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Anne Jurek
Alameda County Environmental Health
1131 Harbor Parkway, Suite 250
Alameda, CA 94502-6577

November 15, 2016

RE: Shell-Branded Service Station
1800 ½ Powell Street, Emeryville CA
PlaNet Site ID 10007884
PlaNet Project ID 38528
ACEH Case No. RO0000254

Dear Ms. Jurek

I am informed and believe that, based on a reasonably diligent inquiry undertaken by AECOM on behalf of Equilon Enterprises LLC dba Shell Oil Products US, the information and/or recommendations contained in the attached document is true, and on that ground I declare under penalty of perjury in accordance with Water Code section 13267 that this statement is true and correct.

As always, please feel free to contact me directly at (714) 731-1050 with any questions or concerns.

Sincerely,
Shell Oil Products US

Andrea A. Wing
Principle Program Manager

AECOM
300 Lakeside Drive
Suite 400
Oakland, CA 94612
www.aecom.com

510 893 3600 tel
510 874 3268 fax

November 15 , 2016

Anne Jurek
Alameda County Department of Public Works
1131 Harbor Bay Pkwy
Alameda, California 94502

San Francisco Bay Regional Water Quality
Control Board
1515 Clay Street, Suite 1400
Oakland, California 94612

Re: Status Report and Low Threat Closure Evaluation
Shell-Branded Service Station
1800 ½ Powell Street, Emeryville, CA
Shell PlaNet Site ID: 10007884
Shell PlaNet Project ID: 38528
ACDEH Case No . RO0000254

Dear Ms Jurek:

On behalf of Equilon Enterprises LLC dba Shell Oil Products US, AECOM Technical Services, Inc. is pleased to submit this Status Report and Low Threat Closure Request for the Shell-Branded Service Station located 1800½ Powell Street in Emeryville, California.

If you have questions regarding this submittal, please contact Shane Olton at (916) 414-5849 or Shane.Olton@aecom.com.

Sincerely,

Dominick Mariano
Geologist II

Shane Olton, P.G.
Portfolio Manager

Enclosures: Status Report and Low Threat Closure Evaluation

cc: Andrea Wing, Shell Oil Products US
Au Energy LLC (property owner)

AECOM

Status Report and Low Threat Closure Evaluation

Shell-Branded Service Station
1800½ Powell Street

Emeryville, California

November 2016

AECOM

Status Report and Low Threat Closure Evaluation

Shell-Branded Service Station
1800 ½ Powell Street
Emeryville, California

PlaNet Site ID	10007884
PlaNet Project ID	38528
ACDEH Case No.	RO0000254

Submitted to:

Anne Jurek
Alameda County
Department of Environmental Health
1131 Harbor Bay Pkwy
Alameda, California 94502

San Francisco Bay
Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, California 94612

Submitted by:

AECOM Technical Services, Inc.
300 Lakeside Drive, Suite 400
Oakland, California 94612

On Behalf of

Equilon Enterprises LLC dba Shell Oil Products US

November 15, 2016

Table of Contents

List of Figures

List of Tables

List of Appendices

List of Acronyms

ACDEH	Alameda County Department of Environmental Health
AECOM	AECOM Technical Services, Inc.
amsl	above mean sea level
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
Cambria	Cambria Environmental Technology, Inc.
Equilon	Equilon Enterprises LLC dba Shell Oil Products US
GeoStrategies	GeoStrategies Inc.
LTCP	State's Low-threat Underground Storage Tank Case Closure Policy
mg/kg	milligrams per kilogram
MTBE	methyl tertiary-butyl ether
Paraffine	Paraffine Company
RWQCB	Regional Water Quality Control Board, San Francisco Bay
Site	Shell-Branded service station at 1800 ½ Powell Street, Emeryville, California
SWRCB	California State Water Resources Control Board
TBA	tertiary butyl-alcohol
TPH	total petroleum hydrocarbons
TPHd	total petroleum hydrocarbons as diesel
TPHg	total petroleum hydrocarbons as gasoline
UST	underground storage tank
Weiss	Weiss Associates
WQO	water quality objectives
µg/L	micrograms per liter

1 Introduction

On behalf of Equilon Enterprises LLC dba Shell Oil Products US (Equilon), AECOM Technical Services, Inc. (AECOM) prepared this Status Report and Low Threat Closure Evaluation for the Shell-Branded Service Station (Site) located at 1800½ Powell Street in Emeryville, California (Figures 1 and 2).

