Angeles County, were witnessed by

V. Austin, representative of the supervisor,

on Mar. 10, 1926. There were also present R. R. Crandall, Engineer and C. W. Shaw, Foreman

Casing Record 13" S.P. cemented at 788', only

The operations were performed for the purpose of testing the effectiveness of the mudding of the formations between 788' and 4230'.

and the data and conclusions are as follows:

MR. CRANDALL REPORTED THE FOLLOWING:
1. A 12" rotary hole was drilled from 788' to 4235'.
2. Mud fluid was circulated for 12 hr. prior to the test.
3. No record was kept of the loss of mud fluid prior to the test.
4. The drill pipe was hanging at 4230' during the test.

THE INSPECTOR NOTED THAT during a circulation test from 10:30 a.m. to 11 a.m. mud fluid was lost from the pit at the rate of 4 bbl. per hr.

THE MUDDING OPERATIONS AS WITNESSED AND REPORTED ARE APPROVED.

Oral approval given to cement 8¼" casing at 4230' is hereby confirmed.

cc--J. R. Thomas
Long Beach

VA:D

R. D. BUSH,
*State Oil and Gas Supervisor*

By E. Huguenin Deputy

FORM 111. 39803 7-25 10M

# CALIFORNIA STATE MINING BUREAU

DEPARTMENT OF PETROLEUM AND GAS

## Report on Proposed Operations

No. P -1-12459

Los Angeles, Cal. January 27, 1926

Mr. J. R. Thomas

Montebello, Cal.

Agent for CALIFORNIA PETROLEUM CORPORATION OF ~~XXXXX~~ Company CALIFORNIA

DEAR SIR:

Your proposal to drill Well No. "FIELDS" 18,

Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Oil Field, Los Angeles County,

dated Jan. 12, 1926, received Jan. 20, 1926, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES:
"The well is 160' S. of N. prop. line and 660' E. from int. c/l Atlantic Ave. & Crest Drive. Dist. parallel and at right angles to c/l streets.
The elevation of the derrick floor above sea level is 92.00'.
We estimate that the first productive oil or gas sand should be encountered at a depth of about--------feet, more or less."

PROPOSAL:
"We propose to use the following strings of casing either cementing or landing them as here indicated:

| Size of Casing | Weight | New or Second Hand | Depth | Landed or Cemented |
|---|---|---|---|---|
| 13 | S.P. | New | 800 | Cemented |
| 8¼ | 36# | " | 4270 | " |
| 6¼ | 26# | " | 4560 | Landed |

It is understood that if changes in this plan become necessary we are to notify you before cementing or landing casing."

RECOMMENDATION:
We estimate that the top of the oil zone should be encountered at a depth of about 4205' at this location.

THE PROPOSAL IS APPROVED WITH THE FOLLOWING RECOMMENDATIONS:
1. The exact top of the oil zone shall be located be careful coring below a depth of 4185'.
2. Effective mudding of the formations to be left back of the 8¼" casing shall be demonstrated by circulating mud fluid through the drill pipe hanging just off bottom after drilling and reaming to the cementing depth for this casing until the loss is not more than 5 bbl. per hr.

KINDLY NOTIFY THIS DEPARTMENT TO WITNESS:
1. Final mudding operations before cementing the 8¼" casing.
2. A bailing test of the 8¼" shut off.

cc--J. R. Thomas
Long Beach

R. D. BUSH,
*State Oil and Gas Supervisor*

By E. Ferguson Deputy

LWS:L

Form 105. 36617 1-25 10M

# CALIFORNIA STATE MINING BUREAU

DEPARTMENT OF PETROLEUM AND GAS

JAN 20 1926

Department of Petroleum and Gas
LOS ANGELES, CAL.

## NOTICE OF INTENTION TO DRILL NEW WELL

037-11543

This notice must be given before drilling begins

TEXACO INC.

Montebello, Cal. Jan. 12, 1926

MR. E. Huguenin,

*Deputy State Oil and Gas Supervisor*

Los Angeles, Cal.

DEAR SIR:

"Field" 18

In compliance with Section 17, Chapter 718, Statutes of 1915, as amended, notice is hereby given that it is our intention to commence the work of drilling well number Fields 18 Section 19 T. 4S R. 12W, S.B. B. & M., Long Beach Oil Field, Los Angeles County.

* The well is 160 feet ~~N.~~ or S. of N. prop. line and 660 feet E. ~~or W.~~ from Int. c/l Atlantic Ave. & Crest Drive,
(Give location in distance from section corners or other corners of legal subdivision)
Dist. parallel and at right angles to c/l streets.

The elevation of the derrick floor above sea level is 92.00 feet.

We propose to use the following strings of casing either cementing or landing them as here indicated:

| Size of Casing, Inches | Weight, Lb. Per Foot | New or Second Hand | Depth | Landed or Cemented |
|---|---|---|---|---|
| 13" | S.P. | New | 800 | Cemented |
| 8¼" | 36# | " | 4270 | " |
| 6¼" | 26# | " | 4560 | Landed |
| | | | | |

It is understood that if changes in this plan become necessary we are to notify you before cementing or landing casing.

We estimate that the first productive oil or gas sand should be encountered at a depth of about ..... feet, more or less.

Respectfully yours,

Address .....

California Petroleum Corp. of Cal.
(Name of Company or Operator)

Telephone number .....

By J. R. Thomas
Engineer.

Address notice to Deputy State Oil and Gas Supervisor in charge of district where well is located

Reference to file of data

| | | Cross section | Cards | Forms 114 | Forms 121 |
|---|---|---|---|---|---|
| #20 | | | | | |
| HMO. 1/20/26 | HMO 1/21/26 | | | ✓ | ✓ |

+ Correy to HMO 1/21/26

OB HMO. 1/21/26

# CalGEM Oil Well Files
# API 037-00338
# AW-1

RESOURCES AGENCY OF CALIFORNIA
**DEPARTMENT OF CONSERVATION**
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

# REPORT OF WELL PLUGGING AND ABANDONMENT

Cypress, California

January 27, 2006

Craig C. Barto, Agent
SIGNAL HILL PETROLEUM, INC.
2901 Orange Avenue
Signal Hill, CA 90755

Your report of the plugging and **abandonment** of well **AW-1**, A.P.I. No. **037-00338**, Section **19**, T. **4**S, R. **12**W, S.B. B & M., **Long Beach** Field, **Los Angeles** County, dated **4-9-04**, received **4-14-04**, has been examined in conjunction with operations witnessed and records filed in this office.

We have determined that all of the requirements of this Division have been fulfilled relative to plugging and **abandonment** of the well, removal of well equipment and junk, and the filing of well records.

**NOTE:**

1. Surface plugging completed on **3-19-04**.
2. Surface inspection made and approved on **11-18-05**.

Hal Bopp
*State Oil and Gas Supervisor*

**By:** _____
**For:** R. K. Baker, *Deputy Supervisor*

BLANKET BOND

CC: Update
L.A. County Assessor
L.A. County Fire Prevention Bureau
L.B. Dept of Building & Planning
Dept. of Oil Properties
City of Signal Hill

CJM:dt

OG159 3-23-99

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# CHECK LIST – RECORDS RECEIVED AND WELL STATUS

| | | |
|---|---|---|
| Company: | **Signal Hill Petroleum, Inc.** | Well: **AW-1** |
| API#: | **037-00338** | Sec. **19**, T. **4S**, R.**12W**. S. B. B. & M. |
| County: | **Los Angeles** | Field: **Long Beach** |

| RECORDS RECEIVED | DATE |
|---|---|
| Well Summary (Form OG100) | |
| History (Form OG103) | **4/14/04** |
| Core Record (Form OG101) | |
| Directional Survey | |
| Sidewall Samples | |
| Date final records received. | |
| Electric Logs: | |
| Other: | |

**STATUS**

| | | | |
|---|---|---|---|
| Producing | ☐ | Drilling | ☐ |
| Abandoned | ☑ | Idle | ☐ |
| Reabandoned | ☐ | Other | ☐ |

**WELL TYPE**

| | | | |
|---|---|---|---|
| Oil | ☐ | Waterflood | ☒ |
| Gas | ☐ | Water Disposal | ☐ |
| Water Source | ☐ | Cyclic Steam | ☐ |
| Observation | ☐ | Steam Flood | ☐ |
| Exploratory | ☐ | Fire Flood | ☐ |
| Dry Hole | ☐ | Other | ☐ |

EFFECTIVE DATE: 3/19/04

REMARKS:

| ENGINEERS CHECK LIST | |
|---|---|
| ☑ | Summary, History & Core Record (Dupl.) |
| ☐ | Electric Log |
| ☑ | Operator's Name |
| ☑ | Signature |
| ☑ | Well Designation |
| ☐ | Location |
| ☐ | Elevation |
| ☑ | Notices |
| ☐ | "T" Reports |
| ☐ | Casing Record |
| ☑ | Plugs |
| ☐ | Directional Survey |
| ☐ | Production/Injection (FAP Codes: ) |
| ☐ | E Well on Prod., enter EDP |
| ☑ | Surface Inspection Required 11/18/05 Ok SCH |
| ☐ | Surface inspection Waived (Island) |
| ☐ | Well site restoration deferred (common cellar) |
| ☑ | Final Letter Required AB: ☒ REAB: ☐ |
| ☐ | Other: |

| CLERICAL CHECK LIST |
|---|
| Location change |
| Elevation change |
| Form OGD121 |
| Form OGD150b (Release of Bond) |
| Duplicate logs to archives |
| Notice of Records Due |
| EDP 6/7/04 (a) |
| District Date Base |
| Final Letter (OG159) 2/9/2006 |
| Update Center (a) |

**FIELD CHECK LIST**

Date Surface Inspection Completed: 11/18/05 Ok SCH

Other:

| RECORDS NOT APPROVED | RECORDS APPROVED mb / 5-20-04 |
|---|---|
| (Reason:) T/Surface/FL/MW | (Signature) |
| | RELEASE BOND |
| | Date Eligible |
| | (Use date last needed records received.) |
| | MAP AND MAP BOOK 138 |
| | Map 6/10/04 (MW) |

OGD2 5/16/01 CYPRESS

F KR 4-7-04

SUBMIT IN DUPLICATE

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
**DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES**

# HISTORY OF OIL OR GAS WELL

Operator Signal Hill Petroleum, Inc. Field Long Beach County Los Angeles
Well Signal Hill West Unit AW-1 , Sec 19 , T 4S , R 12W , SB B.&M.
A.P.I. No. 037-00338 Name Dave Slater (Person submitting report) Title Vice President (President, Secretary or Agent)
Date April 9 2004

Signature [signature]

2901 Orange Avenue, Long Beach, CA 90806 (Address)
(562) 595-6440 (Telephone Number)
Fax (562)426-4587

History must be complete in all detail. Use this form to report all operations during drilling and testing of the well or during redrilling or altering the casing, plugging, or abandonment with the dates thereof. Include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests and initial production data.

| Date | |
|---|---|
| 2004 3/16 to 3/19 | MIRU, installed BOPE, approved by Inspector Moser, tagged fill at 3294' and cleaned out to 4345', witnessed by Inspector Wells. Placed 59 CF Class G cement at 4343' with Inspector Wells waiving witnessing of work. Inspector Moser witnessed tag at 4090' and mudding of well. Placed 53 CF Class G cement at 1920', witnessed by Inspector Moser who also witnessed tag at 1680' and mudding to surface. Placed 30 CF Class G cement at 100' to surface witnessed by Inspector Moser.RDMO. Cut and plated casing 5' below final grade. |

OG103 (8/93/GSR1/5M)

Apr 14 04 08:54a p.4

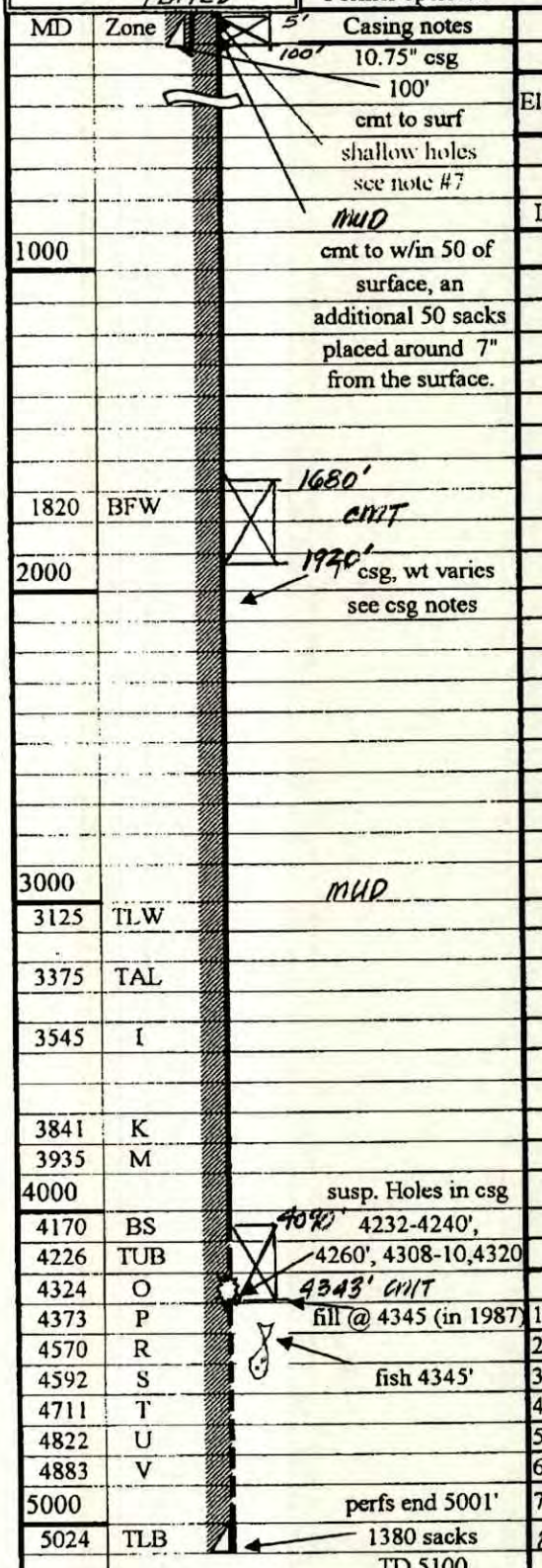
SIGNAL HILL PETROLEUM

PLATED

| Well Name: | AW1 | Type: | Inj | Location: | | RMA: | Field Lease |
|---|---|---|---|---|---|---|---|
| Unit: | West | | Sec/Tw/R | 19 | 4s | 12w | |
| API number: | 03700338 | | Lambert N | 4045.45 | E: | 4233.03 | |
| Former name: | Field #37, AIW1 | | Street | 470' W. & 500' S. c/l Calif. & 33rd St. | | | |
| Former operator: | Texaco | | Compl./ spud date: | ######## | ######## | | idle |
| | | | Original or Redrill: | Original | | | since |
| City: | Signal Hill | | Current Status/as of: | idle | 2/6/2001 | | Sep-87 |

| Elevations: | PBTD | TD | TVD | MAT | KB | DF |
|---|---|---|---|---|---|---|
| | | 5100 | 5050 | 91 | 102 | |

| Logs Available: | induction | | spinner | caliper | |
|---|---|---|---|---|---|
| Date of logs: | 1966 | | 1986 | 1987 | |
| Logging company: | Lane | | | Tiger | |




**CASING**

| size | top | base | wt/grade | sx cmt | hole size | top cmt |
|---|---|---|---|---|---|---|
| 10.75 | 0 | 100 | 32.5 | 0 | unk | 0 |
| 7 | 0 | 25 | 32 | | | |
| 7 | 25 | 4099 | 23 | | | |
| 7 | 4099 | 5100 | 32 | 1380 | 9.875 | 0 |
| | | | | | | |

**Effective Perforated Intervals**

| Top | Base | Type | Zone | Sand | ft open | completion |
|---|---|---|---|---|---|---|
| 4260 | 4290 | 3-.5" hpf | UBN | TUB | 30 | 1966 |
| 4290 | 4300 | 1-.5"hpf | UBN | TUB | 10 | 1966 |
| 4300 | 4325 | 3-.5" hpf | UBN | TUB | 25 | 1966 |
| 4325 | 4365 | 2-.5"hpf | UBN | O | 40 | 1966 |
| 4365 | 4410 | 1-.5"hpf | UBN | P | 45 | 1966 |
| 4610 | 4640 | 2-.5"hpf | UBN | S | 30 | 1966 |
| 4660 | 4675 | 1-.5"hpf | UBN | S | 15 | 1966 |
| 4675 | 4710 | 2-.5"hpf | UBN | S | 35 | 1966 |
| 4768 | 4788 | 2-.5"hpf | UBN | T | 20 | 1966 |
| 4788 | 4820 | 3-.5" hpf | UBN | T | 32 | 1966 |
| 4850 | 4865 | 2-.5"hpf | UBN | U | 15 | 1966 |
| 4865 | 4885 | 3-.5" hpf | UBN | U | 20 | 1966 |
| 4912 | 4922 | 2-.5"hpf | UBN | V | 10 | 1966 |
| 4922 | 4942 | 3-.5" hpf | UBN | V | 20 | 1966 |
| 4942 | 4965 | 2-.5"hpf | UBN | V | 23 | 1966 |
| 4976 | 5001 | 2-.5"hpf | UBN | V | 25 | 1966 |
| 4450 | 4570 | 1-.5"hpf | UBN | P | 120 | 1976 |
| 4590 | 4640 | 1-.5"hpf | UBN | S | 50 | 1976 |
| 4660 | 4710 | 1-.5"hpf | UBN | S | 50 | 1976 |
| 4750 | 4820 | 1-.5"hpf | UBN | T | 70 | 1976 |
| 4830 | 4885 | 1-.5"hpf | UBN | U | 55 | 1976 |
| 4910 | 4965 | 1-.5"hpf | UBN | V | 55 | 1976 |
| 4975 | 4995 | 1-.5"hpf | UBN | V | 20 | 1976 |

**NOTES**

1) Put on injection 3/2/67
2) completion totals: TUB 65', O 40 ', P 165', S 130', T 70', U 55", V 80'.
3) holes in csg 4225-4245 found 10/22/87 (Tiger caliper)
4) fish in hole @ 4345': 3 cones off 5.875" bit on fill or collapsed casing
5) Returns of clay, cmt, FeO3, sand, from 4260' susp. Hole in csg.
6) DOG did not require a WSO, CBL showed good bonding.
7) 5/31/85 inj surv. Finds hole @ 24' in 7" csg.
8) Abandoned 3/19/04

Mechanical Detail as of: 2/7/2001 Prepared by: BWD

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RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

**No. T 104-0180**

# REPORT ON OPERATIONS

WATERFLOOD PROJECT

Cypress, California
5/13/2004

Craig C. Barto, Agent
SIGNAL HILL PETROLEUM, INC.
2901 Orange Avenue
Signal Hill, CA 90755

Your operations at well **AW-1,** A.P.I. No. **037-00338**, Sec. **19**, T. **4S.**, R. **12W**, S.B. B. & M., **Long Beach** Field, **Los Angeles** County, were witnessed on **3/19/2004**. **E. P. Moser**, representative of the supervisor, was present from **0930** to **1100**. There was also present **H. Howard, Rig Foreman**.

Present condition of well: **10 3/4" cem 100'; 7" cem 5100', perfs @ int 4260'-5001', holes 24' & 4225'. Junk below 4345'. TD 5100'. Plugged w/cem 5100'-5090', 4343'-4090', 1920'-1680' & 100'-0'.**

The operations were performed for the purpose of witnessing the plugging operations in the process of abandonment.

**DECISION:** APPROVED.

NOTE: The required Class II2M blowout prevention equipment was inspected and approved on **3/18/2004**.

DEFICIENCIES: None.

CONTRACTOR: MMI Services

MG:bd

cc: Update

Hal Bopp
*State Oil and Gas Supervisor*

**By:** _____
**For:** R. K. Baker, *Deputy Supervisor*

Surface Inspection Approved 11/18/2005 SCH

OG109 3-16-99

104-0180

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOUR

# CEMENTING/PLUGGING MEMO

Operator SIGNAL HILL PET., INC. Well No. AW-1
API No. 037-00338 Sec. 19, T. 4S, R. 12W, SB B&M
Field LONG BEACH, County LOS ANGELES. On 3/19/04,
Mr. / Ms. E. MOSER, representative of the supervisor, was present from 930 to 1100.
There were also present H. HOWARD - RF
Casing record of well: 10 3/4" cem 100'; 7" cem 5100', perfs @ int 4260'-5001', holes 24' & 4225', Junk below 4345', TD 5100'. Plugged w/cem 5100'-5090', 4343'-4090', 1920'-1680' & 100'-0'.
The operations were performed for the purpose of (L)

☒ The plugging/cementing operations as witnessed and reported are approved.

☐ The location and hardness of the cement plug @ _____' are approved.

Hole size: _____" fr. _____' to _____'; _____" to _____' & _____" to _____'

| Casing | | | | Cemented | | | Top of Fill | | Squeezed Away | Final Press. | Perfs. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | Wt. | Top | Bottom | Date | MO-Depth | Volume | Annulus | Casing | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Casing/tubing recovered: _____" shot/cut at _____', _____', _____' pulled fr. _____';
_____" shot/cut at _____', _____', _____' pulled fr. _____'.

Junk (in hole): _____

Hole fluid (bailed to) at _____'. Witnessed by _____

| Mudding | Date | bbls. | Displaced | Poured | Fill | Engr. |
|---|---|---|---|---|---|---|
| 73# | 3/18/04 | 94 | 4090 | | 1920'± | E. MOSER |
| 73# | 3/19/04 | 72 | 1680 | | 0' | E. MOSER |
| | | | | | | |

NOTE: (k) I.M. 3/18/04 C/O 4345'

| Cement Plugs | | Placing | Placing Witnessed | | Top Witnessed | | | |
|---|---|---|---|---|---|---|---|---|
| Date | Sx./cf | MO & Depth | Time | Engr. | Depth | Wt/Sample | Date & Time | Engr. |
| 3/17/04 | 59CF | T@ 4343 | RPT. BY | H. HOWARD | 4090' | ATW | 3/18/04 0930 | E. MOSER |
| 3/18/04 | 53CF | T@ 1920' | 1335 | E. MOSER | 1680 | ATW | 3/19/04 0800 | E. MOSER |
| 3/19/04 | 30CF | T@ 100' | 1030 | E. MOSER | 0' | VISUAL | 3/19/04 1030 | E. MOSER |
| | | | | | | | | |

API No. 037-00338 DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES T_____

# BLOWOUT PREVENTION EQUIPMENT MEMO

Operator SIGNAL HILL PET., INC. Well AW-1 Sec. 19 T. 4S R. 12W

Field LONG BEACH County LOS ANGELES Spud Date _____

| VISITS: | Date | Engineer | Time | Operator's Rep. | Title |
|---|---|---|---|---|---|
| 1st | 3/18/04 | | (1030 to 1030) | | |
| 2nd | | | ( to ) | | |

Contractor MMI Rig# _____ Contractor's Rep. & Title H. HOWARD - RE

Casing record of well: MEMO

**OPERATION:** Testing (inspecting) the blowout prevention equipment and installation. Critical well? Y____ N X

**DECISION:** The blowout prevention equipment and its installation on the 10 3/4 " casing are approved.

Proposed Well Opns: ABANDON . MACP: _____ psi

Hole size: _____ " fr. _____ ' to _____ ' , _____ " to _____ ' & _____ " to _____ '

**REQUIRED BOPE CLASS:** 2M

| CASING RECORD OF BOPE ANCHOR STRING | | | | | Cement Details | Top of Cement | |
|---|---|---|---|---|---|---|---|
| Size | Weight(s) | Grade(s) | Shoe at | CP at | | Casing | Annulus |
| | | | | | | | |
| | | | | | | | |

**BOP STACK**

| API Symb. | Ram Size (in.) | Manufacturer | Model or Type | Vert. Bore Size (in.) | Press. Rtg. | Date Last Overhaul |
|---|---|---|---|---|---|---|
| HD | 2 1/8 | SHAFFER | E | 13 | | |
| RD | CSO | " | E | 13 | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

**TEST DATA**

| Gal. to Close | Recovery Time (Min.) | Calc. GPM Output | psi Drop to Close | Secs. to Close | Test Date | Test Press. |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

**ACTUATING SYSTEM**

Accumulator Unit(s) Working Pressure _____ psi

Total Rated Pump Output _____ gpm Fluid Level

Distance From Well Bore _____ ft. _____

| | Accum. Manufacturer | Capacity | Precharge |
|---|---|---|---|
| 1 | | gal. | psi |
| 2 | | gal. | psi |

| | CONTROL STATIONS | Elec. | Hyd. | Pneu. |
|---|---|---|---|---|
| | Manifold at accumulator unit | | | |
| | Remote at Driller's station | | | |
| ✓ | Other: HAND PUMP | | | |

| | EMERG. BACKUP SYSTEM | | | Press. | Wkg. Fluid |
|---|---|---|---|---|---|
| ✓ | $N_2$ Cylinders | 1 | L=55" | 2500 | gal. |
| | Other: | 2 | L= " | | gal. |
| | | 3 | L= " | | gal. |
| | | 4 | L= " | | gal. |
| | | 5 | L= " | | gal. |
| | | 6 | L= " | | gal. |
| | | | TOTAL: | | gal. |

TOTAL:

**AUXILIARY EQUIPMENT**

| | | No. | Size (in.) | Rated Press. | Connections: Weld | Flange | Thread | Test Press. |
|---|---|---|---|---|---|---|---|---|
| | Fill-up Line | | | | | | | |
| ✓ | Kill Line | | 2 | 2M | | | ✓ | |
| ✓ | Control Valve(s) | 2 | | 2M | | | ✓ | |
| | Check Valve(s) | | | | | | | |
| | Aux. Pump Connect. | | | | | | | |
| | Choke Line | | | | | | | |
| | Control Valve(s) | | | | | | | |
| | Pressure Gauge | | | | | | | |
| | Adjustable Choke(s) | | | | | | | |
| | Bleed Line | | | | | | | |
| | Upper Kelly Cock | | | | | | | |
| | Lower Kelly Cock | | | | | | | |
| | Standpipe Valve | | | | | | | |
| | Standpipe Press. Gauge | | | | | | | |
| ✓ | Pipe Safety Valve | | 2 1/8 | | | | | |
| | Internal Preventer | | | | | | | |

| | HOLE FLUID MONITORING EQUIPMENT | Alarm Type: Audible | Visual | Class |
|---|---|---|---|---|
| | Calibrated Mud Pit | | | A |
| | Pit Level Indicator | | | B |
| | Pump Stroke Counter | | | B |
| | Pit Level Recorder | | | C |
| | Flow Sensor | | | C |
| | Mud Totalizer | | | C |
| | Calibrated Trip Tank | | | C |
| | Other: | | | C |

| Hole Fluid Type | Weight | Storage Pits (Type & Size) |
|---|---|---|
| LEASE H2O | | |

**REMARKS AND DEFICIENCIES:** NONE

OGD9 (4/03/UCP/3M)

RESOURCES AGENCY OF CALIFORNIA
**DEPARTMENT OF CONSERVATION**
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

No. P 104-0101

412 (Field Code)

06 (Area Code)

-- (New Pool Code)

15 (Old Pool Code)

# PERMIT TO CONDUCT WELL OPERATIONS

WATERFLOOD PROJECT

Craig C. Barto, Agent
SIGNAL HILL PETROLEUM, INC.
2901 Orange Avenue
Signal Hill CA 90755

Cypress, California
March 2, 2004

Your proposal to **abandon** well **AW-1**, A.P.I. No. **037-00338**, Section **19**, T. **4S**, R. **12W**, **S.B.** B. & M., **Long Beach** Field, **Old** area, **Brown** pool, **Los Angeles** County, dated **2-23-04**, received **2-23-04** has been examined in conjunction with records filed in this office.

**THE PROPOSAL IS APPROVED PROVIDED:**

1. Blowout prevention equipment with hydraulic controls, equivalent to this Division's Class **II2M** requirements, or better, shall be installed and maintained in operating condition.
2. All portions of the well not plugged with cement shall be filled with clay base mud having a minimum density of 72 lb/cu ft and a minimum gel-shear strength of 25 lb/100 sq ft.
3. The cement plug proposed to be placed to **1620'** shall extend from **1920'** to **1720'**.
4. This Division shall be consulted and a Supplementary Notice may be required before making any changes in the proposed program.
5. **THIS DIVISION SHALL BE NOTIFIED TO:**
   a. Inspect the installed blowout prevention equipment prior to commencing downhole operations.
   b. Witness the location and hardness of the cement plug from **4345'** to **4125'**.
   c. Witness the mudding of the hole.
   d. Witness the placing, location and hardness of the cement plug from **1920'** to **1720'**.
   e. Witness the placing, location and hardness of the cement plug from **100'** to **surface.**
   f. Inspect and approve the cleanup of the well site within 60 days after placement of the surface plug.

**NOTE:** The proposed surface plug shall not contain rock or gravel.

3/12/04 Carlson/Harvey w MMS confirmed tagging of cem plug for BFW (@1820) from 1920' to 1720'.

DS:ds

cc: Update
EDP
City Signal Hill
BLANKET BOND

Engineer: D. Sanchez

Phone: 714/816-6847

Hal Bopp
*State Oil and Gas Supervisor*

By _____
For R. K. Baker, *Deputy Supervisor*

**A copy of this permit and the proposal must be posted at the well site prior to commencing operations. Records for work done under this permit are due within 60 days after the work has been completed or the operations have been suspended.**

OG 111

2-23-04 KTL

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

S/DS

## Notice of Intention to Abandon Well

P# 104-0101

| FOR DIVISION USE ONLY | | | |
|---|---|---|---|
| CARDS | BOND | FORM OGD114 | FORM OGD121 |
| | BB VB | 2/28/04 | 2/24/04 |

DIVISION OF OIL AND GAS

In compliance with Section 3229, Division 3, Public Resources Code, notice is hereby given that it is our intention to abandon well Signal Hill West Unit AW-1, API No. 037-00338

Sec. 19, T. 4S, R. 12W, SB B. & M., Long Beach Field, Los Angeles County.

commencing work on Mar-04

The present condition of the well is:

1. Total depth 5100'
2. Complete casing record, including plugs and perforations (present hole)
   See Attached Casing Plat
3. Last produced _____ (Date) _____ (Oil, B/D) _____ (Gas, Mcf/D) _____ (Water, B/D)
   or
4. Last injected Sep-87 (Date) _____ (Water, B/D) _____ (Gas, Mcf/D) _____ (Surface Pressure)

Additional data for dry hole (show depths):

5. Oil or gas shows
6. Stratigraphic markers
7. Formation and age at total depth
8. Base of fresh water sands 1820'

9. Is this a critical well according to the definition on the reverse side of this form? x Yes No

The proposed work is as follows: Propose to Abandon.

MIRU, remove equipment, install BOPE and notify DOGGR. Clean out well to 4345'. Place Class G cement plug to 4160', tag for DOGGR. Mud to 1820', place 200' Glass G cement from 1820'-1620'. Tag for DOGGR and place mud to surface. Place Glass G cement plug 100' to surface, cut and plate casing 6' below final grade. Clean location.

**It is understood that if changes in this plan become necessary we are to notify you immediately.**

Address 2901 Orange Avenue (Street)

Long Beach (City) California (State) 90806 (Zip)

Telephone Number (562) (Area Code) 595-6440 (Number)

Fax: (562) 426-4587

Signal Hill Petroleum, Inc. (Name of Operator)

By David L. Slater, Vice President / General Manager. (Print Name)

(Signature) 02/23/04 (Date)

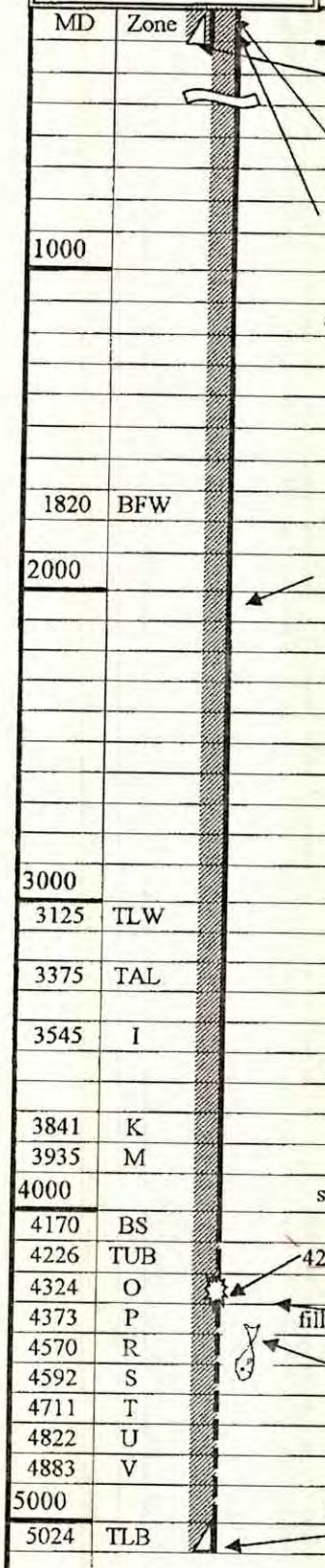
OG108 (5/90/GSR1/5M)

SIGNAL HILL PETROLEUM

| Well Name: | AW1 | Type: | Inj | Location: | | RMA: | Field Lease |
|---|---|---|---|---|---|---|---|
| Unit: | West | Sec/Tw/R | 19 | 4s | 12w | | |
| API number: | 03700338 | Lambert N | 4045.45 | E: | 4233.03 | | |
| Former name: | Field #37, AIW1 | Street | 470' W. & 500' S. c/l Calif. & 33rd St. | | | | |
| Former operator: | Texaco | Compl./ spud date: | ####### | ######## | | idle | |
| City: | Signal Hill | Original or Redrill: | Original | | | since | |
| | | Current Status/as of: | idle | 2/6/2001 | | Sep-87 | |

| Elevations: | PBTD | TD | TVD | MAT | KB | DF |
|---|---|---|---|---|---|---|
| | | 5100 | 5050 | 91 | 102 | |

| Logs Available: | induction | | spinner | caliper | |
|---|---|---|---|---|---|
| Date of logs: | 1966 | | 1986 | 1987 | |
| Logging company: | Lane | | | Tiger | |




Casing notes

10.75" csg 100' cmt to surf shallow holes see note #7

cmt to w/in 50 of surface, an additional 50 sacks placed around 7" from the surface.

7" csg, wt varies see csg notes

susp. Holes in csg 4232-4240', 4260', 4308-10,4320

fill @ 4345 (in 1987)

fish 4345'

perfs end 5001'

1380 sacks

TD 5100

**CASING**

| size | top | base | wt/grade | sx cmt | hole size | top cmt |
|---|---|---|---|---|---|---|
| 10.75 | 0 | 100 | 32.5 | 0 | unk | 0 |
| 7 | 0 | 25 | 32 | | | |
| 7 | 25 | 4099 | 23 | | | |
| 7 | 4099 | 5100 | 32 | 1380 | 9.875 | 0 |
| | | | | | | |

**Effective Perforated Intervals**

| Top | Base | Type | Zone | Sand | ft open | completion |
|---|---|---|---|---|---|---|
| 4260 | 4290 | 3-.5" hpf | UBN | TUB | 30 | 1966 |
| 4290 | 4300 | 1-.5"hpf | UBN | TUB | 10 | 1966 |
| 4300 | 4325 | 3-.5" hpf | UBN | TUB | 25 | 1966 |
| 4325 | 4365 | 2-.5"hpf | UBN | O | 40 | 1966 |
| 4365 | 4410 | 1-.5"hpf | UBN | P | 45 | 1966 |
| 4610 | 4640 | 2-.5"hpf | UBN | S | 30 | 1966 |
| 4660 | 4675 | 1-.5"hpf | UBN | S | 15 | 1966 |
| 4675 | 4710 | 2-.5"hpf | UBN | S | 35 | 1966 |
| 4768 | 4788 | 2-.5"hpf | UBN | T | 20 | 1966 |
| 4788 | 4820 | 3-.5" hpf | UBN | T | 32 | 1966 |
| 4850 | 4865 | 2-.5"hpf | UBN | U | 15 | 1966 |
| 4865 | 4885 | 3-.5" hpf | UBN | U | 20 | 1966 |
| 4912 | 4922 | 2-.5"hpf | UBN | V | 10 | 1966 |
| 4922 | 4942 | 3-.5" hpf | UBN | V | 20 | 1966 |
| 4942 | 4965 | 2-.5"hpf | UBN | V | 23 | 1966 |
| 4976 | 5001 | 2-.5"hpf | UBN | V | 25 | 1966 |
| 4450 | 4570 | 1-.5"hpf | UBN | P | 120 | 1976 |
| 4590 | 4640 | 1-.5"hpf | UBN | S | 50 | 1976 |
| 4660 | 4710 | 1-.5"hpf | UBN | S | 50 | 1976 |
| 4750 | 4820 | 1-.5"hpf | UBN | T | 70 | 1976 |
| 4830 | 4885 | 1-.5"hpf | UBN | U | 55 | 1976 |
| 4910 | 4965 | 1-.5"hpf | UBN | V | 55 | 1976 |
| 4975 | 4995 | 1-.5"hpf | UBN | V | 20 | 1976 |

NOTES

1) Put on injection 3/2/67
2) completion totals: TUB 65', O 40 ', P 165', S 130', T 70', U 55", V 80'.
3) holes in csg 4225-4245 found 10/22/87 (Tiger caliper)
4) fish in hole @ 4345': 3 cones off 5.875" bit on fill or collapsed casing
5) Returns of clay, cmt, FeO3, sand, from 4260' susp. Hole in csg.
6) DOG did not require a WSO, CBL showed good bonding.
7) 5/31/85 inj surv. Finds hole @ 24' in 7" csg.

Mechanical Detail as of: 2/7/2001 Prepared by: BWD

# WELL TRANSFER NOTICE

EFFEC FEBRUARY 17, 1994,
TEXACO EXPLORATION & PRODUCTION INC.
TRANS SIGNAL HILL WEST UNIT WELLS
TO
SIGNAL HILL PETROLEUM INC.

*SEE OGD156 DATED 2-28-94*

DIVISION OF OIL AND GAS
CHECK LIST - RECORDS RECEIVED AND WELL STATUS

Company Texaco Inc. Well No. AW-1

API No. 037-00338 Sec. 19, T. 4S, R. 12W, SB B.&M.

County L.A. Field Long Beach

| RECORDS RECEIVED | DATE |
|---|---|
| Well Summary (Form OG100) | |
| ✓ History (Form OG103) | 9-21-77 |
| Core Record (Form OG101) | |
| Directional Survey | |
| Sidewall Samples | |
| ✓ Other Spinner | 10-17-77 |
| Date final records received | |
| Electric logs: | |

| STATUS | | STATUS | |
|---|---|---|---|
| Producing - Oil | ___ | Water Disposal | ✓ |
| Idle - Oil | ___ | Water Flood | ___ |
| Abandoned - Oil | ___ | Steam Flood | ___ |
| Drilling - Idle | ___ | Fire Flood | ___ |
| Abandoned - Dry Hole | ___ | Air Injection | ___ |
| Producing - Gas | ___ | Gas Injection | ___ |
| Idle - Gas | ___ | $CO_2$ Injection | ___ |
| Abandoned - Gas | ___ | LPG Injection | ___ |
| Gas-Open to Oil Zone | ___ | Observation | ___ |
| Water Flood Source | ___ | | |

DATE 9-8-76
RECOMPLETED
REMARKS

ENGINEER'S CHECK LIST

1. Summary, History, & Core record (dupl.) ✓
2. Electric Log =
3. Operator's Name ✓
4. Signature ✓
5. Well Designation =
6. Location =
7. Elevation =
8. Notices ✓
9. "T" Reports ✓
10. Casing Record =
11. Plugs =
12. Surface Inspection =
13. Production =
14. E Well on Prod. Dir. Sur. =

CLERICAL CHECK LIST

1. Location change ___ (F-OGD165) ___
2. Elevation change ___ (F-OGD165) ___
3. Form OGD121 ___
4. Form OG159 (Final Letter) ___
5. Form OGD150b (Release of Bond) ___
6. Duplicate logs to archives ___
7. Notice of Records due (F-OGD170) ___

Records to PI 8/28/77

BB

RECORDS NOT APPROVED
Reason: Need Spinner Request rec'd

RECORDS APPROVED 10-26-77 RFC

RELEASE BOND
Date Eligible
(Use date last needed records were received.)
MAP AND MAP BOOK
NC DC. 10-5-77

LONG BEACH OFFICE - USE REVERSE SIDE

OGD2 (3-77-GSR1-4M)

FORM 103

SUBMIT IN DUPLICATE

62802-705 5-72 20M ⓢ OSP

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## History of Oil or Gas Well

OPERATOR TEXACO Inc. FIELD Long Beach,

(037-00338)

Well No. AW-1 (Formerly Field #37 Sec. 19, T. 4S, R. 12W, SB B. & M.

Date September 16, 19 77 Signed A B Dann

3350 Wilshire Blvd
Los Angeles, CA 90010, (213) 385-0515 Title General Superintendent

(Address) (Telephone Number) (President, Secretary or Agent)

History must be complete in all detail. Use this form to report all operations during drilling and testing of the well or during redrilling or altering the casing, plugging, or abandonment with the dates thereof. Include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests and initial production data.

Date

Conversion of well Field #37 from a producing well to an injection well to be known as AW-1.

1976

8-31 Rigged up and bled down well. Unset packer. Unlanded tubing laying down 2-7/8" tubing. Pick up bit & 7" scraper. Measured and picked up 2-7/8" drill pipe. Ran in to 2356'.

9-2 Continued to measure & pick-up drill pipe. Tagged top of fill @ 5042'. Drilled out fill to 5100'. Circulated with 240 bbls fresh water. Perf. one ½" hole/ft. 4450'-4570', 4590'-4640', 4660'-4710', 4750'-4820', 4830'-4885', 4910'-4965', 4975'-4995', = 420'.

9-3 Ran in with 5-7/8" bit & 7" scraper to 5100'. Circulated hole clean with hot water. Lay down bit and scraper. Run in to 4200' with circulating washer.

9-4 Continued to run in with circulating washer. Set tool @ 5010. Pick-up to 4995'. Displace drill pipe with 23 bbls of acid wash perfs. from 4995'-4450' with 5 gals per ft of acid (2100 gals). Pulled out and replaced cups. Ran in to 4200'.

9-5 Continued to run in with circulating washer. Washed perfs from 4995'-4450= 420 holes with 10.5 gallons of 12% HCL, 3% HF acid, and 500 gallons of 7½% of HCL buffer. Displaced acid into formation with 200 bbls of $H_2O$. Ran in openended to 1400'.

9-6 Down time - holiday.

9-7 Pumped down annulus and down drill pipe 100 bbls. Clean water - bled well off. Continued to run in to 5100' - no fill. Layed down drill pipe.

9-8 Removed BOPE. Set packer. Swab shoe @ 4427-81. Installed well head and released rig. Well idle pending injection start up.

RECEIVED

GAP:wdp

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## Report on Operations

WATER FLOOD

No. T 176-851

Mr. Leo McCann, Agent
TEXACO INC.
P.O. Box 3756
Los Angeles, CA 90051

Long Beach, Calif.
Nov. 29, 1976

DEAR SIR:

Operations at well No. AW-1, API No. 037-00338, Sec. 19, T. 4S, R. 12W, S.B. B & M. Long Beach Field, in Los Angeles County, were witnessed on 11/18/76. Mr. G. W. Stark, Engineer, representative of the supervisor was present from 0900 to 0930. There were also present F. Coffman, Engineer.

Present condition of well: 10-3/4" cem. 100'; 7" cem. 5100', perfs. at intervals 4260'-4410' and 4610'-4942'. T.D. 5100'.
4450-4995

The operations were performed for the purpose of demonstrating that all of the injection fluid is confined to the formations below 4610'. 4450

DECISION: THE OPERATIONS AS WITNESSED AND REPORTED ARE APPROVED AS INDICATING THAT ALL OF THE INJECTION FLUID IS CONFINED TO THE FORMATIONS BELOW 4610' AT THIS TIME.

GWS:d

Needs Summary, History, & 1 copy of Spinner Survey.

KH 12-6-76

M. F. MEFFERD, Acting Chief

By M. B. Albright Deputy

OG109 (2-75—OSP—20M)

30986-705 2-75 20M ① ◇ OSP

FORM 157

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

# REPORT ON PROPOSED CHANGE OF WELL DESIGNATION

Long Beach, California

July 16, 1976

Mr. L. McCann, Agent
Texaco Inc.
3350 Wilshire Blvd.
Los Angeles, CA 90010

DEAR SIR:

Your ~~request dated~~ notices dated 7-15-76, relative to change in designation of well(s) in Sec. 19, T. 4 S., R 12 W., S.B. B. & M., Long Beach field, Los Angeles County, District No. 1, has been received; and in accordance with Section 3203, Public Resources Code, reading in part as follows:

> "* * * The number or designation by which any well heretofore drilled has been known, and the number or designation specified for any well in a notice filed as required by Section 3203, shall not be changed without first obtaining a written consent of the Supervisor."

the proposed change in designation is hereby authorized as follows:

Well Nos. A1W1, A20, A26, A10, will hereafter be known as well Nos. AW-1 (037-00338), AW-2 (037-11555), AW-3 (037-11793), AW-10 (037-11556), respectively.

| Corrections Made as Follows: | By Whom |
|---|---|
| Form 114 | |
| " 115 | |
| " 121 ✓ | ag |
| " 148 | |
| Cards | |
| Production Reports ✓ | cc |
| Well Records ( Folders ✓ | ag |
| ( Reports | |
| Field Maps 130 ✓ | |
| Map Book 7/26/76 ✓ | HHB |

HAROLD W. BERTHOLF
~~JOHN E. MATTHEWS, JR.~~
*State Oil and Gas Supervisor*

By M. B. Albright
*Deputy Supervisor*

ag
cc: Hrod. Dept.
Conservation Committee

59810-705 1-72 5M ① OSP

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## REPORT ON PROPOSED OPERATIONS No. P 176-513

LONG BEACH WATER-FLOOD
WEST UNIT, BROWN ZONE

Mr. Leo McCann, Agent
TEXACO INC.
P.O. Box 3756
Los Angeles, CA 90051

Long Beach, Calif.
July 20, 1976

DEAR SIR:

Your proposal to rework injection Well No. AW-1 (037-00338),
Section 19, T. 4S, R. 12W, S.B. B. & M., Long Beach Field, Los Angeles County,
dated 7/15/76, received 7/16/76, has been examined in conjunction with records filed in this office.

**THE PROPOSAL IS APPROVED PROVIDED:**

1. A COPY OF THIS APPROVAL SHALL BE POSTED AT THE WELL SITE PRIOR TO COMMENCING OPERATIONS.
2. Blowout prevention equipment with a minimum 3000 psi working pressure shall be installed and maintained in operating condition during all stages of perforating.
3. This well shall conform to the provisions set forth in our letter of July 31, 1975, approving the project.
4. Well records, under Sec. 3215 of the Public Resources Code, are received 60 days after recompletion of the well.
5. THIS DIVISION SHALL BE NOTIFIED TO WITNESS THE RUNNING OF A TEMPERATURE, SPINNER AND/OR RADIOACTIVE SURVEY TO CONFIRM THAT THE INJECTION WATER IS CONFINED TO THE INTENDED ZONE OF INJECTION.

RFC:d

cc Dept. Water Resources
Regional Water Quality Control Board
Production Dept.
Project File
County Industrial Waste Division

Blanket Bond

HAROLD W. BERTHOLF,
JOHN F. MATTHEWS, Jr., State Oil and Gas Supervisor

Original signed

By T.M.B. Albright, Deputy

25476-705 7-74 50M ①D OSP
OG 111

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## Notice of Intention to Rework Well

5

This notice and indemnity or cash bond shall be filed, and approval given, before rework begins. If operations have not commenced within one year of receipt of the notice, this notice will be considered cancelled.

Rework

| FOR DIVISION USE ONLY | | |
|---|---|---|
| BOND | FORMS | |
| | 114 | 121 |
| B | ✓ | ✓ |

DIVISION OF OIL AND GAS

In compliance with Section 3203, Division 3. Public Resources Code, notice is hereby given that it is our intention to rework well No. (SHWU) AIW1 to be named AW-1, API No. 00338,

Sec. 19, T. 4S., R. 12W, S.B. B. & M., Long Beach Field, Los Angeles County.

The present condition of the well is as follows:

1. Total depth. 5100'

2. Complete casing record, including plugs and perforations:
7", 23#, J-55 & 7", 32# N-80 csg from 5100' to surface.
Cmtd solid to surface.
Perfs: 4260'-4410', 4610'-4640', 4660'-4710', 4768'-4820', 4850'-4885', 4912'-4967', and 4976'-5001'

3. Present producing zone name Brown Zone in which well is to be recompleted Brown

4. Present zone pressure ±3500 psi New zone pressure ±3500 psi

5. Last produced _____ (Date) _____ (Oil, B/D) _____ (Water, B/D) _____ (Gas, Mcf/D)

or

6. Last injected Present (Date) ±1800 (Water, B/D) - (Gas, Mcf) ±1900 (Surface pressure, psig.)

The proposed work is as follows: ow
1. Perforate the folling intervals with one 1/2" hole/ft: 4450'-4570'; 4590'-4640'; 4660'-4710'; 4750'-4820';4830'-4885'; 4910'-4965' and 4975'-4995'.
2. Acid wash the above intervals with 25 gal/ft of 12% HCl-3% HF
3. Return well to service as an injector and run injection survey when injectivity stabilizes.

NOTE: Name of well to be changed from AIW1 to AW-1

**It is understood that if changes in this plan become necessary we are to notify you immediately.**

Address 3350 Wilshire Blvd. (Street)
Los Angeles, (City) Calif. (State) 90010 (Zip)
Telephone Number (213) 385-0515

TEXACO Inc. (Name of Operator)
By L. McCann (Name) 7-15-76 (Date)
Asst. General Super.
Type of Organization Corp. (Corporation, Partnership, Individual, etc.)

FORM 107 (REV. 1-73)

10340-705 1-73 15M ② OSP

See Ownership File, Signal Hill West Unit Agreement, Texaco Inc. (Unit Operator), for Forms 156 and 157 dated 3-14-75.

WORK PERFORMED:

Drill ____ Redrill ____ Deepen ____

Plug ____ Alter casing ____

Water flood ✓ Water disposal ____

Abandon ____

Other ____

STATUS: (Date)

Producing ____

Recomp. prod. ____

Water flood 3-2-67

Water disposal ____

Abandoned ____

Other ____

MAP AND BOOK NC Ox

RECORDS FILED & DATE: Clerk Scott

✓ Summary (dup.) 4/13/67

Log & Core (dup.) ____

✓ History (dup.) 4/13/67

Induction E-log 112-5088 4/13/67

Temperature Survey Radio log 7/13/73

✓ D. Survey Surf 5.00 4/24/67

✓ Radioactive tracer + temperature Other 1/31/68

✓ Spinner (2) 3/10/70

(Check records for signature and correct name of operator or well, S.T.R. and field.)

Location OK Notice states ____

Elevation OK Notice states ____

Production Reports ____

(If production reports not received, make notation and inform Sr. Steno. when rec'd.)

If stimulation or disposal well:
Form 121 ____ Folder ____

RECORDS & REQUIREMENTS CHECKED: Eng. [illegible] 70A

✓

✓

✓

✓

✓

✓ 70A

Surface inspection ____

Data needed None ~~Spinner~~ Clerk: 4/24

Request records 4/20/67 F 170 CK 4/20/67

Correct records ____ (Specify) F 165 ____ 165A ____

CARDS ____

BOND: Blanket

Hold ____ Reason ____

Release ____ Date elig. ____ F 150b

End premium year ____
Release requested ____ (Check one)
Bond superseded ____
Well abandoned ____

FINAL LETTER ____ F 159 ____
and
FILE CLEARED ____ F 121 ____

Form 19-A

ORM 100

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND G
RECEIVED
APR 13 1967
DOG

## WELL SUMMARY REPORT

SUBMIT IN DUPLICATE

INGLEWOOD, CALIFORNIA

Operator TEXACO Inc. Well No. Field #37

Sec. 19, T. 4S, R. 12W, SBM xxxxx Long Beach B. & M. Field Los Angeles County.

Location 1225' E & 890' S. of NWcorner of Sec. 19, T.4S, R.12W, SBM or 470'W & 500' S. of centerline of the intersection of Calif. Ave. and 33rd St. Signal Hill, Los Angeles, County (Give location from property or section corner, or street center lines)

Elevation of ground above sea level 100 feet.

All depth measurements taken from top of Kelly Bushing which is 11.00 feet above ground.
(Derrick Floor, Rotary Table or Kelly Bushing)

In compliance with Sec. 3215, of the Public Resources Code, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date March 21, 1967

Signed O W Chonette

H. J. Smith (Engineer or Geologist)

O. W. Chonette (Superintendent)

Title District Superintendent (President, Secretary or Agent)

Commenced drilling 11-28-66

Completed drilling 12-13-66

Total depth 5100' Plugged depth

Junk None

Commenced producing Water Injection (Date) Flowing/gas lift/pumping (Cross out unnecessary words)

| GEOLOGICAL MARKERS | DEPTH |
|---|---|
| | |
| | |
| | |
| | |
| | |

Geologic age at total depth: Pliocene

Name of producing zone Brown

| | Clean Oil bbl. per day | Gravity Clean Oil | Per Cent Water including emulsion | Gas Mcf. per day | Tubing Pressure | Casing Pressure |
|---|---|---|---|---|---|---|
| Initial production | "Water Injection Well" | | | | | |
| Production after 30 days | | | | | | |

### CASING RECORD (Present Hole)

| Size of Casing (A. P. I.) | Depth of Shoe | Top of Casing | Weight of Casing | New or Second Hand | Seamless or Lapweld | Grade of Casing | Size of Hole Drilled | Number of Sacks of Cement | Depth of Cementing if through perforations |
|---|---|---|---|---|---|---|---|---|---|
| 10-3/4" | 100' | Surface | 32.5# | New | Smls. | H-40 | Dug & set w/rat hole digger. | | |
| 7" | 5100' | Surface | 23#+32# | New | Smls | N-80-J-55 | 9-7/8" | 1380 cu. ft. slurry | |
| | | | | | | | | | |
| | | | | | | | | | |

### PERFORATED CASING

(Size, top, bottom, perforated intervals, size and spacing of perforation and method.)

7" casing perforated in intervals from 5001' to 4260' as detailed on attached sheet.

Was the well directionally drilled? Yes Electrical Log Depths 5092' to 100' (loggers depth) (Attach Copy of Log)

△ OSP

Perforation:

7" casing perforated in intervals from 5001' to 4260' as follows:

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 4260'-4290' | 3 | holes/ft. | (Lane Wells | NCF-2 | jet) | 1/2" | hole | | | |
| 4290'-4300' | 1 | " | " | " | " | " | " | " | " | " |
| 4300'-4325' | 3 | " | " | " | " | " | " | " | " | " |
| 4325'-4365' | 2 | " | " | " | " | " | " | " | " | " |
| 4365'-4410' | 1 | " | " | " | " | " | " | " | " | " |
| 4610'-4640' | 2 | " | " | " | " | " | " | " | " | " |
| 4660'-4675' | 1 | " | " | " | " | " | " | " | " | " |
| 4675'-4710' | 2 | " | " | " | " | " | " | " | " | " |
| 4768'-4788' | 2 | " | " | " | " | " | " | " | " | " |
| 4788'-4820' | 3 | " | " | " | " | " | " | " | " | " |
| 4850'-4865' | 2 | " | " | " | " | " | " | " | " | " |
| 4865'-4885' | 3 | " | " | " | " | " | " | " | " | " |
| 4912'-4922' | 2 | " | " | " | " | " | " | " | " | " |
| 4922'-4942' | 3 | " | " | " | " | " | " | " | " | " |
| 4942'-4967' | 2 | " | " | " | " | " | " | " | " | " |
| 4976'-5001' | 2 | " | " | " | " | " | " | " | " | " |

Surveys:

Lane Wells - Induction Electrolog from 5092' to 100'.
Welex-Micro-Seismogram Log - Cased Hole from 5085' to 4000'.

Mud Program:

Weight: 71 to 76 #/Cf, Type: Chrome lignosulfonate.
Surface to T.D. Water loss: not over 10cc/30 min.

BIR
Bit Record:

| (BIT NO.) | (SIZE) | (KIND) | (TYPE) | (FROM) | (TO) | (FOOTAGE) |
|---|---|---|---|---|---|---|
| 1 | 9-7/8" | Reed | YT3 | 100' | 1572' | 1472' |
| 2 | 9-7/8" | Smith | TDT | 1572' | 1756' | 184' |
| 3 | 9-7/8" | Reed | YT3J | 1756' | 2805' | 1049' |
| 4 | 9-7/8" | Security | S3S | 2805' | 3424' | 619' |
| 5 | 9-7/8" | Hughes | OSC | 3424' | 3633' | 209' |
| 6 | 9-7/8" | Reed | YT1A | 3633' | 3920' | 287' |
| 7 | 9-7/8" | Smith | DT2G | 3920' | 4200' | 280' |
| 8 | 9-7/8" | Reed | YT3J | 4200' | 4475' | 275' |
| 9 | 9-7/8" | Reed | YT1AJ | 4475' | 4665' | 190' |
| 10 | 9-7/8" | Smith | DT2G | 4665' | 4824' | 159' |
| 11 | 9-7/8" | Security | S4J | 4824' | 4962' | 138' |
| 12 | 9-7/8" | Reed | T1J | 4962' | 5100' | 138' |
| 13 | 6-1/8" | Reed | YT1A | 5056' | 5095' | 34' |

Bit #13 was used for clean out work.

FORM 103

SUBMIT IN DUPLICATE

26535-705 7-64 25M △ OSP

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## History of Oil or Gas Well

OPERATOR Texaco Inc. FIELD Long Beach

Well No. Field #37, Sec. 19, T. 4S, R. 12W, SBM B. & M.

Date March 21, 19 67 Signed O. W. Chonette

O. W. Chonette

P. O. Box 3337, Ventura, Calif. 642-6781 Title District Superintendent

(Address) (Telephone Number) (President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. Use this form to report a full account of all important operations during the drilling and testing of the well or during re-drilling, altering of casing, plugging, or abandonment with the dates thereof. Be sure to include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, shooting and initial production data.

Date

1966

DRILLING CONTRACTOR: Atlantic

MUD CONTRACTOR: IMC

11-26 Prepared the location and constructed a cellar. Dug hole for conductor pipe with rat hole digger. Ran and cemented 100' of 10-3/4", 32.5#, H-40 casing as conductor pipe.

11-28 Atlantic Oil Co. moved in and rigged up.

11-29 Installed S900 flange to conductor pipe to accommodate BOPE. Installed BOPE. Spudded a 9-7/8" hole at 2:00 AM and drilled to 300'. Mud: 74 #/cf.

11-30 Circulated and pulled up to conductor pipe and ran back to bottom. Hole was tight. Made a short wiper run and circulated hole clean. Ran in with Dynadrill and drilled to 1780' ±. Laid down Dynadrill. Ran in with bit and drilled to 1811'. Mud 74 #/cf.

12-1 Drilled to 2553' Mud 73 #/cf.
12-2 Drilled to 3290' Mud 72 #/cf.
12-3 Drilled to 3633' Mud 73 #/cf.
12-4 Drilled to 4048' Mud 74 #/cf.
12-5 Drilled to 4426' Mud 72 #/cf.
12-6 Drilled to 4665' Mud 73 #/cf.
12-7 Drilled to 4911' Mud 72 #/cf.
12-8 Drilled to 5100' Mud 72 #/cf.
Circulated hole clean for electric log.

12-9 Ran Lane Wells Induction Electrolog from 5092' to 112' (loggers depth). Ran in with a 9-7/8" bit to 5100'. Circulated hole clean and conditioned mud to run casing. Rigged up and ran 123 jts. of 7", 32#, and 23# casing as follows: 7" Baker Model "G" fill up shoe set at 5100', 100.80' of 7", 32#, N-80 blank casing, 4074.34' of 7", 23#, J-55 blank casing, 44.00' of 7", 32#, N-80 blank casing. Placed cast iron baffle plate at 5056'. Placed centralizers on the bottom 22 joints at the collars. Cemented 7" casing through shoe at 5100' as follows: Pumped in

1000 gallons of mud flush followed by 100 cu. ft. of lease salt water. Mixed and displaced 1380 cu. ft. of slurry consisting of a 1:1:4 mixture (cement, Pozzolan, and % gel). The first 200 cu. ft. was treated with 0.5% CFR-2 followed by 300 cu. ft. of slurry consisting of a 1:1 mixture of cement and Pozzolan treated with 0.5% CFR-2. Used top plug and displaced plug with 1144 cu. ft. of mud. Bumped plug on baffle plate at 5056' with 1000 psi (pressure held). Cement in place at 11:55 PM.

12-10 Had no cement returns to surface. Ran in a 1" pipe and located top of cement at 50'. Cemented top job with 50 sacks of neat cement treated with 3% $CaCl_2$. Removed BOPE. Landed 7" casing. Installed 6" series 900 flange, and tubing head. Pressure tested tubing head to 3000 psi. Pressure test good. Installed BOPE. Closed blind rams and pressure tested casing to 3000 psi for 30 minutes. Pressure test good. Made up 3-1/2" drill pipe and ran in with a 6-1/8" bit to baffle plate at 5056'. Drilled out baffle collar and cement to 5090'. Circulated hole clean and changed over to lease salt water. Pulled out and rigged up Lane Wells logging equipment.

12-11 Ran in Lane Wells Gamma Ray Bond Log. Lane Wells equipment would not work. Pulled out and ran Welex Micro-Seismogram Log (cased hole) from 5085' to 4000' (loggers depth). Log indicated good bonding.

12-12 Lane Wells perforated 7" casing at intervals from 5001' to 4260' as follows:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4260'-4290' | 3 | holes/ft. | | NCF-2 | Jet | - | 1/2" | hole |
| 4290'-4300' | 1 | " | " | " | " | " | " | " |
| 4300'-4325' | 3 | " | " | " | " | " | " | " |
| 4325'-4365' | 2 | " | " | " | " | " | " | " |
| 4365'-4410' | 1 | " | " | " | " | " | " | " |
| 4610'-4640' | 2 | " | " | " | " | " | " | " |
| 4660'-4675' | 1 | " | " | " | " | " | " | " |
| 4675'-4710' | 2 | " | " | " | " | " | " | " |
| 4768'-4788' | 2 | " | " | " | " | " | " | " |
| 4788'-4820' | 3 | " | " | " | " | " | " | " |
| 4850'-4865' | 2 | " | " | " | " | " | " | " |
| 4865'-4885' | 3 | " | " | " | " | " | " | " |
| 4912'-4922' | 2 | | " | " | " | " | " | " |
| 4922'-4942' | 3 | " | " | " | " | " | " | " |

4942'-4967' 2 Holes/ft.,NCF-2 jet, 1/2" holes
4976'-5001' 2 " " " " " " "

Ran in with 6-1/8" bit and casing scraper to 5090', and scraped perforations. Circulated casing clean. Layed down 3-1/2" drill pipe.

12-13 Ran 155 jts. of 2-7/8" used, inspected tubing including Baker Lok-Set retrievable casing packer, (product #646-12), set at 4736' and Baker Model "L" sliding sleeve, (product #810-5), set at 4722'. All the used tubing was Hydrotested to 4,000 psi. Removed BOPE and installed 10' blast nipple. Landed and flanged up tubing. Released rig at 8:00 PM. Tubing string including accessories = 4725' + 11' K.B. = 4736'.

Well idle from 12-13-66 to 3-2-67.

WATER INJECTION DATA

| (DATE) | (HOURS INJECTED) | (ZONE) | (BW INJECTED) | (PRESSURE) (PSI) |
|---|---|---|---|---|
| 3-2-67 | 15 | C Upper | 325 | 1,500 |
| 3-2-67 | 15 | T Lower | 373 | 1,400 |
| 3-3-67 | 21 | C Upper | 1,024 | 1,750 |
| 3-3-67 | 21 | T Lower | 436 | 1,700 |
| 3-4-67 | 24 | C Upper | 344 | 1,800 |
| 3-4-67 | 24 | T Lower | 596 | 1,800 |
| 3-5-67 | 16 | C Upper | 308 | 1,800 |
| 3-5-67 | 16 | T Lower | 596 | 1,800 |
| 3-6-67 | 16 | C Upper | 312 | 1,850 |
| 3-6-67 | 16 | T Lower | 583 | 1,850 |
| 3-7-67 | 22 | C Upper | 442 | 1,900 |
| 3-7-67 | 22 | T Lower | 550 | 1,900 |
| 3-8-67 | 24 | C Upper | 456 | 1,875 |
| 3-8-67 | 24 | T Lower | 606 | 1,850 |

FORM 109-D

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T 169-424
WATER FLOOD

Mr. O. W. Chonette, Agent
TEXACO INC.
P. O. Box 3337
Ventura, California 93003
Agent for

Inglewood, Calif.
May 12, 1969

DEAR SIR: (037-00338)

Operations at well No. "Field" 37, Sec. 19, T. 4 S, R. 12 W, S.B. B & M.
Long Beach Field, in Los Angeles County, were ~~witnessed~~ reviewed
on May 1, 1967. Mr. A.D. Stockton, Engineer, representative of the supervisor was present
from --- to ---. There were also present ---

Present condition of well: 10-3/4" cem. 100'; 7" cem. 5100', perfs. 4260'-5001'. TD 5100', plugged w/cem. 5100'-5090'.

The operations were performed for the purpose of demonstrating that all of the injection fluid is confined to formations below 4180'.

Mr. ---------- reported:

1. A hole was drilled from the surface to 100' and 10-3/4", 32.5 lb. conductor pipe was cemented at 100', filling behind this casing to the surface.
2. A 9-7/8" hole was drilled from 100' to 300' and a Dynadrill was run to 1780'.
3. A 9-7/8" hole was drilled from 1780' to 5100'.
4. On December 9, 1966, 7", 23 and 32 lb. casing was cemented at 5100', with 1380 cubic feet of a 1:1:4 mixture of cement, pozzolan and gel, filling behind this casing to 50'.
5. An additional 50 sacks of cement was placed around the 7" casing from the surface.
6. The 7" casing was pressure tested at 3000 Psi for 30 minutes.
7. Cement was drilled out of the 7" casing from 5056' to 5090'.
8. The 7" casing was jet-perforated as noted above.

THE ENGINEER NOTED:
The following information is in the history filed by the operator:
An analysis of the temperature survey run on August 22, 1967 indicated there was no upward movement of fluid.

THE OPERATIONS AS WITNESSED AND REPORTED ARE APPROVED as indicating that all of the injection fluid is confined to the formation below 4180' at this time.

NOTE: This report was delayed pending interpretation of the injection profile surveys.

ADS:nw

cc H. J. Smith (2)

F. E. KASLINE
State Oil and Gas Supervisor

By Robert Scott Matthews Jr. Deputy

W/S

21022-705 5-68 15M ② OSP

FORM 111

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## REPORT ON PROPOSED OPERATIONS No. P 166-1240

WATER FLOOD

Mr. O. W. Chonette
P. O. Box 3337
Ventura, California

Inglewood, Calif.
November 1, 1966

Agent for TEXACO INC.

DEAR SIR:

Your proposal to drill water flood Well No. "Field" 37, Section 19, T. 4 S, R. 12 W, S.B. B. & M., Long Beach Field, Los Angeles County, dated July 22,1966, received Oct. 21,1966, has been examined in conjunction with records filed in this office. Present conditions as shown by the records and the proposal are as follows:

**THE NOTICE STATES**

"Legal description of mineral-right lease, consisting of 60.0 acres is as follows:
Do mineral and surface leases coincide? Yes X No
Location of Well: 1225 feet East along section line and 890 feet South at right angles to said line from the Northwest corner of section 19, T. 4S, R. 12W, S.B.B.&M.
Elevation of ground above sea level 100'± feet mat datum.
All depth measurements taken from top of K.B. which is 11± feet above ground."

**PROPOSAL**

"PROPOSED CASING PROGRAM

| Size of Casing | Weight | Grade and Type | Top | Bottom | Cementing Depths |
|---|---|---|---|---|---|
| 10-3/4" | 32.75# | H-40 | Surface | 90' | - |
| 7" | 23&26# | J-55 & N-80 | Surface | 5100' | 5100' |

Intended zone of completion: Brown 4240-5100' Estimated total depth 5100'
Note: This well will be used for water injection in our existing water flood.
It is understood that if changes in this plan become necessary we are to notify you immediately."

**DECISION**

**THE PROPOSAL IS APPROVED PROVIDED:**

1. A monthly statement shall be filed with this Division on our Form 110-B showing the amount of fluid injected, pressure required, and source of injected water.
2. An analysis of the fluid to be injected shall be submitted upon request.
3. Injection shall cease if any evidence of damage or failure of water shut-off is observed, or upon written notice from this Division.
4. This Division shall be furnished within 30 days after injection is started sufficient data to confirm that the injection fluid is confined to the intended zone of injection.
5. Sufficient data shall be maintained and shall be open to inspection by personnel of this Division to establish that no damage is occurring due to excessive injection pressure.
6. Sufficient cement shall be used to fill back of the 7" casing to reach above the base of the fresh waters which is at approx. 1800'.

**NOTE:**

1. The base of the fresh water sands is at 1800'±. The fresh water will be protected by the 7" casing cemented at 5100' with sufficient cement to fill to 1800' or higher.
2. The water to be injected tests about 1800 G/G sodium chloride, and is water produced from neighboring wells.
3. The strata into which water is to be injected contain a mixture of oil and salt water. The salt water tests approx. 1800 G/G sodium chloride.

E. R. MURRAY-AARON, State Oil and Gas Supervisor

By CONTINUED ON PAGE 2, Deputy

①T OSP

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## Report on Proposed Operations

WATER FLOOD

No. P 166-1240

Page 2

TEXACO INC. ~~xCompany~~

Well No. "Field" 37, Section 19, T. 4 S, R. 12 W, S.B. B. & M.,
4. Approx. Surface Location of Well: 890' S., 1225 E. from NW cor. of Sec.

JFM:nw

cc Sacramento (3)
R. J. Smith (2)
Co. Ind. Waste Div.

Blanket Bond

E. R. MURRAY-AARON, State Oil and Gas Supervisor

By _____, Deputy

FORM 111X
27541-705 7-64 3500 OSP

FORM 105

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## Notice of Intention to Drill New Well

This notice and surety bond must be filed before drilling begins

DIVISION OF OIL AND GAS
RECEIVED
037-00338 S
OCT 21 1966
INGLEWOOD, CALIFORNIA

Ventura, Calif. July 22, 1966

DIVISION OF OIL AND GAS

In compliance with Section 3203, Division III, Article 4, Public Resources Code, notice is hereby given that it is our intention to commence drilling well No. "Field" #37 Aw-1, Sec. 19, T. 4S, R. 12W, S.B. B. & M., Long Beach Field, Los Angeles County.

Legal description of mineral-right lease, consisting of 60.0 acres, is as follows: - (Attach map or plat to scale)

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| 130 | Aw 10-29 | W | blanket | W | W |

Do mineral and surface leases coincide? Yes X No ____ If answer is no, attach legal description of both surface and mineral leases, and map or plat to scale.

Location of Well: 1225 feet East (Direction) along section line and 890 feet South (Direction)

at right angles to said line from the Northwest corner of section 19,

T.4S, R.12W, S.B.B.&M.

Elevation of ground above sea level 100'± feet mat datum.

All depth measurements taken from top of K.B. (Derrick Floor, Rotary Table or Kelly Bushing) which is 11± feet above ground.

## PROPOSED CASING PROGRAM

| SIZE OF CASING INCHES A.P.I. | WEIGHT | GRADE AND TYPE | TOP | BOTTOM | CEMENTING DEPTHS |
|---|---|---|---|---|---|
| 10-3/4" | 32.75# | H-40 | Surface | 90' | - |
| 7" | 23&26# | J-55 & N-80 | Surface | 5100' | 5100' |
| | | | | | |

Intended zone(s) of completion: Brown (Name) 4240-5100' (Depth, top and bottom) Estimated total depth 5100'

Note: This well will be used for water injection in our existing water flood.

**It is understood that if changes in this plan become necessary we are to notify you immediately.**

Address P. O. Box 3337
Ventura, California 93003

Telephone Number 1-805-642-6781

Texaco Inc. (Name of Operator)

By O. W. Chonette
O. W. Chonette, Dist. Supt.

Type of Organization Corporation (Corporation, Partnership, Individual, etc.)

27537-705 7-64 20M △ OSP

# CalGEM Oil Well Files
# API 037-00410
# “Field” 36

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

# REPORT OF PROPERTY AND WELL TRANSFER

| Field or County | | District |
|---|---|---|
| Imperial Co., Wilmington, L.A. Co., W. Coyote, Montebello, Beverly Hills, Seal Beach, El Segundo, Inglewood, Rosecrans, Venice Beach, Las Cienegas, S. Salt Lake, Dominguez, Hyperion, Lawndale, Leffingwell, Long Beach, Los Angeles Downtown, Potrero, Salt Lake, Santa Fe Springs, Cheviot Hills, Sherman, Torrance, Whittier, Howard Townsite, Huntington Beach, Yorba Linda, Orange Co., Richfield, Kraemer, W. Newport, Sunset Beach, Belmont Offshore | | District 1 (Cypress, California) |
| Former owner: ChevronTexaco Exploration & Production Co. | C5680 | Date: 9/23/2005 |

| Well Name | API Number | Section Township Range |
|---|---|---|
| See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA | See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA | See Attached List<br>For Complete List of Wells<br>See Operator Folder (C5640) Chevron U.S.A. Inc.<br>Dist. 1, Cypress, CA |

Description of the land upon which the well (s) is (are) located.
Various

| Date of transfer | New owner | | Type of organization |
|---|---|---|---|
| 7/11/2005 | | Chevron U.S.A. Inc.<br>**C5640** | Corp. |
| | Address: | 9525 Camino Media<br>Bakersfield, CA 93311 | Telephone: 661/654-7065 |
| Reported by | OG30A received in Sacramento 9/2005 | | |
| Confirmed by | Same as above | | |
| New operator new status: **PA** | Designation of Agent: Greg Leyendecker, Agent | | |
| Old operator new status: **AB** | Remarks: For further information see Operator file (C5640) Chevron U.S.A. Inc. | | |

**OPERATOR STATUS ABBREVIATIONS**

*PA – Producing Active*
*NPA- No potential, Active*
*PI- Potential Inactive*
*NPI-No potential, Inactive*
*AB-Abandoned or No More Wells*

cc: Update; Envir Desk (2); File
Conservation Committee
Harold W. Bertholf, Inc.
L.A. & Orange County Assessors
WellStats – Cypress Dist. 1
WellStats – Sacrament HQS

Deputy Supervisor: R. K. Baker

Signature: Richard K. Baker, District Deputy

**FORM AND RECORD CHECK LIST**

| Form or Record | Initials | Date | Form or Record | Initials | Date |
|---|---|---|---|---|---|
| Form OGD121 | — | — | Map and Book | | |
| Operator Card | (cc) | 9-23-05 | Notice cancellations | — | — |
| Well Records | (cc) | 9/26/05 — | Bond Status BB | (cc) | 9-23-05 |
| Log Records | (cc) | 9/26/05 — | EDP HQS | J.C | 7-11-05 |
| Production Reports | — | — | Data Base Rdy DL | GM | 9-26-05 |
| | | | | | |

# WELL TRANSFER NOTICE

Effective August 22, 2002

**Chevron USA Inc.**
**Texaco California Inc.**
**And**
**Texaco Exploration and Production, Inc.**

Transferred ALL THEIR WELLS
To

## ChevronTexaco Exploration & Production Company

*See OGD156 dated October 18, 2002 in Operator File for ChevronTexaco Exploration & Production Company (C5680) for details*

FORM 159

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

# REPORT OF WELL ABANDONMENT

830 North La Brea
Inglewood, California

September 16, 1971

Mr. M. E. Benson, Agent
TEXACO INC.
P. O. Box 3337
Ventura, CA 93003

DEAR SIR:

Your report of abandonment of Well No. "Field" 36 (037-00410), Sec. 19, T. 4S, R. 12W, S.B. B. & M., Long Beach field, Los Angeles County, dated September 9, 1971 received Sept. 10, 1971 has been examined in conjunction with records filed in this office.

A review of the reports and records shows that the requirements of this Division, which are based on all information filed with it, have been fulfilled.

DL:rk
cc Wesley G. Bruer
G. C. Cady (2)
Production Dept.
Conservation Comm.
Fire Prevention Engr
Fire Prevention Bureau
Dept of Bldg & Safety, LB
Fire Dept, LB

BLANKET BOND

WESLEY G. BRUER
~~F. E. KASLINE~~
*State Oil and Gas Supervisor*

By W L Ingram
*Deputy Supervisor*

31486-705 4-69 10M OSP

WORK PERFORMED:

Drill ____ Redrill ____ Deepen ____

Plug ____ Alter casing ____

Water flood ✓ Water disposal ____

Abandon ✓

Other ____

BROWN

STATUS: (Date)

Producing ____

Recomp. prod. ____

Water flood ____

Water disposal ____

Abandoned 7-26-71

Other ____

MAP AND BOOK ✱ Clamar

130 (SW 33rd & California)

RECORDS FILED & DATE: Clerk [illegible]

Summary (dup.) ____

Log & Core (dup.) ____

✓ History (dup.) 9-10-71

E-log ____

Radio log ____

D. Survey ____

Other ____

(Check records for signature and correct name of operator or well, S.T.R. and field.)

Location ____ Notice states ____

Elevation ____ Notice states ____

Production Reports ____

(If production reports not received, make notation and inform Sr. Steno. when rec'd.)

If stimulation or disposal well:
Form 121 ____ Folder ____

RECORDS & REQUIREMENTS CHECKED: Eng. [illegible]

✓

Surface inspection OK

Data needed NONE

Clerk:

Request records ____ F 170 __

Correct records ____ (Specify) F 165 __ 165A __

CARDS ____

BOND: Blanket

Hold ____ Reason ____

Release ____ Date elig. ____ F 150b __

End premium year ____
Release requested ____ (Check)
Bond superseded ____ (one )
Well abandoned ____

FINAL LETTER ✓ F 159 RK
and
FILE CLEARED ✓ F 121 [illegible]

Form 19-A

FORM 103

SUBMIT IN DUPLICATE

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
SEP 10 1971
INGLEWOOD, CALIFORNIA

## History of Oil or Gas Well

OPERATOR TEXACO INC. FIELD Long Beach

Well No. Field #36, Sec. 19, T. 4S, R. 12W, S.B. B. & M.

Date September 9, 1971 Signed M. E. Benson

P. O. Box 3337
Ventura, Calif. 93003 (805) 642-6781 Title District Superintendent
(Address) (Telephone Number) (President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. Use this form to report a full account of all important operations during the drilling and testing of the well or during re-drilling, altering of casing, plugging, or abandonment with the dates thereof. Be sure to include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, shooting and initial production data.

Date

PRESENT CONDITION:

Total Depth: 5160'

Casing: 13-3/8", 61#, J-55 Surface to 59'
10-3/4", 32.75#, J-55 59' to 2012'
2-1/2", 6.4#, J-55 #1 - Surface to 5146'.
#2 - Surface to 5126'.
#3 - Surface to 5133'
#4 - Surface to 4771'.
Cemented to surface.

Perforated at intervals 4250' to 5060'. Never produced.
Water Injector.

PROPOSED WORK:

Cement all strings beginning with string #3 (deepest perforated interval), then strings #1, #2, #4. Division of Oil and Gas to witness placement of cement.

Cut casings off at least 10' below ground level, weld on steel plate and abandon. Division of Oil and Gas to witness plate.

1971

SUMMARY

7-19

Dowell moved in, rigged up and connected equipment to string #3. Pumped into tubing 50 cu.ft. of water followed by 130 cu.ft. of neat cement. Started getting oil returns from string #2. Connected string #2 to vacuum truck and squeezed string #3 with 160 cu.ft. cement. Total cement in string #3, 290 cu.ft. Good cement returns to surface in string #2. Plug was witnessed and approved by Division of Oil and Gas. Connected to string #1 and pumped into tubing 50 cu.ft. water followed by 81 cu.ft. neat cement. Pressured up to 1000 psi, good returns to surface. Cement job on string #1 witnessed and approved by Division of Oil and Gas. Connected equipment to string #4 and pumped 5 cu.ft. of water into tubing, pressured to 1500 psi. Held pressure for 20 minutes, bled pressure off well and released cementers.

DIVISION OF OIL AND GAS
RECEIVED
SEP 10 1971
INGLEWOOD, CALIFORNIA



7-20 Allied Oil Well Service Co. moved in, rigged up and ran a 1-3/4" bailer in string #4 to 4184', pulled, no cement. Reran bailer to 4186', pulled and recovered hard sand and some black oily material. Released rig and shut down.

7-21 Standing idle.

7-22 Moved in Company production hoist and ran 1-1/4" tubing to 1038' in string #4. Pumped in 50 cu.ft. water and displaced well fluid. Pumped in 30 sacks of neat cement in 3 stages filling from 1038' to surface. Witnessed and approved by Division of Oil and Gas.

7-23 through 7-25 Idle.

7-26 Cleaned out 10' below ground level, cut off 16" conductor pipe, 13-3/8" surface casing and four strings of 2-7/8" tubing 10' below the surface. Welded a steel plate on each string of tubing and on the 13-3/8" casing. Witnessed and approved by a representative of the city of Signal Hill. Cleaned up location and restored to natural contours. The plugging operations were witnessed and approved by the Division of Oil and Gas. The well is abandoned.

VSR:sc

FORM 109-D

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T 171-722

WATER FLOOD

Mr. M. E. Benson, Agent
TEXACO INC.
P. O. Box 3337
Ventura, CA 93003

Inglewood, Calif.
July 29, 1971

DEAR SIR: (037-00410)

Operations at well No. "Field" 36, Sec. 19, T. 4 S, R. 12 W, S.B. B & M. Long Beach Field, in Los Angeles County, were witnessed on July 22, 1971. Mr. L. Olson, Engineer, representative of the supervisor was present from 0920 to 1030. There were also present A. Hambly, Foreman & Wm. Reid, Hoist Operator

Present condition of well: 13-3/8" x 10-3/4" cem. 2012'; 2-7/8" cem. 5146', perf. 4590'-4738', bridge plug 4749'; plugged w/cem. 2500'± to surface; 2-7/8" cem. 5126', cp 4210', 4432', 4560', & 4749', perfs. 4240'-4415', plugged w/cem. 4240'± to surface; 2-7/8" cem. 5133', perf. 4780'-5060'. Junk 1½" tubing 4793'-4928', plugged w/cem. 4780'± to surface; 2-7/8" cem. 4771', perf. 4450'-4556', plugged w/cem. 1038' to surface. TD 5160'.

The operations were performed for the purpose of witnessing the plugging operations in the process of abandonment.

Mr. ---------- reported:

MR. L. OLSON, ENGINEER, WAS PRESENT AT THE WELL FROM 0800 TO 1400 ON JULY 19, 1971, AND MR. HAMBLY REPORTED THAT 1½" tubing was left in the 2-7/8" casing cemented at 5133', from 4793' to 4928'.

THE ENGINEER NOTED:

1. Two hundred and ninety cubic feet of cement was pumped down the 2-7/8" casing cemented at 5133', filling from 4780'± to the surface, and also that cement returned to the surface through the 2-7/8" casing cemented at 5126', filling it from 4240'± to the surface.
2. Eighty one cubic feet of cement was pumped into the 2-7/8" casing cemented at 5146' under a final pressure of 2500 psi, filling from 2500'± to the surface.
3. No cement could be displaced into the 2-7/8" casing cemented at 4771' under a pressure of 1500 psi.

MR. L. OLSON, ENGINEER, WAS PRESENT AT THE WELL FROM 0845 TO 0900 ON JULY 20, 1971, AND NOTED THAT the bailer was spudded on hard fill at 4186' in the 2-7/8" casing cemented at 4771' and brought up a sample of sand and scale.

MR. L. OLSON, ENGINEER, WAS PRESENT AT THE WELL FROM 0920 TO 1030 ON JULY 22, 1971, AND NOTED THAT 30 sacks of cement was pumped into the 2-7/8" casing cemented at 4771' in stages through 1½" tubing beginning at 1038', filling to the surface.

THE PLUGGING OPERATIONS AS WITNESSED AND REPORTED ARE APPROVED.

LO:nw

cc H. J. Smith (2)
Prod. Dept.

WESLEY G. BRUER

~~F. E. KASLINE~~
~~State~~ Oil and Gas Supervisor

By W L Ingram Deputy

w/s

48443-705 11-70 15M ② OSP

Wesley G. Bruer

July 7, 1971

WATER-FLOOD PROJECT
Texaco Inc.
Long Beach Field
Brown Zone
Well No. "Field" 36

Inglewood

We are enclosing three copies of report No. P171-603, dated July 7, 1971, issued in answer to a proposal by Texaco Inc. to abandon water flood well No. "Field" 36 (037-00410), Sec. 19, T. 4 S., R. 12 W., S.B.B.& M., Long Beach field.

The base of the fresh water sands is at 1,800 feet. The fresh water is protected by 10 3/4-inch casing cemented at 2,012 feet with sufficient cement to fill the annular space behind this casing to the surface.

This well was originally approved for water-flood service in our letter dated July 24, 1963.

W. L. Ingram
Deputy Supervisor

MM:nw

Enc.

cc A. D. Stockton
Production Department

FORM 111

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## REPORT ON PROPOSED OPERATIONS No. P 171-603

WATER FLOOD

Mr. M. E. Benson, Agent
TEXACO, INC.
P. O. Box 3337
Ventura, CA 93003

Inglewood, Calif.
July 7, 1971

DEAR SIR:

(037-00410)

Your proposal to abandon water flood Well No. "Field" 36, Section 19, T. 4 S, R. 12 W, S.B. B. & M., Long Beach Field, Los Angeles County, dated 6/2/71, received 6/29/71, has been examined in conjunction with records filed in this office.

NOTE: 2-1/2" cem. 5146', perf. 4590'-4738', bridge plug 4749'; 2-1/2" cem. 5126', cp 4210', 4432', 4560' & 4749', perfs. 4240'-4415'; 2-1/2" cem. 5133', perf. 4780'-5060', fish top @ 4769'; 2-1/2" cem. 4771', perf. 4450'-4556'.

THE PROPOSAL IS APPROVED PROVIDED:

1. Heavy rotary mud shall be used to replace any oil or water in the hole and to fill all portions of the hole not plugged with cement.
2. THIS DIVISION SHALL BE NOTIFIED TO WITNESS the plugging operations.

NOTE:

1. The base of the fresh water sands is at 1800'. The fresh water is protected by the 10-3/4" casing cemented at 2012' with sufficient cement to fill to the surface.
2. Approx. Surface Location of Well: 880' S., 1265' E. fr. NW cor. Sec. 19.

MM:nw

cc Sacramento (3)
H. J. Smith (2)
Co. Ind. Waste Div.

Blanket Bond

WESLEY G. BRUER
~~F. E. KASLINE, State~~ Oil and Gas Supervisor

By W. L. Ingram, Deputy

① △ OSP

FORM 108. 24227-705 8-68 10M ② OSP

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
JUN 29 1971
INGLEWOOD, CALIFORNIA

## Notice of Intention to Abandon Well

This notice must be given at least five days before work is to begin; one copy only

Ventura, Calif. June 2, 19 71

DIVISION OF OIL AND GAS

In compliance with Division 3, Public Resources Code, notice is hereby given that it is our intention to abandon

Well No. "Field #36 (Water Injection)", Sec. 19, T. 4S,

R. 12W, S.B. B. & M., Long Beach Field, Los Angeles County,

commencing work on July 28, 19 71.

The present condition of the well is:

1. Total depth: 5160'

2. Complete casing record, including plugs:

13-3/8", 61#, J-55 Surf. to 59'
10-3/4", 32.75#, J-55 59' to 2012'
2-1/2", 6.4#, J-55 #1-Surf. to 5146'
#2-Surf. to 5126'
#3-Surf. to 5133'
#4-Surf. to 4771'

Cemented to Surface
Perfs @ intervals 4240' to 5060'

3. Last produced Never
(Date) (Oil, B/D) (Gas, Mcf/D) (Water, B/D)

Additional data for dry hole

4. Oil or gas showings and results of tests:

5. Stratigraphic markers and depths:

6. Age of formation at bottom:

7. Base of fresh water sands:

The proposed work is as follows:

1. Completely fill all strings with cement, beginning with String #3 (deepest perforated interval), then Strings #1, #4, and #2. DOG to witness placement of cement.

2. Cut off the casings at least 10' below ground level, weld on steel plate, and abandon the well. DOG to witness plate.

Note: The above proposal has been discussed with and verbally approved by Mr. Doug Stockton of the Division of Oil and Gas, as of 5-19-71.

Abandon

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| | | ARG | B | ARG | ARG ✓ |

P. O. Box 3337
Ventura, Calif. 93003
(Address)

(805) 642-6781
(Telephone No.)

Texaco Inc.
(Name of Operator)

By M. E. Benson
M. E. Benson, Dist. Supt.

KCS:ni

FORM 109-D

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## Special Report on Operations Witnessed

No. T 169-22
WATER FLOOD

Mr. O. W. Chonette, Agent
TEXACO INC.
P. O. Box 3337
~~Agent for~~ Ventura, California 93003

Inglewood, Calif.
January 8, 1969

DEAR SIR: (037-00410)

Operations at well No. "Field" 36, Sec. 19, T. 4 S, R. 12 W, S.B. B & M.
Long Beach Field, in Los Angeles County, were witnessed
on ----- . Mr. ----- , representative of the supervisor was present
from ---- to ---- . There were also present ------

Present condition of well: 13-3/8" cem. 59'; 10-3/4" cem. 2012'; 2-1/2" as follows: String #1: 2-1/2" cem. 4771', cp 4210', 4432', 4560' & 4749', perf. 4590'-4640' & 4667'-4738', bridge plug 4749'. String #2: 2-1/2" ld. 5126', 4210', 4432', 4560', 4749' & 4771', WSO above 4240', perf. 4240'-4330' & 4346'-4415'. String #3: 2-1/2" ld. 5133', 4210', 4432', 4560', 4749' & 4771'.* String #4: 2-1/2" ld. 5146', 4210', 4432', 4560', 4749' & 4771', perf. 4450'-4656'. TD 5160'. * perf. (intervals) 4780'-5060'.

The operations were performed for the purpose of demonstrating that all of the injection fluid is confined to the formations below 4240' in string #2.

Mr. ---------- reported:

The following information is in the history filed by the operator:
String #1 was bridged at 4749' with a bridge plug.

An examination of the water injection profile curve based on a Radioactivity survey run at an injection rate of 290 B/D and a pressure of 1900 Psi indicates no upward fluid movement.

NOTE: An analysis of the temperature survey run on August 22, 1967 confirmed there was no upward fluid movement.

THE OPERATIONS AS WITNESSED AND REPORTED ARE APPROVED as indicating that all of the injection fluid is confined to the formations below 4240' at this time in string #2.

LA:nw

cc H. J. Smith (2)

F. E. KASLINE
E. R. MURRAY-AARON
State Oil and Gas Supervisor

By Robert Matthews, Jr. Deputy

90947-705 3-67 15M ② OSP

FORM 103

SUBMIT IN DUPLICATE

D06 △ OSP

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## History of Oil or Gas Well

OPERATOR Texaco, Inc. FIELD Long Beach

Well No. "Field #36 (W.I.)", Sec. 19, T. 4-S, R. 12-W, SBM B. & M.

Date August 29, 19 67 Signed O. W. Chonette /s/
O. W. Chonette

Box 3337, Ventura, Calif., 642-6781 Title District Superintendent
(Address) (Telephone Number) (President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. Use this form to report a full account of all important operations during the drilling and testing of the well or during re-drilling, altering of casing, plugging, or abandonment with the dates thereof. Be sure to include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, shooting and initial production data.

Date

**Present Condition:** Total Depth 5160'

Casing: 13 3/8", 61#, J-55 Conductor cemented at 59'.
10 3/4", 32 3/4#, J-55 Surface to 2012', cemented.

String #1 - 2 1/2", 6.4#, J-55 Surf. to 5146'. Perf'd. one 1/2" hole/foot at intervals from 4590' to 4783'.

String #2 - 2 1/2", 6.4#, J-55 Surf. to 5126'. Perf'd one 1/2" hole/foot at intervals from 4240' to 4515'.

String #3 - 2 1/2", 6.4#, J-55 Surf. to 5133'. Perf'd three 1/2" holes/foot from 4780' to 4915' and one 1/2" hole/foot from 4995' to 5060', at intervals.

String #4 - 2 1/2", 6.4#, J-55 Surf. to 4771'. Perf'd one 1/2" hole/foot from 4450' to 4556', at intervals.

**Purpose:** To isolate String #3 from Strings #1, #2 & #4, and to clean out Strings #1, #2 & #3.

1966

**Contractor:** Maddox Production Company

Maddox

3-28-67 String #3 - Ran in w/saw tooth collar on bottom. Hit fill at 4788 Circ. to 4816. Cont. to circ. to 4905'.

3-29-67 Using power swivel circ. to 4917. Pull 1 1/4" macaroni out of #3 and run into #1. Circulated #1 to 4850'. Found that 4 singles + about 15' of 1 1/4" had been left in #3. Pulled 1 1/4" out of #1 and ran in #2. Ran 2 1/4" fishing tool in #1 on jars and sinker bars. Stop at 595'. Pulled out. Found fill at 5050 in #2. Circ. in #2 from 5050 to 5101.

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OCT 5 1967

INGLEWOOD, CALIFORNIA

3-30-67 Circ. 5101 to 5126' in #2. Ran 2 1/16" feeler on sand line. Stop at 4763'. Ran 2 1/4" broach in #1 on macaroni. Stop at 4776. Pulled out and made up 2 5/16" scraper. Ran in #2. Stopped at 4581, then went to 4763. Stopped. Ran 2 5/16" scraper in #1. Stop at 4396. Made up 2" I.B. on sand line and ran in #3. Get pickup at 4723. Pulled out. Ran spear on 1 1/4" to 4776'. Did not engage fish. Pulled out. Ran 1 3/4" I.B. sand line. Stop at 4506'. Good picture of bad pipe.

3-31-67 Ran 2 5/16" scraper on 1 5/8" sinker bar in #1. Stop at 4392. Ran 2 5/16" scraper on macaroni. Stop at 4780'. Pulled out of #1 and ran spear on macaroni in #3. Pulled up 2 stands off bottom. 74 stands in #3. Ran 2 5/16" scraper in #1 on sand line. Stopped at 4396'. Worked to 4405'. Pulled out of #1. Pulled macaroni out of #3. Did not recover fish.

4-1-67 Rig up to run bridge plug in #1. McCullough. Could not get below 4660'. Ran 2 1/8" I.B. in #3 on macaroni. Stop at 4506. Set down all weight. Pulled out. No impression. Laid down macaroni, released rig.

4-2 to 6-26 Standing idle.

6-27-67 Contractor - Allied Oilwell Service.
Ran in #3 with 1 1/4" Servco flat bottom junk/mill on 151 joints of 1 1/4" macaroni. Stopped at 4768'. Broke circulation at 4768. Started milling using 800 psi on Bower Power swivel & 30 RPM in high gear. Dropped to 4769' and stopped. Pulled back through 4768' several times. Mill hung up both ways. Continued milling at 4769'. Made approximately 4 inches and pulled out. No excessive torque developed. Left mill in the hole. It appeared to have split or spread the 1 1/4" Baash Ross External Flush Tool Joint box as it was evident that the threads on the sub, which was screwed into the mill (box up) had been rotating inside of something. The threads were rolled over. Ran in with 2 1/8" I.B on sand line. Stopped at 4767 and indicated 2 1/2" casing swaged in. Ran in with 1" X 1 1/4" Die Tap. Tapped into fish at 4769. Fish hung up slightly at 4768'. Pulled out and found that the mill fish had been engaged but not recovered.

Moved to #1 and attempted to run Baker scraper.
Would not go into the casing at the surface. Ran condra scraper. Stopped at 4691. Scraped clean to 4785.

6-28-67 Pulled out and found that the scraper had been left in the hole. Ran fishing tool. Engaged fish at 4780' and recovered same. Ran 2 1/2" Halliburton SDC Packer Bridge Plug & set same with rubber at 4750' and top of plug at 4749'. Pulled out with setting tool and moved to

String #3. Ran in with Die Tap rigged to catch 1 1/4" Servco Mill. Engaged fish at 4769' and recovered same. Repaired damaged tool joint and ran in hole (#3) with 1 1/4" mill on macaroni. Tagged

fish (1 1/4" tubing fish) at 4769. Broke circulation and milled 4 inches. Pulled out and found that the mill had been left in the hole. The threads were worn off of the bottom joint of the 1 1/4" tubing. Bottom joint polished 3 1/2 feet above the mill, indicating bad pipe at that point. Ran back in hole.

6-29-67 Pulled and laid down macaroni tubing. Released contractor.

7-1-67 Hooked up well head to inject in String #2 and #3.

7-2-67 Resumed injection in String #2.

7-4-67 Resumed injection in String #3.

| Date | STRING #2 BBLS./INJ. | STRING #2 PRESS | STRING #3 BBLS. INJ. | STRING #3 PRESS. | TOTAL BBLS. INJ |
|---|---|---|---|---|---|
| 7-2-67 | 582 | 1850 | - | - | 582 |
| 7-3-67 | 406 | 1650 | - | - | 406 |
| 7-4-67 | 192 | 1750 | 643 | 1550 | 835 |
| 7-5-67 | 173 | 1800 | 625 | 1575 | 798 |
| 7-6-67 | 161 | 1800 | 615 | 1600 | 776 |
| 7-7-67 | 122 | 1775 | 531 | 1550 | 653 |
| 7-8-67 | 307 | 1800 | 560 | 1575 | 867 |
| 7-9-67 | 340 | 1825 | 565 | 1600 | 905 |
| 7-10-67 | 329 | 1825 | 538 | 1600 | 867 |
| 7-11-67 | 347 | 1825 | 564 | 1600 | 911 |
| 7-12-67 | 366 | 1850 | 581 | 1625 | 947 |
| 7-13-67 | 186 | 1200 | 315 | 1000 | 501 |
| 7-14-67 | 301 | 1825 | 579 | 1600 | 880 |
| 8-5-67 | 345 | 1850 | 625 | 1625 | 970 |
| 8-6-67 | 327 | 1850 | 603 | 1625 | 930 |
| 8-7-67 | 286 | 1825 | 541 | 1575 | 827 |
| 8-8-67 | 313 | 1825 | 578 | 1600 | 891 |
| 8-9-67 | 331 | 1825 | 588 | 1600 | 919 |
| 8-10-67 | 313 | 1825 | 554 | 1600 | 867 |

8-22-67 Ran Tracer survey in String #2. Copy to be attached to history.

Present condition same as prior to remedial work except String #1 plugged @ 4749 - 4750 , and a 1 1/4" tubing fish in String #3 with top of fish at 4769 and a 1 1/4" Servco mill on top of the fish.

E. R. Murray-Aaron

October 10, 1966

WATER-FLOOD WELL
Texaco Inc.
Brown Zone
Long Beach Field

Inglewood

Enclosed are three copies of report No. P166-1116, dated October 10, 1966, issued in answer to a proposal by Texaco Inc. to plug water flood well No. "Field" 36, Sec. 19, T. 4 S., R. 12 W., S.B.B. & M., Long Beach field.

The base of the fresh water sands is at about 1800'. The fresh water is protected by the 10-3/4" casing cemented at 2012' with sufficient cement to fill the annular space behind this casing to the surface.

This well was originally approved for water flood in report No. P163-905, dated July 24, 1963.

Wm. C. Bailey, Jr.

Deputy Supervisor

JFM:nw

cc John F. Matthews
Prod. Dept.

Encl.

D 092

FORM 103

SUBMIT IN DUPLICATE

26535-705 7-64 25M △ OSP

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## History of Oil or Gas Well

OPERATOR Texaco Inc. FIELD Long Beach

Well No. "FIELD" #36, Sec. 19, T. 4S, R. 12W, S.B. B. & M.

Date July 27, 1966 Signed O. W. Chonette
O. W. Chonette

P. O. Box 3337, Ventura, Calif. 642-6781 Title District Superintendent
(Address) (Telephone Number) (President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. Use this form to report a full account of all important operations during the drilling and testing of the well or during re-drilling, altering of casing, plugging, or abandonment with the dates thereof. Be sure to include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, shooting and initial production data.

Date

PURPOSE: To re-perforate String #3 from 4780' - 4850' and 4880' - 4915' for injectivity improvement.

MECHANICAL CONDITION: Total depth 5160'

Casing - 13-3/8", 61#, J-55, surface to 59'
10-3/4", 32-3/4#, J-55, surface to 2012'

#1 - 2-1/2", 6.4#, J-55, Surf. to 5146' - perforated 4590-4738' at intervals one 1/2" hole/ft.

#2 - " " " Surf. to 5126' - perforated 4240 - 4415' at intervals one 1/2" hole/ft.

#4 - " " " Surf. to 4771' - perforated 4450 - 4556' at intervals one 1/2" hole/ft.

#3 - " " " Surf. to 5133' - perforated 4780 - 4850', 4880 - 4915', 4955 - 5010', and 5035 - 5060', one 1/2" hole/ft.

Injection: The injectivity in String #3 had decreased to 0.0174 B/D/psi (Nov. 1965). This was equal to 40 B/D at 2300 psi.

1966

Contractor: Maddox Production Company, Inc.

2-22 Rigged up and ran 1-1/4" tubing in String #2. Found sand fill at 4231'.

2-23 Circulated sand out of hole to 5100'. Ran 2-3/8" scraper to 4202' where it stopped. Ran 2-1/4" scraper to 5070'. Ran 1-1/4" tubing in String #3 and found fill at 4768'. Circulated out sand to 4963'.

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AUG 4 1966
INGLEWOOD, CALIFORNIA

2-24 String #3: Circulated fill out to 5060'. The 1-1/4" tubing would not go below 5060'. Ran 1-1/4" scraper to 5060'. Rigged up Go Western to perforate. Go Western lost an expendable carrier, strip gun in String #3 at about 1500'. Ran various spears on the sand line and recovered only small pieces of the fish.

2-25 String #3: Ran spear on 1-1/4" tubing and sand line and pushed fish down about 20'. Ran 2-1/2" mill on 1-1/4" tubing.

2-26 String #3: Ran mill to 1520'. Ran 2-3/8" scraper to 1500'. Ran 2-3/16" feeler to 1650'. Ran spear to 1650' and recovered small pieces of wire. Ran 2-1/2" mill to 1520'. Milled and pushed gun to 5060' and circulated. Ran 2-3/8" feeler in String #2 and could not go below 4208'. Go Western ran 2-1/8" feeler in String #3 and could not go to bottom. Ran 2-3/16" feeler on sand line to 5060'. Go Western ran to bottom with 2-1/8" jet gun and perforated String #3 from 4915' to 4880' with 2-1/2" holes/ ft. They could not get to bottom with the next gun.

2-27 Ran 2-3/8" feeler to 4906' on sandline. Go Western ran a 1-11/16" jet gun and perforated String #3 from 4850' to 4780' with two 1/2" holes/ft.

2-28 Laid down tubing and rigged up well for injection.

Injectivity after repair: Well was placed on injection 3-1-66. From 3-21 to 3-26, the injectivity into String #3 averaged 0.221 B/D/psi (an increase of 12.7 times the prior rate). This was equal to 510 B/D at 2300 psi.

Final Mechanical Condition: Same as the initial mechanical condition except that String #3 is perforated with three 1/2" holes/ft. from 4915' to 4880' and from 4850' to 4780'.

FORM 111

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## REPORT ON PROPOSED OPERATIONS No. P 166-1116

WATER FLOOD

Mr. O. W. Chonette
P. O. Box 3337
Ventura, California

Inglewood, Calif.
October 10, 1966

Agent for TEXACO INC.

