



**CONESTOGA-ROVERS
& ASSOCIATES**

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TRANSMITTAL

DATE: November 17, 2010 REFERENCE NO.: 060204
PROJECT NAME: 2301-2307 Lincoln Avenue, Alameda
TO: Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

RECEIVED
10:47 am, Nov 22, 2010
Alameda County
Environmental Health

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 Originals Other
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 Overnight Courier Other GeoTracker and Alameda County FTP

| QUANTITY | DESCRIPTION |
|----------|--|
| 1 | Remedial Action Plan and Well Survey Work Plan |
| | |
| | |

As Requested For Review and Comment
 For Your Use _____

COMMENTS:
If you have any questions regarding the contents of this document, please call Peter Schaefer at (510) 420-3319.

Copy to: Denis Brown, Shell Oil Products US (electronic copy)
Alan A. and Beverly M. Sebanc, Trustees, 2805 Ralston Avenue, Hillsborough, CA 94010
Jake Torrens, AMEC Geomatrix, Inc., 2101 Webster Street, 12th Floor, Oakland, CA 94612

Completed by: Peter Schaefer Signed: *Peter Schaefer*

Filing: Correspondence File



Mr. Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Denis L. Brown
Shell Oil Products US
HSE – Environmental Services
20945 S. Wilmington Ave.
Carson, CA 90810-1039
Tel (707) 865 0251
Fax (707) 865 2542
Email denis.l.brown@shell.com

Subject: 2301-2307 Lincoln Avenue
Alameda, California
SAP Code 165255
Incident No. 97767044
ACEH No. RO0002971

Dear Mr. Wickham,

The attached document is provided for your review and comment. Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached document is true and correct.

As always, please feel free to contact me directly at (707) 865-0251 with any questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "Denis L. Brown", is written over a horizontal line.

Denis L. Brown
Senior Program Manager



REMEDIAL ACTION PLAN AND WELL SURVEY WORK PLAN

FORMER SHELL SERVICE STATION
2301-2307 LINCOLN AVENUE
ALAMEDA, CALIFORNIA

SAP CODE 165255
INCIDENT NO. 97767044
AGENCY NO. RO0002971

NOVEMBER 17, 2010
REF. NO. 060204 (16)
This report is printed on recycled paper.

Prepared by:
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1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) prepared this remedial action plan and work plan on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell) to address residual petroleum hydrocarbon and lead impacts and to identify any water supply wells in the vicinity of the site. This work plan was requested in Alameda County Environmental Health's (ACEH's) October 11, 2010 letter.

The site is a former Shell service station located at the northeastern corner of Lincoln Avenue and Oak Street in Alameda, California (Figure 1). The area surrounding the site is mixed commercial and residential. The current site layout (Figure 2) includes a parking lot and commercial building housing a convenience store, a cleaners (not a dry cleaner), and a laundromat. The former service station layout included a station building, two dispenser islands, and seven fuel underground storage tanks (USTs). According to the Alameda Fire Department, the seven USTs were removed from the site in June 1982.

A summary of previous work performed at the site and additional background information is contained in Appendix A.

2.0 REMEDIAL ACTION PLAN

2.1 EXCAVATION - PETROLEUM HYDROCARBON AREA

Based on groundwater analytical data from monitoring well MW-4 and soil boring EB-1 and soil vapor data from soil vapor probe SVP-5 indicating a localized source of petroleum hydrocarbons in this area, CRA proposes to excavate soils as shown on Figure 2. Prior to excavating, CRA will properly destroy monitoring well MW-4. Soil vapor probes SVP-5 and SVP-5A will be completely removed during the excavation activities. Specific work tasks are detailed below.

2.1.1 PERMITS

CRA will obtain a well destruction permit from the Alameda County Public Works Agency (ACPWA). The excavation contractor will acquire required excavation permits and provide the required notifications for the excavation activities.

2.1.2 HEALTH AND SAFETY PLAN (HASP)

CRA will prepare a HASP to protect site workers. The plan will be kept on site during field activities and will be reviewed and signed by each site worker.

2.1.3 UTILITY CLEARANCE

CRA will mark the proposed excavation location, and the location will be cleared through Underground Service Alert (USA) and a private line locator service prior to excavation.

2.1.4 WELL DESTRUCTION

CRA proposes to properly destroy one monitoring well (MW-4) and two soil vapor probes (SVP-5 and SVP-5A). The well will be destroyed by backfilling with neat cement under pressure (pressure grouting). The well vault and a portion of the casing will be removed during the excavation activities. The soil vapor probes will be removed in their entireties during the excavation process. CRA includes the well and soil vapor probe logs in Appendix B. The proposed scope of work will be performed under the supervision of a professional geologist or engineer.