The purpose of this report is to present the current Site status and a comparison to the State Water Resources Control Board (SWRCB) *Low-Threat Underground Storage Tank Case Closure Policy* (LTCP) (SWRCB, 2012).

This report was prepared in response to the Alameda County Department of Environmental Health (ACDEH) meeting on July 28, 2016, and subsequent directive dated August 8, 2016, requesting Site Status Reports from Equilon and AU Energy by September 16, 2016 (Appendix A). Extensions were granted to November 15, 2016 in email correspondence with the ACDEH dated August 31, 2016 and October 31, 2016.

ACDEH requested the following items from Equilon, which are presented in this report:

1. A summary table of historical groundwater, grab groundwater, and soil analytical data (Tables 1 through 3).
2. All available boring logs and well construction diagrams (Appendix B).
3. Cross-sections showing borings, wells, excavation, and filled areas (Figures 3 through 5).
4. Figures delineating the gasoline and diesel plumes before and after the 2013 diesel release (Figures 6 through 15) and a discussion of the historical migration of these plumes (Section 2.6).
5. Trend graphs (hydrographs) of concentration and water level in each well (Appendix C).
6. A review of analytical records for naphthalene data (Section 2.2).
7. A map of the utility lines along Powell Street (Figure 2).
8. Verification of any previous tanks existing at the Site (Section 2.4).
9. A discussion of historical background petroleum hydrocarbon concentrations (Section 2.5).
10. A comparison to the LTCP criteria (Section 3).

ACDEH also requested that a 2006 Work Plan submitted by Cambria Environmental Technology Inc. (Cambria) be uploaded to Geotracker. Existing files were reviewed, and AECOM determined that the Work Plan is currently on Geotracker as a line item on Page 5 of the 2006 Site Conceptual Model submitted by Cambria.

2 Background

This section describes the Site and associated environmental history. Historical groundwater, grab groundwater, and soil analytical data are included on Tables 1 through 3, respectively. Available boring logs are provided in Appendix B. A cross-section map and associated cross-sections are provided in Figures 3, 4, and 5, respectively.

2.1 Site Description

The Site is a Shell-Branded service station located at 1800½ Powell Street on the northwest corner of West Frontage Road and Powell Street in Emeryville, California (Figure 2).

The Site is primarily surrounded by commercial properties, including an office building to the north, I-580 and shopping plazas to the east, and hotel to the northwest. East Bay Regional Parks District land and the San Francisco Bay are located to the south directly across Powell Street.

2.2 Site History

In 1884, the Paraffine Company (Paraffine) purchased 10 acres of waterfront in Emeryville and filled areas along the shoreline until 1969, when operations ceased due to rising environmental concerns. Operations of Paraffine are detailed in an article written by the Journal of the Emeryville Historical Society in 1993, and included in a 1996 Investigation Workplan by Weiss Associates (Weiss, 1996) (Appendix D). The Emeryville Historical Society paper indicates that Paraffine's main product was a petroleum-based asphaltic paint. The implications of this Site history are discussed further in section 2.5.

The Site began operating as a Shell service station in the 1970s, and in 1982, a fiberglass pipe connecting to the underground storage tank (UST) was damaged during the installation of new dispensers, causing a release of approximately 3,200 gallons of super unleaded gasoline. Five tank backfill wells (S-1 through S-4, and S-11) and six groundwater monitoring wells (S-5 through S-10) were installed following the release and prior to August 1983. The boring logs, soil analytical data, and well construction diagrams for these 11 wells have not been located since before 1989. Three additional groundwater monitoring wells (S-12 through S-14) were installed in 1989 to fill these data gaps (GeoStrategies, Inc. [GeoStrategies], 1989) (Appendix B).