DEAR SIR:

Your proposal to plug water flood Well No. "Field" 36, Section 19, T. 4 S, R 12 W, S.B. B. & M., Long Beach Field, Los Angeles County, dated July 27, 1966, received Oct. 3, 1966, has been examined in conjunction with records filed in this office. Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES

"The present condition of the well is as follows:

1. Total depth. 5160'
2. Complete casing record, including plugs: 13-3/8", 61#, J-55, surface to 59', cmt'd.
   10-3/4", 32-3/4#, J-55, surf. to 2012', cmtd.

String #1 - 2-1/2", 6.4#, J-55, Surf. to 5146' - perforated 1 - 1/2" hole per ft.
4590' - 4738' at intervals

" #2 - " " " " " 5126' - perforated 1 - 1/2" hole per ft.
4240' - 4415' at intervals

" #4 - " " " " " 4771' - perforated 1 - 1/2" hole per ft.
4450' - 4556' at intervals

" #3 - " " " " " 5133'- perforated 3 - 1/2" holes per ft.
4780' - 4915' at intervals.
perforated 1 - 1/2" hole per ft.
4995' - 5060' at intervals.

3. Last produced. Water injection well."

PROPOSAL

"The proposed work is as follows:

1. To place a bridge plug in String #1 at 4750' to prevent undesirable fluid movement. This bridge plug is to permanently abandon String #1 below 4750'. Verbal approval to permanently abandon String #1 below 4750' with a bridge plug was obtained from your Mr. John F. Matthews, Jr. on April 14, 1966. done
2. To run injection surveys in Strings #2 & #3."

DECISION

THE PROPOSAL IS APPROVED PROVIDED THAT this Division shall be furnished within 30 days after injection is started sufficient data to confirm that the injection fluid is confined to the intended zone of injection.

JFM:nw

cc Sacramento (3)
R. J. Smith
Co. Ind. Waste Div.

Blanket Bond

W/C

E. R. MURRAY-AARON, State Oil and Gas Supervisor

By Wm C Bailey, Jr. Deputy

1T OSP

FORM 107

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS
RECEIVED
OCT 3 1966
INGLEWOOD, CALIFORNIA

# DIVISION OF OIL AND GAS

## Notice of Intention to Deepen, Redrill, Plug or Alter Casing in Well

This notice must be given before work begins; one copy only

Long Beach, Calif. July 27, 1966

DIVISION OF OIL AND GAS

In compliance with Section 3203, Chapter 93, Statutes of 1939, notice is hereby given that it is our intention to commence the work of ~~deepening~~ ~~redrilling~~ plugging ~~altering~~ casting at Well No. Field #36
(Cross out unnecessary words)

, Sec. 19, T. 4S, R. 12W, S.B. B. & M.

Long Beach Field, Los Angeles County.

The present condition of the well is as follows:

1. Total depth. 5160'

2. Complete casing record, including plugs: 13-3/8", 61#, J-55, surface to 59', cmt'd.
10-3/4", 32-3/4#, J-55, surf. to 2012', cmt'd.

String #1 - 2-1/2", 6.4#, J-55, Surf. to 5146' - perforated 1 - 1/2" hole per ft. 4590' - 4738' at intervals

" #2 - " " " " " 5126' - perforated 1 - 1/2" hole per ft. 4240' - 4415' at intervals.

" #4 - " " " " " 4771' - perforated 1 - 1/2" hole per ft. 4450' - 4556' at intervals.

" #3 - " " " " " 5133' - perforated 3 - 1/2" holes per ft. 4780' - 4915' at intervals.
perforated 1 - 1/2" hole per ft. 4995' - 5060' at intervals.

3. Last produced. Water injection well.
(Date) (Oil, B/D) (Water, B/D) (Gas Mcf/D)

The proposed work is as follows:

1. To place a bridge plug in String #1 at 4750' to prevent undesirable fluid movement. This bridge plug is to permanently abandon String #1 below 4750'. Verbal approval to permanently abandon String #1 below 4750' with a bridge plug was obtained from your Mr. John F. Matthews, Jr. on April 14, 1966.

2. To run injection surveys in Strings #2 & #3.

plug

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| | | | blanket | W | W |

P. O. Box 3337, Ventura, Calif. (Address)

Texaco Inc. (Name of Operator)

642-6781 (Telephone No.)

By O. W. Chonette
O. W. Chonette, Dist. Supt.

ADDRESS ONE COPY OF NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

39529-705 1-65 15M ② OSP

E. R. MURRAY-AARON

March 30, 1966

WATER-FLOOD WELL
Texaco Inc.
Brown Zone
Long Beach Field

Inglewood

Enclosed are three copies of report No. P 166-394, dated March 30, 1966, issued in answer to a proposal by Texaco Inc. to alter casing and return to water flood injection well No. "Field" 36, Sec. 19, T. 4 S., R. 12 W., S.B.B.&M.,Long Beach field.

The base of the fresh water sands is at about 1800'. The fresh water is protected by 10-3/4" casing cemented at 2012' with sufficient cement to fill to the surface.

This well was originally approved for injection service in report No. P 163-905 dated July 24, 1963.

Wm. C. Bailey, Jr.

Deputy Supervisor

JFM:es

cc - Mr. John Matthews, Jr.
Production Dept.

FORM 111

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## REPORT ON PROPOSED OPERATIONS No. P 166-394

WATER FLOOD

Mr. O. W. Chonette
P. O. Box 3337
Ventura, California
Agent for TEXACO INC.

Inglewood, Calif.
March 30, 1966

DEAR SIR:

Your alter casing and return proposal to to water flood Well No. "Field" 36, Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, Los Angeles County, dated Mar. 16, 1966 received Mar. 25, 1966, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES:

"The present condition of the well is as follows:

1. Total depth. 5160'
2. Complete casing record, including plugs:
   13-3/8", 61#, J-55, surface to 59'
   10-3/4", 32-3/4#, J-55, 59' to 2012'
   #1 - 2-1/2", 6.4#, J-55, Surface to 5146' - perforated 4590'-4738' at intervals one ½" hole/ft.
   #2 - 2-1/2", 6.4#, J-55, surface to 5126' - perforated 4240'-4415' at intervals one 1/2"hole/ft.
   #3 - 2-1/2", 6.4#, J-55, surface to 5133' - perforated 4780'-5060' at intervals one 1/2" hole/ft.
   #4 - 2-1/2", 6.4#, J-55, surface to 4771' - perforated 4450'-4556' at intervals one 1/2" hole/ft.
3. Last produced. Injection Well"

PROPOSAL:

"The proposed work is as follows:
To re-perforate String #3 with two 1/2" holes per foot from 4780' to 4850' and from 4880' to 4915' (K.B.)."

DECISION:

THE PROPOSAL IS APPROVED.

JFM:es

cc - Sacramento (3)
Mr. P. O. Giddens
Mr. R. J. Smith

W/S

BLANKET BOND.

E. R. MURRAY-AARON, State Oil and Gas Supervisor

By Wm C. Bailey, Deputy

18755-705 3-64 50M ⓘT OSP

FORM 107

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
MAR 25 1966
INGLEWOOD, CALIFORNIA

## Notice of Intention to Deepen, Redrill, Plug or Alter Casing in Well

This notice must be given before work begins; one copy only

Ventura Calif. March 16, 1966

DIVISION OF OIL AND GAS

In compliance with Section 3203, Chapter 93, Statutes of 1939, notice is hereby given that it is our intention to commence the work of ~~deepening, redrilling, plugging or~~ altering casing at Well No. Field #36
(Cross out unnecessary words)

, Sec. 19, T. 4 S, R. 12 W, S.B. B. & M.

Long Beach Field, Los Angeles County.

The present condition of the well is as follows:

1. Total depth. 5160'

2. Complete casing record, including plugs:

13-3/8", 61#, J-55, surface to 59'
10-3/4", 32-3/4#, J-55, 59' to 2012'
#1 - 2-1/2", 6.4#, J-55, Surface to 5146' - perforated 4590'-4738' at intervals one ½" hole/ft.
#2 - 2-1/2", 6.4#, J-55, surface to 5126' - perforated 4240'-4415' at intervals one ½" hole/ft.
#3 - 2-1/2", 6.4#, J-55, surface to 5133' - perforated 4780'-5060' at intervals one ½" hole/ft.
#4 - 2-1/2", 6.4#, J-55, surface to 4771' - perforated 4450'-4556' at intervals one ½" hole/ft.

3. Last produced. Injection Well (Date) (Oil, B/D) (Water, B/D) (Gas Mcf/D)

The proposed work is as follows:

To re-perforate String #3 with two ½" holes per foot from 4780' to 4850' and from 4880' to 4915' (K.B.).

alter casing

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| | | | Blanket | mj | mj |

1215 East San Antonio Drive
(Address) Long Beach
GArfield 3-7994
(Telephone No.)

TEXACO Inc.
(Name of Operator)
By O. W. Chonette /pds
O.W.Chonette, Dist. Supt.

ADDRESS ONE COPY OF NOTICE TO DIVISION OF OIL AND GAS IN DISTRICT WHERE WELL IS LOCATED

20501-705 4-64 15M ② OSP

# TRIANGLE SERVICE, II

RECEIVED

## SURVEY DATA SHEET

JUL 1 1964

Radioactive Tracer Survey

Order No. 603-4

Company Texaco, Inc.

Date February 14, 1964

Well "Field" #36 (String #2)

Field/Location Long Beach

Co. Rep. K. C. Smith

Survey Engr. D. Willis, D. Goldman

WELL DATA

Zero Point gnd.+10.7'

T.D. 4940'

| | SIZE | WT. | DEPTH |
|---|---|---|---|
| Casing | | | t<br>b |
| Liner | | | t<br>b |
| | | | |
| Tubing | 2 1/2" | | 4940' |

Pressure 500 psi

Tools TSI (R/A tracer)

Meter Rate _____ bpd

Flow Loss _____ bpd

Net Rate _____ bpd

Depth _____ Reset to _____

Perforations 4240' to 4330', 4346' to 4415'

| Time | Depth | Count | Avg. Count | |
|---|---|---|---|---|
| | | See attached sheet for survey procedure and conclusions. | | |

| Run No. | Type | Line Spd. | Direction | Calib. | Depth | 100% Counts |
|---|---|---|---|---|---|---|
| | | | | | | |

| Depth | Count | Depth | Count | Depth | Count | Depth | Count |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

Texaco, Inc. Field #36 (String #2)
Radioactive tracer survey
2-14-64

PURPOSE OF SURVEY

To determine if water being injected into the well at the surface or coming into the well from wells no. 1 and no. 4 at approximately 4940', is moving up above the perforations behind the pipe.

PROCEDURE

The TSI R/A tracer tool with the gamma detector spaced 4 feet below was lowered to 4200'. At this point radioactive iodine solution was injected into the tubing while water was being injected into the well. After waiting several minutes the tool was lowered slowly until an increase in radioactivity was detected.

Four separate determinations were made, each indicated increasing activity at a depth of 4260' to 4280', this activity decreasing on subsequent runs through the interval.

CONCLUSIONS

No indication could be found of water movement upwards above the perforations behind the pipe.

100

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## WELL SUMMARY REPORT

SUBMIT IN DUPLICATE

Operator TEXACO Inc. Well No. Field #36

Sec. 19, T. 4S., R. 12W., S.B. B. & M. Long Beach Field Los Angeles County.

Location 500'S and 400'W from the intersection of the centerlines of California Ave. & 33rd St.
(Give location from property or section corner, or street center lines)

Elevation of ground above sea level 91.3 feet USGS.

All depth measurements taken from top of Kelly Bushing which is 10.7 feet above ground.
(Derrick Floor, Rotary Table or Kelly Bushing)

In compliance with Sec. 3215, of the Public Resources Code, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date January 9, 1964

Signed T. R. Beauchamp

P. O. Giddens
(Engineer or Geologist)

(Superintendent)

Title District Superintendent
(President, Secretary or Agent)

Commenced drilling 10/15/63

Completed drilling 11/ 4/63

Total depth 5160' Plugged depth

Junk None

| GEOLOGICAL MARKERS | DEPTH |
|---|---|
| | |
| | |
| | |
| | |
| | |

Geologic age at total depth: Lower Pliocene

Commenced producing - (Date) Flowing/gas lift/pumping (Cross out unnecessary words)

Name of producing zone Brown

Water Injection Well

| | Clean Oil bbl. per day | Gravity Clean Oil | Per Cent Water including emulsion | Gas Mcf. per day | Tubing Pressure | Casing Pressure |
|---|---|---|---|---|---|---|
| Initial production | | | | | | |
| Production after 30 days | | | | | | |

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JAN 10 1964
INGLEWOOD, CALIFORNIA

CASING RECORD (Present Hole)

| Size of Casing (A. P. I.) | Depth of Shoe | Top of Casing | Weight of Casing | New or Second Hand | Seamless or Lapweld | Grade of Casing | Size of Hole Drilled | Number of Sacks of Cement | Depth of Cementing if through perforations |
|---|---|---|---|---|---|---|---|---|---|
| 13-3/8" | 59' | Surf. | 61# | New | Smls | J-55 | 15" | | |
| 10-3/4" | 2012' | 59' | 32.75# | New | Smls | J-55 | 15" | 235 | |
| 2-1/2" | 5146' | Surf. | 6.4# | New | Smls | J-55 | 9-7/8" | 420 | |
| Note: 4 Strings of 2½" were cemented at 4771', 5126', 5133' and 5146'. | | | | | | | | | |

PERFORATED CASING
(Size, top, bottom, perforated intervals, size and spacing of perforation and method.)

String #1 - 4590' to 4640' and 4667' to 4738'
String #2 - 4240' to 4330' and 4346' to 4415'
String #3 - 4780' to 4850', 4880' to 4915', 4955' to 5010' and 5035' to 5060'
String #4 - 4450' to 4656'

Electrical Log Depths 2012' to 5160' (Attach Copy of Log)

SPO

FORM 103

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA

DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## History of Oil or Gas Well

OPERATOR TEXACO Inc. FIELD Long Beach

Well No. Field #36, Sec. 19, T. 4S., R. 12W., S.B. B. & M.

Date January 9, 1964 Signed T. R. Beauchamp

1215 E. San Antonio Dr.
Long Beach 7, Calif. (Address) Garfield 3-7994 (Telephone Number) Title District Superintendent (President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. Use this form to report a full account of all important operations during the drilling and testing of the well or during re-drilling, altering of casing, plugging, or abandonment with the dates thereof. Be sure to include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, shooting and initial production data.

| Date | |
|---|---|
| 1963 | CONTRACTOR - ATLANTIC OIL COMPANY |
| 10/15 | Spudded at 3:00 AM and drilled a 10-5/8" hole to 1337'. There was 20' of 16" conductor pipe in place. |
| 10/16 | Drilled to 1340', set whipstock #1 and drilled to 1758'. |
| 10/17 | Drilled to 2026' and opened the hole to 15" to 1391'. |
| 10/18 | Opened the hole to 2025'. Ran 48 joints (1953') of 10-3/4", 32.75#, J-55 casing with one joint of 13-3/8", 54.5#, J-55 casing on top. Cemented with the shoe at 2012' with 185 sacks of class A cement mixed 1 to 1 with possolan plus 18% gel followed with 50 sacks of neat cement (1210 cubic feet of slurry). Cement returned to the surface. |
| 10/19 | Installed blowout prevention equipment and tested the casing to 800 psi for 15 minutes. Drilled a 9-7/8" hole to 2261'. |
| 10/20 | Drilled to 2373', set whipstock #2 and drilled to 2552'. |
| 10/23 | Drilled to 3835', set whipstock #3 and drilled to 3891'. |
| 10/24 | Drilled to 3942' and changed from a fresh water-gel mud to a lignosulfonate salt water mud using lease produced water. |
| 10/27 | Drilled a 9-7/8" hole to 5160' (total depth). |
| 10/28 | Ran an electric log. Ran a bit to bottom and laid down the drill string. Ran a string of 2-1/2" to 5150' and started a second string. The collars would not pass. Pulled the 2-1/2" casing and sent all the 2-1/2" to have the collars tapered to feather edges. The casing collars were tapered on the upper side with a 1/8" flat shoulder. The shoulders had to be eliminated. |

DIVISION OF OIL AND GAS
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10/29 Picked up the drill string, ran a bit to 5160' and circulated.

10/30 Laid down the drill string and ran 2-1/2" casing String #1 to 5146' (164 joints) and hung in the North hole of the suspension plate. Used a guide shoe and a float collar one joint up. Ran String #2 to 5126' (164 joints) and hung in the West hole of the suspension plate. Used a bull plug shoe and Otis type A sliding sleeves at 4210', 4432', 4560' and 4749'. The sliding sleeves were closed.

10/31 Ran String #3 to 5133' (163 joints) and hung in the East hole of the suspension plate. Used a bull plug shoe. Ran String #4 to 4771' and hung in the South hole of the suspension plate. Used a bull plug shoe. Cemented through String #1 with 240 sacks of class A cement mixed 1 to 1 with pozzolan plus 18% gel followed with 130 sacks mixed 1 to 1 with pozzolan plus 4% gel (1875 cubic feet of slurry). Cement did not return to the surface. Ran 3/4" line pipe to 60' and pumped in 50 sacks of neat cement. Cement returned to the surface. Removed the 13-3/8" casing head and suspension plate.

11/ 1 Ran 1-1/4" drill pipe with Otis actuators and opened the sliding sleeve at 4749' and squeeze cemented with 50 sacks. Breakdown pressure - 800 psi. Final pumping pressure - 3500 psi. Closed the sleeve and circulated. After 3 hours, opened the sleeve and tested to 2000 psi. Closed the sleeve and pulled up.

11/ 2 Opened the sleeve at 4560' and squeeze cemented with 50 sacks. Pumping pressure - 2300 psi. Final pumping pressure - 2900 psi. Closed the sleeve. After 5-1/2 hours, opened the sleeve and broke down the cement with 800 psi. Re-squeeze cemented with 50 sacks. Final pumping pressure - 2700 psi. Closed the sleeve and pulled up. Opened the sleeve at 4432' and started to squeeze cement. The pumping truck broke down after 15 sacks were pumped in. Closed the sleeve and backscuttled. Opened the sleeve and squeeze cemented with 50 sacks. Breakdown pressure - 2000 psi. Final pumping pressure - 2500 psi. Closed the sleeve.

11/ 3 After 5 hours, re-squeezed with 50 sacks. Breakdown pressure - 1800 psi. Final pumping pressure - 2500 psi. Closed the sleeve and pulled up. Opened the sleeve at 4210' and squeeze cemented with 65 sacks. Breakdown pressure - 2700 psi. Final pumping pressure - 1500 psi. Closed the sleeve. After 5 hours, re-squeezed with 65 sacks. Final pumping pressure - 1800 psi. Closed the sleeve, lowered the drill pipe to 4470' and circulated. Pressure tested the casings. Strings #1, #2 and #4 held 4000 psi. String #3 would not hold pressure.

11/ 4 Ran a plug on a wire line which set in collars. Found the leak in String #3 at the shoe. Apparently the cement bull plug shoe had been damaged while being run. Set a 2-1/2" cast iron bridge plug at 5080' and tested the string to 4000 psi. Released the rig.

11/19 Rigged up to perforate. The individual strings were directionally perforated as follows:

| | |
|---|---|
| #1 | 4590' to 4640' and 4667' to 4738' |
| #2 | 4240' to 4330' and 4346' to 4415' |
| #3 | 4780' to 4850', 4880' to 4915', 4955' to 5010', and 5035' to 5060' |
| #4 | 4450' to 4556' |

One 1/2" jet hole per foot was used. After each gun was oriented and fired, water was pumped in to make sure there was no fluid communication between strings. The crew worked only during the daylight hours. The work was completed on 12/2/63 and each string shut in until water injection can begin.

FINAL MECHANICAL CONDITION: Total Depth - 5160'.

| | | | |
|---|---|---|---|
| Casing - | 13-3/8", 61#, J-55 | | Surface to 59' |
| | 10-3/4", 32.75#, J-55 | | 59' to 2012' |
| | 2-1/2", 6.4#, J-55 | #1 | Surface to 5146' |
| | 2-1/2", 6.4#, J-55 | #2 | Surface to 5126' |
| | 2-1/2", 6.4#, J-55 | #3 | Surface to 5133' |
| | 2-1/2", 6.4#, J-55 | #4 | Surface to 4771' |

| | | |
|---|---|---|
| Perforations - One 1/2" jet hole/ft. | #1 | 4590' to 4640' |
| | | 4667' to 4738' |
| | #2 | 4240' to 4330' |
| | | 4346' to 4415' |
| | #3 | 4780' to 4850' |
| | | 4880' to 4915' |
| | | 4995' to 5010' |
| | | 5035' to 5060' |
| | #4 | 4450' to 4556' |

Note: All measurements were from the Kelly Bushing.

POG:tb

DIVISION OF OIL AND GAS
RECEIVED
OCT 21 1963
INGLEWOOD, CALIFORNIA

State of California
The Resources Agency of California
REGIONAL WATER POLLUTION CONTROL BOARD NO. 4
217 West First St.- Room 907- Los Angeles 90012
October 18, 1963

Texaco, Incorporated
1215 E. San Antonio Drive
Long Beach 7, California
Attn:T.R. Beauchamp

Re:Reinjection, Oil Field Brine, Long Beach Field - Texaco, Inc. - (File 63-118)

Gentlemen:

Reference is made to our letter dated September 13, 1963, which transmitted a draft of tentative requirements for the wastes discharged at the subject site.

Pursuant to Section 13054 of the Water Code of the State of California, this Regional Water Pollution Control Board at its meeting held on October 16, 1963, reviewed these tentative requirements, considering all factors in the case, and adopted Resolution 63-50 (copy attached) prescribing requirements for this waste discharge.

Very truly yours,

REGIONAL WATER POLLUTION CONTROL BOARD NO. 4

Linne C. Larson

LINNE C. LARSON, Executive Officer

LCL:V
encl.
cc:Long Beach Water Department
State Div.Oil & Gas,Inglewood
State Dept.Water Resources
State Dept. of Public Health

FORM R-1

State of California
Resources Agency
REGIONAL WATER POLLUTION CONTROL BOARD NO. 4
Los Angeles Region

RESOLUTION NO. 63-50

PRESCRIBING REQUIREMENTS FOR REINJECTION OF OIL FIELD BRINE
TEXACO, INCORPORATED
Long Beach Field, Los Angeles County, California
(File 63-118)

WHEREAS, TEXACO, INCORPORATED,has filed a proposal with the State Division of Oil and Gas to convert a well for water injection (No. "Field" 36) located in Section 19, T4S, R12W, S.B.B.&M., Long Beach, Los Angeles County. This proposal by administrative procedure previously adopted is subject to joint review by the Division of Oil and Gas and this Regional Board; and

WHEREAS, the following information has been submitted by the Division of Oil and Gas with this report:

1. Fresh waters above 1800 feet will be protected by 9-5/8" casing cemented at 2000' with sufficient cement to fill in back of the pipe to the surface.

2. Site of well No. "Field" 36 is 500 feet southerly along property section line and 370 feet westerly at right angles to this line from the northwesterly corner of property, which is also 500 feet southerly along the center line of California Avenue from the center line of 33rd Street, and 400 feet westerly at right angles.

3. Saline water produced from nearby wells will be injected into the Brown Zone, Long Beach Field;

and

WHEREAS, on September 13, 1963, a letter transmitting a tentative draft of this resolution was submitted to Texaco, Incorporated, and copies thereof sent to interested persons and governmental agencies with the advice that objections thereto would be considered by this Board if submitted in writing on or before October 15, 1963; and

WHEREAS, objections and recommendations received have been reviewed and considered by the Board;

NOW, THEREFORE, BE IT RESOLVED, that in order to prevent a condition of pollution in the receiving waters and to prevent the creation of a nuisance in the disposal area, this Regional Water Pollution Control Board, in accordance with authority granted by Division 7 of the Water Code of the State of California, prescribes the following requirements with respect to the proposed saline injection by Texaco, Incorporated, at this site, subject to the provisions of the Water Code, which reads in part that requirements may be revised from time to time:

1. Saline waters shall be confined to disposal sites and in no event shall be permitted to flow upon the surface of the ground, enter water courses or drainage ditches.

2. Waste discharged shall be confined to the substances as defined.

3. All applicable ordinances, laws, rules and regulations of public agencies shall be complied with in the construction, operation and maintenance of the proposed discharge; and

BE IT FURTHER RESOLVED, that in prescribing these requirements, it is the intent of this Board to:

1. Preserve the quality of the receiving waters, insofar as they may be affected by this waste discharge, suitable for such beneficial uses for which they may be utilized.

2. Prevent the creation of a nuisance as a result of the proposed injection; and

BE IT FURTHER RESOLVED, that these requirements do not authorize the commission of any act resulting in injury to the property of another; and

BE IT FURTHER RESOLVED, that Texaco, Incorporated, be further advised that these requirements do not exempt the operator of this waste disposal facility from compliance with any other law which may be applicable. The requirements are not a permit; they do not legalize this waste disposal facility, and they leave unaffected any further restraint on the disposal of wastes at this site which may be contained in other statutes; and

BE IT FURTHER RESOLVED, that the Executive Officer of this Board be authorized and he is hereby directed, to certify and submit copies of this Resolution to Texaco, Incorporated, and to such individuals and agencies as may have need therefor or as may request same.

I, Linne C. Larson, Executive Officer of the Los Angeles Regional Water Pollution Control Board, State of California, do hereby certify that the foregoing is a full, true and correct copy of a resolution adopted by the Los Angeles Regional Water Pollution Control Board at the Board Meeting held on October 16, 1963.

LINNE C. LARSON
Executive Officer

RMH:IF
9-13-63

September 16, 1963

Mr. Fred W. Baxter
Administrative Officer
City of Signal Hill
2175 Cherry Avenue
Signal Hill, California

Dear Mr. Baxter:

Texaco Inc. has informed me that you wish assurance that proper means will be taken to protect fresh water before considering approval of its proposal to drill well No. "Field" 36, Sec. 19, T. 4 S., R. 12 W., S.B.B.& M.,Long Beach field.

Under the "California Laws for Conservation of Petroleum and Gas", the Division of Oil and Gas is responsible for the protection of fresh water reservoirs from pollution or contamination due to subsurface oil and gas operations. Sections 3106, 3220 and 3224 of the Public Resources Code cover these responsibilities. (See enclosed pamphlet.)

Any proposal to drill a well in California for oil, gas, secondary recovery of oil, or waste water disposal must contain an adequate protection plan for fresh water or it is not approved. This applies to Texaco's well No. "Field" 36.

I might add that the California Regional Water Pollution Control Board and the Department of Water Resources work through the Division of Oil and Gas for prevention of contamination of fresh waters due to subsurface oil and gas well operations.

Sincerely,

WM. C. BAILEY
Deputy Supervisor

WCB:rw

Encl

cc Mr. P. O. Giddens, Texaco Inc.

State of California
Resources Agency
REGIONAL WATER POLLUTION CONTROL BOARD NO. 4
217 W. First St.-Room 907-Los Angeles 12,Calif.

**September 13, 1963**

DIVISION OF OIL AND GAS
RECEIVED
SEP 17 1963
INGLEWOOD, CALIFORNIA

"Field" 36

**Texaco, Incorporated**
**1215 East San Antonio Drive**
**Long Beach 7, California**
**Attn: T. R. Beauchamp**

Re: Tentative Requirements - **Reinjection,Oil Field Brine, Long Beach Field - Texaco,Inc.(File 63-118)**

**Gentlemen:**

Reference is made to **Report on Proposed Operations P163-905, dated July 24, 1963, submitted by Division of Oil and Gas,** which in accordance with administrative procedures adopted by this Regional Water Pollution Control Board is accepted as a Report of Waste Discharge, filed with this Board in accordance with Section 13054 of the Water Code of the State of California.

The subject waste discharge has been investigated, and based upon this investigation, the enclosed draft of tentative requirements has been prepared for consideration by this Board.

In accordance with established administrative procedures this Board, at its next regular meeting to be held on **Wednesday, October 16, 1963, at 10 A.M., in the City Council Chambers, City Hall, 225 West Third Street, Oxnard, California,** will consider objections submitted in writing to any or all portions of the attached tentative requirements.

The Board will also consider reports and/or recommendations of State and local governmental agencies, facts brought out by protests, and the attached tentative requirements, and then will take final action by prescribing requirements for this waste discharge.

Should objections be received which appear to have merit, the Board at its discretion may order further investigations before taking final action in prescribing requirements for the subject waste discharge.

Very truly yours,

**LINNE C. LARSON, Executive Officer**

By Raymond M. Hertel
**RAYMOND M. HERTEL**
**Senior Water Pollution Control Engr.**

**RMH:IF**
**Encl.**
**cc: State Div.Oil&Gas,Inglewood**
**State Dept.of Public Health**
**State Dept.of Water Resources**
**Long Beach Water Department**

✓ KK 9-17-63

FORM T-2

TENTATIVE

State of California
Resources Agency
REGIONAL WATER POLLUTION CONTROL BOARD NO. 4
Los Angeles Region

RESOLUTION NO. _____

PRESCRIBING REQUIREMENTS FOR REINJECTION OF OIL FIELD BRINE
TEXACO, INCORPORATED
Long Beach Field, Los Angeles County, California
(File 63-118)

WHEREAS, TEXACO, INCORPORATED,has filed a proposal with the State Division of Oil and Gas to convert a well for water injection (No. "Field" 36) located in Section 19, T4S, R12W, S.B.B.&M., Long Beach, Los Angeles County. This proposal by administrative procedure previously adopted is subject to joint review by the Division of Oil and Gas and this Regional Board; and

WHEREAS, the following information has been submitted by the Division of Oil and Gas with this report:

1. Fresh waters above 1800 feet will be protected by 9-5/8" casing cemented at 2000' with sufficient cement to fill in back of the pipe to the surface.

2. Site of well No. "Field" 36 is 500 feet southerly along property section line and 370 feet westerly at right angles to this line from the northwesterly corner of property, which is also 500 feet southerly along the center line of California Avenue from the center line of 33rd Street, and 400 feet westerly at right angles.

3. Saline water produced from nearby wells will be injected into the Brown Zone, Long Beach Field;

and

WHEREAS, on September 13, 1963, a letter transmitting a tentative draft of this resolution was submitted to Texaco, Incorporated, and copies thereof sent to interested persons and governmental agencies with the advice that objections thereto would be considered by this Board if submitted in writing on or before October 15, 1963; and

WHEREAS, objections and recommendations received have been reviewed and considered by the Board;

BE IT FURTHER RESOLVED, that the Executive Officer of this Board be authorized and he is hereby directed, to certify and submit copies of this Resolution to Texaco, Incorporated, and to such individuals and agencies as may have need therefor or as may request same.

I, Linne C. Larson, Executive Officer of the Los Angeles Regional Water Pollution Control Board, State of California, do hereby certify that the foregoing is a full, true and correct copy of a resolution adopted by the Los Angeles Regional Water Pollution Control Board at the Board Meeting held on October 16, 1963.

LINNE C. LARSON
Executive Officer

RMH:IF
9-13-63

TEXACO
INC.

PETROLEUM PRODUCTS

DIVISION OF OIL AND GAS
RECEIVED
SEP 13 1963
INGLEWOOD, CALIFORNIA

1215 E. San Antonio Drive
Long Beach 7, California
September 12, 1963

FIELD #36 - WATER INJECTION
LONG BEACH FIELD

Mr. W. C. Bailey
Division of Oil and Gas
830 N. LaBrea
Inglewood 3, California

Dear Sir:

The City Administrator for Signal Hill wants assurance that the fresh water will be protected before we can get Signal Hill approval to drill Field #36. He indicated he would accept a letter from you showing your duties and responsibilities and the Sections of the code which apply for that assurance.

Attached is a proposed letter for your signature. It was written in an effort to save your time. I hope it is satisfactory.

Very truly yours,

P. O. Giddens

P. O. Giddens

POR-RW

E. R. MURRAY-AARON

July 24, 1963

WATER FLOOD PROJECT
TEXACO INC.
Long Beach Field
Brown zone

Inglewood

Enclosed are:

1. Copy of a letter from Texaco Inc. accepting responsibility for liability to neighboring operators for a proposed water flood in the Brown zone, Long Beach field.

2. Map showing status of adjoining operators with regard to the proposed water flood.

3. Analysis of produced waters from the various zones in the field.

4. Copy of our letter to the operator approving the plan.

5. Our report No. P 163-905, dated July 24, 1963, in triplicate, issued in answer to the operator's proposal to drill well No. "Field" 36, Sec. 19, T. 4 S., R. 12 W., S. B. B. & M., Long Beach field, as a water flood well in the Brown zone.

Please refer to our letter of November 19, 1962, disapproving the plan as originally proposed for copies of the original letter of proposal, contour map and cross-sections A-A and B-B.

The pool to be flooded is located under property controlled by Texaco Inc. Lateral confinement is provided by faults to the east and west which are believed to be barriers. Edgewater downdip confines the flood on the north. Wells across both faults are presently being produced from the Brown zone by the operator. Monthly fluid level surveys made in these wells and in wells adjacent to the injection well will provide close observation of fluid movement.

The flood will be initiated by drilling one injection well to a down structure location. Additional wells may be added if the flood progresses satisfactorily.

All wells are to be repaired when necessary and new wells completed in a manner to prevent interzonal migration of fluids. Injected water will be filtered and treated waste water from the field. The injection rate and surface pressures will be determined after the program has begun. Close observation will be kept

of the fluid level in neighboring wells to insure that the injection fluid is not raised above the Brown shale which overlies the Brown zone.

The usual notices will be required for work done on existing wells or for new wells to be drilled.

Wm C. Bailey JJZ

Deputy Supervisor

KPL:eb

Encls (5)

CC- Prod. Dept.

July 24, 1963

Mr. T. R. Beauchamp
District Superintendent
Texaco Inc.
1215 East San Antonio Drive
Long Beach 7, California

Water Flood Project
Brown Zone
Long Beach Field

Dear Mr. Beauchamp

We have your Supplementary Notice of Intention to Drill water flood well No. "Field" 36, Sec. 19, T. 4 S., R. 12 W., S. B. B. & M., Long Beach field, and your letters of November 6, 1962, and July 16, 1963, requesting this Division's approval of a proposed water flood project in the Brown zone, Long Beach field.

Your proposal is approved provided:

1. Pressure and fluid level surveys shall be made in the wells neighboring the injector before injection is started and continued thereafter to determine the movement of the injection water. Proof must be available to this Division at all times that pressure within the reservoir being flooded is safely below that necessary to raise fluid up to the fresh water zones. Such surveys shall also be conducted in those wells on the "Field" lease which produce from the Brown zone across the projected boundary faults to the east and west.

2. Accurate records are kept of the production of oil, gas and water from all wells involved and of the amounts of water injected and pressures required. This Division shall have access to all such records.

3. A monthly report on our Form 110-B is furnished this Division showing complete data as to fluid injected and pressures required. This is in addition to the regular monthly production report.

4. A notice is filed when your company intends to:

   a. Drill a water injection well (on our Form 105).
   b. Alter casing and convert a well to water injection (on our Form 107).
   c. Convert a well to water injection even though no mechanical change is required.

Specific requirements will be outlined in our reply to your notice.

5. If in the course of operations it becomes evident that permanent damage might result, the operations shall be discontinued and any recommended remedial work promptly effected.

Sincerely

Wm. C. Bailey

WM. C. BAILEY
Deputy Supervisor

KPL:eb

CC- Mr. E. R. Murray-Aaron

FORM 111

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## REPORT ON PROPOSED OPERATIONS No. P 163-905

Mr. T. R. Beauchamp
1215 E. San Antonio Drive
Long Beach 7, California
Agent for TEXACO INC.

Inglewood, Calif.
July 24, 1963

WATER FLOOD

DEAR SIR:

Your supplementary proposal to drill water flood Well No. "Field" 36, Section 19, T. 4 S., R. 12 W., S.B. B. & M., Long Beach Field, Los Angeles County, dated July 15, 1963, received July 18, 1963 has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES:

"Legal description of mineral-right lease, consisting of 60 acres, is as follows: Farm Lots 15, 22 and 33 of the American Colony Tract as per map recorded in Book 19, Page 89 of Map, Records of Los Angeles County.

Do mineral and surface leases coincide? Yes_____ No X If answer is no, attach legal description of both surface and mineral leases, and map or plat to scale.

Location of Well: 500 feet S'ly along property line and 370 feet W'ly at right angles to said section line from the NW'ly corner of property which is also 500' S'ly along the C/L of California Avenue from the C/L of 33rd St. and 400' W'ly at right angles.

Elevation of ground above sea level 91 feet USGS datum.

All depth measurements taken from top of Kelly Bushing which is 10± feet above ground."

PROPOSAL:

"PROPOSED CASING PROGRAM

| Size of Casing | Weight | Grade and Type | Top | Bottom | Cementing Depths |
|---|---|---|---|---|---|
| 9-5/8" | 32.3# | H-40, T&C | Surf. | 2000' | 2000' (to surface) |
| 2-1/2" | 6.4# | J-55, T&C | Surf. | 5125' | 5125' |

Intended zone of completion: Brown Zone (Name) 4315' to 5125' (Depth, top and bottom) Estimated total depth 5125'

Note: A 9" hole will be drilled to total depth. Three (3) strings of 2-1/2" will be run to total depth and one (1) string of 2-1/2" will be run to ±4700'. All 2-1/2" strings will be cemented in place and each selectively perforated for water injection.

It is understood that if changes in this plan become necessary we are to notify you immediately."

DECISION:

THE PROPOSAL IS APPROVED PROVIDED THAT

1. A monthly statement shall be filed with this Division on our Form 110-B showing the amount of fluid injected, pressure required, and source of injected water.
2. An analysis of the fluid to be injected shall be submitted upon request.
3. Injection shall cease if any evidence of damage or failure of water shut-off is observed, or upon written notice from this Division.
4. Fluid consistent with good drilling practice shall be used and the column of fluid maintained at all times to the surface, particularly while pulling the drill pipe.
5. Adequate blowout prevention equipment shall be installed and maintained in operating condition at all times.
6. Sufficient cement shall be used to fill back of the 2-1/2" tubing strings to the surface.
7. Temperature surveys shall be run and filed with this Division after the well has been operating for one month and thereafter every six months.

E. R. MURRAY-AARON, State Oil and Gas Supervisor

By (CONTINUED ON PAGE 2), Deputy

79186 1-63 50M SPO

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION

# DIVISION OF OIL AND GAS

## Report on Proposed Operations

No. P163-905



TEXACO INC. ~~XXXXXX~~ Company

Well No. "Field" 36, Section 19, T. 4 S, R. 12 W, S B B. & M.,

NOTE:

1. The base of the fresh water is at 1800'±. The fresh water will be protected by the 9-5/8" casing cemented at 2000' with sufficient cement to fill to the surface.
2. The water to be injected tests about 1800 G/G sodium chloride, and is water produced from neighboring wells.
3. The strata into which water is to be injected contain a mixture of oil and salt water. The salt water tests approx. 1800 G/G sodium chloride.
4. Approx. Surface Location of Well: 880' S., 1265' E. fr. NW cor. Section 19.

KL:es

cc - Company - Long Beach
Dept. of Water Resources
Regional Water Pollution Control Board

1-2-64
Giddens/Loken
Co. expects to have
equipment installed and
well on injection this month.

B/S

BLANKET BOND

FORM 111X
56220 1-62 3,500 SPO

E. R. MURRAY-AARON, State Oil and Gas Supervisor

By Wm. C. Bailey, Deputy

FORM 105

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## * Supplementary Notice of Intention to Drill New Well

This notice and surety bond must be filed before drilling begins

DIVISION OF OIL AND GAS
RECEIVED
JUL 18 1963
INGLEWOOD, CALIFORNIA

* Giddens/Loken 7-19-63 Long Beach Calif. July 15 1963

DIVISION OF OIL AND GAS - Inglewood

In compliance with Section 3203, Division III, Article 4, Public Resources Code, notice is hereby given that it is our intention to commence drilling well No. Field #36 (Water Injection), Sec. 19, T. 4S, R. 12W, SB B. & M., Long Beach Field, Los Angeles County.

Legal description of mineral-right lease, consisting of 60 acres, is as follows: Farm Lots 15, 22 and 33 of the American Colony Tract as per map recorded in Book 19, Page 89 of Map, Records of Los Angeles County.
(Attach map or plat to scale)

Do mineral and surface leases coincide? Yes ____ No X If answer is no, attach legal description of both surface and mineral leases, and map or plat to scale.

Location of Well: 500 feet S'ly (Direction) along property section line and 370 feet W'ly (Direction) at right angles to said line from the NW'ly property corner of section which is also 500' S'ly along the C/L of California Avenue from the C/L of 33 rd St. and 400' W'ly at right angles.

Suppl to drill

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| | | | Blanket | EB | EB |

Elevation of ground above sea level 91 feet USGS datum.

All depth measurements taken from top of Kelly Bushing (Derrick Floor, Rotary Table or Kelly Bushing) which is 10+ feet above ground.

## PROPOSED CASING PROGRAM

| SIZE OF CASING INCHES A.P.I. | WEIGHT | GRADE AND TYPE | TOP | BOTTOM | CEMENTING DEPTHS |
|---|---|---|---|---|---|
| 9-5/8" | 32.3# | H-40, T&C | Surf. | 2000' | 2000' (to surface) |
| 2-1/2" | 6.4# | J-55, T&C | Surf. | 5125' | 5125' |
| | | | | | |

Intended zone(s) of completion: Brown Zone (Name) 4315' to 5125' (Depth, top and bottom) Estimated total depth 5125'

Note: A 9" hole will be drilled to total depth. Three (3) strings of 2-1/2" will be run to total depth and one (1) string of 2-1/2" will be run to ±4700'. All 2-1/2" strings will be cemented in place and each selectively perforated for water injection.

**It is understood that if changes in this plan become necessary we are to notify you immediately.**

Address 1215 E. San Antonio Drive
Long Beach 7, California

Telephone Number GA 3-7994

TEXACO Inc. (Name of Operator)

By T. R. Beauchamp, Dist. Superintendent

Type of Organization Corporation (Corporation, Partnership, Individual, etc.)

27035 9-60 20M △ SPO

November 19, 1962

E. R. MURRAY-AARON

PROPOSED WATER
INJECTION PROGRAM
TEXACO INC.
WELL NO. "FIELD" 36
Sec. 19-4S-12W
Long Beach Field

Inglewood

I am enclosing the following regarding a water injection program proposed by Texaco Inc. in the Long Beach field:

1. Copy of letter from Texaco outlining the program.
2. Illustration of proposed completion method.
3. Contour map of lease.
4. Cross section A-A.
5. Cross section B-B.
6. Our P-report No. P162-1068 disapproving the plan.
7. Copy of our letter to Texaco Inc. explaining our reason for disapproving the program.

Deputy Supervisor

WCB:rw

Encls

December 12, 1962

Mr. P. O. Giddens
District Petroleum Engineer
Texaco Inc.
P. O. Box 7221
Long Beach 7, California

Proposed water flood
Texaco "Field" lease
Sec. 19, T. 4 S., R. 12 W.,
S. B. B. & M.,
Long Beach Field

Dear Mr. Giddens:

As promised at our conference on December 6, 1962, regarding the proposed water flood project at Texaco "Field" lease, Long Beach field, we have made further consideration of the data and conditions brought up at this meeting and have discussed the matter again with the Long Beach Water Department. I am sure that an amended proposal for this project could be approved if it contained the following conditions:

1. The 10¾" surface pipe shall be cemented at a point below the bottom of the fresh water sands (about 2,000 feet) with sufficient cement to reach to the surface. The injection strings are then run and cemented in accordance with your original proposal. This is to insure that salt water will be prevented from entering the fresh water sands from the injection well itself.

2. Pressure and fluid level surveys are made in the wells neighboring the injector before injection is started and continued thereafter to adequately determine the movement of the injection water. Proof must be available at all times that pressure within the reservoir being flooded is safely below that necessary to raise fluid up to the fresh water zones. Such surveys shall also be conducted, insofar as possible, in observation wells located outside the confines of the proposed flood area.

3. Written consent of the program is obtained from neighboring operators who might be affected by the water injection or a written acceptance for full responsibility by Texaco Inc. is filed with this office.

A supplementary proposal to drill well No. "Field" 36 must be filed.

Sincerely,

WM. C. BAILEY
Deputy Supervisor

WCB:eb

CC - E. R. Murray-Aaron

November 19, 1962

Mr. T. R. Beauchamp, Agent
Texaco Inc.
P. O. Box 7221
Long Beach 7, California

Notice to Drill Water Injection
Well No. "Field" 36, Sec. 19,
T. 4 S., R. 12 W., S.B.B.& M.,
Long Beach Field

Dear Mr. Beauchamp:

Your Notice of Intention to Drill New Well No. "Field" 36, Sec. 19, T. 4 S., R. 12 W., S.B.B.& M., Long Beach field, for water injection purposes, together with accompanying statements, contour maps and cross sections, was received by this office on November 14, 1962.

This Division is unable to approve this proposal for several reasons:

1. The proposed method of demonstrating a water shut-off as reported by Mr. Smith of your company in a telephone conversation with Engineer Loken of this office, whereby a pressure test would be run on only one of the four strings of 2½-inch casing, cannot be considered to satisfy the requirements of the Division of Oil and Gas.

2. The condition of many wells, both abandoned and producing, in proximity to the proposed flood area, is such that adequate protection of the overlying fresh waters, which extend to a depth of about 1800 feet in this area, as well as the overlying oil sands, cannot be ensured.

3. This Division has no evidence which would indicate that the faults, as depicted on your contour map, would serve as barriers to water migration to the east and west.

Sincerely,

WM. C. BAILEY
Deputy Supervisor

KPL:rw

Encl - Report P162-1068

cc Mr. E. R. Murray-Aaron

TEXACO
INC.

PETROLEUM PRODUCTS

DIVISION OF OIL AND GAS
RECEIVED
NOV 14 1962

P. O. Box 7221
Long Beach 7, California

November 6, 1962

PROPOSED WATER INJECTION
E. S. FIELD LEASE-LONG BEACH FIELD

Mr. W. C. Bailey
Division of Oil and Gas
830 N. La Brea
Inglewood 3, California

Dear Sir:

Texaco plans to inject produced water on its E. S. Field Lease in the Long Beach Field. The purpose of this project is to flood that portion of the Brown Zone above the "W" shale which underlies this 60 acre property. The project will be started as soon as possible. Your permission is requested.

It is our intention to drill an injection well at a low structural position and inject into four intervals through four individual strings of 2-1/2" casing. A sketch of our proposed casing and completion program is attached for your convenience, together with the required Form 105, Notice of Intention to Drill New Well.

The injected water will be confined to the Texaco property as shown on the attached structure map and cross section. There are sealing faults on the east and west of the proposed injection well. The Cherry Hill Fault provides the seal on the south. The zone is completely wet down structure to the north. There are no wells to the north which produce the Brown Zone in the fault block to be flooded.

Very truly yours,

TEXACO INC.

By: P. O. Giddens
P. O. Giddens
District Petroleum Engineer

KCS-RW

CBS

Attach. 2 copies - Structure Map
2 copies each - Cross Section, N-S & E-W
2 copies - Completion Program Sketch

FORM 111

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION
# DIVISION OF OIL AND GAS

## REPORT ON PROPOSED OPERATIONS No. P 162-1068

Mr. T. R. Beauchamp
P. O. Box 7221
Long Beach 7, California
Agent for TEXACO INC.

Inglewood Calif.
November 19, 1962

DEAR SIR:

Your proposal to drill water injection Well No. "Field" 36, Section 19, T. 4 S, R. 12 W, S B B. & M., Long Beach Field, Los Angeles County, dated Nov. 6, 1962, received Nov. 14, 1962, has been examined in conjunction with records filed in this office. Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES
"Legal description of mineral-right lease, consisting of 60.00 acres, is as follows: Farm Lots 15, 22 and 33 of the American Colony Tract as per Map recorded in Book 19, Page 89 of Maps, Records of Los Angeles County
Do mineral and surface leases coincide? Yes ____ No X ____ If answer is no, attach legal description of both surface and mineral leases, and map or plat to scale.
Location of Well: 500 feet Sly along property line and 370 feet Wly at right angles to said line from the NWly corner of property which is also 500' Sly along the C/L of California Avenue from the C/L of 33rd St. and 400' Wly at right angles.
Elevation of ground above sea level 91.28 feet U.S.G.S. datum.
All depth measurements taken from top of Kelly Bushing which is ±10 feet above ground."

PROPOSAL
"PROPOSED CASING PROGRAM

| Size of casing | Weight | Grade and Type | Top | Bottom | Cementing Depths |
|---|---|---|---|---|---|
| 13-3/8" | 61# | J-55, T&C | Surf. | 40' | |
| 10-3/4" | 40.5# | J-55, T&C | 40 | 700' | 700' (to surface) |
| 2-1/2" | 6.4# | J-55, T&C | Surf. | 5125' | 5125' (to surface) |

Intended zone of completion: BROWN ZONE (Name) 4315'± to 5125'± (Depth, top and bottom) Estimated total depth 5125'

NOTE: A 9-7/8" hole will be drilled to total depth. Three (3) strings of 2-1/2" will be run to total depth and one (1) string of 2-1/2" will be run to ±4700'. All strings will be cemented solid to the surface. See the attached sketch for further details.

It is understood that if changes in this plan become necessary we are to notify you immediately."

DECISION
THE PROPOSAL IS NOT APPROVED.

KPL:omh

cc Company - Long Beach

E. R. MURRAY-AARON, State Oil and Gas Supervisor

By _____ Deputy

Blanket Bond

54357 12-61 50M SPO

FORM 105

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## Notice of Intention to Drill New Well

This notice and surety bond must be filed before drilling begins

DIVISION OF OIL AND GAS RECEIVED
NOV 14 1962
037-00410
INGLEWOOD, CALIFORNIA

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| | | | Blanket | | |

Long Beach, Calif. November 6, 1962

DIVISION OF OIL AND GAS "Field "36

In compliance with Section 3203, Division III, Article 4, Public Resources Code, notice is hereby given that it is our intention to commence drilling well No. FIELD #36 Water Injection, Sec. 19, T. 4S, R. 12W, SB B. & M., Long Beach Field, Los Angeles County.

Legal description of mineral-right lease, consisting of 60.00 acres, is as follows: Farm Lots (Attach map or plat to scale)

15, 22 and 33 of the American Colony Tract as per Map recorded in Book 19, Page 89 of Maps, Records of Los Angeles County

Do mineral and surface leases coincide? Yes ____ No X If answer is no, attach legal description of both surface and mineral leases, and map or plat to scale.

Location of Well: 500 feet Sly (Direction) along property ~~section~~ line and 370 feet Wly (Direction)

at right angles to said line from the NWly corner of property ~~section~~ which is also 500' Sly along the C/L of California Avenue from the C/L of 33rd St. and 400' Wly at right angles.

Elevation of ground above sea level 91.28 feet U.S.G.S. datum.

All depth measurements taken from top of Kelly Bushing (Derrick Floor, Rotary Table or Kelly Bushing) which is ±10 feet above ground.

## PROPOSED CASING PROGRAM

| SIZE OF CASING INCHES A.P.I. | WEIGHT | GRADE AND TYPE | TOP | BOTTOM | CEMENTING DEPTHS |
|---|---|---|---|---|---|
| 13-3/8" | 61# | J-55, T&C | Surf. | 40' | |
| 10-3/4" | 40.5# | J-55, T&C | 40 | 700' | 700' (to surface) |
| 2-1/2" | 6.4# | J-55, T&C | Surf. | 5125' | 5125' (to surface) |

Intended zone(s) of completion: BROWN ZONE (Name) 4315'± to 5125'± (Depth, top and bottom) Estimated total depth 5125'

NOTE: A 9-7/8" hole will be drilled to total depth. Three (3) strings of 2-1/2" will be run to total depth and one (1) string of 2-1/2" will be run to ±4700'. All strings will be cemented solid to the surface. See the attached sketch for further details.

**It is understood that if changes in this plan become necessary we are to notify you immediately.**

Address P. O. Box 7221
Long Beach 7, California

Telephone Number GA 3-7994

TEXACO Inc. (Name of Operator)

By T. R. Beauchamp/mz
T. R. Beauchamp, Dist. Superintendent

Type of Organization Corporation (Corporation, Partnership, Individual, etc.)

KCS/mz
11/6/62

27035 9-60 20M △ SPO

# CalGEM Oil Well Files
# API 037-11552
# A-19

RESOURCES AGENCY OF CALIFORNIA
**DEPARTMENT OF CONSERVATION**
**DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES**

# REPORT OF WELL PLUGGING AND ABANDONMENT

Cypress, California

January 9, 2006

Craig C. Barto, Agent
SIGNAL HILL PETROLEUM, INC.
2901 Orange Avenue
Signal Hill CA 90755

Your report of the plugging and **abandonment** of well **A-19**, A.P.I. No. **037-11552**, Section **19**, T. **4**S, R. **12**W, S.B. B & M., **Long Beach** Field, **Los Angeles** County, dated **6-2-04**, received **6-03-04**, has been examined in conjunction with operations witnessed and records filed in this office.

We have determined that all of the requirements of this Division have been fulfilled relative to plugging and **abandonment** of the well, removal of well equipment and junk, and the filing of well records.

**NOTE:**

1. Surface plugging completed on **8-12-04**.
2. Surface inspection made and approved on **11-18-05**.

Hal Bopp
*State Oil and Gas Supervisor*

**By:** [signature]
**For:** R. K. Baker, *Deputy Supervisor*

BLANKET BOND

CC: Update
L.A. County Assessor
L.A. County Fire Prevention Bureau
L.B. Dept. of Building & Planning
Dept. of Oil Properties
City of Signal Hill

CJM:dt

DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

# CHECK LIST – RECORDS RECEIVED AND WELL STATUS

| | | |
|---|---|---|
| Company: | **Signal Hill Petroleum, Inc.** | Well: **A-19** |
| API#: | **037-11552** | Sec. **19**, T. **4S**, R.**12W**. S. B. B. & M. |
| County: | **Los Angeles** | Field: **Long Beach** |

| RECORDS RECEIVED | DATE |
|---|---|
| Well Summary (Form OG100) | |
| History (Form OG103) | **6/3/04** |
| Core Record (Form OG101) | |
| Directional Survey | |
| Sidewall Samples | |
| Date final records received. | |
| Electric Logs: | |
| Other: | |

**STATUS**

| | | | |
|---|---|---|---|
| Producing | ☐ | Drilling | ☐ |
| Abandoned | ☑ | Idle | ☐ |
| Reabandoned | ☐ | Other | ☐ |

**WELL TYPE**

| | | | |
|---|---|---|---|
| Oil | ☑ | Waterflood | ☐ |
| Gas | ☐ | Water Disposal | ☐ |
| Water Source | ☐ | Cyclic Steam | ☐ |
| Observation | ☐ | Steam Flood | ☐ |
| Exploratory | ☐ | Fire Flood | ☐ |
| Dry Hole | ☐ | Other | ☐ |

EFFECTIVE DATE: 8/12/2004

REMARKS:

| | ENGINEERS CHECK LIST |
|---|---|
| ☑ | Summary, History & Core Record (Dupl.) |
| ☐ | Electric Log |
| ☑ | Operator's Name |
| ☑ | Signature |
| ☑ | Well Designation |
| ☐ | Location |
| ☐ | Elevation |
| ☑ | Notices |
| ☑ | "T" Reports |
| ☑ | Casing Record |
| ☑ | Plugs |
| ☐ | Directional Survey |
| ☐ | Production/Injection (FAP Codes: ) |
| ☐ | E Well on Prod., enter EDP |
| ☑ | Surface Inspection Required 11/18/05 Ok SCH |
| ☐ | Surface inspection Waived (Island) |
| ☐ | Well site restoration deferred (common cellar) |
| ☑ | Final Letter Required AB: ☒ REAB: ☐ |
| ☐ | Other: |

| CLERICAL CHECK LIST |
|---|
| Location change |
| Elevation change |
| Form OGD121 |
| Form OGD150b (Release of Bond) |
| Duplicate logs to archives |
| Notice of Records Due |
| EDP 11/29/04 CS |
| District Date Base |
| Final Letter (OG159) 1/26/06 VM |
| Update Center CS |

**FIELD CHECK LIST**

Date Surface Inspection Completed: 11/18/05 Ok SCH

Other:

| RECORDS NOT APPROVED |
|---|
| *(Reason:)* |

| RECORDS APPROVED |
|---|
| *(Signature)* |
| RELEASE BOND |
| Date Eligible |
| *(Use date last needed records received.)* |
| MAP AND MAP BOOK |
| Map 136 1/14/05 GB |

KTL 6-1-04

F

SUBMIT IN DUPLICATE

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
**DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES**

# HISTORY OF OIL OR GAS WELL

Operator Signal Hill Petroleum, Inc. Field Long Beach County Los Angeles
Well Signal Hill West Unit A-19 , Sec 19 , T 4S , R 12W , SB B.&M.
A.P.I. No. 037-11552 Name David L. Slater (Person submitting report) Title V P / Gen Mgr. (President, Secretary or Agent)
Date 6/2 , 2004

Signature David L. Slater

2901 Orange Avenue, Long Beach, CA 90806 (Address)
(562) 595-6440 (Telephone Number)

History must be complete in all detail. Use this form to report all operations during drilling and testing of the well or during redrilling or altering the casing, plugging, or abandonment with the dates thereof. Include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests and initial production data.

| Date | |
|---|---|
| 4/5/04 | MIRU, removed equipment, washed over and removed fish from 4093' to 4105'. In cleaning out to 4353' wash tools became stuck. Recovered washover fish to 4058' with bottom at 4290'. Placed total of 60 CF Class G cement in two jobs starting at 4058' with Inspector Saw witnessing and approving BOPE and tag at 3335', pressure testing of the casing to 300 psig. Placed an additional 16 CF Class G |
| to | cement to 3234' ( per request by DOGGR Engineer Gamache) witnessed by Inspector Saw and mudding to 1880'. Detonated cavity shot 1880'-90', broke down cavity at 1.5 B/M at 900 psig. Placed 101 CF Class G cement at 1446', displaced 69 CF at 900 psig. DOGGR waived witness of job. Tagged top at 1661' with Inspector Wells waiving mudding of well and witnessing of tag. Placed 121 CF Class G cement from 810' to surface with Inspector Brandt waiving witness of work. RDMO and cleaned location. |
| 4/22/04 | Will cut and plate casing 5' below final grade. |

OG163 (8/83/GSR1/5M)

RECEIVED

JUN 3 - 2004

DIVISION OF OIL, GAS
& GEOTHERMAL RESOURCES
CYPRESS

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

No. T 104-0403

# REPORT ON OPERATIONS

Cypress, California
November 16, 2004

Craig C. Barto, Agent
SIGNAL HILL PETROLEUM, INC.
2901 Orange Avenue
Signal Hill, CA 90755

Your operations at well **A19,** A.P.I. No. **037-11552**, Sec. **19**, T. 4S., R. 12W, S.B. B. & M., **Long Beach** Field, **Los Angeles** County, were witnessed on **8/12/04**. **Grace Brandt**, representative of the supervisor, was present from **1230** to **1245**. There was also present **V. Romo, Rig Supervisor**.

Present condition of well: **11 3/4" cem 63'; 5 1/2" ld 4805', cp 80[illegible] & 4227', perf 4190' WSO, perf @ int 4236'-4805', holes 3872', 4037' & 4067', cav shot 1880'. Junk below 4058'. TD 4830'. Plugged w/cem 4058'-3235', 1890'-1661', 810'-5'.**

The operations were performed for the purpose of witnessing the plugging operations in the process of abandonment.

**DECISION:** APPROVED.

NOTE: The required Class II2M blowout prevention equipment was inspected and approved on **4/16/04**.

DEFICIENCIES: None.

CONTRACTOR: Pool California Energy Services, Inc.

CJM:bw

cc: Update

Hal Bopp
*State Oil and Gas Supervisor*

**By:** [signature]
**For:** R. K. Baker, *Deputy Supervisor*

Surface Inspection Approved 11/18/2005 JCH

OG109 3-16-99

T104-0403 cfr 11/8/04

IVISION OF OIL, GAS, AND GEOTHERMAL RESOURCI

# CEMENTING/PLUGGING MEMO

Operator Signal Hill Petroleum, Inc. Well No. A19
API No. 037-11552 Sec. 19, T. 4S, R. 12W, SB B&M
Field Long Beach, County Los Angeles. On 8/12/04,
~~Mr.~~/ Ms. Grace Brandt, representative of the supervisor, was present from 1230 to 1245.
There were also present V. Romo Rig Supervisor
Casing record of well: 11 3/4" cem 63'; 5 1/2 ld 4805', cp 808' + 4227', perf 4190' INTO, perf @ int 4236'-4805', holes 3873', 4037' + 4067', cav shot 1880'. Junk below 4058'. TD 4830. Plugged w/cem 4058'-3235', 1890'-1661'
The operations were performed for the purpose of (L)
810'-5'.

☒ The plugging/cementing operations as witnessed and reported are approved.

☐ The location and hardness of the cement plug @ _____' are approved.

Hole size: _____" fr. _____' to _____', _____" to _____' & _____" to _____'

| Casing | | | | Cemented | | | Top of Fill | | Squeezed Away | Final Press. | Perfs. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | Wt. | Top | Bottom | Date | MO-Depth | Volume | Annulus | Casing | | | |
| 5 1/2" | 17# | 0 | 4227' | 4/20/04 | t @ 1890' | 101 cf | 1661' | 1661' | 71 cf | 900# | CV 1880' |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Casing/tubing recovered: _____" shot/cut at _____', _____', _____' pulled fr. _____';
_____" shot/cut at _____', _____', _____' pulled fr. _____'.
Junk (in hole): below 4058' (4 1/2" wash pipe) backed off from 4058'
Hole fluid (bailed to) at _____'. Witnessed by _____

| Mudding | Date | bbls. | Displaced | Poured | Fill | Engr. |
|---|---|---|---|---|---|---|
| 72 | 4/16/04 | 35 | Hbg @ 3235 | | 1880' ± | M Saw |
| 72# | 4/21/04 | 50 | T @ 1661 | | Surface | Reported |
| | | | | | | |

NOTE (K) II 2M 4/16/04 4/16/04 Pressure test 5 1/2 csg with 300 psi. OK

| Cement Plugs | | Placing | Placing Witnessed | | Top Witnessed | | | |
|---|---|---|---|---|---|---|---|---|
| Date | Sx./cf | MO & Depth | Time | Engr. | Depth | Wt/Sample | Date & Time | Engr. |
| 4/15/04 | 60 ct | Hbg @ 4058 | Rptd by A. Aguilar | | 3335', | High * | 4/16/04 09:30 | M Saw |
| 4/16/04 | 15 ct | " " 3335 | " " " | " | 3235 | " | 4/16/04 14:00 | M Saw |
| 4/20/04 | 101 cf | t @ 1890' | " " | " | 1661' | | | Rpt'd by AA |
| 4/21/04 | 121 cf | t @ 810' | " | " | -5 | 11 3/4" & 5 1/2" Visual | 8/12/04 1230 | G. Brandt |

OGD10 (7/02/OSP/5M) Printed on recycled paper

* OK by M. Gamache

CONTRACTOR:

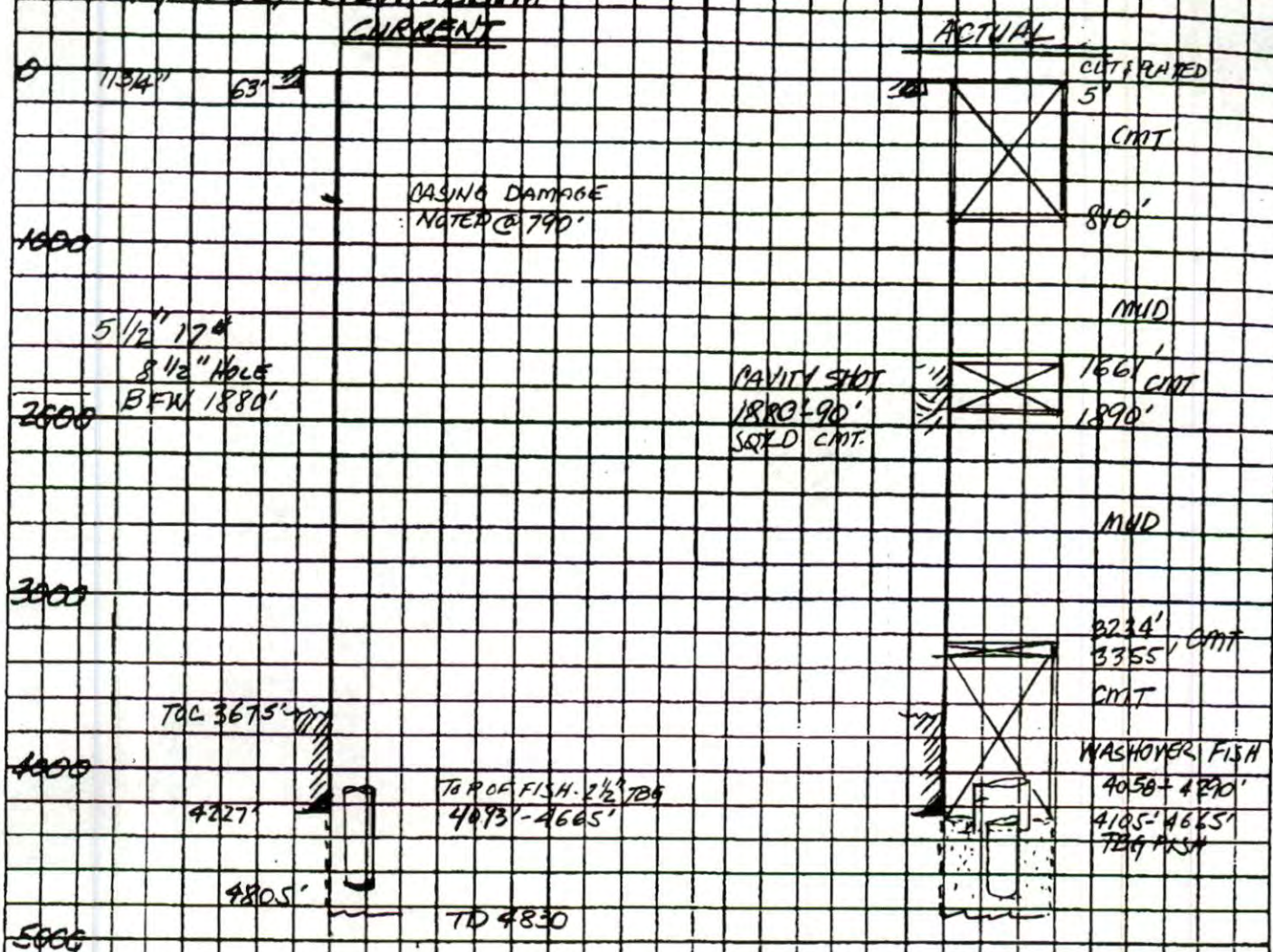
Pool

UNCORRECTABLE DEFICIENCIES:

DEFICIENCIES NOTED AND TO BE CORRECTED:

DEFICIENCIES NOTED AND CORRECTED:

API: 037-11552
ELEV: 81' MAT
SEC 19 T4S, R12W SBB&M




ABANDONED 4/22/04

SCHAUHAUPETROLEUM

SHWU A-19

| | |
|---|---|
| DATE: 5-20-04 | SCALE: |
| DWG BY: MBW | DWG NO. |

API No. 037-11552 DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES T _____

# BLOWOUT PREVENTION EQUIPMENT MEMO

Operator Signal Hill Petroleum, Inc. Well A19 Sec. 19 T. 4S R. 12W
Field Long Beach County Los Angeles Spud Date _____

| VISITS: | Date | Engineer | Time | Operator's Rep. | Title |
|---|---|---|---|---|---|
| 1st | 4/16/04 | M. Saw | ( 0910 to 0920 ) | A. Arguila | |
| 2nd | | | ( ____ to ____ ) | | |

Contractor Pool Rig # _____ Contractor's Rep. & Title _____
Casing record of well: _____

MEMO

OPERATION: ~~Testing~~ (inspecting) the blowout prevention equipment and installation. Critical well? Y ☒ N ☐
DECISION: The blowout prevention equipment and its installation on the _____ " casing are approved.

Proposed Well Opns: Abandon . MACP: _____ psi **REQUIRED BOPE CLASS:**
Hole size: _____ " fr. _____ ' to _____ ', _____ " to _____ ' & _____ " to _____ '

| CASING RECORD OF BOPE ANCHOR STRING | | | | | Cement Details | Top of Cement | |
|---|---|---|---|---|---|---|---|
| Size | Weight(s) | Grade(s) | Shoe at | CP at | | Casing | Annulus |
| | | | | | | | |
| | | | | | | | |

**BOP STACK**

| API Symb. | Ram Size (in.) | Manufacturer | Model or Type | Vert. Bore Size (in.) | Press. Rtg. | Date Last Overhaul |
|---|---|---|---|---|---|---|
| RB | 2 7/8 | Well-specialist | Duke | 8 | 3000 | |
| RA | CSO | " | " | 8 | " | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

**TEST DATA**

| Gal. to Close | Recov. Time (Min.) | Calc. GPM Output | psi Drop to Close | Secs. to Close | Test Date | Test Press. |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

**ACTUATING SYSTEM**

Accumulator Unit(s) Working Pressure _____ psi
Total Rated Pump Output _____ gpm Fluid Level
Distance from Well Bore _____ ft. _____

| | Accum. Manufacturer | Capacity | Precharge |
|---|---|---|---|
| 1 | | gal. | psi |
| 2 | | gal. | psi |

**CONTROL STATIONS**

| | | Elec. | Hyd. | Pneu. |
|---|---|---|---|---|
| | Manifold at accumulator unit | | | |
| | Remote at Driller's station | | | |
| X | Other: Hand pump | | | |

**EMERG. BACKUP SYSTEM**

| | | | Press. | Wkg. Fluid |
|---|---|---|---|---|
| ☒ | $N_2$ Cylinders | 1 L= 31 " | 2M | gal. |
| ☐ | Other: | 2 L= " | | gal. |
| | | 3 L= " | | gal. |
| | | 4 L= " | | gal. |
| | | 5 L= " | | gal. |
| | | 6 L= " | | gal. |
| | | TOTAL: | | ga |

**HOLE FLUID MONITORING**

| | | Alarm Type: Audible | Alarm Type: Visual | Class |
|---|---|---|---|---|
| | Calibrated Mud Pit | | | A |
| | Pit Level Indicator | | | |
| | Pump Stroke Counter | | | B |
| | Pit Level Recorder | | | |
| | Flow Sensor | | | C |
| | Mud Totalizer | | | |
| | Calibrated Trip Tank | | | |
| | Other: | | | |

TOTAL:

**AUXILIARY EQUIPMENT**

| | No. | Size (in.) | Rated Press. | Connections: Weld | Connections: Flange | Connections: Thread | Test Press. |
|---|---|---|---|---|---|---|---|
| | Fill-up Line | | | | | | |
| X | Kill Line | 2 | 2M | | | X | |
| X | Control Valve(s) | 2 | | | | X | |
| | Check Valve(s) | | | | | | |
| | Aux. Pump Connect. | | | | | | |
| | Choke Line | | | | | | |
| | Control Valve(s) | | | | | | |
| | Pressure Gauge | | | | | | |
| | Adjustable Choke(s) | | | | | | |
| | Bleed Line | | | | | | |
| | Upper Kelly Cock | | | | | | |
| | Lower Kelly Cock | | | | | | |
| | Standpipe Valve | | | | | | |
| | Standpipe Press. Gau. | | | | | | |
| X | Pipe Safety Valve | 2 1/16 | | | | | |
| | Internal Preventer | | | | | | |

| Hole Fluid Type | Weight | Storage Pits (Type & Size) |
|---|---|---|
| | | |
| | | |

REMARKS AND DEFICIENCIES: _____

OGD9 (9/00)

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

No. P 104-0102

412 (Field Code)

06 (Area Code)

-- (New Pool Code)

25 (Old Pool Code)

# PERMIT TO CONDUCT WELL OPERATIONS

Craig C. Barto, Agent
SIGNAL HILL PETROLEUM, INC.
2901 Orange Avenue
Signal Hill CA 90755

Cypress, California
March 2, 2004

Your proposal to **abandon** well **A19**, A.P.I. No. **037-11552**, Section **19**, T. **4S**, R. **12W**, **S.B.** B. & M., **Long Beach** Field, **Old** area, **--** pool, **Los Angeles** County, dated **2-23-04**, received **2-23-04** has been examined in conjunction with records filed in this office.

**THE PROPOSAL IS APPROVED PROVIDED:**

1. Blowout prevention equipment with hydraulic controls, equivalent to this Division's Class **II2M** requirements, or better, shall be installed and maintained in operating condition.
2. All portions of the well not plugged with cement shall be filled with clay base mud having a minimum density of 72 lb/cu ft and a minimum gel-shear strength of 25 lb/100 sq ft.
3. The cavity shot proposed to be at **1801'** shall be at **1880'**.
4. This Division shall be consulted and a Supplementary Notice may be required before making any changes in the proposed program.
5. **THIS DIVISION SHALL BE NOTIFIED TO:**
   a. Inspect the installed blowout prevention equipment prior to commencing downhole operations.
   b. Witness the placing, location and hardness of the cement plug from **4123'** to **3773'**.
   c. Witness the mudding of the hole.
   d. Witness the placing, location and hardness of the cement plug from **1880'** to **1680'**, with sufficient cement to fill to **1680'** behind casing.
   e. Witness the location and hardness of the cement plug at **690'**.
   f. Witness the placing, location and hardness of the cement plug from **100'** to **surface**.
   g. Inspect and approve the cleanup of the well site within 60 days after placement of the surface plug.

**NOTE:**

1. The proposed surface plug shall not contain rock or gravel.

4-16-04 MS Telcon w/ Vince Ramno. Hung tbg @ 4058, pumped 60 cf, TTOC 3600'. Tagged @ 3335'. Note: 1st stage tbg 4058', pumped 31cf (probably did not displace enough) TTOC 3828. Second stage tbg 3810', pumped 31 cf (but probably more because of 1st stage) TTOC 3600. Tagged 3335'. They will place another 100' plug on top of this suspect plug. DOG to tag. Also they now want to place a cement plug from 810' to surface, DOG to witness placement.

4-15-04 MS Telcon w/ Vince Ramno 562.577.4897 cell
2 7/8" tbg sanded in, freepointed @ 4123, shot off @ 4123'. Tried to wash over, got stuck, wash over pipe (4 1/2") @ 4058'. Will lay a plug from 4058' - 3673', DOG to witness placing & tag. Note: 11 days of fishing.

DS:ds
cc: Update
EDP
City Signal Hill
BLANKET BOND

Engineer: D. Sanchez

Phone: 714/816-6847

Hal Bopp
*State Oil and Gas Supervisor*

By _____
For R. K. Baker, *Deputy Supervisor*

**A copy of this permit and the proposal must be posted at the well site prior to commencing operations. Records for work done under this permit are due within 60 days after the work has been completed or the operations have been suspended.**

OG 111

STATE OF CALIFORNIA
DEPARTMENT OF CONSERVATION

06/05 KCL 2-23-04

# DIVISION OF OIL AND GAS

## Notice of Intention to Abandon Well P# 104-0102

| FOR DIVISION USE ONLY | | | |
|---|---|---|---|
| CARDS | BOND | FORM OGD114 | FORM OGD121 |
| — | BB VB | 2/26/04 | 2/23/04 |

DIVISION OF OIL AND GAS

In compliance with Section 3229, Division 3, Public Resources Code, notice is hereby given that it is our intention to abandon well Signal Hill West Unit A-19, API No. 037-11552

Sec. 19, T. 4S, R. 12W, SB B. & M., Long Beach Field, Los Angeles County.

commencing work on Mar-04

The present condition of the well is:

1. Total depth 4830'
2. Complete casing record, including plugs and perforations (present hole)
   See Attached Casing Plat
3. Last produced Sep-87 (Date) (Oil, B/D) (Gas, Mcf/D) (Water, B/D)

   or

4. Last injected (Date) (Water, B/D) (Gas, Mcf/D) (Surface Pressure)

Additional data for dry hole (show depths):

5. Oil or gas shows
6. Stratigraphic markers
7. Formation and age at total depth
8. Base of fresh water sands 1880 1811'

9. Is this a critical well according to the definition on the reverse side of this form? x Yes No

The proposed work is as follows: Propose to Abandon.

MIRU, remove equipment, install BOPE and notify DOGGR. Clean out well to 4095'. Place Class G cement plug to 3773', tag for DOGGR. Mud to 1811', detonate cavity shot 1801'-11', place and squeeze 200' Class G cement inside and outside casing (retainer may be required), tag for DOGGR. Mud to surface, place Class G cement from 810'-690', tag for DOGGR, place Class G cement from 100' to surface, cut and plate casing 6' below final grade. Clean location.

**It is understood that if changes in this plan become necessary we are to notify you immediately.**

Address 2901 Orange Avenue (Street)

Long Beach (City) California (State) 90806 (Zip)

Telephone Number (562) (Area Code) 595-6440 (Number)

Fax: (562) 426-4587

Signal Hill Petroleum, Inc. (Name of Operator)

By David L. Slater, Vice President / General Manager. (Print Name)

David L. Slater (Signature) 02/23/04 (Date)

SIGNAL HILL PETROLEUM

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Name:** | A19 | Type: | Oil | Location: | | RMA: Field lease |
| Unit: | West | Sec/Tw/R | 19 | 4s | 12w | |
| API number: | 03711552 | Lambert N | 4041.8 | E: | 4236.63 | |
| Former name: | Field 27 | Street | 500' S. & 300' W. c/l 33rd & Calif. | | | |
| Former operator: | Texaco | Compl./ spud date: | ######## | 7/8/1953 | | idle since |
| City: | Signal Hill | Original or Redrill: | Original | | | 10/1/1987 |
| | | Current Status/as of: | idle | ######## | | |

| Elevations: | PBTD | TD | TVD | MAT | KB | DF |
|---|---|---|---|---|---|---|
| | | 4830 | | 81 | 92 | |

| Logs Available: | electric | caliper |
|---|---|---|
| Date of logs: | 1953 | 1987 |
| Logging company: | Haliburton | Tiger |

**CASING**

| size | top | base | wt/grade | sx cmt | hole size | top cmt |
|---|---|---|---|---|---|---|
| 11.75 | 0 | 603 | 40.5 | 25 | unk | 0 |
| 5.5 | 0 | 808 | 17 | 180 | 10.625 | 0 |
| 5.5 | 808 | 4227 | 17 | 111 | 8.5 | 3675 |
| | | **Liners** | | | | |
| 5.5 | 4227 | 4830 | 17 | lld | | |
| OPEN HOLE 4805 - 4830 | | | | | | |

Effective Perforated Intervals

| Top | Base | Type | Zone | Sand | ft open | completion |
|---|---|---|---|---|---|---|
| 4236 | 4303 | 80mesh | BRN | TUB | 67 | original |
| 4346 | 4446 | 12 row | BRN | P | 100 | original |
| 4511 | 4641 | 6"ctr | BRN | S | 130 | original |
| 4706 | 4805 | 2.5" slots | BRN | T-U | 99 | original |
| 4805 | 4830 | OPEN | BRN | V | 25 | original |

| MD | Zone | Casing notes |
|---|---|---|
| | | 11.75" conductor @ 63' cmt to surf. |
| | | See notes 7 & 8 |
| | | DV collar @ 808' |
| 1000 | | cmt w/ 180 sacks to surface |
| BFW 1811' | | |
| 2000 | | 5.5", 17# csg |
| 3000 | | |
| 3105 | TLW | |
| 3362 | TAL | |
| 3530 | I | |
| | | calc toc 3675' |
| 3829 | K | |
| 3932 | M | WSO 4190' |
| 4000 | | csg holes see# 8 |
| 4168 | BS | fill to 4095' |
| 4228 | TUB | top of fish 4123' |
| 4340 | P | Port collar @ 4227' |
| | | cmt w/ 110 sacks |
| 4512 | S | 5.5" 17# liner |
| 4632 | T | perfs from 4236- 4805. ✓ |
| 4742 | U | open hole |
| 4800 | V | 4805 to 4830 |
| 5000 | | TD 4830 |

Notes

1) No formal DOG history in our files.
2) 1953 IP: 62 BOPD, 21 4 gravity, 42% WC.
3) 10.625" hole 63' to 1607', 9.875" hole 1607 - 2529, 8.5" hole2529 - 4830
4) 9/2/87 pump stuck , rods parted, unable to fish, left 2-3/4" rods & pump in tubing.
5) 9/11/87: Tbg stuck, Dialog found free point @ 4123, chem cut @ 4123'. Tag fill @ 4095', attempt to circulate found holes in 5.5" csg.
6) Fish consists of: 17 jts 2.875" buttress, pump shoe, 1jt 2.875" 8 round with 2 - 3/4" rods and pump inside. Pump 2.5"X 2"X 24'.
7) Casing may be parted @ 790' ( Dialog 1987)
8) Holes in casing reported @ 3873', 4037', and 4067'. (source: undated plat notes, agrees with blips on caliper log)

WSO

Mechanical Detail as of 1/30/2001 Prepared by: BWD

FILL ABOVE TOP PERF – TRY TO TEST @ 300 PSIG

NOWCAM SERVICES
MIT WORK SHEET

Customer: SHP - WEST Date: 7-14-94

Well: A-19

Tubing: NONE Casing: 5½", 17#

Shot Fluid Level in Casing: 1040 Ft.

Annular Volume: .1305 Cu.Ft./Ft. Factor.

Fluid Wt. #9 Fresh Water Table: 1830 Ft.

Add 200 ft. = Final Fluid Level: 2030 Ft.

1. Final Fluid level 2030 Ft. x .1305 Cu.Ft./Ft.
   = 265 Cu.Ft. Annular Volume.
2. Max BHP = .052 x 9 lb./gal. x 2030 Ft.
   = 950 Psi.
3. Max. Well Head Pressure: 950 Psi.
4. Nitrogen Volume Factor: 50 Scf/Ft. x 265 Cu.Ft. =
5. Approximate Nitrogen Volume: 13250 Scf.
6. Pressure Chart: 320 Psi.
7. Total N2 Pumped: 5,000 Scf.
8. Pressure Guage: _____ Psi.

---

REPAIRED CSG. @ CLAMP 9-21-87

NO PERFS OPEN
TOP PERF. 4236
FISH @ 4123
FILL @ 4095

# WELL TRANSFER NOTICE

EFFEC FEBRUARY 17, 1994,
TEXACO EXPLORATION & PRODUCTION INC.
TRANS SIGNAL HILL WEST UNIT WELLS
TO
SIGNAL HILL PETROLEUM INC.

*SEE OGD156 DATED 2-28-94*

DIVISION OF OIL AND GAS
CHECK LIST - RECORDS RECEIVED AND WELL STATUS

Company Texaco Well No. A19
API No. 037-11552 Sec. 19, T. 4S, R. 12W, S.B. B.&M.
County L.A. Field Long Beach

| RECORDS RECEIVED | DATE |
|---|---|
| Well Summary (Form OG100) | |
| History (Form OG103) | |
| Core Record (Form OG101) | |
| Directional Survey | 1/7/82 (2) |
| Sidewall Samples | |
| Other | |
| Date final records received | |
| Electric logs: | |

| STATUS | | STATUS | |
|---|---|---|---|
| Producing - Oil | ___ | Water Disposal | ___ |
| Idle - Oil | ___ | Water Flood | ___ |
| Abandoned - Oil | ___ | Steam Flood | ___ |
| Drilling - Idle | ___ | Fire Flood | ___ |
| Abandoned - Dry Hole | ___ | Air Injection | ___ |
| Producing - Gas | ___ | Gas Injection | ___ |
| Idle - Gas | ___ | $CO_2$ Injection | ___ |
| Abandoned - Gas | ___ | LPG Injection | ___ |
| Gas-Open to Oil Zone | ___ | Observation | ___ |
| Water Flood Source | ___ | | |

DATE
RECOMPLETED
REMARKS

ENGINEER'S CHECK LIST

1. Summary, History, & Core record (dupl.)
2. Electric Log
3. Operator's Name
4. Signature
5. Well Designation
6. Location
7. Elevation
8. Notices
9. "T" Reports
10. Casing Record
11. Plugs
12. Surface Inspection
13. Production
14. E Well on Prod. Dir. Sur. /

CLERICAL CHECK LIST

1. Location change ___ (F-OGD165)
2. Elevation change ___ (F-OGD165)
3. Form OGD121
4. Form OG159 (Final Letter)
5. Form OGD150b (Release of Bond)
6. Duplicate logs to archives
7. Notice of Records due (F-OGD170)

UPDATE CENTER 1/27/82

BB

RECORDS NOT APPROVED
Reason:

RECORDS APPROVED to 1/18/82

RELEASE BOND
Date Eligible
(Use date last needed records were received.)
MAP AND MAP BOOK K/C

LONG BEACH OFFICE - USE REVERSE SIDE

OGD2 (12/80/DWRR/5M)

See Ownership File, Signal Hill West Unit Agreement, Texaco, Inc. (Unit Operator), for Forms 156 and 157 dated 3-14-75.

STENOGRAPHER

Date Received 10-5-53 Form 100 ✓ 101 ___ 103 ✓

Elec. Log 200 - 4832 (2) Radio Log ___

Direct. Surv. ___ Other Data Inclination sheet

Location OK

Elevation OK Steno. Dcw

ENGINEER

BOND Blanket Release ___ Date Elig ___ 150b ___

End Prem.Yr. ___ Release Requested ___ Superseded Aban. ___

HOLD BOND ___ Reason ___

___

Data Needed None

___ Final Letter ___ Eng. JLW

JLW 10-13-53

RECEIPT FOR 11

Well Summary ✓ (2)

Drillers Log ___

Core Record ___

History ✓ (2)

Elec. Log ✓ (2)

Radio Log ___

Direct.Surv. ___

Redrill ___

Deepen ___

Plug ___

Alter Csg. ___

Abandon ___

10

FORM 100.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT LOG IN DUPLICATE

FILL THIS BLANK IN WITH TYPEWRITER. WRITE ON ONE SIDE OF PAPER ONLY

DIVISION OF OIL AND GAS
RECEIVED
OCT 5 - 1953
LOS ANGELES, CALIFORNIA

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

## WELL SUMMARY REPORT

Operator The Texas Company Field Long Beach

Well No. Field #27 Sec. 19, T. 4-S, R. 12-W, S.B. B. & M.

Location 500'S'ly. & 300'W'ly. from ℄ 33rd St. and California Ave.

Elevation above sea level 92 feet. All depth measurements taken from top of K.B., which is 11.24 feet above ground.

In compliance with the provisions of Chapter 93, Statutes of 1939, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date 9-29-53

Signed R. L. Jackson

F. V. Maloney (Engineer or ~~Geologist~~) R. L. Jackson (Superintendent)

Title Agent (President, Secretary or Agent)

Commenced drilling 7-8-53 Completed drilling 7-24-53 Drilling tools ~~Cable~~ Rotary

Total depth 4830' Plugged depth --

Junk

| GEOLOGICAL MARKERS | DEPTH |
|---|---|
| | |
| | |
| | |
| | |

Commenced producing 7-28-53 (date) ~~Flowing/gas lift/pumping~~ (cross out unnecessary words)

| | Clean Oil bbl. per day | Gravity Clean Oil | Per Cent Water including emulsion | Gas Mcf. per day | Tubing Pressure | Casing Pressure |
|---|---|---|---|---|---|---|
| 7-31-53 Initial production | 62 | 21.4° | 42% | 20 | --- | --- |
| Production after 30 days | 60 | " | 40.2% | 16 | --- | --- |

CASING RECORD (Present Hole)

| Size of Casing (A. P. I.) | Depth of Shoe | Top of Casing | Weight of Casing | New or Second Hand | Seamless or Lapweld | Grade of Casing | Size of Hole Drilled | Number of Sacks of Cement | Depth of Cementing if through perforations |
|---|---|---|---|---|---|---|---|---|---|
| 11-3/4 | 63 | 0 | 40.5# | Installed as conductor pipe | | | | | |
| 5-1/2 | 4805 | 0 | 17# | new | smls. | J-55 | 10-5/8" | 110+ | 4227 |
| | | | | | | | 9-7/8", 8-1/2" | 180+ | 808 |
| | | | | | | | | | |
| | | | | | | | | | |

PERFORATIONS

| Size of Casing | From | To | Size of Perforations | Number of Rows | Distance Between Centers | Method of Perforations |
|---|---|---|---|---|---|---|
| 5-1/2 | 4236 ft. | 4303 ft. | 80 mesh | 12 | 6" | 2-1/2" straight slot |
| | 4346 ft. | 4446 ft. | " | " | " | " |
| | 4511 ft. | 4641 ft. | " | " | " | " |
| | 4706 ft. | 4805 ft. | " | " | " | " |
| | ft. | ft. | | | | |

Electrical Log Depths 4830 (Attach Copy of Log)

FORM 103.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
OCT 5 - 1953
LOS ANGELES, CALIFORNIA

## History of Oil or Gas Well

OPERATOR The Texas Company FIELD Long Beach

Well No. Field #27, Sec. 19, T. 4-S, R. 12-W, S.B. B. & M.

from 100

Signed R. L. Jackson

Date 9-29-53 Title Agent

(President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. **Use this form in reporting the history of all important operations at the well, together with the dates thereof, prior to the first production.** Include in your report such information as size of hole drilled to cementing or landing depth of casings, number of sacks of cement used in the plugging, number of sacks or number of feet of cement drilled out of casing, depth at which cement plugs started, and depth at which hard cement encountered. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

| Date | |
|---|---|
| 1953 | All measurements taken from K.B. which is 11.24' above ground. |
| 6-30 | Set and cemented 63' of 11-3/4" pipe as conductor pipe. |
| 7-1 to 7 | Contractor moved in and rigged up. |
| 7-8 | Spudded in at 5:00 A.M. Drilled in 10-5/8" hole. Mud Condition: weight, 84#; viscosity, 63; 11% sand; 5.8 cc/30 minutes water loss; 3/32" cake. |
| 7-9 | Changed to 9-7/8" bit at 1607' and drilled ahead. |
| 7-10 to 12 | Changed to 8-1/2" bit at 2529 and drilled ahead. |
| 7-13 & 14 | Twisted off at 3785'. Ran in and recovered fish. Mud condition: weight, 76#; viscosity, 46; 3% sand; 8.8 cc/30 minutes water loss; 2/32" cake. |
| 7-15 to 19 | Changed to emulsion mud at 4050'. Mud condition: weight, 70#; viscosity, 72; 2.8 cc/30 minutes water loss; 2% sand; 1/32" cake. |
| 7-20 | Drilled ahead in 8-1/2" hole to 4830', total depth and ran electric log. Reamed tight spots to 4750'. Mud condition: weight, 72#; viscosity, 63; 3 cc/30 minutes water loss; 2.5% sand; 1/32" cake. |
| 7-21 | Ran 154 joints, 4823' overall, of 5-1/2", 17#, J-55 casing with shoe at 4805'. C.P. Collar at 4227', differential fillup collar at 4160', and D.V. collar at 808'. Perforated: 4236-4303', 4346-4446', 4511-4641', and 4706-4805' with 80 mesh, 12 rows, 6" centers, 2-1/2" straight slots. Cemented 1st stage through C.P. collar at 4227' with 110 sax construction cement, 28 sax perlite, 4% gel. Cemented through D.V. at 808' with 180 sax construction cement, 11% gel. Good returns to surface. |
| 7-22 | Drilled out D.V. collar and baffle and cleaned out to 4200'. |
| 7-23 | Ran Gun and Tester and shot 4, 1/2" holes at 4190'. Set packer at 4141'. Open 1 hour. Recovered 5' of drilling fluid. Water shut-off witnessed and approved by the Division of Oil & Gas. Ran in and drilled out C.P. collar at 4227' and cleaned out to shoe. Drilled out shoe at 4805' and cleaned out to bottom, 4830'. Changed mud to oil and circulated. Made up and ran in with washer. Washed perforations 4805-4707'. |

FORM 103.
CALIFORNIA STATE PRINTING OFFICE

SUBMIT IN DUPLICATE

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
OCT 5 - 1953
LOS ANGELES, CALIFORNIA

## History of Oil or Gas Well

OPERATOR The Texas Company FIELD Long Beach

Well No. Field #27, Sec. 19, T. 4-S, R. 12-W, S.B. B. & M.

Form 100

Signed R. L. Jackson

Date 9-29-53 Title Agent

(President, Secretary or Agent)

It is of the greatest importance to have a complete history of the well. **Use this form in reporting the history of all important operations at the well, together with the dates thereof, prior to the first production.** Include in your report such information as size of hole drilled to cementing or landing depth of casings, number of sacks of cement used in the plugging, number of sacks or number of feet of cement drilled out of casing, depth at which cement plugs started, and depth at which hard cement encountered. If the well was dynamited, give date, size, position and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position and results of pumping or bailing.

| Date | |
|---|---|
| 7-24 | Washed perforations 4511-4641 and 4346-4446' and 4236-4303'. Laid down drill pipe and removed blowout equipment. Well showed gas and oil. Shut in and contractor moved out. |
| 7-25 | Contractor completed moving out. |
| 7-26 & 27 | Ran 2" tubing to 4700' and ran rods. Installed pumping unit. |
| 7-28 | On pump at 11:30 a.m. Pumped wash oil. |
| 7-29 | 110 bbl. wash oil. |
| 7-30 | 44 B/O in 18 hours -- wash oil considered pumped out. |
| 7-31 | 62 " 21.4° gravity, 46 B/W -- first well production. |
| 8-1 | 55 " " " 41 " |
| 8-2 | 63 " " " 33 " |
| 8-3 | 96 bbls. gross. |
| 8-30 | 60 bbls. net - 21.4° gravity - 40.2% cut. |

## CASING RECORD

11-3/4" C.P. cmtd. at 63'.
5-1/2", 17#, csg. ldd. 4805'. C.P. 4227' and 808'.
Perfd: 4236-4303'; 4346-4446'; 4511-4641';
4706-4805'.
W.S.O. at 4190'.
Note casing shoe is drilled out. Therefore, open hole from 4805 to 4830'.

4830' Total Depth

DIVISION OF OIL AND GAS
RECEIVED
OCT 5 - 1953
LOS ANGELES, CALIFORNIA

# INCLINATION SHEET

FIELD #27 LONG BEACH

| DEPTH | DRIFT |
|---|---|
| 150' | 1/2 |
| 350' | 1/2 |
| 565' | 1/2 |
| 765' | 1/2 |
| 1082' | 1/2 |
| 1292' | 1/4 |
| 1503' | 1/4 |
| 1750' | 1/2 |
| 1950' | 3/4 |
| 2167' | 1/2 |
| 2350' | 1/4 |
| 2769' | 1 |
| 3000' | 1 |
| 3200' | 1-1/2 |
| 3409' | 1-1/4 |

FORM 109-A (10-48)

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
# DIVISION OF OIL AND GAS

## Report on Test of Water Shut-off
(FORMATION TESTER)

No. T 153-912

Los Angeles 15, Calif. July 30, 1953

Mr R L Jackson
~~Mrx~~ P O Box 320
Long Beach 1 Calif.
Agent for THE TEXAS CO

DEAR SIR:

Your well No. "Field" 27, Sec. 19, T. 4 S, R. 12 W, S B B & M.
Long Beach Field, in Los Angeles County, was tested for water shut-off on July 23, 1953. Mr. G. C. Hazenbush, Inspector, designated by the supervisor, was present as prescribed in Secs. 3222 and 3223, Ch. 93, Stat. 1939; there were also present T. Carraway, Foreman; W. Spanks, Driller.

Shut-off data: 5½ in. 17 lb. casing was cemented through perforations at 4227 ft. on July 21, 1953 in 8-1/2 in. hole with 128 sacks of cement (plus 28 sacks Perlite and 4% gel.) of which 11 sacks was left in casing.

Casing record of well: 11-3/4" cem. 70'; 5-3/4" ld. 4805', c.p. 808', c.p. 4227', perf. 4236'-4303', 4346'-4446', 4511'-4641', 4706'-4805', four 1/2" holes 4190', W.S.O.

Present depth 4830 ft. Bridged with cement from 4227 ft. to 4200 ft. Cleaned out to 4200 ft. for test. A pressure of 800 lb. was applied to the inside of casing for 15 min. without loss after cleaning out to 4200 ft. A Johnston gun and tester was run into the hole on 2-7/8 in. drill pipe-~~tubing~~ with ~~xxxx~~ ft. of water-mud cushion, and packer set at 4141 ft. with tailpiece to 4163 ft. Tester valve, with 3/8 in. bean, was opened at 5:20 a.m. and remained open for 1 hr. and ~~xxxx~~ min. During this interval there was a light blow for 2 min., and no blow thereafter.

THE INSPECTOR ARRIVED AT THE WELL AT 8:00 A.M. AND MR. CARRAWAY REPORTED:

1. A 10-5/8" rotary hole was drilled from 70' to 1607'; a 9-7/8" rotary hole, 1607'-2529'; an 8-1/2" rotary hole, 2529'-4830'.
2. On July 21, 1953, 5-1/2", 17 lb. casing including perforations from 4236'-4303', 4346'-4446', 4511'-4641', 4706'-4805' was landed at 4805', and was cemented through perforations at 808' and 4227' with 180 sacks of cement plus 11% gel. and 128 sacks of cement plus 28 sacks perlite and 4% gel., respectively.
3. Cement was drilled out of the 5-1/2" casing from 4131' to 4200' (equivalent to 8 sacks), and the hole was cleaned out to 4200'.
4. The 5-1/2" casing was shot-perforated with four 1/2" holes at 4190'.

THE INSPECTOR NOTED:

1. When the drill pipe was removed, 5' of oil-base drilling fluid was found in the drill pipe above the tester, equivalent to .025 bbl.
2. The recording pressure bomb chart showed that the tester valve was open 1 hr.

The test was completed at 9:00 a.m.

THE 5-1/2" SHUT-OFF AT 4190' IS APPROVED.

GCH:OH

cc Long Beach

The Texas Co (Attention Mr T W Bell)
929 South Broadway
LOS ANGELES 15

R. D. BUSH, State Oil and Gas Supervisor

By E. H. Musser, Deputy

FORM 111 (1-49)

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

D

# DIVISION OF OIL AND GAS

## REPORT ON PROPOSED OPERATIONS

No. P 153-798

Los Angeles 15 Calif. June 24 1953

Mr. R L Jackson
P O Box 320
Long Beach 1 Calif.

Agent for THE TEXAS CO

Dear Sir:

Your proposal to drill Well No. "Field" 27,

Section 19, T. 4 S, R. 12W, S B B. & M., Long Beach Field, Los Angeles County,

dated June 19 1953, received June 22 1953, has been examined in conjunction with records filed in this office.

Present conditions as shown by the records and the proposal are as follows:

THE NOTICE STATES:
"Location of Well: 500 ft. S'ly. and 300 ft. W'ly from the center line of 33rd St. and California Ave., Signal Hill, California
Elevation of ground above sea level 92 feet.
All depth measurements taken from top of Kelly Bushing which is 12± feet above ground."

PROPOSAL:
"Proposed Casing Program

| Size of Casing | Weight | Grade and Type | Top | Bottom | Cementing Depths |
|---|---|---|---|---|---|
| 5-1/2 | 17 | J-55 | 0 | 4850± | 4600'± and 800'± |

Combination casing string perfs approx. 4600 to 4850.
Intended zone or zones of completion:

| Name | Perforated Interval |
|---|---|
| Brown | 4600 to 4850'± slotted and gun perfs at intervals from about 4200 to 4400 feet. Conduct W.S.O. @ 4160±. Division to witness. |

It is understood that if changes in this plan become necessary we are to notify you before running casing."

DECISION:
THE PROPOSAL IS APPROVED PROVIDED THAT THIS DIVISION SHALL BE NOTIFIED TO WITNESS a test of the effectiveness of the 5-1/2" shut-off at 4160'±.

cc T W Bell
Long Beach

JLW:ES

100 ✓
101 ✓ 10-5-53 JLW
103 ✓
E. Log ✓

Blanket bond.

G/A

R. D. BUSH
State Oil and Gas Supervisor

By H. Mussen ma Deputy

FORM 105

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

# DIVISION OF OIL AND GAS

DIVISION OF OIL AND GAS
RECEIVED
JUN 22 1953
LOS ANGELES, CALIFORNIA

D

## Notice of Intention to Drill New Well

**This notice and surety bond must be filed before drilling begins**

TEXACO Inc.

037-11552

Long Beach, Calif. June 19, 1953

DIVISION OF OIL AND GAS

A19

In compliance with Section 3203, Chapter 93, Statutes of 1939, notice is hereby given that it is our intention to commence the work of drilling well No. "Field" #27, Sec. 19, T. 4-S, JFM

R. 12-W, S.B. B. & M., Long Beach Field, Los Angeles County.

Legal description of lease - -

(Attach map or plat to scale)

Location of Well: 500 ft. S'ly. and 300 ft. W'ly from the center line of 33rd St. and California Ave., Signal Hill, California

(Give exact footage from section corners or other legal subdivision or streets)

Elevation of ground above sea level 92 feet.

All depth measurements taken from top of Kelly Bushing which is 12± feet above ground.

(Derrick Floor, Rotary Table or Kelly Bushing)

## PROPOSED CASING PROGRAM

| SIZE OF CASING INCHES A.P.I. | WEIGHT | GRADE AND TYPE | TOP | BOTTOM | CEMENTING DEPTHS |
|---|---|---|---|---|---|
| 5-1/2 | 17 | J-55 | 0 | 4850± | 4600'± and 800'± |
| | | | | | |
| | | | | | |
| Combination casing string perfs approx. 4600 to 4850. | | | | | |

Intended zone or zones of completion:

| NAME | PERFORATED INTERVAL |
|---|---|
| Brown | 4600 to 4850'± slotted and gun perfs at intervals from about 4200 to 4400 feet. Conduct W.S.O. @ 4160±. Division to witness. |

| MAP | MAP BOOK | CARDS | BOND | FORMS 114 | FORMS 121 |
|---|---|---|---|---|---|
| 20 JFM | JFM | Ed Blanket | EB | EB | |

It is understood that if changes in this plan become necessary we are to notify you before running casing.