2.1.5 EXCAVATION

CRA proposes to excavate and dispose of hydrocarbon-impacted soil as shown on Figure 2. Based on previous investigation results, the upper 5 feet of soil are not impacted. We will attempt to segregate clean surface soil and stockpile on site for reuse as backfill. The proposed horizontal extents of the excavation are 13 feet by 13 feet. No soil will be excavated from beyond these proposed excavation boundaries due to surrounding buildings and underground utilities. The proposed excavation depth is 8 feet below grade (fbg), but it may be extended to 10 fbg based on field observations. Soil samples will be collected during excavation activities and analyzed with a photo-ionization detector.

Groundwater accumulation in the excavated pit is anticipated. If the base of the excavation has standing groundwater, no soil samples will be collected from saturated soils. Instead, CRA proposes to collect confirmation sidewall samples from each side of the excavation above the soil-water interface. If no standing groundwater is present,

CRA will collect a minimum of two soil samples from the bottom of the excavation, in addition to the sidewall samples.

An added benefit of excavation is the potential to readily remove dissolved-phase hydrocarbons from groundwater by groundwater extraction from the open excavation. CRA will oversee the off haul and disposal of hydrocarbon-impacted groundwater. Currently it is unknown how much or if any groundwater will need to be extracted and disposed. It is anticipated that extracted groundwater will be transported to Shell's Martinez refinery for recycling.

Upon completion of the excavation and groundwater extraction, the excavation will be backfilled and compacted. The contractor will backfill the excavation in accordance with construction permit requirements.

2.1.6 CHEMICAL ANALYSIS

Soil samples collected from this excavation will be analyzed for total petroleum hydrocarbons as gasoline, benzene, toluene, ethylbenzene, and xylenes by EPA Method 8260B.

2.2 EXCAVATION - LEAD AREA

Based on soil analytical data from soil boring EB-10 at 2 fbg, the lead concentration in soil exceeds the California human health screening level for commercial soils¹ in this area, and CRA proposes to excavate soils as shown on Figure 2. Specific work tasks are detailed below.

2.2.1 PERMITS

The excavation contractor will acquire required excavation permits and provide the required notifications for the excavation activities.

¹ *Revised California Human Health Screening Levels for Lead, California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Integrated Risk Assessment Branch, September 2009*

2.2.2 HASP

CRA will prepare a HASP to protect site workers. The plan will be kept on site during field activities and will be reviewed and signed by each site worker.

2.2.3 UTILITY CLEARANCE

CRA will mark the proposed excavation location, and the location will be cleared through USA and a private line locator service prior to excavation.

2.2.4 EXCAVATION

CRA proposes to excavate and dispose of lead-impacted soil as shown on Figure 2. The proposed horizontal extents of the excavation are 5 feet by 5 feet, and the excavation will extend to 3 fbg. CRA proposes to collect four confirmation samples from the sidewalls of the excavation and one confirmation from the base of the excavation. Upon completion of the excavation, the excavation will be backfilled and compacted. The contractor will backfill the excavation in accordance with construction permit requirements.

2.2.5 CHEMICAL ANALYSIS

Soil samples collected from this excavation will be analyzed for lead by EPA Method 6010B.

3.0 WELL SURVEY WORK PLAN

ACEH's October 11, 2010 letter requested a water supply well survey. CRA will review ACPWA and State of California Department of Water Resources records and identify water supply wells within 2,000 feet of the subject site.

4.0 REPORT PREPARATION

Following receipt of analytical results from the laboratory, CRA will prepare a report which will include field procedures, laboratory results, and well survey results.

5.0 SCHEDULE

CRA will begin work upon ACEH's approval of this work plan, receipt of a drilling permit from ACPWA, and receipt of required excavation permits.