The groundwater monitoring network currently consists of seven groundwater monitoring wells. Quarterly groundwater monitoring has been conducted at the Site since 1988. ACDEH requested AECOM provide groundwater analytical data from 1984 to 1988. After reviewing the historical groundwater monitoring reports, AECOM determined that Weiss made an error in Table 1 of their Groundwater Monitoring Report dated November 22, 1994. All data previously recorded as data from 1988 was reported as data from 1984, creating a data gap in their tables from 1989 to 1994. This error was replicated until Conestoga Rovers & Associates' Groundwater Monitoring Report Fourth Quarter 2011, dated February 8, 2012.

This error in dates is best explained by a conversion from Macintosh format to Windows format, as the two systems used different date systems which introduce a four-year difference when directly converted.

Groundwater samples have historically been tested for total petroleum hydrocarbons (TPH) as motor oil, TPH as gasoline (TPHg), TPH as diesel (TPHd), benzene, toluene, ethylbenzene, total xylenes (BTEX), and fuel oxygenates including methyl tertiary butyl-ether (MTBE) and tertiary butyl-alcohol (TBA). Groundwater has not been analyzed for naphthalene. The most recent groundwater monitoring and sampling event was performed on February 27, 2015.

2.3 Site Geology and Hydrology

The Site was constructed on a peninsula made of fill materials placed by Paraffine, consisting of industrial and waste refuse, and imported clayey and sandy soil (Weiss, 1996). Based on the available boring log data, the fill is approximately 10 feet deep, and appears to be continuous throughout the Site. Cross sections are shown on Figure 4 and Figure 5.

A joint utility trench runs along the station's southern boundary with Powell Street, which has served as a preferential pathway and elongated the shape and length of the TPHg plume. The presence of this utility trench has also limited the expansion of the groundwater monitoring well network, as additional monitoring wells cannot be installed within the trench downgradient. All known utilities are shown on Figure 2.

In the first quarter 2015 groundwater sampling event, groundwater elevations ranged from 4.60 (S-14) to 8.19 feet above mean sea level (amsl) (S-8). In first quarter 2015, the groundwater flow magnitude was variable. Groundwater flow direction flows historically to the south and west of the Site (AECOM, 2016). Historically, groundwater elevations range from -9.55 feet to 9.15 feet amsl. The Site is located on a peninsula, with the San Francisco Bay approximately 400 feet north and 700 feet south of the Site. A tidal and groundwater level survey was conducted for a Site Update Report and included in the second quarter 1991 groundwater monitoring report prepared by Geostrategies and submitted by Gettler-Ryan, Inc., indicating that the tides only influenced approximately 2 inches of groundwater elevation.

2.4 Previous Generations of Tanks

There are no records of previous generations of USTs at the Site prior to a tank upgrade in 2014 by AU Energy. In May 2014, four 10,000 gallon single-walled fiberglass USTs were removed and replaced with two double-walled USTs with capacities of 20,000 gallons and 15,000 gallons (Sparger Technology, Inc., 2014).

2.5 Background Contamination vs. 1982 Release

Separate phase hydrocarbon (SPH) was observed in monitoring well S-9 from 1995 to 2008 and has been dry since 2008. A sample of SPH was collected in 1995 and analyzed by Equilon's Westhollow analytical laboratory in Houston, Texas, the results of which were presented by Weiss in the 1996 Investigation Workplan (Weiss, 1996) (Appendix D). The analysis indicated that the product consisted of approximately 50% gasoline range (C_4-C_{12})

and 50% heavy range (C_{20}-$C_{>50}$) organics. Heavy range organics have not been used or stored by Equilon at the Site; however, they were used by Paraffine. The heavy range organics are believed to pre-date the 1982 release. This is supported by the presence of tar paper in on-site borings between 7 and 12 feet below ground surface (bgs).