Address P.O. Box 320, Long Beach, Calif. THE TEXAS COMPANY

(Name of Operator)

Telephone Number L.B. 41-623 By F. V. Maloney

DISTRICT ENGINEER

SEND ONE COPY OF NOTICE TO DIVISION OFFICE IN DISTRICT WHERE WELL IS LOCATED

# Photographs



API 037-00338, AW-1, casing OD 7", 200 ppmv methane



API 037-00338, AW-1, casing ID 6", 200 ppmv methane



API 037-00338, AW-1, casing ID 10 1/8"



API 037-00338, AW-1, OD 10 ¾"

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC



API 037-00338, AW-1, 400 ppmv methane



API 037-00338, AW-1, 400 ppmv methane exterior casing



API 037-00338, AW-1, depth from surface elevation to top of casing 16' 3"



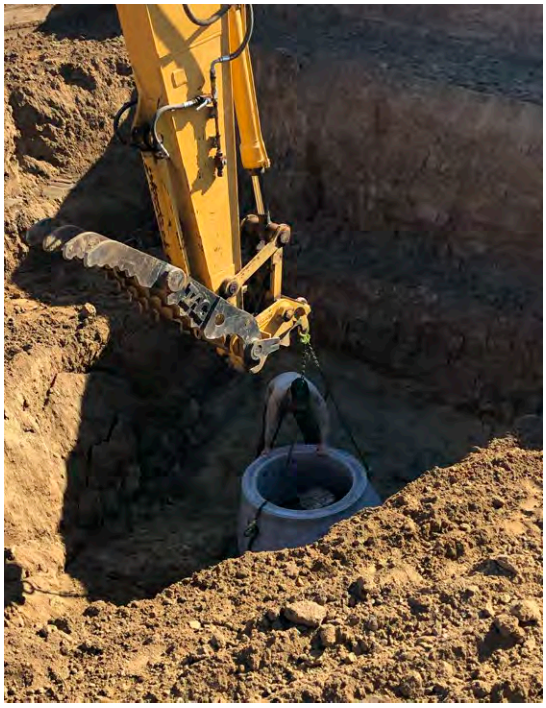
API 037-00338, AW-1, depth from surface elevation to top of casing 16' 3"

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

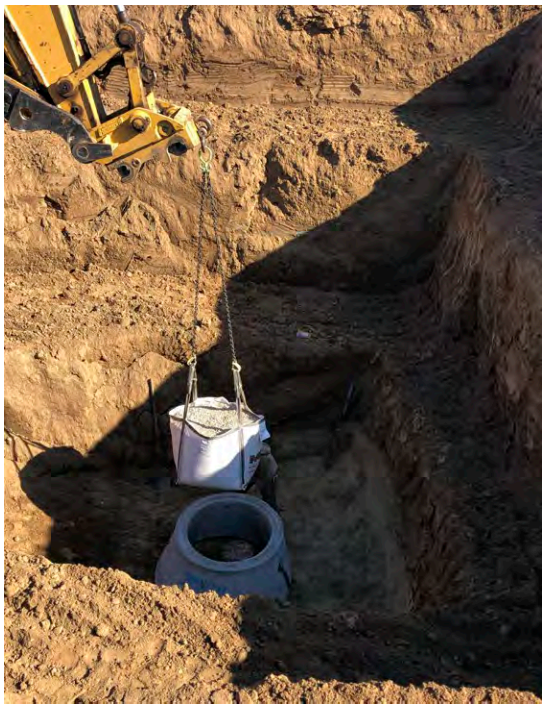
Mearns Consulting LLC



API 037-00338, AW-1, tack welding Well ID Plate to casing OD 10 ¾"



API 037-00338, AW-1, placing concrete vent cone over casing string



API 037-00338, AW-1, placing pea gravel inside concrete vent cone



API 037-00338, AW-1, placing pea gravel inside concrete vent cone

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC



API 037-00410, “Field” 36, casing OD 14", note concrete exterior of casing



API 037-00410, “Field” 36, casing ID 12 ¼"



API 037-00410, “Field” 36, 300 ppmv methane




API 037-00410, “Field” 36, casing ID 15 3/8" and OD 16", 300 ppmv methane

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC



API 037-00410, “Field” 36, 300 ppmv methane exterior of casing string



API 037-00410, “Field” 36, casing OD 16"



API 037-00410, “Field” 36, 300 ppmv methane exterior concrete



API 037-00410, “Field” 36, depth from surface elevation to top of casing 14' 2"

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC



API 037-00410, “Field” 36, depth from surface elevation to top of casing 14' 2"



API 037-00410, “Field” 36, tack welding well ID plate to top of casing



API 037-00410, “Field” 36, placing concrete vent cone over casing string



API 037-00410, “Field” 36, placing pea gravel inside concrete vent cone

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC



API 037-11552, A-19, casing OD 11 ¾"



API 037-11552, A-19, casing ID 11"



API 037-11552, A-19, casing OD 5 7/8"



API 037-11552, A-19, casing ID 4 7/8"

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC



API 037-11552, A-19, 200 ppmv methane interior casing OD 5 7/8"



API 037-00410, A-19, 200 ppmv methane, exterior casing OD 5 7/8", interior casing OD 11 ¾"



API 037-11552, A-19, 300 ppmv methane exterior casing OD 11 ¾", note seamed pipe used for casing string



API 037-11552, A-19, depth from surface elevation to top of casing 14' 5"

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC



API 037-11552, A-19, tack welding well ID plate to casing



API 037-11552, A-19, placing concrete vent cone over casing



API 037-11552, A-19, placing pea gravel inside concrete vent cone

950 E 33rd Street and
3177 California Avenue
Signal Hill, CA

Mearns Consulting LLC

# Record of Calibration

# Certificate of Calibration

The described test equipment has been calibrated and is traceable to the National Institute of Standards and Technology. The indicated work has been performed and the data obtained using traceable test equipment. This certificate may not be reproduced without written approval from LIFECOM, Inc.

| CUSTOMER: | REPAIR #: | DATE: |
|---|---|---|
| MEARNS CONSULTING | 51448 | 03-10-20 |
| **UNIT MODEL:** | **UNIT SERIAL #:** | **CUSTOMER #:** |
| GX-2012 | 489020162 | |

| SENSOR | SENSOR DATE CODE | SENSOR EXP. DATE | ALARM LEVEL | READING BEFORE CAL | | CAL DATE | READING AFTER CAL | |
|---|---|---|---|---|---|---|---|---|
| | | | | WITHOUT GAS | WITH GAS | | WITHOUT GAS | WITH GAS |
| OXYGEN (O2) | 85 | 10-20 | H 23.5 / 19.5 L | 20.9 % | 12 % | 3/10/20 | 20.9 % | 12 % |
| COMBUST. (% LEL) | 1-15 | 1-17 | H 50 / 10 L | -1 % LEL | 50 % LEL | | 0 % LEL | 50 % LEL |
| TOXIC (CO) | 98 | 10-20 | H 50 / 25 L | 0 PPM | 51 PPM | | 0 PPM | 50 PPM |
| TOXIC (H2S) | V | V | H 30 / 10 L | 0 PPM | 26 PPM | | 0 PPM | 25 PPM |
| | | | H / L | PPM | PPM | | PPM | PPM |
| | | | | | | | | |

| CALIBRATION GAS | MFG | LOT # | VALUE |
|---|---|---|---|
| OXYGEN (O2) | NLB | LCF 107-1 | 12 % |
| METHANE (CH4) | | | 50 % |
| CARBON MONOXIDE (CO) | | | 50 PPM |
| HYDROGEN SULFIDE (H2S) | | | 25 PPM |
| | | | PPM |
| | | | PPM |

TEMPERATURE: 67.6F

HUMIDITY: 63%

PUMP FLOW RATE: 1 SCFH 28788

BATTERY VOLTAGE: OK

**NEXT CALIBRATION DUE ON:** 06-10-20

This is to certify this gas detector has passed the QA Test.
Certification is void if the manufacturer's instructions for use, care and maintenance are not followed. Alterations or misuse will also void all certification and warranty.

CALIBRATION & TEST BY: HIEU TRAN

LIFECOM

5355 Industrial Drive
Huntington Beach, CA 92649
800-824-5178

# APPENDIX D:

## Traffic Impact Analysis

# Traffic Study

LINSCOTT LAW & GREENSPAN engineers

**TRAFFIC STUDY**

# TARGET CENTER RETAIL EXPANSION AND SELF-STORAGE FACILITY

**Signal Hill, California**
**February 26, 2021**

*Prepared for:*

**VENTURE POINT**
4685 MACARTHUR COURT, SUITE 375
Newport Beach, CA 92660




*Prepared by:*

Shane S. Green, P.E.
Senior Transportation Engineer
And
Megan Lam
Transportation Engineer II

LLG Ref. 2-20-4277-1




*Under the Supervision of:*

Richard E. Barretto, P.E.
Principal

**Linscott, Law & Greenspan, Engineers**
2 Executive Circle
Suite 250
Irvine, CA 92614
**949.825.6175** T
949.825.6173 F
www.llgengineers.com

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**APPENDIX**


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# EXECUTIVE SUMMARY

## Project Description

- The existing Target Center (Store T2319), addressed at 950 E. 33rd Street, is located south of E. 33rd Street, between Atlantic Avenue and California Avenue, and north of the San Diego (I-405) Freeway in the City of Signal Hill, California. The Project site consists two (2) parcels with a total land area of 15.5± acres, of which 10.1± acres is currently developed with a 135,811 square-foot (SF) free-standing discount store and surface parking supply of 538 spaces. The remaining 4.4± acres, which is generally located on the west side of California Avenue, south of the existing Target and north of the I-405 Freeway, is currently vacant.

- The proposed Project, all of which will be constructed on existing surface parking and/or vacant land, includes development of up to 23,500 SF of retail/restaurant and retail/service/medical office space within three (3) buildings and a three-story self-storage facility totaling 177,345 SF, inclusive of a lobby/guest services area. There are no plans to expand the existing Target. Upon completion of the Project, a total of 491 spaces will be provided.

- The "Drive-Thru" building is a proposed 5,000 SF restaurant pad with drive-thru that would contain one or more restaurant/food uses of which one would operate the drive-thru. The "Retail/Other" building totals 15,000 SF and would be occupied by a single tenant or a various mix retail tenant which may include "take-out" food uses, whereas the "Retail/Service/Medical Office" is a 3,500 SF building that would be occupied by either a medical/dental office or retail use; the amount of potential outdoor dining area that the Project will provide for the "Drive-Thru" is not known at this time. To provide a conservative assessment, up to 600 SF of outdoor dining area is assumed to be provided.

- The proposed three-story, 177,345 SF self-storage facility also includes the provision of up to 25 RV covered storage spaces in the gated storage yard. The proposed self-storage facility leasing office is expected to operate Monday-Friday from 9:30 am-6:00 pm, Saturday from 9:00 am-5:30 pm, and Sunday between 10:00 am-4:00 pm; access to the storage units will be available to customers/tenants Monday-Sunday, between 6:00 am-10:00 pm. Access to the gated yard for employees and tenants will be provided via gate access, Monday-Sunday, between 6:00 am-10:00 pm.

- The Project's total floor area will consist of the following:
  - 135,811 SF Target store,
  - 15,000 SF of retail/other uses,
  - 3,500 SF of retail/service/medical space,
  - 5,000 SF of restaurant uses with up to 600 SF of outdoor dining area, and
  - 177,345 SF of self-storage space

- Since a tenant mix has not been identified for the Project's 5,000 SF of restaurant floor area and up to 600 SF of outdoor dining area, the following mix/type of restaurant has been assumed and is evaluated in this study to allow for flexibility in future tenancies, along with the proposed retail and self-storage space:

| Project Option | Retail Shop | Fine/ Casual Dining/ Outdoor Dining | QSR/Fast-Casual/ Outdoor Dining | Fast-Food w/ Drive-Thru/ Outdoor Dining | Retail/ Service/ Medical Office | Self-Storage |
|---|---|---|---|---|---|---|
| ❑ Option 1 | 15,000 SF | 2,000 SF/ 300 SF | -- | 3,000 SF/ 300 SF | 3,500 SF | 177,345 SF |
| ❑ Option 2 | 15,000 SF | -- | 2,000 SF/ 300 SF | 3,000 SF/ 300 SF | 3,500 SF | 177,345 SF |
| ❑ Option 3 | 15,000 SF | -- | -- | 5,000 SF/ 600 SF | 3,500 SF | 177,345 SF |

- Vehicular access to the Project site will be provided via two (2) existing full access unsignalized driveways located on E. 33rd Street and one (1) existing full access unsignalized driveway located on California Avenue. A second access driveway on California Avenue is proposed. However, this access, which will be gated, will only be used on the occasion that an RV is to exit the facility.

- To provide a conservative assessment, the trip generation potential of all 3 options have been compared and Option 3 will be analyzed in the report. Option 3 of the proposed Project is forecast to generate approximately 2,033 daily trips, with 144 trips (80 inbound, 64 outbound) produced in the AM peak hour and 130 trips (63 inbound, 67 outbound) produced in the PM peak hour on a "typical" weekday.

## Study Area

- Eight (8) key study intersections have been identified for evaluation in collaboration with City of Signal Hill staff. The eight (8) intersections listed below, of which three (3) are located solely within the City of Long Beach, provide regional and local access to the study area and define the extent of the boundaries for this traffic impact investigation, as well as identifies the applicable jurisdiction.

| Key Intersection | Jurisdiction | |
|---|---|---|
| | City of Long Beach | City of Signal Hill |
| 1. Atlantic Avenue at 33rd Street | Long Beach | -- |
| 2. California Avenue at 33rd Street | -- | Signal Hill |
| 3. California Avenue at 32nd Street | -- | Signal Hill |
| 4. Orange Avenue at 33rd Street | -- | Signal Hill |
| 5. Orange Avenue at 32nd Street | -- | Signal Hill |
| 6. California Avenue at Spring Street | Long Beach | Signal Hill |
| 7. California Avenue at Wardlow Road | Long Beach | -- |
| 8. Orange Avenue at Wardlow Road | Long Beach | -- |

## Related Projects Description

- Thirty-eight (38) cumulative projects are expected to generate a combined total of 26,697 daily trips, 1,930 AM peak hour trips (1,119 inbound and 811 outbound) and 2,441 PM peak hour trips (1,106 inbound and 1,335 outbound) on a typical weekday.

## Traffic Impact Analysis

*Existing Traffic Conditions*

- All of the key study intersections currently operate at LOS D or better during the weekday AM and PM peak hours.

*Existing Plus Project Traffic Conditions*

- All of the key study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours under Existing Plus Project traffic conditions.

*Year 2024 Cumulative Traffic Conditions*

- One (1) key study intersection is forecast to operate adversely under Year 2024 Cumulative traffic conditions. The remaining study intersections are forecast to operate at acceptable LOS D or better during the AM and PM peak hours. The intersection operating adversely includes the following:

| | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|
| Key Intersection | ICU | LOS | Delay (s/v) | LOS | ICU | LOS | Delay (s/v) | LOS |
| 5. Orange Avenue at 32nd Street | -- | -- | -- | -- | 0.988 | E | -- | -- |

*Year 2024 Cumulative Plus Project Traffic Conditions*

- One (1) key study intersection is forecast to operate adversely under Year 2024 Cumulative Plus Project traffic conditions. The remaining study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours with the addition of project traffic. The intersection operating adversely includes the following:

| | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|
| **Key Intersection** | **ICU** | **LOS** | **Delay (s/v)** | **LOS** | **ICU** | **LOS** | **Delay (s/v)** | **LOS** |
| 5. Orange Avenue at 32nd Street | -- | -- | -- | -- | 0.990 | E | -- | -- |

- Although the intersection of Orange Avenue/32nd Street is forecast to operate adversely, the project increment adds less than 0.020 to the ICU value and hence the Project's impact is considered insignificant based on the LOS standards and significance criteria defined in this report. In addition to not meeting the significant impact criteria, the intersection of Orange Avenue/32nd Street has Project peak hour trips that are less than the 40 trip threshold required for analysis.

*Year 2041 Buildout Traffic Conditions*

- Two (2) key study intersections are forecast to operate adversely under Year 2041 Buildout traffic conditions. The remaining study intersections are forecast to operate at acceptable LOS D or better during the AM and PM peak hours. The intersections operating adversely include the following:

| | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|
| **Key Intersection** | **ICU** | **LOS** | **Delay (s/v)** | **LOS** | **ICU** | **LOS** | **Delay (s/v)** | **LOS** |
| 4. Orange Avenue at 33rd Street | -- | -- | -- | -- | 0.912 | E | -- | -- |
| 5. Orange Avenue at 32nd Street | 0.906 | E | -- | -- | 1.121 | F | -- | -- |

*Year 2041 Buildout Plus Project Traffic Conditions*

- Two (2) key study intersection are forecast to operate adversely under Year 2041 Buildout Plus Project traffic conditions. The remaining study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours with the addition of project traffic. The intersections operating adversely include the following:

| | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|
| **Key Intersection** | **ICU** | **LOS** | **Delay (s/v)** | **LOS** | **ICU** | **LOS** | **Delay (s/v)** | **LOS** |
| 4. Orange Avenue at 33rd Street | -- | -- | -- | -- | 0.916 | E | -- | -- |
| 5. Orange Avenue at 32nd Street | 0.909 | E | -- | -- | 1.123 | F | -- | -- |

- Although the intersections of Orange Avenue/33rd Street and Orange Avenue/32nd Street are forecast to operate adversely, the project increment adds less than 0.020 to the ICU value and hence the Project's impact is considered insignificant based on the LOS standards and significance criteria defined in this report. In addition to not meeting the significant impact criteria, the intersection of Orange Avenue/33rd Street and Orange Avenue/32nd Street has Project peak hour trips that are less than the 40 trip threshold required for analysis.

**City of Signal Hill Intersection Left-Turn Vehicle Queuing Analysis**

*Existing Traffic Conditions*

- One (1) key study intersection has left-turn queues which exceed the existing storage capacity for one or more intersection approach under existing traffic conditions. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

    - Intersection No. 5: Orange Avenue at 32nd Street
        - Westbound left-turn – PM peak hour

*Existing Plus Project Traffic Conditions*

- One (1) key study intersection has left-turn queues which exceed the existing storage capacity for one or more intersection approach with the addition of project traffic. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

    - Intersection No. 5: Orange Avenue at 32nd Street
        - Westbound left-turn – PM peak hour

- The addition of project traffic does not contribute to the westbound left-turn movement at the intersection of Orange Avenue/32nd Street and therefore does not contribute to additional vehicle queueing beyond that reported under existing conditions.

*Year 2024 Cumulative Traffic Conditions*

- One (1) key study intersection has left-turn queues which exceed the existing storage capacity for one or more intersection approach under Year 2024 cumulative traffic conditions. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

    - Intersection No. 5: Orange Avenue at 32nd Street
        - Westbound left-turn – PM peak hour

*Year 2024 Cumulative Plus Project Traffic Conditions*

- One (1) key study intersection has left-turn queues which exceed the existing storage capacity for one or more intersection approach with the addition of project traffic. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

    - Intersection No. 5: Orange Avenue at 32nd Street
        - Westbound left-turn – PM peak hour

- The addition of project traffic does not contribute to the westbound left-turn movement at the intersection of Orange Avenue/32nd Street and therefore does not contribute to additional vehicle queueing beyond that reported under Year 2024 cumulative conditions.

*Year 2041 Buildout Traffic Conditions*

- One (1) key study intersection has left-turn queues which exceed the existing storage capacity for one or more intersection approach under Year 2041 cumulative traffic conditions. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

    - Intersection No. 5: Orange Avenue at 32nd Street
        - Southbound left-turn – PM peak hour
        - Westbound left-turn – PM peak hour

*Year 2041 Buildout Plus Project Traffic Conditions*

- One (1) key study intersection has left-turn queues which exceed the existing storage capacity for one or more intersection approach with the addition of project traffic. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

    - Intersection No. 5: Orange Avenue at 32nd Street
        - Southbound left-turn – PM peak hour
        - Westbound left-turn – PM peak hour

- The addition of project traffic does not contribute to the southbound or westbound left-turn movements at the intersection of Orange Avenue/32nd Street and therefore does not contribute to additional vehicle queueing beyond that reported under Year 2041 buildout conditions.

**City of Long Beach Intersection Vehicle Queuing Analysis**

*Existing Traffic Conditions*

- One (1) key study intersection has queues which exceed the existing storage capacity for one or more intersection approach under existing traffic conditions. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

    - Intersection No. 8: Orange Avenue at Wardlow Road
        - Eastbound left-turn – PM peak hour

*Existing Plus Project Traffic Conditions*

- One (1) key study intersection has queues which exceed the existing storage capacity for one or more intersection approach with the addition of project traffic. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

    - Intersection No. 8: Orange Avenue at Wardlow Road
        - Eastbound left-turn – AM peak hour & PM peak hour

- The addition of project traffic contributes to the eastbound left-turn movement at the intersection of Orange Avenue/Wardlow Road. Although the eastbound left-turn experiences pre-project storage deficiencies in the PM peak hour, the proposed Project contributes to the storage deficiencies in the AM peak hour. The Project adds a fraction of a vehicle to the projected queues and therefore is not considered a significant impact. In addition, it should be noted that the City of Long Beach determines study intersections based on a 50 peak hour trips threshold. As such, Orange Avenue at Wardlow Road would not be required for analysis based on the City of Long Beach guidelines. The queuing results are provided for informational purposes only.

*Year 2024 Cumulative Traffic Conditions*

- One (1) key study intersection has queues which exceed the existing storage capacity for one or more intersection approach under Year 2024 cumulative traffic conditions. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

    - Intersection No. 8: Orange Avenue at Wardlow Road
        - Northbound left-turn – AM peak hour & PM peak hour
        - Northbound through/right – PM peak hour
        - Eastbound left-turn – AM peak hour & PM peak hour

*Year 2024 Cumulative Plus Project Traffic Conditions*

- One (1) key study intersection has queues which exceed the existing storage capacity for one or more intersection approach with the addition of project traffic. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

    - Intersection No. 8: Orange Avenue at Wardlow Road
        - Northbound left-turn – AM peak hour & PM peak hour
        - Northbound through/right – PM peak hour
        - Eastbound left-turn – AM peak hour & PM peak hour

- The addition of project traffic does not contribute to the northbound left-turn or northbound through/right movements at the intersection of Orange Avenue/Wardlow Road and therefore does not contribute to additional vehicle queueing beyond that reported under Year 2024 cumulative conditions.

- The addition of project traffic contributes to the eastbound left-turn movement at the intersection of Orange Avenue/Wardlow Road. The Project adds a fraction of a vehicle to the projected queues and therefore is not considered a significant impact. In addition, it should be noted that the City of Long Beach determines study intersections based on a 50 peak hour trips threshold. As such, Orange Avenue at Wardlow Road would not be required for analysis based on the City of Long Beach guidelines. The queuing results are provided for informational purposes only.

*Year 2040 Buildout Traffic Conditions*

- Three (3) key study intersections have queues which exceed the existing storage capacity for one or more intersection approach under Year 2041 buildout traffic conditions. The remaining key study intersection has queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

    - Intersection No. 1: Atlantic Avenue at 33rd Street
        - Southbound left-turn – PM peak hour
    - Intersection No. 6: California Avenue at Spring Street
        - Southbound left-turn – PM peak hour
    - Intersection No. 8: Orange Avenue at Wardlow Road
        - Northbound left-turn – AM peak hour & PM peak hour
        - Northbound through/right – PM peak hour
        - Eastbound left-turn – AM peak hour & PM peak hour

- Westbound left-turn – AM peak hour

*Year 2041 Buildout Plus Project Traffic Conditions*

- Three (3) key study intersection have queues which exceed the existing storage capacity for one or more intersection approach with the addition of project traffic. The remaining key study intersection has queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

    - Intersection No. 1: Atlantic Avenue at 33rd Street
        - Southbound left-turn – PM peak hour
    - Intersection No. 6: California Avenue at Spring Street
        - Southbound left-turn – PM peak hour
    - Intersection No. 8: Orange Avenue at Wardlow Road
        - Northbound left-turn – AM peak hour & PM peak hour
        - Northbound through/right – PM peak hour
        - Eastbound left-turn – AM peak hour & PM peak hour
        - Westbound left-turn – AM peak hour

- The addition of project traffic does not contribute to the northbound left-turn, northbound through/right, or westbound left-turn movements at the intersection of Orange Avenue/Wardlow Road and therefore does not contribute to additional vehicle queueing beyond that reported under Year 2041 buildout conditions.

- The addition of project traffic contributes to the southbound left-turn and eastbound left-turn movements at the intersections of California Avenue/Spring Street and Orange Avenue/Wardlow Road, respectively, however, this approach has pre-project storage deficiencies as reported under Year 2041 buildout conditions. The Project adds a fraction of a vehicle to the projected queues and therefore is not considered a significant impact. In addition, it should be noted that the City of Long Beach determines study intersections based on a 50 peak hour trips threshold. As such, California Avenue/Spring Street and Orange Avenue/Wardlow Road would not be required for analysis based on the City of Long Beach guidelines. The queuing results are provided for informational purposes only.

- The addition of project traffic also contributes to the southbound left-turn movement at the intersection of Atlantic Avenue/33rd Street, however, this approach has pre-project storage deficiencies as reported under Year 2041 buildout conditions. It should be noted that the City of Long Beach guidelines do not require a long-term analysis to be performed. The queuing results are provided for informational purposes only. However, based on the queuing results it is recommended to lengthen the southbound left-turn pocket in order to accommodate the

queues. As an alternative improvement, modifying the existing signal to include protected-permissive phasing for the southbound direction minimize queues.

**Recommended Improvements**

*Existing Plus Project Traffic Conditions*

- The proposed Project will not impact any of the eight key study intersections under the "Existing Plus Project" traffic scenario. Therefore, no improvements are recommended.

*Year 2024 Cumulative Plus Project Traffic Conditions*

- The proposed Project will not impact any of the eight key study intersections under the "Year 2024 Cumulative Plus Project" traffic scenario. Therefore, no improvements are recommended.

*Year 2041 Cumulative Plus Project Traffic Conditions*

- The proposed Project will impact one (1) of the eight key study intersections under the "Year 2041 Buildout Plus Project" traffic scenario. The recommended improvements include the following:

  - Intersection 1 – Atlantic Avenue at 33rd Street: Restripe the southbound leg to lengthen the southbound left-turn pocket storage. These improvements are subject to the approval of the City of Long Beach.

  As an alternative improvement, modifying the existing signal to include protected-permissive phasing for the southbound direction to help reduce the southbound left-turn queue and thus would reduce the amount of on-street parking to be removed.

**Project-Related Fair Share Contribution**

- The Project's traffic percentage at the intersection of Atlantic Avenue/33rd Street totals 20.0% under Year 2041 buildout traffic conditions.

**Congestion Management Program Compliance Assessment**

- Based on the proposed Project's trip generation potential, trip distribution and trip assignment, the Project will not add more than 50 at the identified CMP intersections during the weekday AM peak hour or PM peak hour. Therefore, a CMP intersection traffic impact analysis is not required and impacts would be less than significant.

  Based on the project's trip generation potential and distribution pattern, the proposed Project will not add more than 150 trips during the AM or PM peak hour at this CMP mainline freeway-monitoring location. Therefore, a CMP freeway traffic impact analysis is not required.

**Transit Impact Review**

- The proposed Project is forecast to generate 14 transit trips (8 inbound and 6 outbound) during the AM peak hour and 13 transit trips (6 inbound and 7 outbound) during the PM peak hour. Over a 24-hour period the proposed Project is forecasted to generate 199 daily weekday transit trips.

**Vehicle Miles Traveled (VMT) Analysis**

- For the VMT screening analysis, the presumption of less than significant impact near Transit Stations was applied to the proposed Project. Since the proposed Project is considered to be located within half a mile of an existing high-quality transit corridor, this project can be screened from further VMT analysis and can be presumed to have a less than significant impact on VMT.

- Retail Screening: The proposed Project consists of two commercial/retail building totaling 20,600 SF which is less than the 50,000 SF threshold for small projects. It should be noted that if the 3,500 SF of medical/dental office use were converted to retail the commercial/retail component would consist of 24,100 SF which is less than the 50,000 SF threshold for small projects. Therefore, the commercial/retail component of the Project can be screened from further VMT analysis and the commercial/retail component can be presumed to have a less than significant impact on VMT.

- Medical/Dental Office Screening: Assuming a medical/dental office tenant, the proposed 3,500 SF medical/dental office component of the Project is forecast to generate 71 daily trips which is less than 110 daily trip threshold for small projects. As such the medical/dental office component of the Project can be screened from further VMT analysis and the medical/dental office component can be presumed to have a less than significant impact on VMT.

- Self-Storage Screening: Self-storage facilities are generally meant to serve the local community and therefore can be assumed to be a local-serving development which will reduce VMT. It is our understanding that the City of Signal Hill has only a few self-storage facilities and has a need for additional facilities to better serve the community. Therefore, the self-storage component of the Project can be screened from further VMT analysis and the self-storage component can be presumed to have a less than significant impact on VMT.

  In addition to the screening criteria identified above, Greenhouse Gas (GHG) emissions have been quantified and analyzed for the self-storage component of this Project based on the application of CalEEMod. Based on the GHG data contained in the CalEEMod, the proposed GHG emissions based on the VMT for the self-storage component of the Project is approximately 502.5 MTCO2e annually from VMT.

The mobile source GHG emission is 83% lower than the applicable threshold of significance for GHG for the proposed Project. Thus indicating that the self-storage component of the Project's contribution to VMT, which is directly correlated to GHG emissions, would not lead to a significant impact under CEQA. Therefore, it can be concluded that the self-storage component of the proposed Project would not generate GHG emissions that would have a significant impact on the environment. As a result, this Project clearly complies with the state's goals of reducing greenhouse gas emissions, traffic-related air pollution and the intent of SB 743.

**TRAFFIC STUDY**

# TARGET CENTER RETAIL EXPANSION AND SELF-STORAGE FACILITY

**Signal Hill, California**
**February 26, 2021**

## 1.0 INTRODUCTION

This traffic study report addresses the potential traffic impacts and circulation needs associated with the Target Center Retail Expansion and Self-Storage Facility Project (hereinafter referred to as Project). The Project site is located south of E. 33rd Street, between Atlantic Avenue and California Avenue, and north of the San Diego (I-405) Freeway in the City of Signal Hill, California. The Project includes development of up to 23,500 square-feet (SF) of retail/restaurant and retail/service/medical office space within three (3) buildings and a three-story self-storage facility totaling 177,345 SF.

### 1.1 Scope of Work

This report documents the findings and recommendations of a traffic study, conducted by Linscott, Law & Greenspan, Engineers (LLG) to determine the potential impacts associated with the proposed Project. The traffic analysis evaluates the existing operating conditions at eight (8) key study intersections within the project vicinity, estimates the trip generation potential of the proposed Project, and forecasts future operating conditions without and with the Project. Where necessary, intersection improvements/mitigation measures are identified to offset the impact of the proposed Project. ***Appendix A*** contains the traffic study Scope of Work.

This traffic report satisfies the traffic study requirements of the City of Signal Hill as well as the City of Long Beach and is consistent with the requirements and procedures outlined in the most current *Congestion Management Program (CMP) for Los Angeles County.*

The Project site has been visited by LLG and an inventory of adjacent area roadways and intersections was performed. Existing peak hour traffic information has been collected at the eight (8) key study locations on a "typical" weekday for use in the preparation of intersection level of service calculations. Information concerning cumulative projects (planned and/or approved) in the vicinity of the project has been researched at the Cities of Signal Hill and Long Beach. Based on our research, thirty-eight (38) cumulative projects were considered in the cumulative traffic analysis for this project.

Based on the City of Signal Hill requirements, this traffic report analyzes existing, future near-term Year 2024, and future long-term buildout Year 2041 weekday AM and PM peak hour traffic conditions without and with the proposed Project. Peak hour traffic forecasts for the Year 2024 and Year 2041 horizon years have been projected by increasing existing traffic volumes by an annual growth rate of one percent (1.0%) per year and adding traffic volumes generated by the thirty-eight (38) cumulative projects.

## 1.2 Study Area

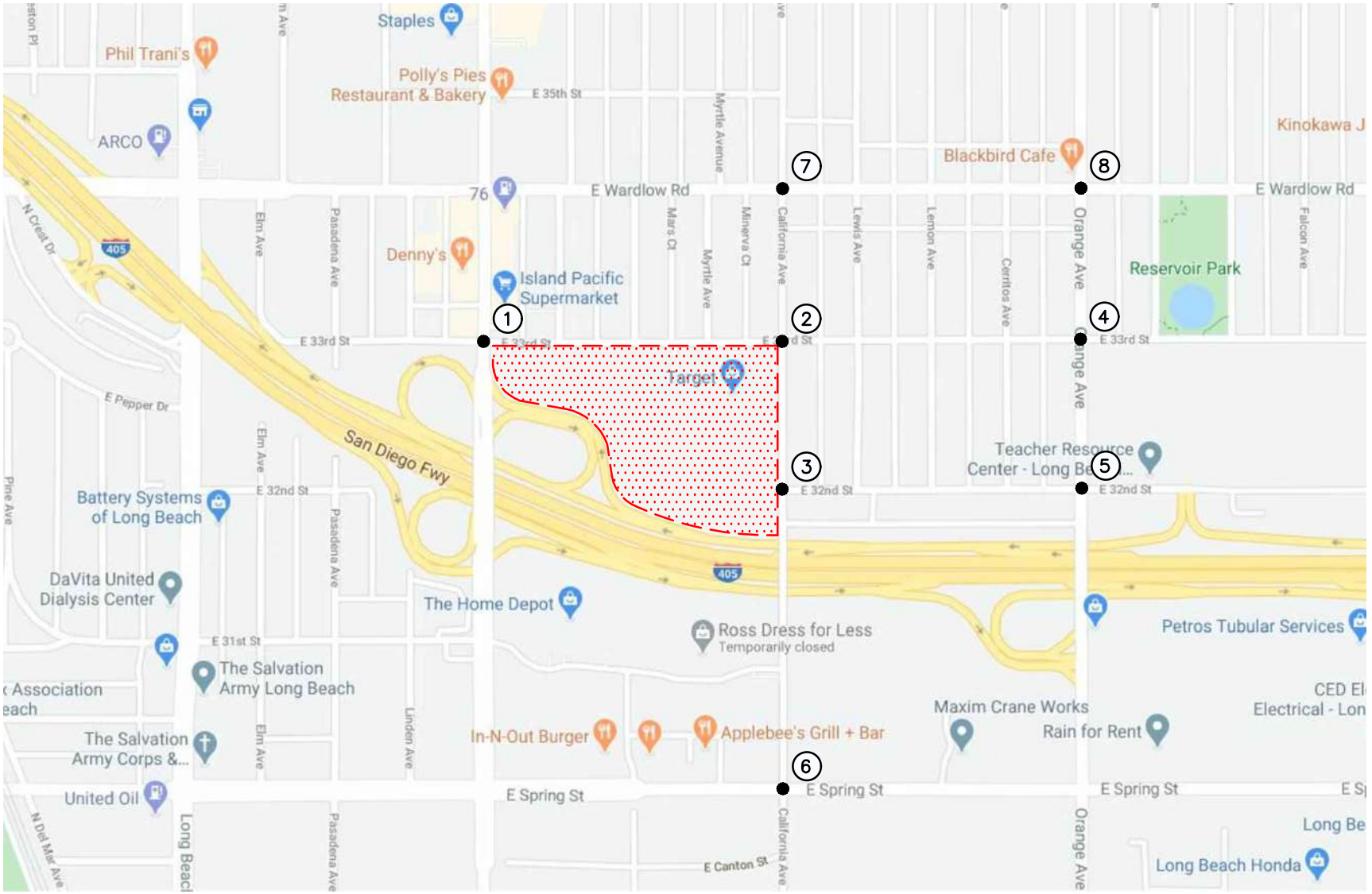
Eight (8) key study intersections have been identified for evaluation in collaboration with City of Signal Hill staff. The eight (8) intersections listed below, of which three (3) are located solely within the City of Long Beach, provide regional and local access to the study area and define the extent of the boundaries for this traffic impact investigation, as well as identifies the applicable jurisdiction.

| Key Intersection | Jurisdiction | |
|---|---|---|
| | City of Long Beach | City of Signal Hill |
| 9. Atlantic Avenue at 33rd Street | Long Beach | -- |
| 10. California Avenue at 33rd Street | -- | Signal Hill |
| 11. California Avenue at 32nd Street | -- | Signal Hill |
| 12. Orange Avenue at 33rd Street | -- | Signal Hill |
| 13. Orange Avenue at 32nd Street | -- | Signal Hill |
| 14. California Avenue at Spring Street | Long Beach | Signal Hill |
| 15. California Avenue at Wardlow Road | Long Beach | -- |
| 16. Orange Avenue at Wardlow Road | Long Beach | -- |

***Figure 1-1*** presents a Vicinity Map, which illustrates the general location of the Project and depicts the study locations and surrounding street system. The Volume-Capacity (V/C), Delay, and Level of Service (LOS) investigations at these key locations were used to evaluate the potential traffic-related impacts associated with the proposed Project.

Included in this traffic study report are:

- Existing traffic counts,
- Estimated project traffic generation/distribution/assignment,
- Estimated cumulative project traffic generation/distribution/assignment,
- AM and PM peak hour capacity analyses for existing conditions,
- AM and PM peak hour capacity analyses for existing plus project conditions,
- AM and PM peak hour capacity analyses for future near-term (Year 2024) conditions without and with project traffic,
- AM and PM peak hour capacity analyses for future long-term (Year 2041) conditions without and with project traffic,
- Intersection vehicle queuing analyses,
- Recommended Improvements,
- Congestion Management Program Compliance Assessment, and
- Vehicle Miles Traveled (VMT) Analysis.

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

# FIGURE 1–1

## VICINITY MAP

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

## 2.0 PROJECT DESCRIPTION

The existing Target Center (Store T2319), addressed at 950 E. 33rd Street, is located south of E. 33rd Street, between Atlantic Avenue and California Avenue, and north of the San Diego (I-405) Freeway in the City of Signal Hill, California. The Project site consists two (2) parcels with a total land area of 15.5± acres, of which 10.1± acres is currently developed with a 135,811 square-foot (SF) free-standing discount store and surface parking supply of 538 spaces. The remaining 4.4± acres, which is generally located on the west side of California Avenue, south of the existing Target and north of the I-405 Freeway, is currently vacant. ***Figure 2-1*** presents the existing site aerial.

The proposed Project, all of which will be constructed on existing surface parking and/or vacant land, includes development of up to 23,500 SF of retail/restaurant and retail/service/medical office space within three (3) buildings and a three-story self-storage facility totaling 177,345 SF, inclusive of a lobby/guest services area. There are no plans to expand the existing Target. Upon completion of the Project, a total of 491 spaces will be provided.

The "Drive-Thru" building is a proposed 5,000 SF restaurant pad with drive-thru that would contain one or more restaurant/food uses of which one would operate the drive-thru. The "Retail/Other" building totals 15,000 SF and would be occupied by a single tenant or a various mix retail tenant which may include "take-out" food uses, whereas the "Retail/Service/Medical Office" is a 3,500 SF building that would be occupied by either a medical/dental office or retail use; the amount of potential outdoor dining area that the Project will provide for the "Drive-Thru" is not known at this time. To provide a conservative assessment, up to 600 SF of outdoor dining area is assumed to be provided.

The proposed three-story, 177,345 SF self-storage facility also includes the provision of up to 25 RV covered storage spaces in the gated storage yard. The proposed self-storage facility leasing office is expected to operate Monday-Friday from 9:30 am-6:00 pm, Saturday from 9:00 am-5:30 pm, and Sunday between 10:00 am-4:00 pm; access to the storage units will be available to customers/tenants Monday-Sunday, between 6:00 am-10:00 pm. Access to the gated yard for employees and tenants will be provided via gate access, Monday-Sunday, between 6:00 am-10:00 pm.

***Figure 2-2*** presents the Project's Conceptual Site Plan, inclusive of the existing Chick-fil-A, prepared by Kimley Horn & Associates, Inc. dated February 25, 2021. The Project's total floor area will consist of the following:

- 135,811 SF Target store,
- 15,000 SF of retail/other uses,
- 3,500 SF of retail/service/medical space,
- 5,000 SF of restaurant uses with up to 600 SF of outdoor dining area, and
- 177,345 SF of self-storage space




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N NO SCALE

SOURCE: GOOGLE

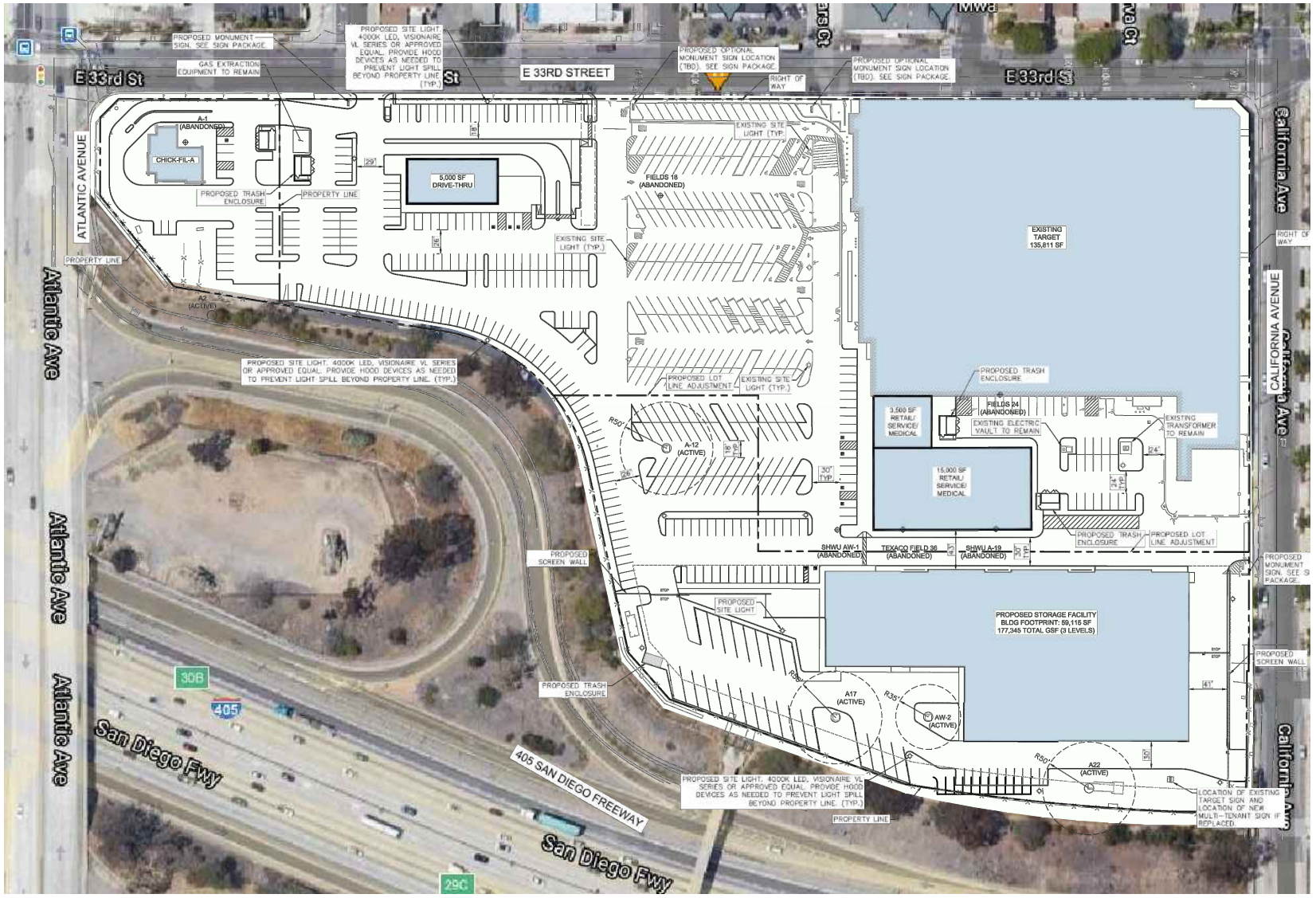
KEY

= PROJECT SITE

# FIGURE 2-1

## EXISTING SITE AERIAL

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: KIMLEY HORN & ASSOCIATES

# FIGURE 2-2

## PROPOSED PROJECT SITE PLAN

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

*Restaurant Tenant Mix*

Since a tenant mix has not been identified for the Project's 5,000 SF of restaurant floor area and up to 600 SF of outdoor dining area, the following mix/type of restaurant has been assumed and is evaluated in this study to allow for flexibility in future tenancies, along with the proposed retail and self-storage space:

| Project Option | Retail Shop | Fine/ Casual Dining/ Outdoor Dining | QSR/Fast-Casual/ Outdoor Dining | Fast-Food w/ Drive-Thru/ Outdoor Dining | Retail/ Service/ Medical Office | Self-Storage |
|---|---|---|---|---|---|---|
| ❑ Option 1 | 15,000 SF | 2,000 SF/ 300 SF | -- | 3,000 SF/ 300 SF | 3,500 SF | 177,345 SF |
| ❑ Option 2 | 15,000 SF | -- | 2,000 SF/ 300 SF | 3,000 SF/ 300 SF | 3,500 SF | 177,345 SF |
| ❑ Option 3 | 15,000 SF | -- | -- | 5,000 SF/ 600 SF | 3,500 SF | 177,345 SF |

## 2.1 Site Access

As shown in *Figure 2-2*, vehicular access to the Project site will be provided via two (2) existing full access unsignalized driveways located on E. 33rd Street and one (1) existing full access unsignalized driveway located on California Avenue. A second access driveway on California Avenue is proposed. However, this access, which will be gated, will only be used on the occasion that an RV is to exit the facility.

## 2.2 Pedestrian Circulation

Pedestrian circulation will be provided via existing public sidewalks along E. 33rd Street and California Avenue within the vicinity of the Project frontage. The proposed Project will protect the existing sidewalks along E. 33rd Street and California Avenue, and if necessary, repair or reconstruct sidewalks along the project frontage per the City's request.

Existing pedestrian facilities within the project area are adequate. Sidewalks are generally provided throughout the City along with crosswalks at most major intersections. In close proximity to the site, the intersections of Atlantic Avenue/33rd Street, California Avenue/33rd Street and California Avenue/32nd Street provide pedestrians connectivity via the existing sidewalks linking the project site to the surrounding community.

# 3.0 EXISTING CONDITIONS

## 3.1 Existing Street System

The principal local network of streets serving the project site includes Atlantic Avenue, California Avenue, Orange Avenue, 33rd Street, 32nd Street, Wardlow Road, and Spring Street. The following discussion provides a brief synopsis of these key area streets. The descriptions are based on an inventory of existing roadway conditions.

**Atlantic Avenue** is a four-lane, divided roadway oriented in the north-south direction. The posted speed limit is 30 miles per hour (mph). Parking is generally not permitted on both sides of the roadway within the vicinity of the project. A traffic signal controls the study intersection of Atlantic Avenue at 33rd Street.

**California Avenue** is a two-lane undivided roadway north of 32nd Street and divided roadway south of 32nd street, oriented in the north-south direction. The posted speed limit is 40 mph south of Spring Street, 35 mph between Spring Street and 32nd Street, and 30 mph north of 32nd Street. Parking is not permitted on either side of the roadway south of 32nd Street but is permitted on both sides of the roadway north of 32nd Street within the vicinity of the project. California Avenue is considered a collector street within the City of Signal Hill Circulation Element. Traffic signals control the study intersections of California Avenue at Spring Street and Wardlow Street.

**Orange Avenue** is a two-lane, undivided roadway oriented in the north-south direction. The posted speed limit is 35 mph. Parking is not permitted on either side of the roadway south of 32nd Street but is permitted on both sides of the roadway north of 33rd Street within the vicinity of the project. Parking between 33rd Street and 32nd Street is only permitted on west side of Orange Avenue. Orange Avenue is considered a minor arterial within the City of Signal Hill Circulation Element. Traffic signals controls the study intersections of Orange Avenue at 32nd Street, 33rd Street and Wardlow Street.

**33rd Street** is a four-lane, undivided roadway west of California Avenue and two-lane undivided roadway east of California Avenue, oriented in the east-west direction. The posted speed limit is 30 mph east of California Avenue and 25 mph west of California Avenue. Parking is generally permitted on either side of the roadway within the vicinity of the project. 33rd Street is considered a collector street west of California Avenue and east of Orange Avenue within the City of Signal Hill Circulation Element.

**32nd Street** is a two-lane, undivided roadway oriented in the east-west direction. The posted speed limit is 25 mph. Parking is generally permitted on either side of the roadway within the vicinity of the project.

**Wardlow Road** is a four-lane, undivided roadway oriented in the east-west direction. The posted speed limit is 35 mph. Parking is generally permitted on either side of the roadway within the vicinity of the project.

**Spring Street** is a four-lane, divided roadway oriented in the east-west direction. The posted speed limit is 40 mph. Parking is not permitted on either side of the roadway west of Orange Avenue but is permitted on both sides of the roadway east of Orange Avenue within the vicinity of the project.

***Figure 3-1*** presents an inventory of the existing roadway conditions for the arterials and intersections evaluated in this report. The number of travel lanes and intersection controls for the key area intersections are identified.

## 3.2 Existing Traffic Volumes

Due to the Covid-19 virus, the Governor of California has issued a state-wide "stay at home" order which has ultimately resulted in a decrease in traffic. Based on these current conditions, the ability to collect traffic counts to establish baseline conditions that would be reflective of traffic conditions without "stay at home" orders in effect are not possible. As such, to establish "baseline" traffic conditions, pre-Covid-19 (i.e. under normal circumstances without "stay at home" orders in effect), LLG has researched historic data and was able to obtain Year 2018 counts at four (4) of the study locations as summarized below:

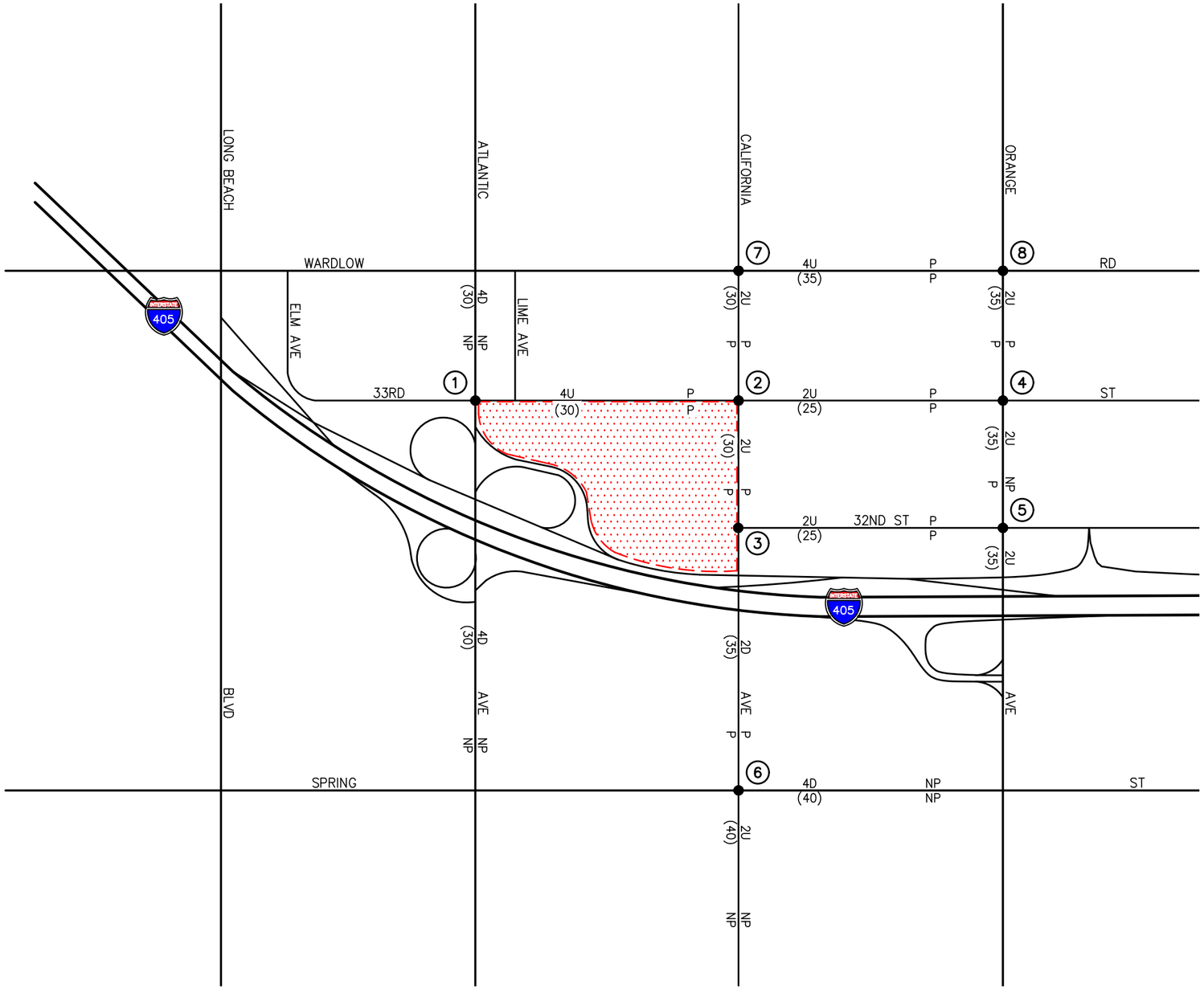
| Key Intersection | Historic Year 2018 Traffic Counts Available | Collect Year 2021 Covid-19 Traffic Counts |
|---|---|---|
| 1. Atlantic Avenue at 33rd Street | Yes | Yes |
| 2. California Avenue at 33rd Street | -- | Yes |
| 3. California Avenue at 32nd Street | -- | Yes |
| 4. Orange Avenue at 33rd Street | -- | Yes |
| 5. Orange Avenue at 32nd Street | Yes | Yes |
| 6. California Avenue at Spring Street | Yes | Yes |
| 7. California Avenue at Wardlow Road | -- | Yes |
| 8. Orange Avenue at Wardlow Road | Yes | Yes |

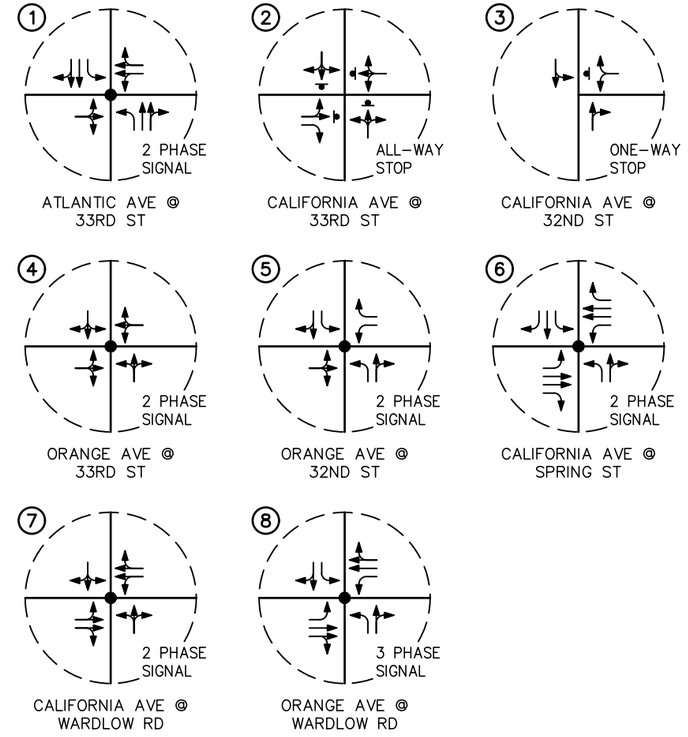
Given the availability of historic data, the following steps were used to establish Existing Year 2021 pre-Covid-19 baseline traffic conditions:

(1) Historic data is available at four locations for Year 2018 (i.e. Intersections No. 1, No. 5, No. 6 and No. 8).

(2) Given data is not available at four study locations (i.e. Intersections No. 2, No. 3, No. 4 and No. 7), LLG collected Year 2021 Covid-19 traffic counts at all study locations for use in establishing traffic counts/turning movement percentages. These traffic counts were collected in January 2021 by National Data and Surveying Services, Inc.

(3) Using information from (1) and (2), compare 2018 to 2021 to establish change in traffic counts due to current Covid-19 environment.

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

- ← = APPROACH LANE ASSIGNMENT
- ● = TRAFFIC SIGNAL, ☚ = STOP SIGN
- P = PARKING, NP = NO PARKING
- U = UNDIVIDED, D = DIVIDED
- 2 = NUMBER OF TRAVEL LANES
- (XX) = POSTED SPEED LIMIT (MPH)
- F = FREE-RIGHT
- ▭ = PROJECT SITE

# FIGURE 3-1

## EXISTING ROADWAY CONDITIONS AND INTERSECTION CONTROLS

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

(4) Apply the rate calculated in (3) to 2021 Covid-19 traffic counts, and forecast 2018 baseline traffic conditions for Intersections No. 2, No. 3, No. 4, and No. 7.

(5) Lastly, apply an annual growth factor of 1% per year for three years to the Year 2018 baseline traffic conditions to establish Year 2021 pre-Covid-19 baseline traffic conditions.

***Figures 3-2*** and ***3-3*** illustrate the Year 2021 existing AM and PM peak hour traffic volumes at the eight (8) key study intersections evaluated in this report, respectively.

***Appendix B*** contains a summary table for the Year 2021 pre-Covid-19 baseline volume development as well as the detailed peak hour traffic count sheets for the key intersections evaluated in this report.

## 3.3 Existing Public Transit

The Long Beach Transit (LBT) provide public transit services in the vicinity of the proposed Project. In the vicinity of the Project, LBT Route 61, 101 and 103 currently serves Atlantic Avenue. LBT Route 71 currently serve Orange Avenue. ***Figure 3-4*** graphically illustrates the transit routes of Long Beach Transit within the vicinity of the Project site. ***Figure 3-5*** identifies the location of the existing bus stops in proximity to the Project site.

## 3.4 Existing Bicycle Master Plan

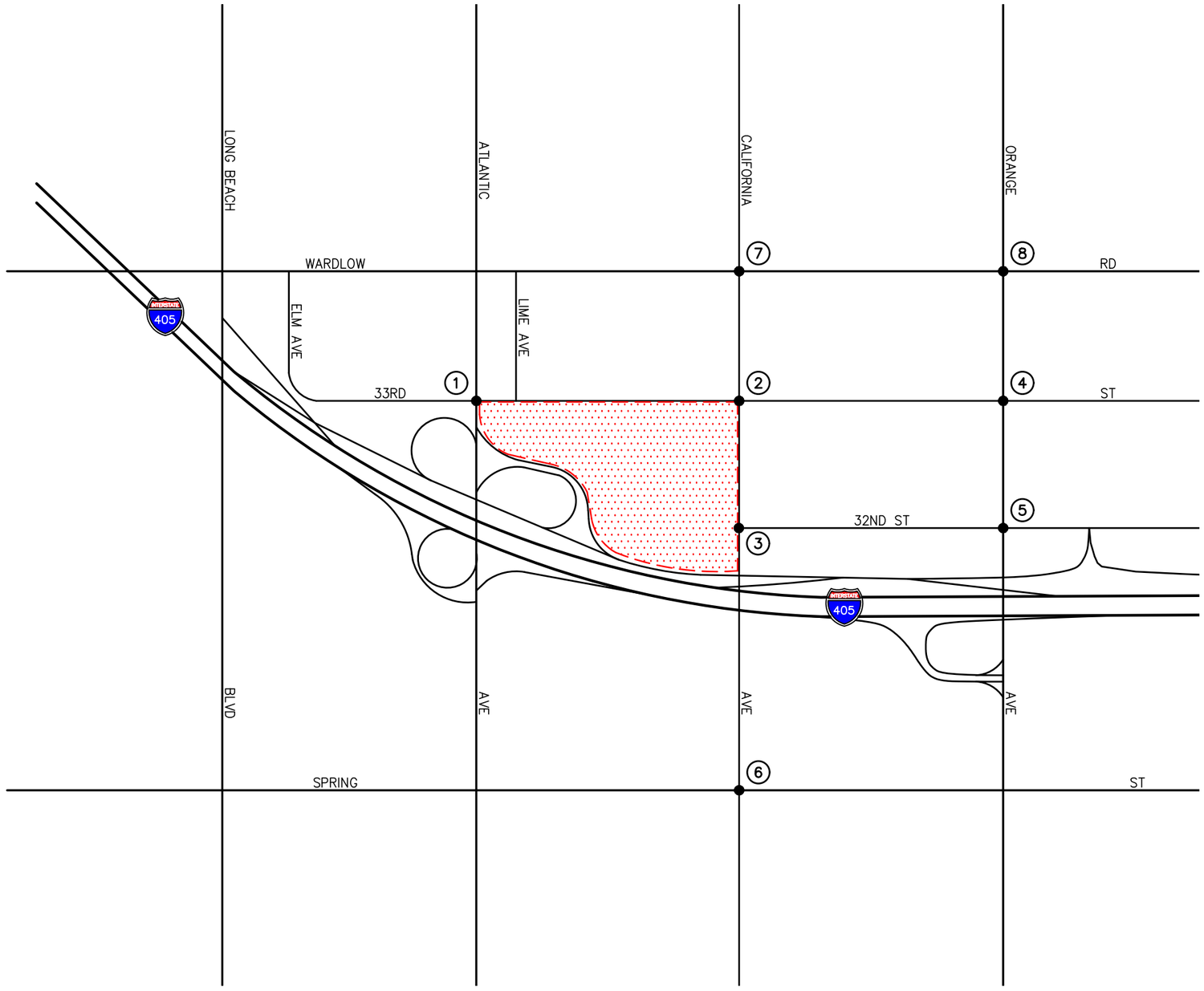
The Cities of Signal Hill and Long Beach promotes bicycling as a means of mobility and a way in which to improve the quality of life within its community. The Bicycle Master Plan recognizes the needs of bicycle users and aims to create a complete and safe bicycle network throughout the City. The City of Signal Hill Bicycle Master Plan is shown on ***Figure 3-6***. The City of Long Beach Bicycle Master Plan is shown on ***Figure 3-7***.

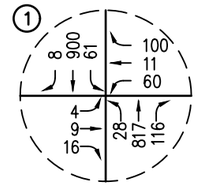
A Class II bike lane is currently provided along the north side and south side of Spring Street, south of the project site. Additionally, both the City of Long Beach and City of Signal Hill classify Orange Avenue as a Class III bikeway facility.

## 3.5 Existing Intersection Conditions

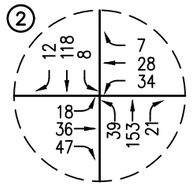
Pursuant to the City of Signal Hill guidelines, existing AM and PM peak hour operating conditions for the key study intersections were evaluated using the *Intersection Capacity Utilization* (ICU) methodology for signalized intersections and the *Highway Capacity Manual* (HCM) methodology for unsignalized intersections.

Pursuant to the City of Long Beach guidelines, existing AM and PM peak hour operating conditions for the key signalized study intersections were evaluated using the *Highway Capacity Manual* (HCM) methodology.

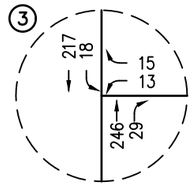


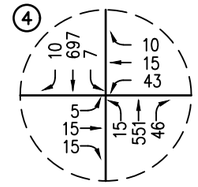

ATLANTIC AVE @ 33RD ST



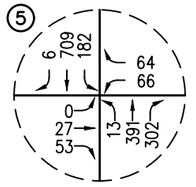

CALIFORNIA AVE @ 33RD ST



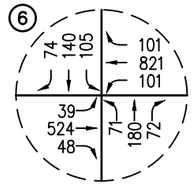

CALIFORNIA AVE @ 32ND ST



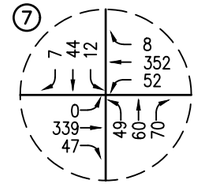

ORANGE AVE @ 33RD ST



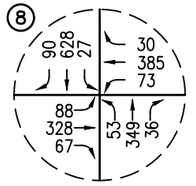

ORANGE AVE @ 32ND ST




CALIFORNIA AVE @ SPRING ST




CALIFORNIA AVE @ WARDLOW RD




ORANGE AVE @ WARDLOW RD

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N NO SCALE

KEY

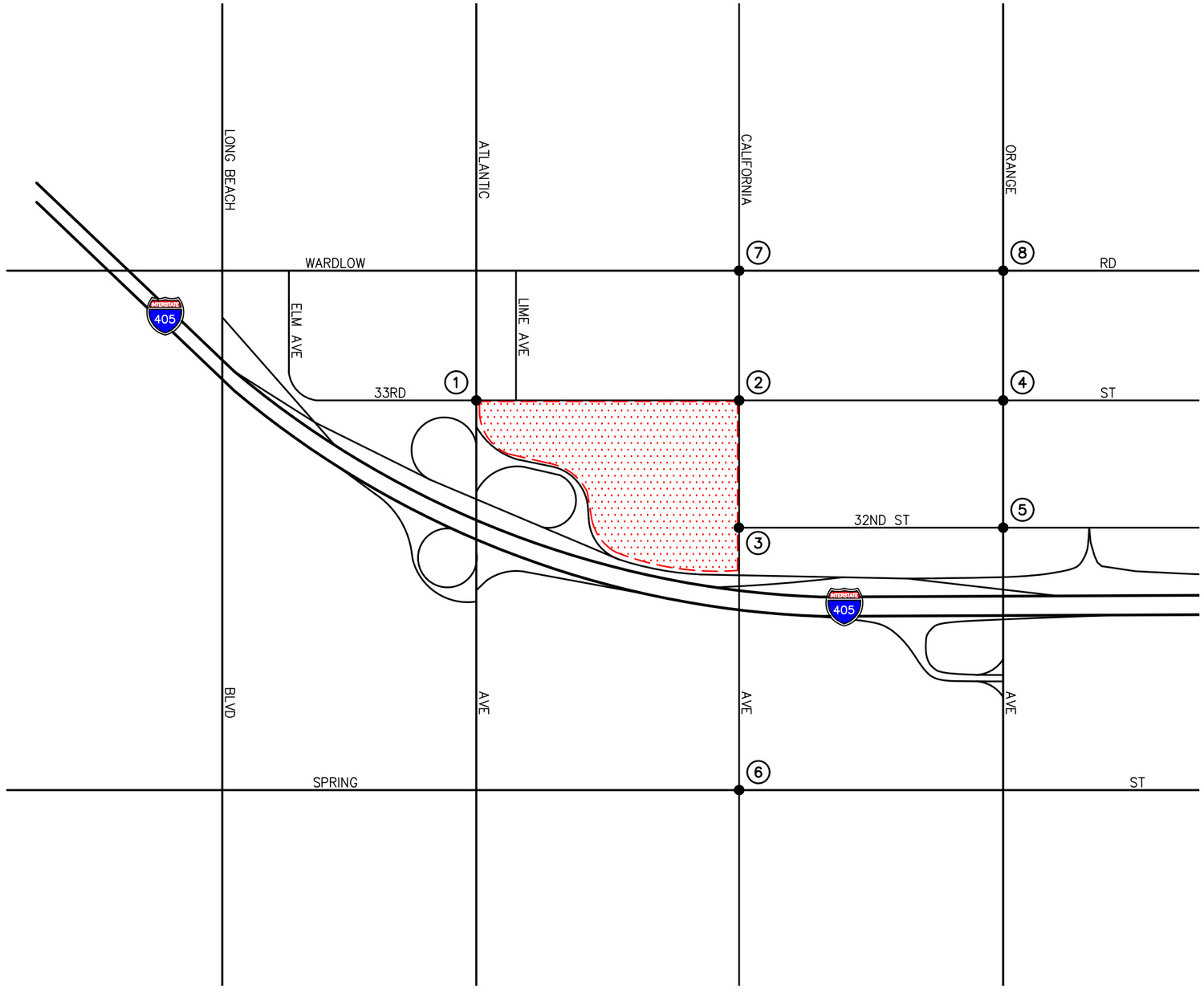
(#) = STUDY INTERSECTION

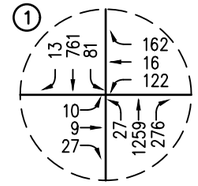
= PROJECT SITE

# FIGURE 3-2

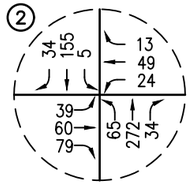
## EXISTING AM PEAK HOUR TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

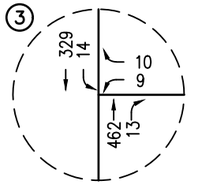


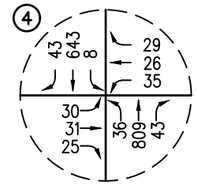

1 ATLANTIC AVE @ 33RD ST



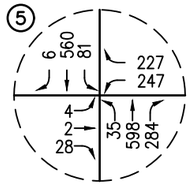

2 CALIFORNIA AVE @ 33RD ST



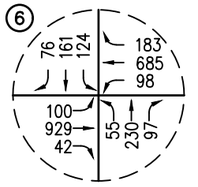

3 CALIFORNIA AVE @ 32ND ST



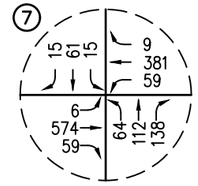

4 ORANGE AVE @ 33RD ST



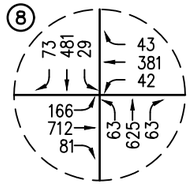

5 ORANGE AVE @ 32ND ST




6 CALIFORNIA AVE @ SPRING ST




7 CALIFORNIA AVE @ WARDLOW RD




8 ORANGE AVE @ WARDLOW RD

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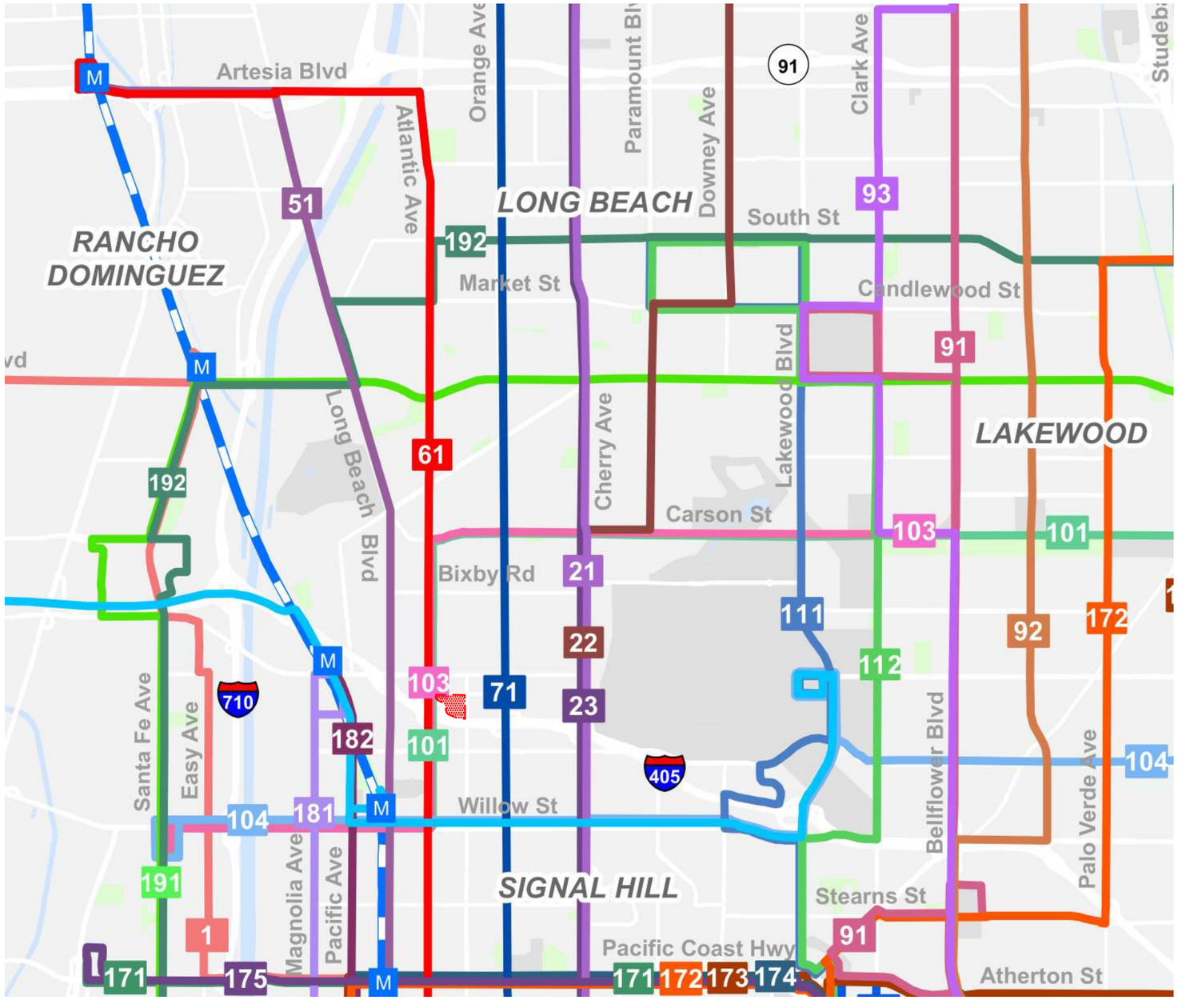
N NO SCALE

KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

# FIGURE 3-3

## EXISTING PM PEAK HOUR TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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N NO SCALE

SOURCE: LONG BEACH TRANSIT

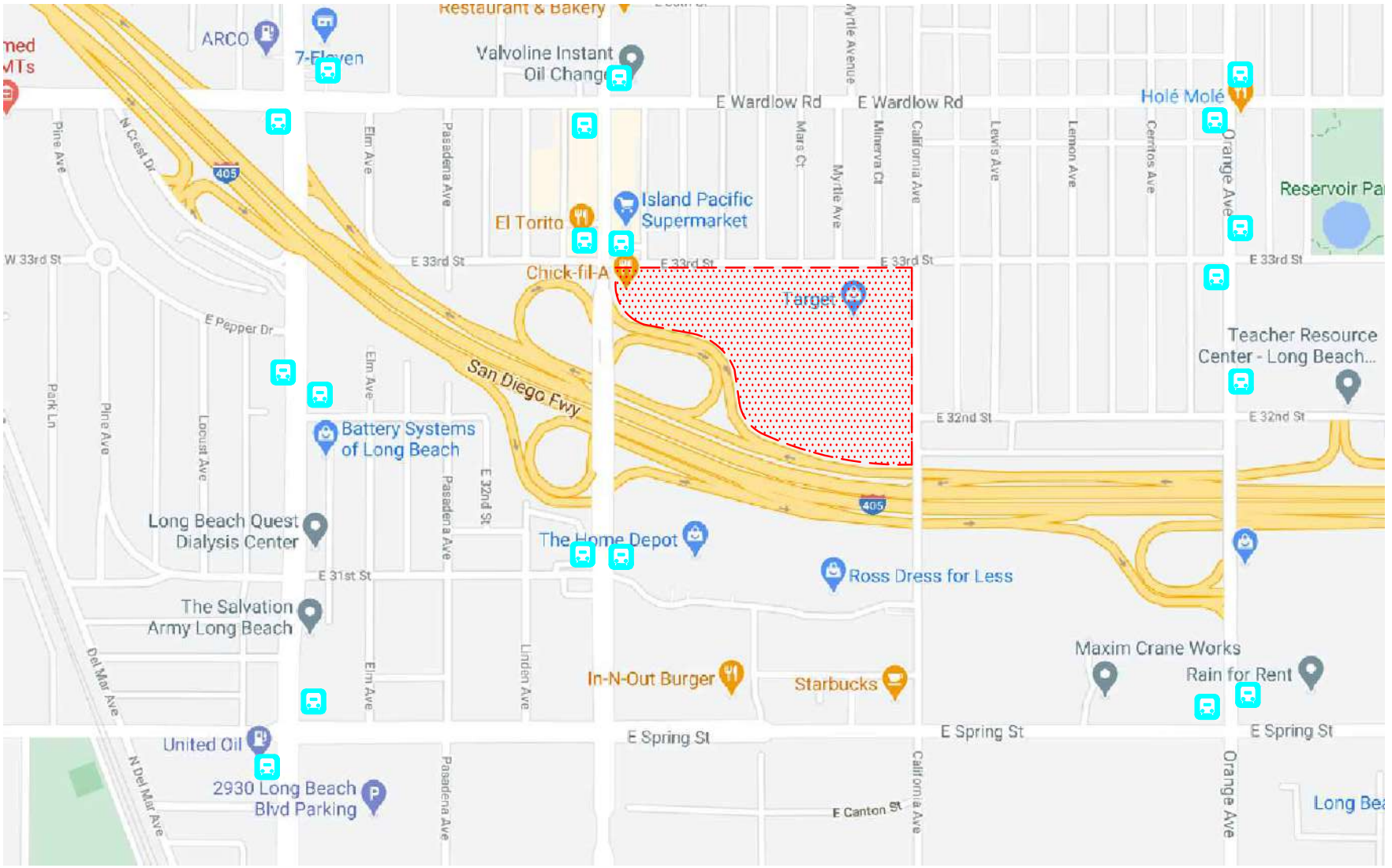
KEY

= PROJECT SITE

# FIGURE 3-4

## LONG BEACH TRANSIT MAP

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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N NO SCALE

SOURCE: GOOGLE

KEY

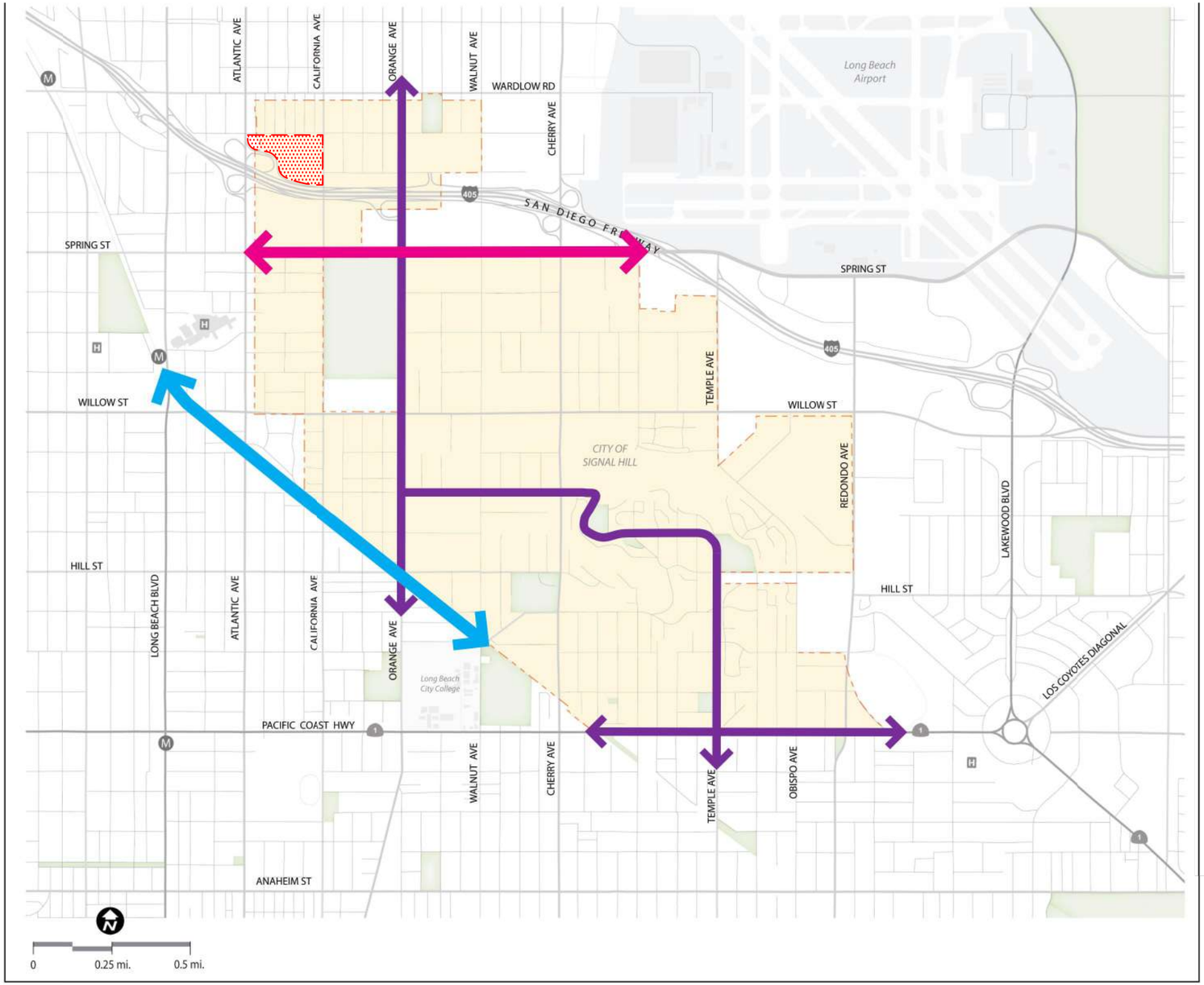
= PROJECT SITE

= TRANSIT STOP

# FIGURE 3-5

## TRANSIT STOP LOCATIONS

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: CITY OF SIGNAL HILL

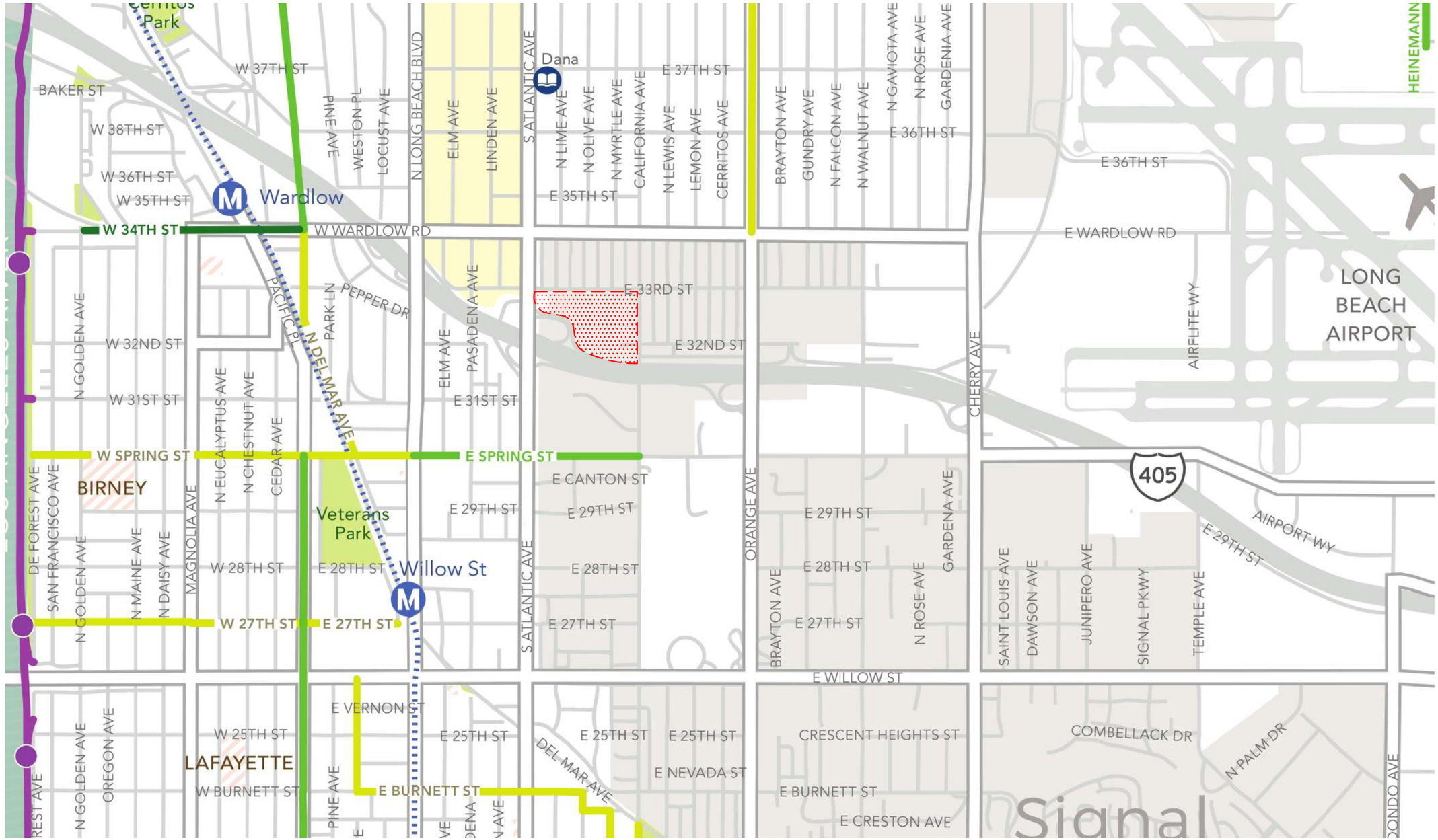
KEY

= PROJECT SITE

# FIGURE 3-6

**SIGNAL HILL BICYCLE MASTER PLAN**

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: CITY OF LONG BEACH

KEY
= PROJECT SITE

# FIGURE 3-7

**LONG BEACH BICYCLE MASTER PLAN**
TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

### 3.5.1 *Intersection Capacity Utilization (ICU) Method of Analysis*

In conformance with City of Signal Hill and LA County CMP requirements, existing weekday peak hour operating conditions for the key signalized study intersections were evaluated using the Intersection Capacity Utilization (ICU) method. The ICU technique is intended for signalized intersection analysis and estimates the volume to capacity (V/C) relationship for an intersection based on the individual V/C ratios for key conflicting traffic movements. The ICU numerical value represents the percent signal (green) time, and thus capacity, required by existing and/or future traffic. It should be noted that the ICU methodology assumes uniform traffic distribution per intersection approach lane and optimal signal timing.

Per LA County CMP requirements, the ICU calculations use a lane capacity of 1,600 vehicles per hour (vph) for left-turn, through, and right-turn lanes, and dual left turn capacity of 2,880 vph. A clearance interval of 0.10 is also added to each Level of Service calculation.

The ICU value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The six qualitative categories of Level of Service have been defined along with the corresponding ICU value range and are shown in ***Table 3-1***. The ICU value is the sum of the critical volume to capacity ratios at an intersection; it is not intended to be indicative of the LOS of each of the individual turning movements.

### 3.5.2 *Highway Capacity Manual (HCM) Method of Analysis (Signalized Intersections)*

In conformance with City of Long Beach requirements, existing weekday peak hour operating conditions for the key signalized study intersections were evaluated using the Highway Capacity Manual (HCM) method. Based on the HCM 6$^{th}$ Edition operations method of analysis, level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometries, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during ideal conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents and when there are no other vehicles on the road.

In the HCM, only the portion of total delay attributed to the control facility is quantified. This delay is called *control delay.* Control delay includes initial deceleration delay, queue move-up time, stopped delay and final acceleration delay. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle. The six qualitative categories of Level of Service that have been defined along with the corresponding HCM control delay value range for signalized intersections are shown in ***Table 3-2***.

### 3.5.3 *Highway Capacity Manual (HCM) Method of Analysis (Unsignalized Intersections)*

The HCM unsignalized methodology for stop-controlled intersections was utilized for the analysis of the unsignalized intersections. This methodology estimates the average control delay for each of the subject movements and determines the level of service for each movement. For all-way stop controlled intersections, the overall average control delay measured in seconds per vehicle, and level

of service is then calculated for the entire intersection. For one-way and two-way stop-controlled (minor street stop-controlled) intersections, this methodology estimates the worst side street delay, measured in seconds per vehicle and determines the level of service for that approach. The HCM control delay value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The six qualitative categories of Level of Service have been defined along with the corresponding HCM control delay value range, as shown in ***Table 3-3***.

### 3.5.4 *Level of Service Criteria*

According to the Cities of Signal Hill and Long Beach, LOS D is the minimum acceptable condition that should be maintained during the peak commute hours, or the current LOS if the existing LOS is worse than LOS D (i.e. LOS E of F).

## 3.6 Existing Level of Service Results

***Table 3-4*** summarizes the existing peak hour service level calculations for the eight (8) key study intersections based on existing traffic volumes and current street geometrics. Review of *Table 3-4* indicates that all of the key study intersections currently operate at LOS D or better during the weekday AM and PM peak hours.

***Appendix C*** contains the detailed peak hour level of service worksheets for the City of Signal Hill study intersections evaluated in this report. ***Appendix D*** contains the detailed peak hour level of service worksheets for the City of Long Beach study intersections evaluated in this report.

**TABLE 3-1**

**LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (ICU) [1]**

| Level of Service (LOS) | Intersection Capacity Utilization Value (V/C) | Level of Service Description |
|---|---|---|
| A | ≤ 0.600 | EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used. |
| B | 0.601 – 0.700 | VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles. |
| C | 0.701 – 0.800 | GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles. |
| D | 0.801 – 0.900 | FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups. |
| E | 0.901 – 1.000 | POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles. |
| F | > 1.000 | FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Potentially very long delays with continuously increasing queue lengths. |

[1] Source: *Transportation Research Board Circular 212 - Interim Materials on Highway Capacity.*

**TABLE 3-2**

**LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (HCM)[2]**

| Level of Service (LOS) | Control Delay Per Vehicle (seconds/vehicle) | Level of Service Description |
|---|---|---|
| A | ≤ 10.0 | This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay. |
| B | > 10.0 and ≤ 20.0 | This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay. |
| C | > 20.0 and ≤ 35.0 | Average traffic delays. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping. |
| D | > 35.0 and ≤ 55.0 | Long traffic delays. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable. |
| E | > 55.0 and ≤ 80.0 | Very long traffic delays. This level is considered by many agencies (i.e. SANBAG) to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent occurrences. |
| F | ≥ 80.0 | Severe congestion. This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels. |

[2] Source: *Highway Capacity Manual* (Signalized Intersections).

**TABLE 3-3**

**LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM)[3]**

| Level of Service (LOS) | Highway Capacity Manual Delay Value (sec/veh) | Level of Service Description |
|---|---|---|
| A | ≤ 10.0 | Little or no delay |
| B | > 10.0 and ≤ 15.0 | Short traffic delays |
| C | > 15.0 and ≤ 25.0 | Average traffic delays |
| D | > 25.0 and ≤ 35.0 | Long traffic delays |
| E | > 35.0 and ≤ 50.0 | Very long traffic delays |
| F | > 50.0 | Severe congestion |

[3] Source: *Highway Capacity Manual 6th Edition*, Chapter 20 (Two-Way Stop Control).

## TABLE 3-4
## EXISTING (YEAR 2021) PEAK HOUR INTERSECTION CAPACITY ANALYSIS

| Key Intersection | | Jurisdiction | Time Period | Control Type | ICU | LOS | Delay (s/v) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1. | Atlantic Avenue at 33rd Street | Long Beach | AM | 2∅ Traffic Signal | -- | -- | 8.4 | A |
| | | | PM | | -- | -- | 13.4 | B |
| 2. | California Avenue at 33rd Street | Signal Hill | AM | All-Way Stop | -- | -- | 8.9 | A |
| | | | PM | | -- | -- | 11.8 | B |
| 3. | California Avenue at 32nd Street | Signal Hill | AM | One-Way Stop | -- | -- | 11.2 | B |
| | | | PM | | -- | -- | 14.0 | B |
| 4. | Orange Avenue at 33rd Street | Signal Hill | AM | 2∅ Traffic Signal | 0.604 | B | -- | -- |
| | | | PM | | 0.736 | C | -- | -- |
| 5. | Orange Avenue at 32nd Street | Signal Hill | AM | 2∅ Traffic Signal | 0.738 | C | -- | -- |
| | | | PM | | 0.878 | D | -- | -- |
| 6. | California Avenue at Spring Street | Signal Hill/ Long Beach | AM | 2∅ Traffic Signal | 0.604 | B | 17.5 | B |
| | | | PM | | 0.733 | C | 17.5 | B |
| 7. | California Avenue at Wardlow Road | Long Beach | AM | 2∅ Traffic Signal | -- | -- | 20.5 | C |
| | | | PM | | -- | -- | 18.3 | B |
| 8. | Orange Avenue at Wardlow Road | Long Beach | AM | 3∅ Traffic Signal | -- | -- | 21.3 | C |
| | | | PM | | -- | -- | 27.0 | C |

Notes:
- ICU = Intersection Capacity Utilization
- LOS = Level of Service, please refer to *Tables 3-1* through *3-3* for the LOS definitions
- ∅ = Phase
- s/v = seconds per vehicle (delay)

# 4.0 TRAFFIC FORECASTING METHODOLOGY

In order to estimate the traffic impact characteristics of the proposed Project, a multi-step process has been utilized. The first step is traffic generation, which estimates the total arriving and departing traffic on a peak hour and daily basis. The traffic generation potential is forecast by applying the appropriate vehicle trip generation equations or rates to the project development tabulation.

The second step of the forecasting process is traffic distribution, which identifies the origins and destinations of inbound and outbound project traffic. These origins and destinations are typically based on demographics and existing/expected future travel patterns in the study area.

The third step is traffic assignment, which involves the allocation of project traffic to study area streets and intersections. Traffic assignment is typically based on minimization of travel time, which may or may not involve the shortest route, depending on prevailing operating conditions and travel speeds. Traffic distribution patterns are indicated by general percentage orientation, while traffic assignment allocates specific volume forecasts to individual roadway links and intersection turning movements throughout the study area.

With the forecasting process complete and project traffic assignments developed, the impact of the project is isolated by comparing operational (LOS) conditions at selected key intersections using expected future traffic volumes with and without forecast project traffic. The need for site-specific and/or cumulative local area traffic improvements can then be evaluated.

# 5.0 PROJECT TRAFFIC CHARACTERISTICS

## 5.1 Project Traffic Generation

Trip generation for the proposed Project was completed for all three project options. The trip generation potential of the proposed Project will be estimated using trip rates contained in the 10th Edition of *Trip Generation,* published by the Institute of Transportation Engineers (ITE), [Washington, D.C., 2017].

***Table 5-1*** summarizes the trip generation rates used in forecasting the vehicular trips generated by all three options of the proposed Project. As shown in *Table 5-1*, ITE Land Use 151: Mini Warehouse, ITE Land Use 720: Medical Dental Office Building, ITE Land Use 820: Shopping Center, ITE Land Use 930: Fast Casual Restaurant, ITE Land Use 932: High-Turnover Sit-Down Restaurant, and ITE Land Use 934: Fast-Food Restaurant with Drive-Through was used to forecast the trip generation potential of the proposed Project.

It should be noted that while the 3,500 SF "Retail/Service/Medical Office" building could be occupied by either a dental office or retail use, the building has been analyzed as medical/dental office building to provide a conservative assessment. A comparison of the trip generation rates for ITE Land Use 720: Medical Dental Office Building and ITE Land Use 820: Shopping Center indicates that the AM peak hour rate for medical/dental office building would generate significantly more trips compared to the AM peak hour rate for shopping center, while the PM peak hour rates for both land uses are relatively comparable.

***Table 5-2*** summarizes the trip generation potential of Option 1. A review of *Table 5-2* indicates that the proposed Project is forecast to generate approximately 1,682 daily trips, with 117 trips (67 inbound, 50 outbound) produced in the AM peak hour and 115 trips (56 inbound, 59 outbound) produced in the PM peak hour on a "typical" weekday.

***Table 5-3*** summarizes the trip generation potential of Option 2. A review of *Table 5-3* indicates that the proposed Project is forecast to generate approximately 1,940 daily trips, with 101 trips (59 inbound, 42 outbound) produced in the AM peak hour and 119 trips (58 inbound, 61 outbound) produced in the PM peak hour on a "typical" weekday.

***Table 5-4*** summarizes the trip generation potential of Option 3. A review of *Table 5-4* indicates that the proposed Project is forecast to generate approximately 2,033 daily trips, with 144 trips (80 inbound, 64 outbound) produced in the AM peak hour and 130 trips (63 inbound, 67 outbound) produced in the PM peak hour on a "typical" weekday.

To provide a conservative assessment, the trip generation for Option 3 will be analyzed in the report.

## TABLE 5-1
## PROJECT TRIP GENERATION RATES[4]

| ITE Land Use | Daily 2-Way | AM Peak Hour Enter | AM Peak Hour Exit | AM Peak Hour Total | PM Peak Hour Enter | PM Peak Hour Exit | PM Peak Hour Total |
|---|---|---|---|---|---|---|---|
| ***Trip Generation Rates*** | | | | | | | |
| ▪ 151: Mini Warehouse (TE/1000 SF) | 1.51 | 60% | 40% | 0.10 | 47% | 53% | 0.17 |
| ▪ 720: Medical Dental Office Building (TE/1000 SF) | 34.80 | 78% | 22% | 2.78 | 28% | 72% | 3.46 |
| ▪ 820: Shopping Center (TE/1000 SF) | 37.75 | 62% | 38% | 0.94 | 48% | 52% | 3.81 |
| ▪ 930: Fast Casual Restaurant (TE/1000 SF) | 315.17 | 67% | 33% | 2.07 | 55% | 45% | 14.13 |
| ▪ 932: High-Turnover Sit-Down Restaurant (TE/1000 SF) | 112.18 | 55% | 45% | 9.94 | 62% | 38% | 9.77 |
| ▪ 934: Fast-Food Restaurant with Drive-Through Window (TE/1000 SF) | 470.95 | 51% | 49% | 40.19 | 52% | 48% | 32.67 |

Notes:
TE/1000 SF = Trip end per 1,000 SF

[4] Source: *Trip Generation, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017).*

## TABLE 5-2
## PROJECT TRIP GENERATION FORECAST – OPTION 1[5]

| Project Description | Daily 2-Way | AM Peak Hour Enter | AM Peak Hour Exit | AM Peak Hour Total | PM Peak Hour Enter | PM Peak Hour Exit | PM Peak Hour Total |
|---|---|---|---|---|---|---|---|
| ***Trip Generation Forecast*** | | | | | | | |
| ▪ Shopping Center (15,000 SF) | 566 | 9 | 5 | 14 | 27 | 30 | 57 |
| Internal Capture[6] | -66 | -1 | -1 | -2 | -3 | -2 | -5 |
| Subtotal | 500 | 8 | 4 | 12 | 24 | 28 | 52 |
| Pass-by Reduction[7] | -50 | -1 | 0 | -1 | -8 | -10 | -18 |
| **Total Shopping Center** | **450** | **7** | **4** | **11** | **16** | **18** | **34** |
| ▪ High Turnover Sit-Down Restaurant (2,300 SF) | 258 | 13 | 10 | 23 | 14 | 8 | 22 |
| Internal Capture[6] | -92 | -1 | -1 | -2 | -3 | -4 | -7 |
| Subtotal | 166 | 12 | 9 | 21 | 11 | 4 | 15 |
| Pass-by Reduction[7] | -17 | -1 | -1 | -2 | -5 | -1 | -6 |
| **Total High Turnover Sit-Down Restaurant** | **149** | **11** | **8** | **19** | **6** | **3** | **9** |
| ▪ Fast-Food Restaurant with Drive-Through Window (3,300 SF) | 1,554 | 68 | 65 | 133 | 56 | 52 | 108 |
| Internal Capture[6] | -562 | -7 | -7 | -14 | -17 | -22 | -39 |
| Subtotal | 992 | 61 | 58 | 119 | 39 | 30 | 69 |
| Pass-by Reduction[7] | -248 | -30 | -28 | -58 | -20 | -15 | -35 |
| **Total Fast-Food Restaurant with Drive-Through Window** | **744** | **31** | **30** | **61** | **19** | **15** | **34** |
| ▪ Medical/Dental Office (3,500 SF) | 122 | 8 | 2 | 10 | 3 | 9 | 12 |
| Internal Capture[6] | -51 | -1 | -1 | -2 | -2 | -2 | -4 |
| **Total Medical/Dental Office** | **71** | **7** | **1** | **8** | **1** | **7** | **8** |
| ▪ Mini Warehouse (177,345 SF) | 268 | 11 | 7 | 18 | 14 | 16 | 30 |
| **Total Option 1 Project Trip Generation** | **1,682** | **67** | **50** | **117** | **56** | **59** | **115** |

5 Source: *Trip Generation, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017)*.

6 Consistent with the *Trip Generation Handbook,* published by ITE (2017), Project trip generation was adjusted to account for internal capture between the retail, restaurant, and office components of the Project. It should be noted that the internal capture adjustment considers the existing Target that is currently part of the retail center and the interaction between this existing use and the proposed Project uses.

7 Pass-By Trips are trips made as intermediate stops on the way from an origin to a primary trip destination. Pass-by trips are attracted from traffic passing the site on adjacent streets, which contain direct access to the generator. For this analysis, the following pass-by reduction factors were used (Source: *Trip Generation Handbook,3rd Edition*, ITE 2017):

- 820: Shopping Center: PM Peak Hour – 34%, Daily/AM peak hour – Assume 10%
- 932: High-Turnover Sit-Down Restaurant: PM Peak Hour – 43%, Daily/AM peak hour – Assume 10%
- 934: Fast-Food Restaurant with Drive-Through Window: AM Peak Hour – 49%, PM Peak Hour – 50%, Daily – Assume 25%

## TABLE 5-3
## PROJECT TRIP GENERATION FORECAST – OPTION 2[8]

| Project Description | Daily 2-Way | AM Peak Hour Enter | AM Peak Hour Exit | AM Peak Hour Total | PM Peak Hour Enter | PM Peak Hour Exit | PM Peak Hour Total |
|---|---|---|---|---|---|---|---|
| ***Trip Generation Forecast*** | | | | | | | |
| ▪ Shopping Center (15,000 SF) | 566 | 9 | 5 | 14 | 27 | 30 | 57 |
| Internal Capture[9] | -83 | -1 | -1 | -2 | -3 | -2 | -5 |
| Subtotal | 483 | 8 | 4 | 12 | 24 | 28 | 52 |
| Pass-by Reduction[10] | -48 | -1 | 0 | -1 | -8 | -10 | -18 |
| **Total Shopping Center** | **435** | **7** | **4** | **11** | **16** | **18** | **34** |
| ▪ Fast Casual Restaurant (2,300 SF) | 725 | 3 | 2 | 5 | 18 | 14 | 32 |
| Internal Capture[9] | -261 | 0 | 0 | 0 | -5 | -6 | -11 |
| Subtotal | 464 | 3 | 2 | 5 | 13 | 8 | 21 |
| Pass-by Reduction[10] | -46 | 0 | -1 | -1 | -6 | -3 | -9 |
| **Total Fast Casual Restaurant** | **418** | **3** | **1** | **4** | **7** | **5** | **12** |
| ▪ Fast-Food Restaurant with Drive-Through Window (3,300 SF) | 1,554 | 68 | 65 | 133 | 56 | 52 | 108 |
| Internal Capture[9] | -556 | -8 | -8 | -16 | -16 | -22 | -38 |
| Subtotal | 998 | 60 | 57 | 117 | 40 | 30 | 70 |
| Pass-by Reduction[10] | -250 | -29 | -28 | -57 | -20 | -15 | -35 |
| **Total Fast-Food Restaurant with Drive-Through Window** | **748** | **31** | **29** | **60** | **20** | **15** | **35** |
| ▪ Medical/Dental Office (3,500 SF) | 122 | 8 | 2 | 10 | 3 | 9 | 12 |
| Internal Capture[9] | -51 | -1 | -1 | -2 | -2 | -2 | -4 |
| **Total Medical/Dental Office** | **71** | **7** | **1** | **8** | **1** | **7** | **8** |
| ▪ Mini Warehouse (177,345 SF) | 268 | 11 | 7 | 18 | 14 | 16 | 30 |
| **Total Option 2 Project Trip Generation** | **1,940** | **59** | **42** | **101** | **58** | **61** | **119** |

8 Source: *Trip Generation, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017)*.

9 Consistent with the *Trip Generation Handbook,* published by ITE (2017), Project trip generation was adjusted to account for internal capture between the retail, restaurant, and office components of the Project. It should be noted that the internal capture adjustment considers the existing Target that is currently part of the retail center and the interaction between this existing use and the proposed Project uses.

10 Pass-By Trips are trips made as intermediate stops on the way from an origin to a primary trip destination. Pass-by trips are attracted from traffic passing the site on adjacent streets, which contain direct access to the generator. For this analysis, the following pass-by reduction factors were used (Source: *Trip Generation Handbook,3rd Edition*, ITE 2017):

- 820: Shopping Center: PM Peak Hour – 34%, Daily/AM peak hour – Assume 10%
- 930: Fast Casual Restaurant: ITE does not identify a pass-by reduction for this land use, therefore, the pass-by factors have been matched to ITE 932: High Turnover Sit Down Restaurant. PM Peak Hour – 43%, Daily/AM peak hour – Assume 10%.
- 934: Fast-Food Restaurant with Drive-Through Window: AM Peak Hour – 49%, PM Peak Hour – 50%, Daily – Assume 25%

## TABLE 5-4
## PROJECT TRIP GENERATION FORECAST – OPTION 3[11]

| Project Description | Daily 2-Way | AM Peak Hour Enter | AM Peak Hour Exit | AM Peak Hour Total | PM Peak Hour Enter | PM Peak Hour Exit | PM Peak Hour Total |
|---|---|---|---|---|---|---|---|
| ***Trip Generation Forecast*** | | | | | | | |
| ▪ Shopping Center (15,000 SF) | 566 | 9 | 5 | 14 | 27 | 30 | 57 |
| Internal Capture[12] | -95 | -1 | -1 | -2 | -4 | -3 | -7 |
| Subtotal | 471 | 8 | 4 | 12 | 23 | 27 | 50 |
| Pass-by Reduction[13] | -47 | -1 | 0 | -1 | -8 | -9 | -17 |
| **Total Shopping Center** | **424** | **7** | **4** | **11** | **15** | **18** | **33** |
| ▪ Fast-Food Restaurant with Drive-Through Window (5,600 SF) | 2,637 | 115 | 110 | 225 | 95 | 88 | 183 |
| Internal Capture[12] | -943 | -8 | -8 | -16 | -28 | -37 | -65 |
| Subtotal | 1,694 | 107 | 102 | 209 | 67 | 51 | 118 |
| Pass-by Reduction[13] | -424 | -52 | -50 | -102 | -34 | -25 | -59 |
| **Total Fast-Food Restaurant with Drive-Through Window** | **1,270** | **55** | **52** | **107** | **33** | **26** | **59** |
| ▪ Medical/Dental Office (3,500 SF) | 122 | 8 | 2 | 10 | 3 | 9 | 12 |
| Internal Capture[12] | -51 | -1 | -1 | -2 | -2 | -2 | -4 |
| **Total Medical/Dental Office** | **71** | **7** | **1** | **8** | **1** | **7** | **8** |
| ▪ Mini Warehouse (177,345 SF) | 268 | 11 | 7 | 18 | 14 | 16 | 30 |
| **Total Option 3 Project Trip Generation** | **2,033** | **80** | **64** | **144** | **63** | **67** | **130** |

[11] Source: *Trip Generation, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017)*.