All of Which is Respectfully Submitted,
CONESTOGA-ROVERS & ASSOCIATES



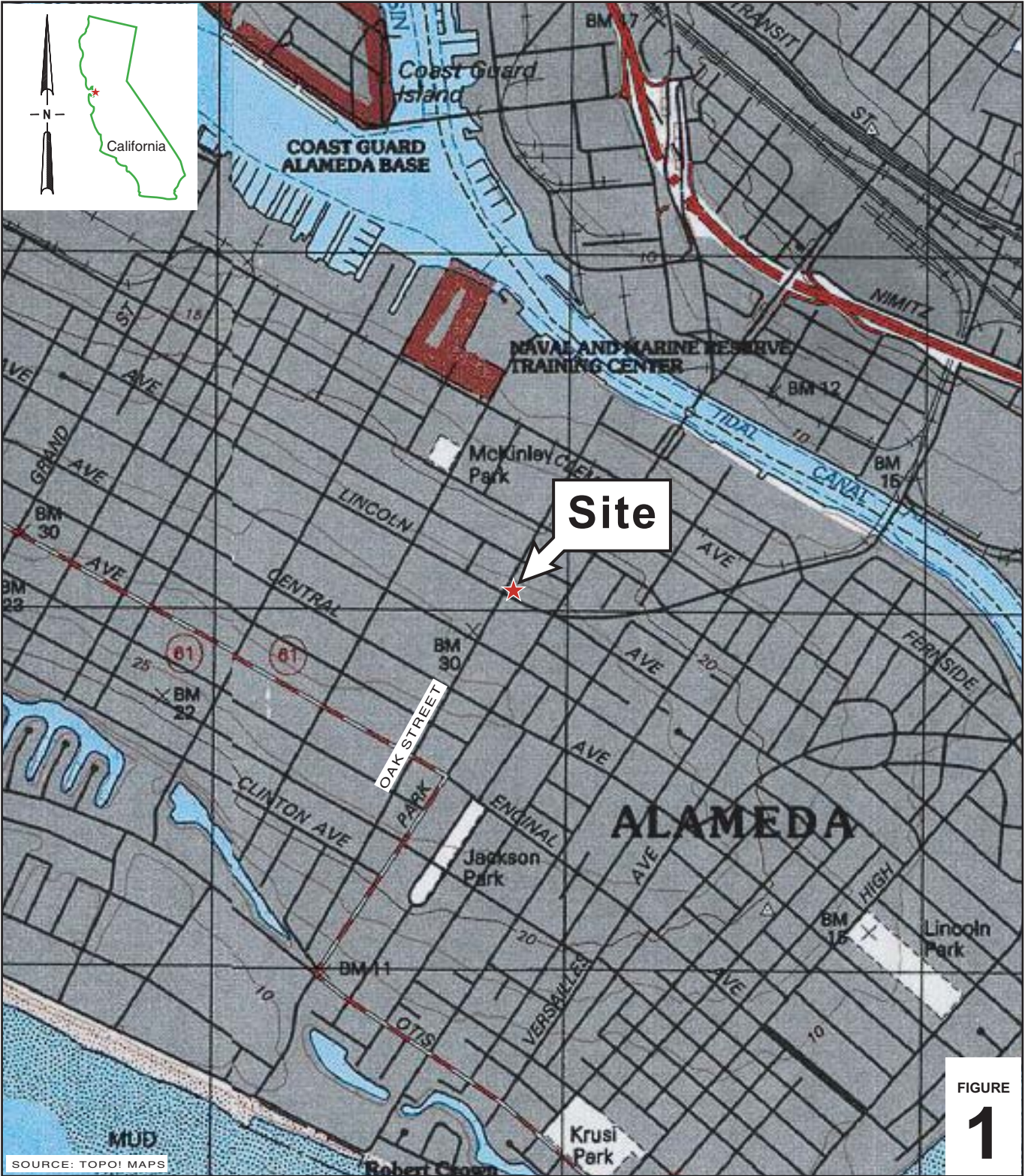
Peter Schaefer, CEG, CHG



Aubrey K. Cool, PG



FIGURES



I:\Shell\6-charts\0602--1060204-Alameda 2301-2307 Lincoln Ave\060204 FIGURES\060204 VICINITY.A1

SOURCE: TOPOI MAPS



SCALE : 1" = 1/4 MILE

FIGURE 1

Former Shell Service Station

2301-2307 Lincoln Avenue
Alameda, California



**CONESTOGA-ROVERS
& ASSOCIATES**

Vicinity Map

EXPLANATION

- MW-1** ● Monitoring well location
- B-6** ⊙ Soil boring location (CRA, 7/10)
- SVP-1** ✦ Soil vapor probe location (CRA, 2/09, 3/10)
- B-5** ○ Geoprobe boring location (CRA, 2/09)
- EB-1** ⊙ Soil boring location (Geomatrix, 8/07)
- SB-1** ⊙ Soil boring location (Basics Environmental, 7/99)

- Electrical & Telecommunications line (E)
- Telecommunications & Cable TV line (T)
- Gas line (G)
- Storm drain line (STM)
- Sanitary sewer line (SAN)
- Water line (W)

- Sources:**
1. Sanborn Fire Insurance Map, 1950
 2. Majors Civil Engineering, 1982