In addition to background heavy range organics, diesel has been observed above detection limits in all off-site and on-site soil samples at varying concentrations ranging from approximately 14) to 6,000 mg/kg, and is not as clearly defined as gasoline hydrocarbons.

The observed TPHd concentrations are likely due to the historical Site use, and are not a result of Equilon's operations on Site. This is evidenced by detections of TPHd at the adjacent 2000 Powell Street site, which did not store diesel fuel historically. These detections were attributed to the presence of diesel in the fill materials used to build the peninsula (Geomatrix, 2007). Additionally, TPHd was detected in all soil samples collected during the 1996 subsurface investigation borings south of Powell Street, whereas gasoline was only detected in one soil sample from these locations.

2.6 Plume Migration and Delineation

Figures 6 through 15 demonstrate the shape and extent of plumes of TPHg and TPHd, from 2010 to 2015. Concentration trend graphs are presented in Appendix C.

2.6.1 Plume Migration

Plume migration is indicated by increasing concentration trends in downgradient wells. Downgradient wells S-5 and S-14 do not exhibit increasing trends for TPHg, or TPHd, All plumes appear to remain stable even after the 2013 release.

Since the diesel release on September 29, 2013, wells S-10, S-12, S-13, and S-14 have been sampled and analyzed for diesel during the regularly scheduled groundwater monitoring and sampling events. Wells S-10 and S-12 have shown an increase in diesel concentrations whereas wells S-13 and S-14 have shown a decrease in diesel concentrations. Both the increase and decreased concentrations fall within historical limits and trends for the respective wells and therefore it is inconclusive whether or not the diesel spill is contributing to dissolved TPHd concentrations in groundwater.

2.6.2 Plume Delineation

Figures 6, 8, 10, 13, and 15 show that TPHg detections are highest near the utility trench along the Site's southern boundary, and ranged from 150 micrograms per liter (µg/L) to 950 µg/L from 2010 to 2015. TPHg concentrations located outside of the proximity of this trench (S-14, S-12) are stable and below 500 µg/L.

Figures 7, 9, 11, 12, and 14 show that TPHd is detected Site wide, and ranged from 1,000 µg/L to 2,000 µg/L from 2010 to 2015. These detections are attributed to background detections and are not a result of the 1982 gasoline release.

Grab groundwater and soil collected from six soil borings south of Powell Street in 1996 did not have reportable concentrations of TPHg. These demonstrate that TPHg impacts do not extend beneath Powell St and do not reach San Francisco Bay.

3 LTCP Evaluation

On August 17, 2012, the SWRCB adopted Resolution No. 2012-0016, the LTCP. The intent of this policy is to increase cleanup process efficiency at petroleum release sites. A benefit of improved efficiency is the preservation of limited resources for mitigation of releases posing the greatest threat to human and environmental health. Per the policy, sites that meet the general and media-specific criteria described in the policy do not pose a threat to human health, safety, or the environment and are appropriate for case closure pursuant to Health and Safety Code section 25296.10. The policy further states that sites meeting the stated criteria for low-threat closure should be issued a closure letter if the site is determined to be low-threat based upon a site-specific analysis. Site conditions with respect to this policy are discussed below.

3.1 General Criteria

a) *The unauthorized release is located within the service area of a public water system.*
Satisfied: The Site and surrounding area are located within the East Bay Municipal Utilities District, which serves as the public water system.

b) *The unauthorized release consists only of petroleum.*
Satisfied: All documented unauthorized releases, beginning with the initial 1982 release, have been associated with the Site operations as a retail service station.

c) *The unauthorized ("primary") release from the UST system has been stopped.*
Satisfied: In 1982, a fiberglass pipe connecting to the UST was damaged during the installation of new dispensers, and caused a release of approximately 3,200 gallons of super unleaded gasoline.

