CONESTOGA-ROVERS & ASSOCIATES

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TRANSMITTAL

DATE: May 28, 2014 **REFERENCE NO.:** 240503

PROJECT NAME: 6039 College Avenue, Oakland

TO: Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

RECEIVED
By Alameda County Environmental Health at 3:58 pm, Jun 02, 2014

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QUANTITY	DESCRIPTION
1	Revised Subsurface Investigation Work Plan

- ☒ As Requested
- ☐ For Your Use
- ☐ For Review and Comment
- ☐
- ☐

COMMENTS:
If you have any questions regarding the content of this document, please call the CRA project manager Peter Schaefer at (510) 420-3319 or the Shell program manager Perry Pineda at (425) 413-1164.

Copy to: Perry Pineda, Shell Oil Products US (electronic copy)
Russell J. Bruzzone, Inc. (property owner), c/o Joan Bruzzone, 899 Hope Lane, Lafayette, CA 94549
Montrose Investment Co. (property owner), Attn: Jim Graham, 242 Rivera Circle, Greenbrae Marina, Larkspur, CA 94939
Clint Mercer (previous lessee), SC Fuels, 1800 West Katella Avenue, Orange, CA 92867
Mike Ahmadi (lessee), Petromart Retail Group, Inc., 587 Ygnacio Valley Road, Walnut Creek, CA 94596

Completed by: Peter Schaefer Signed: Peter Schaefer

Filing: Correspondence File

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

Re: 6039 College Avenue
Oakland, California
SAP Code 135685
Incident No. 98995745
ACEH Case No. RO0000469

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 (425) 413-1164 with any questions or concerns.

Sincerely,
Shell Oil Products US

Perry Pineda
Senior Environmental Program Manager

REVISED SUBSURFACE INVESTIGATION WORK PLAN

FORMER SHELL SERVICE STATION
6039 COLLEGE AVENUE
OAKLAND, CALIFORNIA

SAP CODE **135685**
INCIDENT NO. **98995745**
AGENCY NO. **RO0000469**

Prepared by:
Conestoga-Rovers & Associates

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MAY 28, 2014
REF. NO. 240503 (14)
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1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) prepared this revised work plan on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell), as requested in Alameda County Environmental Health's (ACEH's) April 9, 2014 letter. This document supersedes CRA's November 19, 2013 *Subsurface Investigation Work Plan*.

The site is a former Shell service station located on the southern corner of College Avenue and Claremont Avenue in Oakland, California (Figure 1). Currently, the site is a vacant lot. The former station layout consisted of a station building, three underground storage tanks (USTs), and two dispenser islands (Figure 2). The area surrounding the site is of mixed commercial and residential use.

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

2.0 WORK TASKS

2.1 PERMIT

CRA will obtain a drilling permit from the Alameda County Public Works Agency (ACPWA) and access agreements from the property owners.

2.2 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.

2.3 UTILITY CLEARANCE

CRA will mark the proposed drilling locations, and the locations will be cleared through Underground Service Alert and a private line locator service prior to drilling.

2.4 SUBSURFACE INVESTIGATION

Based on historical site data and field observations and analytical data from the UST removal in January 2013, CRA will drill six exploratory soil borings (SB-9 through SB-14)

and install three soil vapor probes (SVP-7 through SVP-9) to investigate the extent of petroleum hydrocarbon impacts to soil, soil vapor, and groundwater (Figure 2). CRA will perform this work under the supervision of a professional geologist or engineer.

2.4.1 SOIL BORING INSTALLATION AND SAMPLING

Two borings (SB-9 and SB-14) are proposed within the former UST excavation, one boring (SB-13) is located at the northwestern dispenser (Dispenser C), and three borings (SB-10, SB-11, and SB-12) are proposed along the property boundaries near the former USTs. The borings will be advanced using a Geoprobe® rig, and each boring will be advanced to at least 35 feet below grade (fbg). A CRA geologist will supervise the drilling and describe encountered soils using the Unified Soil Classification System and Munsell Soil Color Charts. Each borehole will be cleared to 5 fbg with an air- or water-knife. As requested in ACEH's April 9, 2014 letter, soil samples from the borings will be collected at 1 and 3 fbg using an Encore® sampler. In addition, an Encore® soil sample will be collected from boring SB-13 at 2 fbg.