[12] Consistent with the *Trip Generation Handbook,* published by ITE (2017), Project trip generation was adjusted to account for internal capture between the retail, restaurant, and office components of the Project. It should be noted that the internal capture adjustment considers the existing Target that is currently part of the retail center and the interaction between this existing use and the proposed Project uses.

[13] Pass-By Trips are trips made as intermediate stops on the way from an origin to a primary trip destination. Pass-by trips are attracted from traffic passing the site on adjacent streets, which contain direct access to the generator. For this analysis, the following pass-by reduction factors were used (Source: *Trip Generation Handbook,3rd Edition*, ITE 2017):

- 820: Shopping Center: PM Peak Hour – 34%, Daily/AM peak hour – Assume 10%
- 934: Fast-Food Restaurant with Drive-Through Window: AM Peak Hour – 49%, PM Peak Hour – 50%, Daily – Assume 25%

## 5.2 Project Option 3 Traffic Generation Comparison

A trip generation assessment has been prepared for Project Option 3 to compare the trips identified in *Table 5-4*, which analyzes the 3,500 SF "Retail/Service/Medical Office" building as medical/dental office, to trips generated with the 3,500 SF "Retail/Service/Medical Office" building analyzed as retail shop.

***Table 5-5*** summarizes the alternative trip generation potential of Option 3. A review of *Table 5-5* indicates that the alternative proposed Project is forecast to generate approximately 2,081 daily trips, with 139 trips (75 inbound, 64 outbound) produced in the AM peak hour and 131 trips (67 inbound, 64 outbound) produced in the PM peak hour on a "typical" weekday.

The last row of *Table 5-5* presents a comparison of the trips generated by Project Option 3 (as shown in *Table 5-4)* and the Alternative Project Option 3. As shown, the Alternative Project Option 3 trips are forecast to generate 48 additional daily trips, with 5 fewer trips produced in the AM peak hour and 1 additional trip produced in the PM peak hour. Therefore, it can be concluded that the inclusion of 3,500 SF retail shop instead of medical/dental office would result in a nominal number of additional trips and therefore would not impact the findings of this analysis. Therefore, the trips presented in *Table 5-4* were used to forecast Project trips.

## 5.3 Project Traffic Distribution and Assignment

***Figure 5-1*** illustrates the general, directional traffic distribution pattern for the proposed Project. Project traffic volumes both entering and exiting the project site have been distributed and assigned to the adjacent street system based on the following considerations:

- location of site access points in relation to the surrounding street system,
- the site's proximity to major traffic carriers and regional access routes,
- physical characteristics of the circulation system such as lane channelization and presence of traffic signals that affect travel patterns,
- ingress/egress availability at the project site, plus parking layout and allocation within the subject property, and
- input from City staff.

The anticipated AM and PM peak hour traffic volumes associated with the proposed Project are presented in ***Figures 5-2*** and ***5-3***, respectively. The traffic volume assignments presented in *Figures 5-2* and *5-3* reflect the traffic distribution characteristics shown in *Figure 5-1* and the traffic generation forecast presented in *Table 5-4.*

Additionally, ***Table 5-6*** presents a summary of the project-related added peak hour traffic volumes at the eight (8) study intersections, based on the traffic distribution characteristics shown in *Figure 5-1* and the traffic generation forecast presented in *Table 5-4,* and indicates whether the project trips exceed either the City of Signal Hill's peak hour trip threshold of 40 trips or the City of Long Beach's peak hour trip threshold of 50 trips. Review of *Table 5-6* shows that out of the eight key study intersections, only two (2) study intersections exceed the peak hour trip thresholds, which include Atlantic Avenue/33rd Street and California Avenue/33rd Street. Based on the City of Signal

Hill and City of Long Beach criteria, the remaining six (6) locations that do not meet the peak hour trip threshold for analysis. However, they have been included in this analysis per the City's requirements to fully assess the potential impact in the immediate area of the Project.

## 5.4 Existing Plus Project Traffic Conditions

The existing plus project traffic conditions have been generated based upon existing conditions and the estimated project traffic. These forecast traffic conditions have been prepared to assess the potential impacts of a Project upon the circulation system as it currently exists. This traffic volume scenario and the related intersection capacity analyses will identify the roadway improvements necessary to mitigate the direct traffic impacts of the Project, if any.

***Figures 5-4*** and ***5-5*** present projected AM and PM peak hour traffic volumes at the eight (8) key study intersections with the addition of the trips generated by the proposed Project to existing traffic volumes, respectively.

## TABLE 5-5
## ALTERNATIVE PROJECT TRIP GENERATION FORECAST – OPTION 3[14]

| Project Description | Daily 2-Way | AM Peak Hour Enter | AM Peak Hour Exit | AM Peak Hour Total | PM Peak Hour Enter | PM Peak Hour Exit | PM Peak Hour Total |
|---|---|---|---|---|---|---|---|
| ***Trip Generation Forecast*** | | | | | | | |
| ▪ Shopping Center (18,500 SF) | 698 | 11 | 6 | 17 | 34 | 36 | 70 |
| Internal Capture[15] | -111 | -1 | -1 | -2 | -4 | -3 | -7 |
| Subtotal | 587 | 10 | 5 | 15 | 30 | 33 | 63 |
| Pass-by Reduction[16] | -59 | -1 | -1 | -2 | -10 | -11 | -21 |
| **Total Shopping Center** | **528** | **9** | **4** | **13** | **20** | **22** | **42** |
| ▪ Fast-Food Restaurant with Drive-Through Window (5,600 SF) | 2,637 | 115 | 110 | 225 | 95 | 88 | 183 |
| Internal Capture[15] | -923 | -7 | -7 | -14 | -28 | -36 | -64 |
| Subtotal | 1,714 | 108 | 103 | 211 | 67 | 52 | 119 |
| Pass-by Reduction[16] | -429 | -53 | -50 | -103 | -34 | -26 | -60 |
| **Total Fast-Food Restaurant with Drive-Through Window** | **1,285** | **55** | **53** | **108** | **33** | **26** | **59** |
| ▪ Mini Warehouse (177,345 SF) | 268 | 11 | 7 | 18 | 14 | 16 | 30 |
| **Total Alternative Option 3 Project Trip Generation [A]** | **2,081** | **75** | **64** | **139** | **67** | **64** | **131** |
| **Total Option 3 Project Trip Generation (referenced from *Table 5-4*) [B]** | **2,033** | **80** | **64** | **144** | **63** | **67** | **130** |
| **Alternative Option 3 Project Trip Generation vs. Option 3 Project Trip Generation ([A] – [B])** | **48** | **-5** | **0** | **-5** | **4** | **-3** | **1** |

[14] Source: *Trip Generation, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017)*.

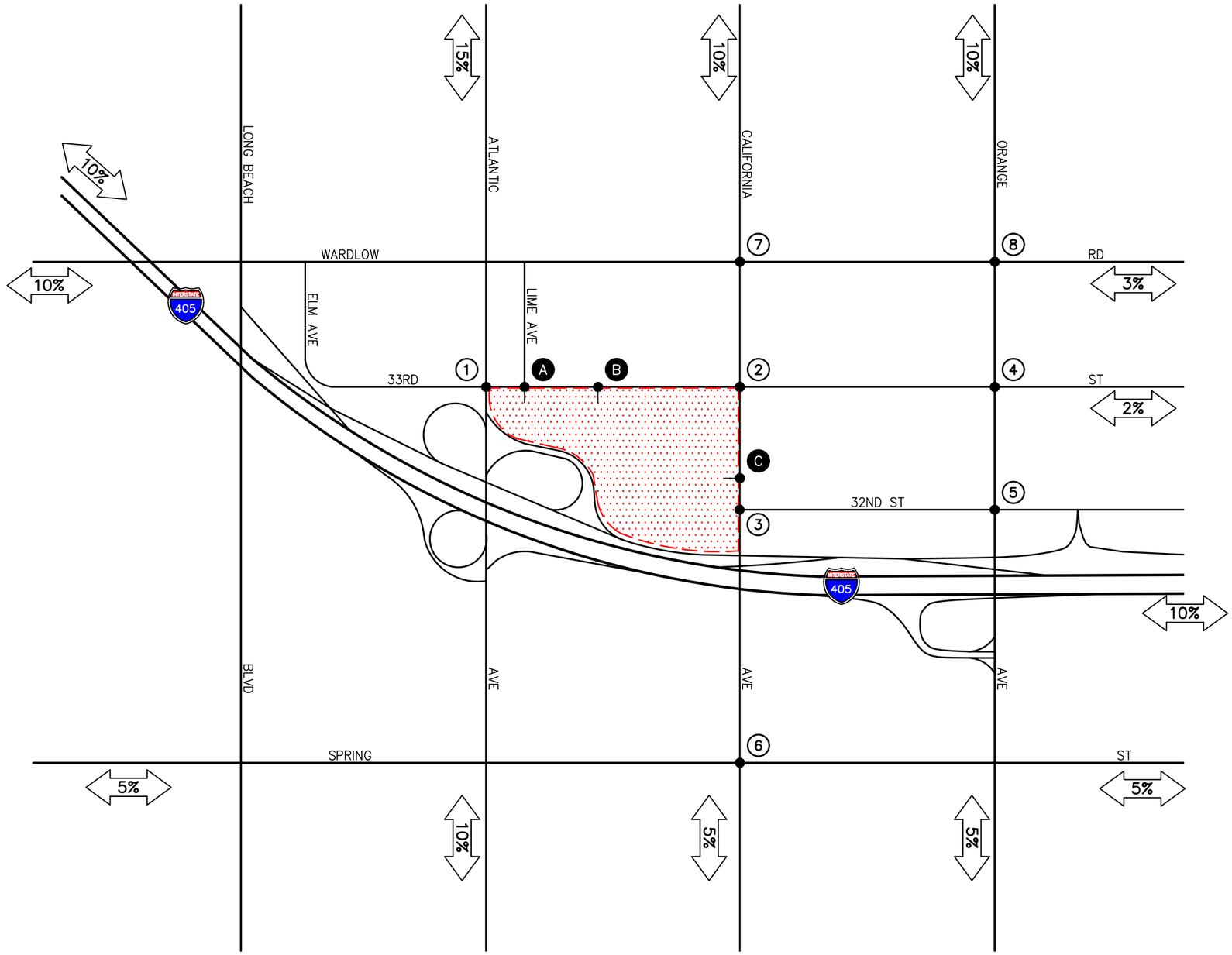
[15] Consistent with the *Trip Generation Handbook,* published by ITE (2017), Project trip generation was adjusted to account for internal capture between the retail, restaurant, and office components of the Project. It should be noted that the internal capture adjustment considers the existing Target that is currently part of the retail center and the interaction between this existing use and the proposed Project uses.

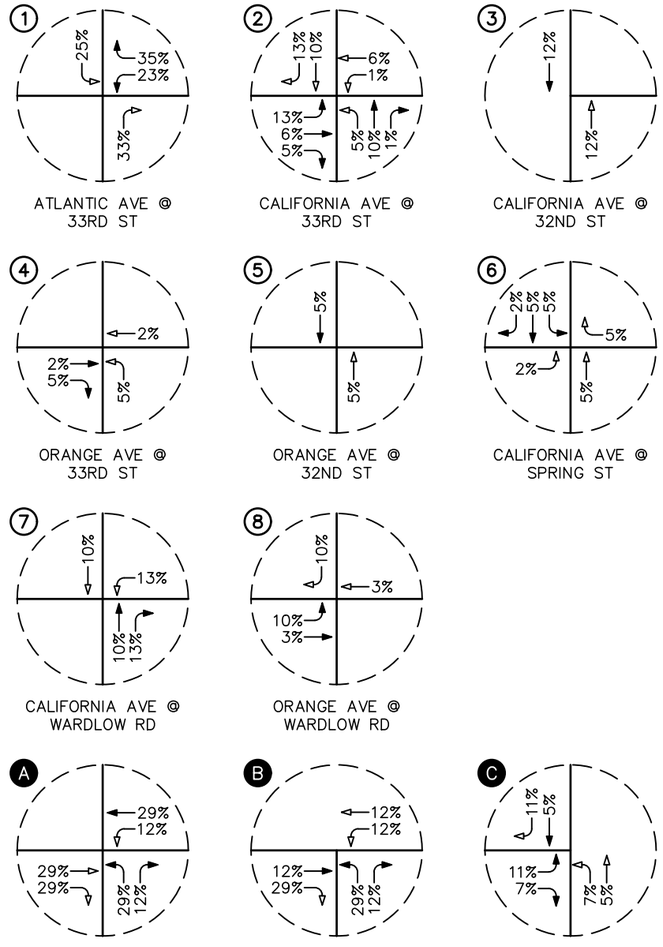
[16] Pass-By Trips are trips made as intermediate stops on the way from an origin to a primary trip destination. Pass-by trips are attracted from traffic passing the site on adjacent streets, which contain direct access to the generator. For this analysis, the following pass-by reduction factors were used (Source: *Trip Generation Handbook,3rd Edition*, ITE 2017):

- 820: Shopping Center: PM Peak Hour – 34%, Daily/AM peak hour – Assume 10%
- 934: Fast-Food Restaurant with Drive-Through Window: AM Peak Hour – 49%, PM Peak Hour – 50%, Daily – Assume 25%

## TABLE 5-6
## PROJECT-RELATED ADDED PEAK HOUR TRAFFIC VOLUMES

| | Key Intersection | Jurisdiction | Time Period | Added Peak Hour Project Trips | Exceed City of Signal Hill "40 Peak Hour Trip" Threshold (Yes/No) | Exceed City of Long Beach "50 Peak Hour Trip" Threshold (Yes/No) |
|---|---|---|---|---|---|---|
| 1. | Atlantic Avenue at 33rd Street | Long Beach | AM | 119 | -- | **Yes** |
| | | | PM | 99 | -- | **Yes** |
| 2. | California Avenue at 33rd Street | Signal Hill | AM | 50 | **Yes** | -- |
| | | | PM | 45 | **Yes** | -- |
| 3. | California Avenue at 32nd Street | Signal Hill | AM | 18 | No | -- |
| | | | PM | 16 | No | -- |
| 4. | Orange Avenue at 33rd Street | Signal Hill | AM | 10 | No | -- |
| | | | PM | 8 | No | -- |
| 5. | Orange Avenue at 32nd Street | Signal Hill | AM | 7 | No | -- |
| | | | PM | 6 | No | -- |
| 6. | California Avenue at Spring Street | Signal Hill/ Long Beach | AM | 17 | No | No |
| | | | PM | 14 | No | No |
| 7. | California Avenue at Wardlow Road | Long Beach | AM | 32 | -- | No |
| | | | PM | 30 | -- | No |
| 8. | Orange Avenue at Wardlow Road | Long Beach | AM | 18 | -- | No |
| | | | PM | 17 | -- | No |

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

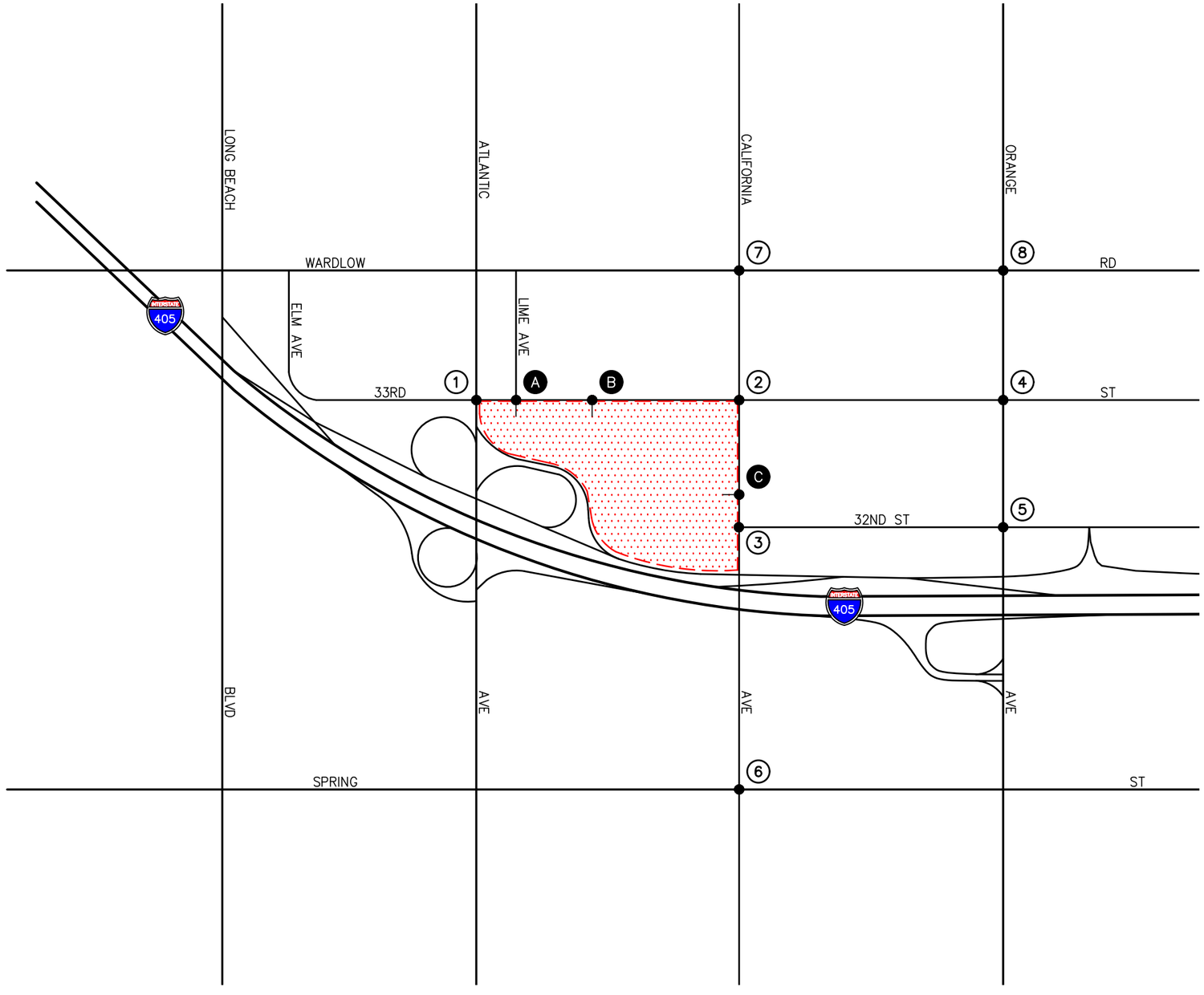
KEY

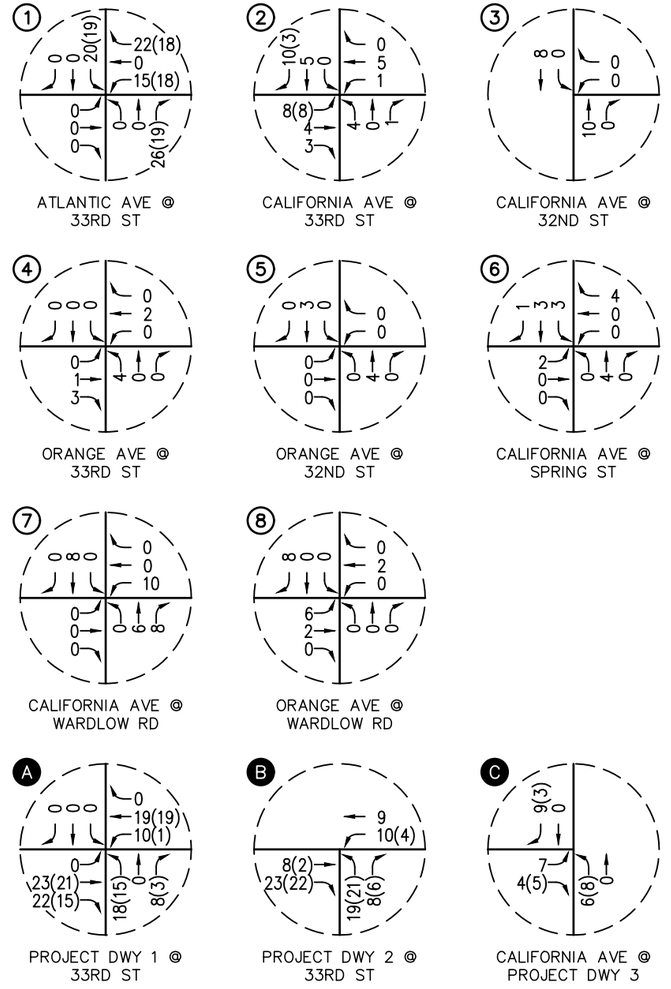
(#) = STUDY INTERSECTION
⇦ = INBOUND PERCENTAGE
⇦ = OUTBOUND PERCENTAGE
▭ = PROJECT SITE

# FIGURE 5-1

## PROJECT TRIP DISTRIBUTION PATTERN

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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N NO SCALE

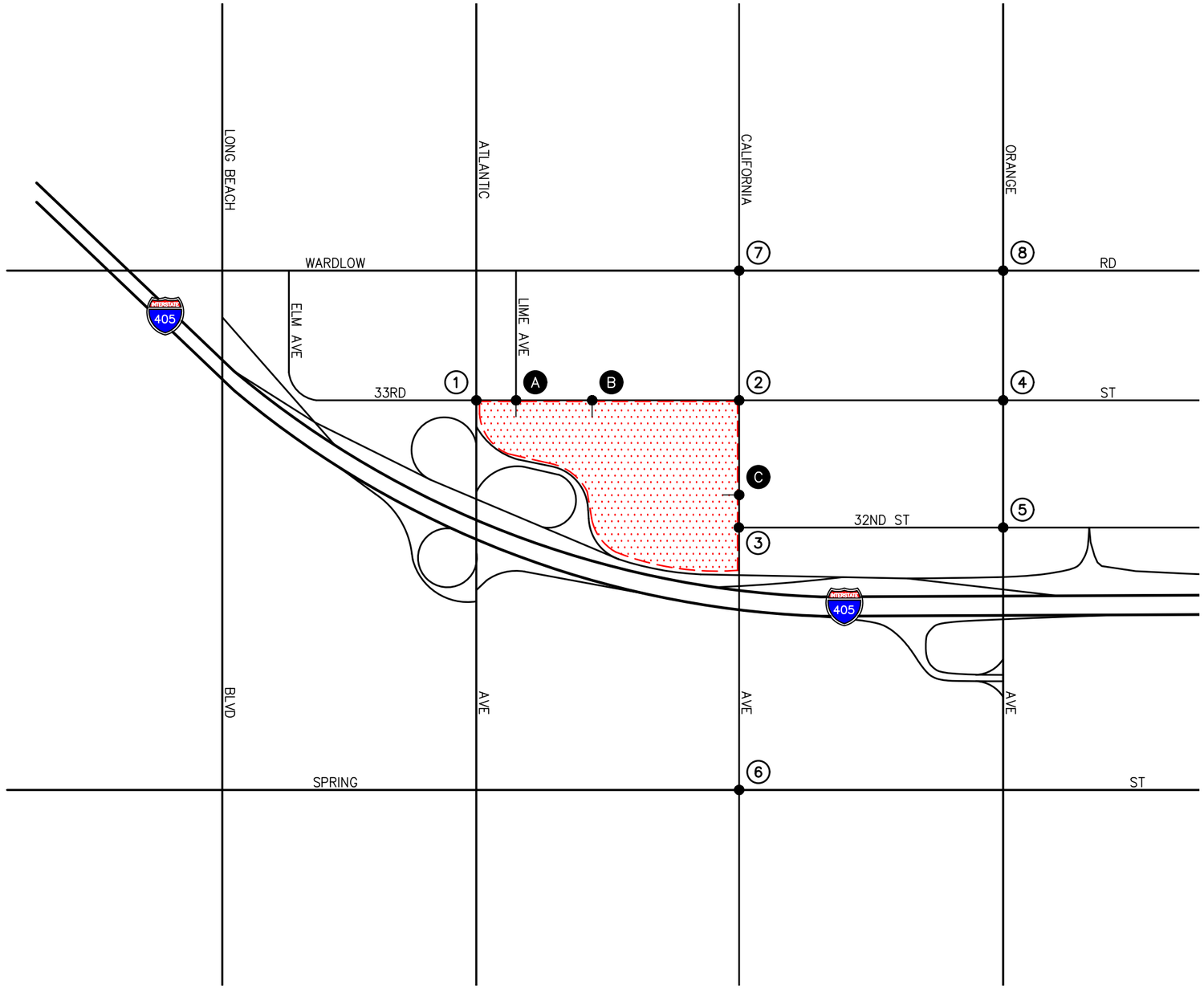
KEY

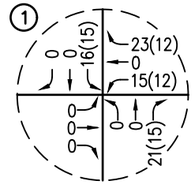
(#) = STUDY INTERSECTION
(XX) = PASS-BY TRIPS
= PROJECT SITE

# FIGURE 5-2

## AM PEAK HOUR PROJECT TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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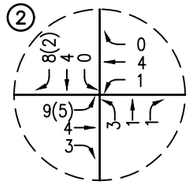
33RD ST

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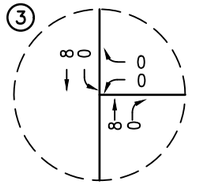


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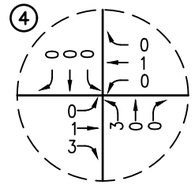


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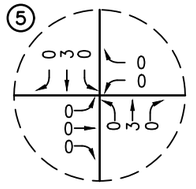


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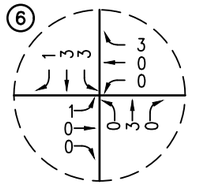


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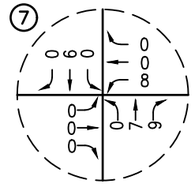
SPRING ST

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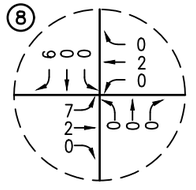


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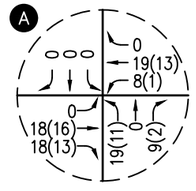


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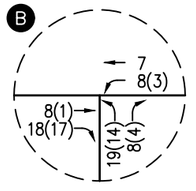


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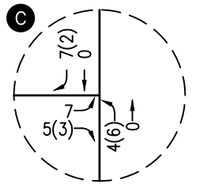


CALIFORNIA AVE @
PROJECT DWY 3

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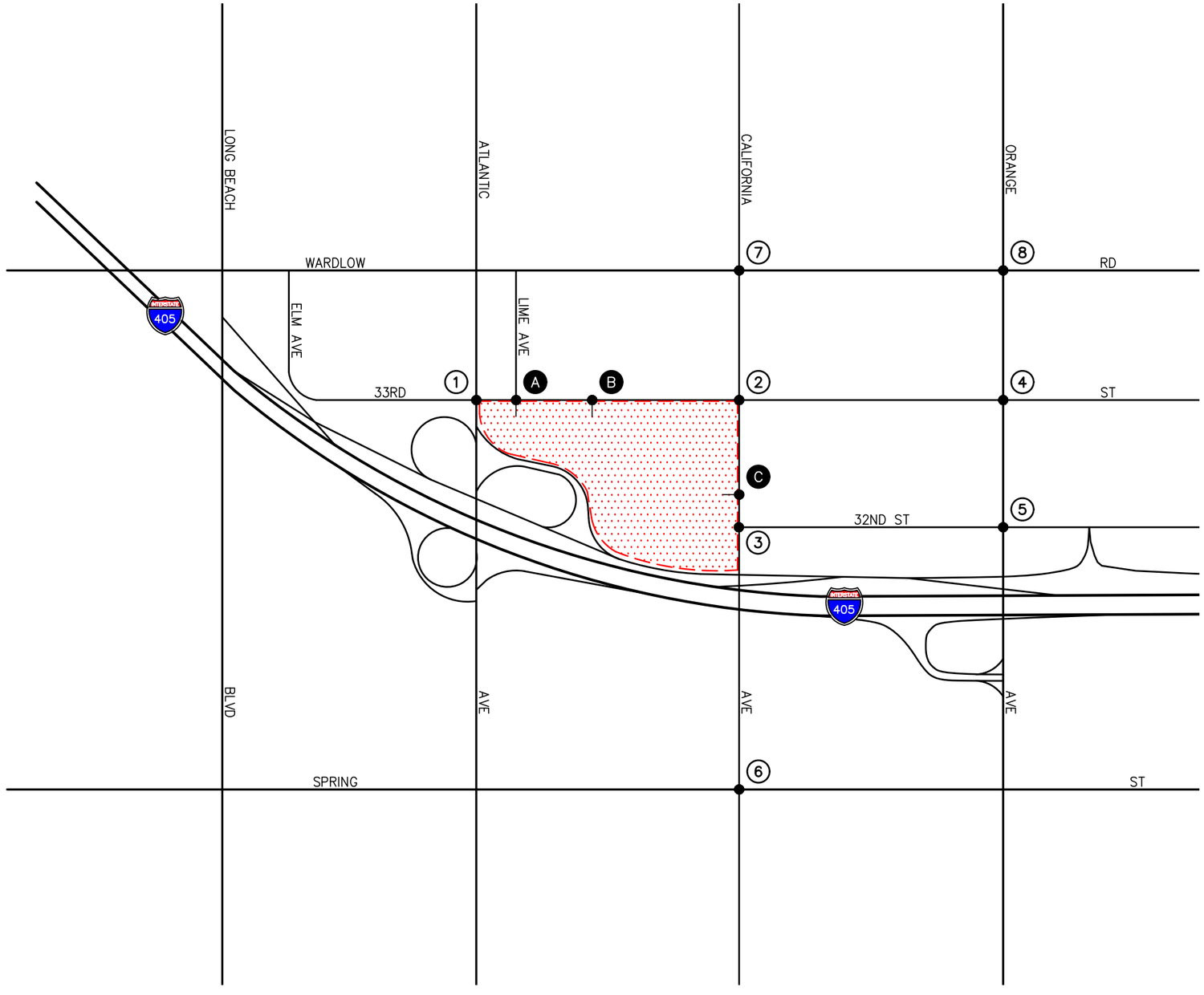
N NO SCALE

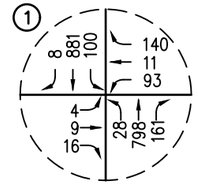
KEY
(#) = STUDY INTERSECTION
(XX) = PASS-BY TRIPS
= PROJECT SITE

# FIGURE 5-3

## PM PEAK HOUR PROJECT TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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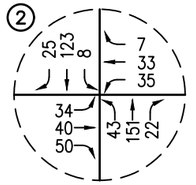


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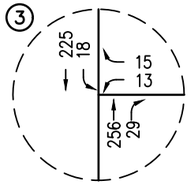


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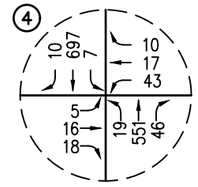


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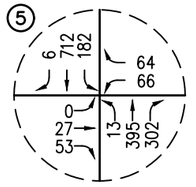


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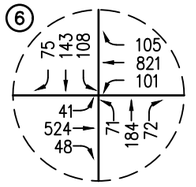


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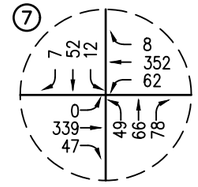


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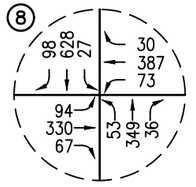


ORANGE AVE @
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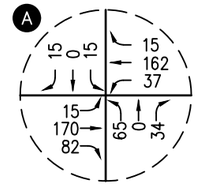


PROJECT DWY 1 @
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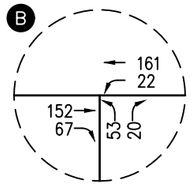


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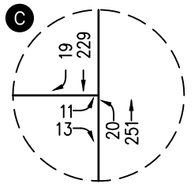


CALIFORNIA AVE @
PROJECT DWY 3

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N NO SCALE

KEY

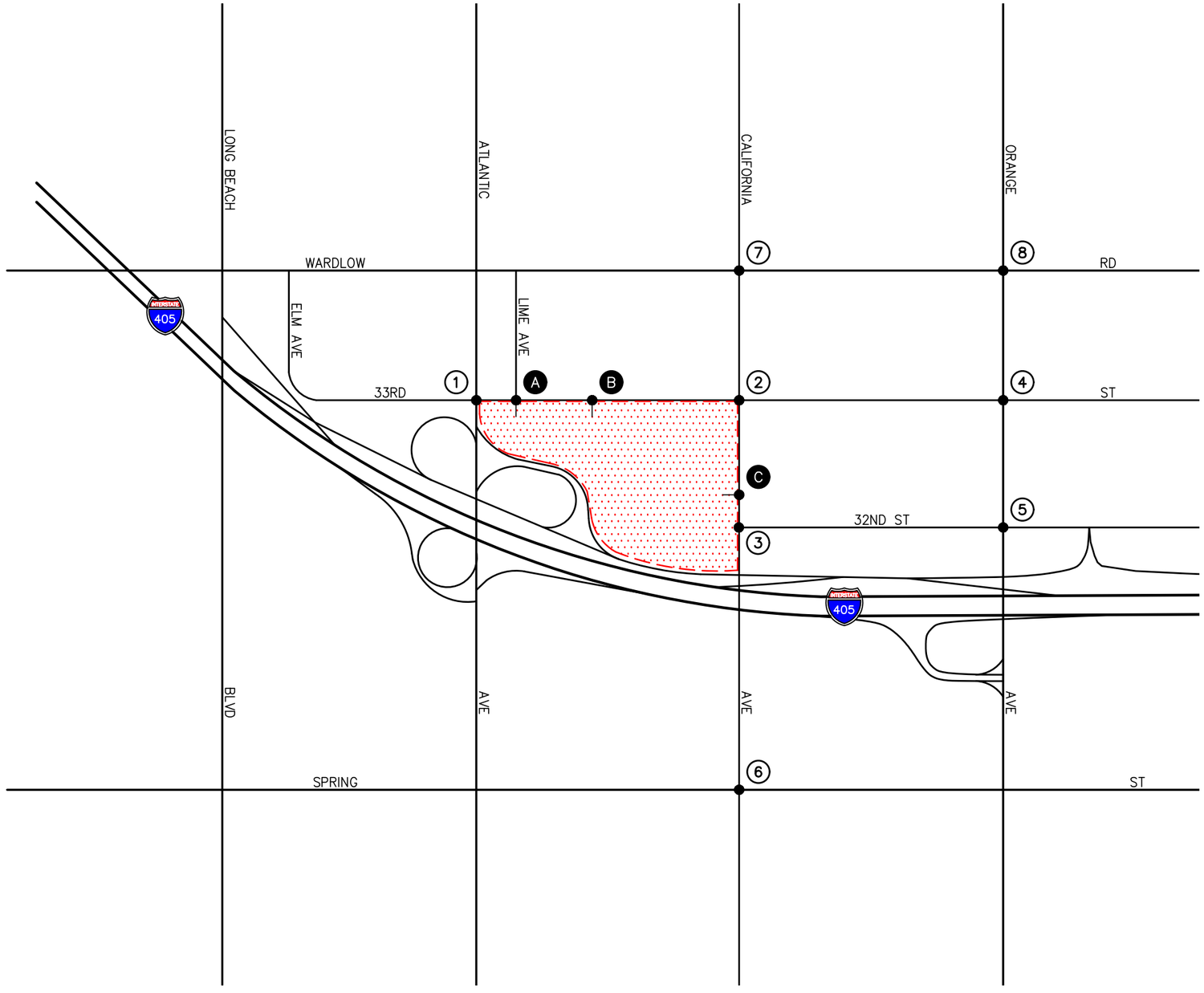
(#) = STUDY INTERSECTION

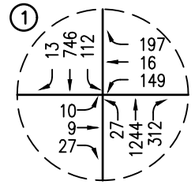
= PROJECT SITE

# FIGURE 5-4

## EXISTING PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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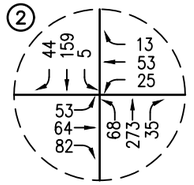


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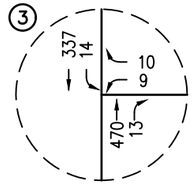


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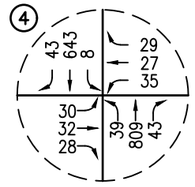


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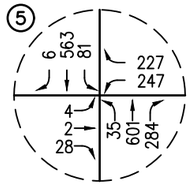


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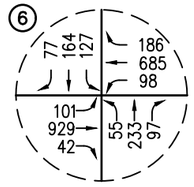


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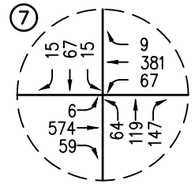


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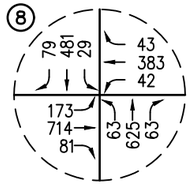


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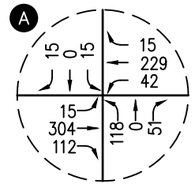


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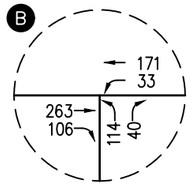


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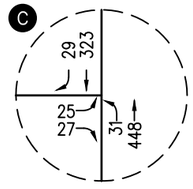


CALIFORNIA AVE @
PROJECT DWY 3

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

# FIGURE 5-5

## EXISTING PLUS PROJECT PM PEAK HOUR TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

# 6.0 FUTURE TRAFFIC CONDITIONS

## 6.1 Ambient Traffic Growth

Cumulative and buildout traffic growth estimates have been calculated using an ambient growth factor. The ambient traffic growth factor is intended to include unknown and future cumulative projects in the study area, as well as account for regular growth in traffic volumes due to the development of projects outside the study area. The future growth in traffic volumes has been calculated at one percent (1%) per year. Applied to existing Year 2021 traffic volumes results in a three percent (3%) increase of growth in existing volumes to near-term horizon Year 2024 and a twenty percent (20%) increase of growth to long-term buildout Year 2041.

Please note that the recommended ambient growth factor is generally consistent with the background traffic growth estimates contained in the most current *Congestion Management Program for Los Angeles County*. It should be further noted that the 1.0% per year ambient growth factor was approved by City of Signal Hill staff.

## 6.2 Cumulative Projects Traffic Characteristics

The Cities of Signal Hill and Long Beach identified thirty-eight (38) cumulative projects within the Project study area. Cumulative projects, as defined by Section 15355 of the CEQA Guidelines, are "closely related past, present and reasonably foreseeable probable future projects". The Traffic Impact Analysis assumes that all of these cumulative projects will be developed at their proposed size and density and operational when the proposed Project is operational. This is the most conservative, worst-case approach, since the exact timing of each cumulative project is uncertain. In addition, impacts for these cumulative projects would likely be, or have been, subject to mitigation measures and/or reduced in size, which could reduce potential impacts. Under this analysis, however, those mitigation measures and/or reduction are not considered.

With this information, the potential impact of the proposed Project can be evaluated within the context of the cumulative impact of all ongoing development. These thirty-eight (38) cumulative projects have been included as part of the cumulative and buildout background setting. Of the thirty-eight (38) cumulative projects, ten (10) are located in the City of Signal Hill and twenty-eight (28) are located in the City of Long Beach.

***Table 6-1*** provides the location and a brief description for each of the thirty-eight (38) cumulative projects. ***Figure 6-1*** graphically illustrates the location of the cumulative projects. These cumulative projects are expected to generate vehicular traffic, which may affect the operating conditions of the key study intersections.

***Table 6-2*** presents the development totals and resultant trip generation for the thirty-eight (38) cumulative projects. As shown in *Table 6-2*, the thirty-eight (38) cumulative projects are expected to generate a combined total of 26,697 daily trips, 1,930 AM peak hour trips (1,119 inbound and 811 outbound) and 2,441 PM peak hour trips (1,106 inbound and 1,335 outbound) on a typical weekday.

The AM and PM peak hour traffic volumes associated with the thirty-eight (38) cumulative projects are presented in ***Figures 6-2*** and ***6-3*** respectively.

## 6.3 Year 2024 Traffic Volumes

***Figures 6-4*** and ***6-5*** present future AM and PM peak hour near-term cumulative traffic volumes at the eight (8) key study intersections for the Year 2024, respectively. Please note that the cumulative traffic volumes represent the accumulation of existing traffic, ambient growth traffic and cumulative projects traffic.

***Figures 6-6*** and ***6-7*** illustrate Year 2024 forecast AM and PM peak hour traffic volumes with the inclusion of the trips generated by the proposed Project, respectively.

## 6.4 Year 2041 Traffic Volumes

***Figures 6-8*** and ***6-9*** present future AM and PM peak hour long-term buildout traffic volumes at the eight (8) key study intersections for the Year 2041, respectively. Please note that the buildout traffic volumes represent the accumulation of existing traffic, ambient growth traffic and cumulative projects traffic.

***Figures 6-10*** and ***6-11*** illustrate Year 2041 forecast AM and PM peak hour traffic volumes with the inclusion of the trips generated by the proposed Project, respectively.

## TABLE 6-1
## LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS[17]

| No. | Description | Location/Address | Size |
|---|---|---|---|
| ***City of Signal Hill*** | | | |
| 1. | 2550 Orange Avenue Industrial | 2550 Orange Avenue | 114,354 SF High Cube Fulfillment Center Warehouse |
| 2. | Signal Hill Heritage Square | West of Cherry Avenue, east of Rose Avenue, south of Crescent Heights Street, and north of Burnett Street. | 4 DU single family residential, 199 DU apartments, 10,700 SF retail, 19,500 SF quality restaurant, 5,000 SF high-turnover sit-down restaurant, and 1,600 SF coffee shop with drive-through window |
| 3. | Signal Hill Business Center | Bounded by Gundry Avenue to the west, Gundry Hill Apartments to the north, Gaviota Avenue to the east, and Signal Hill City Limits/Alamitos Avenue to the south | 151,080 SF Business Park |
| 4. | 2351 Walnut Ave | 2351 Walnut Ave | 7,904 SF Warehouse<br>2,051 SF Office |
| 5. | Honda Expansion | 1500 Spring Street | 2,364 SF Automobile Sales |
| 6. | Mazda Dealer | 1400 Spring Street | 32,385 SF Automobile Sales |
| 7. | Crescent Square | NEC Walnut Avenue and Crescent Heights Street | 25 DU Single-Family Residential |
| 8. | Zinnia | SWC Walnut Avenue and Hill Street | 72 DU Affordable Living |
| 9. | The Courtyard | 1939 Temple Avenue | 10 DU Multi-Family Residential |
| 10. | 2599 Pacific Coast Highway | 2599 Pacific Coast Highway | 7 DU Single-Family Residential |
| ***City of Long Beach*** | | | |
| 11. | 1803-11 | 3855 Lakewood Boulevard | 20,513 SF Office |
| 12. | 1612-29 | 101 Pacific Coast Highway and 1814 Pine Avenue | 26 DU Multi-Family Residential<br>5,550 SF Commercial |
| 13. | 1701-41 | 2515-2545 Atlantic Avenue | 154 DU Senior Living |
| 14. | 1709-32 | 1900-1940 Long Beach Blvd. | 95 DU Multi-Family Residential (5-Story)<br>12,400 SF Commercial |
| 15. | 1709-35 | 1836-1852 Locust Avenue | 47 DU Affordable Living<br>3,600 SF Commercial |
| 16. | Long Beach Senior Living | 2400 Long Beach Boulevard | 145 DU Assisted Living |

[17] Source: Cities of Long Beach and Signal Hill Planning Departments.

**TABLE 6-1 (CONTINUED)**
**LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS[18]**

| No. | Description | Location/Address | Size |
|---|---|---|---|
| *City of Long Beach (Cont.)* | | | |
| 17. | 1810-26 | 201 W. Pacific Coast Hwy | 147 DU Multi-Family Residential<br>24,000 SF Commercial |
| 18. | 1902-13 | 2701 Atlantic Avenue | 80,000 SF Office |
| 19. | 2002-07 | 941 E. Pacific Coast Highway | 68 DU Senior Living |
| 20. | Salvation Army Citadel Expansion | 3012 Long Beach Boulevard | 1 Soccer Field<br>24,608 SF Recreational Community Center |
| 21. | 1703-32 | 3426 Linden Avenue | 6,000 SF Preschool Addition |
| 22. | 1706-14 | 3849 Atlantic Avenue | 5,000 SF Commercial |
| 23. | Harbor Freight | 530 E 33rd Street | 15,432 SF Commercial |
| 24. | Spring Street Industrial | 2851 Orange Avenue | 160,673 SF Manufacturing |
| 25. | 1804-14 | 3435-3459 Long Beach Boulevard and 3464 Locust Avenue | 104,227 SF Office |
| 26. | 1805-31 | 2035 Wardlow Road | 116,877 SF Self Storage |
| 27. | 2003-024 | 712 Baker Street | 226 DU Multi-Family Residential<br>7 DU Single Family Residential |
| 28. | 2004-024 | 3450 Long Beach Boulevard | 15,200 SF Office |
| 29. | 1406-12A | 4747 Daisy Avenue | 131 DU Multi-Family Residential |
| 30. | 1707-10 | 4800 Long Beach Boulevard | 20 DU Multi-Family Residential |
| 31. | 1805-03 | 4000 Via Oro Avenue | 517,037 SF Industrial |
| 32. | 1905-29 | 4251 Long Beach Boulevard | 8,559 SF Commercial |
| 33. | 2005-08 | 3701 Pacific Place | 152,745 SF Self Storage |
| 34. | Las Ventanas Apartments | 1795 Long Beach Boulevard | 101 DU Multi-Family Residential<br>4,051 SF Commercial |
| 35. | Mendoza Project | 201-245 PCH and 1827 Pacific Avenue | 154 DU Multi-Family Residential<br>36,000 SF Commercial |
| 36. | 1807-12 | 901 De Forest Avenue | 10,000 SF stormwater treatment facility |
| 37. | 1810-23 | 469 Pacific Coast Highway | 39 DU Multi-Family Residential (4-Story) |
| 38. | 1910-23 | 2515-2545 Atlantic Avenue and 550-572 Vernon Street | 154 DU Multi-Family Residential |

[18] Source: Cities of Long Beach and Signal Hill Planning Departments.

## TABLE 6-2
## CUMULATIVE PROJECTS TRAFFIC GENERATION FORECAST[19]

| No. | Cumulative Project Description | Daily Two-Way | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total |
| 1. | 2550 Orange Avenue Industrial | 801 | 82 | 20 | 102 | 54 | 86 | 140 |
| 2. | Signal Hill Heritage Square | 3,064 | 75 | 98 | 173 | 144 | 90 | 234 |
| 3. | Signal Hill Business Center[20] | 2,668 | 207 | 37 | 244 | 64 | 182 | 246 |
| 4. | 2351 Walnut Ave | 34 | 3 | 0 | 3 | 1 | 3 | 4 |
| 5. | Honda Expansion | 66 | 3 | 1 | 4 | 2 | 4 | 6 |
| 6. | Mazda Dealer | 902 | 45 | 16 | 61 | 32 | 47 | 79 |
| 7. | Crescent Square | 236 | 5 | 14 | 19 | 16 | 9 | 25 |
| 8. | Zinnia | 294 | 14 | 22 | 36 | 14 | 10 | 24 |
| 9. | The Courtyard | 73 | 1 | 4 | 5 | 4 | 2 | 6 |
| 10. | 2599 Pacific Coast Highway | 102 | 1 | 5 | 6 | 5 | 3 | 8 |
| 11. | 1803-11 | 200 | 21 | 3 | 24 | 4 | 20 | 24 |
| 12. | 1612-29 | 379 | 6 | 10 | 16 | 16 | 13 | 29 |
| 13. | 1701-41 | 570 | 11 | 20 | 31 | 22 | 18 | 40 |
| 14. | 1709-32 | 938 | 15 | 30 | 45 | 41 | 32 | 73 |
| 15. | 1709-35 | 397 | 6 | 14 | 20 | 20 | 15 | 35 |
| 16. | Long Beach Senior Living | 600 | 18 | 8 | 26 | 21 | 21 | 42 |
| 17. | 1810-26 | 1,891 | 29 | 60 | 89 | 81 | 61 | 142 |
| 18. | 1902-13 | 779 | 80 | 13 | 93 | 15 | 77 | 92 |
| 19. | 2002-07 | 252 | 5 | 9 | 14 | 10 | 8 | 18 |
| 20. | Salvation Army Citadel Expansion[21] | 903 | 34 | 18 | 52 | 45 | 40 | 85 |
| 21. | 1703-32 | 117 | 23 | 19 | 42 | 4 | 4 | 8 |
| 22. | 1706-14 | 170 | 3 | 1 | 4 | 6 | 7 | 13 |
| 23. | Harbor Freight | 583 | 9 | 6 | 15 | 28 | 31 | 59 |
| 24. | Spring Street Industrial[22] | 757 | 93 | 27 | 120 | 40 | 90 | 130 |
| 25. | 1804-14 | 1,015 | 104 | 17 | 121 | 19 | 101 | 120 |
| 26. | 1805-31 | 176 | 7 | 5 | 12 | 9 | 11 | 20 |
| 27. | 2003-024 | 1,720 | 25 | 84 | 109 | 84 | 50 | 134 |
| 28. | 2004-024 | 148 | 15 | 3 | 18 | 3 | 14 | 17 |

[19] Unless otherwise noted, Source: *Trip Generation, 10th Editions*, Institute of Transportation Engineers (ITE) [Washington, D.C. (2017)].

[20] Source: *Signal Hill Business Center TIA*, prepared by Kunzman Associates, Inc. in July 2019.

[21] Source: *Salvation Army Long Beach Citadel Expansion Project TIA*, prepared by LLG Engineers in December 2016.

[22] Source: *Spring Street Business/Industrial Park TIA*, prepared by LLG Engineers in December 2019.

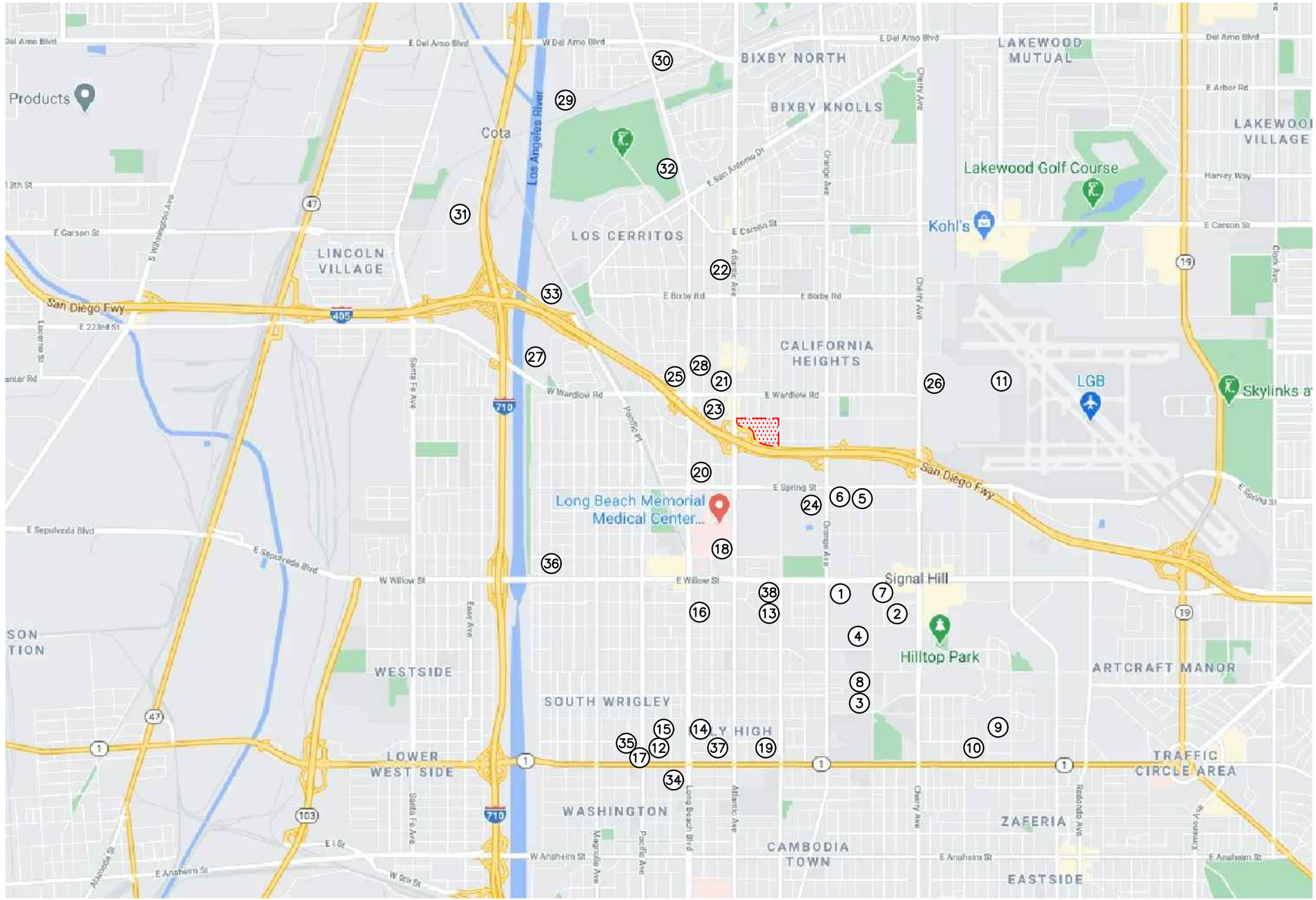
**TABLE 6-2 (CONTINUED)**

**CUMULATIVE PROJECTS TRAFFIC GENERATION FORECAST[23]**

| No. | Cumulative Project Description | Daily Two-Way | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total |
| 29. | 1406-12A | 959 | 14 | 46 | 60 | 46 | 27 | 73 |
| 30. | 1707-10 | 146 | 2 | 7 | 9 | 7 | 4 | 11 |
| 31. | 1805-03 | 900 | 68 | 20 | 88 | 26 | 72 | 98 |
| 32. | 1905-29 | 291 | 4 | 3 | 7 | 11 | 11 | 22 |
| 33. | 2005-08 | 231 | 9 | 6 | 15 | 12 | 14 | 26 |
| 34. | Las Ventanas Apartments[24] | 803 | 11 | 42 | 53 | 46 | 28 | 74 |
| 35. | Mendoza Project | 2,061 | 33 | 53 | 86 | 85 | 73 | 158 |
| 36. | 1807-12 | 132 | 18 | 5 | 23 | 5 | 18 | 23 |
| 37. | 1810-23 | 212 | 4 | 10 | 14 | 10 | 7 | 17 |
| 38. | 1910-23 | 1,127 | 16 | 55 | 71 | 54 | 32 | 86 |
| | **Total Cumulative Projects Tip Generation Forecast** | **26,697** | **1,119** | **811** | **1,930** | **1,106** | **1,335** | **2,441** |

[23] Unless otherwise noted, Source: *Trip Generation, 10th Editions*, Institute of Transportation Engineers (ITE) [Washington, D.C. (2017)].

[24] Source: *1795 Long Beach Boulevard Mixed-Use Development Project TIA*, prepared by LLG Engineers in June 2017.




## KEY

1. 2550 ORANGE AVENUE INDUSTRIAL
2. SIGNAL HILL HERITAGE SQUARE
3. SINGAL HILL BUSINESS CENTER
4. 2351 WALNUT AVE
5. HONDA EXPANSION
6. MAZDA DEALER
7. CRESCENT SQUARE
8. ZINNIA
9. THE COURTYARD
10. 2599 PACIFIC COAST HIGHWAY
11. 1803–11
12. 1612–29
13. 1701–41
14. 1709–32
15. 1709–35
16. LONG BEACH SENIOR LIVING
17. 1810–26
18. 1902–13
19. 2002–07
20. SALVATION ARMY CITADEL EXPANSION
21. 1703–32
22. 1706–14
23. HARBOR FREIGHT
24. SPRING STREET INDUSTRIAL
25. 1804–14
26. 1805–31
27. 2003–024
28. 2004–024
29. 1406–12A
30. 1707–10
31. 1805–03
32. 1905–29
33. 2005–08
34. LAS VENTANAS APARTMENTS
35 MEDOZA PROJECT
36. 1807–12
37. 1810–23
38. 1910–23

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

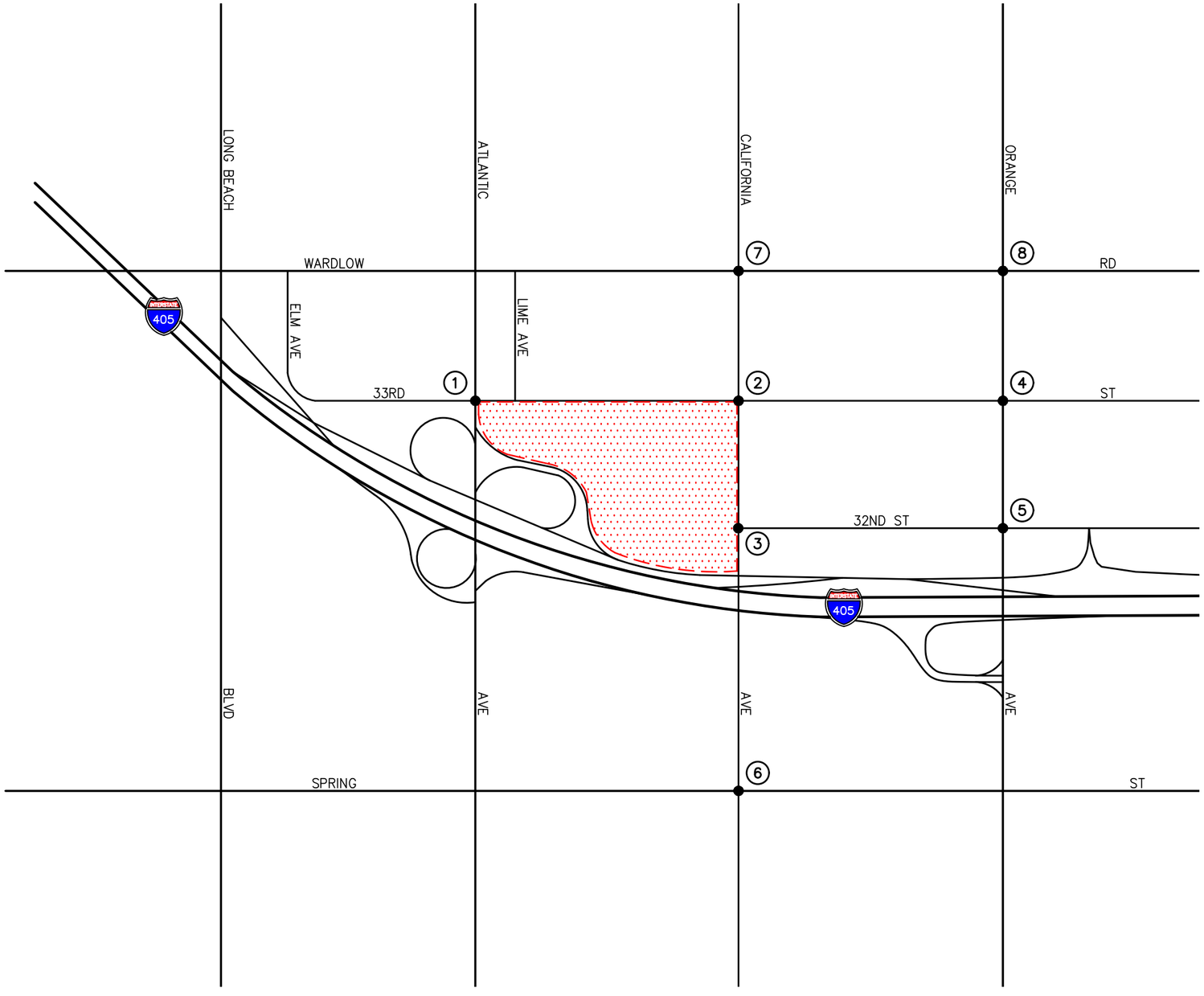
(#) = LOCATION OF CUMULATIVE PROJECT

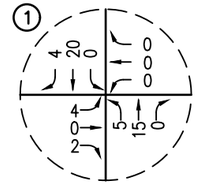
= PROJECT SITE

# FIGURE 6–1

**LOCATION OF CUMULATIVE PROJECTS**

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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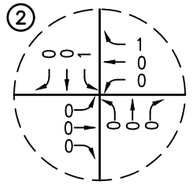


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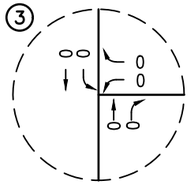


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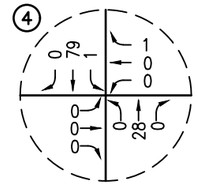


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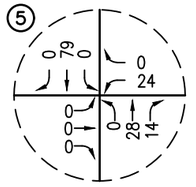


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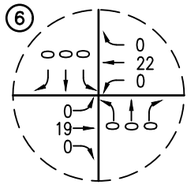


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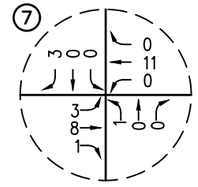


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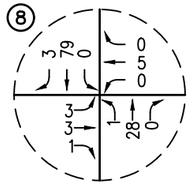
WARDLOW RD




ORANGE AVE @
WARDLOW RD

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LINSCOTT LAW & GREENSPAN engineers

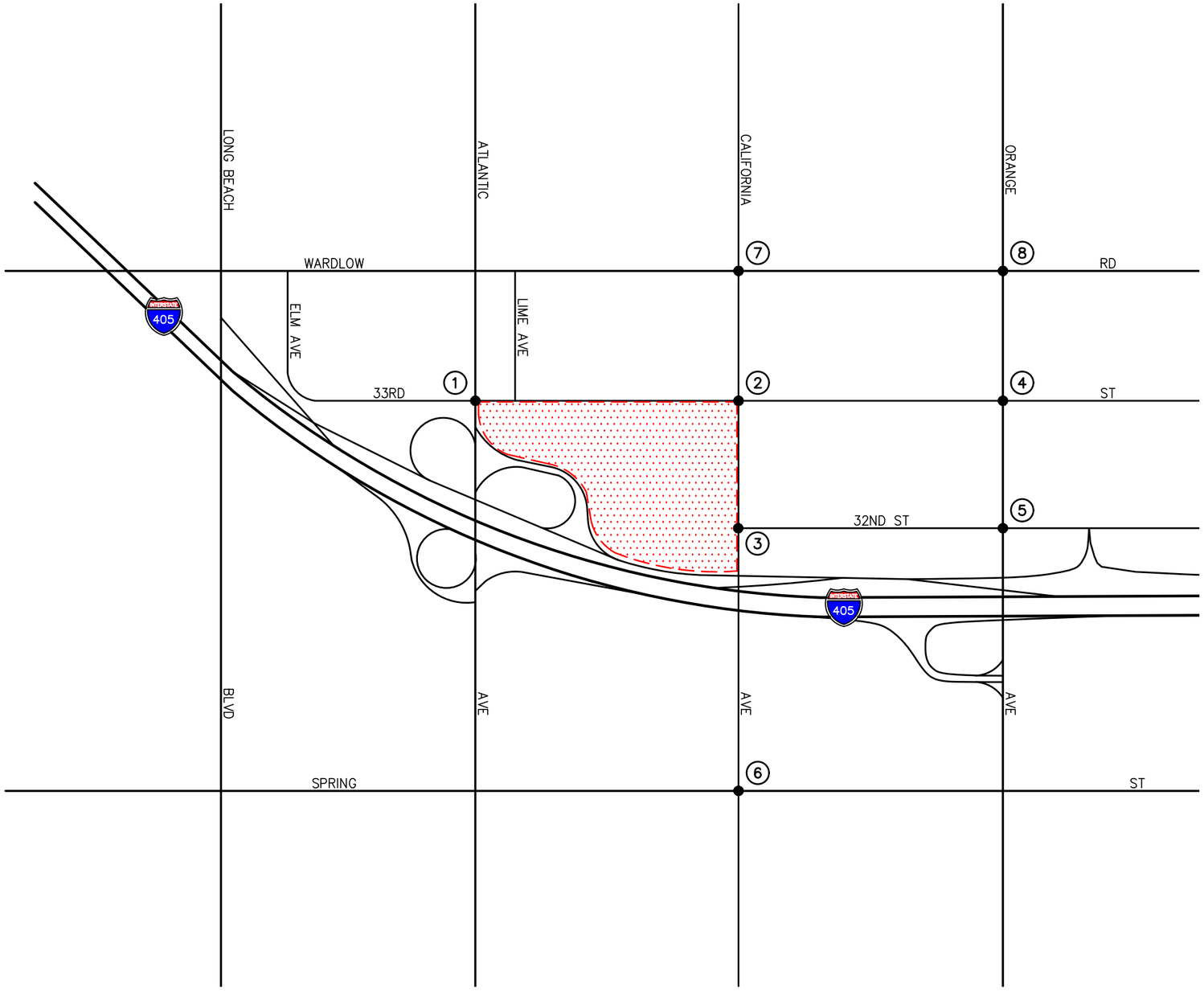
N NO SCALE

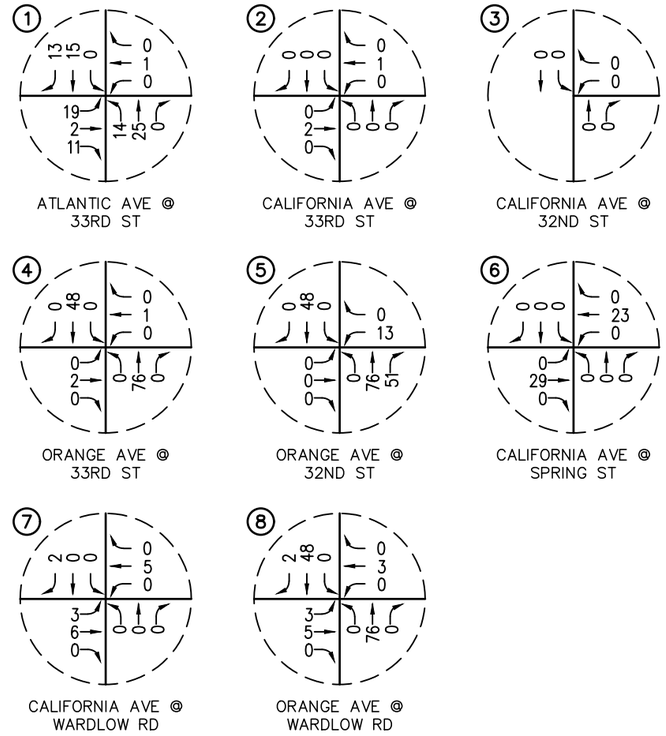
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

# FIGURE 6-2

## AM PEAK HOUR CUMULATIVE PROJECT TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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LINSCOTT LAW & GREENSPAN engineers

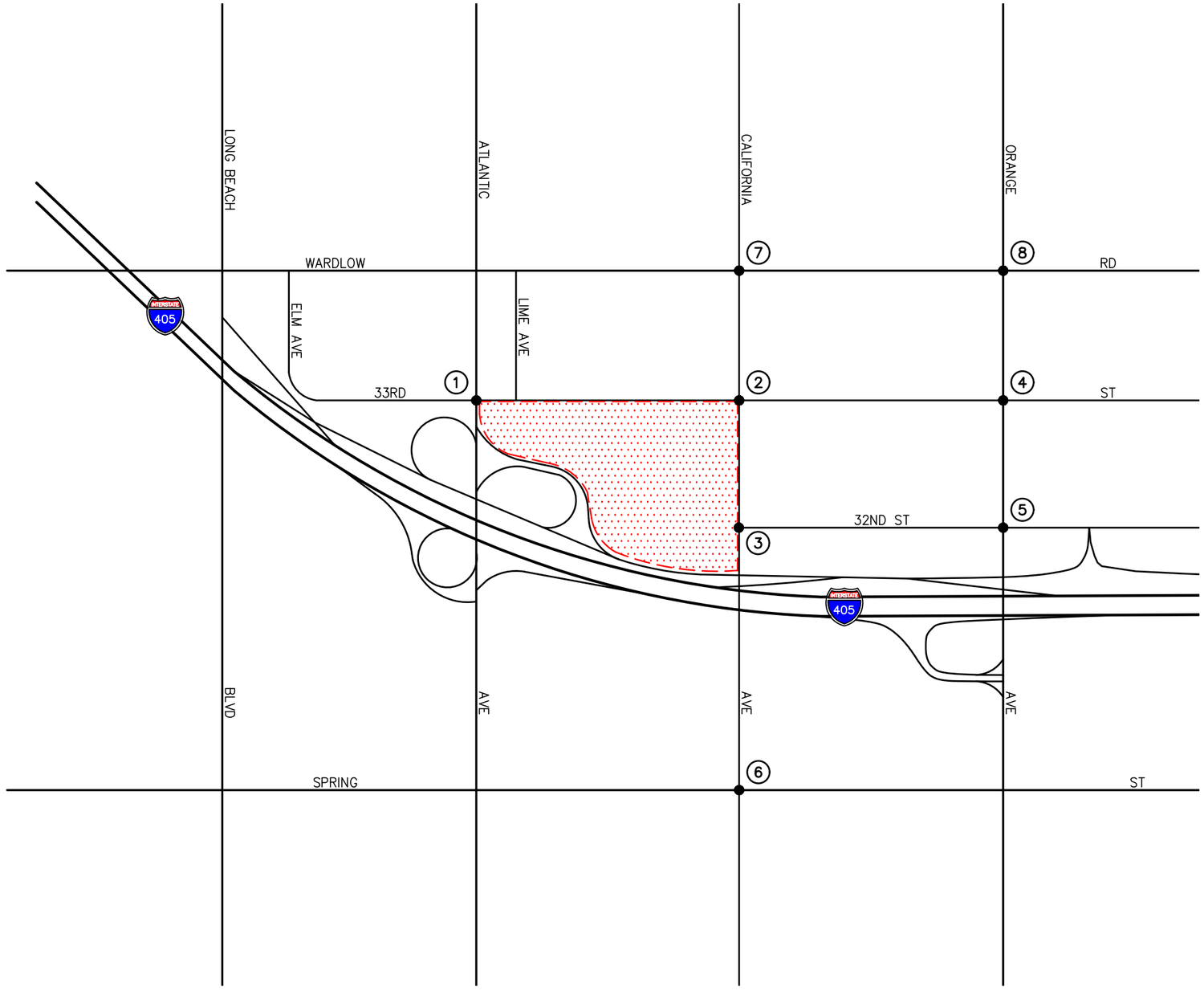
N NO SCALE

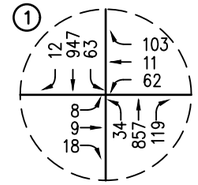
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

# FIGURE 6-3

## PM PEAK HOUR CUMULATIVE PROJECT TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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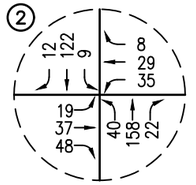


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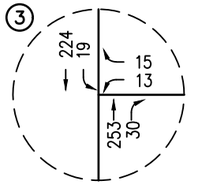


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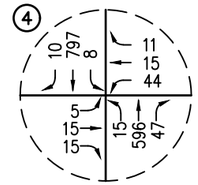


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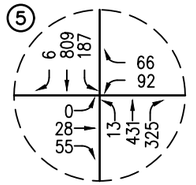


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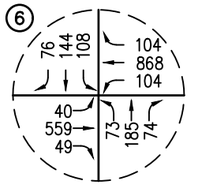


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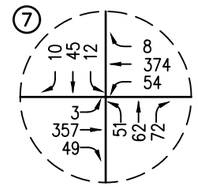


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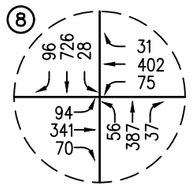


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LINSCOTT LAW & GREENSPAN engineers

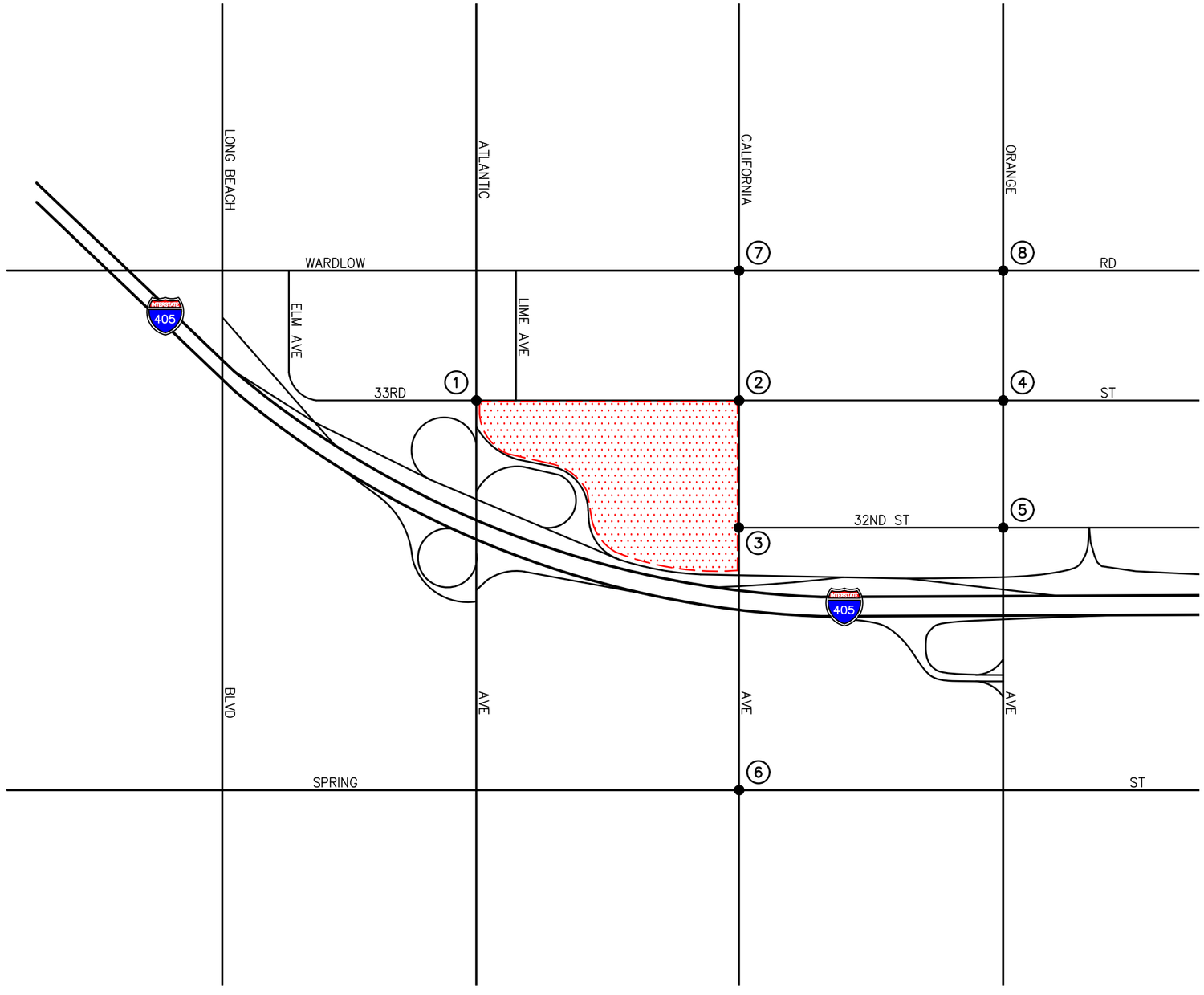
N NO SCALE

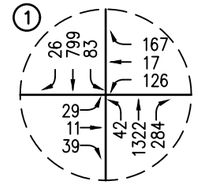
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

# FIGURE 6-4

## YEAR 2024 CUMULATIVE AM PEAK HOUR TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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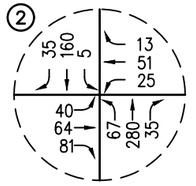


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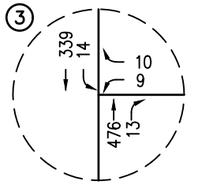


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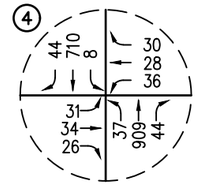


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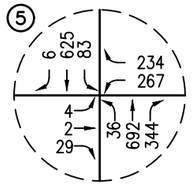


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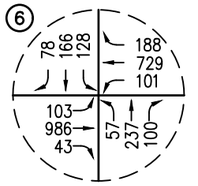
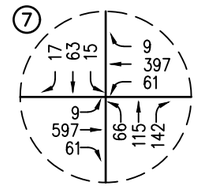
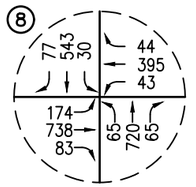



CALIFORNIA AVE @ SPRING ST




CALIFORNIA AVE @ WARDLOW RD




ORANGE AVE @ WARDLOW RD

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LINSCOTT LAW & GREENSPAN engineers

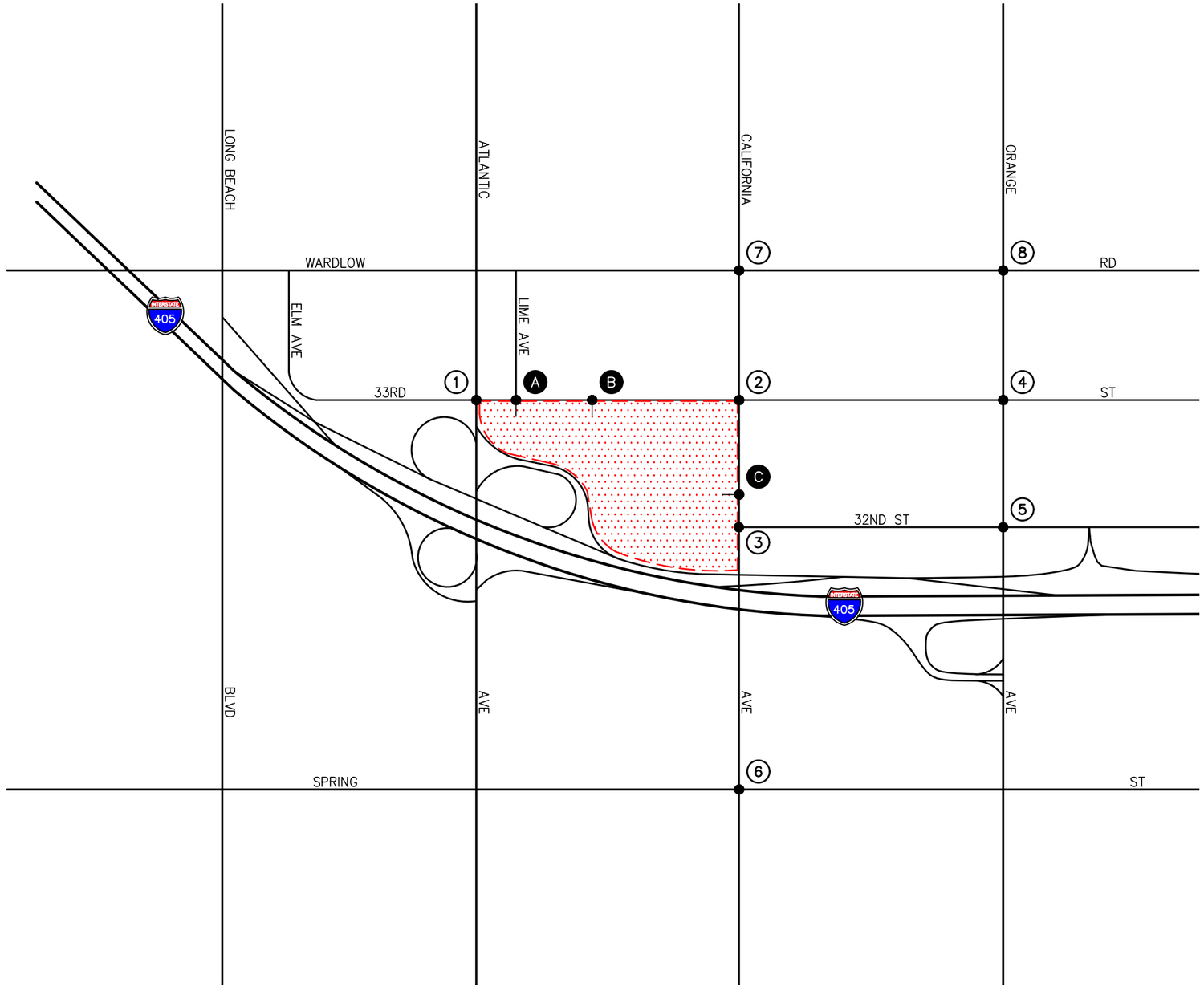
N NO SCALE

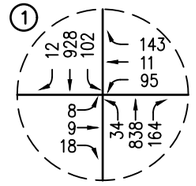
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

# FIGURE 6-5

## YEAR 2024 CUMULATIVE PM PEAK HOUR TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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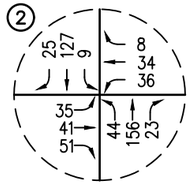
33RD ST

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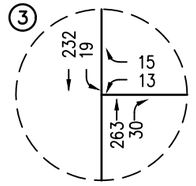
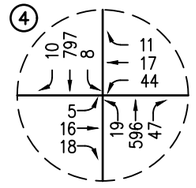



CALIFORNIA AVE @
32ND ST

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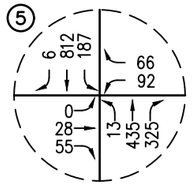


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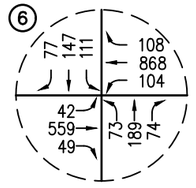
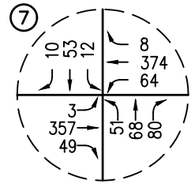



CALIFORNIA AVE @
SPRING ST

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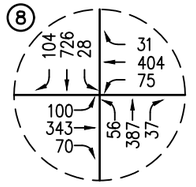
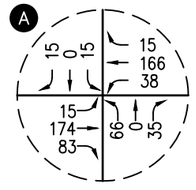
WARDLOW RD




ORANGE AVE @
WARDLOW RD




PROJECT DWY 1 @
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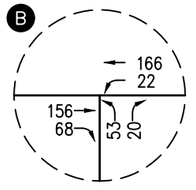


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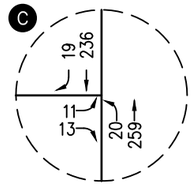



CALIFORNIA AVE @
PROJECT DWY 3

n:\4200\2204277 - target retail center & self storage, signal hill\dwg\tia report 2-26-21\4277 f6-6.dwg LDP 11:27:05 02-24-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

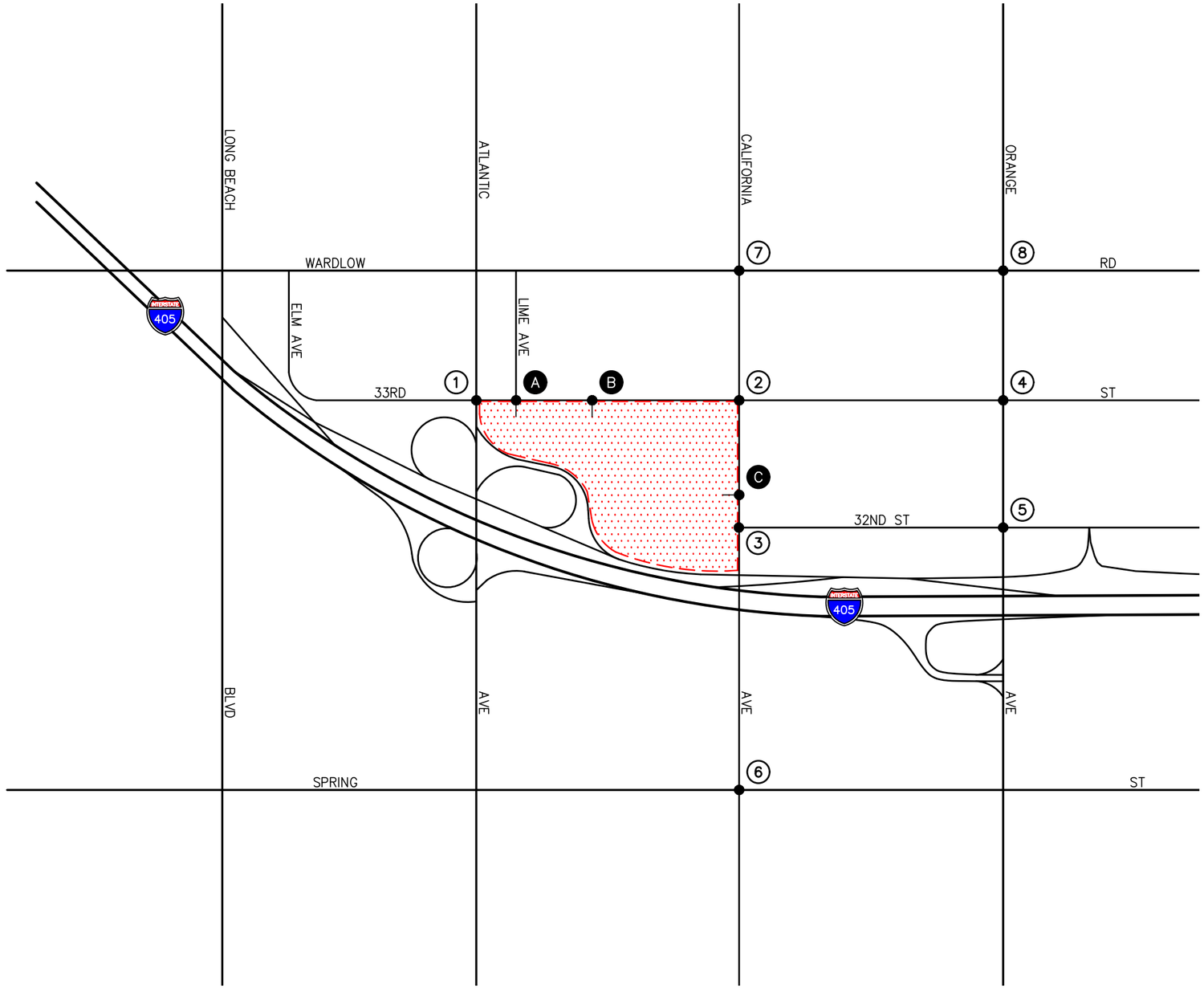
(#) = STUDY INTERSECTION

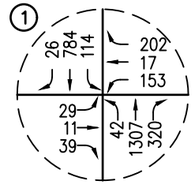
= PROJECT SITE

# FIGURE 6-6

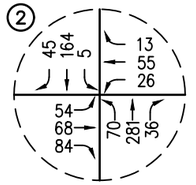
## YEAR 2024 CUMULATIVE PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL




ATLANTIC AVE @
33RD ST

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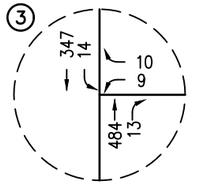


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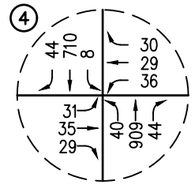
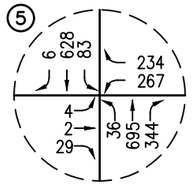
32ND ST




ORANGE AVE @
33RD ST

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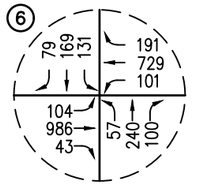
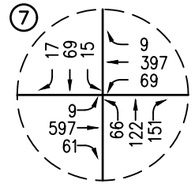
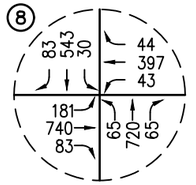



CALIFORNIA AVE @
SPRING ST




CALIFORNIA AVE @
WARDLOW RD

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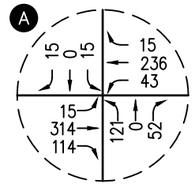
WARDLOW RD




PROJECT DWY 1 @
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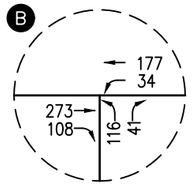


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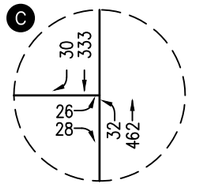



CALIFORNIA AVE @
PROJECT DWY 3

n:\4200\2204277 - target retail center & self storage, signal hill\dwg\tia report 2-26-21\4277 f6-7.dwg LDP 11:27:39 02-24-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

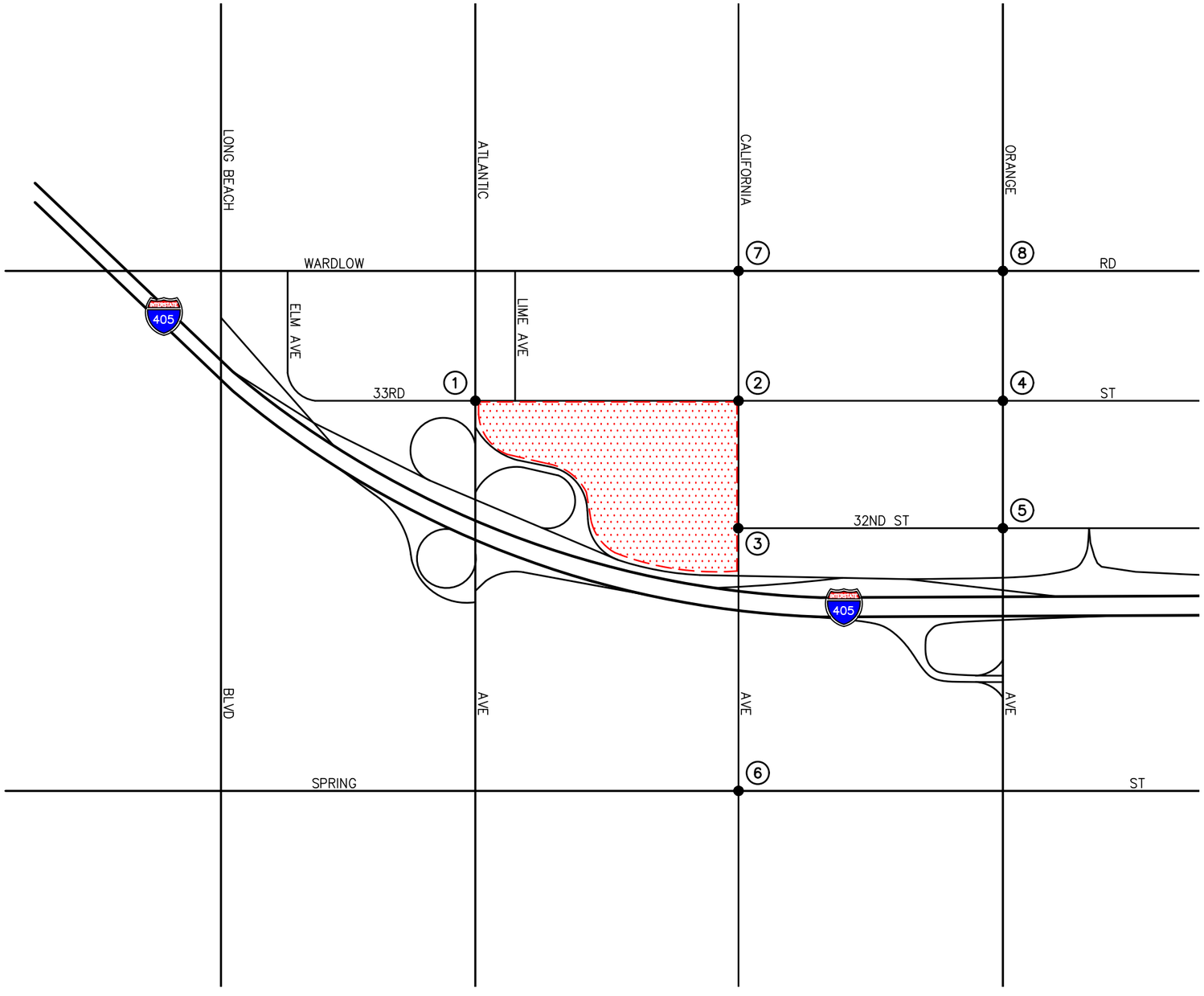
N NO SCALE

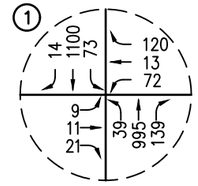
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

# FIGURE 6-7

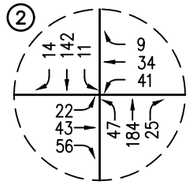
## YEAR 2024 CUMULATIVE PLUS PROJECT PM PEAK HOUR TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

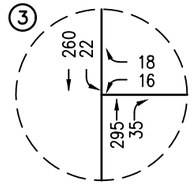



ATLANTIC AVE @ 33RD ST




CALIFORNIA AVE @ 33RD ST

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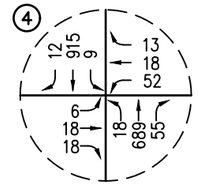


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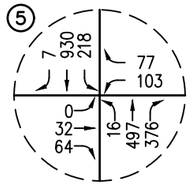


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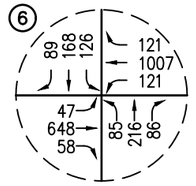
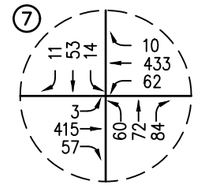
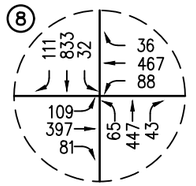



CALIFORNIA AVE @ SPRING ST




CALIFORNIA AVE @ WARDLOW RD




ORANGE AVE @ WARDLOW RD

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LINSCOTT LAW & GREENSPAN engineers

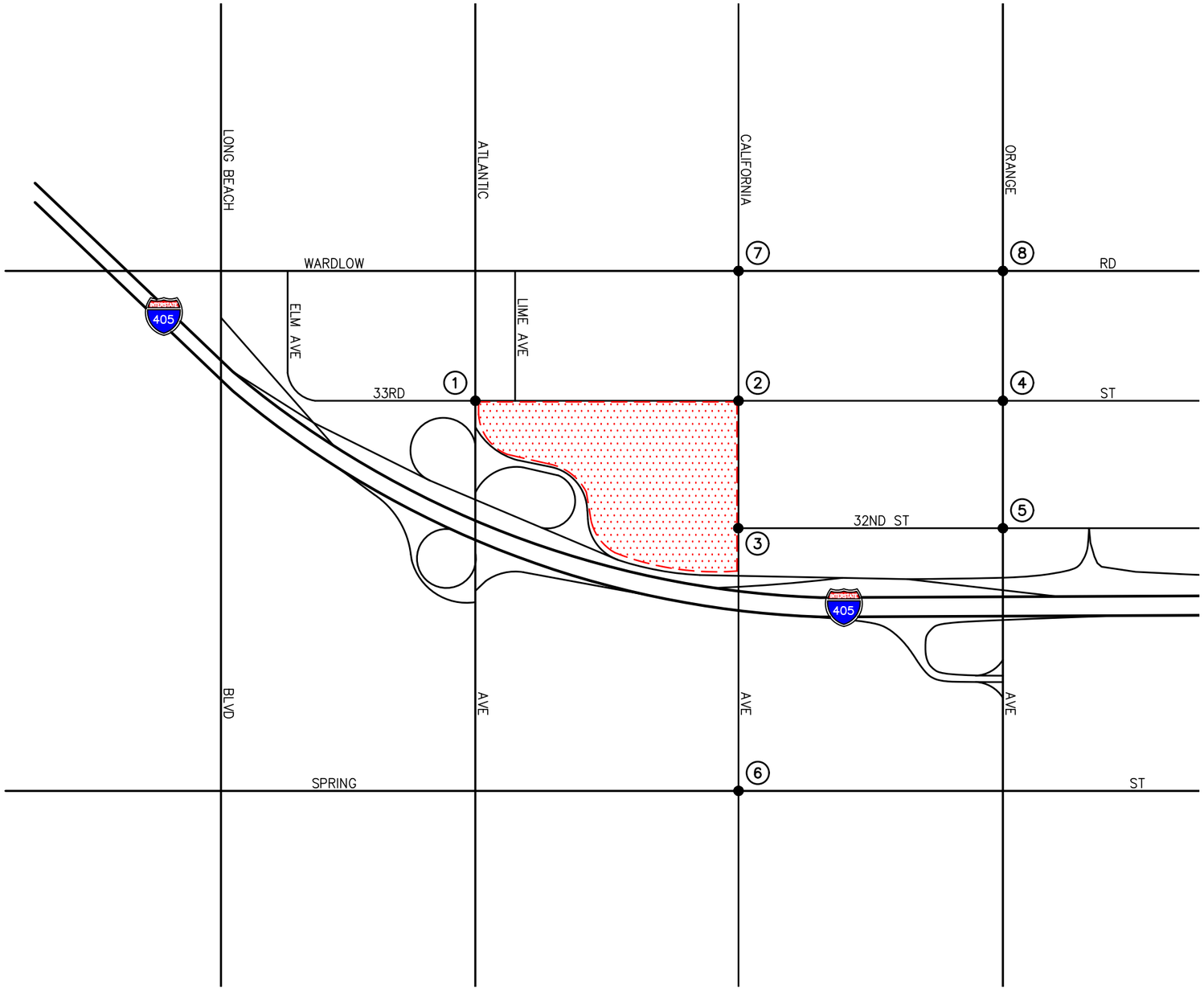
N NO SCALE

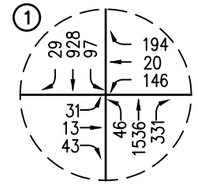
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

# FIGURE 6-8

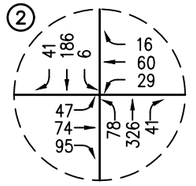
## YEAR 2041 BUILDOUT AM PEAK HOUR TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL




ATLANTIC AVE @ 33RD ST

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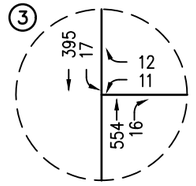
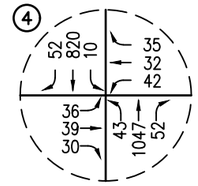
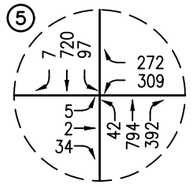


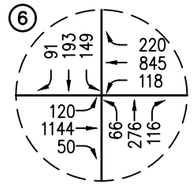

CALIFORNIA AVE @ 32ND ST



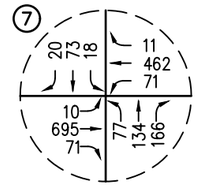

ORANGE AVE @ 33RD ST



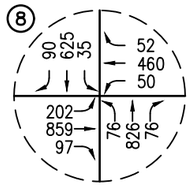

ORANGE AVE @ 32ND ST




CALIFORNIA AVE @ SPRING ST




CALIFORNIA AVE @ WARDLOW RD




ORANGE AVE @ WARDLOW RD

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LINSCOTT LAW & GREENSPAN engineers

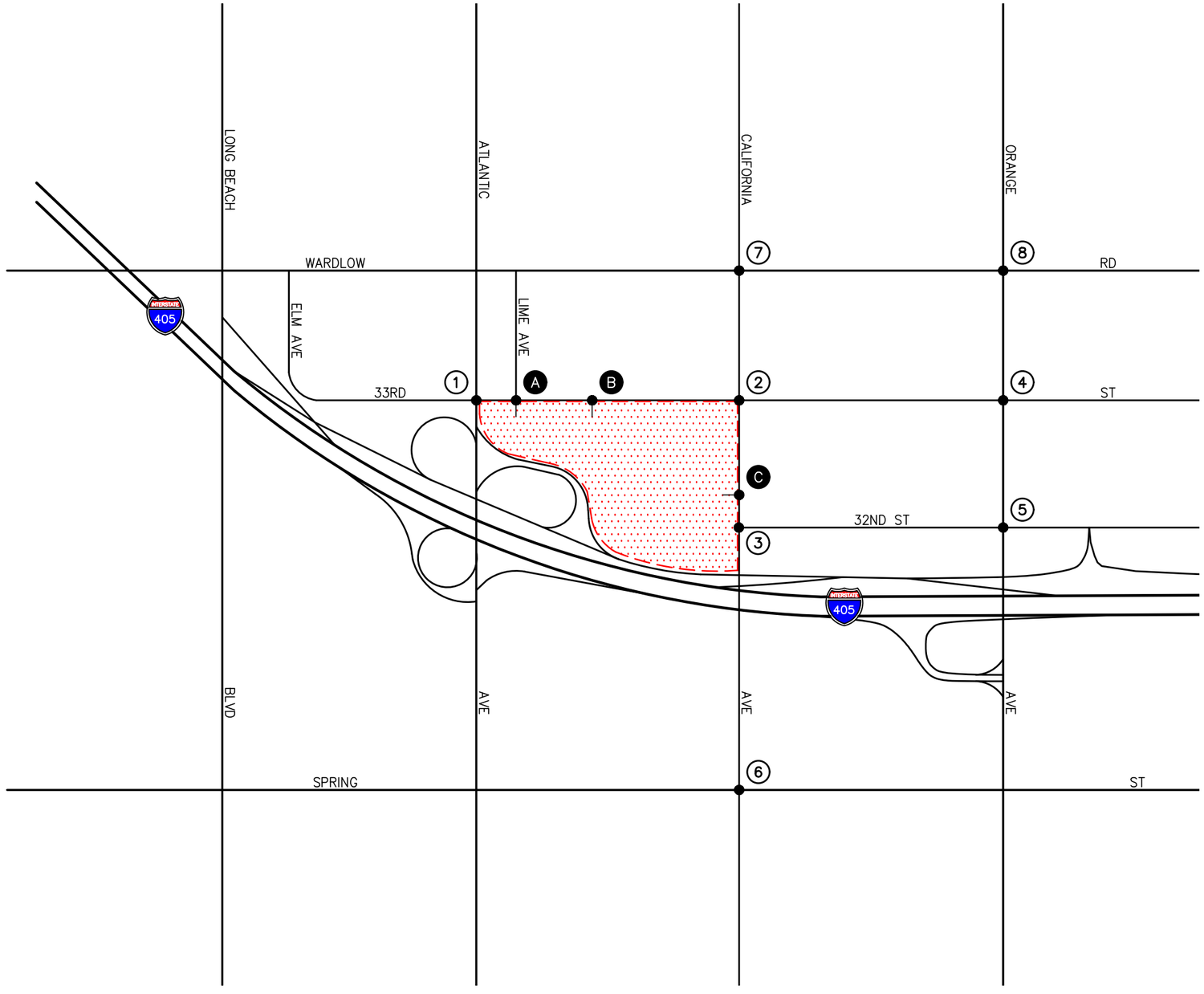
N NO SCALE

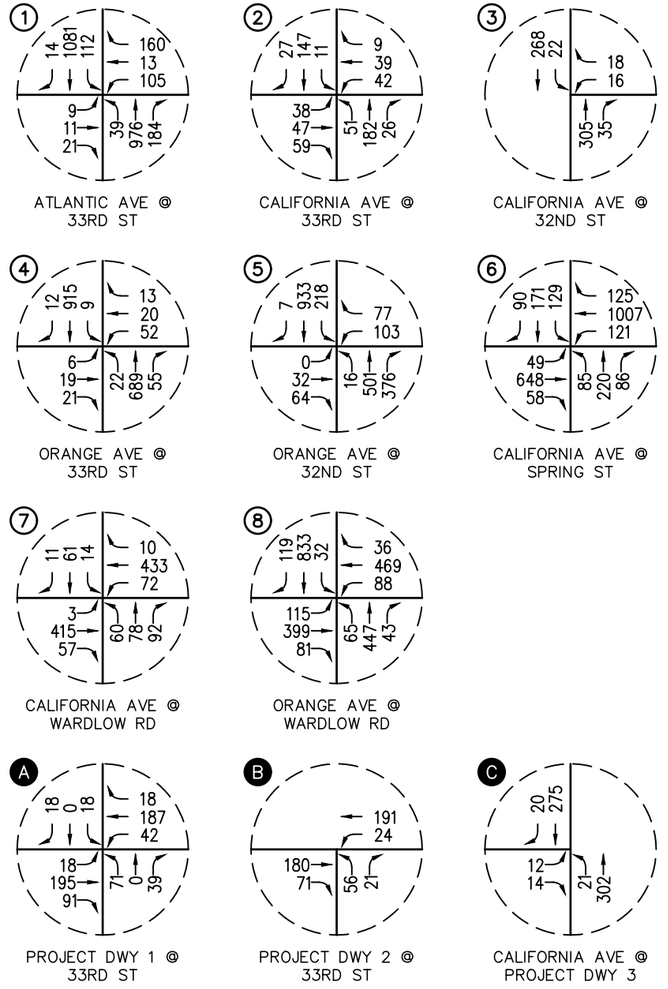
KEY
(#) = STUDY INTERSECTION
= PROJECT SITE

# FIGURE 6-9

## YEAR 2041 BUILDOUT PM PEAK HOUR TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL




n:\4200\2204277 - target retail center & self storage, signal hill\dwg\tia report 2-26-21\4277 f6-10.dwg LDP 11:29:34 02-24-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

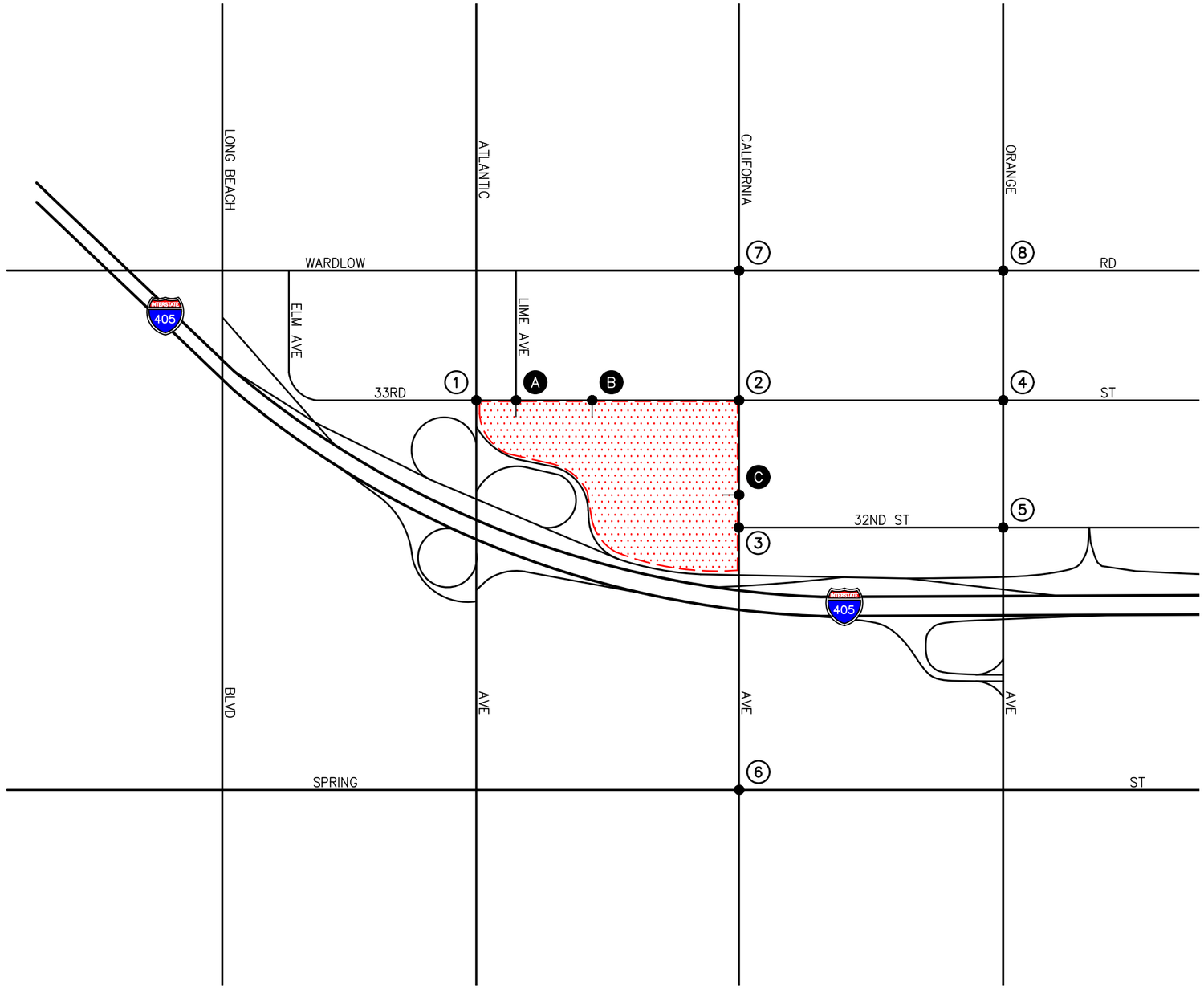
(#) = STUDY INTERSECTION

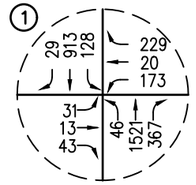
= PROJECT SITE

# FIGURE 6-10

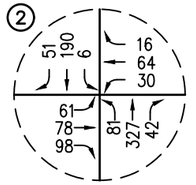
## YEAR 2041 BUILDOUT PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

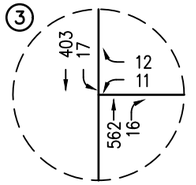


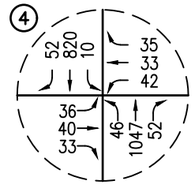

ATLANTIC AVE @ 33RD ST



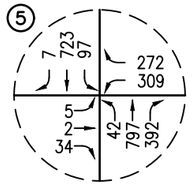

CALIFORNIA AVE @ 33RD ST



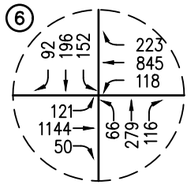

CALIFORNIA AVE @ 32ND ST



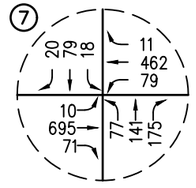

ORANGE AVE @ 33RD ST



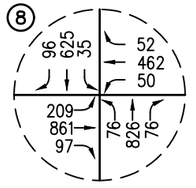

ORANGE AVE @ 32ND ST



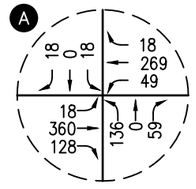

CALIFORNIA AVE @ SPRING ST



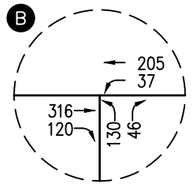

CALIFORNIA AVE @ WARDLOW RD



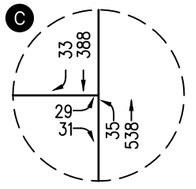

ORANGE AVE @ WARDLOW RD




PROJECT DWY 1 @ 33RD ST




PROJECT DWY 2 @ 33RD ST




CALIFORNIA AVE @ PROJECT DWY 3

n:\4200\2204277 - target retail center & self storage, signal hill\dwg\tia report 2-26-21\4277 f6-11.dwg LDP 11:30:27 02-24-2021 aguilar

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

# FIGURE 6-11

## YEAR 2041 BUILDOUT PLUS PROJECT PM PEAK HOUR TRAFFIC VOLUMES

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

# 7.0 TRAFFIC IMPACT ANALYSIS METHODOLOGY

## 7.1 Impact Criteria and Thresholds

The potential impact of the added project traffic volumes generated by the proposed Project during the weekday peak hours was evaluated based on analysis of future operating conditions at the eight (8) key study intersections, without, then with, the proposed Project. The previously discussed capacity analysis procedures were utilized to investigate the future volume-to-capacity relationships and service level characteristics at each study intersection. The significance of the potential impacts of the project at each key intersection was then evaluated using the following traffic impact criteria.