d) *Free product has been removed to the maximum extent practicable.*
Satisfied: Separate Phase Hydrocarbons (SPH) have historically been observed in S-9, S-10 and S-13 until 1996. Historically, the hydrocarbons observed in the on-site wells have been heavier than gasoline. In 1996, Weiss shipped a sample of the SPH observed in S-9 to Equilon's Westhollow laboratory. Analytical results identified the substance as 50% gasoline and 50% denser hydrocarbons ranging from C_{20} to C_{50}, indicating a range of roofing tar (Weiss, 1996).

e) *A conceptual site model has been developed.*
Satisfied: A Site Conceptual Model was submitted by Cambria on January 10, 2006. As of June 2016, the ACDEH determined that the groundwater assessment was incomplete due to the lack of definition of the aerial extent of impaction (Geotracker). As will be discussed in Section 3.2.1, TPHg is the only constituent that currently exceeds its water quality objective. Figures 5, 7, 9, 12, and 14 show that a TPHg data gap exists south (downgradient) of the Site with respect to the monitoring well network. Historically, several attempts have been made to install wells south of the Site but have been unsuccessful due to access restrictions and subsurface utility constraints.

However, a soil and groundwater investigation was performed in 1996 on the property south of Powell Street. Results of the investigation did not detect any constituents analyzed for in groundwater above the laboratory method reporting limits including TPHg (Table 2). Given the time of the release with respect to the 1996 investigation it is reasonable to use these data points to delineate between the Site and the San Francisco Bay.

f) *Secondary source removal has been addressed.*
Satisfied: Released product was removed following the 1982 release, as well as SPH that predates the 1982 release.

g) *Soil or groundwater has been tested for MTBE and results reported in accordance with Health and Safety Code section 25296.15.*
Satisfied: Soil and groundwater samples have been analyzed for MTBE.

h) Nuisance as defined by Water Code section 13050 does not exist at the site.
Satisfied: Conditions meeting the definition of a nuisance as defined in Water Code section 13050 do not exist at the Site.

3.2 Media-Specific Criteria

There are three media-specific criteria that must be satisfied under the *LTCP*:

3.2.1 Groundwater

The *LTCP* includes five classes of sites (that can be considered "low threat") with differing characteristics such as plume length, contaminant concentrations, and distance to supply wells or surface water bodies. The current site plume has concentrations exceeding water quality objectives (WQOs), but is stable to decreasing in areal extent, considering the safety restrictions to obtaining additional off-site data, as discussed below. The Site meets Case 1:

a) *The contaminant plume that exceeds water quality objectives is less than 100 feet in length*.
Satisfied: WQOs for this report are derived from Table GW-2 of the Regional Water Quality Control Board (RWQCB) Environmental Screening Levels (ESLs) (RWQCB, 2016). WQOs were selected for the most conservative aquatic habitat goals. These levels were selected on the basis that the San Francisco bay is the nearest potential receptor and that groundwater in the region is not being considered as a future drinking water source, as stated in the East Bay Plain Groundwater Basin Beneficial Use Evaluation Report (RWQCB, 1999). The following table compares maximum concentrations of dissolved groundwater constituents from the most recent groundwater sampling event (February 27, 2015) to WQOs.

Constituent	WQO (µg/L)	Maximum Concentration Feb 27, 2015 (µg/L)	WQO Exceeded (Y/N)
TPHg	440	510	Y
Benzene	46	3.8	N
Toluene	130	0.55	N
Ethylbenzene	43	<0.50	N
Xylenes	100	2.2	N
MTBE	8,000	33	N
TBA	18,000	260	N

As shown in the above table, TPHg was the only constituent where the maximum concentration exceeded its respective WQO. Figure 17shows that the length of the TPHg plume exceeding the WQO is approximately 52.5 feet which is less than 100 feet.