After clearing the borings to 5 fbg with an air- or water-knife, soil samples will be collected continuously for soil description, for possible chemical analyses, and screening in the field for organic vapors using a photo-ionization detector (PID). Soil sample selection will be based on field observations (including PID readings and soil types) and previous soil data (concentrations, depths, and locations) from the UST excavation soil samples. At a minimum soil samples at 5-foot intervals in each boring will be submitted for analysis.

Grab groundwater samples will be collected from first-encountered groundwater in each of the borings. Based on the first quarter 2010 data, depth to water is between 11 and 14 fbg. Following collection of a grab groundwater sample from first-encountered groundwater, the borings will be drilled to at least 35 fbg for soil sampling, as described above. If petroleum hydrocarbon impacts are noted at 35 fbg, the borings will be extended until there are no field observations of petroleum hydrocarbon impact including PID readings. CRA will prepare a boring log for each boring, and PID measurements will be recorded on the boring logs.

Soil samples designated for chemical analyses will be retained in stainless steel sample tubes, brass sample tubes, or plastic sleeves. If plastic sleeves are used, they will be cut into 6-inch lengths. The tubes or sleeves will be covered on both ends with Teflon® sheets and plastic end caps. Grab groundwater samples will be collected from the borings using Hydropunch® equipment and transferred into vials containing

hydrochloric acid preservative with no headspace. Soil and grab groundwater samples will be labeled, entered onto a chain-of-custody record, and placed into a cooler with ice for transport to a State of California certified laboratory for analyses. CRA will request a standard 2-week turnaround time for laboratory results.

2.4.2 SOIL VAPOR PROBE INSTALLATION

Two soil vapor probes (SVP-7 and SVP-8) are proposed within the former UST excavation, and one probe (SVP-9) is located at the northwestern dispenser (Dispenser C). SVP-1 through SVP-6 will be screened at approximately 5 feet below grade (fbg). The soil vapor probes will be screened at 5 fbg at each location.

Assuming the absence of subsurface obstructions, CRA will advance the soil borings to 5.5 fbg using an air-knife rig. CRA will prepare a boring log for each soil vapor probe boring, and PID measurements will be recorded on the boring logs.

After the borings are drilled, fixed vapor-sampling points will be installed in each boring using ¼-inch-diameter Teflon® tubing. Each point will use a 1-inch screen interval attached to the Teflon® tubing. To ensure the tubing does not curl or kink during installation, CRA will first straighten out each length of tubing prior to installation, and then use a small-diameter PVC guide pipe to hold the tubing in place within the boring while packing the annulus with sand. A clean, fine-grained silica sand filter pack will be installed approximately 6 inches below and above the sampling point (5 fbg), and the guide pipe will be lifted as the sand pack is installed to ensure the pack stabilizes the tubing within each boring. The annulus will then be sealed to the surface using hydrated granular bentonite, set atop a 1-foot base of dry granular bentonite. Each soil vapor probe will be completed at the surface using a traffic-rated well box at grade.

2.4.3 SOIL VAPOR PROBE SAMPLING

At least 2 weeks following probe installation, CRA will collect soil vapor samples from each sampling point. Sampling is affected by rain. CRA's standard procedure is to allow 2 days or more after a heavy rain event prior to collecting soil vapor samples.

CRA will sample soil vapor probes SVP-7 through SVP-9 using a vacuum pump and Tedlar® bags. Prior to sampling, CRA will purge at least three tubing volumes of air from the probes using a vacuum pump. Then CRA will attach a sealed "lung sampler"

containing a 1-liter Tedlar® bag to the probe and attach the vacuum pump to the box. The vacuum pump will lower the pressure in the "lung sampler" and draw air from the probe into the Tedlar® bag. To avoid breakage, CRA will fill the bags no more than two-thirds full. Each sample will be labeled, entered onto a chain-of-custody, and placed into a protective box at room temperature for transport to a State of California-certified laboratory for analysis within 72 hours.

2.4.4 LEAK TESTING

To check the system for leaks, CRA will cover the soil gas probe surface casing and sampling equipment with a containment unit (or shroud). Prior to soil gas probe purging, CRA will introduce helium into the containment unit to obtain a minimum 50 percent (%) helium content level. CRA will confirm the helium content within the containment unit using a helium meter and will record the helium meter readings in our field notes. Helium will continue to be introduced to the containment unit during soil gas probe purging and sampling.