### 7.1.1 *City of Signal Hill*

According to the City of Signal Hill significant impact criteria, impacts to local and regional transportation systems are considered significant if:

*Signalized Intersections:*

- Intersection with more than 40 project trips, and
- An unacceptable peak hour LOS (i.e. LOS E or F) at any of the key study intersections is projected. The City of Signal Hill considers LOS D (ICU = 0.801 - 0.900) to be the minimum acceptable LOS for all intersections, and
- The project increases traffic demand at the study intersection by 2% of capacity (ICU increase ≥ 0.020), causing or worsening LOS E or F (ICU > 0.901).
- Intersection left-turn queue lengths exceed the existing storage lengths.

*Unsignalized Intersections:*

- The project causes an intersection operating at LOS D or better to degrade to LOS E or F, and the traffic signal warrant analysis determines that a traffic signal is justified.

### 7.1.2 *City of Long Beach*

According to the City of Long Beach significant impact criteria, impacts to local and regional transportation systems are considered significant if:

*Signalized Intersections:*

- The project causes a study intersection to deteriorate from Level of Service (LOS) D to LOS E or F. The City of Long Beach considers LOS D to be the minimum acceptable LOS for all intersections; or
- The project increases average control delay at the study intersection by 2.5 seconds or more when an intersection is operating at LOS E or F in the baseline condition.
- The 95$^{th}$ percentile queue length exceeds the available storage length at any turn bay under project conditions.

*Unsignalized Intersections:*

- The intersection operates at LOS E or F, and the intersection meets the peak-hour traffic signal warrant after the addition of project traffic.

## 7.2 Traffic Impact Analysis Scenarios

The following scenarios are those for which intersection capacity calculations have been performed using the ICU/HCM methodologies:

A. Existing Traffic Conditions;
B. Existing Plus Project Traffic Conditions;
C. Scenario (B) with Improvements, if necessary;
D. Year 2024 Cumulative Traffic Conditions;
E. Year 2024 Cumulative Plus Project Traffic Conditions;
F. Scenario (E) with Improvements, if necessary;
G. Year 2041 Buildout Traffic Conditions;
H. Year 2041 Buildout Plus Project Traffic Conditions; and
I. Scenario (H) with Improvements, if necessary.

# 8.0 PEAK HOUR INTERSECTION CAPACITY ANALYSIS

## 8.1 Existing Plus Project Traffic Conditions

***Table 8-1*** summarizes the peak hour Level of Service results at the eight (8) key study intersections for existing plus project traffic conditions. The first column (1) of ICU/HCM/LOS values in *Table 8-1* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Table 3-4*). The second column (2) lists existing plus project traffic conditions with current intersection geometry/lane configurations. The third column (3) shows the increase in ICU/HCM value due to the added peak hour project trips and indicates whether the traffic associated with the Project will have a significant impact based on the significant impact criteria defined in this report. The fourth column (4) indicates the anticipated level of service with improvements, if any.

### 8.1.1 *Existing Traffic Conditions*

As previously presented in *Table 3-4*, review of column 1 indicates that all of the key study intersections currently operate at LOS D or better during the weekday AM and PM peak hours.

### 8.1.2 *Existing Plus Project Traffic Conditions*

Review of columns 2 and 3 of *Table 8-1* indicates that all of the key study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours under Existing Plus Project traffic conditions.

*Appendix C* contains the detailed peak hour level of service worksheets for the City of Signal Hill study intersections evaluated in this report. *Appendix D* contains the detailed peak hour level of service worksheets for the City of Long Beach study intersections evaluated in this report.

## TABLE 8-1
## EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

| Key Intersection | Jurisdiction | Time Period | (1) Existing Traffic Conditions | | | | (2) Existing Plus Project Traffic Conditions | | | | (3) Significant Impact | | | | (4) Existing Plus Project Traffic Conditions with Improvements | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ICU | LOS | Delay (s/v) | LOS | ICU | LOS | Delay (s/v) | LOS | ICU Increase | Yes/No | Delay Increase (s/v) | Yes/No | ICU | LOS | Delay (s/v) | LOS |
| 1. Atlantic Avenue at 33rd Street | Long Beach | AM | -- | -- | 8.4 | A | -- | -- | 11.6 | B | -- | -- | 3.2 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 13.4 | B | -- | -- | 16.5 | B | -- | -- | 3.1 | No | -- | -- | -- | -- |
| 2. California Avenue at 33rd Street | Signal Hill | AM | -- | -- | 8.9 | A | -- | -- | 9.2 | A | -- | -- | 0.3 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 11.8 | B | -- | -- | 12.3 | B | -- | -- | 0.5 | No | -- | -- | -- | -- |
| 3. California Avenue at 32nd Street | Signal Hill | AM | -- | -- | 11.2 | B | -- | -- | 11.4 | B | -- | -- | 0.2 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 14.0 | B | -- | -- | 14.2 | B | -- | -- | 0.2 | No | -- | -- | -- | -- |
| 4. Orange Avenue at 33rd Street | Signal Hill | AM | 0.604 | B | -- | -- | 0.609 | B | -- | -- | 0.005 | No | -- | -- | -- | -- | -- | -- |
| | | PM | 0.736 | C | -- | -- | 0.740 | C | -- | -- | 0.004 | No | -- | -- | -- | -- | -- | -- |
| 5. Orange Avenue at 32nd Street | Signal Hill | AM | 0.738 | C | -- | -- | 0.741 | C | -- | -- | 0.003 | No | -- | -- | -- | -- | -- | -- |
| | | PM | 0.878 | D | -- | -- | 0.879 | D | -- | -- | 0.001 | No | -- | -- | -- | -- | -- | -- |
| 6. California Avenue at Spring Street | Signal Hill/ Long Beach | AM | 0.604 | B | 17.5 | B | 0.610 | B | 17.5 | B | 0.006 | No | 0.0 | No | -- | -- | -- | -- |
| | | PM | 0.733 | C | 17.5 | B | 0.737 | C | 17.6 | B | 0.004 | No | 0.1 | No | -- | -- | -- | -- |
| 7. California Avenue at Wardlow Road | Long Beach | AM | -- | -- | 20.5 | C | -- | -- | 21.0 | C | -- | -- | 0.5 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 18.3 | B | -- | -- | 19.2 | B | -- | -- | 0.9 | No | -- | -- | -- | -- |
| 8. Orange Avenue at Wardlow Road | Long Beach | AM | -- | -- | 21.3 | C | -- | -- | 21.7 | C | -- | -- | 0.4 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 27.0 | C | -- | -- | 27.3 | C | -- | -- | 0.3 | No | -- | -- | -- | -- |

**Notes**:

- s/v = seconds per vehicle (delay)

## 8.2 Year 2024 Traffic Conditions

***Table 8-2*** summarizes the peak hour Level of Service results at the eight (8) key study intersections for the Year 2024 horizon year. The first column (1) of ICU/HCM/LOS values in *Table 8-2* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Tables 3-4* and *8-1*). The second column (2) lists future Year 2024 cumulative traffic conditions (existing plus ambient growth traffic plus cumulative projects traffic), without any traffic generated by the proposed Project. The third column (3) presents future forecast traffic conditions with the addition of traffic generated by the proposed Project. The fourth column (4) shows the increase in ICU/HCM value due to the added peak hour project trips and indicates whether the traffic associated with the Project will have a significant impact based on the LOS standards and significant impact criteria defined in this report. The fifth column (5) indicates the anticipated level of service with improvements, if any.

### 8.2.1 *Year 2024 Cumulative Traffic Conditions*

Review of Column 2 of *Table 8-2* indicates that one (1) key study intersection is forecast to operate adversely under Year 2024 Cumulative traffic conditions. The remaining study intersections are forecast to operate at acceptable LOS D or better during the AM and PM peak hours. The intersection operating adversely includes the following:

| | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|
| **Key Intersection** | **ICU** | **LOS** | **Delay (s/v)** | **LOS** | **ICU** | **LOS** | **Delay (s/v)** | **LOS** |
| 5. Orange Avenue at 32nd Street | -- | -- | -- | -- | 0.988 | E | -- | -- |

### 8.2.2 *Year 2024 Cumulative Plus Project Traffic Conditions*

Review of column 3 of *Table 8-2* indicates that one (1) key study intersection is forecast to operate adversely under Year 2024 Cumulative Plus Project traffic conditions. The remaining study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours with the addition of project traffic. The intersection operating adversely includes the following:

| | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|
| **Key Intersection** | **ICU** | **LOS** | **Delay (s/v)** | **LOS** | **ICU** | **LOS** | **Delay (s/v)** | **LOS** |
| 5. Orange Avenue at 32nd Street | -- | -- | -- | -- | 0.990 | E | -- | -- |

Although the intersection of Orange Avenue/32nd Street is forecast to operate adversely, review of column 4 indicates that the project increment adds less than 0.020 to the ICU value and hence the Project's impact is considered insignificant based on the LOS standards and significance criteria defined in this report. In addition to not meeting the significant impact criteria, the intersection of Orange Avenue/32nd Street has Project peak hour trips that are less than the 40 trip threshold required for analysis.

*Appendix C* contains the detailed peak hour level of service worksheets for the City of Signal Hill study intersections evaluated in this report. *Appendix D* contains the detailed peak hour level of service worksheets for the City of Long Beach study intersections evaluated in this report.

## TABLE 8-2
## YEAR 2024 CUMULATIVE PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

| Key Intersection | Jurisdiction | Time Period | (1) Existing Traffic Conditions | | | | (2) Year 2024 Cumulative Traffic Conditions | | | | (3) Year 2024 Cumulative Plus Project Traffic Conditions | | | | (4) Significant Impact | | | | (5) Year 2024 Cumulative Plus Project Traffic Conditions with Improvements | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ICU | LOS | Delay (s/v) | LOS | ICU | LOS | Delay (s/v) | LOS | ICU | LOS | Delay (s/v) | LOS | ICU Increase | Yes/No | Delay Increase (s/v) | Yes/No | ICU | LOS | Delay (s/v) | LOS |
| 1. Atlantic Avenue at 33rd Street | Long Beach | AM | -- | -- | 8.4 | A | -- | -- | 8.4 | A | -- | -- | 11.6 | B | -- | -- | 3.2 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 13.4 | B | -- | -- | 13.8 | B | -- | -- | 16.5 | B | -- | -- | 2.7 | No | -- | -- | -- | -- |
| 2. California Avenue at 33rd Street | Signal Hill | AM | -- | -- | 8.9 | A | -- | -- | 9.0 | A | -- | -- | 9.3 | A | -- | -- | 0.3 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 11.8 | B | -- | -- | 12.2 | B | -- | -- | 12.8 | B | -- | -- | 0.6 | No | -- | -- | -- | -- |
| 3. California Avenue at 32nd Street | Signal Hill | AM | -- | -- | 11.2 | B | -- | -- | 11.3 | B | -- | -- | 11.5 | B | -- | -- | 0.2 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 14.0 | B | -- | -- | 14.3 | B | -- | -- | 14.4 | B | -- | -- | 0.1 | No | -- | -- | -- | -- |
| 4. Orange Avenue at 33rd Street | Signal Hill | AM | 0.604 | B | -- | -- | 0.668 | B | -- | -- | 0.673 | B | -- | -- | 0.005 | No | -- | -- | -- | -- | -- | -- |
| | | PM | 0.736 | C | -- | -- | 0.803 | D | -- | -- | 0.808 | D | -- | -- | 0.005 | No | -- | -- | -- | -- | -- | -- |
| 5. Orange Avenue at 32nd Street | Signal Hill | AM | 0.738 | C | -- | -- | 0.799 | C | -- | -- | 0.801 | D | -- | -- | 0.002 | No | -- | -- | -- | -- | -- | -- |
| | | PM | 0.878 | D | -- | -- | **0.988** | **E** | -- | -- | **0.990** | **E** | -- | -- | 0.002 | No | -- | -- | -- | -- | -- | -- |
| 6. California Avenue at Spring Street | Signal Hill/ Long Beach | AM | 0.604 | B | 17.5 | B | 0.626 | B | 17.5 | B | 0.631 | B | 17.5 | B | 0.005 | No | 0.0 | No | -- | -- | -- | -- |
| | | PM | 0.733 | C | 17.5 | B | 0.762 | C | 18.0 | B | 0.766 | C | 18.0 | B | 0.004 | No | 0.0 | No | -- | -- | -- | -- |
| 7. California Avenue at Wardlow Road | Long Beach | AM | -- | -- | 20.5 | C | -- | -- | 21.4 | C | -- | -- | 22.7 | B | -- | -- | 1.3 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 18.3 | B | -- | -- | 18.9 | B | -- | -- | 19.0 | B | -- | -- | 0.1 | No | -- | -- | -- | -- |
| 8. Orange Avenue at Wardlow Road | Long Beach | AM | -- | -- | 21.3 | C | -- | -- | 27.2 | C | -- | -- | 28.6 | C | -- | -- | 1.4 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 27.0 | C | -- | -- | 30.6 | C | -- | -- | 31.2 | C | -- | -- | 0.6 | No | -- | -- | -- | -- |

**Notes**:

- s/v = seconds per vehicle (delay)

## 8.3 Year 2041 Traffic Conditions

***Table 8-3*** summarizes the peak hour Level of Service results at the eight (8) key study intersections for the Year 2041 buildout year. The first column (1) of ICU/HCM/LOS values in *Table 8-4* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Tables 3-4, 8-1, and 8-2*). The second column (2) lists future Year 2041 buildout traffic conditions (existing plus ambient growth traffic plus cumulative projects traffic), without any traffic generated by the proposed Project. The third column (3) presents future forecast traffic conditions with the addition of traffic generated by the proposed Project. The fourth column (4) shows the increase in ICU/HCM value due to the added peak hour project trips and indicates whether the traffic associated with the Project will have a significant impact based on the LOS standards and significant impact criteria defined in this report. The fifth column (5) indicates the anticipated level of service with improvements, if any.

### 8.3.1 *Year 2041 Buildout Traffic Conditions*

Review of Column 2 of *Table 8-3* indicates that two (2) key study intersections are forecast to operate adversely under Year 2041 Buildout traffic conditions. The remaining study intersections are forecast to operate at acceptable LOS D or better during the AM and PM peak hours. The intersections operating adversely include the following:

| | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|
| **Key Intersection** | **ICU** | **LOS** | **Delay (s/v)** | **LOS** | **ICU** | **LOS** | **Delay (s/v)** | **LOS** |
| 4. Orange Avenue at 33rd Street | -- | -- | -- | -- | 0.912 | E | -- | -- |
| 5. Orange Avenue at 32nd Street | 0.906 | E | -- | -- | 1.121 | F | -- | -- |

### 8.3.2 *Year 2041 Buildout Plus Project Traffic Conditions*

Review of column 3 of *Table 8-3* indicates that two (2) key study intersection are forecast to operate adversely under Year 2041 Buildout Plus Project traffic conditions. The remaining study intersections are forecast to operate at acceptable LOS D or better during the weekday AM and PM peak hours with the addition of project traffic. The intersections operating adversely include the following:

| | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|
| **Key Intersection** | **ICU** | **LOS** | **Delay (s/v)** | **LOS** | **ICU** | **LOS** | **Delay (s/v)** | **LOS** |
| 4. Orange Avenue at 33rd Street | -- | -- | -- | -- | 0.916 | E | -- | -- |
| 5. Orange Avenue at 32nd Street | 0.909 | E | -- | -- | 1.123 | F | -- | -- |

Although the intersections of Orange Avenue/33rd Street and Orange Avenue/32nd Street are forecast to operate adversely, review of column 4 indicates that the project increment adds less than 0.020 to the ICU value and hence the Project's impact is considered insignificant based on the LOS standards and significance criteria defined in this report. In addition to not meeting the significant impact

criteria, the intersection of Orange Avenue/33rd Street and Orange Avenue/32nd Street has Project peak hour trips that are less than the 40 trip threshold required for analysis.

*Appendix C* contains the detailed peak hour level of service worksheets for the City of Signal Hill study intersections evaluated in this report. *Appendix D* contains the detailed peak hour level of service worksheets for the City of Long Beach study intersections evaluated in this report.

## TABLE 8-3
## YEAR 2041 BUILDOUT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

| Key Intersection | Jurisdiction | Time Period | (1) Existing Traffic Conditions | | | | (2) Year 2041 Buildout Traffic Conditions | | | | (3) Year 2041 Buildout Plus Project Traffic Conditions | | | | (4) Significant Impact | | | | (5) Year 2041 Buildout Plus Project Traffic Conditions with Improvements | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ICU | LOS | Delay (s/v) | LOS | ICU | LOS | Delay (s/v) | LOS | ICU | LOS | Delay (s/v) | LOS | ICU Increase | Yes/No | Delay Increase (s/v) | Yes/No | ICU | LOS | Delay (s/v) | LOS |
| 1. Atlantic Avenue at 33rd Street | Long Beach | AM | -- | -- | 8.4 | A | -- | -- | 9.2 | A | -- | -- | 12.4 | B | -- | -- | 3.2 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 13.4 | B | -- | -- | 18.6 | B | -- | -- | 24.7 | C | -- | -- | 6.1 | No | -- | -- | -- | -- |
| 2. California Avenue at 33rd Street | Signal Hill | AM | -- | -- | 8.9 | A | -- | -- | 9.6 | A | -- | -- | 9.9 | A | -- | -- | 0.3 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 11.8 | B | -- | -- | 15.2 | C | -- | -- | 16.4 | C | -- | -- | 1.2 | No | -- | -- | -- | -- |
| 3. California Avenue at 32nd Street | Signal Hill | AM | -- | -- | 11.2 | B | -- | -- | 12.2 | B | -- | -- | 12.3 | B | -- | -- | 0.1 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 14.0 | B | -- | -- | 16.5 | C | -- | -- | 16.8 | C | -- | -- | 0.3 | No | -- | -- | -- | -- |
| 4. Orange Avenue at 33rd Street | Signal Hill | AM | 0.604 | B | -- | -- | 0.755 | C | -- | -- | 0.760 | C | -- | -- | 0.005 | No | -- | -- | -- | -- | -- | -- |
| | | PM | 0.736 | C | -- | -- | **0.912** | **E** | -- | -- | **0.916** | **E** | -- | -- | 0.004 | No | -- | -- | -- | -- | -- | -- |
| 5. Orange Avenue at 32nd Street | Signal Hill | AM | 0.738 | C | -- | -- | **0.906** | **E** | -- | -- | **0.909** | **E** | -- | -- | 0.003 | No | -- | -- | -- | -- | -- | -- |
| | | PM | 0.878 | D | -- | -- | **1.121** | **F** | -- | -- | **1.123** | **F** | -- | -- | 0.002 | No | -- | -- | -- | -- | -- | -- |
| 6. California Avenue at Spring Street | Signal Hill/ Long Beach | AM | 0.604 | B | 17.5 | B | 0.712 | C | 20.9 | C | 0.717 | C | 21.6 | C | 0.005 | No | 0.7 | No | -- | -- | -- | -- |
| | | PM | 0.733 | C | 17.5 | B | 0.869 | D | 22.0 | C | 0.873 | D | 22.1 | C | 0.004 | No | 0.1 | No | -- | -- | -- | -- |
| 7. California Avenue at Wardlow Road | Long Beach | AM | -- | -- | 20.5 | C | -- | -- | 26.2 | C | -- | -- | 27.9 | C | -- | -- | 1.7 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 18.3 | B | -- | -- | 24.1 | C | -- | -- | 24.8 | C | -- | -- | 0.7 | No | -- | -- | -- | -- |
| 8. Orange Avenue at Wardlow Road | Long Beach | AM | -- | -- | 21.3 | C | -- | -- | 31.4 | C | -- | -- | 33.0 | C | -- | -- | 1.6 | No | -- | -- | -- | -- |
| | | PM | -- | -- | 27.0 | C | -- | -- | 42.9 | D | -- | -- | 43.5 | D | -- | -- | 0.6 | No | -- | -- | -- | -- |

**Notes**:

- s/v = seconds per vehicle (delay)

# 9.0 INTERSECTION VEHICLE QUEUEING ANALYSES

## 9.1 City of Signal Hill Intersection Left-Turn Vehicle Queueing Analysis

Excessive left-turn vehicle queuing which extends into and/or blocks adjacent through travel lanes may have detrimental effects on intersection operations and the roadway network as a whole in ways not otherwise accounted for by the ICU methodology. Therefore, left-turn vehicle queuing at the signalized study intersections within the City of Signal Hill were evaluated in order to identify the effects of project traffic on left-turn queuing at the intersections.

The left-turn vehicle queuing analysis was prepared utilizing the HCM methodology for signalized intersections using Synchro 10.0 software. The HCM methodology considers traffic volume data, lane configurations, and traffic signal phasing in order to calculate the 85$^{th}$ percentile queues for the respective traffic movements. The 85$^{th}$ percentile queue represents the maximum back of vehicle queue with 85$^{th}$ percentile traffic volumes (i.e., actual traffic volumes will exceed the 85$^{th}$ percentile volumes 15 percent of the time) and is commonly used for design purposes.

The left-turn vehicle queuing analysis was based on the forecast weekday AM and PM intersection turning movement volumes utilized in the level of service analyses. The existing left-turn lane configurations and storage lengths were determined based on a review of aerial maps of the subject intersections obtained from Google Earth and on field reviews conducted by LLG Engineers. An average vehicle length of 25 feet is assumed for purposes of this analysis.

### 9.1.1 *Existing Traffic Conditions*

***Table 9-1*** presents the left-turn queueing analyses results for the three (3) signalized study intersections in the City of Signal Hill. Column 1 presents the queuing results for existing traffic conditions. Column 2 presents the results for existing plus project traffic conditions.

*Existing Traffic Conditions*

Review of Column 1 of *Table 9-1* indicates that one (1) key study intersection has left-turn queues which exceed the existing storage capacity for one or more intersection approach under existing traffic conditions. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

- Intersection No. 5: Orange Avenue at 32$^{nd}$ Street
  - Westbound left-turn – PM peak hour

*Existing Plus Project Traffic Conditions*

Review of Column 2 of *Table 9-1* indicates that same one (1) key study intersection has left-turn queues which exceed the existing storage capacity for one or more intersection approach with the addition of project traffic. The remaining key study intersections have queues that are adequately

accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

- Intersection No. 5: Orange Avenue at 32nd Street
  - Westbound left-turn – PM peak hour

The addition of project traffic does not contribute to the westbound left-turn movement at the intersection of Orange Avenue/32nd Street and therefore does not contribute to additional vehicle queueing beyond that reported under existing conditions. ***Appendix E*** presents the queuing worksheets for the City of Signal Hill signalized study intersections.

### 9.1.2 *Year 2024 Cumulative Traffic Conditions*

***Table 9-2*** presents the left-turn queueing analyses results for the three (3) signalized study intersections in the City of Signal Hill. Column 1 presents the queuing results for Year 2024 Cumulative traffic conditions. Column 2 presents the results for Year 2024 Cumulative Plus Project traffic conditions.

*Year 2024 Cumulative Traffic Conditions*

Review of Column 1 of *Table 9-2* indicates that one (1) key study intersection has left-turn queues which exceed the existing storage capacity for one or more intersection approach under Year 2024 cumulative traffic conditions. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

- Intersection No. 5: Orange Avenue at 32nd Street
  - Westbound left-turn – PM peak hour

*Year 2024 Cumulative Plus Project Traffic Conditions*

Review of Column 2 of *Table 9-2* indicates that same one (1) key study intersection has left-turn queues which exceed the existing storage capacity for one or more intersection approach with the addition of project traffic. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

- Intersection No. 5: Orange Avenue at 32nd Street
  - Westbound left-turn – PM peak hour

The addition of project traffic does not contribute to the westbound left-turn movement at the intersection of Orange Avenue/32nd Street and therefore does not contribute to additional vehicle

queueing beyond that reported under Year 2024 cumulative conditions. *Appendix E* presents the queuing worksheets for the City of Signal Hill signalized study intersections.

### 9.1.3 *Year 2041 Buildout Traffic Conditions*

***Table 9-3*** presents the left-turn queueing analyses results for the three (3) signalized study intersections in the City of Signal Hill. Column 1 presents the queuing results for Year 2041 Buildout traffic conditions. Column 2 presents the results for Year 2041 Buildout Plus Project traffic conditions.

*Year 2041 Buildout Traffic Conditions*

Review of Column 1 of *Table 9-3* indicates that one (1) key study intersection has left-turn queues which exceed the existing storage capacity for one or more intersection approach under Year 2041 cumulative traffic conditions. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

- Intersection No. 5: Orange Avenue at 32nd Street
  - Southbound left-turn – PM peak hour
  - Westbound left-turn – PM peak hour

*Year 2041 Buildout Plus Project Traffic Conditions*

Review of Column 2 of *Table 9-3* indicates that same one (1) key study intersection has left-turn queues which exceed the existing storage capacity for one or more intersection approach with the addition of project traffic. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

- Intersection No. 5: Orange Avenue at 32nd Street
  - Southbound left-turn – PM peak hour
  - Westbound left-turn – PM peak hour

The addition of project traffic does not contribute to the southbound or westbound left-turn movements at the intersection of Orange Avenue/32nd Street and therefore does not contribute to additional vehicle queueing beyond that reported under Year 2041 buildout conditions. *Appendix E* presents the queuing worksheets for the City of Signal Hill signalized study intersections.

## TABLE 9-1

## CITY OF SIGNAL HILL – EXISTING PLUS PROJECT PEAK HOUR INTERSECTION QUEUING ANALYSIS[25]

| Key Intersection | Storage Provided (feet) | (1) Existing Traffic Conditions | | | | (2) Existing Plus Project Traffic Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| | | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) |
| 4. Orange Avenue at 33rd Street | | | | | | | | | |
| *Northbound Left/Through/Right* | 585’ | 25’ | Yes | 25’ | Yes | 25’ | Yes | 25’ | Yes |
| *Southbound Left/Through/Right* | 575’ | 25’ | Yes | 25’ | Yes | 25’ | Yes | 25’ | Yes |
| *Eastbound Left/Through/Right* | 1,250’ | 40’ | Yes | 93’ | Yes | 43’ | Yes | 98’ | Yes |
| *Westbound Left/Through/Right* | 1,250’ | 78’ | Yes | 98’ | Yes | 80’ | Yes | 98’ | Yes |
| 5. Orange Avenue at 32nd Street | | | | | | | | | |
| *Northbound Left-Turn* | 100’ | 25’ | Yes | 25’ | Yes | 25’ | Yes | 25’ | Yes |
| *Southbound Left-Turn* | 200’[26] | 33’ | Yes | 70’ | Yes | 33’ | Yes | 73’ | Yes |
| *Eastbound Left/Through/Right* | 1,240’ | 83’ | Yes | 28’ | Yes | 83’ | Yes | 28’ | Yes |
| *Westbound Left-Turn* | 240’[26] | 75’ | Yes | **243’** | **No** | 75’ | Yes | **243’** | **No** |
| 6. California Avenue at Spring Street | | | | | | | | | |
| *Northbound Left-Turn* | 150’[26] | 35’ | Yes | 28’ | Yes | 35’ | Yes | 28’ | Yes |
| *Southbound Left-Turn* | 175’[26] | 63’ | Yes | 78’ | Yes | 63’ | Yes | 83’ | Yes |
| *Eastbound Left-Turn* | 160’[26] | 33’ | Yes | 85’ | Yes | 33’ | Yes | 85’ | Yes |
| *Westbound Left-Turn* | 160’[26] | 73’ | Yes | 98’ | Yes | 73’ | Yes | 98’ | Yes |

[25] Queues are based on HCM 85th Percentile methodology.

[26] Existing storage capacity includes the striped turn pocket as well as the storage space upstream of the turn lane.

## TABLE 9-2

## CITY OF SIGNAL HILL – YEAR 2024 CUMULATIVE PEAK HOUR INTERSECTION QUEUING ANALYSIS[27]

| Key Intersection | Storage Provided (feet) | (1) Year 2024 Cumulative Traffic Conditions | | | | (2) Year 2024 Cumulative Plus Project Traffic Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| | | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) |
| 4. Orange Avenue at 33rd Street | | | | | | | | | |
| *Northbound Left/Through/Right* | 585’ | 25’ | Yes | 25’ | Yes | 25’ | Yes | 25’ | Yes |
| *Southbound Left/Through/Right* | 575’ | 25’ | Yes | 25’ | Yes | 25’ | Yes | 25’ | Yes |
| *Eastbound Left/Through/Right* | 1,250’ | 43’ | Yes | 108’ | Yes | 48’ | Yes | 110’ | Yes |
| *Westbound Left/Through/Right* | 1,250’ | 88’ | Yes | 110’ | Yes | 90’ | Yes | 110’ | Yes |
| 5. Orange Avenue at 32nd Street | | | | | | | | | |
| *Northbound Left-Turn* | 100’ | 25’ | Yes | 25’ | Yes | 25’ | Yes | 25’ | Yes |
| *Southbound Left-Turn* | 200’[28] | 65’ | Yes | 110’ | Yes | 65’ | Yes | 110’ | Yes |
| *Eastbound Left/Through/Right* | 1,240’ | 90’ | Yes | 35’ | Yes | 90’ | Yes | 35’ | Yes |
| *Westbound Left-Turn* | 240’[28] | 108’ | Yes | **388’** | **No** | 108’ | Yes | **388’** | **No** |
| 6. California Avenue at Spring Street | | | | | | | | | |
| *Northbound Left-Turn* | 150’[28] | 35’ | Yes | 28’ | Yes | 35’ | Yes | 28’ | Yes |
| *Southbound Left-Turn* | 175’[28] | 65’ | Yes | 83’ | Yes | 65’ | Yes | 85’ | Yes |
| *Eastbound Left-Turn* | 160’[28] | 33’ | Yes | 90’ | Yes | 35’ | Yes | 90’ | Yes |
| *Westbound Left-Turn* | 160’[28] | 78’ | Yes | 105’ | Yes | 78’ | Yes | 105’ | Yes |

[27] Queues are based on HCM 85th Percentile methodology.

[28] Existing storage capacity includes the striped turn pocket as well as the storage space upstream of the turn lane.

## TABLE 9-3

## CITY OF SIGNAL HILL – YEAR 2041 BUILDOUT PEAK HOUR INTERSECTION QUEUING ANALYSIS[29]

| Key Intersection | Storage Provided (feet) | (1) Year 2041 Buildout Traffic Conditions | | | | (2) Year 2041 Buildout Plus Project Traffic Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| | | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) |
| 4. Orange Avenue at 33rd Street | | | | | | | | | |
| *Northbound Left/Through/Right* | 585’ | 25’ | Yes | 25’ | Yes | 25’ | Yes | 25’ | Yes |
| *Southbound Left/Through/Right* | 575’ | 25’ | Yes | 25’ | Yes | 25’ | Yes | 25’ | Yes |
| *Eastbound Left/Through/Right* | 1,250’ | 58’ | Yes | 103’ | Yes | 63’ | Yes | 108’ | Yes |
| *Westbound Left/Through/Right* | 1,250’ | 108’ | Yes | 108’ | Yes | 110’ | Yes | 108’ | Yes |
| 5. Orange Avenue at 32nd Street | | | | | | | | | |
| *Northbound Left-Turn* | 100’ | 25’ | Yes | 25’ | Yes | 25’ | Yes | 25’ | Yes |
| *Southbound Left-Turn* | 200’[30] | 145’ | Yes | **220’** | **No** | 148’ | Yes | **220’** | **No** |
| *Eastbound Left/Through/Right* | 1,240’ | 110’ | Yes | 33’ | Yes | 110’ | Yes | 33’ | Yes |
| *Westbound Left-Turn* | 240’[30] | 128’ | Yes | **460’** | **No** | 128’ | Yes | **460’** | **No** |
| 6. California Avenue at Spring Street | | | | | | | | | |
| *Northbound Left-Turn* | 150’[30] | 85’ | Yes | 50’ | Yes | 85’ | Yes | 50’ | Yes |
| *Southbound Left-Turn* | 175’[30] | 138’ | Yes | 145’ | Yes | 140’ | Yes | 148’ | Yes |
| *Eastbound Left-Turn* | 160’[30] | 50’ | Yes | 113’ | Yes | 55’ | Yes | 113’ | Yes |
| *Westbound Left-Turn* | 160’[30] | 108’ | Yes | 138’ | Yes | 108’ | Yes | 138’ | Yes |

[29] Queues are based on HCM 85th Percentile methodology.

[30] Existing storage capacity includes the striped turn pocket as well as the storage space upstream of the turn lane.

## 9.2 City of Long Beach Intersection Vehicle Queueing Analysis

A vehicle queueing analysis was conducted at each signalized study intersection in the City of Long Beach in addition to the intersection level of service analyses. The queueing analysis was prepared for each intersection lane group and was based on the 95$^{th}$ percentile queues utilizing HCM methodology for signalized intersections.

The queuing analysis was based on the forecast weekday AM and PM intersection turning movement volumes utilized in the level of service analyses. The existing lane configurations and storage lengths were determined based on a review of aerial maps of the subject intersections obtained from Google Earth and on field reviews conducted by LLG Engineers. An average vehicle length of 25 feet is assumed for purposes of this analysis.

### 9.2.1 *Existing Traffic Conditions*

***Table 9-4*** presents the queueing analyses results for the four (4) signalized study intersections in the City of Long Beach. Column 1 presents the queuing results for existing traffic conditions. Column 2 presents the results for existing plus project traffic conditions.

*Existing Traffic Conditions*

Review of Column 1 of *Table 9-4* indicates that one (1) key study intersection has queues which exceed the existing storage capacity for one or more intersection approach under existing traffic conditions. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

- Intersection No. 8: Orange Avenue at Wardlow Road
  - Eastbound left-turn – PM peak hour

*Existing Plus Project Traffic Conditions*

Review of Column 2 of *Table 9-4* indicates that same one (1) key study intersection has queues which exceed the existing storage capacity for one or more intersection approach with the addition of project traffic. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

- Intersection No. 8: Orange Avenue at Wardlow Road
  - Eastbound left-turn – AM peak hour & PM peak hour

The addition of project traffic contributes to the eastbound left-turn movement at the intersection of Orange Avenue/Wardlow Road. Although the eastbound left-turn experiences pre-project storage deficiencies in the PM peak hour, the proposed Project contributes to the storage deficiencies in the AM peak hour. The Project adds a fraction of a vehicle to the projected queues and therefore is not

considered a significant impact. In addition, it should be noted that the City of Long Beach determines study intersections based on a 50 peak hour trips threshold. As such, Orange Avenue at Wardlow Road would not be required for analysis based on the City of Long Beach guidelines. The queuing results are provided for informational purposes only.

*Appendix D* presents the queuing information for the City of Long Beach signalized study intersections.

### 9.2.2 *Year 2024 Cumulative Traffic Conditions*

***Table 9-5*** presents the queueing analyses results for the four (4) signalized study intersections in the City of Long Beach. Column 1 presents the queuing results for Year 2024 cumulative traffic conditions. Column 2 presents the results for Year 2024 Cumulative Plus Project traffic conditions.

*Year 2024 Cumulative Traffic Conditions*

Review of Column 1 of *Table 9-5* indicates that one (1) key study intersection has queues which exceed the existing storage capacity for one or more intersection approach under Year 2024 cumulative traffic conditions. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

- Intersection No. 8: Orange Avenue at Wardlow Road
  - Northbound left-turn – AM peak hour & PM peak hour
  - Northbound through/right – PM peak hour
  - Eastbound left-turn – AM peak hour & PM peak hour

*Year 2024 Cumulative Plus Project Traffic Conditions*

Review of Column 2 of *Table 9-5* indicates that same one (1) key study intersection has queues which exceed the existing storage capacity for one or more intersection approach with the addition of project traffic. The remaining key study intersections have queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

- Intersection No. 8: Orange Avenue at Wardlow Road
  - Northbound left-turn – AM peak hour & PM peak hour
  - Northbound through/right – PM peak hour
  - Eastbound left-turn – AM peak hour & PM peak hour

The addition of project traffic does not contribute to the northbound left-turn or northbound through/right movements at the intersection of Orange Avenue/Wardlow Road and therefore does not contribute to additional vehicle queueing beyond that reported under Year 2024 cumulative conditions.

The addition of project traffic contributes to the eastbound left-turn movement at the intersection of Orange Avenue/Wardlow Road. The Project adds a fraction of a vehicle to the projected queues and therefore is not considered a significant impact. In addition, it should be noted that the City of Long Beach determines study intersections based on a 50 peak hour trips threshold. As such, Orange Avenue at Wardlow Road would not be required for analysis based on the City of Long Beach guidelines. The queuing results are provided for informational purposes only.

*Appendix D* presents the queuing information for the City of Long Beach signalized study intersections.

### 9.2.3 *Year 2041 Buildout Traffic Conditions*

***Table 9-6*** presents the queueing analyses results for the four (4) signalized study intersections in the City of Long Beach. Column 1 presents the queuing results for Year 2041 buildout traffic conditions. Column 2 presents the results for Year 2041 Buildout Plus Project traffic conditions.

*Year 2041 Buildout Traffic Conditions*

Review of Column 1 of *Table 9-6* indicates that three (3) key study intersections have queues which exceed the existing storage capacity for one or more intersection approach under Year 2041 buildout traffic conditions. The remaining key study intersection has queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

- Intersection No. 1: Atlantic Avenue at 33rd Street
  - Southbound left-turn – PM peak hour
- Intersection No. 6: California Avenue at Spring Street
  - Southbound left-turn – PM peak hour
- Intersection No. 8: Orange Avenue at Wardlow Road
  - Northbound left-turn – AM peak hour & PM peak hour
  - Northbound through/right – PM peak hour
  - Eastbound left-turn – AM peak hour & PM peak hour
  - Westbound left-turn – AM peak hour

*Year 2041 Buildout Plus Project Traffic Conditions*

Review of Column 2 of *Table 9-6* indicates that same three (3) key study intersection have queues which exceed the existing storage capacity for one or more intersection approach with the addition of project traffic. The remaining key study intersection has queues that are adequately accommodated by the existing storage space. The intersections/approaches with storage deficiencies include the following:

- Intersection No. 1: Atlantic Avenue at 33rd Street

- Southbound left-turn – PM peak hour

- Intersection No. 6: California Avenue at Spring Street
  - Southbound left-turn – PM peak hour
- Intersection No. 8: Orange Avenue at Wardlow Road
  - Northbound left-turn – AM peak hour & PM peak hour
  - Northbound through/right – PM peak hour
  - Eastbound left-turn – AM peak hour & PM peak hour
  - Westbound left-turn – AM peak hour

The addition of project traffic does not contribute to the northbound left-turn, northbound through/right, or westbound left-turn movements at the intersection of Orange Avenue/Wardlow Road and therefore does not contribute to additional vehicle queueing beyond that reported under Year 2041 buildout conditions.

The addition of project traffic contributes to the southbound left-turn and eastbound left-turn movements at the intersections of California Avenue/Spring Street and Orange Avenue/Wardlow Road, respectively, however, this approach has pre-project storage deficiencies as reported under Year 2041 buildout conditions. The Project adds a fraction of a vehicle to the projected queues and therefore is not considered a significant impact. In addition, it should be noted that the City of Long Beach determines study intersections based on a 50 peak hour trips threshold. As such, California Avenue/Spring Street and Orange Avenue/Wardlow Road would not be required for analysis based on the City of Long Beach guidelines. The queuing results are provided for informational purposes only.

The addition of project traffic also contributes to the southbound left-turn movement at the intersection of Atlantic Avenue/33rd Street, however, this approach has pre-project storage deficiencies as reported under Year 2041 buildout conditions. It should be noted that the City of Long Beach guidelines do not require a long-term analysis to be performed. The queuing results are provided for informational purposes only. However, based on the queuing results it is recommended to lengthen the southbound left-turn pocket in order to accommodate the queues. As an alternative improvement, modifying the existing signal to include protected-permissive phasing for the southbound direction minimize queues.

*Appendix D* presents the queuing information for the City of Long Beach signalized study intersections.

## TABLE 9-4

## CITY OF LONG BEACH – EXISTING PLUS PROJECT PEAK HOUR INTERSECTION QUEUING ANALYSIS[31]

| Key Intersection | Storage Provided (feet) | (1) Existing Traffic Conditions | | | | (2) Existing Plus Project Traffic Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| | | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) |
| 1. Atlantic Avenue at 33rd Street | | | | | | | | | |
| *Northbound Left-Turn* | 40’ | 25’ | Yes | 25’ | Yes | 25’ | Yes | 25’ | Yes |
| *Northbound Through* | 1,245’ | 121’ | Yes | 323’ | Yes | 197’ | Yes | 368’ | Yes |
| *Northbound Through/Right* | 1,245’ | 116’ | Yes | 321’ | Yes | 189’ | Yes | 368’ | Yes |
| *Southbound Left-Turn* | 165’[32] | 25’ | Yes | 79’ | Yes | 63’ | Yes | 155’ | Yes |
| *Southbound Through* | 580’ | 111’ | Yes | 139’ | Yes | 168’ | Yes | 154’ | Yes |
| *Southbound Through/Right* | 580’ | 110’ | Yes | 138’ | Yes | 168’ | Yes | 153’ | Yes |
| *Eastbound Left/Through/Right* | 590’ | 38’ | Yes | 55’ | Yes | 31’ | Yes | 52’ | Yes |
| *Westbound Left/Through* | 1,235’ | 96’ | Yes | 163’ | Yes | 131’ | Yes | 197’ | Yes |
| *Westbound Through/Right* | 1,235’ | 131’ | Yes | 165’ | Yes | 153’ | Yes | 200’ | Yes |
| 6. California Avenue at Spring Street | | | | | | | | | |
| *Northbound Left-Turn* | 150’[32] | 46’ | Yes | 36’ | Yes | 46’ | Yes | 36’ | Yes |
| *Northbound Through/Right* | 2,540’ | 156’ | Yes | 210’ | Yes | 160’ | Yes | 213’ | Yes |
| *Southbound Left-Turn* | 175’[32] | 70’ | Yes | 107’ | Yes | 74’ | Yes | 110’ | Yes |
| *Southbound Through* | 1,870’ | 63’ | Yes | 83’ | Yes | 64’ | Yes | 85’ | Yes |
| *Southbound Right-Turn* | 110’[32] | 32’ | Yes | 38’ | Yes | 33’ | Yes | 38’ | Yes |

[31] Queues are based on HCM 95th Percentile methodology.

[32] Existing storage capacity includes the striped turn pocket as well as the storage space upstream of the turn lane.

## TABLE 9-4 (CONTINUED)
## CITY OF LONG BEACH – EXISTING PLUS PROJECT PEAK HOUR INTERSECTION QUEUING ANALYSIS[33]

| Key Intersection | Storage Provided (feet) | (1) Existing Traffic Conditions | | | | (2) Existing Plus Project Traffic Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| | | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) |
| 6. *California Avenue at Spring Street (Continued)* | | | | | | | | | |
| *Eastbound Left-Turn* | 160'[34] | 37' | Yes | 79' | Yes | 38' | Yes | 80' | Yes |
| *Eastbound Through* | 565' | 166' | Yes | 272' | Yes | 166' | Yes | 272' | Yes |
| *Eastbound Right-Turn* | 100' | 26' | Yes | 25' | Yes | 26' | Yes | 25' | Yes |
| *Westbound Left-Turn* | 160'[34] | 89' | Yes | 94' | Yes | 89' | Yes | 94' | Yes |
| *Westbound Through* | 1,210' | 281' | Yes | 198' | Yes | 280' | Yes | 198' | Yes |
| *Westbound Right-Turn* | 195'[34] | 60' | Yes | 98' | Yes | 62' | Yes | 99' | Yes |
| 7. California Avenue at Wardlow Road | | | | | | | | | |
| *Northbound Left/Through/Right* | 585' | 48' | Yes | 167' | Yes | 62' | Yes | 162' | Yes |
| *Southbound Left/Through/Right* | 1,110' | 25' | Yes | 41' | Yes | 25' | Yes | 40' | Yes |
| *Eastbound Left/Through* | 1,240' | 152' | Yes | 233' | Yes | 159' | Yes | 243' | Yes |
| *Eastbound Through/Right* | 1,240' | 136' | Yes | 213' | Yes | 142' | Yes | 225' | Yes |
| *Westbound Left/Through* | 1,245' | 134' | Yes | 102' | Yes | 140' | Yes | 115' | Yes |
| *Westbound Through/Right* | 1,245' | 187' | Yes | 209' | Yes | 204' | Yes | 214' | Yes |

[33] Queues are based on HCM 95th Percentile methodology.

[34] Existing storage capacity includes the striped turn pocket as well as the storage space upstream of the turn lane.

## TABLE 9-4 (CONTINUED)

## CITY OF LONG BEACH – EXISTING PLUS PROJECT PEAK HOUR INTERSECTION QUEUING ANALYSIS[35]

| Key Intersection | Storage Provided (feet) | (1) Existing Traffic Conditions | | | | (2) Existing Plus Project Traffic Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| | | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) |
| 8. Orange Avenue at Wardlow Road | | | | | | | | | |
| *Northbound Left-Turn* | 70'[36] | 54' | Yes | 65' | Yes | 56' | Yes | 66' | Yes |
| *Northbound Through/Right* | 575' | 197' | Yes | 495' | Yes | 198' | Yes | 495' | Yes |
| *Southbound Left-Turn* | 75' | 25' | Yes | 34' | Yes | 25' | Yes | 34' | Yes |
| *Southbound Through/Right* | 1,105' | 430' | Yes | 407' | Yes | 445' | Yes | 414' | Yes |
| *Eastbound Left-Turn* | 85'[36] | 82' | Yes | **195'** | **No** | **87'** | **No** | **206'** | **No** |
| *Eastbound Through* | 1,240' | 157' | Yes | 326' | Yes | 157' | Yes | 327' | Yes |
| *Eastbound Through/Right* | 1,240' | 150' | Yes | 317' | Yes | 150' | Yes | 318' | Yes |
| *Westbound Left-Turn* | 85'[36] | 38' | Yes | 32' | Yes | 38' | Yes | 32' | Yes |
| *Westbound Through* | 1,245' | 131' | Yes | 198' | Yes | 130' | Yes | 198' | Yes |
| *Westbound Through/Right* | 1,245' | 128' | Yes | 193' | Yes | 127' | Yes | 194' | Yes |

[35] Queues are based on HCM 95th Percentile methodology.

[36] Existing storage capacity includes the striped turn pocket as well as the storage space upstream of the turn lane.

## TABLE 9-5

## CITY OF LONG BEACH – YEAR 2024 CUMULATIVE PEAK HOUR INTERSECTION QUEUING ANALYSIS[37]

| Key Intersection | Storage Provided (feet) | (1) Year 2024 Cumulative Traffic Conditions | | | | (2) Year 2024 Cumulative Plus Project Traffic Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| | | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) |
| 1. Atlantic Avenue at 33rd Street | | | | | | | | | |
| *Northbound Left-Turn* | 40’ | 25’ | Yes | 25’ | Yes | 25’ | Yes | 25’ | Yes |
| *Northbound Through* | 1,245’ | 119’ | Yes | 328’ | Yes | 201’ | Yes | 362’ | Yes |
| *Northbound Through/Right* | 1,245’ | 115’ | Yes | 331’ | Yes | 193’ | Yes | 368’ | Yes |
| *Southbound Left-Turn* | 165’[38] | 25’ | Yes | 86’ | Yes | 65’ | Yes | 164’ | Yes |
| *Southbound Through* | 580’ | 110’ | Yes | 143’ | Yes | 176’ | Yes | 153’ | Yes |
| *Southbound Through/Right* | 580’ | 110’ | Yes | 142’ | Yes | 175’ | Yes | 152’ | Yes |
| *Eastbound Left/Through/Right* | 590’ | 47’ | Yes | 118’ | Yes | 41’ | Yes | 119’ | Yes |
| *Westbound Left/Through* | 1,235’ | 99’ | Yes | 167’ | Yes | 144’ | Yes | 210’ | Yes |
| *Westbound Through/Right* | 1,235’ | 139’ | Yes | 175’ | Yes | 174’ | Yes | 208’ | Yes |
| 6. California Avenue at Spring Street | | | | | | | | | |
| *Northbound Left-Turn* | 150’[38] | 49’ | Yes | 38’ | Yes | 50’ | Yes | 38’ | Yes |
| *Northbound Through/Right* | 2,540’ | 169’ | Yes | 217’ | Yes | 172’ | Yes | 219’ | Yes |
| *Southbound Left-Turn* | 175’[38] | 77’ | Yes | 113’ | Yes | 80’ | Yes | 117’ | Yes |
| *Southbound Through* | 1,870’ | 67’ | Yes | 86’ | Yes | 69’ | Yes | 88’ | Yes |
| *Southbound Right-Turn* | 110’[38] | 34’ | Yes | 39’ | Yes | 35’ | Yes | 39’ | Yes |

[37] Queues are based on HCM 95th Percentile methodology.

[38] Existing storage capacity includes the striped turn pocket as well as the storage space upstream of the turn lane.

## TABLE 9-5 (CONTINUED)

## CITY OF LONG BEACH – YEAR 2024 CUMULATIVE PEAK HOUR INTERSECTION QUEUING ANALYSIS[39]

| Key Intersection | Storage Provided (feet) | (1) Year 2024 Cumulative Traffic Conditions | | | | (2) Year 2024 Cumulative Plus Project Traffic Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| | | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) |
| 6. *California Avenue at Spring Street (Continued)* | | | | | | | | | |
| *Eastbound Left-Turn* | 160'[40] | 38' | Yes | 85' | Yes | 39' | Yes | 86' | Yes |
| *Eastbound Through* | 565' | 174' | Yes | 292' | Yes | 173' | Yes | 292' | Yes |
| *Eastbound Right-Turn* | 100' | 26' | Yes | 25' | Yes | 26' | Yes | 25' | Yes |
| *Westbound Left-Turn* | 160'[40] | 92' | Yes | 99' | Yes | 91' | Yes | 99' | Yes |
| *Westbound Through* | 1,210' | 292' | Yes | 210' | Yes | 291' | Yes | 210' | Yes |
| *Westbound Right-Turn* | 195'[40] | 60' | Yes | 100' | Yes | 62' | Yes | 102' | Yes |
| 7. California Avenue at Wardlow Road | | | | | | | | | |
| *Northbound Left/Through/Right* | 585' | 59' | Yes | 165' | Yes | 68' | Yes | 175' | Yes |
| *Southbound Left/Through/Right* | 1,110' | 25' | Yes | 42' | Yes | 25' | Yes | 44' | Yes |
| *Eastbound Left/Through* | 1,240' | 167' | Yes | 249' | Yes | 184' | Yes | 250' | Yes |
| *Eastbound Through/Right* | 1,240' | 156' | Yes | 228' | Yes | 166' | Yes | 231' | Yes |
| *Westbound Left/Through* | 1,245' | 144' | Yes | 112' | Yes | 162' | Yes | 118' | Yes |
| *Westbound Through/Right* | 1,245' | 212' | Yes | 218' | Yes | 227' | Yes | 220' | Yes |

[39] Queues are based on HCM 95th Percentile methodology.

[40] Existing storage capacity includes the striped turn pocket as well as the storage space upstream of the turn lane.

## TABLE 9-5 (CONTINUED)

## CITY OF LONG BEACH – YEAR 2024 CUMULATIVE PEAK HOUR INTERSECTION QUEUING ANALYSIS[41]

| Key Intersection | Storage Provided (feet) | (1) Year 2024 Cumulative Traffic Conditions | | | | (2) Year 2024 Cumulative Plus Project Traffic Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| | | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) |
| 8. Orange Avenue at Wardlow Road | | | | | | | | | |
| *Northbound Left-Turn* | 70'[42] | **79'** | **No** | **73'** | **No** | **83'** | **No** | **74'** | **No** |
| *Northbound Through/Right* | 575' | 224' | Yes | **618'** | **No** | 225' | Yes | **618'** | **No** |
| *Southbound Left-Turn* | 75' | 25' | Yes | 41' | Yes | 25' | Yes | 41' | Yes |
| *Southbound Through/Right* | 1,105' | 621' | Yes | 468' | Yes | 655' | Yes | 477' | Yes |
| *Eastbound Left-Turn* | 85'[42] | **87'** | **No** | **219'** | **No** | **93'** | **No** | **239'** | **No** |
| *Eastbound Through* | 1,240' | 161' | Yes | 350' | Yes | 161' | Yes | 351' | Yes |
| *Eastbound Through/Right* | 1,240' | 153' | Yes | 341' | Yes | 153' | Yes | 342' | Yes |
| *Westbound Left-Turn* | 85'[42] | 38' | Yes | 33' | Yes | 38' | Yes | 33' | Yes |
| *Westbound Through* | 1,245' | 134' | Yes | 207' | Yes | 133' | Yes | 208' | Yes |
| *Westbound Through/Right* | 1,245' | 131' | Yes | 203' | Yes | 131' | Yes | 204' | Yes |

41 Queues are based on HCM 95th Percentile methodology.

42 Existing storage capacity includes the striped turn pocket as well as the storage space upstream of the turn lane.

## TABLE 9-6

## CITY OF LONG BEACH – YEAR 2041 BUILDOUT PEAK HOUR INTERSECTION QUEUING ANALYSIS[43]

| Key Intersection | Storage Provided (feet) | (1) Year 2041 Buildout Traffic Conditions | | | | (2) Year 2041 Buildout Plus Project Traffic Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| | | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) |
| 1. Atlantic Avenue at 33rd Street | | | | | | | | | |
| *Northbound Left-Turn* | 40’ | 25’ | Yes | 27’ | Yes | 25’ | Yes | 28’ | Yes |
| *Northbound Through* | 1,245’ | 183’ | Yes | 511’ | Yes | 252’ | Yes | 542’ | Yes |
| *Northbound Through/Right* | 1,245’ | 177’ | Yes | 550’ | Yes | 243’ | Yes | 590’ | Yes |
| *Southbound Left-Turn* | 165’[44] | 38’ | Yes | **187’** | **No** | 88’[45] | Yes | **293’[45]** | **No** |
| *Southbound Through* | 580’ | 174’ | Yes | 205’ | Yes | 229’ | Yes | 208’ | Yes |
| *Southbound Through/Right* | 580’ | 173’ | Yes | 203’ | Yes | 228’ | Yes | 207’ | Yes |
| *Eastbound Left/Through/Right* | 590’ | 52’ | Yes | 128’ | Yes | 48’ | Yes | 145’ | Yes |
| *Westbound Left/Through* | 1,235’ | 124’ | Yes | 254’ | Yes | 176’ | Yes | 315’ | Yes |
| *Westbound Through/Right* | 1,235’ | 167’ | Yes | 251’ | Yes | 205’ | Yes | 314’ | Yes |
| 6. California Avenue at Spring Street | | | | | | | | | |
| *Northbound Left-Turn* | 150’[44] | 56’ | Yes | 66’ | Yes | 56’ | Yes | 66’ | Yes |
| *Northbound Through/Right* | 2,540’ | 194’ | Yes | 258’ | Yes | 190’ | Yes | 361’ | Yes |
| *Southbound Left-Turn* | 175’[44] | 102’ | Yes | **214’** | **No** | 104’ | Yes | **219’** | **No** |
| *Southbound Through* | 1,870’ | 97’ | Yes | 172’ | Yes | 95’ | Yes | 175’ | Yes |
| *Southbound Right-Turn* | 110’[44] | 50’ | Yes | 77’ | Yes | 48’ | Yes | 78’ | Yes |

[43] Queues are based on HCM 95th Percentile methodology.

[44] Existing storage capacity includes the striped turn pocket as well as the storage space upstream of the turn lane.

[45] For informational purposes, queues with the implementation of protected/permissive phasing for the southbound left-turn movement consist of: *AM peak hour = 28’; PM peak hour = 70’*

## TABLE 9-6 (CONTINUED)

## CITY OF LONG BEACH – YEAR 2041 BUILDOUT PEAK HOUR INTERSECTION QUEUING ANALYSIS[46]

| Key Intersection | Storage Provided (feet) | (1) Year 2041 Buildout Traffic Conditions | | | | (2) Year 2041 Buildout Plus Project Traffic Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| | | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) |
| 6. *California Avenue at Spring Street (Continued)* | | | | | | | | | |
| *Eastbound Left-Turn* | 160'[47] | 51' | Yes | 121' | Yes | 54' | Yes | 122' | Yes |
| *Eastbound Through* | 565' | 226' | Yes | 384' | Yes | 233' | Yes | 384' | Yes |
| *Eastbound Right-Turn* | 100' | 36' | Yes | 28' | Yes | 37' | Yes | 28' | Yes |
| *Westbound Left-Turn* | 160'[47] | 122' | Yes | 153' | Yes | 121' | Yes | 153' | Yes |
| *Westbound Through* | 1,210' | 363' | Yes | 270' | Yes | 375' | Yes | 270' | Yes |
| *Westbound Right-Turn* | 195'[47] | 78' | Yes | 137' | Yes | 84' | Yes | 139' | Yes |
| 7. California Avenue at Wardlow Road | | | | | | | | | |
| *Northbound Left/Through/Right* | 585' | 86' | Yes | 231' | Yes | 94' | Yes | 257' | Yes |
| *Southbound Left/Through/Right* | 1,110' | 28' | Yes | 58' | Yes | 32' | Yes | 66' | Yes |
| *Eastbound Left/Through* | 1,240' | 216' | Yes | 322' | Yes | 232' | Yes | 333' | Yes |
| *Eastbound Through/Right* | 1,240' | 203' | Yes | 303' | Yes | 213' | Yes | 310' | Yes |
| *Westbound Left/Through* | 1,245' | 193' | Yes | 164' | Yes | 214' | Yes | 172' | Yes |
| *Westbound Through/Right* | 1,245' | 292' | Yes | 329' | Yes | 308' | Yes | 346' | Yes |

[46] Queues are based on HCM 95th Percentile methodology.

[47] Existing storage capacity includes the striped turn pocket as well as the storage space upstream of the turn lane.

## TABLE 9-6 (CONTINUED)

## CITY OF LONG BEACH – YEAR 2041 BUILDOUT PEAK HOUR INTERSECTION QUEUING ANALYSIS[48]

| Key Intersection | Storage Provided (feet) | (1) Year 2041 Buildout Traffic Conditions | | | | (2) Year 2041 Buildout Plus Project Traffic Conditions | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| | | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) | Max. Queue/ Min. Storage Required | Adequate Storage (Yes/No) |
| 8. Orange Avenue at Wardlow Road | | | | | | | | | |
| *Northbound Left-Turn* | 70'[49] | **101'** | **No** | **111'** | **No** | **109'** | **No** | **113'** | **No** |
| *Northbound Through/Right* | 575' | 287' | Yes | **990'** | **No** | 299' | Yes | **991'** | **No** |
| *Southbound Left-Turn* | 75' | 25' | Yes | 69' | Yes | 26' | Yes | 69' | Yes |
| *Southbound Through/Right* | 1,105' | 780' | Yes | 617' | Yes | 833' | Yes | 626' | Yes |
| *Eastbound Left-Turn* | 85'[49] | **174'** | **No** | **329'** | **No** | **195'** | **No** | **352'** | **No** |
| *Eastbound Through* | 1,240' | 274' | Yes | 547' | Yes | 285' | Yes | 549' | Yes |
| *Eastbound Through/Right* | 1,240' | 263' | Yes | 534' | Yes | 274' | Yes | 536' | Yes |
| *Westbound Left-Turn* | 85'[49] | **86'** | **No** | 44' | Yes | **90'** | **No** | 44' | Yes |
| *Westbound Through* | 1,245' | 265' | Yes | 248' | Yes | 274' | Yes | 249' | Yes |
| *Westbound Through/Right* | 1,245' | 260' | Yes | 242' | Yes | 270' | Yes | 243' | Yes |

[48] Queues are based on HCM 95th Percentile methodology.

[49] Existing storage capacity includes the striped turn pocket as well as the storage space upstream of the turn lane.

# 10.0 AREA-WIDE TRAFFIC IMPROVEMENTS

## 10.1 Recommended Improvements

For those intersections where projected traffic volumes are expected to result in poor operating conditions, this report identifies roadway improvements that are expected to:

- Mitigate the impact of existing traffic, Project traffic and future non-project (ambient growth and cumulative project) traffic; and
- Improve Levels of Service to an acceptable range and/or to pre-project conditions.

### 10.1.1 *Existing Plus Project Traffic Conditions*

The results of the intersection capacity and queueing analyses presented previously in *Tables 8-1, 9-1 and 9-4* indicates that the proposed Project will not impact any of the eight key study intersections under the "Existing Plus Project" traffic scenario. Therefore, no improvements are recommended.

### 10.1.2 *Year 2024 Cumulative Plus Project Traffic Conditions*

The results of the intersection capacity and queueing analyses presented previously in *Tables 8-2, 9-2 and 9-5* indicates that the proposed Project will not impact any of the eight key study intersections under the "Year 2024 Cumulative Plus Project" traffic scenario. Therefore, no improvements are recommended.

### 10.1.3 *Year 2041 Buildout Plus Project Traffic Conditions*

The results of the intersection capacity and queueing analyses presented previously in *Tables 8-3, 9-3 and 9-6* indicates that the proposed Project will impact one (1) of the eight key study intersections under the "Year 2041 Buildout Plus Project" traffic scenario. The recommended improvements include the following:

- **Intersection 1 – Atlantic Avenue at 33rd Street:** Restripe the southbound leg to lengthen the southbound left-turn pocket storage. These improvements are subject to the approval of the City of Long Beach.

  As an alternative improvement, modifying the existing signal to include protected-permissive phasing for the southbound direction to help reduce the southbound left-turn queue and thus would reduce the amount of on-street parking to be removed.

## 10.2 Project-Related Fair Share Contribution

The transportation impacts associated with the development of the Project were determined based on the Existing Plus Project, Year 2024 and Year 2041 traffic analyses. As summarized in Section 10.1, the development of the Project is anticipated to have an impact at one (1) location under Year 2041 Plus Project traffic conditions. As such, the Project can be expected to pay its fair share of the improvement costs for the impacted intersection.

### 10.2.1 *Year 2041 Buildout Project-Related Fair Share Contribution*

***Table 10-1*** presents the peak hour percentage of net traffic impact at the intersection of Orange Avenue/Wardlow Road for Year 2041 buildout traffic conditions. As presented in this table, the first column (1) presents a total of all intersection peak hour movements for existing traffic conditions. The second column (2) presents project only traffic conditions. The third column (3) presents future Year 2041 buildout traffic conditions with project traffic. The fourth column (4) represents what percentage of total intersection peak hour traffic is project-related traffic.

Review of *Table 10-1* shows that the Project's traffic percentage at the intersection of Atlantic Avenue/33rd Street totals 20.0% under Year 2041 buildout traffic conditions.

## TABLE 10-1
## YEAR 2041 BUILDOUT PROJECT FAIR SHARE CONTRIBUTION

| | Key Intersection | Impacted Time Period | (1) Existing Traffic | (2) Project Only Traffic | (3) Year 2041 Buildout Plus Project Traffic | (4) Net Project Percent Increase |
|---|---|---|---|---|---|---|
| 1. | **Atlantic Avenue at 33rd Street** | **AM** | **2,130** | **119** | **2,725** | **20.0%** |
| | | PM | 2,763 | 99 | 3,513 | 13.2% |

Notes:
- Net Project Percent Increase (4) = [Column (2)] / [Column (3) – Column (1)]

# 11.0 CONGESTION MANAGEMENT PROGRAM COMPLIANCE ASSESSMENT

The Congestion Management Program (CMP) was created statewide as a result of Proposition 111 and has been implemented locally by the Los Angeles County Metropolitan Transportation Authority (LACMTA). The CMP for Los Angeles County requires that the traffic impact of individual development projects of potential regional significance be analyzed. A specific system of arterial roadways plus all freeways comprises the CMP system.

For purposes of the CMP, a significant impact occurs when the proposed Project increases traffic demand on a CMP facility by two percent of capacity ($V/C \geq 0.02$), causing LOS F ($V/C > 1.00$). If the facility is already at LOS F, a significant impact occurs when the proposed Project increases traffic demand on a CMP facility by two percent of capacity ($V/C \geq 0.02$).

## 11.1 Traffic Impact Review

As required by the current *Congestion Management Program for Los Angeles County*, a review has been made of designated monitoring locations on the CMP highway system for potential impact analysis. Per CMP TIA criteria, the geographic area examined in the TIA must include the following, at a minimum:

- All CMP arterial monitoring intersections, including freeway on and off-ramp intersections, where the project will add 50 or more trips during either the AM or PM weekday peak hours.

- Mainline freeway-monitoring stations where the project will add 150 or more trips, in either direction, during the AM or PM weekday peak hours.

### 11.1.1 *Intersections*

The following CMP intersection monitoring locations in the project vicinity have been identified:

| CMP Station | Intersection/Jurisdiction |
|---|---|
| No. 37 | Pacific Coast Highway at Orange Avenue |

As stated earlier, the CMP guidelines require that arterial monitoring intersection locations must be examined if the proposed Project will add 50 or more trips during either the AM or PM weekday peak hours (of adjacent street traffic) at CMP monitoring intersections. Based on the proposed Project's trip generation potential, trip distribution and trip assignment, the Project will not add more than 50 trips at the identified CMP intersections during the weekday AM peak hour or PM peak hour. Therefore, a CMP intersection traffic impact analysis is not required.

### 11.1.2 *Freeways*

The following CMP freeway monitoring locations in the project vicinity have been identified:

| CMP Station | Intersection/Jurisdiction |
|---|---|
| No. 1078 | SR-710, north of Willow Street |

As stated earlier, the CMP TIA guidelines require that freeway monitoring locations must be examined if the proposed Project will add 150 or more trips (in either direction) during either the AM or PM weekday peak periods. Based on the project's trip generation potential and distribution pattern, the proposed Project will not add more than 150 trips during the AM or PM peak hour at this CMP mainline freeway-monitoring location. Therefore, a CMP freeway traffic impact analysis is not required.

## 11.2 Transit Impact Review

As required by the current *Congestion Management Program for Los Angeles County*, a review has been made of the potential impacts of the project on transit service. As previously discussed, and shown in *Figure 3-4*, a number of transit services exist in the project area, necessitating the following transit impact review.

The project trip generation, as shown in *Table 5-4*, was adjusted by values set forth in the CMP (i.e. person trips equal 1.4 times vehicle trips, and transit trips equal 7 percent of the total person trips) to estimate project-related transit trip generation. Pursuant to the CMP guidelines, the proposed Project is forecast to generate 14 transit trips (8 inbound and 6 outbound) during the AM peak hour and 13 transit trips (6 inbound and 7 outbound) during the PM peak hour. Over a 24-hour period the proposed Project is forecasted to generate 199 daily weekday transit trips.

It is anticipated that the existing transit service in the project area would be able to accommodate the project generated transit trips. Therefore, given the number of transit trips generated by the project and the existing transit routes in the project vicinity, it is concluded that the existing public transit system would not be significantly impacted by the proposed Project.

# 12.0 VEHICLE MILES TRAVELED (VMT) ANALYSIS

## 12.1 SB743 Compliance VMT Screening Assessment

The purpose of this Vehicle Miles Traveled (VMT) analysis is to evaluate the Project based on Senate Bill 743 (SB 743) requirements consistent with the *Technical Advisory on Evaluating Transportation Impacts In California Environmental Quality Act* (CEQA), December 2018, prepared by the State of California Governor's Office of Planning and Research (OPR). The OPR Technical Advisory provides project screening criteria and guidance for analysis of VMT assessments under SB 743. With the adopted guidelines, transportation impacts are to be evaluated based on a project's effect on vehicle miles traveled. Lead agencies are allowed to continue using their current impact criteria, or to opt into the revised transportation guidelines. However, the new guidelines must be used starting July 1, 2020, as required in CEQA section 15064.3.

The City of Signal Hill has yet to adopt criteria for evaluating VMT impacts under CEQA. However, it is our understanding that the City of Signal Hill may likely utilize criteria consistent with the OPR Technical Advisory, and may be open to considering the criteria which has been adopted by neighboring jurisdiction of the City of Long Beach.

For the VMT screening analysis, the presumption of less than significant impact near Transit Stations was applied to the proposed Project. Proposed CEQA Guideline Section 5064.3, subdivision (b), states that "generally, [land use] projects within one-half mile of either an existing major transit stop or an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact". A high-quality transit corridor is defined as a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. Review of the Long Beach Transit Priority Areas Map from the *City of Long Beach Traffic Impact Analysis Guidelines dated June 2020* shows the area between Atlantic Avenue and Orange Avenue within the City of Long Beach and Signal Hill as falling within half a mile from high quality transit corridor or major transit stop. Since the proposed Project is considered to be located within half a mile of an existing high-quality transit corridor, this project can be screened from further VMT analysis and can be presumed to have a less than significant impact on VMT.

In addition, screening for small projects and retail developments was also applied to the proposed Project. Consistent with the OPR Technical Advisory Section E.1 *Threshold for Small Projects*, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less than significant transportation impact. Additionally, as stated in the OPR Technical Advisory Section E.2 *Recommended Thresholds for Retail Projects*, "local serving retail development tends to shorten trips and reduce VMT. Thus, lead agencies generally may presume such development created less than significant transportation impact." The OPR Technical Advisory, as well as the City of Long Beach guidelines, also suggests that retail projects which do not exceed 50,000 SF may be presumed to create a less than significant transportation impact.

**Retail Screening**

As stated in Section 2.0, the proposed Project consists of two commercial/retail building totaling 20,600 SF which individually and collectively is less than the 50,000 SF threshold for small projects. It should be noted that if the 3,500 SF of medical/dental office use were converted to retail the commercial/retail component would consist of 24,100 SF which is less than the 50,000 SF threshold for small projects. Therefore, the commercial/retail component of the Project can be screened from further VMT analysis and the commercial/retail component can be presumed to have a less than significant impact on VMT.

**Medical/Dental Office Screening**

Review of the trip generation estimates presented in *Table 5-4* for the proposed 3,500 SF medical/dental office component of the Project is forecast to generate 71 daily trips which is less than 110 daily trip threshold for small projects. As such the medical/dental office component of the Project, if this were to be the land use, can be screened from further VMT analysis and the medical/dental office component can be presumed to have a less than significant impact on VMT.

**Self-Storage Screening**

Self-storage facilities are generally meant to serve the local community and therefore can be assumed to be a local-serving development which will reduce VMT. It is our understanding that the City of Signal Hill has only a few self-storage facilities and has a need for additional facilities to better serve the community. Therefore, the self-storage component of the Project can be screened from further VMT analysis and the self-storage component can be presumed to have a less than significant impact on VMT.

In addition to the screening criteria identified above, Greenhouse Gas (GHG) emissions have been quantified and analyzed for the self-storage component of this Project based on the application of CalEEMod. SB 743 includes legislative intent to help guide the development of the new criteria for transportation impacts to align with Green House Gas (GHG) reduction. For example, Section 1 of the legislation states: "New methodologies under the California Environmental Quality Act are needed for evaluating transportation impacts that are better able to promote the state's goals of reducing greenhouse gas emissions and traffic-related air pollution, promoting the development of a multimodal transportation system, and providing clean, efficient access to destinations." Further, subdivision (b) of the new Section 21099 requires that the new criteria "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses."

The SCAQMD in its Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans recommends a screening threshold of 3,000 MT of $CO_2e$ per year for residential and commercial sectors. Greenhouse gas (GHG) emissions, reported in terms of metric tons of carbon dioxide equivalent ($MTCO_2e$) per year, were estimated for the proposed Project using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2. Based on the GHG data contained in the

CalEEMod the proposed GHG emissions based on the VMT for the self-storage component of the Project is approximately 502.5 MTCO2e annually from VMT.

The mobile source GHG emission is 83% lower than the applicable threshold of significance for GHG for the proposed Project. Thus indicating that the self-storage component of the Project's contribution to VMT, which is directly correlated to GHG emissions, would not lead to a significant impact under CEQA. Therefore, it can be concluded that the self-storage component of the proposed Project would not generate GHG emissions that would have a significant impact on the environment. As a result, this Project clearly complies with the state's goals of reducing greenhouse gas emissions, traffic-related air pollution and the intent of SB 743.

# Parking & Circulation Study

LINSCOTT LAW & GREENSPAN engineers

# UPDATED PARKING AND SITE ACCESS/CIRCULATION ASSESSMENT

# TARGET RETAIL CENTER EXPANSION AND SELF-STORAGE FACILITY

**Signal Hill, California**

**January 13, 2021**

**Engineers & Planners**
Traffic
Transportation
Parking

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San Diego
Woodland Hills

January 13, 2021

John E. Clement,President
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Tel: 949.673.4660 Fax: 949.220.0566
Email: john.clement@venturepointinc.com

LLG Reference No. 2.20.4277.1

Subject: **Updated Parking and Site Access/Circulation Assessment for the Target Center Retail Expansion and Self-Storage Facility Project**
Signal Hills, California

Dear Mr. Clement:

As requested, Linscott, Law & Greenspan, Engineers (LLG) is pleased to submit this Parking Demand Analysis and Site Access/Circulation Assessment associated with the proposed Target Center Retail Expansion and Self-Storage Facility (herein after referred to as Project) in the City of Signal Hill. The Project site is located at the existing Target Center (Store T2319), addressed at 950 E. 33rd Street, which is generally located south of E. 33rd Street, between Atlantic Avenue and California Avenue, and north of the San Diego (I-405) Freeway. Based on our coordination efforts and subsequent discussions with Bill Zimmerman, City Traffic Engineer, we understand that the preparation of a parking study, as well as a site access/on-site circulation assessment inclusive of evaluation of parking layout, is required by the City as part of the review and approval process for the proposed Project. The analysis has been updated to incorporate and address applicable City comments as summarized in a memorandum prepared by Mr. Zimmerman and addressed to the City of Signal Hill, dated October 21, 2020

The Project site consists of two (2) parcels with a total land area of 15.5± acres, of which 4.4± acres is currently vacant. The Target Center site is a 10.1± acre parcel of land that is currently developed with a 135,811 square-foot (SF) free-standing discount store and surface parking supply of 538 spaces. The proposed Project includes the development of up to 23,500 of retail/restaurant and medical/dental office space within three (3) buildings, and a three-story self-storage facility totaling 177,345 SF. Upon completion of the Project, a total floor area of 336,656 SF with a preliminary parking supply of 492 spaces. There are no plans to expand the existing Target.

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The future parking needs of the Project will be evaluated in the context of full site occupancy using City "code", and also by applying the "shared parking" techniques as published in the Urban Land Institute (ULI) *Shared Parking 2nd Edition*. Information that may be applicable to the Project uses as referenced in *Parking Generation (5th Edition)* published by the Institute of Transportation Engineers (ITE) has been considered in this study. Those needs will be compared with a proposed on-site parking supply of the Project.

The study focuses on the following, per the requirements of the City of Signal Hill:

- Calculates the Code-based parking requirements for the Project based on the application of City Code parking ratios for occupied existing and future (full occupancy) conditions, inclusive of the proposed self-storage facility, if applicable.
- Estimates parking demand through application of the shared parking concept consistent with the ULI *Shared Parking* methodology, applied to existing site occupancies as well as future full site occupancy following the pending modifications identified above,
- Analysis of the existing parking needs for the Target store facility based upon square foot basis of the facility. For this analysis, empirical parking demand studies of an existing Target facility in the City of San Clemente will be used to establish the parking needs of the existing Target Signal store, and supplemented with parking requirements presented in the *Parking Generation (5th Edition)* published by the Institute of Transportation Engineers (ITE) for ITE Land Use: 813 Free Standing Discount Superstore.
- For comparison purposes, an analysis of a similar site, Bristol Square Santa Ana, where Target is the anchor of a shopping center with restaurants and retail space, in included.
- Analysis of the proposed storage facility's parking needs based on application of the City's parking code requirements, comparison of parking ratios of adjacent jurisdictions as well as parking requirements presented in the *Parking Generation (5th Edition)* for ITE Land Use: 151 Mini-Warehouse, and actual needs using similar facilities as a reference, based on information provided by the self-storage operator.
- Compares the estimated shared parking demand of the Project against the proposed parking supply, to identify any potential, operational surplus or deficiency in parking spaces.

Relative to the Site Access/On-site Circulation of the Project, the assessment focuses on the following:

- Evaluation of access from E. 33rd Street and California Avenue for the retail component of the Project, and consideration of access to the self-storage facility, inclusive of potential vehicular and parking conflict.
- Truck access and circulation to the existing Target and proposed self-storage facility, inclusive of truck turning requirements.
- Evaluation of the Project's main entry drives on E. 33rd Street and ability to serve the existing Target and proposed retail/restaurant uses and circulate internally.
- Evaluation of potential circulation and parking conflicts associated with the proposed Project fast-food drive-thru restaurant, and consideration of the drive-thru operations of the planned Chick-fil-A.
- Identification of potential site plan solutions/modifications to minimize access/internal circulation conflicts.

Our method of analysis, findings, and recommendations are detailed in the following sections of this report.

## PROJECT LOCATION AND DESCRIPTION

The existing Target Center (Store T2319), addressed at 950 E. 33rd Street, is located south of E. 33rd Street, between Atlantic Avenue and California Avenue, and north of the San Diego (I-405) Freeway in the City of Signal Hill, California. ***Figure 1***, located at the rear of this letter report, presents a Vicinity Map, which illustrates the general location of the subject property in the context of the surrounding street system.

### Existing Development

The Project site consists of two (2) parcels with a total land area of 15.5± acres, of which 10.1± acres is currently developed with a 135,811 square-foot (SF) free-standing discount store and surface parking supply of 538 spaces. The remaining 4.4± acres, which is generally located on the west side of California Avenue, south of the existing Target and north of the I-405 Freeway, is currently vacant. The City of Signal Hill Municipal Code identifies this site falls within the SP-12 Freeway Self-Storage Specific Plan area. ***Figure 2-1*** presents an existing aerial photograph of the site and illustrates the existing buildings and parking areas, as well as 4.4± acre vacant parcel.

### Proposed Project

From review of the Site Plan, the proposed Project, all of which will be constructed on existing surface parking and/or vacant land, includes development of up to 23,500 SF of retail/restaurant and medical/dental office space within three (3) buildings and a

three-story self-storage facility totaling 177,345 SF, inclusive of a lobby/guest services area. There are no plans to expand the existing Target.

The "Drive-Thru" building is a proposed 5,000 SF restaurant pad with drive-thru that would contain one or more restaurant/food uses of which one would operate the drive-thru. The "Retail/Other" building totals 15,000 SF and would be occupied by a single tenant or a various mix retail tenant which may include "take-out" food uses, whereas the "Medical Office" is a 3,500 SF building that would be occupied by a dental office; the amount of potential outdoor dining area that the Project will provide for the "Drive-Thru" is not known at this time. To provide a conservative assessment, up to 600 SF of outdoor dining area is assumed to be provided as a placeholder for which the parking impacts can be assessed.

The proposed three-story, 177,345 SF self-storage facility also includes the provision of up to 25 RV covered storage spaces in the gated storage yard. Upon completion of the Project, a total floor area of 336,656 SF with a preliminary parking supply of 49[2] spaces, of which 11 spaces will be located within the gated storage yard of the proposed self-storage facility. The proposed self-storage facility leasing office is expected to operate Monday-Friday from 9:30 am-6:00 pm, Saturday from 9:00 am-5:30 pm, and Sunday between 10:00 am-4:00 pm; access to the storage units will be available to customers/tenants Monday-Sunday, between 6:00 am-10:00 pm. Access to the gated yard for employees and tenants will be provided via gate access, Monday-Sunday, between 6:00 am-10:00 pm.

***Figure 2-2*** presents the Project's Conceptual Site Plan, inclusive of the existing Chick-fil-A, prepared by Kimley Horn & Associates, Inc. dated January 8, 2021.

***Table 1***, located at the end of this letter report, following the figures, presents the existing and proposed development tabulation/tenant mix and associated floor areas for the Project. A review of *Table 1* indicates the Project's total floor area of 336,656 SF will consist of the following:

- 135,811 SF Target store
- 15,000 SF of retail/other uses,
- 3,500 SF of medical/dental space
- 5,000 SF of restaurant uses with up to 600 SF of outdoor dining area, and
- 177,345 SF of self-storage space

Upon completion of the Project, a total floor area of 336,656 SF with a preliminary parking supply of 492 spaces, of which 11 spaces will be located within the gated

storage yard of the proposed self-storage facility. Note, although not a part of the Project site or this parking study, a third parcel, located on the southeast corner of Atlantic Avenue and E. 33rd Street in the City of Long Beach, is developed with a Chick-fil-A fast-food with drive-thru restaurant and a parking supply of 19 spaces, where access to the existing fast-food restaurant is provided via the site's westerly driveway on E. 33rd Street.

**Alternative Restaurant Tenant Mix**

Since a tenant mix has not been identified for the Project's 5,000 SF of restaurant floor area and up to 600 SF of outdoor dining area, the following mix/type of restaurant has been assumed and is evaluated in this study to allow for flexibility in future tenancies, along with the proposed retail and self-storage space:

| Alternative | Retail Shop | Fine/ Casual Dining/ Outdoor Dining | QSR/Fast-Casual/ Outdoor Dining | Fast-Food w/ Drive-Thru/ Outdoor Dining | Medical/ Dental Office | Self-Storage |
|---|---|---|---|---|---|---|
| ❑ Alternative 1 | 15,000 SF | 2,000 SF/ 300 SF | -- | 3,000 SF/ 300 SF | 3,500 SF | 177,345 SF |
| ❑ Alternative 2 | 15,000 SF | -- | 2,000 SF/ 300 SF | 3,000 SF/ 300 SF | 3,500 SF | 177,345 SF |
| ❑ Alternative 3 | 15,000 SF | -- | -- | 5,000 SF/ 600 SF | 3,500 SF | 177,345 SF |

**Parking Supply**

The existing on-site parking supply totals 538 spaces, which translates to parking supply ratio of 4.0 spaces per 1000 SF. Per information provided in the Project Site Plan, the implementation of the Project will result in a net loss of 46 spaces for a total of 492 spaces. It should be noted that of the 492 spaces provided, 11 are located within the gated self-storage facility. For detailed study purposes, the parking areas were divided into six (6) zones, Zones A through F, as summarized in *Table 2* and illustrated on *Figure 2-2.* Please note *Figure 2-2* has been updated to include the most current proposed site plan which addresses all previous comments from the City.

However, since the additional 11 self-storage spaces located in Zone F can only be accessed to customer/employees of the facility during the hours of operation, these spaces are assumed to be "in use" during all hours of the day to provide a conservative analysis.

## PARKING SUPPLY-DEMAND ANALYSIS

The parking analysis for the proposed Project involves determining the expected parking needs based on the size and type of the proposed development components versus the parking supply. In general, there are several methods that can be used to estimate the site's peak parking needs. The methods used in this analysis include:

- Application of City code requirements for the proposed Project (which typically treats each tenancy type as a "stand alone" use at maximum demand).
- Application of shared parking usage patterns by time-of-day (which recognizes that the parking demand for each tenancy type varies by time of day and day of week). The shared parking analysis starts with a code calculation for each tenancy type.

The shared parking methodology is concluded to be applicable to a development such as the Project because the individual land use types (i.e., major retailer, retail shops, various restaurant types, self-storage, etc.) experience peak demands at different times of the day, which is based on the Urban Land Institute's (ULI's) data contained in the *Shared Parking* 2nd Edition publication or referenced in *Parking Generation (5th Edition)* published by the Institute of Transportation Engineers (ITE).

## CITY CODE PARKING REQUIREMENTS

The code parking calculation for the proposed Project is based on the City's requirements as outlined in the *City of Signal Hill Municipal Code; Chapter 20.70.030 – Number of parking spaces required, by use* and *Chapter 20.32.050 – Off-street parking*. The City specifies the following parking ratios:

- Retail, General: one (1) space per 250 SF of Gross Floor Area (GFA).[1]
- Retail shopping center in excess of 100,000 GFA: 1 space per 200 SF of GFA.
- Restaurant, fast food, including drive-thru: one (1) space for 100 SF of GFA; this ratio is also applicable to outdoor dining area

[1] The exact tenant mix is unknown at this time for the 15,000 SF retail building. Therefore, to provide flexibility in the various retail tenant mix, and potential "take out" food uses, a parking ratio of 1 space per 200 SF of GFA (5 spaces per 1000 SF) has been applied to the 15,000 SF retail building consistent with City's "Retail shopping center" parking requirement, thus resulting in a conservative requirement of 75 spaces, instead of 60 spaces which is 15 more than what City code would require.

- Restaurant, take-out: one (1) space per 250 SF of GFA.
- Offices, Medical: one (1) space per 200 SF of GFA.
- Self-Storage: 1 space per 7,500 SF; two-car garage for manager's unit, if provided

***Table 3*** presents the code parking requirements for the proposed Project, inclusive of the existing Target. As shown, application of the above-referenced parking code ratios to the development totals results in a code-parking requirement of 716 spaces, of which 543 spaces is required for the existing Target, while the remaining 173 spaces would be required for the proposed Project, and of this total, 24 spaces would be required for the proposed self-storage facility, and 600 SF of outdoor dining area would require 6 spaces. With a preliminary parking supply of 492 spaces, a theoretical parking deficiency of 224 spaces is calculated.

***Attachment 1A*** and ***Attachment 1B*** contains excerpts from the *City of Signal Hill Municipal Code; Chapter 20.70.030 – Number of parking spaces required, by use* and *Chapter 20.32.050 – Off-street parking* used in this code assessment, respectively.

However, the specific tenancy mix of the existing Target Store and the proposed Project provides an opportunity to share parking spaces based on the utilization profile of each included land use component. The following section calculates the parking requirements for the proposed Project and the entire site based on the shared parking methodology approach.

In addition, an analysis of the existing parking needs for the Target store facility based upon square foot basis of the facility was completed using the results of empirical parking demand studies conducted at an existing Target facility in the City of San Clemente, and supplemented with evaluation of parking requirements presented in the *Parking Generation (5th Edition)* published for ITE Land Use: 813 Free Standing Discount Superstore. Further yet, for comparison purposes, in response to the City's requirements, the existing parking demands of a similar site, Bristol Square Santa Ana, where Target is the anchor of a shopping center with restaurants and retail space, was conducted.

For the proposed storage facility's parking needs, a comparison of the City's parking code requirements to that of adjacent jurisdictions as well as parking requirements presented in the *Parking Generation (5th Edition)* for ITE Land Use: 151 Mini-Warehouse was also conducted, and compared to the actual needs using similar

facilities as a reference based on an analysis of information provided by the self-storage operator.

## SHARED PARKING ANALYSIS

According to the Urban Land Institute's (ULI's) *Shared Parking* 2nd Edition publication, shared parking is defined as a parking space that can be used to serve two or more individual land uses without conflict or encroachment. The ULI *Shared Parking* publication provides hourly parking accumulation rates for retail and restaurant uses, as well as other uses to include office, medical office, health club, cinema, hotel, etc. expressed as a percentage of the peak demand for the day.

### Shared Parking Methodology

It has become common knowledge within our industry that parking demand characteristics indicates that a mixing of land uses results in an overall parking need that is less than the sum of the individual peak requirements for each land use. Due to the proposed mixed-use characteristics of the Project, opportunities to share parking can be expected. The objective of this shared parking analysis is to forecast the peak parking requirements for the project based on the combined demand patterns of different tenancy types at the site.

Shared parking calculations recognize that different uses often experience individual peak parking demands at different times of day, or days of the week. When uses share common parking footprints, the total number of spaces needed to support the collective whole is determined by adding parking profiles (by time of day for weekdays versus weekend days), rather than individual peak ratios as represented in the City of Signal Hill Municipal Code. In that way, the shared parking approach starts from the City's own code ratios and results in the "design level" parking supply needs of a site.

There is an important common element between the traditional "code" and the shared parking calculation methodologies: the peak parking ratios or "highpoint" for each land use's parking profile is typically similar to the "code" parking ratio for that use. The analytical procedures for shared parking analyses are well documented in the *Shared Parking, 2nd Edition* publication by the Urban Land Institute (ULI).

Shared parking calculations for the Project site utilize hourly parking accumulations developed from field studies of single developments in free-standing settings, where travel by private auto is maximized. These characteristics permit the means for calculating peak parking needs when land use types are combined. Further, the

shared parking approach illustrates how, at other than peak parking demand times, an increasing surplus of spaces will service the overall needs of the center.

Key inputs in the shared parking analysis for each land use include:

- Peak parking demand by land use for visitors and employees.
- Adjustments for alternative modes of transportation, if applicable.
- Adjustment for internal capture (captive versus non-captive parking demand), if applicable.
- Hourly variations of parking demand.
- Weekday versus weekend adjustment factors
- Monthly adjustment factors to account for variations of parking demand over the year.
- City of Signal Hill Parking Ratios per the City's Municipal Code and/or empirically derived parking ratios.

Please note that for this analysis, no monthly adjustment factors to account for variations of parking demand over the year and no alternative modes of transportation or internal capture adjustment factors were applied to provide a conservative parking demand forecast.

**Shared Parking Ratios and Profiles**

The hourly parking demand profiles (expressed in percent of peak demand) utilized in this analysis and applied to the Project are based on profiles developed by the Urban Land Institute (ULI) and published in *Shared Parking, 2nd Edition*.

The ULI publication presents hourly parking demand profiles (employees and customers/visitors are separated) for several general land uses to include the following: retail, office, medical office, restaurant and fast-food uses. These factors present a profile of parking demand over time and have been used directly, by land use type, in the analysis of this project. The ULI profiles of parking demand have been used directly, by land use type, in the analysis of this site and are applied to the City's applicable parking ratio or empirically derived parking ratios.

*Retail and Target Parking Needs*

The ULI retail use profiles are applied directly. In doing so, there is an intermediate step in expressing ULI profiles as a percentage of the week-long peak, thus arriving at a weekday profile and weekend profile each expressed as a percentage of the baseline parking ratio (ULI actually starts with separate ratios for weekday and weekend day, and develops profiles for each accordingly; we've found it more convenient to

translate both profiles to a percent of expected maximum demand, which, for retail, turns out to be on a Saturday). This conversion allows for the use of one parking ratio, in this case the applicable City-code parking ratio, when assessing the hourly needs of a land use. The resulting profiles represent the most likely hourly parking demand profile and are applied to the Project's proposed retail floor area at a City code parking ratio of 1 space per 200 SF (5 spaces per 1000 SF) for Retail shopping center to provide a conservative assessment and flexibility in retail tenant mix[2]. Peak demand for retail uses occurs between 1:00 PM–2:00 PM on weekdays, and 2:00 PM–4:00 PM on weekends.

Relative to the Target, the parking demand for this existing store is based on an analysis of empirical parking demand surveys conducted by LLG at the existing Target store located north of Avenida Vista Hermosa and west of Avenida La Pata in the City of San Clemente, as well as an evaluation of parking requirements presented in the *Parking Generation (5th Edition)* published for ITE Land Use 813: Free Standing Discount Superstore. ***Attachment 2A*** contains the empirical parking demand data for the existing Target San Clemente, whereas ***Attachment 2B*** contains the parking generation rates for ITE Land Use: 813 Free Standing Discount Superstore.

The existing Target San Clemente[3] has a building size of 142,206 SF and a parking supply of 501 spaces, which translates to a parking supply ratio of 3.52 spaces per 1000 SF (San Clemente Code amounts to 3.33 spaces per 1000 SF). Based on an evaluation of parking surveys of actual parking demand, which were conducted from 8:00 AM through 10:00 PM on two (2) weekdays and two (2) weekend days (Thursday, October 5th and 12th, 2017; and Saturday October 7th and 14th, 2017), a peak parking demand of 235 spaces was observed at 1:00 PM on Saturday. With an existing Target San Clemente floor area of 142,206 SF an empirical peak parking demand rate of 1.65 spaces per 1,000 SF was calculated [235 spaces ÷ 142,206 SF) x 1000 SF = 1.65 spaces/1000 SF].

Similar to our practice of adjusting empirically derived parking rates, a seasonal adjustment factor was applied to reflect peak-December retail characteristics, per ULI *Shared Parking* (see ***Attachment 3A*** for monthly adjustment factors identified in the ULI).

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[2] The exact tenant mix is unknown at this time for the 15,000 SF retail building. Therefore, to provide flexibility in the tenant mix a parking ratio of 1 space per 200 SF (5 spaces/1000 SF) was used in place of the City's "retail, general" parking code of 1 space per 250 SF (4 spaces per 1000 SF) and has been applied to the 15,000 SF retail building, thus resulting in a conservative requirement of 75 spaces, instead of 60 spaces which is 15 more than what City code would require.

[3] Source: *Parking Demand Analysis for the Avenida Vista Hermosa Retail Development (Target San Clemente), prepare by LLG, dated August 29, 2018*

The application of a seasonal adjustment factor translates to a calculated parking ratio of 2.50 spaces per 1,000 SF. With the application of a 5% contingency (safety) factor in addition to the seasonal adjustment factor, a "design" parking ratio specific to Target facilities amounts to 2.63 spaces per 1,000 SF. However, the parking supply provided at the study site amounted to 4.8 spaces per 1000 SF. Therefore, the parking provided at Target facilities far exceeds their demands.

As a comparison, per *5th Edition of the Parking Generation*, ITE Land Use: 813 Free Standing Discount Superstore are shown to have the following parking demand rates:

| | Parking Space per 1000 SF | |
|---|---|---|
| **Peak Period Parking Demand / Day of Week** | **Average Rate** | **85th Percentile "Design" Rate** |
| ❑ Weekday (Monday-Friday) | 1.46 | 2.03 |
| ❑ Weekend (Saturday) | 2.07 | 2.81 |
| ❑ Weekend (Sunday) | 1.38 | -- |

The parking rates summarized above are based on studies of eight (8) existing "discount superstore" facilities, all of which included a grocery store like the existing Target store in Signal Hill. However, the average parking supply provided at the study sites amounted to 4.8 spaces per 1000 SF, whereas the 85th percentile rate[4] was calculated at 2.81 spaces per 1000 SF. As a result, it is recommended that the design parking rate is based on the 85th percentile "design" rate.

Nevertheless, given the make-up of the study sites included as part of Parking Generation is not known, it is recommended that the design parking rate of 2.63 spaces per 1000 SF developed by LLG specific to a Target store be used to establish the parking needs of the existing Target in Signal Hill. Based on application of this parking rate, it was determined that Target would require 357 parking spaces (2.63 spaces per 1,000 SF x 135,811 SF = 357 spaces.

*Restaurant Parking Needs*

The ULI *Shared Parking* publication includes several categories for restaurants. For this analysis, the parking profile for fine/casual dining, family/quick serve restaurant and fast food restaurant were utilized as these categories would likely match the proposed tenant mix. Like the retail profiles, the restaurant profiles are derived exactly from the ULI baseline. The restaurant-parking ratio utilized in this analysis is

[4] Common engineering practice when identifying the parking needs for a site is to use the 85th percentile value. The 85th percentile value is the peak design value where 85 percent of the time parking will not be exceeded. All other times are considered atypical and should not be used for design (i.e. Thanksgiving's, Christmas, etc.).

based on the City code rate of 1 space per 100 SF, which is also applied to up to 1,000 SF of potential outdoor seating area in addition to the proposed 8,750 SF of restaurant space. The base demand associated with 1,000 SF of outdoor dining area amount to 10 spaces.

According to the *Shared Parking* publication, casual/fining dining restaurant uses are shown to experience peak demand between 7:00 PM and 10:00 PM on weekdays, and 8:00 PM and 9:00 PM on weekends, whereas a family restaurant uses peak demand occurs between 12:00 PM and 1:00 PM on weekdays and weekends. For fast-food uses peak demand occurs between 12:00 PM and 2:00 PM on weekdays and weekends.

As noted earlier, since a tenant mix has not been identified for the Project's 5,000 SF of restaurant floor area and 600 SF of outdoor dining, the following mix/type of restaurant and outdoor dining area has been assumed and is evaluated in this study for each of the alternatives:

| Alternative | Fine-Casual Dining / Outdoor Dining | QSR/Fast-Casual / Outdoor Dining | Fast-Food w/ Drive-Thru / Outdoor Dining |
|---|---|---|---|
| ❑ Alternative 1 | 2,000 SF / 300 SF | -- | 3,000 SF /300 SF |
| ❑ Alternative 2 | -- | 2,000 SF / 300 SF | 3,000 SF/300 SF |
| ❑ Alternative 3 | -- | -- | 5,000 SF/600 SF |

*Medical Office Parking Needs*

For medical office uses, the parking profile in the ULI publication was used and applied to the City's Parking Code ratio of 1 space 200 SF of floor area to forecast weekday and weekend hourly demand. Peak demand for medical office uses occurs between 10:00 AM–12:00 PM and 2:00 PM–4:00 PM on weekdays, and 10:00 AM–12:00 PM on weekends.