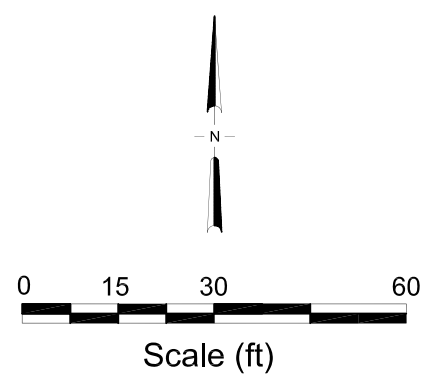
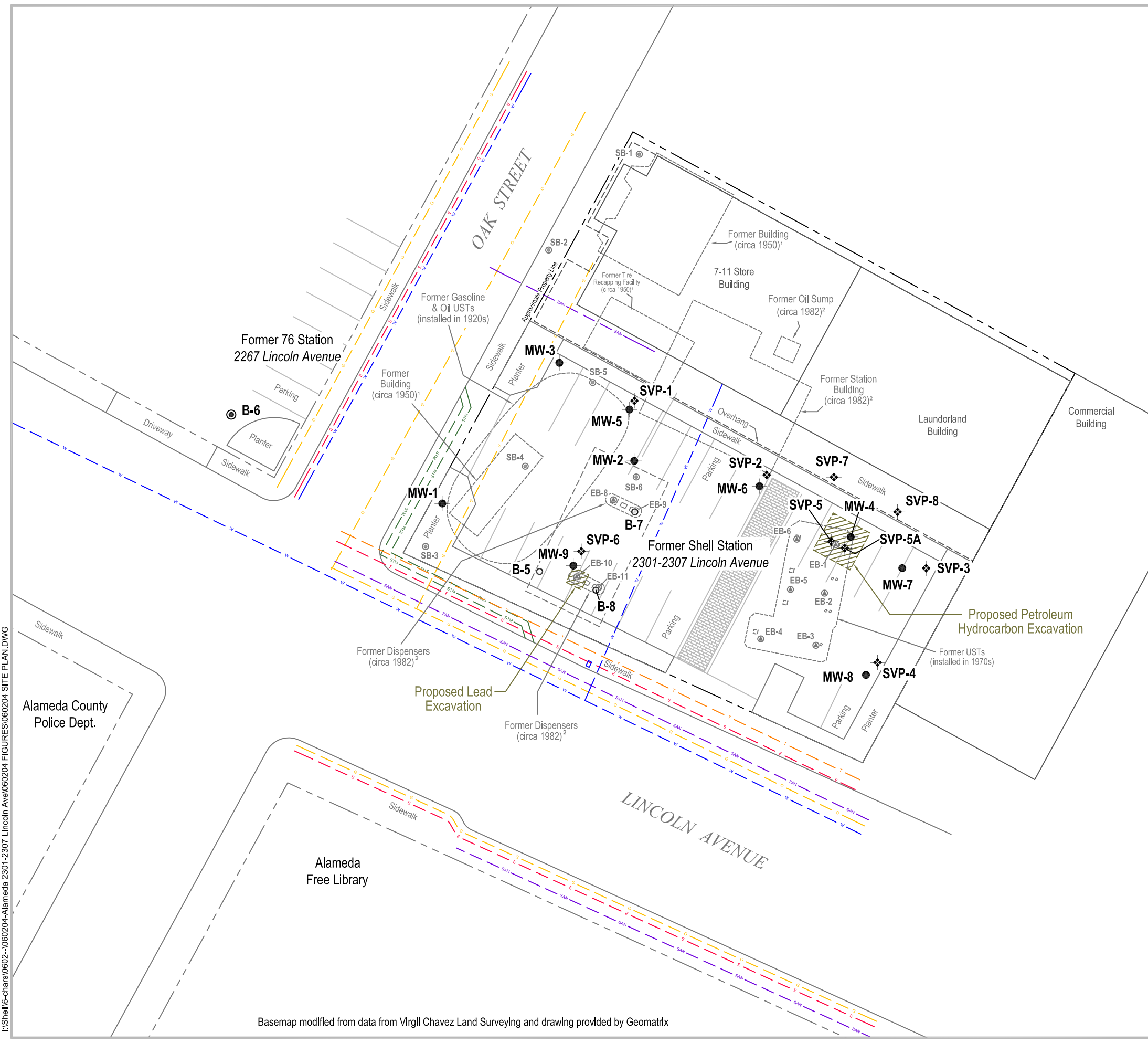


FIGURE
2

Basemap modified from data from Virgil Chavez Land Surveying and drawing provided by Geomatrix