All samples will be analyzed in a laboratory for helium. In the event that the soil vapor samples contain a helium content of greater than 10% of the source concentration (i.e., 10% of the helium content measured within the containment unit), the soil gas sample will be considered invalid.

2.5 CHEMICAL ANALYSES

Grab groundwater samples, selected soil samples, and soil vapor samples will be analyzed for total petroleum hydrocarbons as gasoline, benzene, toluene, ethylbenzene, total xylenes, naphthalene, methyl-tertiary butyl ether, 1,2-dichloroethane, and 1,2-dibromoethane using EPA Method 8260B. In addition, soil samples will be analyzed for total petroleum hydrocarbons as diesel by EPA Method 8015M and total lead by EPA Method 6010B, and soil vapor samples will be analyzed for helium by ASTM D Method 1649 (M).

2.6 REPORT PREPARATION

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

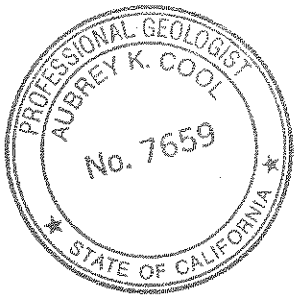
3.0 SCHEDULE

Shell is currently negotiating an access agreement with the property owners. CRA will begin work upon receiving ACEH's written approval of this revised work plan, appropriate drilling permit from ACPWA, and access agreements from the property owners.

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

Peter Schaefer, CHG, CEG

Aubrey K. Cool, PG



FIGURES

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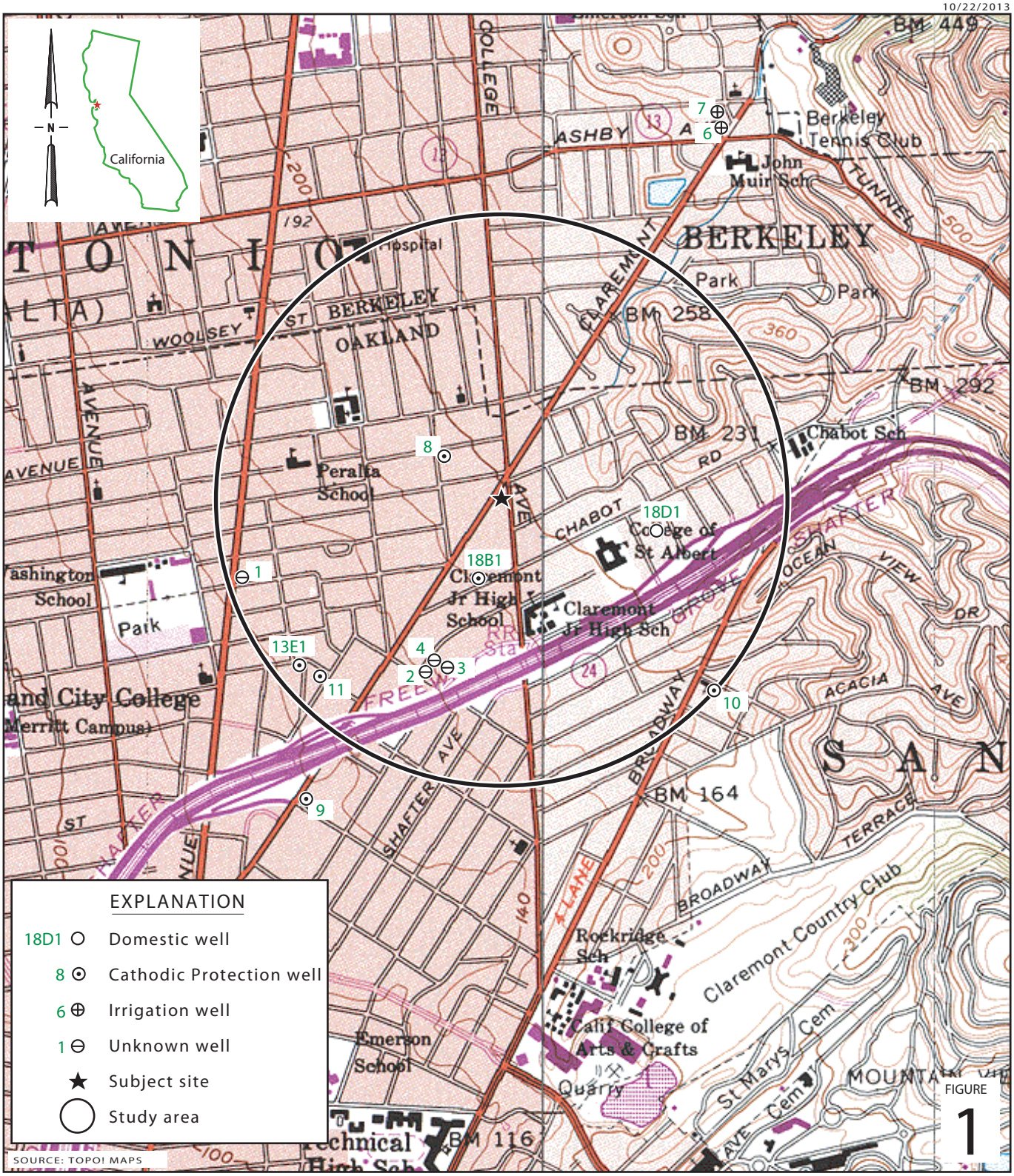