*Self- Storage Parking Needs*

Relative to the proposed self-storage facility, a comparison of the City's parking code requirements to that of adjacent jurisdictions as well as parking requirements presented in the *Parking Generation (5th Edition)* for ITE Land Use: 151 Mini-Warehouse has been conducted, and compared to the actual needs using similar facilities as a reference based on an analysis of information provided by the self-storage operator.

As a result, research of near-by Cities and *Parking Generation (5th Edition)* for ITE Land Use: 151 Mini-Warehouse has been completed. ***Table 4*** presents the parking requirements and compares them to Signal Hill requirement for self-storage facilities.

Review of the *Table 4* shows that three (3) of ten Cities have similar to lower parking requirements to that of the City of Signal Hill; the remaining seven (7) jurisdictions have higher parking requirements for self-storage facilities.

As a comparison, per *5th Edition of the Parking Generation*, ITE Land Use: 151 Min-Warehouse is shown to have the following parking demand rates:

| Peak Period Parking Demand / Day of Week | Parking Space per 1000 SF Average Rate | Parking Space per 1000 SF 85th Percentile "Design" Rate |
|---|---|---|
| ❑ Weekday (Monday-Friday) | 0.10 | 0.25 |
| ❑ Weekend (Saturday) | 0.09 | 0.14 |

The self-storage operator has eleven (11) sites which they own and operate the existing self-storage facilities. ***Table 5*** presents location of each site, total building size, spaces provided and composite parking supply ratio for which each was constructed and have proven to be adequate. Review of *Table 5* shows that the average parking supply ratio for the eleven sites is 0.131 spaces per 1,000 SF. Direct comparison between this ratio and the Signal Hill Ratio of 0.133 spaces per 1,000 SF shows that the Signal Hill parking requirement for self-storage is similar to what is typically developed and has proven to be sufficient based on information provided by the self-storage operator.When calculating the 85th percentile parking supply ratio, the peak parking supply ratio amounts to 0.184 spaces per 1000 SF.

Based on the information provided above, LLG concludes that the parking code requirements of the City's Municipal Code as documented in Chapter 20.32 SP-12 Freeway Self-Storage Specific Plan is considered adequate, especially when considering that the average parking supply ratio for 11 existing self-storage facilities (0.131 spaces per 1000 SF) owned by the proposed Project self-storage operator is almost equal to that of code (0.133 spaces per 1000 SF). Nevertheless, to provide a conservative assessment, the 85th Percentile parking rate of 0.184 spaces per 1000 SF was used in this study to establish the baseline parking needs of the self-storage component of the Project under the shared parking methodology. Based on application of this parking rate, 33 parking spaces (0.184 spaces per 1,000 SF x 177,345 = 33 spaces) would be used as the baseline parking need (per City code, this component of the Project would require 24 spaces for which 29 spaces are proposed as part of the Project site plan).

The weekday and weekend parking demand profile for self-storage uses referenced in *Parking Generation (5th Edition)* published by the Institute of Transportation Engineers (ITE) for ITE Land Use: 151 Mini-Warehouse have been used since the

*Shared Parking* publication does not include such information. The resulting profiles represent the most likely hourly parking demand profile for a self-storage facility. *Parking Generation (5th Edition)* indicates that the peak demand for a self-storage use uses generally occurs at 5:00 PM on weekdays and at 4:00 PM on weekends (Saturday).

It is noted that the proposed self-storage facility provides a total of 29 spaces, which satisfies City code. However, 11 of the 29 spaces are located within the proposed gated self-storage facility, which can only be accessed to customer/employees of the facility during the hours of operation. Hence to provide a conservative analysis, the 11 proposed spaces within the gated self-storage facility are shown as "in use" thus resulting in a minimum base hourly demand of 11 spaces by the self-storage facility all hours of the day.

***Attachment 3A*** also contains excerpts from Urban Land Institute's (ULI's) *Shared Parking* 2nd Edition publication (i.e. recommended time of day factors for weekdays and weekends), while ***Attachment 3B*** includes the weekday and weekend parking demand profile referenced in *Parking Generation (5th Edition)* published by the Institute of Transportation Engineers (ITE) for ITE Land Use: 151 Mini-Warehouse. It should be noted that the parking profiles in this report are normalized to translate both profiles to a percent of expected maximum demand.

**Shared Parking Analysis Results**

*Proposed Project – Alternative 1 Restaurant Mix*

***Tables 6*** and ***7*** present the overall weekday and weekend parking demand profiles for the entire project, inclusive the existing Target, based on the shared parking methodology, assuming full occupancy and including the following proposed Project restaurant tenant mix, inclusive of allocation of potential outdoor seating area.

| Alternative | Retail Shop | Fine/ Casual Dining/ Outdoor Dining | QSR/Fast-Casual/ Outdoor Dining | Fast-Food w/ Drive-Thru/ Outdoor Dining | Medical/ Dental Office | Self-Storage |
|---|---|---|---|---|---|---|
| ❑ Alternative 1 / outdoor dining | 15,000 SF | 2,000 SF / 300 SF | -- | 3,000 SF / 300 SF | 3,500 SF | 177,345 SF |

Columns (1) through (7) of these tables present the parking accumulation characteristics and parking demand of the Project for the hours of 6:00 AM to midnight. Column (8) presents the expected joint-use parking demand for the entire site on an hourly basis, while Column (9) summarizes the hourly parking

surplus/deficiency for the proposed Project compared to a modified parking supply of 492 spaces; the percentage surplus/deficiency is noted in Column (10).

Review of *Tables 6* and *7* indicates that the Project's weekday peak parking demand under this alternative is forecast to occur at 1:00 PM with peak hour demand of 476 spaces. Based on a proposed parking supply of 492 spaces, the peak demand hour on a weekday will yield a surplus of 16 spaces. On a weekend the peak parking demand will occur at 2:00 PM with a peak demand of 482 spaces. When compared to a proposed parking supply of 492 spaces, a parking surplus of 10 spaces is forecast.

***Figures 4*** and ***5*** graphically illustrate the weekday and weekend hourly parking demand forecast for the Project, respectively. The existing demand and the forecasted hourly Shared Parking demand for the proposed Project, which were presented in *Tables 6* and *7*, are depicted in these two figures relative to a modified parking supply of 492 spaces. A review of these figures indicates that the Project's modified parking supply of 492 spaces will adequately accommodate the Project' shared parking demand, inclusive of up 600 SF of outdoor dining area, for all morning, midday, afternoon and evening hours.

***Appendix A*** contains the shared parking analysis calculation worksheets for this weekday and weekend day parking scenario – Alternative 1 Restaurant Mix.

*Proposed Project – Alternative 2 Restaurant Mix*

***Tables 8*** and ***9*** are similar to the information presented in *Tables 6* and *7*, however these set of tables present the weekday and weekend parking demand for the Project, with Alternative 2 Restaurant as noted below.

| Alternative | Retail Shop | Fine/ Casual Dining/ Outdoor Dining | QSR/Fast-Casual/ Outdoor Dining | Fast-Food w/ Drive-Thru/ Outdoor Dining | Medical/ Dental Office | Self-Storage |
|---|---|---|---|---|---|---|
| ❑ Alternative 2 / outdoor dining | 15,000 SF | -- | 2,000 SF / 300 SF | 3,000 SF / 300 SF | 3,500 SF | 177,345 SF |

Review of *Table 8* shows that the peak-parking requirement for the Project during a weekday occurs at 1:00 PM and totals 475 spaces. On a weekend day, the peak parking requirements for the Project occurs at 2:00 PM with a peak parking demand of 487 spaces as shown in *Table 9*. With a proposed parking supply of 492 spaces, a surplus of 17 spaces is forecast for the weekday peak hour, and a surplus of 5 spaces

is forecast for the weekend peak hour under the Project's Alternative 2 Restaurant Mix.

***Figures 6*** and *7* graphically illustrate the weekday and weekend hourly parking demand forecast for the Project Alternative 2 Restaurant Mix, respectively. The existing demand and the forecasted hourly Shared Parking demand for the proposed Project, which were presented in *Tables 8* and *9*, are depicted in these two figures relative to a modified parking supply of 492 spaces.

***Appendix B*** contains the shared parking analysis calculation worksheets for Project's mix of uses under this alternative for the weekday and weekend day parking scenario – Alternative 2 Restaurant Mix.

*Proposed Project – Alternative 3 Restaurant Mix*

Similarly, ***Tables 10*** and ***11*** present the same information as shown in *Tables 6* and *7*, *Tables 10* and *11*, however, present the weekday and weekend parking demand profiles for the Project with Alternative 3 Restaurant Mix, respectively.

| Alternative | Retail Shop | Fine/ Casual Dining/ Outdoor Dining | QSR/Fast-Casual/ Outdoor Dining | Fast-Food w/ Drive-Thru/ Outdoor Dining | Medical/ Dental Office | Self-Storage |
|---|---|---|---|---|---|---|
| ❑ Alternative 3 / outdoor dining | 15,000 SF | -- | -- | 5,000 SF / 600 SF | 3,500 SF | 177,345 SF |

A review of *Tables 10* and *11* in comparison to the information in *Tables 6* and *7*, indicates that Alternative 3 Restaurant Mix results in the highest parking demand on a weekend.

As shown in *Table 10*, the peak-parking requirement for the Project during a weekday occurs at 1:00 PM and totals 492 spaces. On a weekend day, the peak parking requirements for the Project, which is forecast at 2:00 PM, is projected to total 490 space as shown in *Table 11*. With a proposed parking supply of 492 spaces, a surplus of 9 spaces is forecast for the weekday peak hour, and a surplus of 2 spaces is forecast for the weekend peak hour under the Project's Alternative 3 Restaurant Mix.

***Figures 8*** and ***9*** graphically illustrate the weekday and weekend hourly parking demand forecast for the Project with Alternative 3 Restaurant Mix, respectively.

***Appendix C*** contains the shared parking analysis calculation worksheets for Project's mix of uses under this alternative for the weekday and weekend day parking scenario – Alternative 3 Restaurant Mix.

**Comparative Assessment of a Similar Site**

For comparison purposes, an analysis of the parking demand of Bristol Square, which is located on the southwest corner of Bristol Street and Alton Avenue, was completed. Bristol Square is an existing 168,221 SF mixed-use center and a current occupancy of 158,915 SF (9,306 SF of vacancy) inclusive of a 104,500 SF Target. The existing on-site parking supply at Bristol Square totals 727 spaces, which translates to parking supply ratio of 4.32 spaces per 1000 SF. Based on existing parking demand studies of this retail center, Bristol Square had a calculated peak composite parking ratio of 2.11[5] spaces per 1,000 SF (or 3.06 spaces per 1000 SF when adjusted to reflect peak-December retail characteristics/conditions). *Attachment 2A* also contains the existing parking demand data for the Bristol Square Santa Ana that was conducted on a Thursday, Friday and Saturday in August 2015 as a part of the renovation of this existing shopping center.

For the Project, based on a proposed supply of 463 spaces and a proposed commercial floor area of 159,311 SF (excluding the 177,345 SF self-storage facility, and associated parking supply of 29 spaces), the calculated composite supply ratio amounts to 2.91 spaces per 1,000 SF. However, based on the results of the shared parking assessment, a peak composite parking rate of 3.01 spaces per 1000 SF is calculated (479 spaces ÷ 159.311 SF = 3.01 spaces/1000 SF), which excludes the self-storage facility area.

Direct comparison between these ratios shows that the proposed tenant mix for Target Signal Hill provides a similar amount of parking spaces per 1000 SF than what is observed for a commercial center with a Target and various mix of retail/commercial and food uses.

**SITE ACCESS AND CIRCULATION ASSESSMENT**

Based on concerns by the City about access and circulation this section of the report looks further into the following items:

- Crash history data along 33rd Street.

[5] Based on review of conceptual site plan; Zone F is located within the proposed self-storage facility accessible via gates.

- Sight distance analysis at the Project driveways, and
- Truck/vehicular access and circulation, inclusive of internal vehicular conflicts and truck turning requirements.

**Crash History Along 33rd Street**

It is our understanding that the City had concerns with the Targets' existing main entrance/exit driveway along E. 33rd Street and its current off-set layout relative to the the adjacent intersection (Olive Avenue) located on the north side of E. 33rd Street. As a result of these concerns, five years of crash data have been research at both the City of Signal Hill and City of Long Beach Police Departments. ***Figure 10*** presents the crash data from both Cities. Review of *Figure 10* shows that there were no crashes at or near Target Driveway/Olive Avenue. Therefore, LLG concludes that the existing driveway layout that now serves as the primary access to the Project site is adequate and no modifications to the driveway location/design is necessary or recommended.

**Sight Distance Analysis**

In support of evaluating the Project's existing and/or proposed access on E. 33rd Street and California Avenue, a sight line assessment was prepared to validate the adequacy of sight lines at the Project's access driveways.

The line of sight evaluation was prepared according to the general engineering practices for stopping sight distance analysis as documented in the State of California Department of Transportation (Caltrans) *Highway Design Manual (HDM),*

This assessment is based on the intersection sight distance requirements as published in the Caltrans *HDM* and focuses on the sight distance requirements for the Project's driveways located on 33rd Street and California Avenue. The Sight Distance Evaluation prepared for the proposed driveways was based on the criteria and procedures set forth by the California Department of Transportation (Caltrans) in the State's *Highway Design Manual* for "Private Road Intersections".

The *Highway Design Manual (HDM),* in Section 405.1(2)(c), page 400-22, indicates that for Private Road Intersections, "The minimum corner sight distance shall be equal to the stopping sight distance as given in Table 201.1...", where stopping sight distance is defined as the distance required by the driver of a vehicle, traveling at a given speed, to bring his vehicle to a stop after an object on the road becomes visible. Stopping sight distance is measured from the driver's eyes, which are assumed to be 3.5 feet above the pavement surface, to an object 0.5-foot high on the roadway. The speed used in determining stopping sight distance is defined as the "critical speed" or 85th percentile speed which is the speed at which 85% of the vehicles are traveling at

or less. The critical speed is the single most important factor in determining stopping sight distance. Table 201.1 in the HDM is used in determining stopping sight distance based on the critical speed of vehicles on the affected roadway. For this analysis, a design speed of 30 miles per hour (mph) for E. 33rd Street and California Avenue, which is the existing posted speed limit for these roadways, was utilized.

Using Table 201.1, titled *Sight Distance Standards,* in the State's *HDM* for stopping, a minimum stopping sight distance of 200 feet is required.

To provide a conservative assessment, the "corner sight distance" criteria in Section 405.1(2)(b) of the *HDM* was also utilized. Based on the criteria set forth in Table 405.1A of the *HDM* and a posted speed limit of 30 mph on E. 33rd Street, a corner sight distance of 358 feet is required for the left-turns and 314 feet is required for right-turns. With a posted speed limit of 30 mph on California Avenue, a corner sight distance of 331 feet is required for the left-turns and 287 feet is required for right-turns.

***Figures 11*** and ***12*** illustrate a schematic of the sight distance evaluation for project driveways along E. 33rd Street and California Avenue. These figures illustrate the limited use areas. Review of *Figures 11* and *12* indicate that sight distances at the Project Driveways are expected to be adequate if obstructions within the sight triangles are minimized.

**Internal Circulation Evaluation**

The on-site circulation layout of the proposed Project, based upon the LLG's recommendations, with incorporation of applicable City comments, as illustrated in the conceptual site plan, *Figure 2-2*, on an overall basis is adequate. Please note *Figure 2-2* has been updated to include the most current proposed site plan which addresses all previous comments from the City.

To minimize internal conflicts it is recommended that a stop pavement legend be add to the western leg of the southernmost section of the main entrance to the Target driveway as noted on ***Figure 13.***

Our evaluation of the on-site circulation shown on the preliminary site plans was performed using the *Turning Vehicle Templates*, developed by Jack E. Leisch & Associates and *AutoTURN for AutoCAD* computer software that simulates turning maneuvers for various types of vehicles. The turning templates were utilized to ensure that full-sized trucks, small service/delivery trucks (i.e., UPS, FedEx, and trash trucks), fire trucks and passenger vehicles could properly access and circulate through

the Project site. A fire truck turning template, small truck (SU-30) and a large truck (WB-67) turning template was utilized in this evaluation.

Based on our evaluation, curb return radii have been confirmed and are generally adequate for small service/delivery trucks (Fedex, UPS), trash trucks and fire trucks. The design of the entry/exit points of the project driveways are adequate for expected traffic volumes. ***Figures 14, 15*** and ***16*** present the turning movements required of a fire truck, small truck (SU-30) and large truck (WB-67) to circulate throughout the site, respectively. ***Figure 17*** present the turning movements required of a vehicle to enter and exit the drive-thru.

**SUMMARY OF FINDINGS AND CONCLUSIONS**

1. The Project site consists of two (2) parcels with a total land area of 15.5± acres, of which 4.4± acres is currently vacant. The Target Center site is a 10.1± acre parcel of land that is currently developed with a 135,811 square-foot (SF) free-standing discount store and surface parking supply of 543 spaces.

2. The proposes Project includes the development of up to 23,500 SF of retail/restaurant space within three (3) buildings consisting of 15,000 SF of retail/other uses, 5,000 SF of restaurant/food uses, 3,500 SF of medical/dental spaces and a three-story self-storage facility totaling 177,345 SF. Up to 600 SF of outdoor dining area is assumed to be provided as a placeholder for which the parking impacts can be assessed. Upon completion of the Project, a total floor area of 336,656 SF with a preliminary parking supply of 492 spaces, of which 29 spaces are located on the self-storage site. There are no plans to expand the existing Target.

   Since the tenant mix for the Project's 5,000 SF of drive-through / restaurant floor area has not been determined, the following mix/type of restaurant and outdoor dining area alternatives has been evaluated:

| Alternative | Fine-Casual Dining / Outdoor Dining | QSR/Fast-Casual / Outdoor Dining | Fast-Food w/ Drive-Thru / Outdoor Dining |
|---|---|---|---|
| ❑ Alternative 1 | 2,000 SF / 300 SF | -- | 3,000 SF /300 SF |
| ❑ Alternative 2 | -- | 2,000 SF / 300 SF | 3,000 SF / 300 SF |
| ❑ Alternative 3 | -- | -- | 5,000 SF / 600 SF |

3. Direct application of City parking codes to the development totals results in a code-parking requirement of 716 spaces. With a parking supply of 492 spaces, a theoretical parking deficiency of 224 spaces is forecast.

4. Given the mix of tenancies, a shared parking analysis was prepared to forecast the peak parking demand for the Project. In addition, to establish the parking requirement for the existing Target store, an empirically derived parking ratio based on parking demand studies of an existing Target store in San Clemente indicates a parking supply of 357 spaces for Project's existing Target will meet their peak parking demand. For the proposed self-storage facility, based on a review of parking supply of similar facilities operated by the applicant's self-storage operator indicates 33 spaces would satisfy the peak parking demand of the proposed Project.

5. For the proposed tenancy mix, the weekday condition peak parking demand is forecast to total up to 483 spaces, thus resulting in a minimum surplus of 9 spaces. However, during the weekend condition, the peak parking demand for the site is forecast to total 490 spaces, which results in a minimum surplus of 2 spaces when compared to a parking supply of 492 spaces.

6. Given the results of the shared parking analysis, it is concluded that a minimum parking supply of 492 spaces will be required to accommodate the peak parking demand of the existing Target and the proposed Project, inclusive of up to 600 SF of outdoor dining area.

7. To ensure adequate parking is provided it is recommended that a Parking Management Plan (PMP) be prepared for the Project which outlines the proposed allocation of parking supply and key parking management strategies to maximize the availability of parking for customers and employees of the Project. The PMP should identify, at a minimum, where the retail/commercial employees park within the site and consider identifying the location of short-term parking spaces for service retail uses and/or food uses (take-out/curb side service, etc.).

8. The Project's site access and on-site circulation, with implementation of recommended site plan modifications, will be adequate. The overall layout does not create any unsafe vehicle-pedestrian conflict points. Curb return radii have been confirmed and are adequate for fire trucks, small service/delivery trucks (i.e. UPS, FedEx, and trash trucks), large delivery trucks (WB-67), and passenger vehicles.

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9. The table below further tabulates the key parking requirements and demands for the three Project Alternatives.

| Description | City Code Parking Required (Spaces) | City Code Requirement with Modified Target Ratio (Spaces) [b] | Weekday Peak Hour Shared Parking Demand (Spaces) | Weekend Peak Hour Shared Parking Demand (Spaces) |
|---|---|---|---|---|
| **Alternative 1** | **716** | **530** | **476** | **482** |
| Parking Surplus/Deficiency (+/-) [a] | -224 | -38 | 16 | 10 |
| **Alternative 2** | **716** | **530** | **475** | **487** |
| Parking Surplus/Deficiency (+/-) [a] | -224 | -38 | 17 | 5 |
| **Alternative 3** | **716** | **530** | **483** | **490** |
| Parking Surplus/Deficiency (+/-) [a] | -224 | -38 | 9 | 2 |

Notes:

[a] = Parking suprlus compared against a parking supply of 492 spaces.

[b] = Modified target ratio is based on a rate of 2.63 from emperical data.

* * * * * * * * * *

We appreciate the opportunity to prepare this analysis for proposed Project and the City of Signal Hill. Should you have any questions or need additional assistance, please do not hesitate to call me at (949) 825-6175.

Very truly yours,
**Linscott, Law & Greenspan, Engineers**

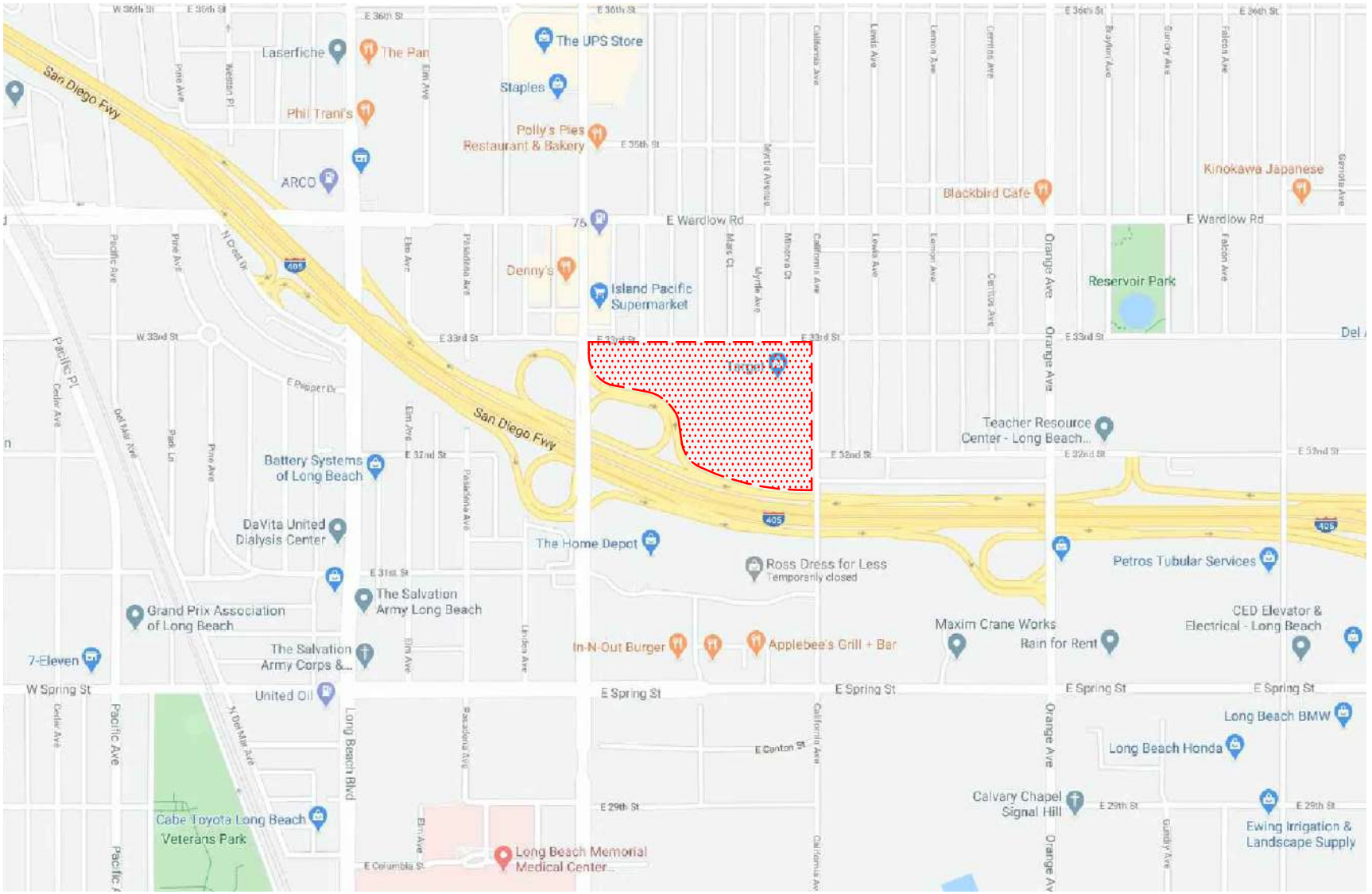





Richard E. Barretto, P.E.
Principal

cc: Shane S. Green, P.E., LLG
Kevin Laney/Lauren Coombs, Signal Hill Petroleum, Inc.

**Attachments**
**Figures**
**Tables**
**Appendices**

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N

NO SCALE

SOURCE: GOOGLE

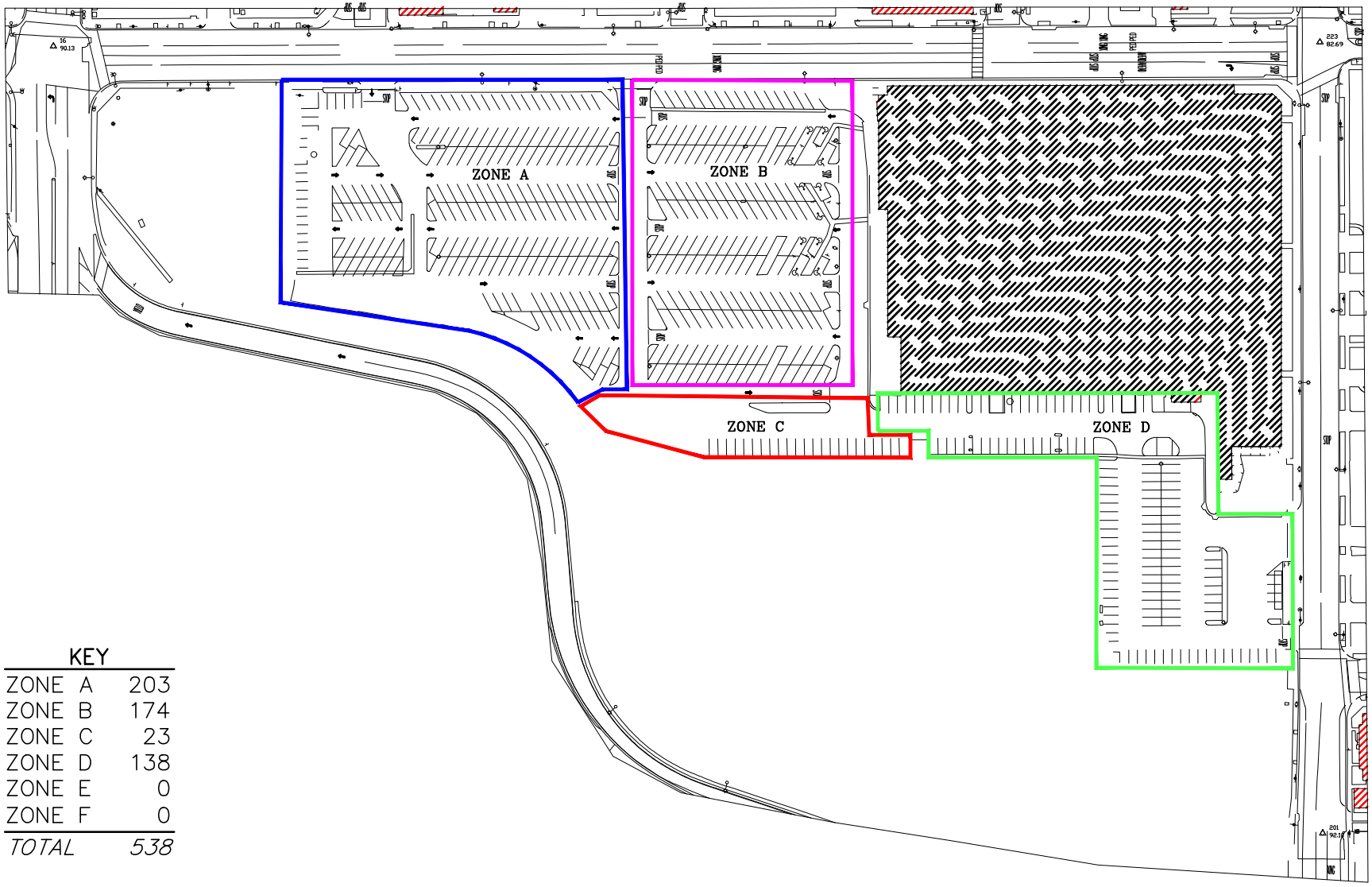
KEY

= PROJECT SITE

# FIGURE 1

## VICINITY MAP

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL




| KEY | |
|---|---|
| ZONE A | 203 |
| ZONE B | 174 |
| ZONE C | 23 |
| ZONE D | 138 |
| ZONE E | 0 |
| ZONE F | 0 |
| *TOTAL* | *538* |

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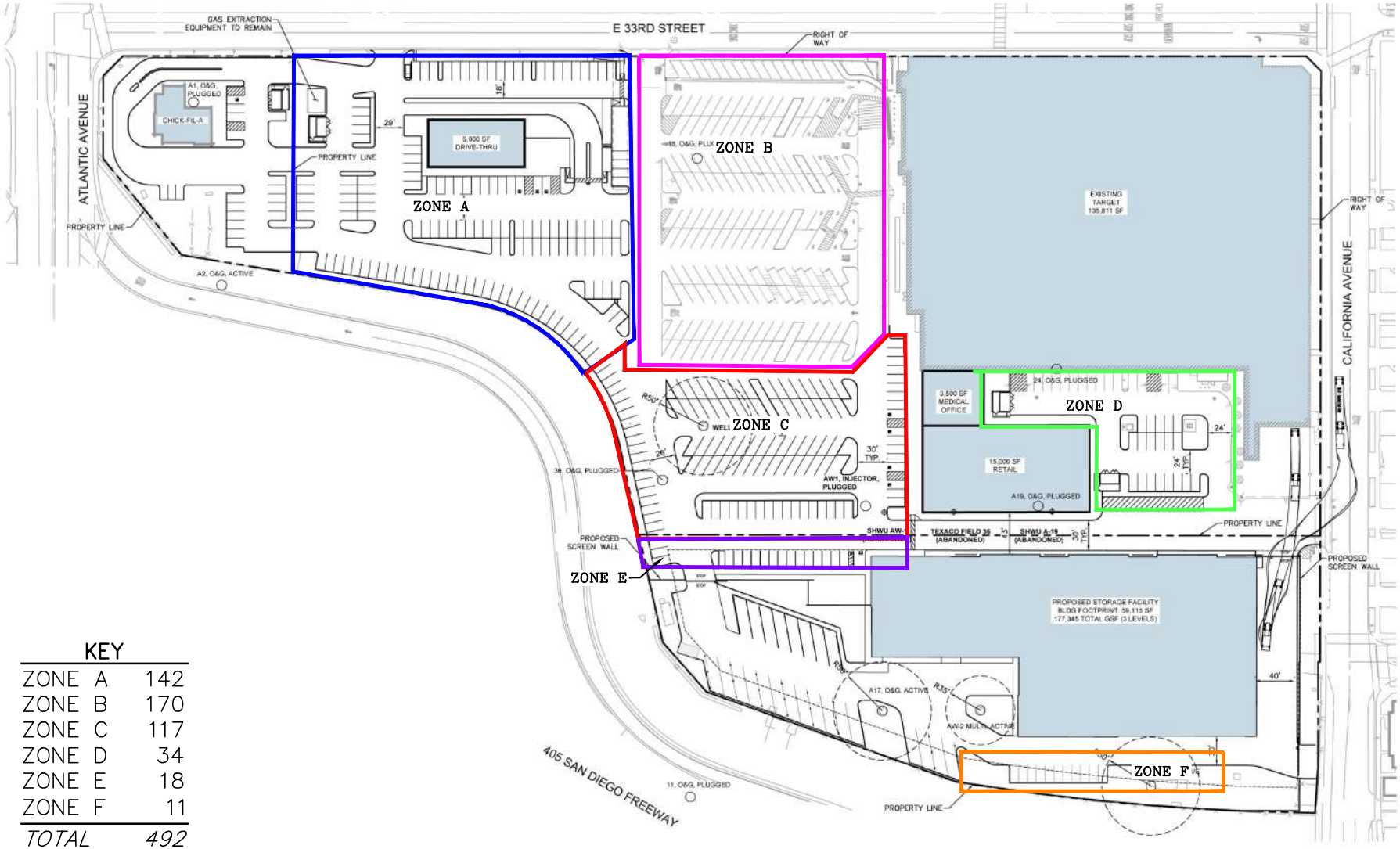
N NO SCALE

SOURCE: KIMLEY HORN & ASSOCIATES

# FIGURE 2-1

## EXISTING SITE PLAN

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL




| KEY | |
|---|---|
| ZONE A | 142 |
| ZONE B | 170 |
| ZONE C | 117 |
| ZONE D | 34 |
| ZONE E | 18 |
| ZONE F | 11 |
| *TOTAL* | *492* |

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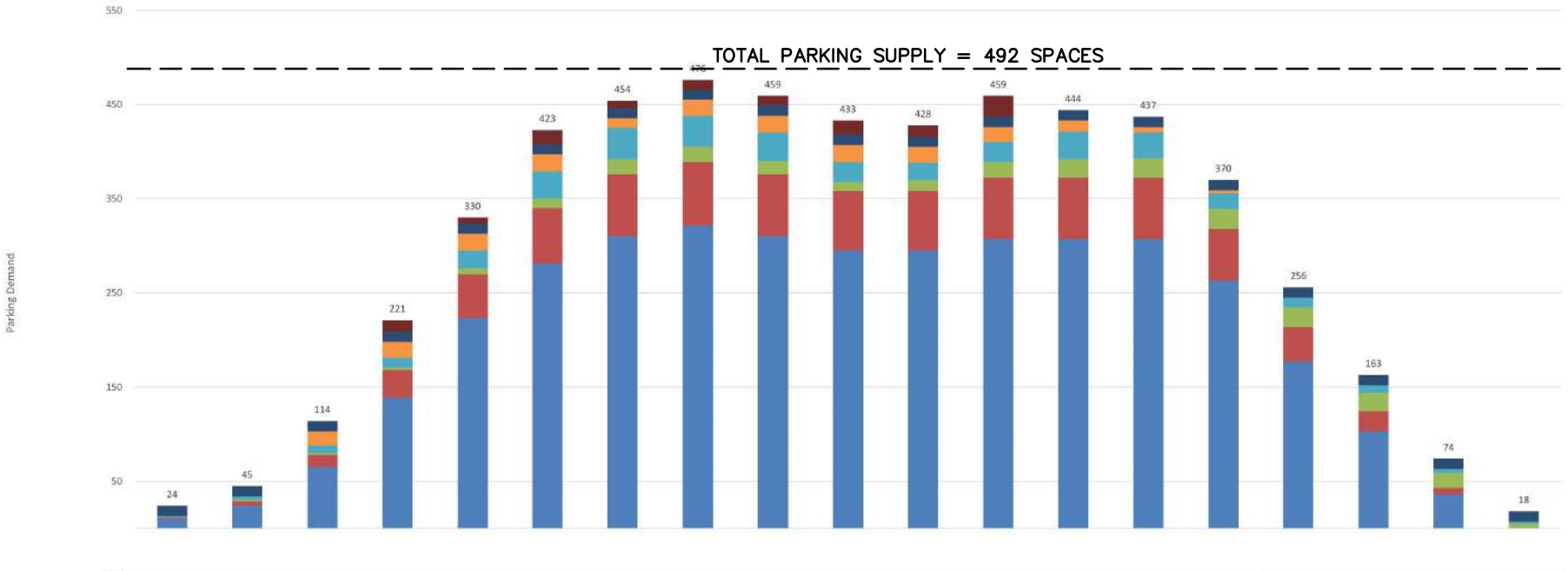
N NO SCALE

SOURCE: KIMLEY HORN & ASSOCIATES

# FIGURE 2-2

## PROPOSED SITE PLAN

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL




| | 6:00 AM | 7:00 AM | 8:00 AM | 9:00 AM | 10:00 AM | 11:00 AM | 12:00 PM | 1:00 PM | 2:00 PM | 3:00 PM | 4:00 PM | 5:00 PM | 6:00 PM | 7:00 PM | 8:00 PM | 9:00 PM | 10:00 PM | 11:00 PM | 12:00 AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 24 | 45 | 114 | 221 | 330 | 423 | 454 | 476 | 459 | 433 | 428 | 459 | 444 | 437 | 370 | 256 | 163 | 74 | 18 |
| Outside Gate Self Storage | 0 | 0 | 0 | 12 | 6 | 15 | 8 | 10 | 10 | 15 | 12 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Inside Gate Self Storage | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Medical/ Dental Office | 0 | 0 | 15 | 17 | 18 | 18 | 10 | 17 | 18 | 18 | 17 | 16 | 12 | 6 | 3 | 0 | 0 | 0 | 0 |
| Fast-Food Restaurant | 2 | 4 | 8 | 10 | 19 | 29 | 33 | 33 | 30 | 21 | 18 | 21 | 29 | 27 | 17 | 10 | 8 | 4 | 2 |
| Family Restaurant QSR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fine/Causal Dining | 0 | 1 | 2 | 3 | 6 | 10 | 16 | 16 | 14 | 10 | 12 | 17 | 20 | 21 | 21 | 21 | 20 | 16 | 5 |
| Retail | 2 | 5 | 13 | 29 | 47 | 59 | 66 | 68 | 66 | 63 | 63 | 65 | 65 | 65 | 55 | 37 | 21 | 7 | 0 |
| Target | 9 | 24 | 65 | 139 | 223 | 281 | 310 | 321 | 310 | 295 | 295 | 307 | 307 | 307 | 263 | 177 | 103 | 36 | 0 |

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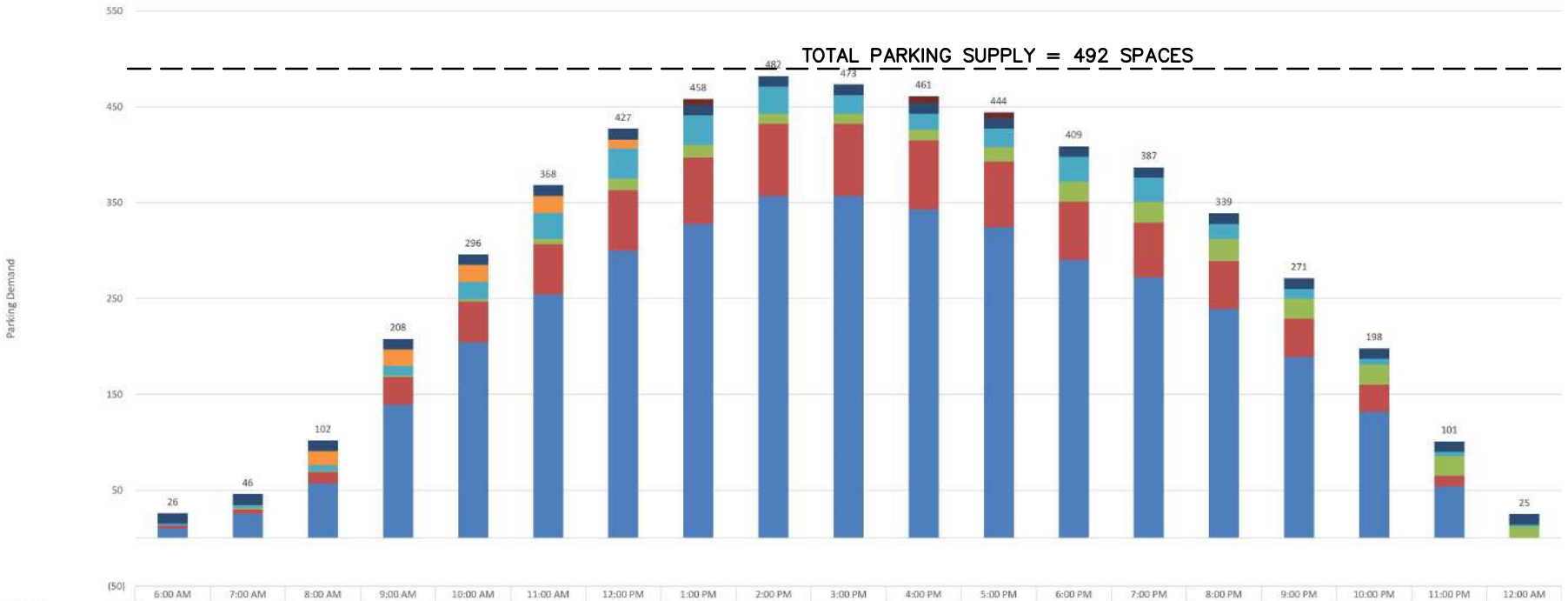
# FIGURE 3

## WEEKDAY SHARED PARKING DEMAND PROFILE – ALTERNATIVE 1

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL




| | 6:00 AM | 7:00 AM | 8:00 AM | 9:00 AM | 10:00 AM | 11:00 AM | 12:00 PM | 1:00 PM | 2:00 PM | 3:00 PM | 4:00 PM | 5:00 PM | 6:00 PM | 7:00 PM | 8:00 PM | 9:00 PM | 10:00 PM | 11:00 PM | 12:00 AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 26 | 46 | 102 | 208 | 296 | 368 | 427 | 458 | 482 | 473 | 461 | 444 | 409 | 387 | 339 | 271 | 198 | 101 | 25 |
| Outside Gate Self Storage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 7 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Inside Gate Self Storage | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Medical/ Dental Office | 0 | 0 | 15 | 17 | 18 | 18 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fast-Food Restaurant | 2 | 4 | 6 | 10 | 18 | 27 | 31 | 31 | 28 | 19 | 17 | 19 | 26 | 25 | 16 | 10 | 6 | 4 | 2 |
| Family Restaurant QSR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fine/Causal Dining | 0 | 1 | 1 | 2 | 2 | 5 | 12 | 13 | 11 | 11 | 11 | 15 | 21 | 22 | 23 | 21 | 21 | 21 | 12 |
| Retail | 3 | 5 | 12 | 29 | 43 | 53 | 63 | 69 | 75 | 75 | 72 | 68 | 61 | 57 | 50 | 40 | 28 | 11 | 0 |
| Target | 10 | 25 | 57 | 139 | 204 | 254 | 300 | 328 | 357 | 357 | 343 | 325 | 290 | 272 | 239 | 189 | 132 | 54 | 0 |

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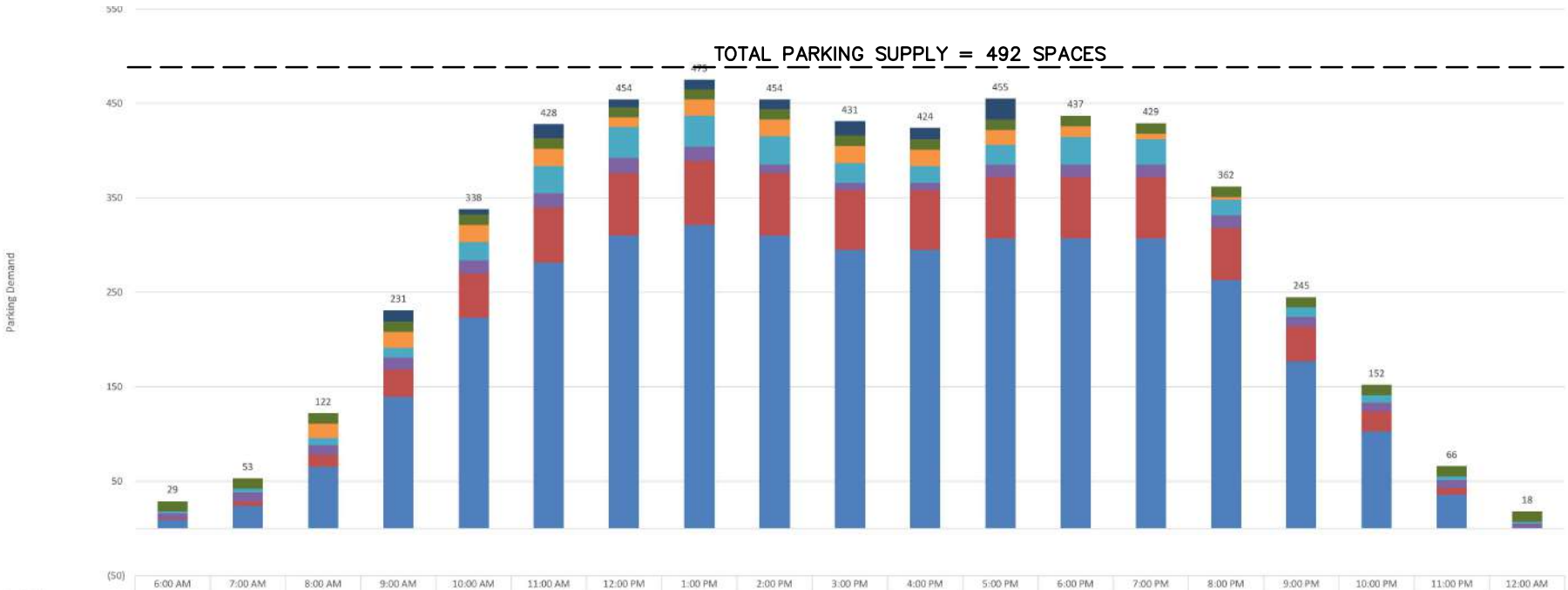
# FIGURE 4

## WEEKEND SHARED PARKING DEMAND PROFILE – ALTERNATIVE 1

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL




| | 6:00 AM | 7:00 AM | 8:00 AM | 9:00 AM | 10:00 AM | 11:00 AM | 12:00 PM | 1:00 PM | 2:00 PM | 3:00 PM | 4:00 PM | 5:00 PM | 6:00 PM | 7:00 PM | 8:00 PM | 9:00 PM | 10:00 PM | 11:00 PM | 12:00 AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 29 | 53 | 122 | 231 | 338 | 428 | 454 | 475 | 454 | 431 | 424 | 455 | 437 | 429 | 362 | 245 | 152 | 66 | 18 |
| Outside Gate Self Storage | 0 | 0 | 0 | 12 | 6 | 15 | 8 | 10 | 10 | 15 | 12 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Inside Gate Self Storage | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Medical/ Dental Office | 0 | 0 | 15 | 17 | 18 | 18 | 10 | 17 | 18 | 18 | 17 | 16 | 12 | 6 | 3 | 0 | 0 | 0 | 0 |
| Fast-Food Restaurant | 2 | 4 | 8 | 10 | 19 | 29 | 33 | 33 | 30 | 21 | 18 | 21 | 29 | 27 | 17 | 10 | 8 | 4 | 2 |
| Family Restaurant QSR | 5 | 9 | 10 | 13 | 14 | 15 | 16 | 15 | 9 | 8 | 8 | 13 | 13 | 13 | 13 | 10 | 9 | 8 | 5 |
| Fine/Causal Dining | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Retail | 2 | 5 | 13 | 29 | 47 | 59 | 66 | 68 | 66 | 63 | 63 | 65 | 65 | 65 | 55 | 37 | 21 | 7 | 0 |
| Target | 9 | 24 | 65 | 139 | 223 | 281 | 310 | 321 | 310 | 295 | 295 | 307 | 307 | 307 | 263 | 177 | 103 | 36 | 0 |

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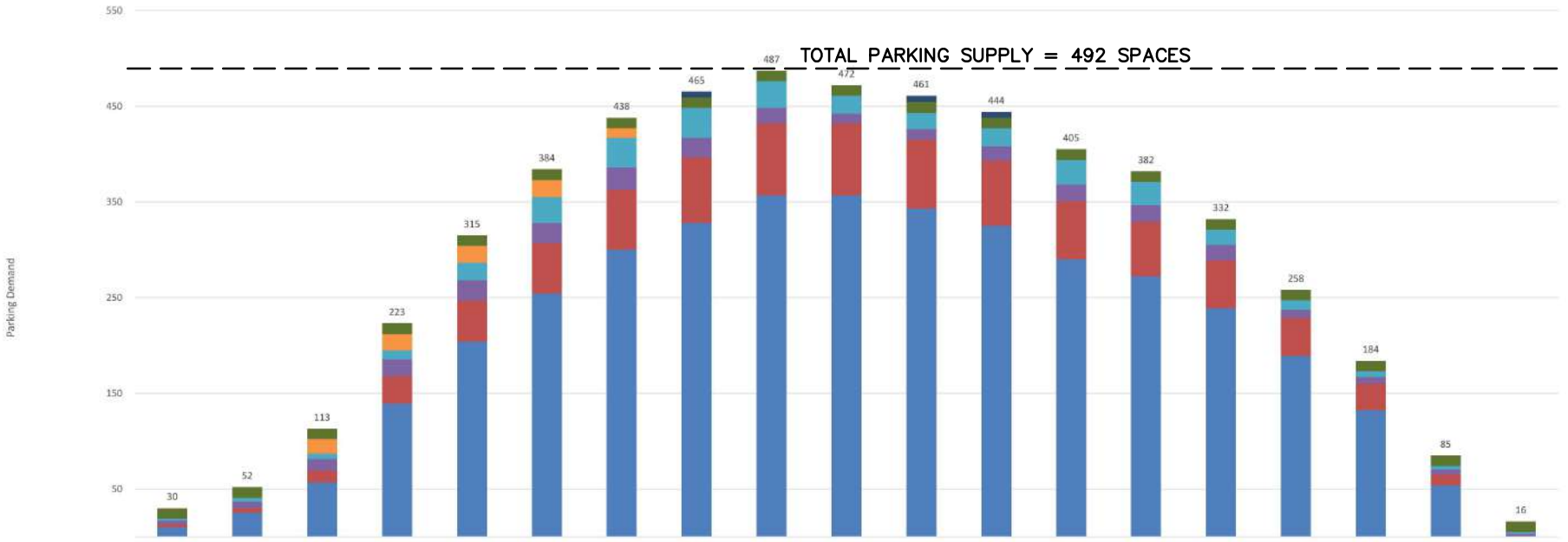
# FIGURE 5

## WEEKDAY SHARED PARKING DEMAND PROFILE – ALTERNATIVE 2

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL




| | 6:00 AM | 7:00 AM | 8:00 AM | 9:00 AM | 10:00 AM | 11:00 AM | 12:00 PM | 1:00 PM | 2:00 PM | 3:00 PM | 4:00 PM | 5:00 PM | 6:00 PM | 7:00 PM | 8:00 PM | 9:00 PM | 10:00 PM | 11:00 PM | 12:00 AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 30 | 52 | 113 | 223 | 315 | 384 | 438 | 465 | 487 | 472 | 461 | 444 | 405 | 382 | 332 | 258 | 184 | 85 | 16 |
| Outside Gate Self Storage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 7 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Inside Gate Self Storage | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Medical/ Dental Office | 0 | 0 | 15 | 17 | 18 | 18 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fast-Food Restaurant | 2 | 4 | 6 | 10 | 18 | 27 | 31 | 31 | 28 | 19 | 17 | 19 | 26 | 25 | 16 | 10 | 6 | 4 | 2 |
| Family Restaurant QSR | 4 | 7 | 12 | 17 | 21 | 21 | 23 | 20 | 16 | 10 | 11 | 15 | 17 | 17 | 16 | 8 | 7 | 5 | 3 |
| Fine/Causal Dining | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Retail | 3 | 5 | 12 | 29 | 43 | 53 | 63 | 69 | 75 | 75 | 72 | 68 | 61 | 57 | 50 | 40 | 28 | 11 | 0 |
| Target | 10 | 25 | 57 | 139 | 204 | 254 | 300 | 328 | 357 | 357 | 343 | 325 | 290 | 272 | 239 | 189 | 132 | 54 | 0 |

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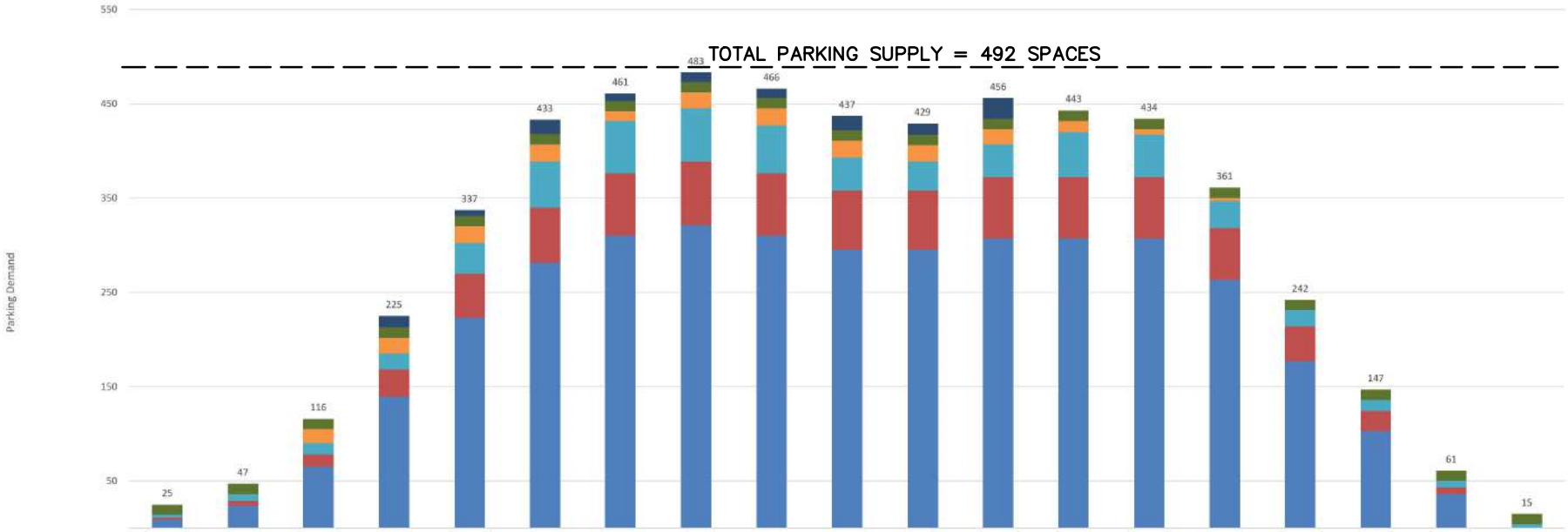
# FIGURE 6

## WEEKEND SHARED PARKING DEMAND PROFILE – ALTERNATIVE 2

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL




| | 6:00 AM | 7:00 AM | 8:00 AM | 9:00 AM | 10:00 AM | 11:00 AM | 12:00 PM | 1:00 PM | 2:00 PM | 3:00 PM | 4:00 PM | 5:00 PM | 6:00 PM | 7:00 PM | 8:00 PM | 9:00 PM | 10:00 PM | 11:00 PM | 12:00 AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 25 | 47 | 116 | 225 | 337 | 433 | 461 | 483 | 466 | 437 | 429 | 456 | 443 | 434 | 361 | 242 | 147 | 61 | 15 |
| Outside Gat Self Storage | 0 | 0 | 0 | 12 | 6 | 15 | 8 | 10 | 10 | 15 | 12 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Inside Gate Self Storage | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Medical/ Dental Office | 0 | 0 | 15 | 17 | 18 | 18 | 10 | 17 | 18 | 18 | 17 | 16 | 12 | 6 | 3 | 0 | 0 | 0 | 0 |
| Fast-Food Restaurant | 3 | 7 | 12 | 17 | 32 | 49 | 56 | 56 | 51 | 35 | 31 | 35 | 48 | 45 | 29 | 17 | 12 | 7 | 4 |
| Family Restaurant QSR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fine/Causal Dining | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Retail | 2 | 5 | 13 | 29 | 47 | 59 | 66 | 68 | 66 | 63 | 63 | 65 | 65 | 65 | 55 | 37 | 21 | 7 | 0 |
| Target | 9 | 24 | 65 | 139 | 223 | 281 | 310 | 321 | 310 | 295 | 295 | 307 | 307 | 307 | 263 | 177 | 103 | 36 | 0 |

n:\4200\2204277 - target retail center & self storage, signal hill\dwg\4277 f-7.dwg LDP 15:32:21 01-12-2021 co

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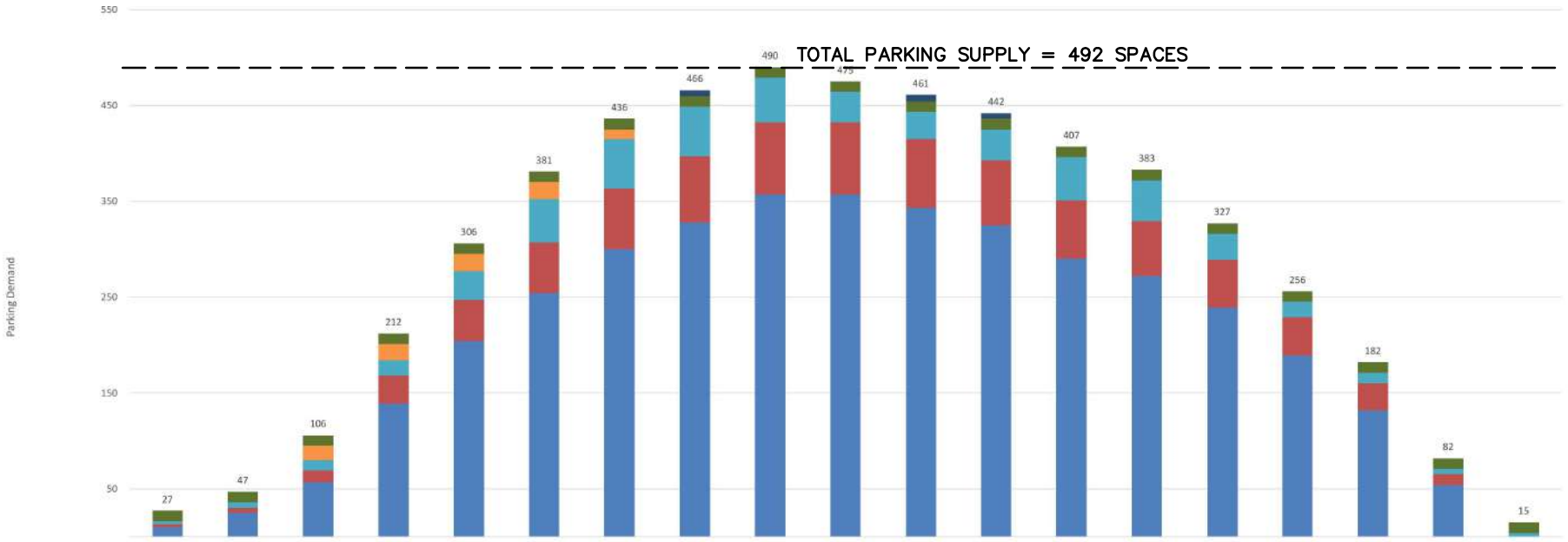
# FIGURE 7

## WEEKDAY SHARED PARKING DEMAND PROFILE – ALTERNATIVE 3

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL




| | 6:00 AM | 7:00 AM | 8:00 AM | 9:00 AM | 10:00 AM | 11:00 AM | 12:00 PM | 1:00 PM | 2:00 PM | 3:00 PM | 4:00 PM | 5:00 PM | 6:00 PM | 7:00 PM | 8:00 PM | 9:00 PM | 10:00 PM | 11:00 PM | 12:00 AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 27 | 47 | 106 | 212 | 306 | 381 | 436 | 466 | 490 | 475 | 461 | 442 | 407 | 383 | 327 | 256 | 182 | 82 | 15 |
| Outside Gat Self Storage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 7 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Inside Gate Self Storage | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Medical/ Dental Office | 0 | 0 | 15 | 17 | 18 | 18 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fast-Food Restaurant | 3 | 6 | 11 | 16 | 30 | 45 | 52 | 52 | 47 | 32 | 28 | 32 | 45 | 43 | 27 | 16 | 11 | 6 | 4 |
| Family Restaurant QSR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fine/Causal Dining | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Retail | 3 | 5 | 12 | 29 | 43 | 53 | 63 | 69 | 75 | 75 | 72 | 68 | 61 | 57 | 50 | 40 | 28 | 11 | 0 |
| Target | 10 | 25 | 57 | 139 | 204 | 254 | 300 | 328 | 357 | 357 | 343 | 325 | 290 | 272 | 239 | 189 | 132 | 54 | 0 |

n:\4200\2204277 - target retail center & self storage, signal hill\dwg\4277 f-8.dwg LDP 15:32:38 01-12-2021 co

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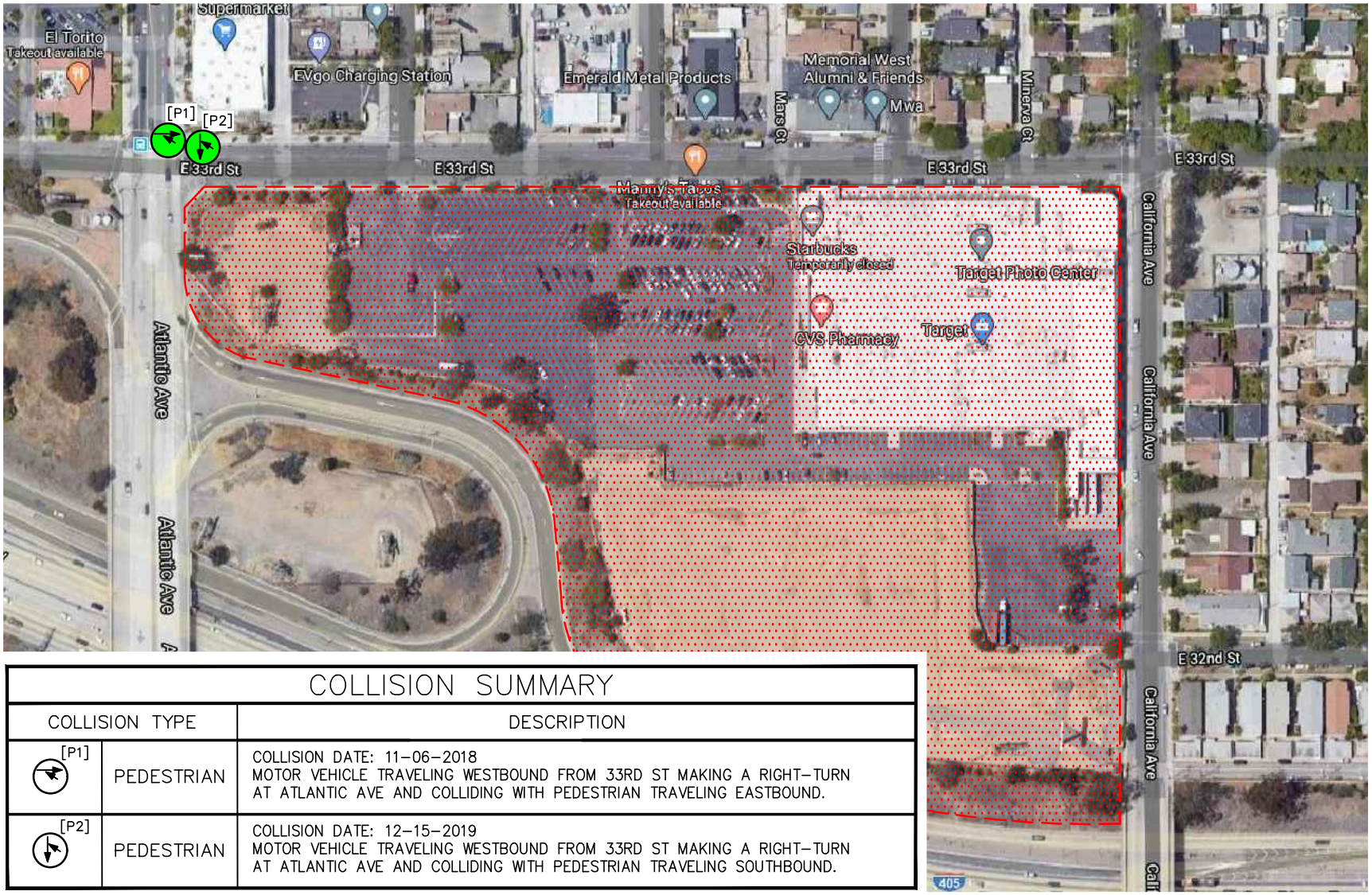
# FIGURE 8

## WEEKEND SHARED PARKING DEMAND PROFILE – ALTERNATIVE 3

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL




## COLLISION SUMMARY

| COLLISION TYPE | | DESCRIPTION |
|---|---|---|
| [P1] | PEDESTRIAN | COLLISION DATE: 11-06-2018<br>MOTOR VEHICLE TRAVELING WESTBOUND FROM 33RD ST MAKING A RIGHT-TURN AT ATLANTIC AVE AND COLLIDING WITH PEDESTRIAN TRAVELING EASTBOUND. |
| [P2] | PEDESTRIAN | COLLISION DATE: 12-15-2019<br>MOTOR VEHICLE TRAVELING WESTBOUND FROM 33RD ST MAKING A RIGHT-TURN AT ATLANTIC AVE AND COLLIDING WITH PEDESTRIAN TRAVELING SOUTHBOUND. |

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N NO SCALE

SOURCE: GOOGLE

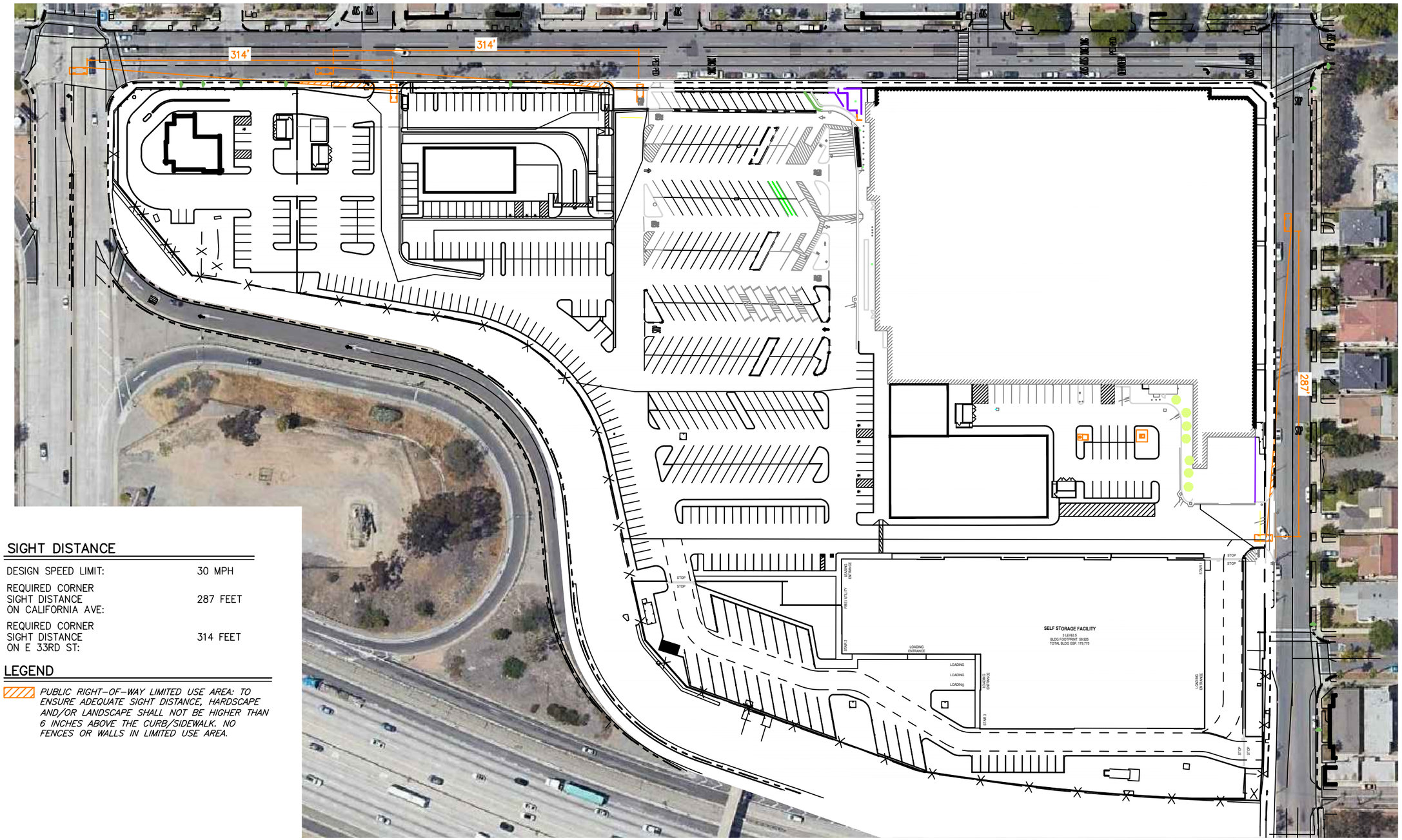
KEY

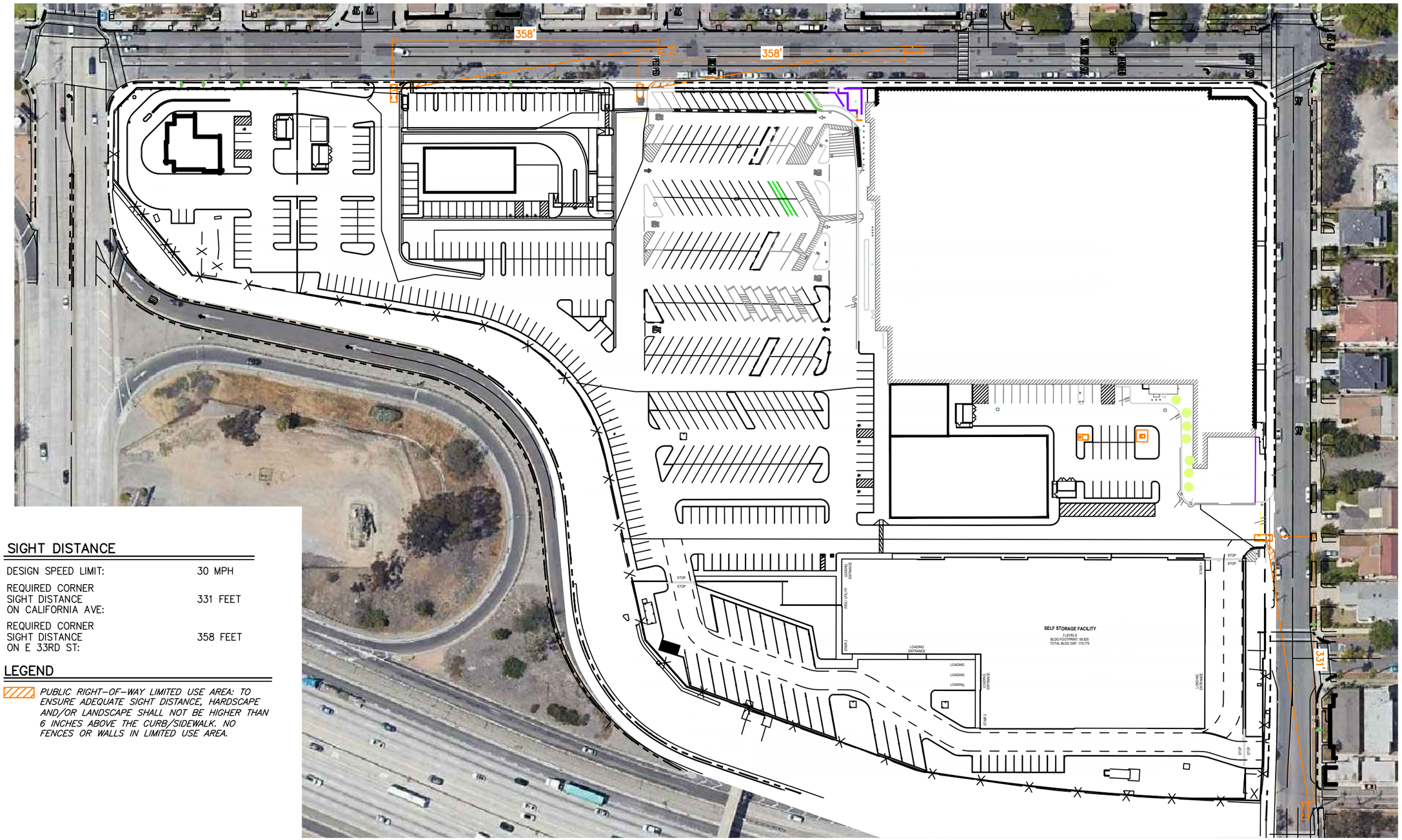
= PROJECT SITE

# FIGURE 9

## CRASH HISTORY

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL


314'
314'
287'
SELF STORAGE FACILITY
3 LEVELS
BLDG FOOTPRINT: 59,925
TOTAL BLDG GSF: 179,775
LOADING ENTRANCE
LOADING
LOADING
LOADING
STOP
STOP
STOP




## SIGHT DISTANCE

| | |
|---|---|
| DESIGN SPEED LIMIT: | 30 MPH |
| REQUIRED CORNER SIGHT DISTANCE ON CALIFORNIA AVE: | 331 FEET |
| REQUIRED CORNER SIGHT DISTANCE ON E 33RD ST: | 358 FEET |

## LEGEND

*PUBLIC RIGHT-OF-WAY LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 6 INCHES ABOVE THE CURB/SIDEWALK. NO FENCES OR WALLS IN LIMITED USE AREA.*

n:\4200\2204277 - target retail center & self storage, signal hill\dwg\4277 f-11.dwg LDP 11:56:05 01-13-2021 co

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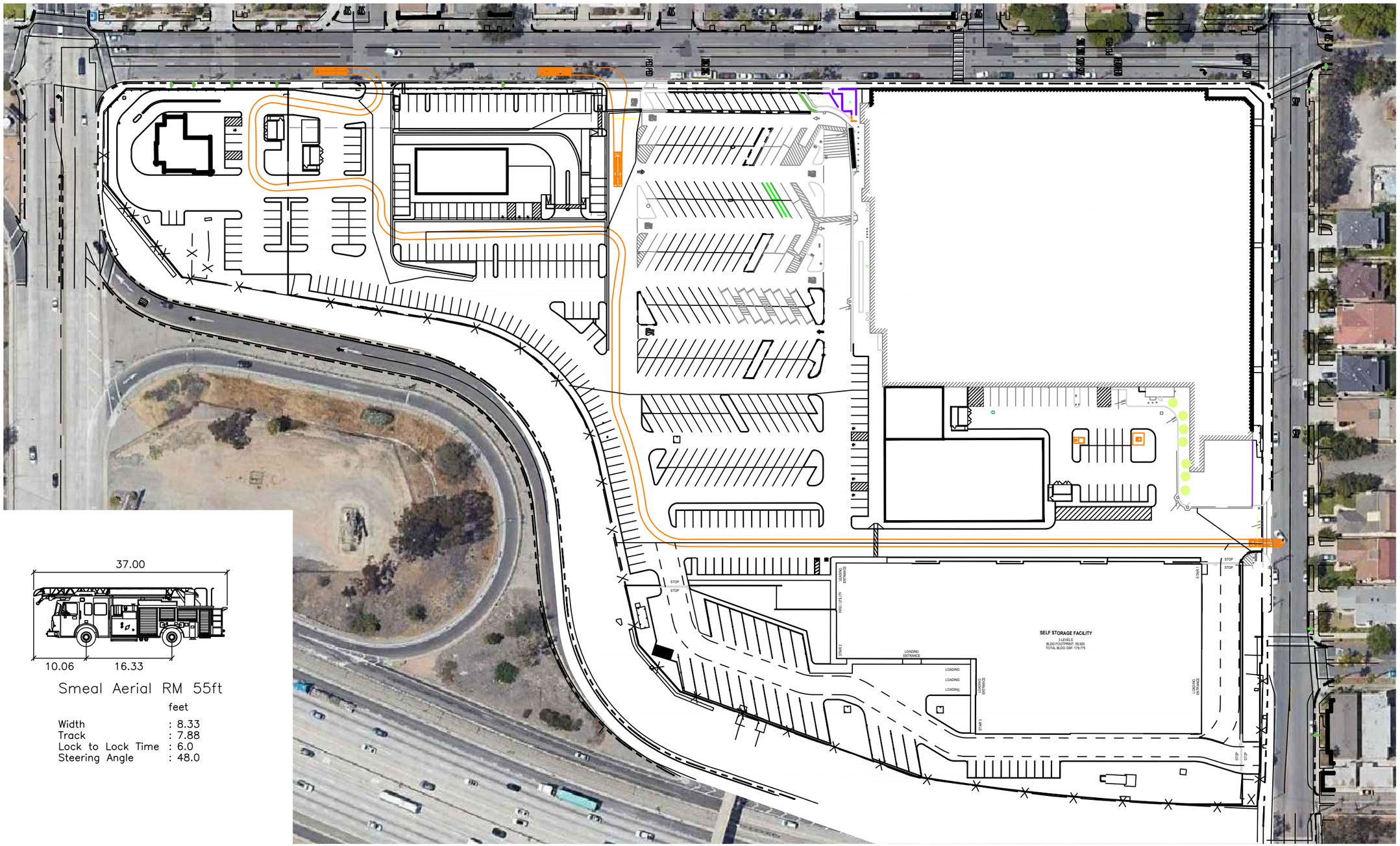
N NO SCALE

# FIGURE 11

**CORNER SIGHT ANALYSIS – LEFT EXITING VEHICLES**

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL







Smeal Aerial RM 55ft

| | feet |
|---|---|
| Width | : 8.33 |
| Track | : 7.88 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 48.0 |

n:\4200\2204277 – target retail center & self storage, signal hill\dwg\4277 f-12.dwg LDP 11:29:55 01-13-2021 co

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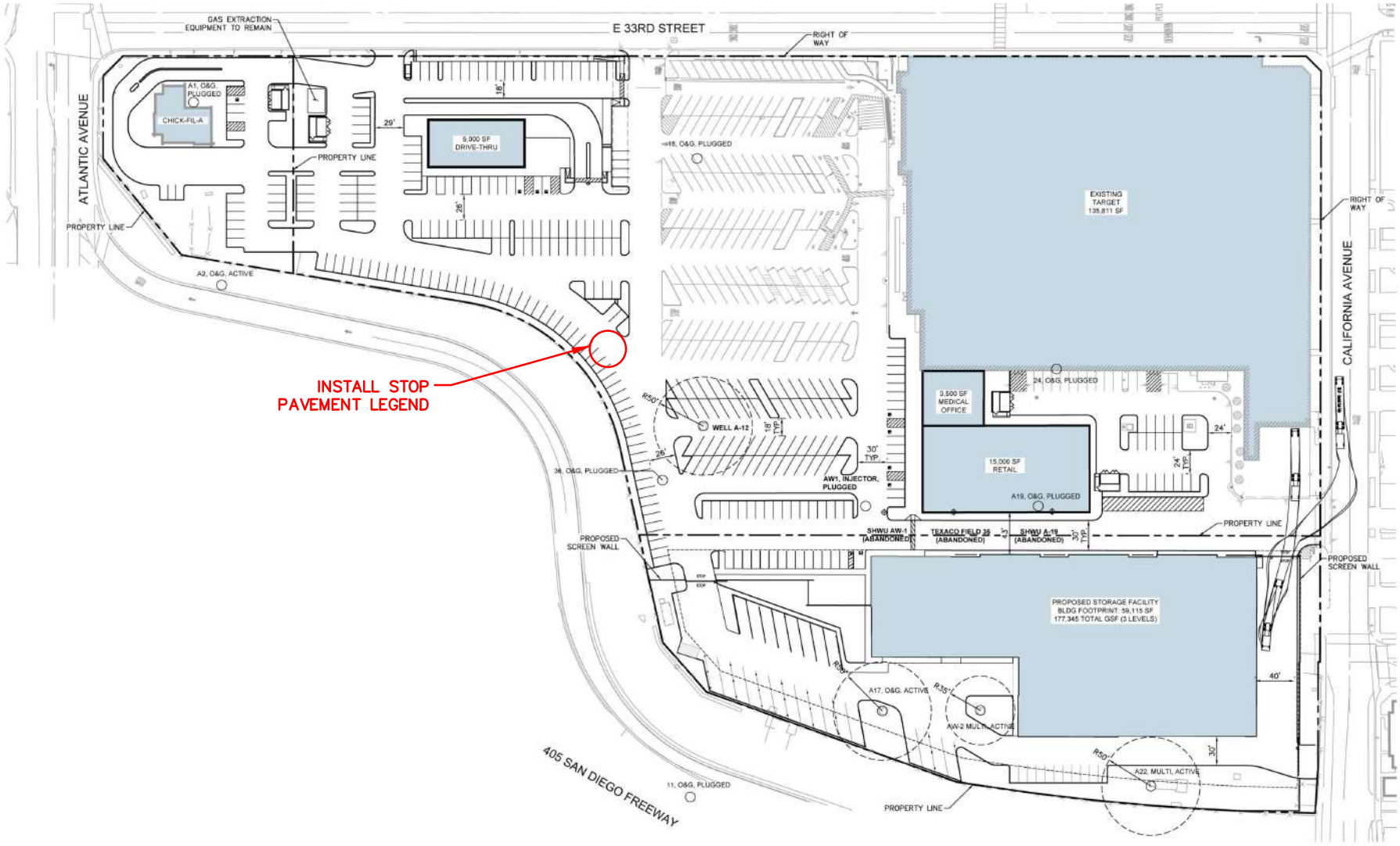
N NO SCALE

# FIGURE 12

**FIRE TRUCK TURNING ANALYSIS**

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL




n:\4200\2204277 - target retail center & self storage, signal hill\dwg\4277 f-13.dwg LDP 11:22:04 01-13-2021 co

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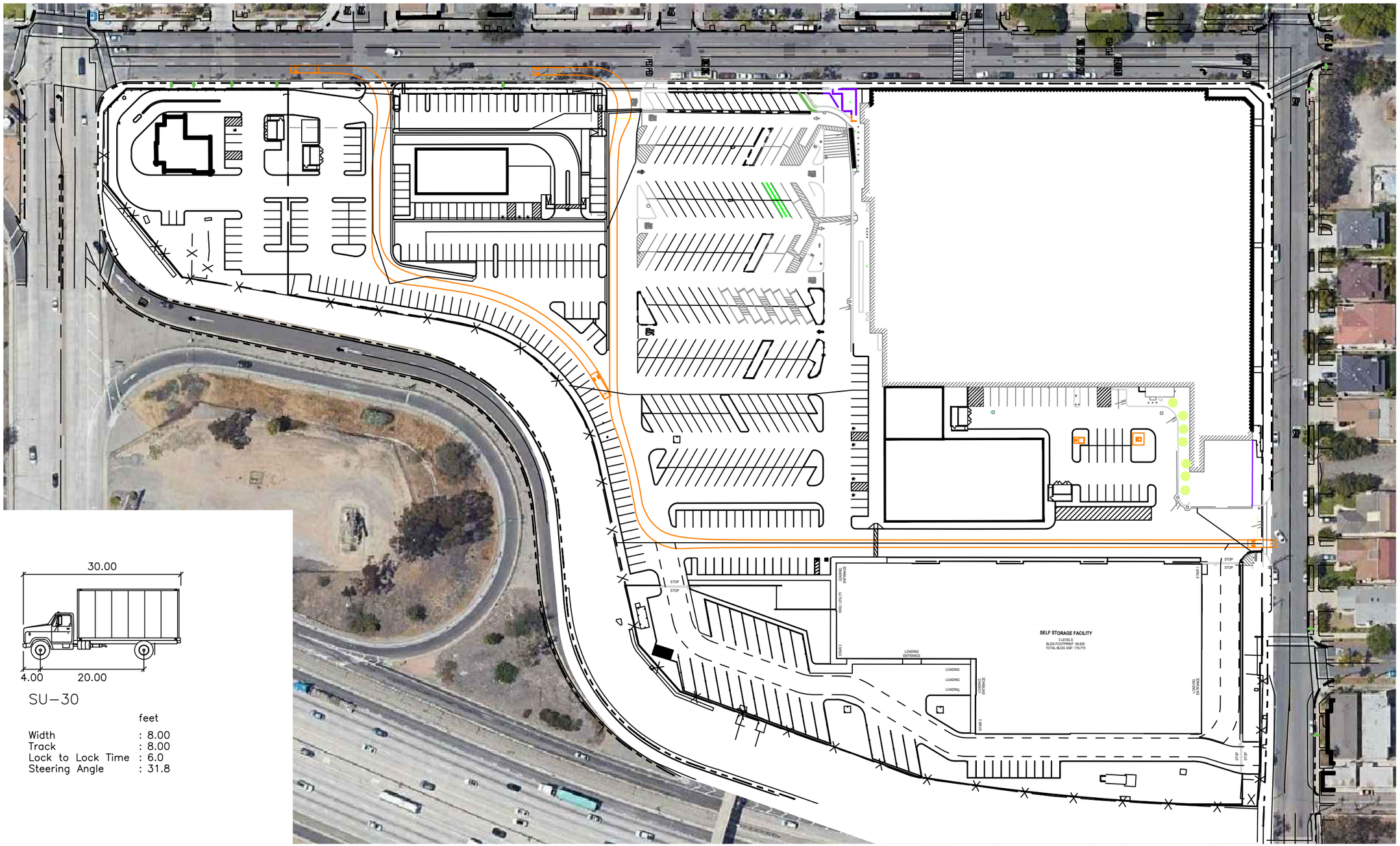
N NO SCALE

SOURCE: KIMLEY HORN & ASSOCIATES

# FIGURE 13

## PROPOSED SITE PLAN

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL







SU-30

| | feet |
|---|---|
| Width | : 8.00 |
| Track | : 8.00 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 31.8 |

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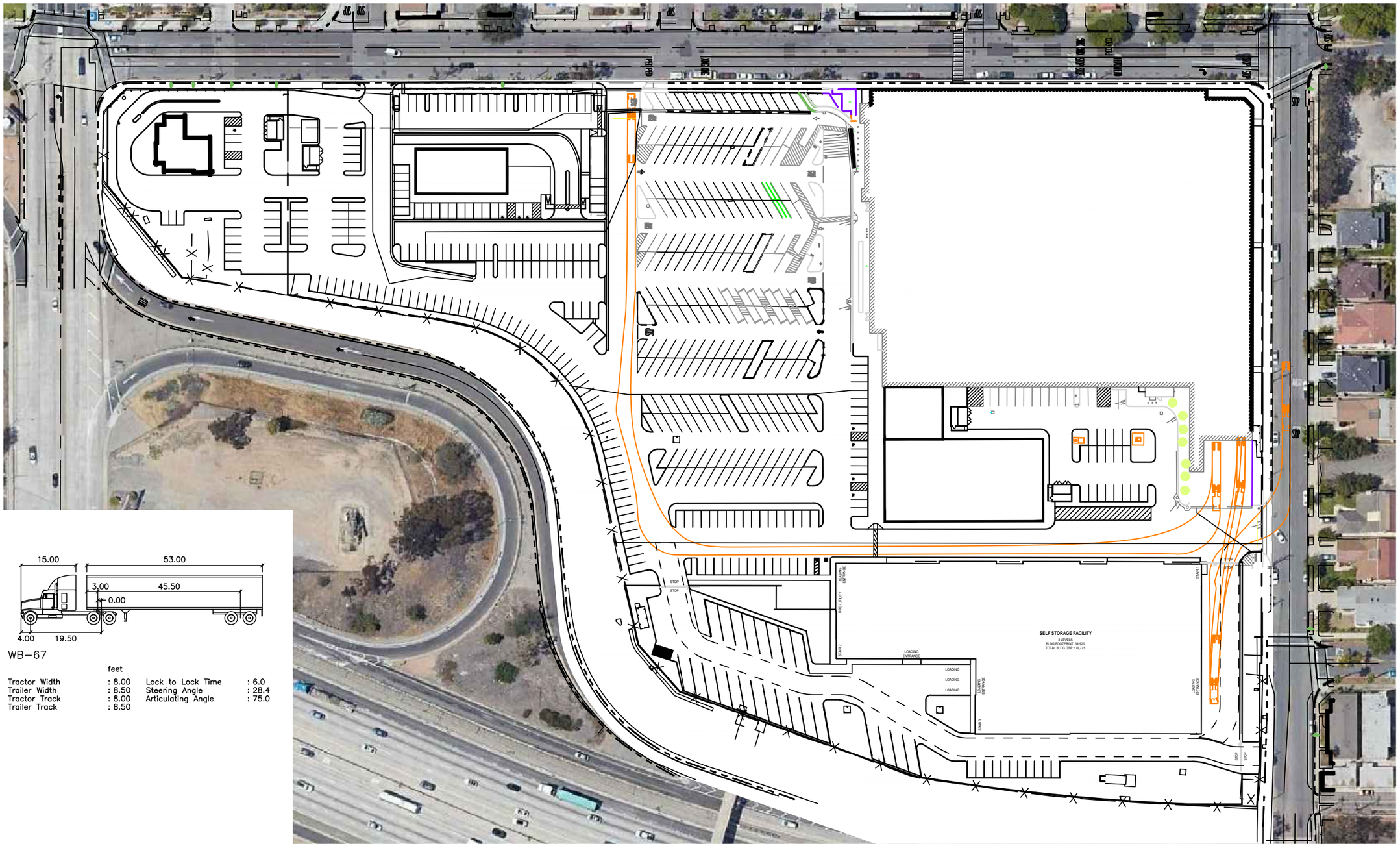
N NO SCALE

# FIGURE 14

**SU-30 TRUCK TURNING ANALYSIS**

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL







WB-67

feet

| | | | |
|---|---|---|---|
| Tractor Width | : 8.00 | Lock to Lock Time | : 6.0 |
| Trailer Width | : 8.50 | Steering Angle | : 28.4 |
| Tractor Track | : 8.00 | Articulating Angle | : 75.0 |
| Trailer Track | : 8.50 | | |

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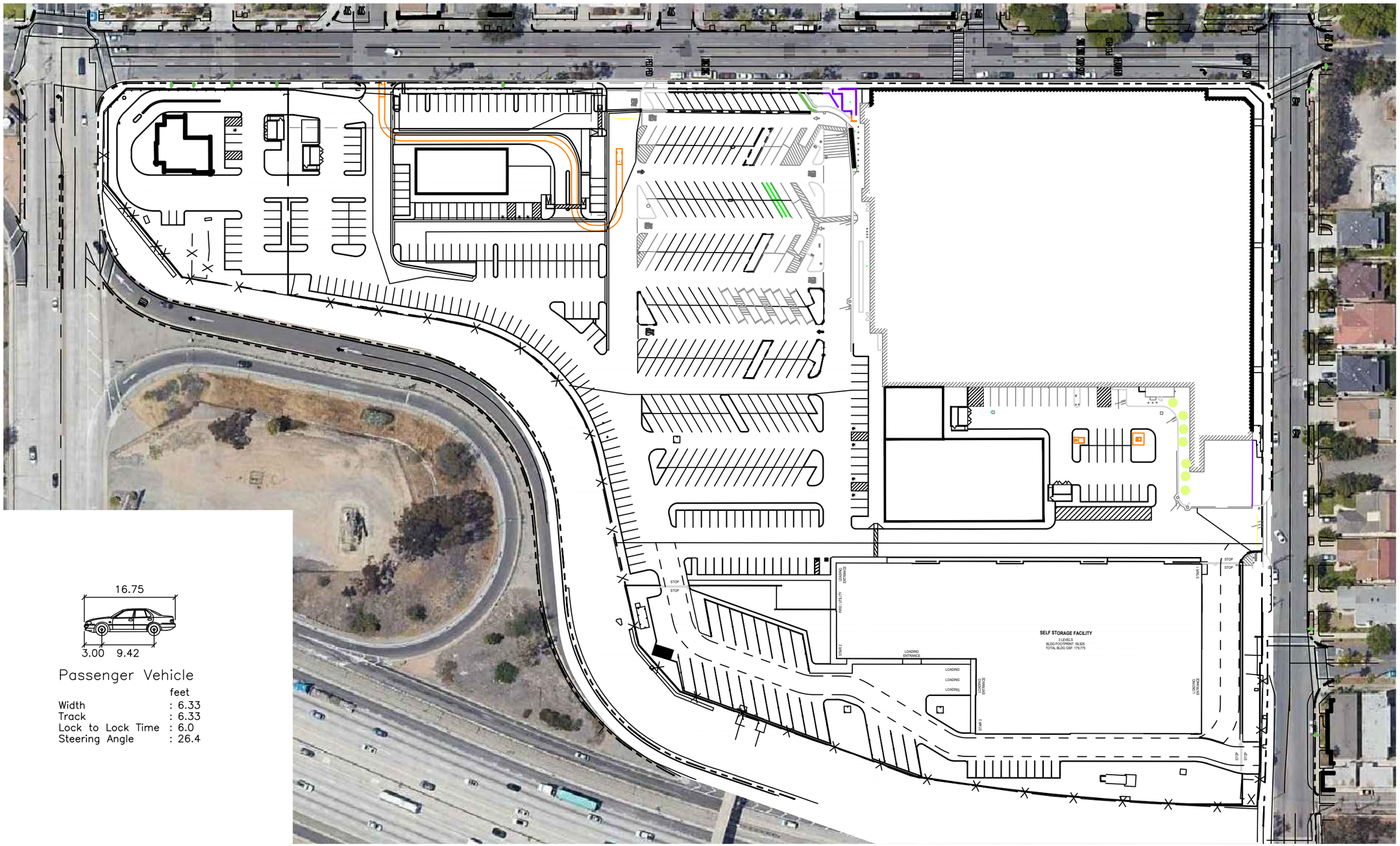
N NO SCALE

# FIGURE 15

**WB-67 TRUCK TURNING ANALYSIS**

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL







Passenger Vehicle

| | feet |
|---|---|
| Width | : 6.33 |
| Track | : 6.33 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 26.4 |

n:\4200\2204277 – target retail center & self storage, signal hill\dwg\4277 f-16.dwg LDP 11:37:46 01-13-2021 co

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N NO SCALE

# FIGURE 16

**DRIVE THRU TURNING MOVEMENT**

TARGET RETAIL CENTER & SELF STORAGE, SIGNAL HILL

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# TABLE 1

## PROPOSED DEVELOPMENT SUMMARY [1]

### TARGET RETAIL CENTER EXPANSION AND SELF-STORAGE, SIGNAL HILL

| Building / Tenant | Land Use | Retail | Fine/Casual Dining [2] | Restaurant/Fast-Casual/QSR [2] | Fast-Food with Drive-Thru [2] | Medical / Dental Office | Self Storage | Building Size (SF) |
|---|---|---|---|---|---|---|---|---|
| ***Existing Uses*** | | | | | | | | |
| Target (T2319) | Retail | 135,811 | -- | -- | -- | | -- | 135,811 SF |
| | ***EXISTING SUBTOTAL*** | ***135,811*** | ***0*** | ***0*** | ***0*** | | ***0*** | ***135,811 SF*** |
| ***Proposed Uses*** | | | | | | | | |
| Restaurant Pad With Drive-Thru [3] | Restaurant | | 2,000 | 0 | 3,000 | | | 5,000 SF |
| Retail/Other Building | Retail Shops/Personal Services | 15,000 | | | | | | 15,000 SF |
| Medical Office Building | Medical/Dental Office | | | | | 3,500 | | 3,500 SF |
| Storage Facility | Self Storage | | | | | | 177,345 | 177,345 SF |
| | ***VACANT/PROPOSED SUBTOTAL*** | ***15,000*** | ***2,000*** | ***0*** | ***3,000*** | ***3,500*** | ***177,345*** | ***200,845 SF*** |
| | ***TOTAL*** | ***150,811*** | ***2,000*** | ***0*** | ***3,000*** | ***3,500*** | ***177,345*** | ***336,656 SF*** |
| | ***PERCENT LAND USE MIX*** | ***44.8%*** | ***0.6%*** | ***0.0%*** | ***0.9%*** | ***1.0%*** | ***52.7%*** | ***100.0%*** |

[1] Source: Site Plan/Perspective View dated 09-10-2020 prepared by Kimley-Horn and Associates, Inc. / VenturePoint

[2] Anticipated type of restaurant/tenants are unknown at this time. Restaurant tenant mix are expected to consists of a mix of fine/casual dining, QSR/Fast-Casual, and a fast-food with drive-thru (Source: VenturePoint)
For this assesment, three (3) alternatives were evaluated for the various mix of restaurant tenants are assumed as shown in column.
See Project Description in report for details of potential tenancy options for the Project's potential restaurant uses.

[3] Potential outdoor dining area is unknown at this time. The study assumes a placeholder of 600 SF for this project component.

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## TABLE 2

### SUMMARY OF PROPOSED PARKING SUPPLY[2]

### TARGET RETAIL CENTER EXPANSION AND SELF-STORAGE, SIGNAL HILL

| Zone | Type of Parking Space and Space Count | | |
|---|---|---|---|
| | **Regular** | **Handicapped** | **Total** |
| A | 139 | 3 | 142 |
| B | 159 | 11 | 170 |
| C | 113 | 4 | 117 |
| D | 34 | 0 | 34 |
| E | 17 | 1 | 18 |
| F[6] | 11 | 0 | 11 |
| **Total** | 473 | 19 | 492 |

[6] Based on review of conceptual site plan; Zone F is located within the proposed self-storage facility accessible via gates.

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## TABLE 3

## CITY CODE PARKING REQUIREMENTS [1]

### TARGET RETAIL CENTER EXPANSION AND SELF-STORAGE, SIGNAL HILL

| Land Use | Size | City of Signal Hill Code Parking Ratio | Spaces Required |
|---|---|---|---|
| *Existing Tenant Mix* | | | |
| Retail | 135,811 SF | 4 spaces per 1000 SF of GFA | 543 |
| *Vacant/Proposed Project* | | | |
| Retail/Other | 15,000 SF | 5 spaces per 1000 SF of GFA [b] | 75 |
| Restaurant | 5,000 SF | 10 spaces per 1000 SF of GFA | 50 |
| Restaurant Outdoor Dining Area [d] | 600 SF | 10 spaces per 1000 SF of GFA | 6 |
| Medical Dental Office | 3,500 SF | 5 spaces per 1000 SF of GFA | 18 |
| Self Storage | 177,345 SF | 1 spaces per 7,500 SF GFA [c] | 24 |
| **A. TOTAL OCCUPIED PARKING CODE REQUIREMENT** | | | **543** |
| **B. TOTAL VACANT/PROPOSED PARKING CODE REQUIREMENT** | | | **173** |
| **C. TOTAL PARKING CODE REQUIREMENT BASED ON FULL OCCUPANCY** | | | **716** |
| **D. PROPOSED PARKING SUPPLY [e]** | | | **492** |
| **E. PARKING SURPLUS/DEFICIENCY (+/-) BASED ON FULL OCCUPANCY (D - C)** | | | **-224** |

**Notes:**

[a] Source: City of Signal Hill Municipal Code, Chapter 20.70 - Off-Street Parking.

[b] The parking requirement for retail usue is 4/1000. However, since the uses are unknow for this building and to provide flexibility for tenanting, a parking ratio of 5/1000 has been applied.

[c] Source: City of Signal Hill Muncipal Code: the parking requirement of 1 space per 7500 SF is based on Section 20.32.050 Off-Street Parking of Chapter 20.32 SP-12 Freeway Self-Storage Specific Plan.

[d] Potential outdoor dining area is unknown at this time. The study assumes a placeholder of upto 600 SF for the Project's restaurant component.

[e] Proposed parking supply of 483 spaces includes 11 proposed spaces that would be included within the RV Storage yard.

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## TABLE 4

## SELF-STORAGE PARKING REQUIREMENTS COMPARISON

### TARGET RETAIL CENTER EXPANSION AND SELF-STORAGE, SIGNAL HILL

| Source | Code Requirement for Self Storage Facility | Comparison to Signal Hill |
|---|---|---|
| Signal Hill | 1 space per 7,500 SF (equivalent 0.133 spaces per 1,000 SF) | -- |
| Westminster | 5 parking spaces, plus 1 parking space for every 500 SF, or major fraction thereof, of GFA | Higher Requirement than Signa Hill |
| **Huntington Beach** | **1 per 5,000 SF (Single Story), 1 per 2,000 SF plus 2 spaces for caretaker's unit (Each additional story)** | **Similar Requirements** |
| Lakewood | 1 parking space for every 3,000 SF of GFA. 2 additional parking spaces shall be provided for those self-storage facilities with an on-site aretaker's quarters or manager's apartment. | Higher Requirement than Signa Hill |
| Torrance | For each lot or parcel of land used for a warehouse and storage building, there shall be provided one (1) **space** for each fifteen hundred (1500) square feet of floor area, plus one (1) **space** for each two hundred and fifty (250) square feet of office area. | Higher Requirement than Signa Hill |
| Norwalk | one space for each one thousand (1,000) square feet for the first twenty thousand (20,000) square feet; plus one space for each two thousand (2,000) square feet for the second twenty thousand (20,000) square feet; plus one space for each four thousand (4,000) square feet in excess of forty thousand (40,000) square feet; plus one space for each vehicle operated from the property. | Higher Requirement than Signa Hill |
| Seal Beach | 1 space per 1000 SF | Higher Requirement than Signa Hill |
| Compton | 1 space/1000 SF of GFA | Higher Requirement than Signa Hill |
| Los Angeles | 1 SP/500 SF for the first 10,000 SF; 1SP/ For every 5,000 SF> 10,000 SF | Higher Requirement than Signa Hill |
| **Firestone** | **Office: 1 SP/400 SF; Self-Storage: 1 SP/7,000 SF; Mgr. Residence: (2) Covered** | **Similar Requirements** |
| Camarillo | General Industrial: 1 SP/500 SF; Professional Offices: 1 SP/250 SF | Higher Requirement than Signa Hill |
| **Richmond** | **Mini Storage: 0.15/1,000 SF** | **Similar Requirements** |
| ITE 151: Mini-Warehouse | 85th % 0.25 space per 1000 SF | Higher Requirement than Signa Hill |

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## TABLE 5

### PARKING REQUIREMENTS FROM EXISTING SELF STORAGE FACILITY[7]

#### TARGET RETAIL CENTER EXPANSION AND SELF-STORAGE, SIGNAL HILL

| Project | Location | Building Size | Spaces Provided | Parking Ratio (Space/KSF) |
|---|---|---|---|---|
| Sand Lake Road | Orlando, FL | 109,767 | 20 | 0.182 |
| Tapestry | Kissimee, FL | 124,902 | 7 | 0.056 |
| Wesley Chapel | Wesley Chapel, FL | 116,529 | 9 | 0.077 |
| Lutz | Lutz, FL | 86,950 | 4 | 0.046 |
| Fortune Road | Kissimee, FL | 147,041 | 7 | 0.048 |
| Piscataway | Piscataway, NJ | 155,136 | 18 | 0.116 |
| Alemeda | Lakewood, CO | 86,044 | 16 | 0.186 |
| Torrance | Torrance, CA | 93,660 | 19 | 0.203 |
| Broadway | Los Angeles, CA | 126,520 | 23 | 0.182 |
| Hayward | Hayward, CA | 142,513 | 26 | 0.182 |
| Newark | Newark, NJ | 173,098 | 29 | 0.168 |
| | | | **Average Parking Ratio** | **0.131** |
| | | | **85th Percentile Parkign Ratio** | **0.184** |
| | | | **Signal Hill Parking Ratio** | **0.133** |

[7] Source: SHPI/self-storage operator.