I:\Shell\6-chars\0602--\060204-Alameda 2301-2307 Lincoln Ave\060204 FIGURES\060204 SITE PLAN.DWG



Former Shell Service Station
 2301-2307 Lincoln Avenue
 Alameda, California

APPENDIX A

SITE HISTORY

SITE HISTORY

July 1999 Phase II Site Investigation: Basics Environmental (Basics) drilled six borings (SB-1 through SB-6, Figure 2) in the western portion of the site. Single soil samples were collected from all of the borings at 5 or 7.5 feet below grade (fbg) and grab groundwater samples were obtained from five of the borings (all except SB-5). Benzene and methyl tertiary-butyl ether (MTBE) were not detected in any of the samples. Analyses of the soil sample from boring SB-3 at 7.5 fbg showed concentrations of 40 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as gasoline (TPHg) and 0.012 mg/kg ethylbenzene. Analyses of the grab groundwater sample from SB-3 showed concentrations of up to 4,500 micrograms per liter ($\mu\text{g}/\text{l}$) TPHg, 4.4 $\mu\text{g}/\text{l}$ toluene, 2.7 $\mu\text{g}/\text{l}$ ethylbenzene, 4.0 $\mu\text{g}/\text{l}$ xylenes, 10 $\mu\text{g}/\text{l}$ n-butylbenzene, 14 $\mu\text{g}/\text{l}$ sec-butylbenzene, 45 $\mu\text{g}/\text{l}$ isopropyl benzene, 60 $\mu\text{g}/\text{l}$ n-propylbenzene, and 26 $\mu\text{g}/\text{l}$ vinyl acetate. Basics' August 12, 1999 *Limited Phase II Environmental Site Investigation* report presents details of this investigation.

August 2000 Site Assessment: Toxicchem Management Systems, Inc. (Toxicchem) conducted a site assessment which included a review of Basics' investigation, aerial photographs, Sanborn maps, and agency files. The site assessment is presented in Toxicchem's May 1, 2000 *Site Assessment Report*.

February 2007 Site Investigation: Geomatrix installed three groundwater monitoring wells (MW-1 through MW-3, Figure 2) in the western former UST (USTs originally installed in the 1920's) area and drilled 11 exploratory borings (EB-1 through EB-6 and EB-8 through EB-11, Figure 2) in the area of the eastern former USTs (USTs originally installed in the 1970's) and fuel dispensers. No toluene, fuel oxygenates, or lead scavengers were detected in any of the soil samples. No petroleum hydrocarbons were detected in samples collected from 1.5 to 6.5 fbg. Soil samples collected from 8.5 to 14.0 fbg showed concentrations of up to 1,600 mg/kg TPHg, 0.99 mg/kg benzene, 100 mg/kg ethylbenzene, 1.1 mg/kg xylenes, and 21 mg/kg lead. Sample EB-10-2.0 contained a concentration of 550 mg/kg lead. Grab groundwater samples collected from the wells and exploratory borings EB-1 and EB-4 contained concentrations of up to 7,000 $\mu\text{g}/\text{l}$ TPHg, 980 $\mu\text{g}/\text{l}$ benzene, 490 $\mu\text{g}/\text{l}$ ethylbenzene, 11 $\mu\text{g}/\text{l}$ toluene, and 19 $\mu\text{g}/\text{l}$ xylenes. Groundwater was gauged at 8.37 to 9.26 fbg and flow direction was calculated to be to the east-northeast. Geomatrix's December 2007 *Subsurface Investigation Summary Report* presents details of this investigation.

February 2009 Subsurface Investigation: Conestoga-Rovers & Associates (CRA) installed five groundwater monitoring wells (MW-4, MW-5, MW-6, MW-7, and MW-8), installed five soil vapor probes (SVP-1 through SVP-5), and drilled three soil borings

(B-5, B-7, and B-8). No benzene, toluene, or MTBE were detected in soil samples collected during this investigation. Only the TPHg (7,900 mg/kg), ethylbenzene (120 mg/kg), and total xylenes (150 mg/kg) detections in soil sample B-8-8.5' exceeded the San Francisco Bay Regional Water Quality Control Board's (RWQCB's) environmental screening levels (ESLs) for shallow soil where groundwater is not a source of drinking water¹. TPHg, benzene, ethylbenzene, and xylenes were detected in grab groundwater samples collected from some of the borings. Only TPHg (up to 470 µg/l) exceeded the ESL in two grab groundwater samples; no other constituents of concern exceeded ESLs. MTBE was not detected in grab groundwater. Soil vapor samples from soil vapor probe SVP-5 contained concentrations of TPHg (up to 11,000,000 micrograms per cubic meter [µg/m³]), benzene (up to 12,000 µg/m³), and ethylbenzene (up to 23,000 µg/m³), which exceeded ESLs. TPHg and benzene, toluene, ethylbenzene, and xylenes concentrations in soil vapor samples collected from the other three soil vapor probes (SVP-1, SVP-2, and SVP-3) were all below ESLs. MTBE was not detected in soil vapor. Soil vapor probe SVP-4 could not be sampled due to an obstruction in the sample line. CRA's April 9, 2009 *Subsurface Investigation Report* presents details of this investigation.