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FIGURE 1

Former Shell Service Station
6039 College Avenue
Oakland, California

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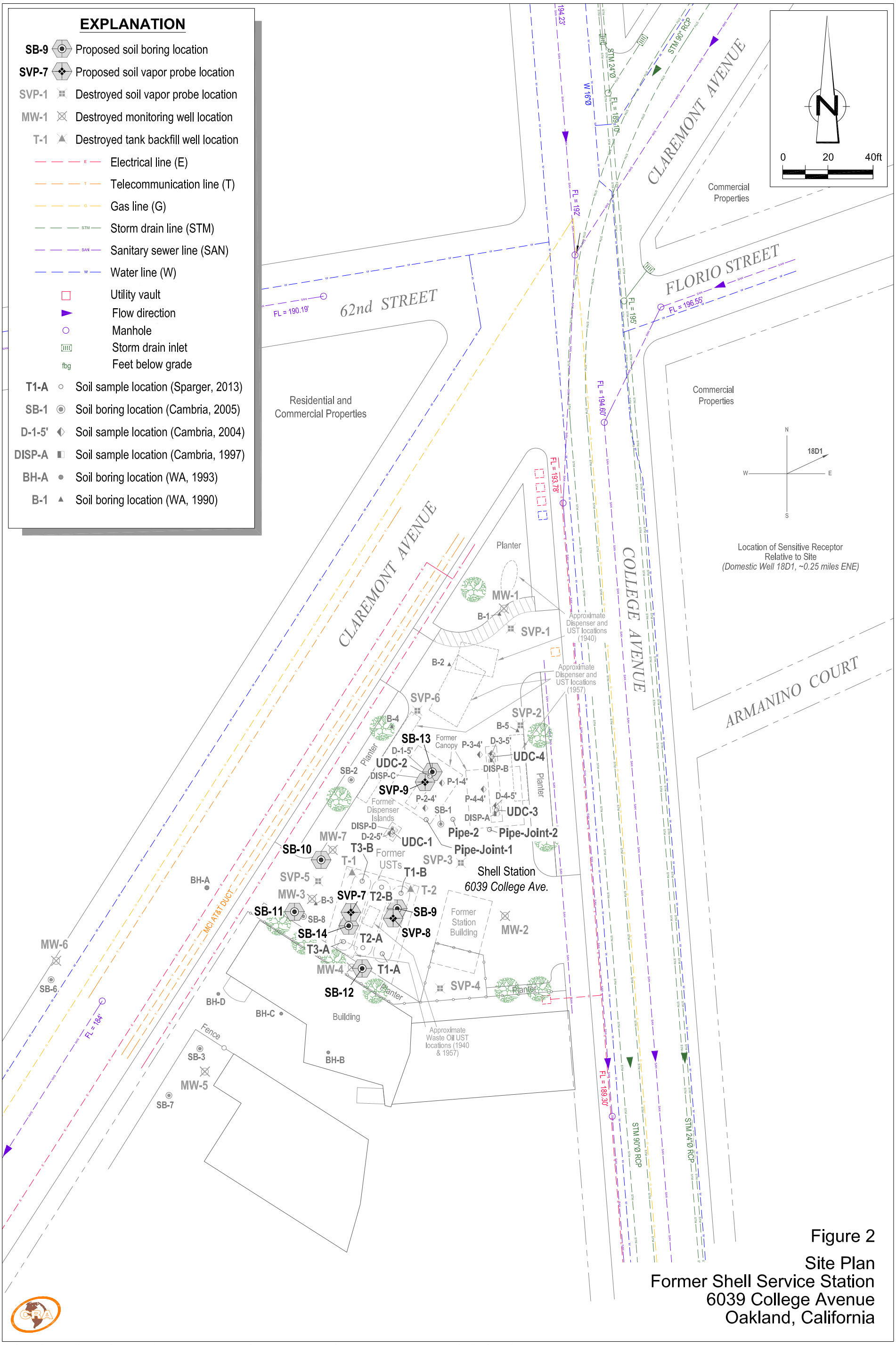
Vicinity Map