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# TABLE 6

## WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

## PROPOSED PROJECT WITH ALTERNATIVE 1 RESTAURANT TENANT MIX

### TARGET RETAIL CENTER EXPANSION AND SELF-STORAGE, SIGNAL HILL

| Land Use | Target | Retail/Other | Fine/Casual Dining | Family Restaurant QSR | Fast-Food Restaurant | Medical/Dental Office | Inside Gate Self Storage | Outside Gate Self Storage | Total KSF | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | 135.811 KSF | 15.000 KSF | 2.300 KSF | 0.000 KSF | 3.300 KSF | 3.500 KSF | 177.345 KSF | 177.345 KSF | 337.256 | | |
| Pkg Rate[2] | [3] | 5 /KSF | 10 /KSF | 10 /KSF | 10 /KSF | 5 /KSF | 0.184 /KSF [4] | 0.184 /KSF [4] | | | |
| Gross Spaces | 357 Spc. | 75 Spc. | 23 Spc. | 0 Spc. | 33 Spc. | 18 Spc. | 11 Spc. | 22 Spc. | | Comparison w/ Parking Supply 492 Spaces [4] | |
| Time of Day | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces [4] | Number of Spaces [4] | Shared Parking Demand | Surplus (Deficiency) | Percentage Available |
| 6:00 AM | 9 | 2 | 0 | 0 | 2 | 0 | 11 | 0 | 24 | 468 | 95% |
| 7:00 AM | 24 | 5 | 1 | 0 | 4 | 0 | 11 | 0 | 45 | 447 | 91% |
| 8:00 AM | 65 | 13 | 2 | 0 | 8 | 15 | 11 | 0 | 114 | 378 | 77% |
| 9:00 AM | 139 | 29 | 3 | 0 | 10 | 17 | 11 | 12 | 221 | 271 | 55% |
| 10:00 AM | 223 | 47 | 6 | 0 | 19 | 18 | 11 | 6 | 330 | 162 | 33% |
| 11:00 AM | 281 | 59 | 10 | 0 | 29 | 18 | 11 | 15 | 423 | 69 | 14% |
| 12:00 PM | 310 | 66 | 16 | 0 | 33 | 10 | 11 | 8 | 454 | 38 | 8% |
| 1:00 PM | 321 | 68 | 16 | 0 | 33 | 17 | 11 | 10 | 476 | 16 | 3% |
| 2:00 PM | 310 | 66 | 14 | 0 | 30 | 18 | 11 | 10 | 459 | 33 | 7% |
| 3:00 PM | 295 | 63 | 10 | 0 | 21 | 18 | 11 | 15 | 433 | 59 | 12% |
| 4:00 PM | 295 | 63 | 12 | 0 | 18 | 17 | 11 | 12 | 428 | 64 | 13% |
| 5:00 PM | 307 | 65 | 17 | 0 | 21 | 16 | 11 | 22 | 459 | 33 | 7% |
| 6:00 PM | 307 | 65 | 20 | 0 | 29 | 12 | 11 | 0 | 444 | 48 | 10% |
| 7:00 PM | 307 | 65 | 21 | 0 | 27 | 6 | 11 | 0 | 437 | 55 | 11% |
| 8:00 PM | 263 | 55 | 21 | 0 | 17 | 3 | 11 | 0 | 370 | 122 | 25% |
| 9:00 PM | 177 | 37 | 21 | 0 | 10 | 0 | 11 | 0 | 256 | 236 | 48% |
| 10:00 PM | 103 | 21 | 20 | 0 | 8 | 0 | 11 | 0 | 163 | 329 | 67% |
| 11:00 PM | 36 | 7 | 16 | 0 | 4 | 0 | 11 | 0 | 74 | 418 | 85% |
| 12:00 AM | 0 | 0 | 5 | 0 | 2 | 0 | 11 | 0 | 18 | 474 | 96% |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code ratios, except for the existing Target, see Note [3].

[3] The parking requirement of 357 is based on empirically derived parking rates based on parking demand studies of the existing Target store in the CIty of San Clemente. The parking need of 357 spaces is calculate via the application of 2.63 spaces/1000 SF to the exisitng floor area of 135,811 SF.

[4] The self storage facility parking requirement is based on a "design" ratio of 0.184 spaces/1000 SF to provide a conservative assessment given City code requires 0.133 spaces/1000 Sf. The self storage facility has a proposed supply of 26 spaces which meets City code, of which 15 spaces are proposed outside of the RV Storage yard, while the remaining 11 spaces are located "behind the gate" but are accessible to customer/employees of the facility; to provide a conservative analysis, the 11 proposed spaces within the RV Storage yard are shown as "reserved" and "in use" thus resulting in a minimum base hourly demand of 11 spaces by the self-storage facility all hours of the day.

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# TABLE 7

## WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

## PROPOSED PROJECT WITH ALTERNATIVE 1 RESTAURANT TENANT MIX

### TARGET RETAIL CENTER EXPANSION AND SELF-STORAGE, SIGNAL HILL

| Land Use | Target | Retail/Other | Fine/Casual Dining | Family Restaurant QSR | Fast-Food Restaurant | Medical/Dental Office | Inside Gate Self Storage | Outside Gate Self Storage | Total KSF | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | 135.811 KSF | 15.000 KSF | 2.300 KSF | 0.000 KSF | 3.300 KSF | 3.500 KSF | 177.345 KSF | 177.345 KSF | 337.256 | | |
| Pkg Rate[2] | [3] | 5 /KSF | 10 /KSF | 10 /KSF | 10 /KSF | 5 /KSF | 0.184 /KSF [4] | 0.184 /KSF [4] | | | |
| Gross Spaces | 357 Spc. | 75 Spc. | 23 Spc. | 0 Spc. | 33 Spc. | 18 Spc. | 11 Spc. | 22 Spc. | | | |
| Time of Day | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces [4] | Number of Spaces [4] | Shared Parking Demand | Comparison w/ Parking Supply 492 Spaces [4] Surplus (Deficiency) | Percentage Available |
| 6:00 AM | 10 | 3 | 0 | 0 | 2 | 0 | 11 | 0 | 26 | 466 | 95% |
| 7:00 AM | 25 | 5 | 1 | 0 | 4 | 0 | 11 | 0 | 46 | 446 | 91% |
| 8:00 AM | 57 | 12 | 1 | 0 | 6 | 15 | 11 | 0 | 102 | 390 | 79% |
| 9:00 AM | 139 | 29 | 2 | 0 | 10 | 17 | 11 | 0 | 208 | 284 | 58% |
| 10:00 AM | 204 | 43 | 2 | 0 | 18 | 18 | 11 | 0 | 296 | 196 | 40% |
| 11:00 AM | 254 | 53 | 5 | 0 | 27 | 18 | 11 | 0 | 368 | 124 | 25% |
| 12:00 PM | 300 | 63 | 12 | 0 | 31 | 10 | 11 | 0 | 427 | 65 | 13% |
| 1:00 PM | 328 | 69 | 13 | 0 | 31 | 0 | 11 | 6 | 458 | 34 | 7% |
| 2:00 PM | 357 | 75 | 11 | 0 | 28 | 0 | 11 | 0 | 482 | 10 | 2% |
| 3:00 PM | 357 | 75 | 11 | 0 | 19 | 0 | 11 | 0 | 473 | 19 | 4% |
| 4:00 PM | 343 | 72 | 11 | 0 | 17 | 0 | 11 | 7 | 461 | 31 | 6% |
| 5:00 PM | 325 | 68 | 15 | 0 | 19 | 0 | 11 | 6 | 444 | 48 | 10% |
| 6:00 PM | 290 | 61 | 21 | 0 | 26 | 0 | 11 | 0 | 409 | 83 | 17% |
| 7:00 PM | 272 | 57 | 22 | 0 | 25 | 0 | 11 | 0 | 387 | 105 | 21% |
| 8:00 PM | 239 | 50 | 23 | 0 | 16 | 0 | 11 | 0 | 339 | 153 | 31% |
| 9:00 PM | 189 | 40 | 21 | 0 | 10 | 0 | 11 | 0 | 271 | 221 | 45% |
| 10:00 PM | 132 | 28 | 21 | 0 | 6 | 0 | 11 | 0 | 198 | 294 | 60% |
| 11:00 PM | 54 | 11 | 21 | 0 | 4 | 0 | 11 | 0 | 101 | 391 | 79% |
| 12:00 AM | 0 | 0 | 12 | 0 | 2 | 0 | 11 | 0 | 25 | 467 | 95% |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code ratios, except for the existing Target, see Note [3].

[3] The parking requirement of 357 is based on empirically derived parking rates based on parking demand studies of the existing Target store in the CIty of San Clemente. The parking need of 357 spaces is calculate via the application of 2.63 spaces/1000 SF to the exisitng floor area of 135,811 SF.

[4] The self storage facility parking requirement is based on a "design" ratio of 0.184 spaces/1000 SF to provide a conservative assessment given City code requires 0.133 spaces/1000 Sf. The self storage facility has a proposed supply of 26 spaces which meets City code, of which 15 spaces are proposed outside of the RV Storage yard, while the remaining 11 spaces are located "behind the gate" but are accessible to customer/employees of the facility; to provide a conservative analysis, the 11 proposed spaces within the RV Storage yard are shown as "reserved" and "in use" thus resulting in a minimum base hourly demand of 11 spaces by the self-storage facility all hours of the day.

LINSCOTT LAW & GREENSPAN engineers

# TABLE 8

## WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

## PROPOSED PROJECT WITH ALTERNATIVE 2 RESTAURANT TENANT MIX

### TARGET RETAIL CENTER EXPANSION AND SELF-STORAGE, SIGNAL HILL

| Land Use | Target | Retail/Other | Fine/Casual Dining | Family Restaurant QSR | Fast-Food Restaurant | Medical/Dental Office | Inside Gate Self Storage | Outside Gate Self Storage | Total KSF | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | 135.811 KSF | 15.000 KSF | 0.000 KSF | 2.300 KSF | 3.300 KSF | 3.500 KSF | 177.345 KSF | 177.345 KSF | 337.256 | | |
| Pkg Rate[2] | [3] | 5 /KSF | 10 /KSF | 10 /KSF | 10 /KSF | 5 /KSF | 0.184 /KSF [4] | 0.184 /KSF [4] | | | |
| Gross Spaces | 357 Spc. | 75 Spc. | 0 Spc. | 23 Spc. | 33 Spc. | 18 Spc. | 11 Spc. | 22 Spc. | | Comparison w/ Parking Supply 492 Spaces [4] | |
| Time of Day | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces [4] | Number of Spaces [4] | Shared Parking Demand | Surplus (Deficiency) | Percentage Available |
| 6:00 AM | 9 | 2 | 0 | 5 | 2 | 0 | 11 | 0 | 29 | 463 | 94% |
| 7:00 AM | 24 | 5 | 0 | 9 | 4 | 0 | 11 | 0 | 53 | 439 | 89% |
| 8:00 AM | 65 | 13 | 0 | 10 | 8 | 15 | 11 | 0 | 122 | 370 | 75% |
| 9:00 AM | 139 | 29 | 0 | 13 | 10 | 17 | 11 | 12 | 231 | 261 | 53% |
| 10:00 AM | 223 | 47 | 0 | 14 | 19 | 18 | 11 | 6 | 338 | 154 | 31% |
| 11:00 AM | 281 | 59 | 0 | 15 | 29 | 18 | 11 | 15 | 428 | 64 | 13% |
| 12:00 PM | 310 | 66 | 0 | 16 | 33 | 10 | 11 | 8 | 454 | 38 | 8% |
| 1:00 PM | 321 | 68 | 0 | 15 | 33 | 17 | 11 | 10 | 475 | 17 | 3% |
| 2:00 PM | 310 | 66 | 0 | 9 | 30 | 18 | 11 | 10 | 454 | 38 | 8% |
| 3:00 PM | 295 | 63 | 0 | 8 | 21 | 18 | 11 | 15 | 431 | 61 | 12% |
| 4:00 PM | 295 | 63 | 0 | 8 | 18 | 17 | 11 | 12 | 424 | 68 | 14% |
| 5:00 PM | 307 | 65 | 0 | 13 | 21 | 16 | 11 | 22 | 455 | 37 | 8% |
| 6:00 PM | 307 | 65 | 0 | 13 | 29 | 12 | 11 | 0 | 437 | 55 | 11% |
| 7:00 PM | 307 | 65 | 0 | 13 | 27 | 6 | 11 | 0 | 429 | 63 | 13% |
| 8:00 PM | 263 | 55 | 0 | 13 | 17 | 3 | 11 | 0 | 362 | 130 | 26% |
| 9:00 PM | 177 | 37 | 0 | 10 | 10 | 0 | 11 | 0 | 245 | 247 | 50% |
| 10:00 PM | 103 | 21 | 0 | 9 | 8 | 0 | 11 | 0 | 152 | 340 | 69% |
| 11:00 PM | 36 | 7 | 0 | 8 | 4 | 0 | 11 | 0 | 66 | 426 | 87% |
| 12:00 AM | 0 | 0 | 0 | 5 | 2 | 0 | 11 | 0 | 18 | 474 | 96% |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code ratios, except for the existing Target, see Note [3].

[3] The parking requirement of 357 is based on empirically derived parking rates based on parking demand studies of the existing Target store in the CIty of San Clemente. The parking need of 357 spaces is calculate via the application of 2.63 spaces/1000 SF to the exisitng floor area of 135,811 SF.

[4] The self storage facility parking requirement is based on a "design" ratio of 0.184 spaces/1000 SF to provide a conservative assessment given City code requires 0.133 spaces/1000 Sf. The self storage facility has a proposed supply of 26 spaces which meets City code, of which 15 spaces are proposed outside of the RV Storage yard, while the remaining 11 spaces are located "behind the gate" but are accessible to customer/employees of the facility; to provide a conservative analysis, the 11 proposed spaces within the RV Storage yard are shown as "reserved" and "in use" thus resulting in a minimum base hourly demand of 11 spaces by the self-storage facility all hours of the day.

LINSCOTT LAW & GREENSPAN engineers

# TABLE 9

## WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

## PROPOSED PROJECT WITH ALTERNATIVE 2 RESTAURANT TENANT MIX

### TARGET RETAIL CENTER EXPANSION AND SELF-STORAGE, SIGNAL HILL

| Land Use | Target | Retail/Other | Fine/Casual Dining | Family Restaurant QSR | Fast-Food Restaurant | Medical/Dental Office | Inside Gate Self Storage | Outside Gate Self Storage | Total KSF 337.256 | Comparison w/ Parking Supply 492 Spaces [4] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Size<br>Pkg Rate[2] | 135.811 KSF<br>[3] | 15.000 KSF<br>5 /KSF | 0.000 KSF<br>10 /KSF | 2.300 KSF<br>10 /KSF | 3.300 KSF<br>10 /KSF | 3.500 KSF<br>5 /KSF | 177.345 KSF<br>0.184 /KSF [4] | 177.345 KSF<br>0.184 /KSF [4] | | | |
| Gross Spaces | 357 Spc. | 75 Spc. | 0 Spc. | 23 Spc. | 33 Spc. | 18 Spc. | 11 Spc. | 22 Spc. | | | |
| Time of Day | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces [4] | Number of Spaces [4] | Shared Parking Demand | Surplus (Deficiency) | Percentage Available |
| 6:00 AM | 10 | 3 | 0 | 4 | 2 | 0 | 11 | 0 | 30 | 462 | 94% |
| 7:00 AM | 25 | 5 | 0 | 7 | 4 | 0 | 11 | 0 | 52 | 440 | 89% |
| 8:00 AM | 57 | 12 | 0 | 12 | 6 | 15 | 11 | 0 | 113 | 379 | 77% |
| 9:00 AM | 139 | 29 | 0 | 17 | 10 | 17 | 11 | 0 | 223 | 269 | 55% |
| 10:00 AM | 204 | 43 | 0 | 21 | 18 | 18 | 11 | 0 | 315 | 177 | 36% |
| 11:00 AM | 254 | 53 | 0 | 21 | 27 | 18 | 11 | 0 | 384 | 108 | 22% |
| 12:00 PM | 300 | 63 | 0 | 23 | 31 | 10 | 11 | 0 | 438 | 54 | 11% |
| 1:00 PM | 328 | 69 | 0 | 20 | 31 | 0 | 11 | 6 | 465 | 27 | 5% |
| 2:00 PM | 357 | 75 | 0 | 16 | 28 | 0 | 11 | 0 | 487 | 5 | 1% |
| 3:00 PM | 357 | 75 | 0 | 10 | 19 | 0 | 11 | 0 | 472 | 20 | 4% |
| 4:00 PM | 343 | 72 | 0 | 11 | 17 | 0 | 11 | 7 | 461 | 31 | 6% |
| 5:00 PM | 325 | 68 | 0 | 15 | 19 | 0 | 11 | 6 | 444 | 48 | 10% |
| 6:00 PM | 290 | 61 | 0 | 17 | 26 | 0 | 11 | 0 | 405 | 87 | 18% |
| 7:00 PM | 272 | 57 | 0 | 17 | 25 | 0 | 11 | 0 | 382 | 110 | 22% |
| 8:00 PM | 239 | 50 | 0 | 16 | 16 | 0 | 11 | 0 | 332 | 160 | 33% |
| 9:00 PM | 189 | 40 | 0 | 8 | 10 | 0 | 11 | 0 | 258 | 234 | 48% |
| 10:00 PM | 132 | 28 | 0 | 7 | 6 | 0 | 11 | 0 | 184 | 308 | 63% |
| 11:00 PM | 54 | 11 | 0 | 5 | 4 | 0 | 11 | 0 | 85 | 407 | 83% |
| 12:00 AM | 0 | 0 | 0 | 3 | 2 | 0 | 11 | 0 | 16 | 476 | 97% |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code ratios, except for the existing Target, see Note [3].

[3] The parking requirement of 357 is based on empirically derived parking rates based on parking demand studies of the existing Target store in the CIty of San Clemente. The parking need of 357 spaces is calculate via the application of 2.63 spaces/1000 SF to the exisitng floor area of 135,811 SF.

[4] The self storage facility parking requirement is based on a "design" ratio of 0.184 spaces/1000 SF to provide a conservative assessment given City code requires 0.133 spaces/1000 Sf. The self storage facility has a proposed supply of 26 spaces which meets City code, of which 15 spaces are proposed outside of the RV Storage yard, while the remaining 11 spaces are located "behind the gate" but are accessible to customer/employees of the facility; to provide a conservative analysis, the 11 proposed spaces within the RV Storage yard are shown as "reserved" and "in use" thus resulting in a minimum base hourly demand of 11 spaces by the self-storage facility all hours of the day.

LINSCOTT LAW & GREENSPAN engineers

# TABLE 10

## WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

## PROPOSED PROJECT WITH ALTERNATIVE 3 RESTAURANT TENANT MIX

### TARGET RETAIL CENTER EXPANSION AND SELF-STORAGE, SIGNAL HILL

| Land Use | Target | Retail/Other | Fine/Casual Dining | Family Restaurant QSR | Fast-Food Restaurant | Medical/Dental Office | Inside Gate Self Storage | Outside Gate Self Storage | Total KSF | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | 135.811 KSF | 15.000 KSF | 0.000 KSF | 0.000 KSF | 5.600 KSF | 3.500 KSF | 177.345 KSF | 177.345 KSF | 337.256 | | |
| Pkg Rate[2] | [3] | 5 /KSF | 10 /KSF | 10 /KSF | 10 /KSF | 5 /KSF | 0.184 /KSF [4] | 0.184 /KSF [4] | | | |
| Gross Spaces | 357 Spc. | 75 Spc. | 0 Spc. | 0 Spc. | 56 Spc. | 18 Spc. | 11 Spc. | 22 Spc. | | Comparison w/ Parking Supply 492 Spaces [4] | |
| Time of Day | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces [4] | Number of Spaces [4] | Shared Parking Demand | Surplus (Deficiency) | Percentage Available |
| 6:00 AM | 9 | 2 | 0 | 0 | 3 | 0 | 11 | 0 | 25 | 467 | 95% |
| 7:00 AM | 24 | 5 | 0 | 0 | 7 | 0 | 11 | 0 | 47 | 445 | 90% |
| 8:00 AM | 65 | 13 | 0 | 0 | 12 | 15 | 11 | 0 | 116 | 376 | 76% |
| 9:00 AM | 139 | 29 | 0 | 0 | 17 | 17 | 11 | 12 | 225 | 267 | 54% |
| 10:00 AM | 223 | 47 | 0 | 0 | 32 | 18 | 11 | 6 | 337 | 155 | 32% |
| 11:00 AM | 281 | 59 | 0 | 0 | 49 | 18 | 11 | 15 | 433 | 59 | 12% |
| 12:00 PM | 310 | 66 | 0 | 0 | 56 | 10 | 11 | 8 | 461 | 31 | 6% |
| 1:00 PM | 321 | 68 | 0 | 0 | 56 | 17 | 11 | 10 | 483 | 9 | 2% |
| 2:00 PM | 310 | 66 | 0 | 0 | 51 | 18 | 11 | 10 | 466 | 26 | 5% |
| 3:00 PM | 295 | 63 | 0 | 0 | 35 | 18 | 11 | 15 | 437 | 55 | 11% |
| 4:00 PM | 295 | 63 | 0 | 0 | 31 | 17 | 11 | 12 | 429 | 63 | 13% |
| 5:00 PM | 307 | 65 | 0 | 0 | 35 | 16 | 11 | 22 | 456 | 36 | 7% |
| 6:00 PM | 307 | 65 | 0 | 0 | 48 | 12 | 11 | 0 | 443 | 49 | 10% |
| 7:00 PM | 307 | 65 | 0 | 0 | 45 | 6 | 11 | 0 | 434 | 58 | 12% |
| 8:00 PM | 263 | 55 | 0 | 0 | 29 | 3 | 11 | 0 | 361 | 131 | 27% |
| 9:00 PM | 177 | 37 | 0 | 0 | 17 | 0 | 11 | 0 | 242 | 250 | 51% |
| 10:00 PM | 103 | 21 | 0 | 0 | 12 | 0 | 11 | 0 | 147 | 345 | 70% |
| 11:00 PM | 36 | 7 | 0 | 0 | 7 | 0 | 11 | 0 | 61 | 431 | 88% |
| 12:00 AM | 0 | 0 | 0 | 0 | 4 | 0 | 11 | 0 | 15 | 477 | 97% |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code ratios, except for the existing Target, see Note [3].

[3] The parking requirement of 357 is based on empirically derived parking rates based on parking demand studies of the existing Target store in the CIty of San Clemente. The parking need of 357 spaces is calculate via the application of 2.63 spaces/1000 SF to the exisitng floor area of 135,811 SF.

[4] The self storage facility parking requirement is based on a "design" ratio of 0.184 spaces/1000 SF to provide a conservative assessment given City code requires 0.133 spaces/1000 Sf. The self storage facility has a proposed supply of 26 spaces which meets City code, of which 15 spaces are proposed outside of the RV Storage yard, while the remaining 11 spaces are located "behind the gate" but are accessible to customer/employees of the facility; to provide a conservative analysis, the 11 proposed spaces within the RV Storage yard are shown as "reserved" and "in use" thus resulting in a minimum base hourly demand of 11 spaces by the self-storage facility all hours of the day.

LINSCOTT LAW & GREENSPAN engineers

# TABLE 11

## WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

## PROPOSED PROJECT WITH ALTERNATIVE 3 RESTAURANT TENANT MIX

### TARGET RETAIL CENTER EXPANSION AND SELF-STORAGE, SIGNAL HILL

| Land Use | Target | Retail/Other | Fine/Casual Dining | Family Restaurant QSR | Fast-Food Restaurant | Medical/Dental Office | Inside Gate Self Storage | Outside Gate Self Storage | Total KSF 337.256 | Comparison w/ Parking Supply 492 Spaces [4] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | 135.811 KSF | 15.000 KSF | 0.000 KSF | 0.000 KSF | 5.600 KSF | 3.500 KSF | 177.345 KSF | 177.345 KSF | | | |
| Pkg Rate[2] | [3] | 5 /KSF | 10 /KSF | 10 /KSF | 10 /KSF | 5 /KSF | 0.184 /KSF [4] | 0.184 /KSF [4] | | | |
| Gross Spaces | 357 Spc. | 75 Spc. | 0 Spc. | 0 Spc. | 56 Spc. | 18 Spc. | 11 Spc. | 22 Spc. | | | |
| Time of Day | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces | Number of Spaces [4] | Number of Spaces [4] | Shared Parking Demand | Surplus (Deficiency) | Percentage Available |
| 6:00 AM | 10 | 3 | 0 | 0 | 3 | 0 | 11 | 0 | 27 | 465 | 95% |
| 7:00 AM | 25 | 5 | 0 | 0 | 6 | 0 | 11 | 0 | 47 | 445 | 90% |
| 8:00 AM | 57 | 12 | 0 | 0 | 11 | 15 | 11 | 0 | 106 | 386 | 78% |
| 9:00 AM | 139 | 29 | 0 | 0 | 16 | 17 | 11 | 0 | 212 | 280 | 57% |
| 10:00 AM | 204 | 43 | 0 | 0 | 30 | 18 | 11 | 0 | 306 | 186 | 38% |
| 11:00 AM | 254 | 53 | 0 | 0 | 45 | 18 | 11 | 0 | 381 | 111 | 23% |
| 12:00 PM | 300 | 63 | 0 | 0 | 52 | 10 | 11 | 0 | 436 | 56 | 11% |
| 1:00 PM | 328 | 69 | 0 | 0 | 52 | 0 | 11 | 6 | 466 | 26 | 5% |
| 2:00 PM | 357 | 75 | 0 | 0 | 47 | 0 | 11 | 0 | 490 | 2 | 0% |
| 3:00 PM | 357 | 75 | 0 | 0 | 32 | 0 | 11 | 0 | 475 | 17 | 3% |
| 4:00 PM | 343 | 72 | 0 | 0 | 28 | 0 | 11 | 7 | 461 | 31 | 6% |
| 5:00 PM | 325 | 68 | 0 | 0 | 32 | 0 | 11 | 6 | 442 | 50 | 10% |
| 6:00 PM | 290 | 61 | 0 | 0 | 45 | 0 | 11 | 0 | 407 | 85 | 17% |
| 7:00 PM | 272 | 57 | 0 | 0 | 43 | 0 | 11 | 0 | 383 | 109 | 22% |
| 8:00 PM | 239 | 50 | 0 | 0 | 27 | 0 | 11 | 0 | 327 | 165 | 34% |
| 9:00 PM | 189 | 40 | 0 | 0 | 16 | 0 | 11 | 0 | 256 | 236 | 48% |
| 10:00 PM | 132 | 28 | 0 | 0 | 11 | 0 | 11 | 0 | 182 | 310 | 63% |
| 11:00 PM | 54 | 11 | 0 | 0 | 6 | 0 | 11 | 0 | 82 | 410 | 83% |
| 12:00 AM | 0 | 0 | 0 | 0 | 4 | 0 | 11 | 0 | 15 | 477 | 97% |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code ratios, except for the existing Target, see Note [3].

[3] The parking requirement of 357 is based on empirically derived parking rates based on parking demand studies of the existing Target store in the CIty of San Clemente. The parking need of 357 spaces is calculate via the application of 2.63 spaces/1000 SF to the exisitng floor area of 135,811 SF.

[4] The self storage facility parking requirement is based on a "design" ratio of 0.184 spaces/1000 SF to provide a conservative assessment given City code requires 0.133 spaces/1000 Sf. The self storage facility has a proposed supply of 26 spaces which meets City code, of which 15 spaces are proposed outside of the RV Storage yard, while the remaining 11 spaces are located "behind the gate" but are accessible to customer/employees of the facility; to provide a conservative analysis, the 11 proposed spaces within the RV Storage yard are shown as "reserved" and "in use" thus resulting in a minimum base hourly demand of 11 spaces by the self-storage facility all hours of the day.

# ATTACHMENT 1A AND 1B

## CITY OF SIGNAL HILL MUNICIPAL

# Chapter 20.70
# OFF-STREET PARKING*

Sections:


20.70.010 Purpose.

20.70.020 General standards.

20.70.030 Number of parking spaces required, by use.

20.70.035 Required transportation-related facilities.

20.70.040 Surfacing and marking of parking and storage areas.

20.70.050 Landscaping.

20.70.060 Lighting.

20.70.070 Access and location.

20.70.080 Parking area surfacing and grades.

20.70.090 Stall sizes and aisle widths.


* Prior ordinance history: Prior code § 19.52.150; Ord. 557 § 306 as amended by Ords. 68-10-629, 69-9-645, 72-12-777, 77-12-780, 79-2-815, 80-11-857, 80-12-859, 83-03-904, 84-08-930, 84-09-934 and 85-09-955.

## 20.70.010 Purpose.

The purpose of this chapter is to provide for regulation of off-street parking within all commercial, industrial, residential and open space districts. In addition, access to parking, parking lot lighting, parking lot landscaping, driveway design, and required aisle widths are also regulated within this chapter.

(Ord. 93-03-1152 § 18 (part): Ord. 88-09-1015 § 1 (part))

## 20.70.020 General standards.

The following general standards shall apply to all districts unless otherwise specified:

A. No parking area, parking space or loading space which is provided for the purpose of complying with the provisions of this title shall hereafter be relinquished, reduced or altered in any manner unless equivalent facilities are provided elsewhere, the location of which is approved by the planning commission, and legal access to such equivalent facilities by appropriate recorded instrument has been approved by the city attorney.

B. Where automobile parking is provided and maintained on a lot in connection with a main building or structure on or before the effective date of the ordinance codified in this chapter and is insufficient to meet the requirements for the use as provided in this title, or where no such parking has been provided, such automobile parking may be continued as a nonconforming use. Any such building or structure may be altered or

enlarged only if parking is provided in conformance with the provisions of this title for the portion of the building or structure altered, added to, enlarged or extended. Existing parking may not be counted toward meeting the required parking for the alteration, addition, enlargement or extension.

C. In the case of a legally existing residential use in a residential district, on or before the effective date of the ordinance codified in this chapter where additional dwelling unit(s) are permitted, parking in conformance with this title shall be required only for the new dwelling unit(s)

D. All motor vehicles incapable of movement under their own power without alteration or repair shall be stored in an entirely enclosed garage or space enclosed by minimum six-foot solid fence or wall. No inoperable motor vehicle shall be left on public or private property for more than seventy-two hours unless enclosed by a garage, wall or fence. Such regulation shall not apply to automobile related uses such as automobile dealerships, automobile repair shops, automobile body and paint shops which utilize approved outdoor storage areas meeting the requirements of Sections 20.20.020 and 20.30.020 of this code.

E. House trailers or campers which are incapable of movement without being attached to another vehicle may only be stored in the rear yard of any residential use, must be owned by the owner or tenant of such property, and must be enclosed within an area bounded by a six-foot height solid fence or wall. Within any commercial or industrial district, house trailers or campers may only be stored within an enclosed building unless the property is specifically authorized to store and/or display such vehicles. Such vehicles may not be used for residential purposes in any district.

F. No motor vehicle, house trailer, camper shell, tent trailer, watercraft, or utility trailer, including trailers used to transport boats, motorcycles, automobiles, recreational vehicles, household goods or construction equipment shall be parked in any front yard or side yard unless parked on a driveway. For purposes of subsection, yard shall include not only the required open space area as defined in this code, but also the area between the respective setback line, as defined in this code, and the opposing exterior building wall. Driveway shall be defined as in Section 20.04.243 or as legally constructed and in use prior to the effective dates of Section 20.04.243 of this code provided such driveway is joined with an adjacent alley or street by a city-approved curb cut, ramp, and/or other appropriate transition.

(Ord. 93-03-1152 § 18 (part): Ord. 88-09-1015 § 1 (part))

### 20.70.030 Number of parking spaces required, by use.

A. The following uses shall provide parking spaces in accordance with this section:

| | |
|---|---|
| Automobile repair shop | 1 space per 500 sq. ft. G.F.A. (gross floor area) |
| Automobile, truck, recreational vehicles, and boat sales, leasing (new or used) exclusive of repair areas | 1 space per 400 sq. ft. G.F.A. |

Banks, savings and loans
1 space per 200 sq. ft. G.F.A.
Bars, cocktail lounges, nightclubs, dancing, entertainment, alcohol beverage manufacturing with tasting rooms
1 space per 100 sq. ft. G.F.A.
Business colleges, technical schools (adult)
1 space per classroom, plus 1 space per 2 students (based maximum capacity), plus 1 space per 250 sq. ft. of office area
Bowling alleys
5 spaces per alley
Churches, meeting halls, stadium, museums, auction houses
1 space per 5 permanent seats or 1 space per 40 sq. ft. of assembly area whichever results in the greatest number of parking spaces
Commercial uses, not specifically listed in this section
1 space per 250 sq. ft. G.F.A.
Care facility, including convalescent center, residential for the elderly, community
.5 spaces per bed plus 1 space per 250 sq. ft. of intermediate care facility, skilled nursing, office area
Fraternity or sorority house
1 space per 200 sq. ft. G.F.A.
Furniture store
1 space per 1,000 sq. ft. G.F.A.
Gasoline service station
1 space per 200 sq. ft. G.F.A.
Grocery store
1 space per 200 sq. ft. G.F.A.
Guest parking (senior citizen housing)
1 space per 10 dwelling units
Gymnastics academy
1 space per 1,000 sq. ft. of open training floor area plus 1 space per 200 sq. ft. of office and seating area
Hospital
1.5 spaces per bed plus 1 space per 200 sq. ft. of office area
Industrial uses not specifically listed in this section
1 space per 1,000 sq. ft. G.F.A.
Machinery shop
1 space per 1,000 sq. ft. G.F.A.
Manufacturing uses not specifically listed in this section
1 space per 1,000 sq. ft. G.F.A.
Nursery school, preschool
1 space per 500 sq. ft. G.F.A.
Offices, general
1 space per 250 sq. ft. G.F.A.
Offices, medical
1 space per 200 sq. ft. G.F.A.
Private and parochial schools (K-8)

1 space per classroom, plus 1 space per 250 sq. ft. of office area
Private commercial schools, including dancing
1 space per classroom, plus 1 space per 250 sq. academies, music instruction, karate, etc.ft. of office area
Rental car agency
1 space per 250 sq. ft. of office area, plus 1 space per employee, plus 3 customer drop-off parking spaces, plus a minimum of 3 rental car storage spaces
Residential uses
All residential parking provisions, requirements and standards shall be in accordance with Section 20.10.130 of this code
Restaurant, fast food, including drive-thru
1 space per 100 sq. ft. G.F.A.
Restaurant, take-out
1 space per 250 sq. ft. G.F.A.
Retail, general
1 space per 250 sq. ft. G.F.A.
Retail shopping center in excess of 100,000 G.F.A.
1 space per 200 sq. ft. G.F.A.
Senior citizen housing (OS district only)
1 space per dwelling unit (at least 50% of which must be enclosed) and any guest parking required by this chapter
Storage, warehouse
1 space per 1,000 sq. ft. G.F.A.
Theaters, multiple-screen and playhouse (live)
1 space per three seats
Theaters, single-screen
1 space per two seats

B. Combination of facilities shall provide the number of spaces required for each facility and the spaces provided for one facility shall not be construed as satisfying the requirement for another facility, except in the case of retail shopping centers.

C. All fractions resulting in 0.5 or greater are to be rounded up, all others rounded down, except in the case of guest parking in which case all fractions shall be rounded up to the next whole number.

D. For the purposes of this chapter, "retail shopping center" shall be defined as a structure or structures having total G.F.A. of one hundred thousand square feet or more designed to incorporate two or more uses such as retail stores, restaurants, offices, banks, grocery stores, entertainment uses, commercial and personal services, etc.

E. Prior to approval of the development or expansion of any hospital, a trip generation traffic study, prepared by a qualified traffic engineer, shall be submitted for approval of the city engineer. If indicated by such a study, parking shall be provided at a rate greater than that listed in the above table. The total number of spaces provided shall be no less than the number recommended by the approved study.

F. Where parking spaces are determined based upon square footage, unless otherwise specified, such square footage shall be based upon gross floor area of the building as defined in Section 20.04.300, which states that said floor area applies not only to the ground floor area, but also to any additional stories or basement of the structure. All horizontal dimensions shall be taken from the exterior faces of walls, including enclosed porches.

(Ord. 2016-07-1490 § 4; Ord. 2008-11-1391 § 3; Ord. 2001-07-1289 § 3; Ord. 2000-01-1266 § 2; Ord. 93-03-1152 § 18 (part): Ord. 90-07-1072 § 4; Ord. 88-09-1015 § 1 (part))

## 20.70.035 Required transportation-related facilities.

A. Nonresidential projects comprising fifty thousand square feet or more of building area shall provide all of the following measures subject to the approval of the director of planning:

1. At least ten percent of the required employee parking spaces shall be located as close as is practicable to the employee entrance(s) and shall be available for use by carpool/vanpool vehicles as demand may require without displacing handicapped and customer parking needs. This preferential carpool/vanpool parking area shall be identified on the site plan. A statement that preferential carpool/vanpool spaces for employees are available and a description of the method for obtaining such spaces must be included on the transportation information board as required in this chapter. Carpool/vanpool spaces shall be designated by signs and/or pavement markings as demand warrants, provided that at all times at least one space for projects comprising fifty thousand square feet to one hundred thousand square feet of building area and two spaces for projects comprising over one hundred thousand square feet of building area shall be designated for carpool/vanpool vehicles.

2. Preferential parking spaces reserved for vanpools must be accessible to vanpool vehicles. When located within a parking structure, a minimum vertical interior clearance of eight feet two inches shall be provided for those spaces and accessways to be used by such vehicles. Adequate turning radii and parking space dimensions shall also be included in vanpool parking areas.

3. Bicycle racks or other secure bicycle parking shall be provided to accommodate four bicycles for the first fifty thousand square feet of nonresidential building area and one bicycle for each additional fifty thousand square feet of nonresidential building area. Calculations which result in a fraction of 0.5 or higher shall be rounded up to the nearest whole number. A bicycle parking facility may also be a fully enclosed space or locker, accessible only to the owner or operator of the bicycle, which protects the bike from inclement weather. Specific facilities and location (e.g., provision of racks, lockers or locked room) shall be subject to approval of the director of planning.

B. Nonresidential projects comprising one hundred thousand square feet or more of building area shall comply with the requirements of subsection A above, and in addition, shall provide a safe and convenient zone in which vanpool and carpool vehicles may deliver or board their passengers.

(Ord. 93-03-1152 § 18 (part))

## 20.70.040 Surfacing and marking of parking and storage areas.

All areas of a lot to be used for the purpose of parking, loading, storage or access to any parking, loading or storage area shall be graded, surfaced, drained, and marked in accordance with all city standards and the provisions of this title. Parking stalls shall be clearly delineated by striping not less than three inches wide and appropriately labeled for loading, handicapped, etc., where necessary. Wheelstops and/or six-inch concrete curb shall be required for all parking stalls. Directional arrows and signs shall be placed on and off-site where required by the city engineer.

(Ord. 93-03-1152 § 18 (part): Ord. 88-09-1015 § 1 (part))

## 20.70.050 Landscaping.

The following landscaping standards shall apply to all open parking areas within commercial and industrial districts, including commercial uses within the CR district:

A. In any open parking area, a minimum of five percent of the total area of parking stalls and driveways shall be landscaped. The required percentage shall be exclusive of setbacks and vehicular overhangs. The maximum vehicular overhand shall be three feet.

B. To the extent possible, landscaping within a parking area shall be visible from within the parking area and located in order to enhance those areas most visible to the public.

C. A landscaping plan shall be submitted for the parking area. Landscaped areas shall consist of a combination of trees, shrubs and groundcover, the size, quantity, species and location of which shall be approved by the director of planning. Automatic irrigation must be provided to all landscaped areas.

(Ord. 93-03-1152 § 18 (part): Ord. 88-09-1015 § 1 (part))

## 20.70.060 Lighting.

Exterior lighting provided to illuminate parking, display, sales or pedestrian areas shall be shielded, hooded and so arranged as to prevent a nuisance to surrounding or nearby properties from occurring, including public rights-of-way.

(Ord. 93-03-1152 § 18 (part): Ord. 88-09-1015 § 1 (part))

## 20.70.070 Access and location.

There shall be adequate vehicular access from a dedicated and improved street, service road or alley. The design, number and location of such access route(s) shall be approved by the city engineer. Access to parking lots and parking spaces shall comply with the following standards:

A. No parking space shall be so located as to require the moving of any vehicle on the premises in order to enter or leave any other parking stall, unless an attendant is present at all times during the use of the parking facility.

B. In all commercial and industrial districts, including commercial uses with the CR district, all access to individual parking spaces shall be from the property itself and shall not be directly from a public street or alley.

C. Automobile parking shall be so arranged as to prevent vehicles from backing into major, secondary modified highways or local collector streets. This standard may be waived by the city engineer when both of the following conditions exist: 1) the property has no access to a public alley, and 2) the width of the lot and location of existing structures make is possible for vehicles to feasibly turn around on site so as to enter the street moving forward.

D. Parking stalls which are parallel to any major or secondary highway shall not be located less than twenty feet from the property line along such major or secondary highway.

E. Parking shall be provided as follows:

1. On the same lot or parcel as the building(s) or use(s) being served;

2. By participation in an assessment district, established for the purpose of providing an off-street parking facility for multiple uses within the vicinity.

F. Parking parallel to any alley shall be permitted in any district so long as no portion of the parking stall projects into the public right-of-way. The size of such a parking stall shall not be less than ten feet by twenty-two feet.

(Ord. 2008-07-1383 § 1: Ord. 93-03-1152 § 18 (part): Ord. 88-09-1015 § 1 (part))

## 20.70.080 Parking area surfacing and grades.

The following standards shall apply to grading and surfacing of all private parking areas:

A. All new and reconstructed parking lots shall be permanently surfaced with asphalt concrete or portland cement concrete. Private parking areas, and driveways, in the RL, RLM-1, RLM-2, PD-1 and PD-2 districts shall be surfaced with a minimum thickness of four inches of portland cement concrete over compacted native soil. Portland cement concrete or asphalt concrete shall be used in all other districts. The required pavement section shall be reviewed and approved by the city engineer prior to the issuance of grading permits. The determination shall be based upon engineering analysis of the subgrade soils, slope conditions and anticipated traffic loads. All paving materials and installations shall be per city engineer's standards.

B. The minimum acceptable parking lot surface gradients are one percent for asphalt concrete and 0.5 percent for portland cement.

C. The maximum acceptable grades for parking stalls and loading areas is five percent. The maximum acceptable grades for all other paved areas is eight percent.

D. All site and parking lot drainage shall be collected on-site and directed through a drainage system approved by the city engineer. Concentrated drainage shall be carried in concrete gutters, or by other approved methods, per city standards.

E. No driveway ramp shall exceed a rate of grade of (+ or -) twelve percent. A ramp is the area between the public right-of-way and the parking area or any area used strictly as a driveway (no adjacent parking). Differential rates of grade of four percent or greater shall require vertical curves. Differential grades at any chord within a vertical curve shall not exceed four percent. The minimum length of vertical curves shall be eight feet. Minimum chord lengths, where vertical curves are not required, shall be two feet. Back of driveway, at the right-of-way, shall not be modified from the standard slope.

(Ord. 93-03-1152 § 18 (part): Ord. 88-09-1015 § 1 (part))

## 20.70.090 Stall sizes and aisle widths.

A. The following standards apply to commercial and industrial districts. For residential stall sizes and aisle widths refer to Section 20.10.130.

| | | | Aisle Width (in feet) | |
|---|---|---|---|---|
| **Angle of Parking (in degrees)** | **Stall Width (in feet)** | **Stall Depth (in feet)** | **One way** | **Two way** |
| 0 | 10 | 22 | 12 | 24 |
| 30 | 9 | 18 | 12 | 24 |
| 45 | 9 | 20 | 12 | 24 |
| 60 | 9 | 20 | 18 | 24 |
| 90 | 9 | 20 | 24 | 24 |

B. In the case of an end parking stall abutting a building, fence, wall or other similar obstruction which extends beyond the length of the parking space, three feet shall be added to the width of a ninety degree stall. In the case of a parallel parking space, four feet shall be added to the length of the stall.

C. The maximum vehicular overhang for any parking space shall be three feet.

(Ord. 2001-07-1289 § 5; Ord. 93-03-1152 § 18 (part): Ord. 88-09-1015 § 1 (part))

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# Chapter 20.32
# SP-12 FREEWAY SELF-STORAGE SPECIFIC PLAN

Sections:


20.32.010 Purpose.

20.32.020 Adoption of the SP-12 freeway self-storage specific plan.

20.32.030 Use classifications.

20.32.035 Building height.

20.32.040 Design criteria.

20.32.045 Required setbacks

20.32.047 Landscape materials and turf replacement..

20.32.050 Off-street parking.

20.32.060 Required transportation-related improvements.

20.32.070 Trash and recycling storage area.

20.32.080 Signs.

20.32.085 Outdoor advertising structures.

20.32.090 Mechanical equipment.

20.32.100 Utilities, public facilities, services and underground utilities.

20.32.110 Walls, fences, and hedges.

20.32.120 Impact fees.


## 20.32.010 Purpose.

A. Application of the Specific Plan Concept. A specific plan and its function may be described by comparison with the general plan. The general plan expresses in very broad terms the city's planning of its future environment, generally on a long-term basis. Adopted by the city as a legislative act, the general plan may be amended as required by changing circumstances. The specific plan, on the other hand, is a device used to implement the general plan by focusing on a particular parcel or parcels. The specific plan sets standards against which development can be judged and imposes controls on the use of the subject parcels. The specific plan is more detailed than a general plan and can be viewed as a bridge between the general plan and individual project submittals.

The intent and purpose of this chapter is to establish a specific plan to guide the physical development of a particular geographic area within the city, which is well-suited to development of a self-storage facility given its proximity to and visibility from the freeway.

The freeway self-storage specific plan document and Chapter 20.32 are implementation documents, consistent with the adopted goals and policies of the city general plan and prepared in conformance with California Government Code Sections 65450 through 65457.

B. Location and Boundaries of the Specific Plan. The specific plan area encompasses an area about 4.4 acres generally located on the west side of California Avenue between the 405 Freeway to the south and property currently developed with a Target retail store to the north.

C. Goals and Objectives of the Freeway Self-Storage Specific Plan.

1. Enhance the visual image and livability of the adjacent North End residential neighborhood by assuring that new development does not infringe upon the peace, quiet and security of the neighborhood;

2. Provide an opportunity to develop the previously by-passed site with a self-storage facility which would generate less traffic than other commercial uses;

3. Improve the appearance and economic vitality of adjacent North End neighborhood design standards which result in the highest quality development and achieve a corporate style of architecture.

(Ord. 2003-05-1319 § 2)

### 20.32.020 Adoption of SP-12, freeway self-storage specific plan.

The provisions of this chapter shall apply to all property displayed as SP-12, freeway self-storage specific plan, on the official zoning map.

(Ord. 2003-05-1319 § 2)

### 20.32.030 Use classifications.

A. Principal Uses. The following uses shall be permitted within the SP-12, freeway self-storage specific plan area, subject to approval of a conditional use permit, in accordance with Chapter 20.64 of the Signal Hill Municipal Code. Unlisted uses shall be prohibited.

1. Self-storage facility.

B. Accessory Uses. The following accessory uses shall be permitted in conjunction with the development of a self-storage facility at the site.

1. Manager's dwelling unit, not to exceed one, provided that the principal resident is an employee of the self-storage facility.

2. Outdoor recreational vehicle parking.

C. Prohibited uses. The following use shall be prohibited.

1. Commercial marijuana uses.

(Ord. 2017-11-1497 § 6; Ord. 2016-01-1484 § 4; Ord. 2011-04-1424 § 4; Ord. 2003-05-1319 § 2)

### 20.32.035 Building height.

Building heights shall be limited to two stories and shall be no taller than thirty feet.

(Ord. 2003-05-1319 § 2)

### 20.32.040 Design criteria.

A. All property within the freeway self-storage specific plan area shall be developed and maintained in accordance with all provisions of the freeway self-storage specific plan and applicable development standards and city codes.

B. Substantive changes to the physical improvements on the property as described in Subsections (B)(1) through (5) of this section may be made only after review and approval by resolution of the planning commission and in compliance with Chapter 20.52 of the Signal Hill Municipal Code, and this chapter. Determination of "substantive change" hereunder shall be made at the sole discretion of the Planning Director.

1. Design Guidelines. Buildings and improvements shall be designed and reviewed in compliance with Chapter 20.52 of the Signal Hill Municipal Code.

2. Architectural Quality. The buildings shall exhibit architectural excellence. The design theme and façade treatment shall be consistent with the architectural elevations approved by the planning commission, dated as of planning commission approval of same and on file with the department of planning and community development.

3. On-Site Landscape Plan. On-site landscaping shall have design excellence, in terms of each planted area and in the context of the overall site plan. Landscaping shall substantially conform to the landscape plan approved by the planning commission, dated as of planning commission approval of same, on file with the department of planning and community development.

4. Perimeter Landscape and Right-of-Way Improvements Plan. Perimeter landscaping shall exhibit design excellence, in terms of the treatment provided along surface streets, and at all project entry areas and intersections, and in terms of the context of the overall project. Perimeter and right-of-way improvements shall substantially conform to plans for same, as approved and signed by the city engineer, and on file with the department of public works.

5. Site Plan. Site development shall substantially conform to the site plan approved by the planning commission, dated as of planning commission approval of same, on file with the department of planning and community development.

(Ord. 2003-05-1319 § 2)

### 20.32.045 Required setbacks.

Required setbacks for all new development shall be the number of feet stated below as measured from the established future right-of-way line. Setbacks shall be as follows:

Setback Adjacent California Avenue 20 feet

Setback Adjacent 405 Freeway ROW 25 feet

All Other Setbacks 3 feet

(Ord. 2003-05-1319 § 2)

### 20.32.047 Landscape materials and turf replacement.

A. Maximum Allowed Hardscape. Hardscape in front and street side setbacks is limited to driveways and walkways only (hardscape includes paved materials, both permeable and non-permeable). The remaining area shall be landscaped and maintained.

B. Turf in New Development. Turf in new development is subject to Chapter 13.10.

C. Turf Replacement.

1. Turf is not a required or preferred landscape material. Drought tolerant landscape materials that retain water on site are strongly encouraged when replacing existing turf.

2. Turf replacement in landscape areas of two thousand five hundred square feet or greater is subject to Chapter 13.10. (Ord. 2015-11-1481 § 23)

### 20.32.050 Off-street parking.

The number of parking spaces required shall be as follows:

One space per seven thousand five hundred square feet of gross floor area for storage buildings.

Two-car enclosed garage for manager's unit.

The design, construction and striping of parking areas shall be consistent with Chapter 20.70 of the Signal Hill Municipal Code. Driveway aisles between storage buildings shall be a minimum of thirty feet.

(Ord. 2003-05-1319 § 2)

### 20.32.060 Required transportation-related improvements.

Nonresidential development comprising of twenty-five thousand square feet or more of building area shall comply with

Section 20.20.075 of the Signal Hill Municipal Code and provide transportation related improvements including carpool or vanpool preferential parking spaces, bicycle racks and transportation information displays as specified.

(Ord. 2003-05-1319 § 2)

### 20.32.070 Trash and recycling storage area.

Trash storage and recycling materials enclosure areas shall be provided of sufficient size to ensure containment of all solid waste materials generated from the site and to promote the city's recycling program.

(Ord. 2003-05-1319 § 2)

### 20.32.080 Signs.

One thirty-six-square-foot monument sign is permitted along California Avenue frontage. Three sixty-two-square-foot wall signs fronting the freeway are permitted. Design shall be consistent with plans approved by the planning commission.

(Ord. 2003-05-1319 § 2)

### 20.32.085 Outdoor advertising structures.

New outdoor advertising structures are prohibited in the freeway self-storage specific plan area. All existing outdoor advertising structures are considered nonconforming.

(Ord. 2003-05-1319 § 2)

### 20.32.090 Mechanical equipment.

Roof appurtenances, such as vents or flashing, shall be positioned away from the street side of the structures or finished to match the roof color in order to minimize the visual impact. Exterior compressors, air conditioning units, or similar mechanical equipment shall be situated so as to be unobtrusive and shall be shielded from public view.

(Ord. 2003-05-1319 § 2)

### 20.32.100 Utilities, public facilities, services and underground utilities.

All on-site water supply, wastewater collection and sewage facilities shall be provided by the developer in accordance with the city standard plans. Storm drainage facilities shall be provided in accordance with the Los Angeles County Flood Control District standards. Sewage facilities must also be consistent with Los Angeles County Sanitation District requirements.

(Ord. 2003-05-1319 § 2)

### 20.32.110 Walls, fences and hedges.

All proposed walls, fences, or hedges that surround a property shall comply with Section 20.20.070 of the Signal Hill Municipal Code.

(Ord. 2003-05-1319 § 2)

### 20.32.120 Impact fees.

All impact fees required by Title 21 of the Signal Hill Municipal Code shall be paid by the developer. The developer shall pay a citywide traffic impact fee. This fee is currently being amended and the traffic fee paid shall be based on the

amended fee schedule in effect at the time of issuance of a certificate of occupancy.

(Ord. 2003-05-1319 § 2)

# ATTACHMENT 2A

## TARGET SAN CLEMENTE EMPIRICAL PARKING SURVEY AND DEVELOPMENT OF "DESIGN" PARKING RATIO PLUS PARKING SURVEY DATA

## AND

## BRISTOL SQUARE-TARGET SANTA ANA EXISTING PARKING SURVEY DATA OF AUGUST 2015

## TABLE 2A-1
## TARGET SAN CLEMENTE PEAK HOUR PARKING DEMAND[1]

| Time | Weekday – Thursday | | Weekend - Saturday | |
|---|---|---|---|---|
| | 10/5/2020 | 10/12/2017 | 10/7/2017 | 10/14/2017 |
| 8:00 AM | 86 | 72 | 46 | 32 |
| 9:00 AM | 145 | 116 | 105 | 93 |
| 10:00 AM | 185 | 162 | 161 | 143 |
| 11:00 AM | 208 | 181 | 202 | 185 |
| 12:00 PM | **210** | **201** | 201 | 216 |
| 1:00 PM | 179 | 178 | **221** | **235** |
| 2:00 PM | 160 | 179 | 196 | 211 |
| 3:00 PM | 175 | 201 | 197 | 221 |
| 4:00 PM | 196 | 202 | 216 | 191 |
| 5:00 PM | 179 | 179 | 165 | 174 |
| 6:00 PM | 155 | 160 | 114 | 140 |
| 7:00 PM | 130 | 150 | 102 | 121 |
| 8:00 PM | 87 | 104 | 78 | 70 |
| 9:00 PM | 69 | 63 | 60 | 68 |
| 10:00 PM | 41 | 43 | 52 | 42 |
| **Target San Clemente Building Size** | | | | **142,206 SF** |
| **Empirical Parking Rate – Saturday 10/14/17 (Spaces per 1,000 SF)** | | | | **1.65** |
| **Seasonal Adjustment – December[2] (Spaces per 1,000 SF)** | | | | **2.50** |

## TABLE 2A-2
## ULI SEASONAL ADJUSTMENT FACTOR BY MONTH[3]

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Late-Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Seasonal Adjustment Factor** | 56% | 57% | 64% | 63% | 66% | 67% | 64% | 69% | 64% | 66% | 73% | 100% | 80% |
| **Empirical Rate[4]** | 1.40 | 1.43 | 1.50 | 1.58 | 1.65 | 1.68 | 1.60 | 1.73 | 1.60 | **1.65** | 1.83 | **2.50** | 2.00 |
| **"Design" Rate[5]** | 1.47 | 1.50 | 1.58 | 1.66 | 1.73 | 1.76 | 1.68 | 1.82 | 1.68 | **1.73** | 1.92 | **2.63** | 2.10 |

1 Counts collected on October 5th, 7th , 12th and 14th, 2017 by Transportation Studies, Inc. (TSI) at the Target San Clemente located on northwest corner of Avenida Vista Hermosa and Avenida La Pata in the City of San Clemente.

2 Parking counts were collected by TSI. The seasonal adjustment factor for retail in October outlined in the ULI is 66%. Therefore, in order to reflect peak-December conditions a seasonal adjustment factor was added to the empirical parking ratio.

3 Source: Urban Land Institute's (ULI) *Shared Parking, 2nd Edition, Table 2-3 Recommended Monthly Adjustment Factors for Customer/Visitor Parking*

4 Empirical Rate calculated using the following equation: (Seasonal Adjustment Factor/August Factor)* October 2017 Empirical Parking Rate of 1.65.

5 Empirical Rate adjusted to include a 5% contingency factor which results in a "design" parking rate of 2.63 spaces/1000 SF.




n:\3900\2173900 - avenida vista hermosa retail development, san clemente\dwg\parking report figures\3900 f-3.dwg LDP 15:36:05 08-29-2018

LINSCOTT LAW & GREENSPAN engineers

NO SCALE

SOURCE: GOOGLE

| PARKING TOTALS | |
|---|---|
| ZONE I | 121* |
| ZONE II | 380 |
| *TOTAL* | *501* |

NOTE:
* APPROXIMATELY 53 SPACES WILL BE ELIMINATED IN ZONE I TO ACCOMMODATE THE FOOTPRINT OF THE PROPOSED PROJECT.

# FIGURE 3

## PARKING AREAS

AVENIDA VISTA HERMOSA RETAIL DEVELOPMENT, SAN CLEMENTE

TABLE 1A

SUMMARY OF EXISTING PARKING SUPPLY[1]

AVENIDA VISTA HERMOSA RETAIL DEVELOPMENT, SAN CLEMENTE

| Zone | Type of Parking Space and Space Count | | |
|---|---|---|---|
| | **Regular** | **Handicapped** | **Total** |
| I | 121 | -- | 121 |
| II | 368 | 12 | 380 |
| **Total** | 489 | 12 | 501 |

[1] Based on a field inventory conducted by LLG Engineers in October 2017.

[2] The proposed parking supply for Zone I is based on the proposed site plan prepared by McKently Malak Architects.

TABLE 4-1
EXISTING PARKING UTILIZATION SUMMARY [1]
AVENIDA VISTA HERMOSA RETAIL DEVELOPMENT, SAN CLEMENTE
THURSDAY, OCTOBER 5, 2017

| Time of Day | ZONE I | | ZONE II | | TOTAL | |
|---|---|---|---|---|---|---|
| | **Total Supply:** | **121** | **Total Supply:** | **380** | **Total Supply:** | **501** |
| | **Number of Parked Cars** | **Percent Utilization** | **Number of Parked Cars** | **Percent Utilization** | **Number of Parked Cars** | **Percent Utilization** |
| 8:00 AM | 12 | 9.9% | 74 | 19.5% | 86 | 17.2% |
| 9:00 AM | 17 | 14.0% | 128 | 33.7% | 145 | 28.9% |
| 10:00 AM | 19 | 15.7% | 166 | 43.7% | 185 | 36.9% |
| 11:00 AM | 17 | 14.0% | 191 | 50.3% | 208 | 41.5% |
| **12:00 PM** | **18** | **14.9%** | **192** | **50.5%** | **210** | **41.9%** |
| 1:00 PM | 17 | 14.0% | 162 | 42.6% | 179 | 35.7% |
| 2:00 PM | 17 | 14.0% | 143 | 37.6% | 160 | 31.9% |
| 3:00 PM | 16 | 13.2% | 159 | 41.8% | 175 | 34.9% |
| 4:00 PM | 16 | 13.2% | 180 | 47.4% | 196 | 39.1% |
| 5:00 PM | 20 | 16.5% | 159 | 41.8% | 179 | 35.7% |
| 6:00 PM | 18 | 14.9% | 137 | 36.1% | 155 | 30.9% |
| 7:00 PM | 19 | 15.7% | 111 | 29.2% | 130 | 25.9% |
| 8:00 PM | 5 | 4.1% | 82 | 21.6% | 87 | 17.4% |
| 9:00 PM | 3 | 2.5% | 66 | 17.4% | 69 | 13.8% |
| 10:00 PM | 2 | 1.7% | 39 | 10.3% | 41 | 8.2% |

Notes:

[1] On-site parking surveys conducted by Transportation Studies Inc.

**Bold**, highlighted cells represent peak observed parking demands.

TABLE 4-2

EXISTING PARKING UTILIZATION SUMMARY [1]

AVENIDA VISTA HERMOSA RETAIL DEVELOPMENT, SAN CLEMENTE

SATURDAY, OCTOBER 7, 2017

| Time of Day | ZONE I | | ZONE II | | TOTAL | |
|---|---|---|---|---|---|---|
| | Total Supply: | 121 | Total Supply: | 380 | Total Supply: | 501 |
| | Number of Parked Cars | Percent Utilization | Number of Parked Cars | Percent Utilization | Number of Parked Cars | Percent Utilization |
| 8:00 AM | 1 | 0.8% | 45 | 11.8% | 46 | 9.2% |
| 9:00 AM | 1 | 0.8% | 104 | 27.4% | 105 | 21.0% |
| 10:00 AM | 3 | 2.5% | 158 | 41.6% | 161 | 32.1% |
| 11:00 AM | 0 | 0.0% | 202 | 53.2% | 202 | 40.3% |
| 12:00 PM | 2 | 1.7% | 199 | 52.4% | 201 | 40.1% |
| **1:00 PM** | **1** | **0.8%** | **220** | **57.9%** | **221** | **44.1%** |
| 2:00 PM | 1 | 0.8% | 195 | 51.3% | 196 | 39.1% |
| 3:00 PM | 0 | 0.0% | 197 | 51.8% | 197 | 39.3% |
| 4:00 PM | 2 | 1.7% | 214 | 56.3% | 216 | 43.1% |
| 5:00 PM | 2 | 1.7% | 163 | 42.9% | 165 | 32.9% |
| 6:00 PM | 3 | 2.5% | 111 | 29.2% | 114 | 22.8% |
| 7:00 PM | 1 | 0.8% | 101 | 26.6% | 102 | 20.4% |
| 8:00 PM | 0 | 0.0% | 78 | 20.5% | 78 | 15.6% |
| 9:00 PM | 0 | 0.0% | 60 | 15.8% | 60 | 12.0% |
| 10:00 PM | 1 | 0.8% | 51 | 13.4% | 52 | 10.4% |

Notes:

[1] On-site parking surveys conducted by Transportation Studies Inc.

**Bold**, highlighted cells represent peak observed parking demands.

TABLE 4-3

EXISTING PARKING UTILIZATION SUMMARY [1]

AVENIDA VISTA HERMOSA RETAIL DEVELOPMENT, SAN CLEMENTE

THURSDAY, OCTOBER 12, 2017

| | ZONE I | | ZONE II | | TOTAL | |
|---|---|---|---|---|---|---|
| | Total Supply: | 121 | Total Supply: | 380 | Total Supply: | 501 |
| Time of Day | Number of Parked Cars | Percent Utilization | Number of Parked Cars | Percent Utilization | Number of Parked Cars | Percent Utilization |
| 8:00 AM | 15 | 12.4% | 57 | 15.0% | 72 | 14.4% |
| 9:00 AM | 22 | 18.2% | 94 | 24.7% | 116 | 23.2% |
| 10:00 AM | 22 | 18.2% | 140 | 36.8% | 162 | 32.3% |
| 11:00 AM | 22 | 18.2% | 159 | 41.8% | 181 | 36.1% |
| 12:00 PM | 25 | 20.7% | 176 | 46.3% | 201 | 40.1% |
| 1:00 PM | 24 | 19.8% | 154 | 40.5% | 178 | 35.5% |
| 2:00 PM | 23 | 19.0% | 156 | 41.1% | 179 | 35.7% |
| 3:00 PM | 27 | 22.3% | 174 | 45.8% | 201 | 40.1% |
| **4:00 PM** | **29** | **24.0%** | **173** | **45.5%** | **202** | **40.3%** |
| 5:00 PM | 30 | 24.8% | 149 | 39.2% | 179 | 35.7% |
| 6:00 PM | 25 | 20.7% | 135 | 35.5% | 160 | 31.9% |
| 7:00 PM | 30 | 24.8% | 120 | 31.6% | 150 | 29.9% |
| 8:00 PM | 11 | 9.1% | 93 | 24.5% | 104 | 20.8% |
| 9:00 PM | 5 | 4.1% | 58 | 15.3% | 63 | 12.6% |
| 10:00 PM | 0 | 0.0% | 43 | 11.3% | 43 | 8.6% |

Notes:

[1] On-site parking surveys conducted by Transportation Studies Inc.

**Bold**, highlighted cells represent peak observed parking demands.

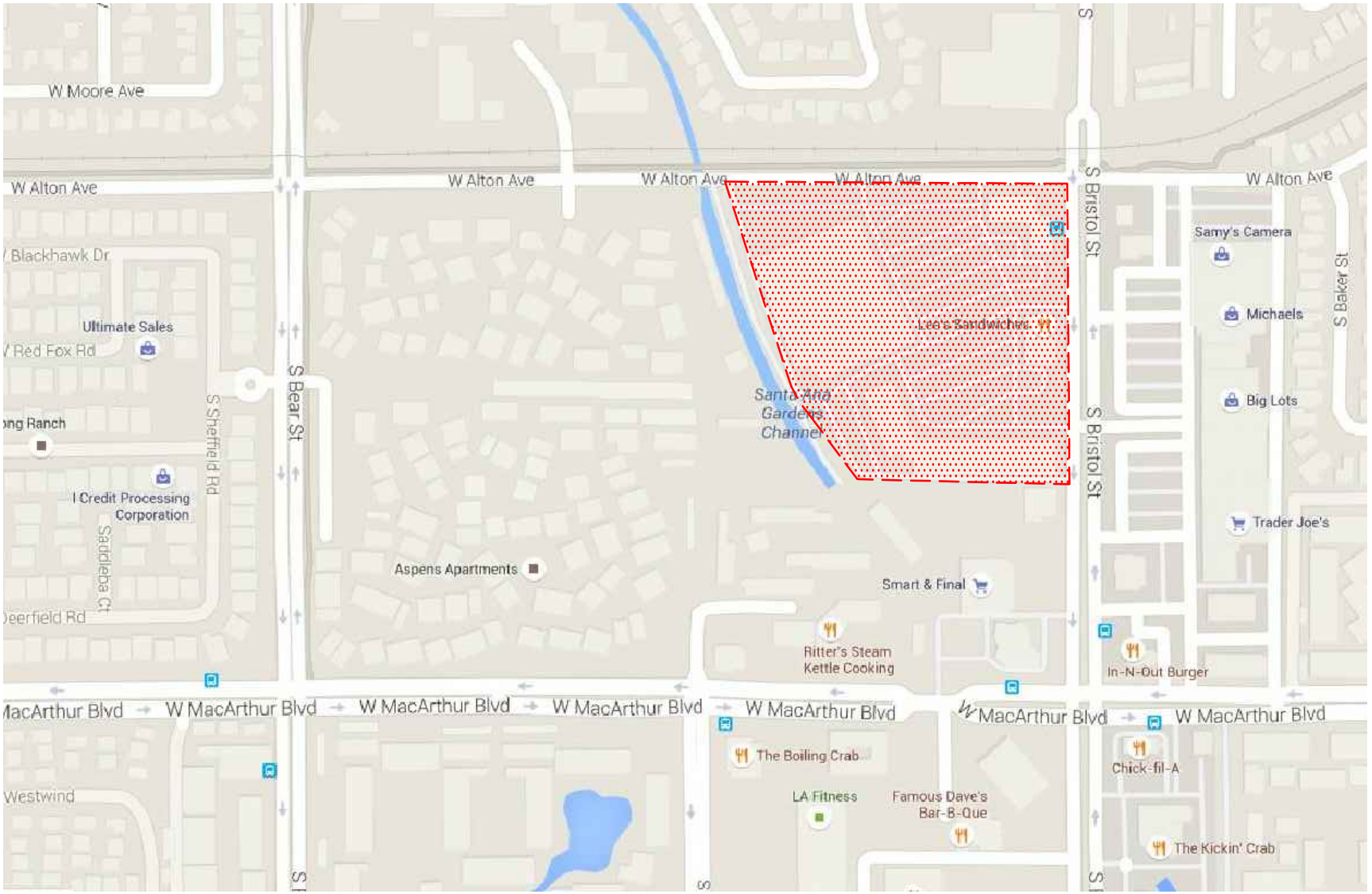
TABLE 4-4
EXISTING PARKING UTILIZATION SUMMARY [1]
AVENIDA VISTA HERMOSA RETAIL DEVELOPMENT, SAN CLEMENTE
SATURDAY, OCTOBER 14, 2017

| Time of Day | ZONE I | | ZONE II | | TOTAL | |
|---|---|---|---|---|---|---|
| | Total Supply: | 121 | Total Supply: | 380 | Total Supply: | 501 |
| | Number of Parked Cars | Percent Utilization | Number of Parked Cars | Percent Utilization | Number of Parked Cars | Percent Utilization |
| 8:00 AM | 1 | 0.8% | 31 | 8.2% | 32 | 6.4% |
| 9:00 AM | 1 | 0.8% | 92 | 24.2% | 93 | 18.6% |
| 10:00 AM | 3 | 2.5% | 140 | 36.8% | 143 | 28.5% |
| 11:00 AM | 0 | 0.0% | 185 | 48.7% | 185 | 36.9% |
| 12:00 PM | 3 | 2.5% | 213 | 56.1% | 216 | 43.1% |
| **1:00 PM** | **1** | **0.8%** | **234** | **61.6%** | **235** | **46.9%** |
| 2:00 PM | 1 | 0.8% | 210 | 55.3% | 211 | 42.1% |
| 3:00 PM | 0 | 0.0% | 221 | 58.2% | 221 | 44.1% |
| 4:00 PM | 4 | 3.3% | 187 | 49.2% | 191 | 38.1% |
| 5:00 PM | 3 | 2.5% | 171 | 45.0% | 174 | 34.7% |
| 6:00 PM | 4 | 3.3% | 136 | 35.8% | 140 | 27.9% |
| 7:00 PM | 2 | 1.7% | 119 | 31.3% | 121 | 24.2% |
| 8:00 PM | 0 | 0.0% | 70 | 18.4% | 70 | 14.0% |
| 9:00 PM | 0 | 0.0% | 68 | 17.9% | 68 | 13.6% |
| 10:00 PM | 1 | 0.8% | 41 | 10.8% | 42 | 8.4% |

Notes:

[1] On-site parking surveys conducted by Transportation Studies Inc.

**Bold**, highlighted cells represent peak observed parking demands.




n:\3600\2153610 - target center, santa ana\dwg\3610f-1.dwg LDP 11:30:58 08-21-2015 besa

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

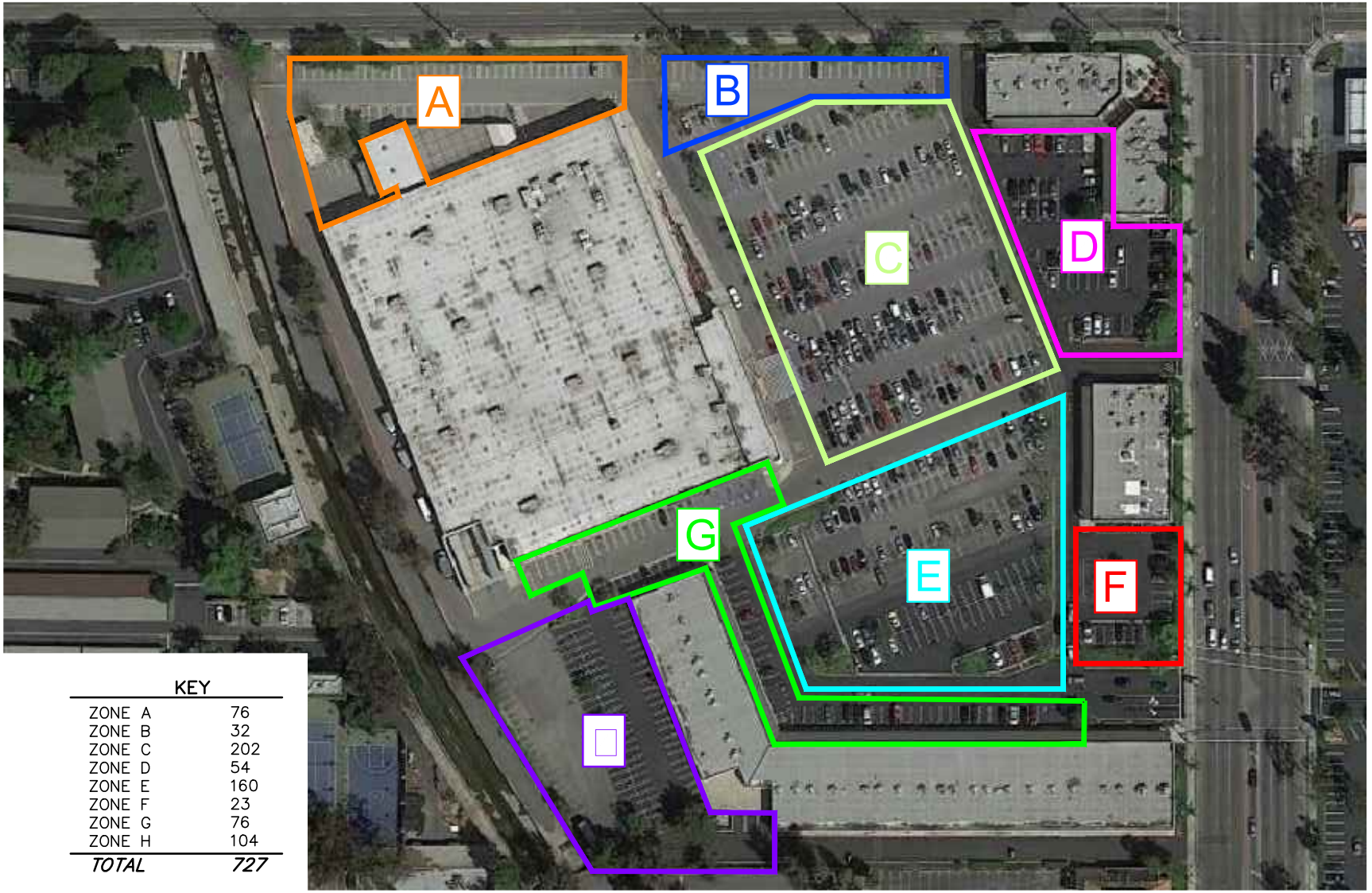
KEY

= PROJECT SITE

# FIGURE 1

## VICINITY MAP

TARGET CENTER, SANTA ANA




| KEY | |
|---|---|
| ZONE A | 76 |
| ZONE B | 32 |
| ZONE C | 202 |
| ZONE D | 54 |
| ZONE E | 160 |
| ZONE F | 23 |
| ZONE G | 76 |
| ZONE H | 104 |
| *TOTAL* | *727* |

n:\3600\2153610 - target center, santa ana\dwg\3610f-3.dwg LDP 10:10:11 08-24-2015 besa

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

# FIGURE 3

## PARKING ZONES

TARGET CENTER, SANTA ANA

LINSCOTT LAW & GREENSPAN engineers

## TABLE 1B
## SUMMARY OF EXISTING PARKING SUPPLY[11]
## TARGET CENTER, SANTA ANA

| Zone | Type of Parking Space and Space Count | | | |
|---|---|---|---|---|
| | Regular | Compact | Handicapped | Total |
| A | 26 | 50 | -- | 76 |
| B | 32 | -- | -- | 32 |
| C | 198 | -- | 4 | 202 |
| D | 52 | -- | 2 | 54 |
| E | 160 | -- | -- | 160 |
| F | 22 | -- | 1 | 23 |
| G | 66 | -- | 10 | 76 |
| H | 104 | -- | -- | 104 |
| **Total** | 660 | 50 | 17 | 727[12] |

[11] Based on field inventory conducted by LLG in August 2015.
[12] The existing site has 727 spaces. However, due to site modifications the proposed parking supply totals 667 spaces.

# APPENDIX A

## EXISTING PARKING SURVEY DATA

APPENDIX TABLE A-1
TARGET CENTER, SANTA ANA
PARKING COUNTS - THURSDAY 8-13-15

| | ZONE A | | ZONE B | ZONE C | | ZONE D | | ZONE E | ZONE F | | ZONE G | | ZONE H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | Regular | Compact | Regular | Regular | Handicap | Regular | Handicap | Regular | Regular | Handicap | Regular | Handicap | Regular | Total |
| 8:00AM | 0 | 0 | 0 | 27 | 0 | 1 | 0 | 22 | 0 | 0 | 3 | 0 | 1 | 54 |
| 9:00AM | 0 | 0 | 3 | 52 | 0 | 7 | 0 | 20 | 0 | 0 | 4 | 0 | 1 | 87 |
| 10:00AM | 0 | 0 | 3 | 60 | 2 | 22 | 0 | 48 | 4 | 0 | 14 | 2 | 1 | 156 |
| 11:00AM | 1 | 0 | 5 | 77 | 2 | 26 | 0 | 58 | 7 | 0 | 24 | 2 | 1 | 203 |
| 12:00PM | 0 | 1 | 7 | 111 | 2 | 43 | 0 | 73 | 8 | 0 | 30 | 1 | 2 | 278 |
| 1:00PM | 0 | 0 | 7 | 110 | 1 | 46 | 0 | 65 | 9 | 0 | 23 | 2 | 1 | 264 |
| 2:00PM | 1 | 0 | 9 | 98 | 1 | 32 | 1 | 59 | 10 | 0 | 29 | 2 | 0 | 242 |
| 3:00PM | 1 | 0 | 10 | 90 | 0 | 35 | 0 | 74 | 10 | 0 | 32 | 2 | 3 | 257 |
| 4:00PM | 1 | 0 | 9 | 81 | 0 | 33 | 1 | 65 | 11 | 0 | 30 | 0 | 3 | 234 |
| 5:00PM | 0 | 0 | 6 | 89 | 2 | 31 | 0 | 63 | 14 | 0 | 41 | 1 | 2 | 249 |
| 6:00PM | 0 | 0 | 10 | 106 | 1 | 44 | 0 | 74 | 11 | 0 | 44 | 2 | 1 | 293 |
| 7:00PM | 0 | 0 | 6 | 131 | 2 | 45 | 1 | 79 | 8 | 0 | 38 | 0 | 1 | 311 |
| 8:00PM | 0 | 0 | 4 | 108 | 1 | 36 | 0 | 53 | 6 | 0 | 32 | 0 | 0 | 240 |

APPENDIX TABLE A-2
TARGET CENTER, SANTA ANA
PARKING COUNTS - FRIDAY 8-14-15

| | ZONE A | | ZONE B | ZONE C | | ZONE D | | ZONE E | ZONE F | | ZONE G | | ZONE H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | Regular | Compact | Regular | Regular | Handicap | Regular | Handicap | Regular | Regular | Handicap | Regular | Handicap | Regular | Total |
| 8:00AM | 0 | 0 | 0 | 44 | 0 | 2 | 0 | 23 | 0 | 0 | 3 | 0 | 1 | 73 |
| 9:00AM | 0 | 0 | 1 | 57 | 0 | 9 | 0 | 43 | 2 | 0 | 4 | 0 | 1 | 117 |
| 10:00AM | 0 | 0 | 6 | 71 | 2 | 20 | 0 | 68 | 3 | 0 | 16 | 3 | 1 | 190 |
| 11:00AM | 0 | 1 | 5 | 89 | 2 | 30 | 0 | 76 | 6 | 0 | 30 | 2 | 1 | 242 |
| 12:00PM | 0 | 0 | 6 | 145 | 3 | 39 | 0 | 95 | 10 | 0 | 30 | 4 | 3 | 335 |
| 1:00PM | 1 | 0 | 11 | 122 | 2 | 49 | 0 | 93 | 12 | 0 | 37 | 3 | 1 | 331 |
| 2:00PM | 1 | 0 | 5 | 110 | 2 | 39 | 0 | 81 | 12 | 0 | 30 | 1 | 1 | 282 |
| 3:00PM | 0 | 0 | 7 | 105 | 1 | 28 | 1 | 77 | 11 | 0 | 35 | 2 | 3 | 270 |
| 4:00PM | 0 | 0 | 6 | 117 | 2 | 38 | 0 | 81 | 12 | 0 | 34 | 2 | 2 | 294 |
| 5:00PM | 0 | 0 | 6 | 120 | 1 | 38 | 0 | 73 | 15 | 0 | 31 | 4 | 2 | 290 |
| 6:00PM | 0 | 0 | 5 | 139 | 2 | 32 | 0 | 87 | 15 | 0 | 41 | 2 | 2 | 325 |
| 7:00PM | 0 | 0 | 4 | 137 | 1 | 48 | 0 | 75 | 19 | 0 | 28 | 0 | 1 | 313 |
| 8:00PM | 0 | 1 | 3 | 140 | 1 | 42 | 1 | 58 | 6 | 0 | 20 | 2 | 0 | 274 |

APPENDIX TABLE A-3
TARGET CENTER, SANTA ANA
PARKING COUNTS - SATURDAY 8-15-15

| | ZONE A | | ZONE B | ZONE C | | ZONE D | | ZONE E | ZONE F | | ZONE G | | ZONE H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | Regular | Compact | Regular | Regular | Handicap | Regular | Handicap | Regular | Regular | Handicap | Regular | Handicap | Regular | Total |
| 8:00AM | 0 | 0 | 1 | 27 | 0 | 4 | 0 | 18 | 0 | 0 | 2 | 0 | 1 | 53 |
| 9:00AM | 0 | 0 | 2 | 57 | 1 | 10 | 0 | 37 | 0 | 0 | 5 | 0 | 1 | 113 |
| 10:00AM | 0 | 0 | 3 | 83 | 0 | 19 | 0 | 48 | 6 | 0 | 13 | 1 | 0 | 173 |
| 11:00AM | 0 | 1 | 8 | 121 | 2 | 27 | 0 | 65 | 6 | 0 | 33 | 3 | 0 | 266 |
| 12:00PM | 1 | 1 | 8 | 132 | 3 | 37 | 0 | 80 | 11 | 0 | 38 | 2 | 1 | 314 |
| 1:00PM | 0 | 1 | 6 | 118 | 0 | 36 | 1 | 79 | 11 | 0 | 41 | 4 | 0 | 297 |
| 2:00PM | 1 | 0 | 9 | 148 | 1 | 43 | 0 | 80 | 8 | 0 | 33 | 0 | 0 | 323 |
| 3:00PM | 1 | 0 | 10 | 132 | 2 | 42 | 0 | 76 | 9 | 0 | 39 | 4 | 1 | 316 |
| 4:00PM | 1 | 1 | 8 | 121 | 1 | 44 | 0 | 84 | 11 | 0 | 36 | 1 | 0 | 308 |
| 5:00PM | 2 | 1 | 9 | 124 | 2 | 33 | 1 | 69 | 9 | 0 | 35 | 5 | 0 | 290 |
| 6:00PM | 0 | 1 | 7 | 103 | 2 | 40 | 1 | 60 | 8 | 0 | 30 | 2 | 0 | 254 |
| 7:00PM | 0 | 0 | 9 | 107 | 1 | 35 | 0 | 60 | 7 | 0 | 30 | 0 | 0 | 249 |
| 8:00PM | 0 | 1 | 9 | 132 | 2 | 35 | 2 | 50 | 3 | 0 | 23 | 1 | 0 | 258 |

# ATTACHMENT 2B

## 5TH EDITION PARKING GENERATION INFORMATION FOR ITE LAND USE: 813 FREE-STANDING DISCOUNT SUPERSTORE

# Land Use: 813 Free-Standing Discount Superstore

## Description

A discount superstore is similar to a free-standing discount store described in Land Use 815 with the exception that it also contains a full-service grocery department under the same roof that shares entrances and exits with the discount store area. These stores usually offer a variety of customer services, centralized cashiering, and a wide range of products. They typically maintain long store hours 7 days a week. The stores included in this land use are often the only ones on the site, but they can also be found in mutual operation with a related or unrelated garden center and/or service station, or as a part of a shopping center, with or without their own dedicated parking area. Freestanding discount store (Land Use 815) is a related use.

## Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand on a non-December weekday (four study sites) and a non-December Saturday (three study sites) in a general urban/suburban setting.

| | Percent of Peak Parking Demand | |
|---|---|---|
| Hour Beginning | Weekday | Saturday |
| 12:00–4:00 a.m. | 7 | – |
| 5:00 a.m. | 10 | – |
| 6:00 a.m. | 15 | – |
| 7:00 a.m. | 21 | – |
| 8:00 a.m. | 33 | – |
| 9:00 a.m. | 52 | 47 |
| 10:00 a.m. | 71 | 67 |
| 11:00 a.m. | 84 | 86 |
| 12:00 p.m. | 92 | 91 |
| 1:00 p.m. | 100 | 97 |
| 2:00 p.m. | 96 | 100 |
| 3:00 p.m. | 96 | 93 |
| 4:00 p.m. | 82 | 96 |
| 5:00 p.m. | 81 | 80 |
| 6:00 p.m. | 74 | 79 |
| 7:00 p.m. | 61 | – |
| 8:00 p.m. | 48 | – |
| 9:00 p.m. | 31 | – |
| 10:00 p.m. | 11 | – |
| 11:00 p.m. | 2 | – |

## Additional Data

Garden centers contained within the principal outside faces of the exterior building walls were included in the gross square floor areas reported. Outdoor or fenced-in areas outside the principal faces of the exterior walls were excluded. Several sites included in this land use indicated the presence of fenced/covered space.

The average parking supply ratio for the eight study sites with parking supply information is 4.8 spaces per 1,000 square feet GFA in a general urban/suburban setting.

The sites were surveyed in the 2000s and the 2010s in Alabama, California, Florida, Illinois, Kansas, Minnesota, and Washington.

*To assist in the future analysis of this land use, it is important to collect and include information on the presence and size of garden centers, outdoor fenced-in space, and service stations in parking generation data submissions.*

## Source Numbers

406, 501, 511, 519, 525, 527, 557

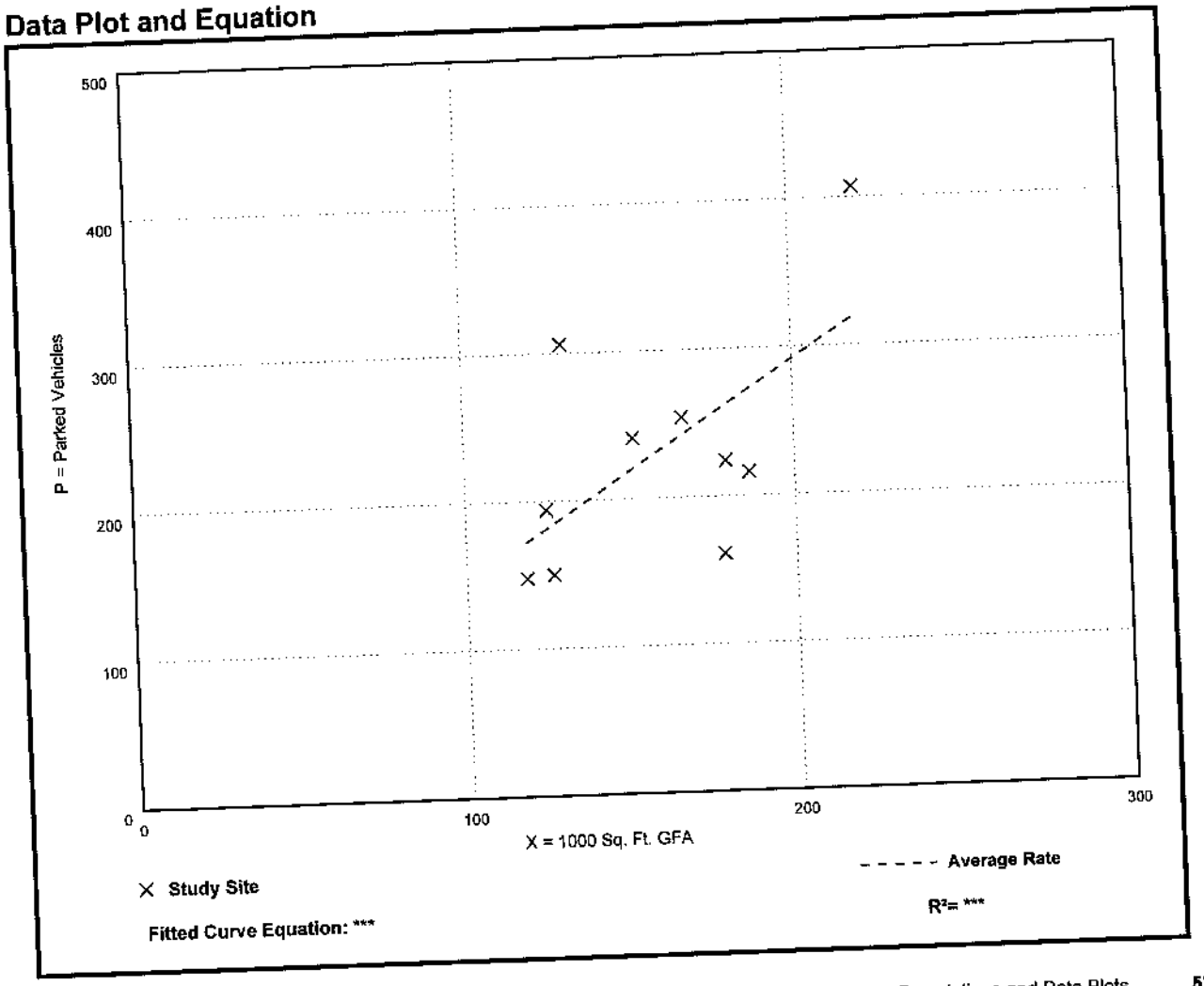
# Free-Standing Discount Superstore - Non-December (813)

**Peak Period Parking Demand vs: 1000 Sq. Ft. GFA**
**On a: Weekday (Monday - Friday)**
**Setting/Location: General Urban/Suburban**
Peak Period of Parking Demand: 12:00 - 5:00 p.m.
Number of Studies: 10
Avg. 1000 Sq. Ft. GFA: 158

## Peak Period Parking Demand per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | 33rd / 85th Percentile | 95% Confidence Interval | Standard Deviation (Coeff. of Variation) |
|---|---|---|---|---|
| 1.46 | 0.90 - 2.35 | 1.23 / 2.03 | *** | 0.41 ( 28% ) |

## Data Plot and Equation



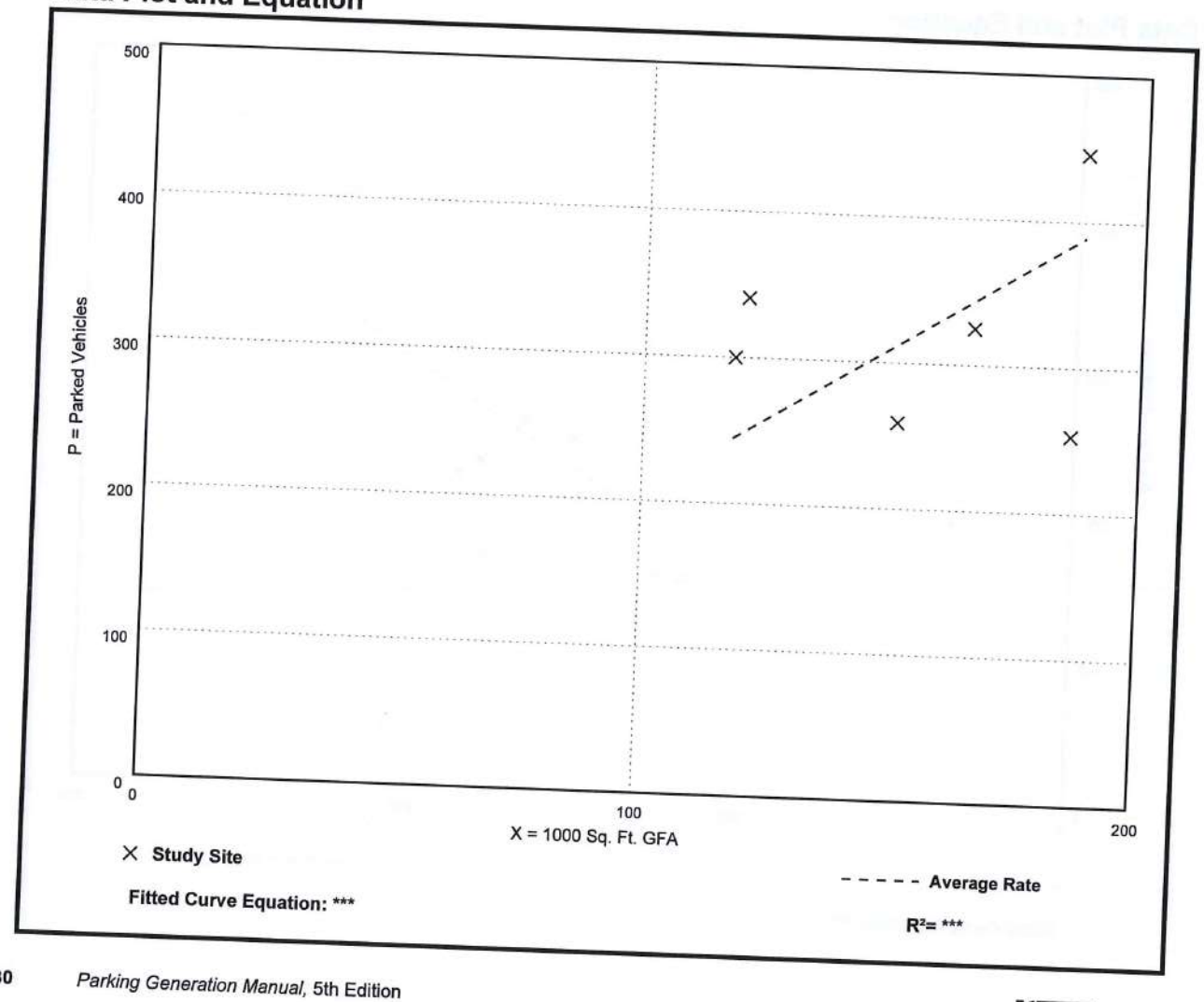
# Free-Standing Discount Superstore - Non-December (813)

**Peak Period Parking Demand vs: 1000 Sq. Ft. GFA**
**On a: Saturday**
**Setting/Location: General Urban/Suburban**
Peak Period of Parking Demand: 11:00 a.m. - 5:00 p.m.
Number of Studies: 6
Avg. 1000 Sq. Ft. GFA: 155

## Peak Period Parking Demand per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | 33rd / 85th Percentile | 95% Confidence Interval | Standard Deviation (Coeff. of Variation) |
|---|---|---|---|---|
| 2.07 | 1.36 - 2.83 | 1.79 / 2.81 | *** | 0.54 ( 26% ) |

## Data Plot and Equation



# Free-Standing Discount Superstore - Non-December (813)

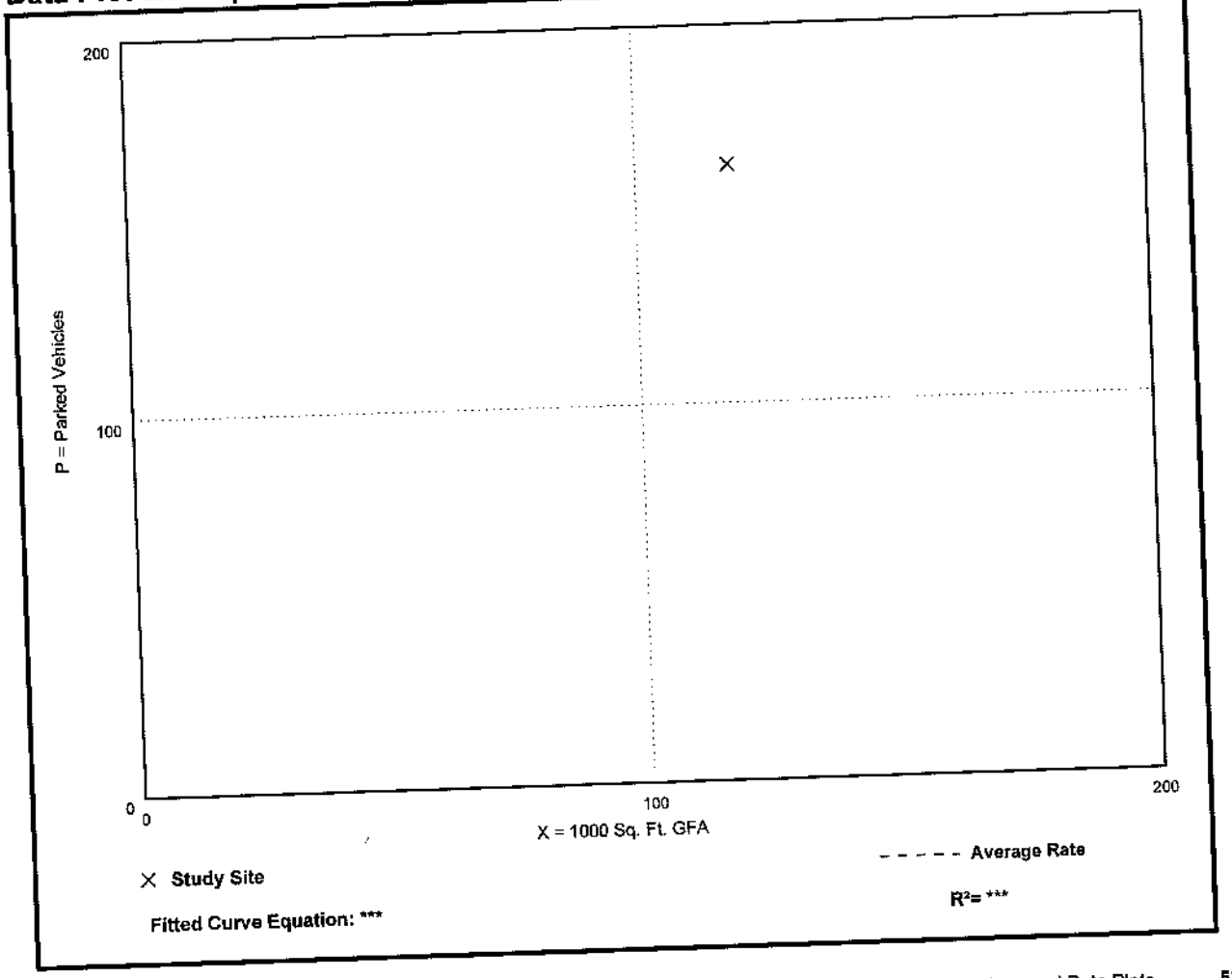
**Peak Period Parking Demand vs: 1000 Sq. Ft. GFA**
**On a: Sunday**
**Setting/Location: General Urban/Suburban**
Peak Period of Parking Demand: 12:00 - 4:00 p.m.
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 118

## Peak Period Parking Demand per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | 33rd / 85th Percentile | 95% Confidence Interval | Standard Deviation (Coeff. of Variation) |
|---|---|---|---|---|
| 1.38 | 1.38 - 1.38 | *** / *** | *** | *** ( *** ) |

## Data Plot and Equation

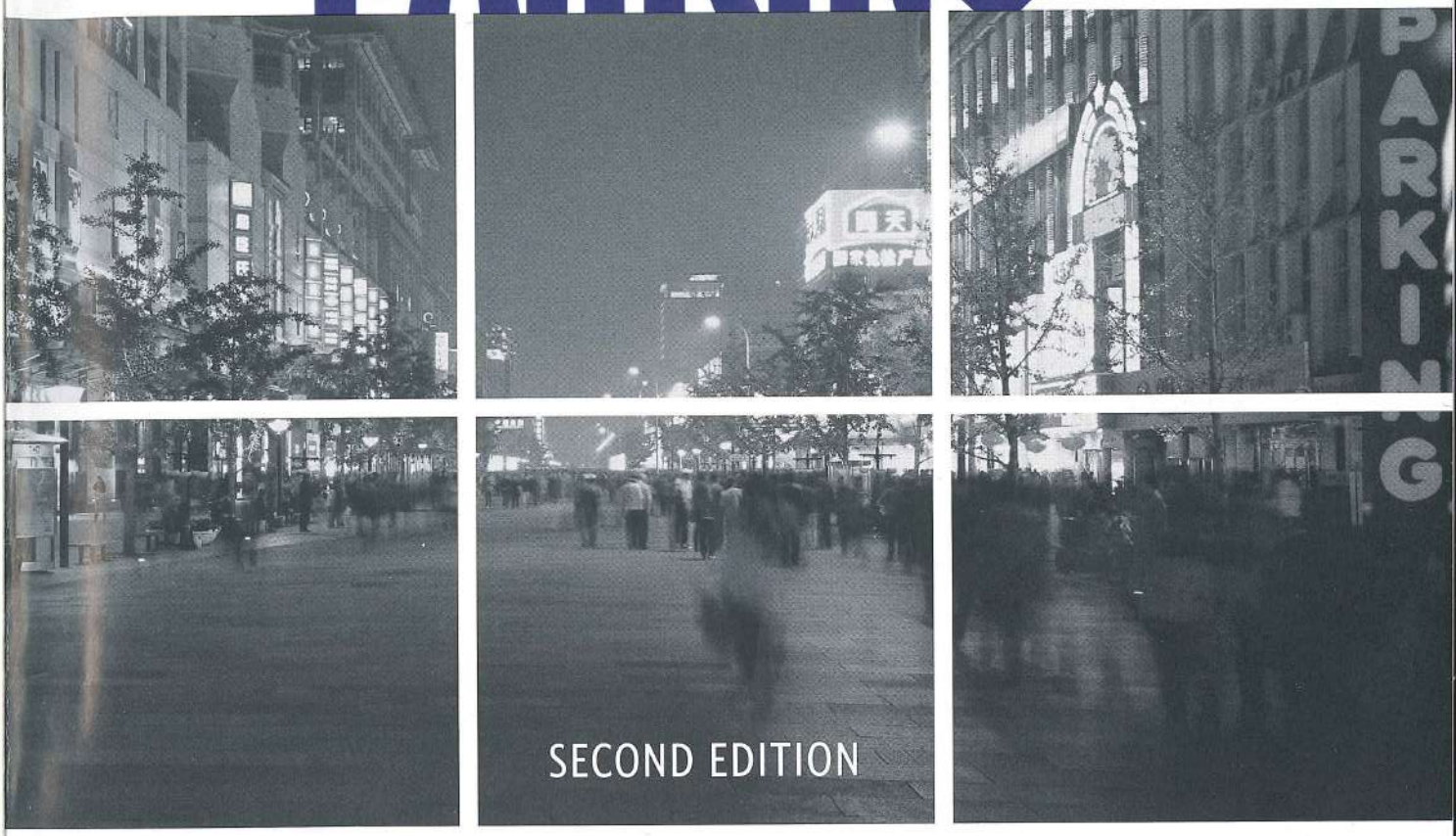
***Caution – Small Sample Size***



# ATTACHMENT 3A

# ULI SHARED PARKING EXCERPT

# SHARED PARKING




SECOND EDITION

Mary S. Smith

Urban Land Institute

International Council of Shopping Centers

## Table 2-3 Recommended Monthly Adjustment Factors for Customer/Visitor Parking

| Land Use | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Late DEC | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shopping Center | 56% | 57% | 64% | 63% | 66% | 67% | 64% | 69% | 64% | 66% | 72% | 100% | 80% | 1, 3 |
| Restaurant | 85% | 86% | 95% | 92% | 96% | 95% | 98% | 99% | 91% | 96% | 93% | 100% | 95% | 1 |
| Fast Food | 85% | 86% | 95% | 92% | 96% | 95% | 98% | 99% | 91% | 96% | 93% | 100% | 95% | 1 |
| Nightclub | 84% | 86% | 98% | 90% | 90% | 91% | 94% | 96% | 92% | 98% | 96% | 100% | 95% | 1 |
| Cineplex Weekdays | 27% | 21% | 20% | 19% | 27% | 41% | 55% | 40% | 15% | 15% | 25% | 23% | 100% | 3 |
| Cineplex Weekends | 71% | 59% | 67% | 58% | 71% | 82% | 92% | 75% | 51% | 62% | 78% | 67% | 100% | 3 |
| Performing Arts Theater | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 100% | 100% | 2 |
| Arena | 90% | 100% | 100% | 100% | 100% | 75% | — | — | 60% | 65% | 90% | 95% | 95% | 2 |
| Pro Football Stadium[1] | — | — | — | — | — | — | — | 67% | — | — | — | 100% | 100% | 2 |
| Pro Baseball Stadium | — | — | — | 100% | 100% | 100% | 100% | 100% | 100% | 100% | — | — | — | 2 |
| Health Club | 100% | 95% | 85% | 70% | 65% | 65% | 65% | 70% | 80% | 85% | 85% | 90% | 95% | 2, 4 |
| Convention Center[2] | 75% | 100% | 90% | 55% | 60% | 50% | 45% | 75% | 80% | 85% | 100% | 60% | — | 2 |
| Hotel—Business | 71% | 85% | 91% | 90% | 92% | 100% | 98% | 92% | 93% | 93% | 81% | 67% | 50% | 5 |
| Hotel—Leisure | 90% | 100% | 100% | 100% | 90% | 90% | 100% | 100% | 75% | 75% | 75% | 50% | 100% | 5 |
| Restaurant/Lounge | 85% | 86% | 95% | 92% | 96% | 95% | 98% | 99% | 91% | 96% | 93% | 100% | 95% | 1 |
| Meeting/Banquet (20 to 50 sq. ft./guest room) | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 2 |
| Convention (>50 sq. ft./guest room) | 75% | 100% | 90% | 55% | 60% | 50% | 45% | 75% | 80% | 85% | 100% | 60% | — | 2 |
| Residential | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 2 |
| Office, Bank | 100% | 100% | 100% | 100% | 100% | 100% | 95% | 95% | 100% | 100% | 100% | 100% | 80% | 2, 6 |

**Notes**
December = December 1–24; Late December = December 25–31.
[1]Because there is only one weeknight game and no Saturday games per NFL team September through November, and activity patterns are modified at adjacent uses due to the crowds expected, this category is not considered a "design day" for parking planning.
[2]Many convention centers are completely dark between Christmas and New Year's Day.