March 2010 Subsurface Investigation: CRA installed one groundwater monitoring well (MW-9), installed four soil vapor probes (SVP-5A and SVP-6 through SVP-8), and reinstalled one soil vapor probe (SVP-4). No TPHg, benzene, toluene, ethylbenzene, or xylenes were detected in soil samples collected from well boring MW-9. Up to 450 mg/kg total petroleum hydrocarbons as motor oil (TPHmo), 54 mg/kg total petroleum hydrocarbons as diesel (TPHd), and 17.1 mg/kg lead were detected (in sample MW-9-12'). None of the detections exceeded the ESLs. CRA's May 12, 2010 *Subsurface Investigation Report* provides details of this investigation.

June 2010 Soil Vapor Sampling: CRA sampled five soil vapor probes (SVP-4, SVP-5A, and SVP-6 through SVP-8) and in July 2010 CRA sampled one soil vapor probe (SVP-5). Only the TPHg (8,400,000 µg/m³) and ethylbenzene (14,000 µg/m³) detections from SVP-5 (at 5 fbg) exceeded ESLs. Soil vapor concentrations are defined below ESLs vertically by SVP-5A (at 2 fbg) and horizontally by SVP-2 through SVP-4 and SVP-6 through SVP-8. CRA's August 24, 2010 *Soil Vapor Sampling Report* provides details of this investigation.

July 2010 Subsurface Investigation: CRA drilled one off-site boring B-6 at 2267 Lincoln Avenue to further assess the extent of petroleum hydrocarbons in soil and groundwater. No TPHmo, TPHd, TPHg, benzene, toluene, ethylbenzene, and xylenes (BTEX), fuel

¹ Screening for Environmental Concerns at Site With Contaminated Soil and Groundwater, California Regional Water Quality Control Board, Interim Final - November 2007 [Revised May 2008]

oxygenates, 1,2-dichloroethane (1,2-DCA), or 1,2-dibromoethane (EDB) were detected in soil samples collected from boring B-6. Up to 2.72 mg/kg lead was detected (B-6-8.0). No TPHg, BTEX, fuel oxygenates, 1,2-DCA, or EDB were detected in the grab groundwater sample collected from boring B-6. The grab groundwater sample contained 56 µg/l TPHd. None of the detections exceeded the ESLs. CRA's August 27, 2010 *Subsurface Investigation Report* provides details of this investigation.

Groundwater Monitoring: Geomatrix sampled wells MW-1 through MW-3 in August 2007, and groundwater monitoring was initiated beginning with the first quarter of 2009 in wells MW-1 through MW-8 and the second quarter of 2010 in well MW-9. Fuel oxygenates were not detected in any of the August 2007 groundwater samples and are not included in the groundwater monitoring program, because gasoline station operations ceased at the site prior to the use of MTBE in gasoline. No constituents of concern have been detected above non-drinking water ESLs in wells MW-2, MW-3, and MW-5 through MW-9. Concentrations up to 17,000 µg/l TPHg, 1,700 µg/l TPHd, 280 µg/l benzene, 270 µg/l ethylbenzene, 25 µg/l toluene, and 360 µg/l xylenes have been detected in groundwater samples from MW-1 and MW-4.