TPHd exceeded the WQO of 640 µg/L Site wide; however, diesel concentrations are attributed to background contamination associated with operations at the Site prior to it being a retail gas station is therefore not considered.

b) *There is no free product.*
Satisfied. Free product has not been detected in the Site groundwater monitoring wells since 1996.

c) *The nearest existing water supply well or surface water body is greater than 250 feet from the defined plume boundary*.
Satisfied. A sensitive receptor survey conducted in 2004 did not find any water producing wells within a ½ mile radius of the Site (Cambria, 2006). The San Francisco bay was identified as the closest surface water body located approximately "390 feet" south of the Site. As previously mentioned, the only constituent exceeding WQOs for the Site was TPHg. As indicated on Figure 17, the shoreline of the San Francisco Bay is located approximately 270 feet from the TPHg plume boundary.

3.2.2 Petroleum Vapor Intrusion to Indoor Air

The Site is an active Shell-Branded service station and is exempt from the media specific criteria for petroleum vapor intrusion to indoor air.

3.2.3 Direct Contact and Outdoor Air Exposure

Satisfied: A total of 22 soil samples have been analyzed for benzene and ethylbenzene within the top 5 feet bgs. Maximum benzene and ethylbenzene concentrations within the top 5 feet bgs were reported at 0.26 mg/kg and 26 mg/kg, respectively. These concentrations are

below LTCP Table 1 maximum concentration limits for benzene (8.2 mg/kg) and ethylbenzene (89 mg/kg) for Commercial/Industry 0 to 5 feet bgs.

A total of 20 soil samples have been analyzed for benzene and ethylbenzene between 5 feet and 10 feet bgs. Maximum benzene and ethylbenzene concentrations within this interval were reported at 0.031 mg/kg and 7.1 mg/kg, respectively. These concentrations are below LTCP Table 1 maximum concentration limits for benzene (12 mg/kg) and ethylbenzene (134 mg/kg) for Commercial/Industry 5 to 10 feet bgs.

A total of 34 soil samples have been analyzed for benzene and ethylbenzene within the top 10 feet bgs. Maximum benzene and ethylbenzene concentrations within this interval were reported at 0.26 mg/kg and 26 mg/kg, respectively. These concentrations are below LTCP Table 1 maximum concentration limits for benzene (14 mg/kg) and ethylbenzene (314 mg/kg) for Utility Worker 0 to 10 feet bgs.

Naphthalene has been analyzed in 1 soil sample (B1-7.0) historically and was not detected above the laboratory reporting limit (<0.25 mg/kg). SWRCB references Potter and Simmons, (1998) in multiple case reviews indicates an equivalency of 2% benzene to 0.025% naphthalene in gasoline mixtures (SWRCB, 2014). Using this ratio, the historical maximum benzene concentration of 0.26 mg/kg equates to approximately 0.02 mg/kg of naphthalene, which is less than the LTCP criteria of 45 mg/kg.

4 Conclusions and Recommendations

- SPH and diesel concentrations observed on Site are attributed to historical Site use, which pre-date Equilon's operations. They do not contribute to the 1982 fuel release.
- Evidence of increased dissolved TPHd concentrations as a result of the September 26, 2016, diesel release is inconclusive.
- Grab groundwater samples collected during the 1996 soil and groundwater investigation provide adequate delineation between the Site and San Francisco Bay.
- The Site meets LTCP requirements for Low Threat Closure

AECOM recommends the Site environmental case associated with the 1982 unauthorized release be closed under the LTCP.

5 Limitations

The conclusions, if any, presented in this report are professional opinions based solely upon the data described in this report. They are intended exclusively for the purpose outlined herein and the Site location and project indicated. This report is for the sole use and benefit of the client. The scope of services performed in execution of this effort may not be appropriate to satisfy the needs of other users, and any use or reuse of this document or the findings, conclusions, or recommendations presented herein is at the sole risk of said user. No express or implied representation or warranty is included or intended in this report except that the work was performed within the limits prescribed by the client with the customary thoroughness and competence of professionals working in the same area on similar projects.