EXPLANATION

- SB-9 — Proposed soil boring location
- SVP-7 — Proposed soil vapor probe location
- SVP-1 — Destroyed soil vapor probe location
- MW-1 — Destroyed monitoring well location
- T-1 — Destroyed tank backfill well location
- E — Electrical line (E)
- T — Telecommunication line (T)
- G — Gas line (G)
- STM — Storm drain line (STM)
- SAN — Sanitary sewer line (SAN)
- W — Water line (W)
- Utility vault
- Flow direction
- Manhole
- Storm drain inlet
- fbg — Feet below grade
- T1-A — Soil sample location (Sparger, 2013)
- SB-1 — Soil boring location (Cambria, 2005)
- D-1-5' — Soil sample location (Cambria, 2004)
- DISP-A — Soil sample location (Cambria, 1997)
- BH-A — Soil boring location (WA, 1993)
- B-1 — Soil boring location (WA, 1990)



Location of Sensitive Receptor Relative to Site
(Domestic Well 18D1, ~0.25 miles ENE)

Figure 2

Site Plan
Former Shell Service Station
6039 College Avenue
Oakland, California

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APPENDIX A

SITE HISTORY

SITE HISTORY

1957 Underground Storage Tank (UST) Removal and Replacement: According to Shell's records, one 550-gallon and three 1,000-gallon steel USTs containing gasoline and one 110-gallon single-walled steel waste oil tank were removed in 1957. These tanks were apparently installed when the station first opened in 1940. The tanks were replaced by three 5,000-gallon leaded gasoline tanks and one 1,000-gallon waste oil tank, all of single-wall steel construction.

1978 UST Removal and Installation: According to Shell's records, one 8,000-gallon and three 5,000-gallon steel USTs and one 1,000-gallon waste oil tank were removed in 1978. It is not clear from the available documentation when the 8,000-gallon tank was installed. The tanks were replaced by three 10,000-gallon fiberglass USTs for gasoline storage.

1989 Unauthorized Release: In September 1989, Alameda County Environmental Health (ACEH) received notification of an unauthorized release from a UST. The source of the release was reported as a slight weep at the piping connection to the submersible pump for a gasoline tank.

1990 Soil Borings: In January 1990, Harding Lawson Associates (HLA) drilled soil borings B-1 through B-6 to a depth of approximately 25 feet below grade (fbg). Up to 610 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as gasoline (TPHg), 5,900 mg/kg total petroleum hydrocarbons as diesel (TPHd), 110,000 mg/kg total petroleum hydrocarbons as motor oil, and 0.57 mg/kg benzene were detected in soil samples from borings B-3 and B-6. Petroleum hydrocarbons were not detected or concentrations were near laboratory detection limits in soil samples collected from borings B-1, B-2, B-4, and B-5. Details of the investigation are included in HLA's April 13, 1990 *Quarterly Technical Report, First Quarter 1990*.

1990 Soil Boring and Well Installations: In February 1990, HLA drilled and installed groundwater monitoring wells MW-1 through MW-4 to a depth of 25 fbg. Up to 230 mg/kg TPHg and 1.1 mg/kg benzene were detected in soil samples collected from well borings MW-3 and MW-4. Petroleum hydrocarbons were not detected or concentrations were near laboratory detection limits in soil samples collected from well boring MW-2. Details of the investigation and well installations are included in HLA's July 10, 1990 *Quarterly Technical Report, Second Quarter 1990*.

1991 Soil Boring and Well Installation: In August 1991, HLA installed monitoring well MW-5 to a depth of 28 fbg. Although 23 mg/kg of a petroleum mixture other than

gasoline was detected in a soil sample from 16 fbg, no benzene was detected in any samples collected. HLA's October 10, 1991 *Quarterly Technical Report, Third Quarter 1991* documents the investigation and well installations.