APPENDIX B

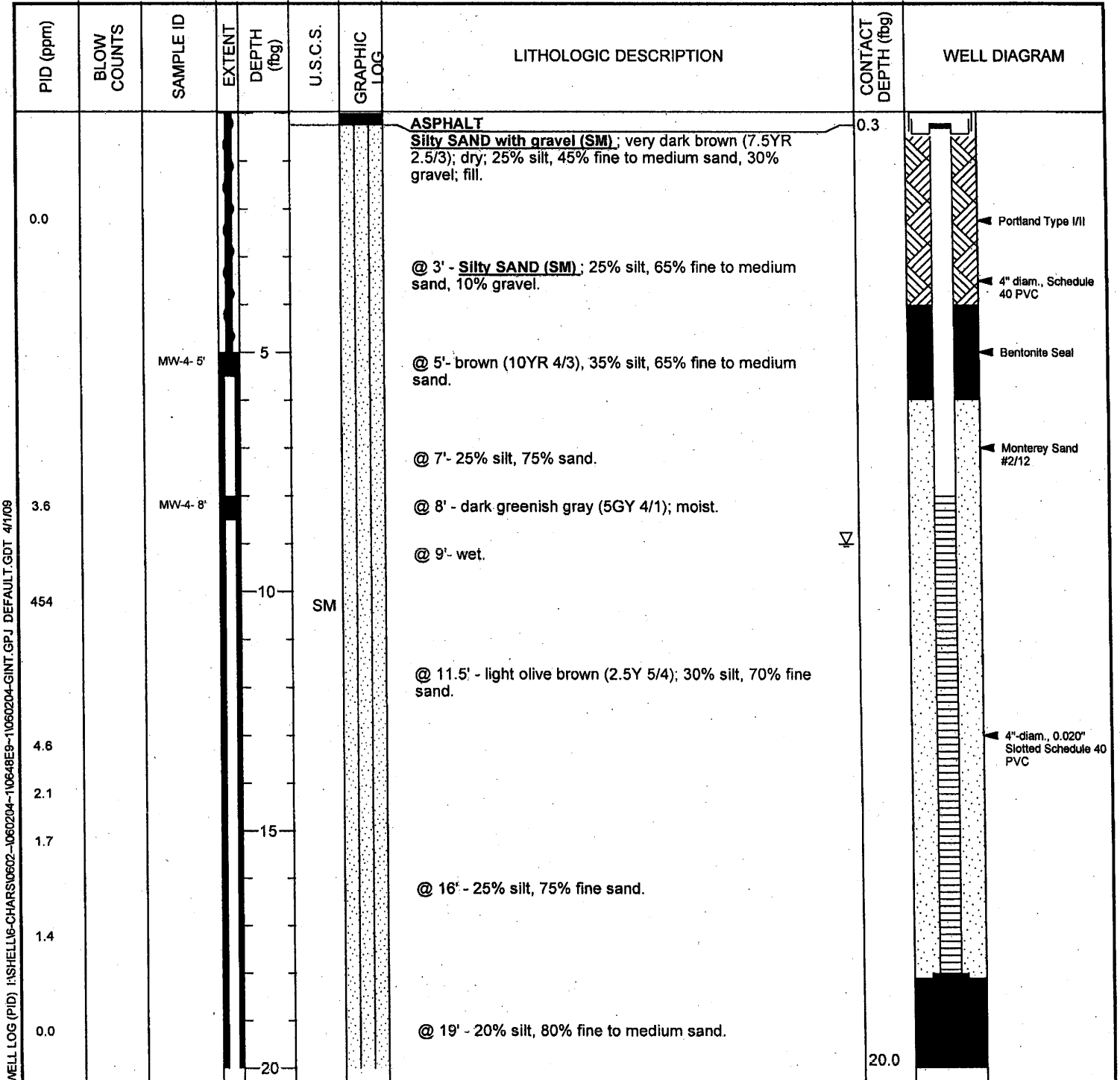
BORING LOGS



Conestoga-Rovers & Associates
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 Emeryville, CA 94608
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 Fax: 510-420-9170

BORING / WELL LOG

| | | | |
|-----------------|---------------------------------------|------------------------------------|-------------|
| CLIENT NAME | Shell Oil Products US | BORING/WELL NAME | MW-4 |
| JOB/SITE NAME | Former Shell Service Station | DRILLING STARTED | 17-Feb-09 |
| LOCATION | 2301-2307 Lincoln Avenue, Alameda, CA | DRILLING COMPLETED | 25-Feb-09 |
| PROJECT NUMBER | 060204 | WELL DEVELOPMENT DATE (YIELD) | NA |
| DRILLER | Gregg Drilling, C-57 #485165 | GROUND SURFACE ELEVATION | NA |
| DRILLING METHOD | Direct-push & hollow-stem auger | TOP OF CASING ELEVATION | NA |
| BORING DIAMETER | 10", 2" below 18 fbg. | SCREENED INTERVALS | 8 to 18 fbg |
| LOGGED BY | E. Reinhart | DEPTH TO WATER (First Encountered) | 9.00 fbg |
| REVIEWED BY | P. Schaefer | DEPTH TO WATER (Static) | NA |
| REMARKS | Air knifed to 5 fbg | | |