**Sources:**
1. U.S. Census Bureau, unadjusted estimates of monthly retail and food service sales, 1999–2002.
2. Data collected by team members.
3. *Parking Generation*, 3rd ed. (Washington, D.C.: Institute of Transportation Engineers, 2004).
4. John W. Dorsett, "Parking Requirements for Health Clubs," *The Parking Professional*, April 2004.
5. Smith Travel Research, www.wwstar.com.
6. Parking study conducted by Patton Harris Rust & Associates for the Peterson Companies, 2001.



## Table 2-4 Recommended Monthly Adjustment Factors for Employee Parking

| Land Use | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Late DEC | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shopping Center | 80% | 80% | 80% | 80% | 80% | 80% | 80% | 80% | 80% | 80% | 90% | 100% | 90% | 1, 2 |
| Restaurant | 95% | 95% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 1, 2 |
| Fast Food | 95% | 95% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 1, 2 |
| Nightclub | 90% | 90% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 1, 2 |
| Cineplex Weekdays | 50% | 50% | 50% | 50% | 50% | 75% | 75% | 75% | 50% | 50% | 50% | 50% | 100% | 3, 2 |
| Cineplex Weekends | 80% | 80% | 80% | 80% | 80% | 100% | 100% | 90% | 80% | 80% | 80% | 80% | 100% | 3, 2 |
| Performing Arts Theater | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 2 |
| Arena | 100% | 100% | 100% | 100% | 100% | 75% | 10% | 10% | 75% | 75% | 100% | 100% | 100% | 2 |
| Pro Football Stadium[1] | 10% | 10% | 10% | 10% | 10% | 10% | 10% | 100% | 10% | 10% | 10% | 100% | 100% | 2 |
| Pro Baseball Stadium | 10% | 10% | 10% | 10% | 100% | 100% | 100% | 100% | 100% | 100% | 10% | 10% | 10% | 2 |
| Health Club | 100% | 100% | 95% | 80% | 75% | 75% | 75% | 80% | 90% | 95% | 95% | 100% | 100% | 4, 2 |
| Convention Center | 85% | 100% | 100% | 65% | 70% | 60% | 55% | 85% | 90% | 95% | 100% | 70% | 10% | 5, 2 |
| Hotel | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 2 |
| Residential | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 2 |
| Office, Bank | 100% | 100% | 100% | 100% | 100% | 100% | 95% | 95% | 100% | 100% | 100% | 100% | 80% | 6 |

**Notes**
December = December 1–24; Late December = December 25–31.
[1]Because there is only one weeknight game and no Saturday games per NFL team September through November, and activity patterns are modified at adjacent uses due to the crowds expected, this category is not considered a "design day" for parking planning.

**Sources:**
1. U.S. Census Bureau, unadjusted estimates of monthly retail and food service sales, 1999–2002.
2. Data adjusted by team members.
3. *Parking Generation*, 3rd ed. (Washington, D.C.: Institute of Transportation Engineers, 2004).
4. John W. Dorsett, "Parking Requirements for Health Clubs," *The Parking Professional*, April 2004.
5. Smith Travel Research, www.wwstar.com.
6. Parking study conducted by Patton Harris Rust & Associates for the Peterson Companies, 2001.

**Table 2-5** Recommended Time-of-Day Factors for Weekdays

| Land Use | User | 6 a.m. | 7 a.m. | 8 a.m. | 9 a.m. | 10 a.m. | 11 a.m. | Noon | 1 p.m. | 2 p.m. | 3 p.m. | 4 p.m. | 5 p.m. | 6 p.m. | 7 p.m. | 8 p.m. | 9 p.m. | 10 p.m. | 11 p.m. | Midnight | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shopping Center—Typical | Customer | 1% | 5% | 15% | 35% | 65% | 85% | 95% | 100% | 95% | 90% | 90% | 95% | 95% | 95% | 80% | 50% | 30% | 10% | — | 1 |
| Peak December | Customer | 1% | 5% | 15% | 30% | 55% | 75% | 90% | 100% | 100% | 100% | 95% | 85% | 80% | 75% | 65% | 50% | 30% | 10% | — | 1 |
| Late December | Customer | 1% | 5% | 10% | 20% | 40% | 65% | 90% | 100% | 100% | 100% | 95% | 85% | 70% | 55% | 40% | 25% | 15% | 5% | — | 1 |
| | Employee | 10% | 15% | 40% | 75% | 85% | 95% | 100% | 100% | 100% | 100% | 100% | 95% | 95% | 95% | 90% | 75% | 40% | 15% | — | 2 |
| Fine/Casual Dining | Customer | — | — | — | — | 15% | 40% | 75% | 75% | 65% | 40% | 50% | 75% | 95% | 100% | 100% | 100% | 95% | 75% | 25% | 2 |
| | Employee | — | 20% | 50% | 75% | 90% | 90% | 90% | 90% | 90% | 75% | 75% | 100% | 100% | 100% | 100% | 100% | 100% | 85% | 35% | 2 |
| Family Restaurant | Customer | 25% | 50% | 60% | 75% | 85% | 90% | 100% | 90% | 50% | 45% | 45% | 75% | 80% | 80% | 80% | 60% | 55% | 50% | 25% | 2 |
| | Employee | 50% | 75% | 90% | 90% | 100% | 100% | 100% | 100% | 100% | 75% | 75% | 95% | 95% | 95% | 95% | 80% | 65% | 65% | 35% | 2 |
| Fast Food | Customer | 5% | 10% | 20% | 30% | 55% | 85% | 100% | 100% | 90% | 60% | 55% | 60% | 85% | 80% | 50% | 30% | 20% | 10% | 5% | 3 |
| | Employee | 15% | 20% | 30% | 40% | 75% | 100% | 100% | 100% | 95% | 70% | 60% | 70% | 90% | 90% | 60% | 40% | 30% | 20% | 20% | 2 |
| Nightclub | Customer | — | — | — | — | — | — | — | — | — | — | — | — | 25% | 50% | 75% | 100% | 100% | 100% | 100% | 2 |
| | Employee | — | — | — | 5% | 5% | 5% | 5% | 10% | 10% | 10% | 20% | 45% | 70% | 100% | 100% | 100% | 100% | 100% | 100% | 2 |
| Cineplex—Typical | Customer | — | — | — | — | — | — | 20% | 45% | 55% | 55% | 55% | 60% | 60% | 80% | 100% | 100% | 80% | 65% | 40% | 2, 6 |
| Late December | Customer | — | — | — | — | — | — | 35% | 60% | 75% | 80% | 80% | 80% | 70% | 80% | 100% | 100% | 85% | 70% | 55% | 2, 6 |
| | Employee | — | — | — | — | — | — | 50% | 60% | 60% | 75% | 75% | 100% | 100% | 100% | 100% | 100% | 100% | 70% | 50% | 2 |
| Performing Arts Theater | Customer | — | — | — | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 25% | 100% | 100% | — | — | — | 2 |
| No matinee | Employee | — | 10% | 10% | 20% | 20% | 20% | 30% | 30% | 30% | 30% | 30% | 30% | 100% | 100% | 100% | 100% | 30% | 10% | 5% | 2 |
| Arena | Customer | — | — | — | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 10% | 25% | 100% | 100% | 85% | — | — | 2 |
| No matinee | Employee | — | 10% | 10% | 20% | 20% | 20% | 30% | 30% | 30% | 30% | 30% | 30% | 100% | 100% | 100% | 100% | 30% | 10% | 5% | 2 |
| Stadium | Customer | — | — | — | 1% | 1% | 1% | 5% | 5% | 5% | 5% | 5% | 5% | 10% | 50% | 100% | 100% | 85% | 25% | — | 2 |
| 8 p.m. start | Employee | — | 10% | 10% | 20% | 20% | 20% | 30% | 30% | 30% | 30% | 30% | 30% | 100% | 100% | 100% | 100% | 100% | 25% | 10% | 2 |
| Health Club | Customer | 70% | 40% | 40% | 70% | 70% | 80% | 60% | 70% | 70% | 70% | 80% | 90% | 100% | 90% | 80% | 70% | 35% | 10% | — | 2, 4 |
| | Employee | 75% | 75% | 75% | 75% | 75% | 75% | 75% | 75% | 75% | 75% | 75% | 100% | 100% | 75% | 50% | 20% | 20% | 20% | — | 2, 4 |
| Convention Center | Visitor | — | — | 50% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 50% | 30% | 30% | 10% | — | — | — | 2 |
| | Employee | 5% | 30% | 33% | 33% | 100% | 100% | 100% | 100% | 100% | 100% | 90% | 70% | 40% | 25% | 20% | 20% | 5% | — | — | 2 |
| Hotel—Business | Guest | 95% | 90% | 80% | 70% | 60% | 60% | 55% | 55% | 60% | 60% | 65% | 70% | 75% | 75% | 80% | 85% | 95% | 100% | 100% | 5 |
| Hotel—Leisure | Guest | 95% | 95% | 90% | 80% | 70% | 70% | 65% | 65% | 70% | 70% | 75% | 80% | 85% | 85% | 90% | 95% | 95% | 100% | 100% | 2 |
| Restaurant/Lounge | Customer | — | 10% | 30% | 10% | 10% | 5% | 100% | 100% | 33% | 10% | 10% | 30% | 55% | 60% | 70% | 67% | 60% | 40% | 30% | 5, 3 |
| Conference/Banquet | Customer | — | — | 30% | 60% | 60% | 60% | 65% | 65% | 65% | 65% | 65% | 100% | 100% | 100% | 100% | 100% | 50% | — | — | 2 |
| Convention | Customer | — | — | 50% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 50% | 30% | 30% | 10% | — | — | — | 2 |
| | Employee | 5% | 30% | 90% | 90% | 100% | 100% | 100% | 100% | 100% | 100% | 90% | 70% | 40% | 20% | 20% | 20% | 20% | 10% | 5% | 2 |
| Residential | Guest | — | 10% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 40% | 60% | 100% | 100% | 100% | 100% | 80% | 50% | 2 |
| Residential | Reserved | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 2 |
| Residential | Resident | 100% | 90% | 85% | 80% | 75% | 70% | 65% | 70% | 70% | 70% | 75% | 85% | 90% | 97% | 98% | 99% | 100% | 100% | 100% | 2 |
| Office | Visitor | — | 1% | 20% | 60% | 100% | 45% | 15% | 45% | 100% | 45% | 15% | 10% | 5% | 2% | 1% | — | — | — | — | 2 |
| Office | Employee | 3% | 30% | 75% | 95% | 100% | 100% | 90% | 90% | 100% | 100% | 90% | 50% | 25% | 10% | 7% | 3% | 1% | — | — | 3 |
| Medical/Dental Office | Visitor | — | — | 90% | 90% | 100% | 100% | 30% | 90% | 100% | 100% | 90% | 80% | 67% | 30% | 15% | — | — | — | — | 2 |
| | Employee | — | — | 60% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 67% | 30% | 15% | — | — | — | — | 2 |
| Bank | Customer | — | — | 50% | 90% | 100% | 50% | 50% | 50% | 70% | 50% | 80% | 100% | — | — | — | — | — | — | — | 3 |
| | Employee | — | — | 60% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | — | — | — | — | — | — | — | 2 |

**Sources:**
1. Confidential data provided by shopping center managers.
2. Developed by team members.
3. *Parking Generation*, 3rd ed. (Washington, D.C.: Institute of Transportation Engineers, 2004).
4. John W. Dorsett, "Parking Requirements for Health Clubs," *The Parking Professional*, April 2004.
5. Gerald Salzman, "Hotel Parking: How Much Is Enough?" *Urban Land*, January 1988.
6. Parking study conducted by Patton Harris Rust & Associates for the Peterson Companies, 2001.

**Table 2-6** Recommended Time-of-Day Factors for Weekends

| Land Use | User | 6 a.m. | 7 a.m. | 8 a.m. | 9 a.m. | 10 a.m. | 11 a.m. | Noon | 1 p.m. | 2 p.m. | 3 p.m. | 4 p.m. | 5 p.m. | 6 p.m. | 7 p.m. | 8 p.m. | 9 p.m. | 10 p.m. | 11 p.m. | Midnight | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shopping Center—Typical | Customer | 1% | 5% | 10% | 30% | 50% | 65% | 80% | 90% | 100% | 100% | 95% | 90% | 80% | 75% | 65% | 50% | 35% | 15% | — | 1 |
| Peak December | Customer | 1% | 5% | 10% | 35% | 60% | 70% | 85% | 95% | 100% | 100% | 95% | 90% | 80% | 75% | 65% | 50% | 35% | 15% | — | 1 |
| Late December | Customer | 1% | 5% | 10% | 20% | 40% | 60% | 80% | 95% | 100% | 100% | 95% | 85% | 70% | 60% | 50% | 30% | 20% | 10% | — | 1 |
| | Employee | 10% | 15% | 40% | 75% | 85% | 95% | 100% | 100% | 100% | 100% | 100% | 95% | 85% | 80% | 75% | 65% | 45% | 15% | — | 2 |
| Fine/Casual Dining | Customer | — | — | — | — | — | 15% | 50% | 55% | 45% | 45% | 45% | 60% | 90% | 95% | 100% | 90% | 90% | 90% | 50% | 2 |
| | Employee | — | 20% | 30% | 60% | 75% | 75% | 75% | 75% | 75% | 75% | 75% | 100% | 100% | 100% | 100% | 100% | 100% | 85% | 50% | 2 |
| Family Restaurant | Customer | 10% | 25% | 45% | 70% | 90% | 90% | 100% | 85% | 65% | 40% | 45% | 60% | 70% | 70% | 65% | 30% | 25% | 15% | 10% | 2 |
| | Employee | 50% | 75% | 90% | 90% | 100% | 100% | 100% | 100% | 100% | 75% | 75% | 95% | 95% | 95% | 95% | 80% | 65% | 65% | 35% | 2 |
| Fast Food | Customer | 5% | 10% | 20% | 30% | 55% | 85% | 100% | 100% | 90% | 60% | 55% | 60% | 85% | 80% | 50% | 30% | 20% | 10% | 5% | 3 |
| | Employee | 15% | 20% | 30% | 40% | 75% | 100% | 100% | 100% | 95% | 70% | 60% | 70% | 90% | 90% | 60% | 40% | 30% | 20% | 20% | 2 |
| Nightclub | Customer | — | — | — | — | — | — | — | — | — | — | — | — | 25% | 50% | 75% | 100% | 100% | 100% | 100% | 2 |
| | Employee | — | — | — | 5% | 5% | 5% | 5% | 10% | 10% | 10% | 20% | 45% | 70% | 100% | 100% | 100% | 100% | 100% | 100% | 2 |
| Cineplex—Typical | Customer | — | — | — | — | — | — | 20% | 45% | 55% | 55% | 55% | 60% | 60% | 80% | 100% | 100% | 100% | 80% | 50% | 2, 6 |
| Late December | Customer | — | — | — | — | — | — | 35% | 60% | 75% | 80% | 80% | 80% | 70% | 80% | 100% | 100% | 100% | 85% | 70% | 2, 6 |
| | Employee | — | — | — | — | — | — | 50% | 60% | 60% | 75% | 75% | 100% | 100% | 100% | 100% | 100% | 100% | 70% | 50% | 2 |
| Performing Arts Theater | Customer | — | — | — | 1% | 1% | 1% | 1% | 17% | 67% | 67% | 1% | 1% | 1% | 25% | 100% | 100% | — | — | — | 2 |
| With matinee | Employee | — | 10% | 10% | 20% | 20% | 20% | 30% | 100% | 100% | 100% | 30% | 30% | 100% | 100% | 100% | 100% | 30% | 10% | 5% | 2 |
| Arena (two shows) | Customer | — | — | — | 1% | 1% | 1% | 1% | 25% | 95% | 95% | 81% | 1% | 1% | 25% | 100% | 100% | — | — | — | 2 |
| | Employee | — | 10% | 10% | 20% | 20% | 20% | 30% | 100% | 100% | 100% | 100% | 30% | 100% | 100% | 100% | 100% | 30% | 10% | 5% | 2 |
| Stadium (1 p.m. start; see | Customer | — | — | 1% | 1% | 5% | 5% | 50% | 100% | 100% | 85% | 25% | — | — | — | — | — | — | — | — | 2 |
| weekday for evening game) | Employee | — | 5% | 10% | 20% | 30% | 30% | 100% | 100% | 100% | 100% | 25% | 10% | 5% | 5% | — | — | — | — | — | 2 |
| Health Club | Customer | 80% | 45% | 35% | 50% | 35% | 50% | 50% | 30% | 25% | 30% | 55% | 100% | 95% | 60% | 30% | 10% | 1% | 1% | — | 2, 4 |
| | Employee | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 75% | 100% | 100% | 75% | 50% | 20% | 20% | 20% | — | 2, 4 |
| Convention Center | Visitor | — | — | 50% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 50% | 30% | 30% | 10% | — | — | — | 2 |
| | Employee | 5% | 30% | 33% | 33% | 100% | 100% | 100% | 100% | 100% | 100% | 90% | 70% | 40% | 25% | 20% | 20% | 5% | — | — | 2 |
| Hotel—Business | Guest | 95% | 90% | 80% | 70% | 60% | 60% | 55% | 55% | 60% | 60% | 65% | 70% | 75% | 75% | 80% | 85% | 95% | 100% | 100% | 5 |
| Hotel—Leisure | Guest | 95% | 95% | 90% | 80% | 70% | 70% | 65% | 65% | 70% | 70% | 75% | 80% | 85% | 85% | 90% | 95% | 95% | 100% | 100% | 2 |
| Restaurant/Lounge | Customer | — | 10% | 30% | 10% | 10% | 5% | 100% | 100% | 33% | 10% | 10% | 30% | 55% | 60% | 70% | 67% | 60% | 40% | 30% | 5 |
| Conference/Banquet | Customer | — | — | 30% | 60% | 60% | 60% | 65% | 65% | 65% | 65% | 65% | 100% | 100% | 100% | 100% | 100% | 50% | — | — | 5 |
| Convention | Customer | — | — | 50% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 50% | 30% | 30% | 10% | — | — | — | 2 |
| | Employee | 5% | 30% | 90% | 90% | 100% | 100% | 100% | 100% | 100% | 100% | 90% | 75% | 60% | 55% | 55% | 55% | 45% | 45% | 30% | 5 |
| Residential | Guest | — | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 40% | 60% | 100% | 100% | 100% | 80% | 50% | 2 |
| Residential | Reserved | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 2 |
| Residential | Resident | 100% | 90% | 85% | 80% | 75% | 70% | 65% | 70% | 70% | 70% | 75% | 85% | 90% | 97% | 98% | 99% | 100% | 100% | 2 |
| Office | Visitor | — | 20% | 60% | 80% | 90% | 100% | 90% | 80% | 60% | 40% | 20% | 10% | 5% | — | — | — | — | — | — | 2 |
| Office | Employee | — | 20% | 60% | 80% | 90% | 100% | 90% | 80% | 60% | 40% | 20% | 10% | 5% | — | — | — | — | — | — | 3 |
| Medical/Dental Office | Visitor | — | — | 90% | 90% | 100% | 100% | 30% | — | — | — | — | — | — | — | — | — | — | — | — | 2 |
| | Employee | — | — | 60% | 100% | 100% | 100% | 100% | — | — | — | — | — | — | — | — | — | — | — | — | 2 |
| Bank | Customer | — | — | 25% | 40% | 75% | 100% | 90% | — | — | — | — | — | — | — | — | — | — | — | — | 3 |
| | Employee | — | — | 90% | 100% | 100% | 100% | 100% | — | — | — | — | — | — | — | — | — | — | — | — | 2 |

**Sources:**
1. Confidential data provided by shopping center managers.
2. Developed by team members.
3. *Parking Generation*, 3rd ed. (Washington, D.C.: Institute of Transportation Engineers, 2004).
4. John W. Dorsett, "Parking Requirements for Health Clubs," *The Parking Professional*, April 2004.
5. Gerald Salzman, "Hotel Parking: How Much Is Enough?" *Urban Land*, January 1988.
6. Parking study conducted by Patton Harris Rust & Associates for the Peterson Companies, 2001.

# ATTACHMENT 3B

## 5TH EDITION PARKING GENERATION INFORMATION FOR ITE LAND USE: 150 MINI-WAREHOUSE

# Land Use: 151 Mini-Warehouse

## Description

A mini-warehouse is a building in which a number of storage units or vaults are rented for the storage of goods. They are typically referred to as "self-storage" facilities. Each unit is physically separated from other units, and access is usually provided through an overhead door or other common access point.

## Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand on a weekday (nine study sites) and a Saturday (one study site) in a general urban/suburban setting.

| | Percent of Peak Parking Demand | |
|---|---|---|
| Hour Beginning | Weekday | Saturday |
| 12:00–4:00 a.m. | 0 | – |
| 5:00 a.m. | 0 | – |
| 6:00 a.m. | 0 | – |
| 7:00 a.m. | 0 | – |
| 8:00 a.m. | 14 | – |
| 9:00 a.m. | 71 | – |
| 10:00 a.m. | 50 | – |
| 11:00 a.m. | 79 | – |
| 12:00 p.m. | 57 | – |
| 1:00 p.m. | 64 | 91 |
| 2:00 p.m. | 64 | 27 |
| 3:00 p.m. | 79 | 55 |
| 4:00 p.m. | 71 | 100 |
| 5:00 p.m. | 100 | 91 |
| 6:00 p.m. | 14 | 27 |
| 7:00 p.m. | 0 | 0 |
| 8:00 p.m. | 0 | – |
| 9:00 p.m. | 0 | – |
| 10:00 p.m. | 0 | – |
| 11:00 p.m. | 0 | – |

### Additional Data

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in British Columbia (CAN), California, Massachusetts, Minnesota, and Texas.

### Source Numbers

37, 314, 415, 556, 562

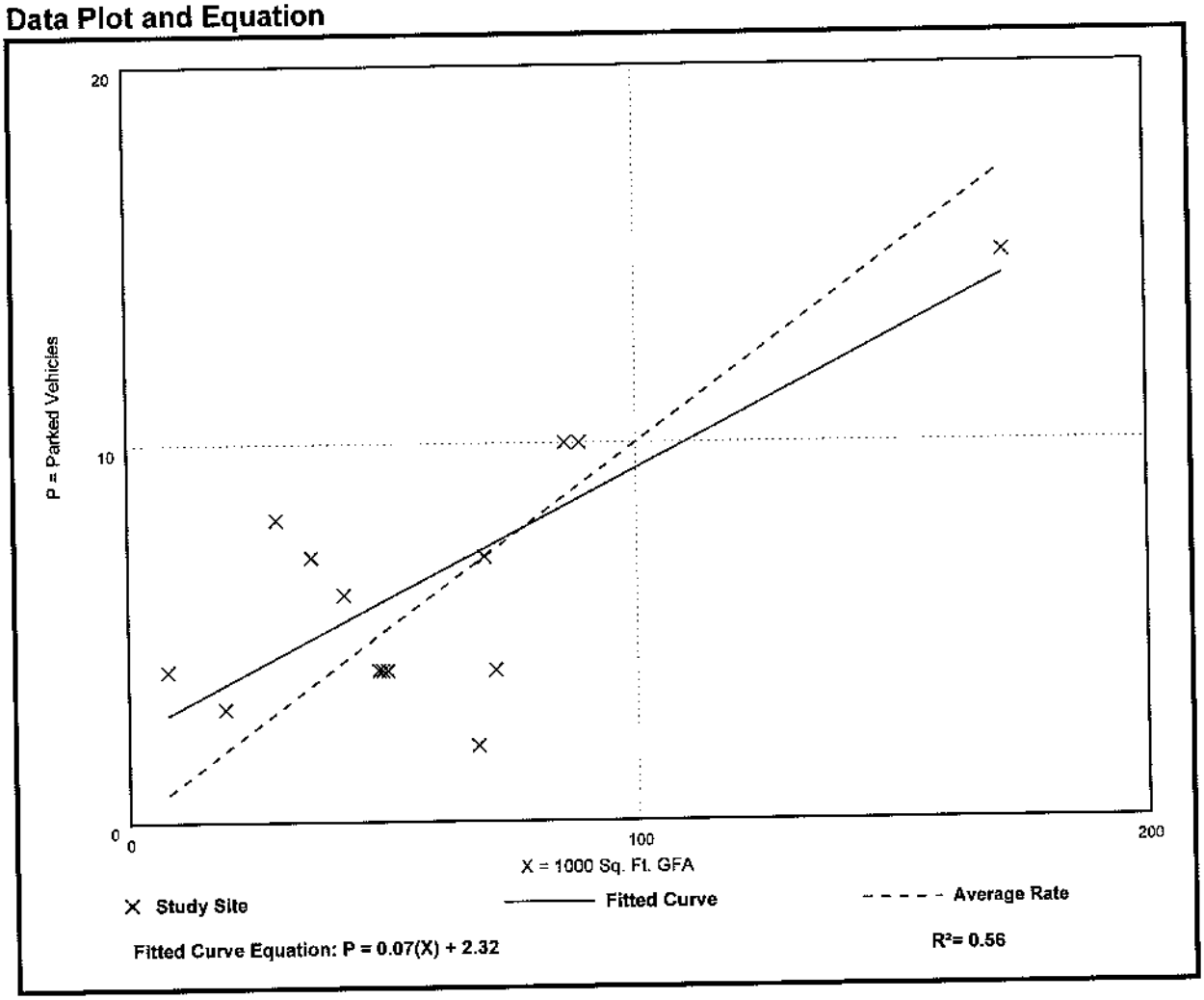
# Mini-Warehouse
# (151)

**Peak Period Parking Demand vs: 1000 Sq. Ft. GFA**
**On a: Weekday (Monday - Friday)**
**Setting/Location: General Urban/Suburban**
Peak Period of Parking Demand: 4:00 - 6:00 p.m.
Number of Studies: 14
Avg. 1000 Sq. Ft. GFA: 60

## Peak Period Parking Demand per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | 33rd / 85th Percentile | 95% Confidence Interval | Standard Deviation (Coeff. of Variation) |
|---|---|---|---|---|
| 0.10 | 0.03 - 0.53 | 0.08 / 0.25 | *** | 0.07 ( 70% ) |

## Data Plot and Equation



# Mini-Warehouse
# (151)

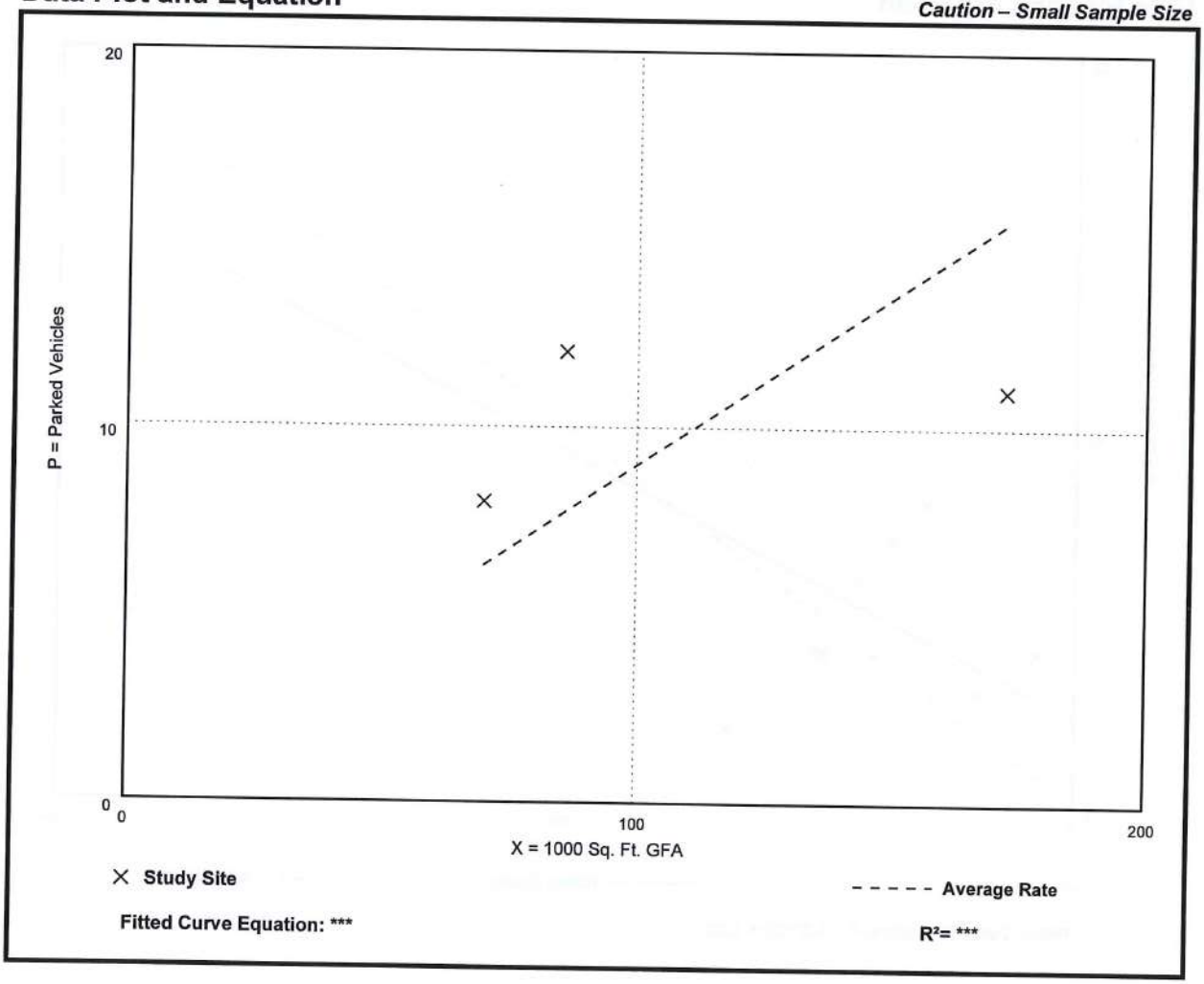
**Peak Period Parking Demand vs: 1000 Sq. Ft. GFA**
**On a: Saturday**
**Setting/Location: General Urban/Suburban**
Peak Period of Parking Demand: 1:00 - 5:00 p.m.
Number of Studies: 3
Avg. 1000 Sq. Ft. GFA: 109

## Peak Period Parking Demand per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | 33rd / 85th Percentile | 95% Confidence Interval | Standard Deviation (Coeff. of Variation) |
|---|---|---|---|---|
| 0.09 | 0.06 - 0.14 | 0.08 / 0.14 | *** | 0.04 ( 44% ) |

## Data Plot and Equation

***Caution – Small Sample Size***



# APPENDIX A

## ULI SHARED PARKING CALCULATION WORKSHEETS

## PROPOSED PROJECT – ALTERNATIVE 1
## RESTAURANT MIX

LINSCOTT LAW & GREENSPAN engineers

Appendix Table 1A

SHOPPING CENTER (TYPICAL DAYS)
WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Shopping Center (Typical Days) | | | | |
|---|---|---|---|---|---|
| Size | 135.811 KSF | | | | |
| Pkg Rate[2] | | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross | 357.18293 Spaces | | | | |
| Spaces | 288 Guest Spc. | | 69.18293 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 1% | 3 | 9% | 6 | 9 |
| 7:00 AM | 5% | 14 | 14% | 10 | 24 |
| 8:00 AM | 14% | 40 | 36% | 25 | 65 |
| 9:00 AM | 32% | 92 | 68% | 47 | 139 |
| 10:00 AM | 59% | 170 | 77% | 53 | 223 |
| 11:00 AM | 77% | 222 | 86% | 59 | 281 |
| 12:00 PM | 86% | 248 | 90% | 62 | 310 |
| 1:00 PM | 90% | 259 | 90% | 62 | 321 |
| 2:00 PM | 86% | 248 | 90% | 62 | 310 |
| 3:00 PM | 81% | 233 | 90% | 62 | 295 |
| 4:00 PM | 81% | 233 | 90% | 62 | 295 |
| 5:00 PM | 86% | 248 | 86% | 59 | 307 |
| 6:00 PM | 86% | 248 | 86% | 59 | 307 |
| 7:00 PM | 86% | 248 | 86% | 59 | 307 |
| 8:00 PM | 72% | 207 | 81% | 56 | 263 |
| 9:00 PM | 45% | 130 | 68% | 47 | 177 |
| 10:00 PM | 27% | 78 | 36% | 25 | 103 |
| 11:00 PM | 9% | 26 | 14% | 10 | 36 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code, except for Target and the Self-Storage facility.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

LINSCOTT LAW & GREENSPAN engineers

Appendix Table 2A

SHOPPING CENTER (TYPICAL DAYS)
WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Shopping Center (Typical Days) | | | | |
|---|---|---|---|---|---|
| Size | 135.811 KSF | | | | |
| Pkg Rate[2] | | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 357.18293 Spaces | | | | |
| | 286 Guest Spc. | | 71.18293 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 1% | 3 | 10% | 7 | 10 |
| 7:00 AM | 5% | 14 | 15% | 11 | 25 |
| 8:00 AM | 10% | 29 | 40% | 28 | 57 |
| 9:00 AM | 30% | 86 | 75% | 53 | 139 |
| 10:00 AM | 50% | 143 | 85% | 61 | 204 |
| 11:00 AM | 65% | 186 | 95% | 68 | 254 |
| 12:00 PM | 80% | 229 | 100% | 71 | 300 |
| 1:00 PM | 90% | 257 | 100% | 71 | 328 |
| 2:00 PM | 100% | 286 | 100% | 71 | 357 |
| 3:00 PM | 100% | 286 | 100% | 71 | 357 |
| 4:00 PM | 95% | 272 | 100% | 71 | 343 |
| 5:00 PM | 90% | 257 | 95% | 68 | 325 |
| 6:00 PM | 80% | 229 | 85% | 61 | 290 |
| 7:00 PM | 75% | 215 | 80% | 57 | 272 |
| 8:00 PM | 65% | 186 | 75% | 53 | 239 |
| 9:00 PM | 50% | 143 | 65% | 46 | 189 |
| 10:00 PM | 35% | 100 | 45% | 32 | 132 |
| 11:00 PM | 15% | 43 | 15% | 11 | 54 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code, except for Target and the Self-Storage facility.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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Appendix Table 3A

SHOPPING CENTER (TYPICAL DAYS)
WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Shopping Center (Typical Days) | | | | |
|---|---|---|---|---|---|
| Size | 15.000 KSF | | | | |
| Pkg Rate[2] | 5 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 75 Spaces | | | | |
| | 60 Guest Spc. | | 15 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 1% | 1 | 9% | 1 | 2 |
| 7:00 AM | 5% | 3 | 14% | 2 | 5 |
| 8:00 AM | 14% | 8 | 36% | 5 | 13 |
| 9:00 AM | 32% | 19 | 68% | 10 | 29 |
| 10:00 AM | 59% | 35 | 77% | 12 | 47 |
| 11:00 AM | 77% | 46 | 86% | 13 | 59 |
| 12:00 PM | 86% | 52 | 90% | 14 | 66 |
| 1:00 PM | 90% | 54 | 90% | 14 | 68 |
| 2:00 PM | 86% | 52 | 90% | 14 | 66 |
| 3:00 PM | 81% | 49 | 90% | 14 | 63 |
| 4:00 PM | 81% | 49 | 90% | 14 | 63 |
| 5:00 PM | 86% | 52 | 86% | 13 | 65 |
| 6:00 PM | 86% | 52 | 86% | 13 | 65 |
| 7:00 PM | 86% | 52 | 86% | 13 | 65 |
| 8:00 PM | 72% | 43 | 81% | 12 | 55 |
| 9:00 PM | 45% | 27 | 68% | 10 | 37 |
| 10:00 PM | 27% | 16 | 36% | 5 | 21 |
| 11:00 PM | 9% | 5 | 14% | 2 | 7 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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Appendix Table 4A

SHOPPING CENTER (TYPICAL DAYS)
WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Shopping Center (Typical Days) | | | | |
|---|---|---|---|---|---|
| Size | 15.000 KSF | | | | |
| Pkg Rate[2] | 5 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 75 Spaces | | | | |
| | 60 Guest Spc. | | 15 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 1% | 1 | 10% | 2 | 3 |
| 7:00 AM | 5% | 3 | 15% | 2 | 5 |
| 8:00 AM | 10% | 6 | 40% | 6 | 12 |
| 9:00 AM | 30% | 18 | 75% | 11 | 29 |
| 10:00 AM | 50% | 30 | 85% | 13 | 43 |
| 11:00 AM | 65% | 39 | 95% | 14 | 53 |
| 12:00 PM | 80% | 48 | 100% | 15 | 63 |
| 1:00 PM | 90% | 54 | 100% | 15 | 69 |
| 2:00 PM | 100% | 60 | 100% | 15 | 75 |
| 3:00 PM | 100% | 60 | 100% | 15 | 75 |
| 4:00 PM | 95% | 57 | 100% | 15 | 72 |
| 5:00 PM | 90% | 54 | 95% | 14 | 68 |
| 6:00 PM | 80% | 48 | 85% | 13 | 61 |
| 7:00 PM | 75% | 45 | 80% | 12 | 57 |
| 8:00 PM | 65% | 39 | 75% | 11 | 50 |
| 9:00 PM | 50% | 30 | 65% | 10 | 40 |
| 10:00 PM | 35% | 21 | 45% | 7 | 28 |
| 11:00 PM | 15% | 9 | 15% | 2 | 11 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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Appendix Table 5A

FINE/CASUAL DINING

WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Fine/Casual Dining | | | | |
|---|---|---|---|---|---|
| Size | 2.300 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 23 Spaces | | | | |
| | 19 Guest Spc. | | 4 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 0% | 0 | 0% | 0 | 0 |
| 7:00 AM | 0% | 0 | 18% | 1 | 1 |
| 8:00 AM | 0% | 0 | 45% | 2 | 2 |
| 9:00 AM | 0% | 0 | 68% | 3 | 3 |
| 10:00 AM | 14% | 3 | 81% | 3 | 6 |
| 11:00 AM | 36% | 7 | 81% | 3 | 10 |
| 12:00 PM | 68% | 13 | 81% | 3 | 16 |
| 1:00 PM | 68% | 13 | 81% | 3 | 16 |
| 2:00 PM | 59% | 11 | 81% | 3 | 14 |
| 3:00 PM | 36% | 7 | 68% | 3 | 10 |
| 4:00 PM | 45% | 9 | 68% | 3 | 12 |
| 5:00 PM | 68% | 13 | 90% | 4 | 17 |
| 6:00 PM | 86% | 16 | 90% | 4 | 20 |
| 7:00 PM | 90% | 17 | 90% | 4 | 21 |
| 8:00 PM | 90% | 17 | 90% | 4 | 21 |
| 9:00 PM | 90% | 17 | 90% | 4 | 21 |
| 10:00 PM | 86% | 16 | 90% | 4 | 20 |
| 11:00 PM | 68% | 13 | 77% | 3 | 16 |
| 12:00 AM | 23% | 4 | 32% | 1 | 5 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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Appendix Table 6A

FINE/CASUAL DINING

WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Fine/Casual Dining | | | | |
|---|---|---|---|---|---|
| Size | 2.300 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 23 Spaces | | | | |
| | 20 Guest Spc. | | 3 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 0% | 0 | 0% | 0 | 0 |
| 7:00 AM | 0% | 0 | 20% | 1 | 1 |
| 8:00 AM | 0% | 0 | 30% | 1 | 1 |
| 9:00 AM | 0% | 0 | 60% | 2 | 2 |
| 10:00 AM | 0% | 0 | 75% | 2 | 2 |
| 11:00 AM | 15% | 3 | 75% | 2 | 5 |
| 12:00 PM | 50% | 10 | 75% | 2 | 12 |
| 1:00 PM | 55% | 11 | 75% | 2 | 13 |
| 2:00 PM | 45% | 9 | 75% | 2 | 11 |
| 3:00 PM | 45% | 9 | 75% | 2 | 11 |
| 4:00 PM | 45% | 9 | 75% | 2 | 11 |
| 5:00 PM | 60% | 12 | 100% | 3 | 15 |
| 6:00 PM | 90% | 18 | 100% | 3 | 21 |
| 7:00 PM | 95% | 19 | 100% | 3 | 22 |
| 8:00 PM | 100% | 20 | 100% | 3 | 23 |
| 9:00 PM | 90% | 18 | 100% | 3 | 21 |
| 10:00 PM | 90% | 18 | 100% | 3 | 21 |
| 11:00 PM | 90% | 18 | 85% | 3 | 21 |
| 12:00 AM | 50% | 10 | 50% | 2 | 12 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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Appendix Table 7A

FAMILY RESTAURANT

WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Family Restaurant | | | | |
|---|---|---|---|---|---|
| Size | 0.000 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | | 1.00 | |
| Non-Captive Ratio | 1.00 | | | 1.00 | |
| Gross Spaces | 0 Spaces | | | | |
| | 0 Guest Spc. | | 0 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 18% | 0 | 35% | 0 | 0 |
| 7:00 AM | 35% | 0 | 53% | 0 | 0 |
| 8:00 AM | 42% | 0 | 63% | 0 | 0 |
| 9:00 AM | 53% | 0 | 63% | 0 | 0 |
| 10:00 AM | 60% | 0 | 70% | 0 | 0 |
| 11:00 AM | 63% | 0 | 70% | 0 | 0 |
| 12:00 PM | 70% | 0 | 70% | 0 | 0 |
| 1:00 PM | 63% | 0 | 70% | 0 | 0 |
| 2:00 PM | 35% | 0 | 70% | 0 | 0 |
| 3:00 PM | 32% | 0 | 53% | 0 | 0 |
| 4:00 PM | 32% | 0 | 53% | 0 | 0 |
| 5:00 PM | 53% | 0 | 67% | 0 | 0 |
| 6:00 PM | 56% | 0 | 67% | 0 | 0 |
| 7:00 PM | 56% | 0 | 67% | 0 | 0 |
| 8:00 PM | 56% | 0 | 67% | 0 | 0 |
| 9:00 PM | 42% | 0 | 56% | 0 | 0 |
| 10:00 PM | 39% | 0 | 46% | 0 | 0 |
| 11:00 PM | 35% | 0 | 46% | 0 | 0 |
| 12:00 AM | 18% | 0 | 25% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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Appendix Table 8A

FAMILY RESTAURANT

WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Family Restaurant | | | | |
|---|---|---|---|---|---|
| Size | 0.000 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | | 1.00 | |
| Non-Captive Ratio | 1.00 | | | 1.00 | |
| Gross Spaces | 0 Spaces | | | | |
| | 0 Guest Spc. | | 0 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 10% | 0 | 50% | 0 | 0 |
| 7:00 AM | 25% | 0 | 75% | 0 | 0 |
| 8:00 AM | 45% | 0 | 90% | 0 | 0 |
| 9:00 AM | 70% | 0 | 90% | 0 | 0 |
| 10:00 AM | 90% | 0 | 100% | 0 | 0 |
| 11:00 AM | 90% | 0 | 100% | 0 | 0 |
| 12:00 PM | 100% | 0 | 100% | 0 | 0 |
| 1:00 PM | 85% | 0 | 100% | 0 | 0 |
| 2:00 PM | 65% | 0 | 100% | 0 | 0 |
| 3:00 PM | 40% | 0 | 75% | 0 | 0 |
| 4:00 PM | 45% | 0 | 75% | 0 | 0 |
| 5:00 PM | 60% | 0 | 95% | 0 | 0 |
| 6:00 PM | 70% | 0 | 95% | 0 | 0 |
| 7:00 PM | 70% | 0 | 95% | 0 | 0 |
| 8:00 PM | 65% | 0 | 95% | 0 | 0 |
| 9:00 PM | 30% | 0 | 80% | 0 | 0 |
| 10:00 PM | 25% | 0 | 65% | 0 | 0 |
| 11:00 PM | 15% | 0 | 65% | 0 | 0 |
| 12:00 AM | 10% | 0 | 35% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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Appendix Table 9A

FAST-FOOD RESTAURANT
WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Fast-Food Restaurant | | | | |
|---|---|---|---|---|---|
| Size | 3.300 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 33 Spaces | | | | |
| | 28 Guest Spc. | | 5 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 5% | 1 | 15% | 1 | 2 |
| 7:00 AM | 10% | 3 | 20% | 1 | 4 |
| 8:00 AM | 20% | 6 | 30% | 2 | 8 |
| 9:00 AM | 30% | 8 | 40% | 2 | 10 |
| 10:00 AM | 55% | 15 | 75% | 4 | 19 |
| 11:00 AM | 85% | 24 | 100% | 5 | 29 |
| 12:00 PM | 100% | 28 | 100% | 5 | 33 |
| 1:00 PM | 100% | 28 | 100% | 5 | 33 |
| 2:00 PM | 90% | 25 | 95% | 5 | 30 |
| 3:00 PM | 60% | 17 | 70% | 4 | 21 |
| 4:00 PM | 55% | 15 | 60% | 3 | 18 |
| 5:00 PM | 60% | 17 | 70% | 4 | 21 |
| 6:00 PM | 85% | 24 | 90% | 5 | 29 |
| 7:00 PM | 80% | 22 | 90% | 5 | 27 |
| 8:00 PM | 50% | 14 | 60% | 3 | 17 |
| 9:00 PM | 30% | 8 | 40% | 2 | 10 |
| 10:00 PM | 20% | 6 | 30% | 2 | 8 |
| 11:00 PM | 10% | 3 | 20% | 1 | 4 |
| 12:00 AM | 5% | 1 | 20% | 1 | 2 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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Appendix Table 10A

FAST-FOOD RESTAURANT
WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Fast-Food Restaurant | | | | |
|---|---|---|---|---|---|
| Size | 3.300 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 33 Spaces | | | | |
| | 28 Guest Spc. | | 5 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 5% | 1 | 14% | 1 | 2 |
| 7:00 AM | 9% | 3 | 19% | 1 | 4 |
| 8:00 AM | 19% | 5 | 28% | 1 | 6 |
| 9:00 AM | 28% | 8 | 37% | 2 | 10 |
| 10:00 AM | 51% | 14 | 70% | 4 | 18 |
| 11:00 AM | 79% | 22 | 93% | 5 | 27 |
| 12:00 PM | 93% | 26 | 93% | 5 | 31 |
| 1:00 PM | 93% | 26 | 93% | 5 | 31 |
| 2:00 PM | 84% | 24 | 89% | 4 | 28 |
| 3:00 PM | 56% | 16 | 65% | 3 | 19 |
| 4:00 PM | 51% | 14 | 56% | 3 | 17 |
| 5:00 PM | 56% | 16 | 65% | 3 | 19 |
| 6:00 PM | 79% | 22 | 84% | 4 | 26 |
| 7:00 PM | 75% | 21 | 84% | 4 | 25 |
| 8:00 PM | 47% | 13 | 56% | 3 | 16 |
| 9:00 PM | 28% | 8 | 37% | 2 | 10 |
| 10:00 PM | 19% | 5 | 28% | 1 | 6 |
| 11:00 PM | 9% | 3 | 19% | 1 | 4 |
| 12:00 AM | 5% | 1 | 19% | 1 | 2 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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**Appendix Table 11A**

**MEDICAL/DENTAL OFFICE**
**WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]**

| Land Use | Medical/Dental Office | | | | |
|---|---|---|---|---|---|
| Size | 3.500 KSF | | | | |
| Pkg Rate[2] | 5 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 18 Spaces | | | | |
| | 12 Visitor Spc. | | 6 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 0% | 0 | 0% | 0 | 0 |
| 7:00 AM | 0% | 0 | 0% | 0 | 0 |
| 8:00 AM | 90% | 11 | 60% | 4 | 15 |
| 9:00 AM | 90% | 11 | 100% | 6 | 17 |
| 10:00 AM | 100% | 12 | 100% | 6 | 18 |
| 11:00 AM | 100% | 12 | 100% | 6 | 18 |
| 12:00 PM | 30% | 4 | 100% | 6 | 10 |
| 1:00 PM | 90% | 11 | 100% | 6 | 17 |
| 2:00 PM | 100% | 12 | 100% | 6 | 18 |
| 3:00 PM | 100% | 12 | 100% | 6 | 18 |
| 4:00 PM | 90% | 11 | 100% | 6 | 17 |
| 5:00 PM | 80% | 10 | 100% | 6 | 16 |
| 6:00 PM | 67% | 8 | 67% | 4 | 12 |
| 7:00 PM | 30% | 4 | 30% | 2 | 6 |
| 8:00 PM | 15% | 2 | 15% | 1 | 3 |
| 9:00 PM | 0% | 0 | 0% | 0 | 0 |
| 10:00 PM | 0% | 0 | 0% | 0 | 0 |
| 11:00 PM | 0% | 0 | 0% | 0 | 0 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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Appendix Table 11A

MEDICAL/DENTAL OFFICE
WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Medical/Dental Office | | | | |
|---|---|---|---|---|---|
| Size | 3.500 KSF | | | | |
| Pkg Rate[2] | 5 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 18 Spaces | | | | |
| | 12 Visitor Spc. | | 6 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 0% | 0 | 0% | 0 | 0 |
| 7:00 AM | 0% | 0 | 0% | 0 | 0 |
| 8:00 AM | 90% | 11 | 60% | 4 | 15 |
| 9:00 AM | 90% | 11 | 100% | 6 | 17 |
| 10:00 AM | 100% | 12 | 100% | 6 | 18 |
| 11:00 AM | 100% | 12 | 100% | 6 | 18 |
| 12:00 PM | 30% | 4 | 100% | 6 | 10 |
| 1:00 PM | 0% | 0 | 0% | 0 | 0 |
| 2:00 PM | 0% | 0 | 0% | 0 | 0 |
| 3:00 PM | 0% | 0 | 0% | 0 | 0 |
| 4:00 PM | 0% | 0 | 0% | 0 | 0 |
| 5:00 PM | 0% | 0 | 0% | 0 | 0 |
| 6:00 PM | 0% | 0 | 0% | 0 | 0 |
| 7:00 PM | 0% | 0 | 0% | 0 | 0 |
| 8:00 PM | 0% | 0 | 0% | 0 | 0 |
| 9:00 PM | 0% | 0 | 0% | 0 | 0 |
| 10:00 PM | 0% | 0 | 0% | 0 | 0 |
| 11:00 PM | 0% | 0 | 0% | 0 | 0 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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Appendix Table 13A

SELF STORAGE (TYPICAL DAYS)
WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Self Storage (Typical Days) | | | |
|---|---|---|---|---|
| Size | | 177.345 | | |
| Pkg Rate[2] | | 0.184 | | |
| Mode Adjust | | 1.00 | | |
| Non-Captive Ratio | | 1.00 | Behind Gate Shared Parking Demand | Outside Gate Shared Parking Demand |
| Gross Spaces | | 33 | | |
| | 33 Spaces | | | |
| Time of Day | % Of Peak [3] | # Of Spaces | | |
| 6:00 AM | 0% | 0 | 11 | 0 |
| 7:00 AM | 0% | 0 | 11 | 0 |
| 8:00 AM | 14% | 5 | 11 | 0 |
| 9:00 AM | 71% | 23 | 11 | 12 |
| 10:00 AM | 50% | 17 | 11 | 6 |
| 11:00 AM | 79% | 26 | 11 | 15 |
| 12:00 PM | 57% | 19 | 11 | 8 |
| 1:00 PM | 64% | 21 | 11 | 10 |
| 2:00 PM | 64% | 21 | 11 | 10 |
| 3:00 PM | 79% | 26 | 11 | 15 |
| 4:00 PM | 71% | 23 | 11 | 12 |
| 5:00 PM | 100% | 33 | 11 | 22 |
| 6:00 PM | 14% | 5 | 11 | 0 |
| 7:00 PM | 0% | 0 | 11 | 0 |
| 8:00 PM | 0% | 0 | 11 | 0 |
| 9:00 PM | 0% | 0 | 11 | 0 |
| 10:00 PM | 0% | 0 | 11 | 0 |
| 11:00 PM | 0% | 0 | 11 | 0 |
| 12:00 AM | 0% | 0 | 11 | 0 |

Notes:

[1] Source: ITE Parking Generation Manual, 5th Edition for Land Use 151 Mini-Warehouse.

[2] Parking rate is based on information provided by the self-storage operator, by which an "design" parking ratio was derived for the Project.

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Appendix Table 14A

SELF STORAGE (TYPICAL DAYS)
WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Self Storage (Typical Days) | | | |
|---|---|---|---|---|
| Size | | 177.345 | | |
| Pkg Rate[2] | | 0.184 | | |
| Mode Adjust | | 1.00 | | |
| Non-Captive Ratio | | 1.00 | Behind Gate Shared Parking Demand | Outside Gate Shared Parking Demand |
| Gross Spaces | | 33 | | |
| | 33 Spaces | | | |
| Time of Day | % Of Peak [3] | # Of Spaces | | |
| 6:00 AM | 0% | 0 | 11 | 0 |
| 7:00 AM | 0% | 0 | 11 | 0 |
| 8:00 AM | 0% | 0 | 11 | 0 |
| 9:00 AM | 0% | 0 | 11 | 0 |
| 10:00 AM | 0% | 0 | 11 | 0 |
| 11:00 AM | 0% | 0 | 11 | 0 |
| 12:00 PM | 0% | 0 | 11 | 0 |
| 1:00 PM | 51% | 17 | 11 | 6 |
| 2:00 PM | 15% | 5 | 11 | 0 |
| 3:00 PM | 31% | 10 | 11 | 0 |
| 4:00 PM | 56% | 18 | 11 | 7 |
| 5:00 PM | 51% | 17 | 11 | 6 |
| 6:00 PM | 15% | 5 | 11 | 0 |
| 7:00 PM | 0% | 0 | 11 | 0 |
| 8:00 PM | 0% | 0 | 11 | 0 |
| 9:00 PM | 0% | 0 | 11 | 0 |
| 10:00 PM | 0% | 0 | 11 | 0 |
| 11:00 PM | 0% | 0 | 11 | 0 |
| 12:00 AM | 0% | 0 | 11 | 0 |

Notes:

[1] Source: ITE Parking Generation Manual, 5th Edition for Land Use 151 Mini-Warehouse.

[2] Parking rate is based on information provided by the self-storage operator, by which an "design" parking ratio was derived for the Project.

# APPENDIX B

## ULI SHARED PARKING CALCULATION WORKSHEETS

## PROPOSED PROJECT – ALTERNATIVE 2
## RESTAURANT MIX

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**Appendix Table 1B**

**SHOPPING CENTER (TYPICAL DAYS)**
**WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]**

| Land Use | Shopping Center (Typical Days) | | | | |
|---|---|---|---|---|---|
| Size | 135.811 KSF | | | | |
| Pkg Rate[2] | | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 357.18293 Spaces | | | | |
| | 288 Guest Spc. | | 69.18293 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 1% | 3 | 9% | 6 | 9 |
| 7:00 AM | 5% | 14 | 14% | 10 | 24 |
| 8:00 AM | 14% | 40 | 36% | 25 | 65 |
| 9:00 AM | 32% | 92 | 68% | 47 | 139 |
| 10:00 AM | 59% | 170 | 77% | 53 | 223 |
| 11:00 AM | 77% | 222 | 86% | 59 | 281 |
| 12:00 PM | 86% | 248 | 90% | 62 | 310 |
| 1:00 PM | 90% | 259 | 90% | 62 | 321 |
| 2:00 PM | 86% | 248 | 90% | 62 | 310 |
| 3:00 PM | 81% | 233 | 90% | 62 | 295 |
| 4:00 PM | 81% | 233 | 90% | 62 | 295 |
| 5:00 PM | 86% | 248 | 86% | 59 | 307 |
| 6:00 PM | 86% | 248 | 86% | 59 | 307 |
| 7:00 PM | 86% | 248 | 86% | 59 | 307 |
| 8:00 PM | 72% | 207 | 81% | 56 | 263 |
| 9:00 PM | 45% | 130 | 68% | 47 | 177 |
| 10:00 PM | 27% | 78 | 36% | 25 | 103 |
| 11:00 PM | 9% | 26 | 14% | 10 | 36 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code, except for Target and the Self-Storage facility.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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**Appendix Table 2B**

**SHOPPING CENTER (TYPICAL DAYS)**
**WEEKEND SHARED PARKING DEMAND ANALYSIS [1]**

| Land Use | Shopping Center (Typical Days) | | | | |
|---|---|---|---|---|---|
| Size | 135.811 KSF | | | | |
| Pkg Rate[2] | | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 357.18293 Spaces | | | | |
| | 286 Guest Spc. | | 71.18293 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 1% | 3 | 10% | 7 | 10 |
| 7:00 AM | 5% | 14 | 15% | 11 | 25 |
| 8:00 AM | 10% | 29 | 40% | 28 | 57 |
| 9:00 AM | 30% | 86 | 75% | 53 | 139 |
| 10:00 AM | 50% | 143 | 85% | 61 | 204 |
| 11:00 AM | 65% | 186 | 95% | 68 | 254 |
| 12:00 PM | 80% | 229 | 100% | 71 | 300 |
| 1:00 PM | 90% | 257 | 100% | 71 | 328 |
| 2:00 PM | 100% | 286 | 100% | 71 | 357 |
| 3:00 PM | 100% | 286 | 100% | 71 | 357 |
| 4:00 PM | 95% | 272 | 100% | 71 | 343 |
| 5:00 PM | 90% | 257 | 95% | 68 | 325 |
| 6:00 PM | 80% | 229 | 85% | 61 | 290 |
| 7:00 PM | 75% | 215 | 80% | 57 | 272 |
| 8:00 PM | 65% | 186 | 75% | 53 | 239 |
| 9:00 PM | 50% | 143 | 65% | 46 | 189 |
| 10:00 PM | 35% | 100 | 45% | 32 | 132 |
| 11:00 PM | 15% | 43 | 15% | 11 | 54 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code, except for Target and the Self-Storage facility.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

Appendix Table 3B

SHOPPING CENTER (TYPICAL DAYS)
WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Shopping Center (Typical Days) | | | | |
|---|---|---|---|---|---|
| Size | 15.000 KSF | | | | |
| Pkg Rate[2] | 5 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 75 Spaces | | | | |
| | 60 Guest Spc. | | 15 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 1% | 1 | 9% | 1 | 2 |
| 7:00 AM | 5% | 3 | 14% | 2 | 5 |
| 8:00 AM | 14% | 8 | 36% | 5 | 13 |
| 9:00 AM | 32% | 19 | 68% | 10 | 29 |
| 10:00 AM | 59% | 35 | 77% | 12 | 47 |
| 11:00 AM | 77% | 46 | 86% | 13 | 59 |
| 12:00 PM | 86% | 52 | 90% | 14 | 66 |
| 1:00 PM | 90% | 54 | 90% | 14 | 68 |
| 2:00 PM | 86% | 52 | 90% | 14 | 66 |
| 3:00 PM | 81% | 49 | 90% | 14 | 63 |
| 4:00 PM | 81% | 49 | 90% | 14 | 63 |
| 5:00 PM | 86% | 52 | 86% | 13 | 65 |
| 6:00 PM | 86% | 52 | 86% | 13 | 65 |
| 7:00 PM | 86% | 52 | 86% | 13 | 65 |
| 8:00 PM | 72% | 43 | 81% | 12 | 55 |
| 9:00 PM | 45% | 27 | 68% | 10 | 37 |
| 10:00 PM | 27% | 16 | 36% | 5 | 21 |
| 11:00 PM | 9% | 5 | 14% | 2 | 7 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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**Appendix Table 4B**

**SHOPPING CENTER (TYPICAL DAYS)**
**WEEKEND SHARED PARKING DEMAND ANALYSIS [1]**

| Land Use | Shopping Center (Typical Days) | | | | |
|---|---|---|---|---|---|
| Size | 15.000 KSF | | | | |
| Pkg Rate[2] | 5 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 75 Spaces | | | | |
| | 60 Guest Spc. | | 15 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 1% | 1 | 10% | 2 | 3 |
| 7:00 AM | 5% | 3 | 15% | 2 | 5 |
| 8:00 AM | 10% | 6 | 40% | 6 | 12 |
| 9:00 AM | 30% | 18 | 75% | 11 | 29 |
| 10:00 AM | 50% | 30 | 85% | 13 | 43 |
| 11:00 AM | 65% | 39 | 95% | 14 | 53 |
| 12:00 PM | 80% | 48 | 100% | 15 | 63 |
| 1:00 PM | 90% | 54 | 100% | 15 | 69 |
| 2:00 PM | 100% | 60 | 100% | 15 | 75 |
| 3:00 PM | 100% | 60 | 100% | 15 | 75 |
| 4:00 PM | 95% | 57 | 100% | 15 | 72 |
| 5:00 PM | 90% | 54 | 95% | 14 | 68 |
| 6:00 PM | 80% | 48 | 85% | 13 | 61 |
| 7:00 PM | 75% | 45 | 80% | 12 | 57 |
| 8:00 PM | 65% | 39 | 75% | 11 | 50 |
| 9:00 PM | 50% | 30 | 65% | 10 | 40 |
| 10:00 PM | 35% | 21 | 45% | 7 | 28 |
| 11:00 PM | 15% | 9 | 15% | 2 | 11 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

Appendix Table 5B

FINE/CASUAL DINING

WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Fine/Casual Dining | | | | |
|---|---|---|---|---|---|
| Size | 0.000 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 0 Spaces | | | | |
| | 0 Guest Spc. | | 0 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 0% | 0 | 0% | 0 | 0 |
| 7:00 AM | 0% | 0 | 18% | 0 | 0 |
| 8:00 AM | 0% | 0 | 45% | 0 | 0 |
| 9:00 AM | 0% | 0 | 68% | 0 | 0 |
| 10:00 AM | 14% | 0 | 81% | 0 | 0 |
| 11:00 AM | 36% | 0 | 81% | 0 | 0 |
| 12:00 PM | 68% | 0 | 81% | 0 | 0 |
| 1:00 PM | 68% | 0 | 81% | 0 | 0 |
| 2:00 PM | 59% | 0 | 81% | 0 | 0 |
| 3:00 PM | 36% | 0 | 68% | 0 | 0 |
| 4:00 PM | 45% | 0 | 68% | 0 | 0 |
| 5:00 PM | 68% | 0 | 90% | 0 | 0 |
| 6:00 PM | 86% | 0 | 90% | 0 | 0 |
| 7:00 PM | 90% | 0 | 90% | 0 | 0 |
| 8:00 PM | 90% | 0 | 90% | 0 | 0 |
| 9:00 PM | 90% | 0 | 90% | 0 | 0 |
| 10:00 PM | 86% | 0 | 90% | 0 | 0 |
| 11:00 PM | 68% | 0 | 77% | 0 | 0 |
| 12:00 AM | 23% | 0 | 32% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

Appendix Table 6B

FINE/CASUAL DINING

WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Fine/Casual Dining | | | | |
|---|---|---|---|---|---|
| Size | 0.000 KSF | | | | Shared Parking Demand |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 0 Spaces | | | | |
| | 0 Guest Spc. | | 0 Emp. Spc. | | |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | |
| 6:00 AM | 0% | 0 | 0% | 0 | 0 |
| 7:00 AM | 0% | 0 | 20% | 0 | 0 |
| 8:00 AM | 0% | 0 | 30% | 0 | 0 |
| 9:00 AM | 0% | 0 | 60% | 0 | 0 |
| 10:00 AM | 0% | 0 | 75% | 0 | 0 |
| 11:00 AM | 15% | 0 | 75% | 0 | 0 |
| 12:00 PM | 50% | 0 | 75% | 0 | 0 |
| 1:00 PM | 55% | 0 | 75% | 0 | 0 |
| 2:00 PM | 45% | 0 | 75% | 0 | 0 |
| 3:00 PM | 45% | 0 | 75% | 0 | 0 |
| 4:00 PM | 45% | 0 | 75% | 0 | 0 |
| 5:00 PM | 60% | 0 | 100% | 0 | 0 |
| 6:00 PM | 90% | 0 | 100% | 0 | 0 |
| 7:00 PM | 95% | 0 | 100% | 0 | 0 |
| 8:00 PM | 100% | 0 | 100% | 0 | 0 |
| 9:00 PM | 90% | 0 | 100% | 0 | 0 |
| 10:00 PM | 90% | 0 | 100% | 0 | 0 |
| 11:00 PM | 90% | 0 | 85% | 0 | 0 |
| 12:00 AM | 50% | 0 | 50% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

Appendix Table 7B

FAMILY RESTAURANT

WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Family Restaurant | | | | |
|---|---|---|---|---|---|
| Size | 2.300 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | | 1.00 | |
| Non-Captive Ratio | 1.00 | | | 1.00 | |
| Gross Spaces | 23 Spaces | | | | |
| | 20 Guest Spc. | | 3 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 18% | 4 | 35% | 1 | 5 |
| 7:00 AM | 35% | 7 | 53% | 2 | 9 |
| 8:00 AM | 42% | 8 | 63% | 2 | 10 |
| 9:00 AM | 53% | 11 | 63% | 2 | 13 |
| 10:00 AM | 60% | 12 | 70% | 2 | 14 |
| 11:00 AM | 63% | 13 | 70% | 2 | 15 |
| 12:00 PM | 70% | 14 | 70% | 2 | 16 |
| 1:00 PM | 63% | 13 | 70% | 2 | 15 |
| 2:00 PM | 35% | 7 | 70% | 2 | 9 |
| 3:00 PM | 32% | 6 | 53% | 2 | 8 |
| 4:00 PM | 32% | 6 | 53% | 2 | 8 |
| 5:00 PM | 53% | 11 | 67% | 2 | 13 |
| 6:00 PM | 56% | 11 | 67% | 2 | 13 |
| 7:00 PM | 56% | 11 | 67% | 2 | 13 |
| 8:00 PM | 56% | 11 | 67% | 2 | 13 |
| 9:00 PM | 42% | 8 | 56% | 2 | 10 |
| 10:00 PM | 39% | 8 | 46% | 1 | 9 |
| 11:00 PM | 35% | 7 | 46% | 1 | 8 |
| 12:00 AM | 18% | 4 | 25% | 1 | 5 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

Appendix Table 8B

FAMILY RESTAURANT

WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Family Restaurant | | | | |
|---|---|---|---|---|---|
| Size | 2.300 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | | 1.00 | |
| Non-Captive Ratio | 1.00 | | | 1.00 | |
| Gross Spaces | 23 Spaces | | | | |
| | 20 Guest Spc. | | 3 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 10% | 2 | 50% | 2 | 4 |
| 7:00 AM | 25% | 5 | 75% | 2 | 7 |
| 8:00 AM | 45% | 9 | 90% | 3 | 12 |
| 9:00 AM | 70% | 14 | 90% | 3 | 17 |
| 10:00 AM | 90% | 18 | 100% | 3 | 21 |
| 11:00 AM | 90% | 18 | 100% | 3 | 21 |
| 12:00 PM | 100% | 20 | 100% | 3 | 23 |
| 1:00 PM | 85% | 17 | 100% | 3 | 20 |
| 2:00 PM | 65% | 13 | 100% | 3 | 16 |
| 3:00 PM | 40% | 8 | 75% | 2 | 10 |
| 4:00 PM | 45% | 9 | 75% | 2 | 11 |
| 5:00 PM | 60% | 12 | 95% | 3 | 15 |
| 6:00 PM | 70% | 14 | 95% | 3 | 17 |
| 7:00 PM | 70% | 14 | 95% | 3 | 17 |
| 8:00 PM | 65% | 13 | 95% | 3 | 16 |
| 9:00 PM | 30% | 6 | 80% | 2 | 8 |
| 10:00 PM | 25% | 5 | 65% | 2 | 7 |
| 11:00 PM | 15% | 3 | 65% | 2 | 5 |
| 12:00 AM | 10% | 2 | 35% | 1 | 3 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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**Appendix Table 9B**

**FAST-FOOD RESTAURANT**
**WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]**

| Land Use | Fast-Food Restaurant | | | | |
|---|---|---|---|---|---|
| Size | 3.300 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 33 Spaces | | | | |
| | 28 Guest Spc. | | 5 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 5% | 1 | 15% | 1 | 2 |
| 7:00 AM | 10% | 3 | 20% | 1 | 4 |
| 8:00 AM | 20% | 6 | 30% | 2 | 8 |
| 9:00 AM | 30% | 8 | 40% | 2 | 10 |
| 10:00 AM | 55% | 15 | 75% | 4 | 19 |
| 11:00 AM | 85% | 24 | 100% | 5 | 29 |
| 12:00 PM | 100% | 28 | 100% | 5 | 33 |
| 1:00 PM | 100% | 28 | 100% | 5 | 33 |
| 2:00 PM | 90% | 25 | 95% | 5 | 30 |
| 3:00 PM | 60% | 17 | 70% | 4 | 21 |
| 4:00 PM | 55% | 15 | 60% | 3 | 18 |
| 5:00 PM | 60% | 17 | 70% | 4 | 21 |
| 6:00 PM | 85% | 24 | 90% | 5 | 29 |
| 7:00 PM | 80% | 22 | 90% | 5 | 27 |
| 8:00 PM | 50% | 14 | 60% | 3 | 17 |
| 9:00 PM | 30% | 8 | 40% | 2 | 10 |
| 10:00 PM | 20% | 6 | 30% | 2 | 8 |
| 11:00 PM | 10% | 3 | 20% | 1 | 4 |
| 12:00 AM | 5% | 1 | 20% | 1 | 2 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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Appendix Table 10B

FAST-FOOD RESTAURANT
WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Fast-Food Restaurant | | | | |
|---|---|---|---|---|---|
| Size | 3.300 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 33 Spaces | | | | |
| | 28 Guest Spc. | | 5 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 5% | 1 | 14% | 1 | 2 |
| 7:00 AM | 9% | 3 | 19% | 1 | 4 |
| 8:00 AM | 19% | 5 | 28% | 1 | 6 |
| 9:00 AM | 28% | 8 | 37% | 2 | 10 |
| 10:00 AM | 51% | 14 | 70% | 4 | 18 |
| 11:00 AM | 79% | 22 | 93% | 5 | 27 |
| 12:00 PM | 93% | 26 | 93% | 5 | 31 |
| 1:00 PM | 93% | 26 | 93% | 5 | 31 |
| 2:00 PM | 84% | 24 | 89% | 4 | 28 |
| 3:00 PM | 56% | 16 | 65% | 3 | 19 |
| 4:00 PM | 51% | 14 | 56% | 3 | 17 |
| 5:00 PM | 56% | 16 | 65% | 3 | 19 |
| 6:00 PM | 79% | 22 | 84% | 4 | 26 |
| 7:00 PM | 75% | 21 | 84% | 4 | 25 |
| 8:00 PM | 47% | 13 | 56% | 3 | 16 |
| 9:00 PM | 28% | 8 | 37% | 2 | 10 |
| 10:00 PM | 19% | 5 | 28% | 1 | 6 |
| 11:00 PM | 9% | 3 | 19% | 1 | 4 |
| 12:00 AM | 5% | 1 | 19% | 1 | 2 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

Appendix Table 11B

MEDICAL/DENTAL OFFICE
WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Medical/Dental Office | | | | |
|---|---|---|---|---|---|
| Size | 3.500 KSF | | | | |
| Pkg Rate[2] | 5 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 18 Spaces | | | | |
| | 12 Visitor Spc. | | 6 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 0% | 0 | 0% | 0 | 0 |
| 7:00 AM | 0% | 0 | 0% | 0 | 0 |
| 8:00 AM | 90% | 11 | 60% | 4 | 15 |
| 9:00 AM | 90% | 11 | 100% | 6 | 17 |
| 10:00 AM | 100% | 12 | 100% | 6 | 18 |
| 11:00 AM | 100% | 12 | 100% | 6 | 18 |
| 12:00 PM | 30% | 4 | 100% | 6 | 10 |
| 1:00 PM | 90% | 11 | 100% | 6 | 17 |
| 2:00 PM | 100% | 12 | 100% | 6 | 18 |
| 3:00 PM | 100% | 12 | 100% | 6 | 18 |
| 4:00 PM | 90% | 11 | 100% | 6 | 17 |
| 5:00 PM | 80% | 10 | 100% | 6 | 16 |
| 6:00 PM | 67% | 8 | 67% | 4 | 12 |
| 7:00 PM | 30% | 4 | 30% | 2 | 6 |
| 8:00 PM | 15% | 2 | 15% | 1 | 3 |
| 9:00 PM | 0% | 0 | 0% | 0 | 0 |
| 10:00 PM | 0% | 0 | 0% | 0 | 0 |
| 11:00 PM | 0% | 0 | 0% | 0 | 0 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

Appendix Table 11B

MEDICAL/DENTAL OFFICE
WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Medical/Dental Office | | | | |
|---|---|---|---|---|---|
| Size | 3.500 KSF | | | | |
| Pkg Rate[2] | 5 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 18 Spaces | | | | |
| | 12 Visitor Spc. | | 6 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 0% | 0 | 0% | 0 | 0 |
| 7:00 AM | 0% | 0 | 0% | 0 | 0 |
| 8:00 AM | 90% | 11 | 60% | 4 | 15 |
| 9:00 AM | 90% | 11 | 100% | 6 | 17 |
| 10:00 AM | 100% | 12 | 100% | 6 | 18 |
| 11:00 AM | 100% | 12 | 100% | 6 | 18 |
| 12:00 PM | 30% | 4 | 100% | 6 | 10 |
| 1:00 PM | 0% | 0 | 0% | 0 | 0 |
| 2:00 PM | 0% | 0 | 0% | 0 | 0 |
| 3:00 PM | 0% | 0 | 0% | 0 | 0 |
| 4:00 PM | 0% | 0 | 0% | 0 | 0 |
| 5:00 PM | 0% | 0 | 0% | 0 | 0 |
| 6:00 PM | 0% | 0 | 0% | 0 | 0 |
| 7:00 PM | 0% | 0 | 0% | 0 | 0 |
| 8:00 PM | 0% | 0 | 0% | 0 | 0 |
| 9:00 PM | 0% | 0 | 0% | 0 | 0 |
| 10:00 PM | 0% | 0 | 0% | 0 | 0 |
| 11:00 PM | 0% | 0 | 0% | 0 | 0 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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Appendix Table 13B

SELF STORAGE (TYPICAL DAYS)
WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Self Storage (Typical Days) | | | |
|---|---|---|---|---|
| Size | | 177.345 | | |
| Pkg Rate[2] | | 0.184 | | |
| Mode Adjust | | 1.00 | | |
| Non-Captive Ratio | | 1.00 | Behind Gate Shared Parking Demand | Outside Gate Shared Parking Demand |
| Gross Spaces | | 33 | | |
| | 33 Spaces | | | |
| Time of Day | % Of Peak [3] | # Of Spaces | | |
| 6:00 AM | 0% | 0 | 11 | 0 |
| 7:00 AM | 0% | 0 | 11 | 0 |
| 8:00 AM | 14% | 5 | 11 | 0 |
| 9:00 AM | 71% | 23 | 11 | 12 |
| 10:00 AM | 50% | 17 | 11 | 6 |
| 11:00 AM | 79% | 26 | 11 | 15 |
| 12:00 PM | 57% | 19 | 11 | 8 |
| 1:00 PM | 64% | 21 | 11 | 10 |
| 2:00 PM | 64% | 21 | 11 | 10 |
| 3:00 PM | 79% | 26 | 11 | 15 |
| 4:00 PM | 71% | 23 | 11 | 12 |
| 5:00 PM | 100% | 33 | 11 | 22 |
| 6:00 PM | 14% | 5 | 11 | 0 |
| 7:00 PM | 0% | 0 | 11 | 0 |
| 8:00 PM | 0% | 0 | 11 | 0 |
| 9:00 PM | 0% | 0 | 11 | 0 |
| 10:00 PM | 0% | 0 | 11 | 0 |
| 11:00 PM | 0% | 0 | 11 | 0 |
| 12:00 AM | 0% | 0 | 11 | 0 |

Notes:

[1] Source: ITE Parking Generation Manual, 5th Edition for Land Use 151 Mini-Warehouse.

[2] Parking rate is based on information provided by the self-storage operator, by which an "design" parking ratio was derived for the Project.

Appendix Table 14B

SELF STORAGE (TYPICAL DAYS)
WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Self Storage (Typical Days) | | | |
|---|---|---|---|---|
| Size | | 177.345 | | |
| Pkg Rate[2] | | 0.184 | | |
| Mode Adjust | | 1.00 | | |
| Non-Captive Ratio | | 1.00 | Behind Gate Shared Parking Demand | Outside Gate Shared Parking Demand |
| Gross Spaces | | 33 | | |
| | 33 Spaces | | | |
| Time of Day | % Of Peak [3] | # Of Spaces | | |
| 6:00 AM | 0% | 0 | 11 | 0 |
| 7:00 AM | 0% | 0 | 11 | 0 |
| 8:00 AM | 0% | 0 | 11 | 0 |
| 9:00 AM | 0% | 0 | 11 | 0 |
| 10:00 AM | 0% | 0 | 11 | 0 |
| 11:00 AM | 0% | 0 | 11 | 0 |
| 12:00 PM | 0% | 0 | 11 | 0 |
| 1:00 PM | 51% | 17 | 11 | 6 |
| 2:00 PM | 15% | 5 | 11 | 0 |
| 3:00 PM | 31% | 10 | 11 | 0 |
| 4:00 PM | 56% | 18 | 11 | 7 |
| 5:00 PM | 51% | 17 | 11 | 6 |
| 6:00 PM | 15% | 5 | 11 | 0 |
| 7:00 PM | 0% | 0 | 11 | 0 |
| 8:00 PM | 0% | 0 | 11 | 0 |
| 9:00 PM | 0% | 0 | 11 | 0 |
| 10:00 PM | 0% | 0 | 11 | 0 |
| 11:00 PM | 0% | 0 | 11 | 0 |
| 12:00 AM | 0% | 0 | 11 | 0 |

Notes:
[1] Source: ITE Parking Generation Manual, 5th Edition for Land Use 151 Mini-Warehouse.

[2] Parking rate is based on information provided by the self-storage operator, by which an "design" parking ratio was derived for the Project.

# APPENDIX C

## ULI SHARED PARKING CALCULATION WORKSHEETS

## PROPOSED PROJECT – ALTERNATIVE 3
## RESTAURANT MIX

Appendix Table 1C

SHOPPING CENTER (TYPICAL DAYS)
WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Shopping Center (Typical Days) | | | | |
|---|---|---|---|---|---|
| Size | 135.811 KSF | | | | |
| Pkg Rate[2] | | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross | 357.18293 Spaces | | | | |
| Spaces | 288 Guest Spc. | | 69.18293 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 1% | 3 | 9% | 6 | 9 |
| 7:00 AM | 5% | 14 | 14% | 10 | 24 |
| 8:00 AM | 14% | 40 | 36% | 25 | 65 |
| 9:00 AM | 32% | 92 | 68% | 47 | 139 |
| 10:00 AM | 59% | 170 | 77% | 53 | 223 |
| 11:00 AM | 77% | 222 | 86% | 59 | 281 |
| 12:00 PM | 86% | 248 | 90% | 62 | 310 |
| 1:00 PM | 90% | 259 | 90% | 62 | 321 |
| 2:00 PM | 86% | 248 | 90% | 62 | 310 |
| 3:00 PM | 81% | 233 | 90% | 62 | 295 |
| 4:00 PM | 81% | 233 | 90% | 62 | 295 |
| 5:00 PM | 86% | 248 | 86% | 59 | 307 |
| 6:00 PM | 86% | 248 | 86% | 59 | 307 |
| 7:00 PM | 86% | 248 | 86% | 59 | 307 |
| 8:00 PM | 72% | 207 | 81% | 56 | 263 |
| 9:00 PM | 45% | 130 | 68% | 47 | 177 |
| 10:00 PM | 27% | 78 | 36% | 25 | 103 |
| 11:00 PM | 9% | 26 | 14% | 10 | 36 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code, except for Target and the Self-Storage facility.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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**Appendix Table 2C**

**SHOPPING CENTER (TYPICAL DAYS)**
**WEEKEND SHARED PARKING DEMAND ANALYSIS [1]**

| Land Use | Shopping Center (Typical Days) | | | | |
|---|---|---|---|---|---|
| Size | 135.811 KSF | | | | |
| Pkg Rate[2] | | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 357.18293 Spaces | | | | |
| | 286 Guest Spc. | | 71.18293 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 1% | 3 | 10% | 7 | 10 |
| 7:00 AM | 5% | 14 | 15% | 11 | 25 |
| 8:00 AM | 10% | 29 | 40% | 28 | 57 |
| 9:00 AM | 30% | 86 | 75% | 53 | 139 |
| 10:00 AM | 50% | 143 | 85% | 61 | 204 |
| 11:00 AM | 65% | 186 | 95% | 68 | 254 |
| 12:00 PM | 80% | 229 | 100% | 71 | 300 |
| 1:00 PM | 90% | 257 | 100% | 71 | 328 |
| 2:00 PM | 100% | 286 | 100% | 71 | 357 |
| 3:00 PM | 100% | 286 | 100% | 71 | 357 |
| 4:00 PM | 95% | 272 | 100% | 71 | 343 |
| 5:00 PM | 90% | 257 | 95% | 68 | 325 |
| 6:00 PM | 80% | 229 | 85% | 61 | 290 |
| 7:00 PM | 75% | 215 | 80% | 57 | 272 |
| 8:00 PM | 65% | 186 | 75% | 53 | 239 |
| 9:00 PM | 50% | 143 | 65% | 46 | 189 |
| 10:00 PM | 35% | 100 | 45% | 32 | 132 |
| 11:00 PM | 15% | 43 | 15% | 11 | 54 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code, except for Target and the Self-Storage facility.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

Appendix Table 3C

SHOPPING CENTER (TYPICAL DAYS)
WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Shopping Center (Typical Days) | | | | |
|---|---|---|---|---|---|
| Size | 15.000 KSF | | | | |
| Pkg Rate[2] | 5 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 75 Spaces | | | | |
| | 60 Guest Spc. | | 15 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 1% | 1 | 9% | 1 | 2 |
| 7:00 AM | 5% | 3 | 14% | 2 | 5 |
| 8:00 AM | 14% | 8 | 36% | 5 | 13 |
| 9:00 AM | 32% | 19 | 68% | 10 | 29 |
| 10:00 AM | 59% | 35 | 77% | 12 | 47 |
| 11:00 AM | 77% | 46 | 86% | 13 | 59 |
| 12:00 PM | 86% | 52 | 90% | 14 | 66 |
| 1:00 PM | 90% | 54 | 90% | 14 | 68 |
| 2:00 PM | 86% | 52 | 90% | 14 | 66 |
| 3:00 PM | 81% | 49 | 90% | 14 | 63 |
| 4:00 PM | 81% | 49 | 90% | 14 | 63 |
| 5:00 PM | 86% | 52 | 86% | 13 | 65 |
| 6:00 PM | 86% | 52 | 86% | 13 | 65 |
| 7:00 PM | 86% | 52 | 86% | 13 | 65 |
| 8:00 PM | 72% | 43 | 81% | 12 | 55 |
| 9:00 PM | 45% | 27 | 68% | 10 | 37 |
| 10:00 PM | 27% | 16 | 36% | 5 | 21 |
| 11:00 PM | 9% | 5 | 14% | 2 | 7 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

Appendix Table 4C

SHOPPING CENTER (TYPICAL DAYS)
WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Shopping Center (Typical Days) | | | | |
|---|---|---|---|---|---|
| Size | 15.000 KSF | | | | |
| Pkg Rate[2] | 5 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 75 Spaces | | | | |
| | 60 Guest Spc. | | 15 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 1% | 1 | 10% | 2 | 3 |
| 7:00 AM | 5% | 3 | 15% | 2 | 5 |
| 8:00 AM | 10% | 6 | 40% | 6 | 12 |
| 9:00 AM | 30% | 18 | 75% | 11 | 29 |
| 10:00 AM | 50% | 30 | 85% | 13 | 43 |
| 11:00 AM | 65% | 39 | 95% | 14 | 53 |
| 12:00 PM | 80% | 48 | 100% | 15 | 63 |
| 1:00 PM | 90% | 54 | 100% | 15 | 69 |
| 2:00 PM | 100% | 60 | 100% | 15 | 75 |
| 3:00 PM | 100% | 60 | 100% | 15 | 75 |
| 4:00 PM | 95% | 57 | 100% | 15 | 72 |
| 5:00 PM | 90% | 54 | 95% | 14 | 68 |
| 6:00 PM | 80% | 48 | 85% | 13 | 61 |
| 7:00 PM | 75% | 45 | 80% | 12 | 57 |
| 8:00 PM | 65% | 39 | 75% | 11 | 50 |
| 9:00 PM | 50% | 30 | 65% | 10 | 40 |
| 10:00 PM | 35% | 21 | 45% | 7 | 28 |
| 11:00 PM | 15% | 9 | 15% | 2 | 11 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

Appendix Table 5C

FINE/CASUAL DINING

WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Fine/Casual Dining | | | | |
|---|---|---|---|---|---|
| Size | 0.000 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 0 Spaces | | | | |
| | 0 Guest Spc. | | 0 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 0% | 0 | 0% | 0 | 0 |
| 7:00 AM | 0% | 0 | 18% | 0 | 0 |
| 8:00 AM | 0% | 0 | 45% | 0 | 0 |
| 9:00 AM | 0% | 0 | 68% | 0 | 0 |
| 10:00 AM | 14% | 0 | 81% | 0 | 0 |
| 11:00 AM | 36% | 0 | 81% | 0 | 0 |
| 12:00 PM | 68% | 0 | 81% | 0 | 0 |
| 1:00 PM | 68% | 0 | 81% | 0 | 0 |
| 2:00 PM | 59% | 0 | 81% | 0 | 0 |
| 3:00 PM | 36% | 0 | 68% | 0 | 0 |
| 4:00 PM | 45% | 0 | 68% | 0 | 0 |
| 5:00 PM | 68% | 0 | 90% | 0 | 0 |
| 6:00 PM | 86% | 0 | 90% | 0 | 0 |
| 7:00 PM | 90% | 0 | 90% | 0 | 0 |
| 8:00 PM | 90% | 0 | 90% | 0 | 0 |
| 9:00 PM | 90% | 0 | 90% | 0 | 0 |
| 10:00 PM | 86% | 0 | 90% | 0 | 0 |
| 11:00 PM | 68% | 0 | 77% | 0 | 0 |
| 12:00 AM | 23% | 0 | 32% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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**Appendix Table 6C**

**FINE/CASUAL DINING**
**WEEKEND SHARED PARKING DEMAND ANALYSIS [1]**

| Land Use | Fine/Casual Dining | | | | |
|---|---|---|---|---|---|
| Size | 0.000 KSF | | | | Shared Parking Demand |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | | 1.00 | |
| Non-Captive Ratio | 1.00 | | | 1.00 | |
| Gross Spaces | 0 Spaces | | | | |
| | 0 Guest Spc. | | 0 Emp. Spc. | | |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | |
| 6:00 AM | 0% | 0 | 0% | 0 | 0 |
| 7:00 AM | 0% | 0 | 20% | 0 | 0 |
| 8:00 AM | 0% | 0 | 30% | 0 | 0 |
| 9:00 AM | 0% | 0 | 60% | 0 | 0 |
| 10:00 AM | 0% | 0 | 75% | 0 | 0 |
| 11:00 AM | 15% | 0 | 75% | 0 | 0 |
| 12:00 PM | 50% | 0 | 75% | 0 | 0 |
| 1:00 PM | 55% | 0 | 75% | 0 | 0 |
| 2:00 PM | 45% | 0 | 75% | 0 | 0 |
| 3:00 PM | 45% | 0 | 75% | 0 | 0 |
| 4:00 PM | 45% | 0 | 75% | 0 | 0 |
| 5:00 PM | 60% | 0 | 100% | 0 | 0 |
| 6:00 PM | 90% | 0 | 100% | 0 | 0 |
| 7:00 PM | 95% | 0 | 100% | 0 | 0 |
| 8:00 PM | 100% | 0 | 100% | 0 | 0 |
| 9:00 PM | 90% | 0 | 100% | 0 | 0 |
| 10:00 PM | 90% | 0 | 100% | 0 | 0 |
| 11:00 PM | 90% | 0 | 85% | 0 | 0 |
| 12:00 AM | 50% | 0 | 50% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

Appendix Table 7C

FAMILY RESTAURANT

WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Family Restaurant | | | | |
|---|---|---|---|---|---|
| Size | 0.000 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | | 1.00 | |
| Non-Captive Ratio | 1.00 | | | 1.00 | |
| Gross Spaces | 0 Spaces | | | | |
| | 0 Guest Spc. | | 0 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 18% | 0 | 35% | 0 | 0 |
| 7:00 AM | 35% | 0 | 53% | 0 | 0 |
| 8:00 AM | 42% | 0 | 63% | 0 | 0 |
| 9:00 AM | 53% | 0 | 63% | 0 | 0 |
| 10:00 AM | 60% | 0 | 70% | 0 | 0 |
| 11:00 AM | 63% | 0 | 70% | 0 | 0 |
| 12:00 PM | 70% | 0 | 70% | 0 | 0 |
| 1:00 PM | 63% | 0 | 70% | 0 | 0 |
| 2:00 PM | 35% | 0 | 70% | 0 | 0 |
| 3:00 PM | 32% | 0 | 53% | 0 | 0 |
| 4:00 PM | 32% | 0 | 53% | 0 | 0 |
| 5:00 PM | 53% | 0 | 67% | 0 | 0 |
| 6:00 PM | 56% | 0 | 67% | 0 | 0 |
| 7:00 PM | 56% | 0 | 67% | 0 | 0 |
| 8:00 PM | 56% | 0 | 67% | 0 | 0 |
| 9:00 PM | 42% | 0 | 56% | 0 | 0 |
| 10:00 PM | 39% | 0 | 46% | 0 | 0 |
| 11:00 PM | 35% | 0 | 46% | 0 | 0 |
| 12:00 AM | 18% | 0 | 25% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

Appendix Table 8C

FAMILY RESTAURANT

WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Family Restaurant | | | | |
|---|---|---|---|---|---|
| Size | 0.000 KSF | | | | Shared Parking Demand |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 0 Spaces | | | | |
| | 0 Guest Spc. | | 0 Emp. Spc. | | |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | |
| 6:00 AM | 10% | 0 | 50% | 0 | 0 |
| 7:00 AM | 25% | 0 | 75% | 0 | 0 |
| 8:00 AM | 45% | 0 | 90% | 0 | 0 |
| 9:00 AM | 70% | 0 | 90% | 0 | 0 |
| 10:00 AM | 90% | 0 | 100% | 0 | 0 |
| 11:00 AM | 90% | 0 | 100% | 0 | 0 |
| 12:00 PM | 100% | 0 | 100% | 0 | 0 |
| 1:00 PM | 85% | 0 | 100% | 0 | 0 |
| 2:00 PM | 65% | 0 | 100% | 0 | 0 |
| 3:00 PM | 40% | 0 | 75% | 0 | 0 |
| 4:00 PM | 45% | 0 | 75% | 0 | 0 |
| 5:00 PM | 60% | 0 | 95% | 0 | 0 |
| 6:00 PM | 70% | 0 | 95% | 0 | 0 |
| 7:00 PM | 70% | 0 | 95% | 0 | 0 |
| 8:00 PM | 65% | 0 | 95% | 0 | 0 |
| 9:00 PM | 30% | 0 | 80% | 0 | 0 |
| 10:00 PM | 25% | 0 | 65% | 0 | 0 |
| 11:00 PM | 15% | 0 | 65% | 0 | 0 |
| 12:00 AM | 10% | 0 | 35% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

Appendix Table 9C

FAST-FOOD RESTAURANT
WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Fast-Food Restaurant | | | | |
|---|---|---|---|---|---|
| Size | 5.600 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 56 Spaces | | | | |
| | 48 Guest Spc. | | 8 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 5% | 2 | 15% | 1 | 3 |
| 7:00 AM | 10% | 5 | 20% | 2 | 7 |
| 8:00 AM | 20% | 10 | 30% | 2 | 12 |
| 9:00 AM | 30% | 14 | 40% | 3 | 17 |
| 10:00 AM | 55% | 26 | 75% | 6 | 32 |
| 11:00 AM | 85% | 41 | 100% | 8 | 49 |
| 12:00 PM | 100% | 48 | 100% | 8 | 56 |
| 1:00 PM | 100% | 48 | 100% | 8 | 56 |
| 2:00 PM | 90% | 43 | 95% | 8 | 51 |
| 3:00 PM | 60% | 29 | 70% | 6 | 35 |
| 4:00 PM | 55% | 26 | 60% | 5 | 31 |
| 5:00 PM | 60% | 29 | 70% | 6 | 35 |
| 6:00 PM | 85% | 41 | 90% | 7 | 48 |
| 7:00 PM | 80% | 38 | 90% | 7 | 45 |
| 8:00 PM | 50% | 24 | 60% | 5 | 29 |
| 9:00 PM | 30% | 14 | 40% | 3 | 17 |
| 10:00 PM | 20% | 10 | 30% | 2 | 12 |
| 11:00 PM | 10% | 5 | 20% | 2 | 7 |
| 12:00 AM | 5% | 2 | 20% | 2 | 4 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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**Appendix Table 10C**

**FAST-FOOD RESTAURANT**
**WEEKEND SHARED PARKING DEMAND ANALYSIS [1]**

| Land Use | Fast-Food Restaurant | | | | |
|---|---|---|---|---|---|
| Size | 5.600 KSF | | | | |
| Pkg Rate[2] | 10 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 56 Spaces | | | | |
| | 48 Guest Spc. | | 8 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 5% | 2 | 14% | 1 | 3 |
| 7:00 AM | 9% | 4 | 19% | 2 | 6 |
| 8:00 AM | 19% | 9 | 28% | 2 | 11 |
| 9:00 AM | 28% | 13 | 37% | 3 | 16 |
| 10:00 AM | 51% | 24 | 70% | 6 | 30 |
| 11:00 AM | 79% | 38 | 93% | 7 | 45 |
| 12:00 PM | 93% | 45 | 93% | 7 | 52 |
| 1:00 PM | 93% | 45 | 93% | 7 | 52 |
| 2:00 PM | 84% | 40 | 89% | 7 | 47 |
| 3:00 PM | 56% | 27 | 65% | 5 | 32 |
| 4:00 PM | 51% | 24 | 56% | 4 | 28 |
| 5:00 PM | 56% | 27 | 65% | 5 | 32 |
| 6:00 PM | 79% | 38 | 84% | 7 | 45 |
| 7:00 PM | 75% | 36 | 84% | 7 | 43 |
| 8:00 PM | 47% | 23 | 56% | 4 | 27 |
| 9:00 PM | 28% | 13 | 37% | 3 | 16 |
| 10:00 PM | 19% | 9 | 28% | 2 | 11 |
| 11:00 PM | 9% | 4 | 19% | 2 | 6 |
| 12:00 AM | 5% | 2 | 19% | 2 | 4 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

Appendix Table 11C

MEDICAL/DENTAL OFFICE
WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Medical/Dental Office | | | | |
|---|---|---|---|---|---|
| Size | 3.500 KSF | | | | |
| Pkg Rate[2] | 5 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross | 18 Spaces | | | | |
| Spaces | 12 Visitor Spc. | | 6 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 0% | 0 | 0% | 0 | 0 |
| 7:00 AM | 0% | 0 | 0% | 0 | 0 |
| 8:00 AM | 90% | 11 | 60% | 4 | 15 |
| 9:00 AM | 90% | 11 | 100% | 6 | 17 |
| 10:00 AM | 100% | 12 | 100% | 6 | 18 |
| 11:00 AM | 100% | 12 | 100% | 6 | 18 |
| 12:00 PM | 30% | 4 | 100% | 6 | 10 |
| 1:00 PM | 90% | 11 | 100% | 6 | 17 |
| 2:00 PM | 100% | 12 | 100% | 6 | 18 |
| 3:00 PM | 100% | 12 | 100% | 6 | 18 |
| 4:00 PM | 90% | 11 | 100% | 6 | 17 |
| 5:00 PM | 80% | 10 | 100% | 6 | 16 |
| 6:00 PM | 67% | 8 | 67% | 4 | 12 |
| 7:00 PM | 30% | 4 | 30% | 2 | 6 |
| 8:00 PM | 15% | 2 | 15% | 1 | 3 |
| 9:00 PM | 0% | 0 | 0% | 0 | 0 |
| 10:00 PM | 0% | 0 | 0% | 0 | 0 |
| 11:00 PM | 0% | 0 | 0% | 0 | 0 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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Appendix Table 11C

MEDICAL/DENTAL OFFICE
WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Medical/Dental Office | | | | |
|---|---|---|---|---|---|
| Size | 3.500 KSF | | | | |
| Pkg Rate[2] | 5 /KSF | | | | |
| Mode Adjust | 1.00 | | 1.00 | | |
| Non-Captive Ratio | 1.00 | | 1.00 | | |
| Gross Spaces | 18 Spaces | | | | |
| | 12 Visitor Spc. | | 6 Emp. Spc. | | Shared |
| Time of Day | % Of Peak [3] | # Of Spaces | % Of Peak [3] | # Of Spaces | Parking Demand |
| 6:00 AM | 0% | 0 | 0% | 0 | 0 |
| 7:00 AM | 0% | 0 | 0% | 0 | 0 |
| 8:00 AM | 90% | 11 | 60% | 4 | 15 |
| 9:00 AM | 90% | 11 | 100% | 6 | 17 |
| 10:00 AM | 100% | 12 | 100% | 6 | 18 |
| 11:00 AM | 100% | 12 | 100% | 6 | 18 |
| 12:00 PM | 30% | 4 | 100% | 6 | 10 |
| 1:00 PM | 0% | 0 | 0% | 0 | 0 |
| 2:00 PM | 0% | 0 | 0% | 0 | 0 |
| 3:00 PM | 0% | 0 | 0% | 0 | 0 |
| 4:00 PM | 0% | 0 | 0% | 0 | 0 |
| 5:00 PM | 0% | 0 | 0% | 0 | 0 |
| 6:00 PM | 0% | 0 | 0% | 0 | 0 |
| 7:00 PM | 0% | 0 | 0% | 0 | 0 |
| 8:00 PM | 0% | 0 | 0% | 0 | 0 |
| 9:00 PM | 0% | 0 | 0% | 0 | 0 |
| 10:00 PM | 0% | 0 | 0% | 0 | 0 |
| 11:00 PM | 0% | 0 | 0% | 0 | 0 |
| 12:00 AM | 0% | 0 | 0% | 0 | 0 |

Notes:

[1] Source: ULI - Urban Land Institute "Shared Parking," Second Edition, 2005.

[2] Parking rates for all land uses based on City code.

[3] Percentage of peak parking demand factors reflect relationships between weekday parking demand ratios and peak parking demand ratios, as summarized in Table 2-2 of the "Shared Parking" manual.

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Appendix Table 13C

SELF STORAGE (TYPICAL DAYS)
WEEKDAY SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Self Storage (Typical Days) | | | |
|---|---|---|---|---|
| Size | | 177.345 | | |
| Pkg Rate[2] | | 0.184 | | |
| Mode Adjust | | 1.00 | | |
| Non-Captive Ratio | | 1.00 | Behind Gate Shared Parking Demand | Outside Gate Shared Parking Demand |
| Gross Spaces | | 33 | | |
| | 33 Spaces | | | |
| Time of Day | % Of Peak [3] | # Of Spaces | | |
| 6:00 AM | 0% | 0 | 11 | 0 |
| 7:00 AM | 0% | 0 | 11 | 0 |
| 8:00 AM | 14% | 5 | 11 | 0 |
| 9:00 AM | 71% | 23 | 11 | 12 |
| 10:00 AM | 50% | 17 | 11 | 6 |
| 11:00 AM | 79% | 26 | 11 | 15 |
| 12:00 PM | 57% | 19 | 11 | 8 |
| 1:00 PM | 64% | 21 | 11 | 10 |
| 2:00 PM | 64% | 21 | 11 | 10 |
| 3:00 PM | 79% | 26 | 11 | 15 |
| 4:00 PM | 71% | 23 | 11 | 12 |
| 5:00 PM | 100% | 33 | 11 | 22 |
| 6:00 PM | 14% | 5 | 11 | 0 |
| 7:00 PM | 0% | 0 | 11 | 0 |
| 8:00 PM | 0% | 0 | 11 | 0 |
| 9:00 PM | 0% | 0 | 11 | 0 |
| 10:00 PM | 0% | 0 | 11 | 0 |
| 11:00 PM | 0% | 0 | 11 | 0 |
| 12:00 AM | 0% | 0 | 11 | 0 |

Notes:

[1] Source: ITE Parking Generation Manual, 5th Edition for Land Use 151 Mini-Warehouse.

[2] Parking rate is based on information provided by the self-storage operator, by which an "design" parking ratio was derived for the Project.

Appendix Table 14C

SELF STORAGE (TYPICAL DAYS)
WEEKEND SHARED PARKING DEMAND ANALYSIS [1]

| Land Use | Self Storage (Typical Days) | | | |
|---|---|---|---|---|
| Size | | 177.345 | | |
| Pkg Rate[2] | | 0.184 | | |
| Mode Adjust | | 1.00 | | |
| Non-Captive Ratio | | 1.00 | Behind Gate Shared Parking Demand | Outside Gate Shared Parking Demand |
| Gross Spaces | | 33 | | |
| | 33 Spaces | | | |
| Time of Day | % Of Peak [3] | # Of Spaces | | |
| 6:00 AM | 0% | 0 | 11 | 0 |
| 7:00 AM | 0% | 0 | 11 | 0 |
| 8:00 AM | 0% | 0 | 11 | 0 |
| 9:00 AM | 0% | 0 | 11 | 0 |
| 10:00 AM | 0% | 0 | 11 | 0 |
| 11:00 AM | 0% | 0 | 11 | 0 |
| 12:00 PM | 0% | 0 | 11 | 0 |
| 1:00 PM | 51% | 17 | 11 | 6 |
| 2:00 PM | 15% | 5 | 11 | 0 |
| 3:00 PM | 31% | 10 | 11 | 0 |
| 4:00 PM | 56% | 18 | 11 | 7 |
| 5:00 PM | 51% | 17 | 11 | 6 |
| 6:00 PM | 15% | 5 | 11 | 0 |
| 7:00 PM | 0% | 0 | 11 | 0 |
| 8:00 PM | 0% | 0 | 11 | 0 |
| 9:00 PM | 0% | 0 | 11 | 0 |
| 10:00 PM | 0% | 0 | 11 | 0 |
| 11:00 PM | 0% | 0 | 11 | 0 |
| 12:00 AM | 0% | 0 | 11 | 0 |

Notes:
[1] Source: ITE Parking Generation Manual, 5th Edition for Land Use 151 Mini-Warehouse.

[2] Parking rate is based on information provided by the self-storage operator, by which an "design" parking ratio was derived for the Project.