1993 Soil Boring and Well Installation: In March 1993, Weiss Associates (WA) drilled soil borings BH-A through BH-E and converted boring BH-E into monitoring well MW-6. Up to 580 mg/kg TPHg, 0.42 mg/kg benzene, and 930 mg/kg petroleum oil and grease were detected in soil samples collected from borings BH-A, BH-C, and BH-D. No petroleum hydrocarbons were detected in soil samples collected from boring BH-B and only 3.5 mg/kg TPHd was detected in soil samples collected from boring BH-E (well MW-6). The report detailing this investigation is unavailable at this time.

1998 Dispenser and Piping Upgrade Soil Sampling: In February 1998, Cambria Environmental Technology, Inc. (Cambria) collected soil samples for analysis during an upgrade of the site's four gasoline dispensers. The maximum hydrocarbon concentrations were detected in soil samples collected at Dispenser C. TPHg, TPHd, and benzene were detected at concentrations of 5,300 mg/kg, 420 mg/kg, and 10 mg/kg, respectively. Samples from the other dispenser locations contained significantly lower concentrations. Soil sampling details are included in Cambria's April 30, 1998 *Dispenser Soil Sampling Report*.

1998 Potential Receptor Survey: In March 1998, Cambria completed a potential receptor survey to identify sensitive groundwater receptors within a one-half-mile radius of the site. Three surface water bodies and one potential receptor well were located within the study area. However, due to their distance and location up gradient and cross gradient of the site, Cambria concluded that none would be impacted by hydrocarbons detected at the subject site. Survey details are included in Cambria's March 5, 1998 *Potential Receptor Survey Report*. Figure 1 includes area well survey results.

1999 to 2005 Separate-Phase and Dissolved-Phase Hydrocarbon Removal: Weekly extraction of separate-phase hydrocarbons (SPHs) and dissolved-phase hydrocarbons was initiated at this site on September 22 and November 10, 1999. Advanced Cleanup Technologies, Inc. of Benicia, California extracted SPHs and groundwater from wells MW-3 and MW-4 with a vacuum truck. Beginning November 10, 1999, Blaine Tech Services, Inc. (Blaine) of San Jose, California assumed the weekly purging events as the volume of groundwater and SPHs removed each week was not sufficient to warrant using a vacuum truck. Due to the absence of SPHs in MW-4, weekly purging events by Blaine were discontinued on June 8, 2000. No SPHs were detected in the first quarter of 2001. SPHs reappeared in the second and third quarters of 2001, and monthly extraction by Onyx Industrial Services was resumed in December 2001. Due to low hydrocarbon

concentrations, monthly extraction was suspended after the first quarter of 2005 event. Mobile groundwater extraction removed an approximate total of 2.6 pounds of hydrocarbons, 0.15 pounds of benzene, and 2.5 pounds of methyl tertiary-butyl ether (MTBE).

2001 Dual-Phase Vacuum Extraction (DVE) Pilot Test: In March 2001, Cambria conducted short-term DVE pilot tests on monitoring wells MW-3 and MW-4. Vacuum influence was not observed in any adjacent wells. Approximately 0.2 pounds of TPHg, 0.004 pounds of benzene, and 0.02 pounds of MTBE were removed during the pilot test. Cambria's June 14, 2001 *First Quarter 2001 Monitoring Report and Remediation Pilot Testing* report presents details of the pilot testing.

2001 Site Conceptual Model (SCM) and Well Receptor Survey and Conduit Studies: In August 2001, Cambria submitted an SCM and well receptor survey for the site. The receptor survey identified three surface water bodies and five potential receptor wells within a one-half-mile radius of the site. Due to either their distance from the site or their location up gradient and cross gradient of the site, it is unlikely that any of these wells would be impacted by hydrocarbons originating from the site. The conduit investigation findings indicated that there is potential for preferential pathway migration of petroleum hydrocarbons in existing horizontal utility trenches. Cambria's August 9, 2001 *Site Conceptual Model and Well Receptor Survey* report presents the SCM and details of the well receptor and conduit studies.