WELL LOG (PID) \SHELL\US-CHARS\0602-1060204-GINT.GPJ DEFAULT.GDT 4/1/09

Continued Next Page



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BORING / WELL LOG

| | | | |
|------------------------|---------------------------------------|---|--------------|
| CLIENT NAME | Shell Oil Products US | BORING/WELL NAME | SVP-5 |
| JOB/SITE NAME | Former Shell Service Station | DRILLING STARTED | 18-Feb-09 |
| LOCATION | 2301-2307 Lincoln Avenue, Alameda, CA | DRILLING COMPLETED | 18-Feb-09 |
| PROJECT NUMBER | 060204 | WELL DEVELOPMENT DATE (YIELD) | NA |
| DRILLER | Gregg Drilling, C-57 #485165 | GROUND SURFACE ELEVATION | NA |
| DRILLING METHOD | Air-knife | TOP OF CASING ELEVATION | NA |
| BORING DIAMETER | 3" | SCREENED INTERVALS | 4.9 to 5 fbg |
| LOGGED BY | E. Reinhart | DEPTH TO WATER (First Encountered) | NA |
| REVIEWED BY | P. Schaefer | DEPTH TO WATER (Static) | NA |
| REMARKS | | | |

| PID (ppm) | BLOW COUNTS | SAMPLE ID | EXTENT | DEPTH (fbg) | U.S.C.S. | GRAPHIC LOG | LITHOLOGIC DESCRIPTION | CONTACT DEPTH (fbg) | WELL DIAGRAM |
|-----------|-------------|-----------|--------|-------------|----------|-------------|--|---------------------|---|
| 0.0 | | | | | SM | | ASPHALT Silty SAND with gravel (SM) ; very dark brown (7.5YR 2.5/3); dry; 25% silt, 45% fine to medium sand, 30% gravel; fill. @ 1' - Silty SAND (SM) ; 25% silt, 65% fine to medium sand, 10% fine gravel. | 0.3 | <ul style="list-style-type: none"> Portland Type I/II Bentonite Seal Monterey Sand #2/12 High Density Porous Polyethylene Soil Vapor Implant Bottom of Boring @ 5 fbg |
| | | | | 5 | | | | 5.0 | |

WELL LOG (PID) I:\SHELL16-CHARS\0602-060204-GINT.GPJ DEFAULT.GDT 4/1/09



Conestoga-Rovers & Associates
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BORING / WELL LOG

| | | | |
|-----------------|---------------------------------------|------------------------------------|--------------|
| CLIENT NAME | Shell Oil Products US | BORING/WELL NAME | SVP-5A |
| JOB/SITE NAME | Former Shell Service Station | DRILLING STARTED | 23-Mar-10 |
| LOCATION | 2301-2307 Lincoln Avenue, Alameda, CA | DRILLING COMPLETED | 23-Mar-10 |
| PROJECT NUMBER | 060204 | WELL DEVELOPMENT DATE (YIELD) | NA |
| DRILLER | Gregg Drilling, C-57 #485165 | GROUND SURFACE ELEVATION | NA |
| DRILLING METHOD | Air-knife | TOP OF CASING ELEVATION | NA |
| BORING DIAMETER | 4" | SCREENED INTERVALS | 2 to 2.1 fbg |
| LOGGED BY | S. Lewis | DEPTH TO WATER (First Encountered) | NA |
| REVIEWED BY | P. Schaefer | DEPTH TO WATER (Static) | NA |
| REMARKS | | | |

| PID (ppm) | BLOW COUNTS | SAMPLE ID | EXTENT | DEPTH (fbg) | U.S.C.S. | GRAPHIC LOG | LITHOLOGIC DESCRIPTION | CONTACT DEPTH (fbg) | WELL DIAGRAM |
|-----------|-------------|-----------|--------|-------------|----------|-------------|---|---------------------|---|
| | | | | | SM | | ASPHALT Silty SAND with Gravel (SM) ; Brown (10YR 4/3); dry; 20% silt, 65% fine grained size sand, 15% fine gravel. @ 1' - Silty SAND (SM) ; 15% silt, 85% fine grained sand. | 0.3 | <ul style="list-style-type: none"> Portland Type III 1/4" Ieflon sample tubing Bentonite Seal Monteary Sand #2/12 1" diam. 0.020" Slotted Schedule 40 PVC Bottom of Boring @ 2.2 fbg |
| | | | | | | | | 2.2 | |

WELL LOG (PID) [SHELL] \6-CHARS\0602-1060204-10648EB-1060204-1.CPJ DEFAULT.GDT 5/6/10