2004 Dispenser and Piping Upgrade Soil Sampling: In May 2004, Cambria collected soil samples for analysis during an upgrade of the site's fueling system. MTBE and benzene were not detected in any soil samples collected during the upgrade activities. TPHg was detected in only one sample (P-3-4'), at a concentration of 17 mg/kg. Cambria's July 7, 2004 *Dispenser and Piping Upgrade Sampling Report* documents the soil sampling.

2005 Subsurface Investigation: In September 2005, Cambria advanced six soil borings (SB-1 through SB-3 and SB-6 through SB-8) to assess subsurface conditions off site and down gradient of the site and on site in the vicinity of the fuel dispensers and USTs. Borings SB-1, SB-3, SB-6, and SB-8 were advanced to 35 fbg, SB-7 to 45 fbg, and SB-2 to 50 fbg. Soil samples were collected every 5 feet for soil description, possible chemical analysis, and headspace analysis. TPHg was detected in nine soil samples, at concentrations up to 740 mg/kg. The hydrocarbon impact to soil in the area investigated was minimal and likely indicative of impacted groundwater.

Grab samples of the first-encountered groundwater were collected from each boring. TPHg was detected in five groundwater samples, at concentrations up to

43,000 micrograms per liter (µg/L). Benzene was detected in SB-8 at a concentration of 170 µg/L. MTBE was detected in all samples at concentrations up to 340 µg/L. Tertiary-butyl alcohol (TBA) was detected in five samples, at concentrations up to 3,400 µg/L. Di-isopropyl ether was detected in two samples, with concentrations of 210 µg/L and 380 µg/L in samples from SB-2 and SB-8, respectively. Ethylene dibromide was detected in SB-7 at a concentration of 2.9 µg/L. Cambria's December 14, 2005 *Subsurface Investigation Report* presents investigation details.

2006 Well Installation: In May 2006, Cambria installed one groundwater monitoring well (MW-7) immediately down gradient of the westernmost dispenser island, a suspected source of hydrocarbon impact to groundwater. Soil samples contained up to 689 mg/kg TPHg, 0.00333 mg/kg benzene, 0.0170 mg/kg toluene, 0.615 mg/kg ethylbenzene, 0.142 mg/kg total xylenes, and 0.0476 mg/kg MTBE. Cambria's August 11, 2006 *Subsurface Investigation Report and Second Quarter 2006 Groundwater Monitoring Report* provides well installation details.

2010 Soil Vapor Investigation: In February 2010, Conestoga-Rovers & Associates (CRA) installed six soil vapor probes (SVP-1 through SVP-6). The vapor probes were sampled in March 2010. No constituents of concern were detected in any soil vapor samples. CRA's April 13, 2010 *Soil Vapor Probe Installation and Sampling Report* presents investigation details.

1990 to 2010 Groundwater Monitoring: From February 1990 to February 2010, periodic groundwater monitoring was conducted from up to five on-site wells (MW-1 through MW-4 and MW-7) and two off-site wells (MW-5 and MW-6).

2011 Well Destructions and Case Closure: In March 2011, CRA destroyed seven groundwater monitoring wells (MW-1 through MW-7) and six soil vapor probes (SVP-1 through SVP-6). ACEH's May 4, 2011 letter confirmed closure of the environmental case.

2013 UST Removal and Station Demolition: In January 2013, MVP Petroleum Engineering, Inc. removed three 10,000-gallon USTs, dispensers, piping, the station building, and all other station fixtures. Upon UST removal, Oakland Fire Department noted cracks in the USTs that did not appear to be due to the UST removal. Sparger Technology, Inc. (Sparger) collected soil samples from beneath the USTs which contained up to 8,740 mg/kg oil and grease (O&G), 1,700 mg/kg TPHg, 3.7 mg/kg toluene, 15 mg/kg ethylbenzene, 79 mg/kg total xylenes, 17 mg/kg naphthalene, and 9.07 mg/kg lead. No benzene or fuel oxygenates were detected in the soil samples from beneath the USTs. Sparger also collected soil samples from beneath the dispensers and

piping which contained up to 2,080 mg/kg O&G, 0.0019 mg/kg toluene, 0.0083 mg/kg ethylbenzene, 0.080 mg/kg total xylenes, 0.0078 mg/kg naphthalene, and 12.3 mg/kg lead. No TPHg, benzene, or fuel oxygenates were detected in the soil samples from the dispensers and piping. Sparger's May 17, 2013 *Underground Storage Tank Removal Report* provides details.