6 References

Cambria Environmental Technology, Inc., 2006, *Site Conceptual Model, Shell-branded Service Station, 1800½ Powell Street, Emeryville California.* January 10

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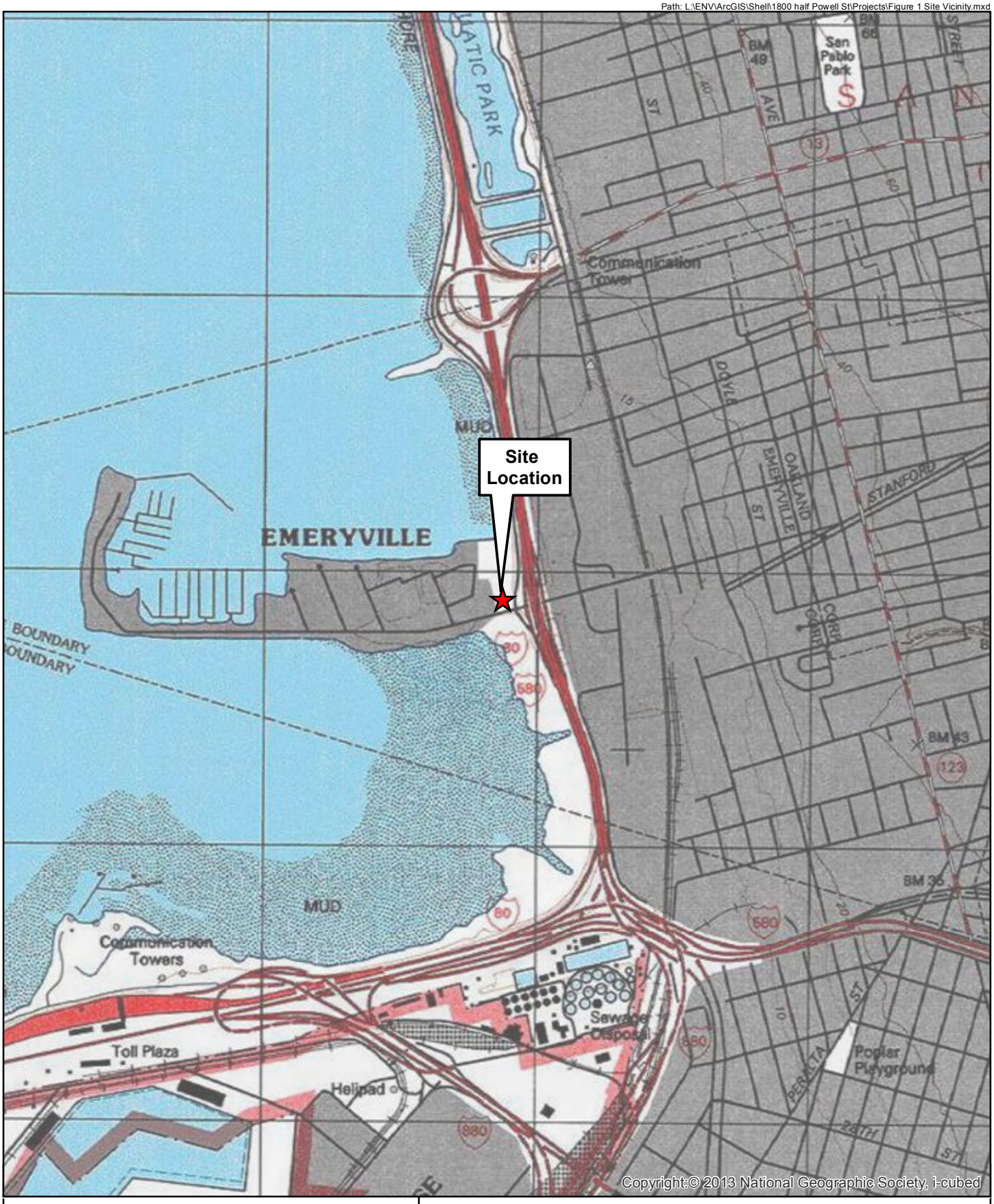
Figures

Path: L:\ENV\ArcGIS\Shell\1800 half Powell St\Projects\Figure 1 Site Vicinity.mxd



N

0 2,000 4,000

Feet

Figure 1
Site Vicinity Map

AECOM

Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

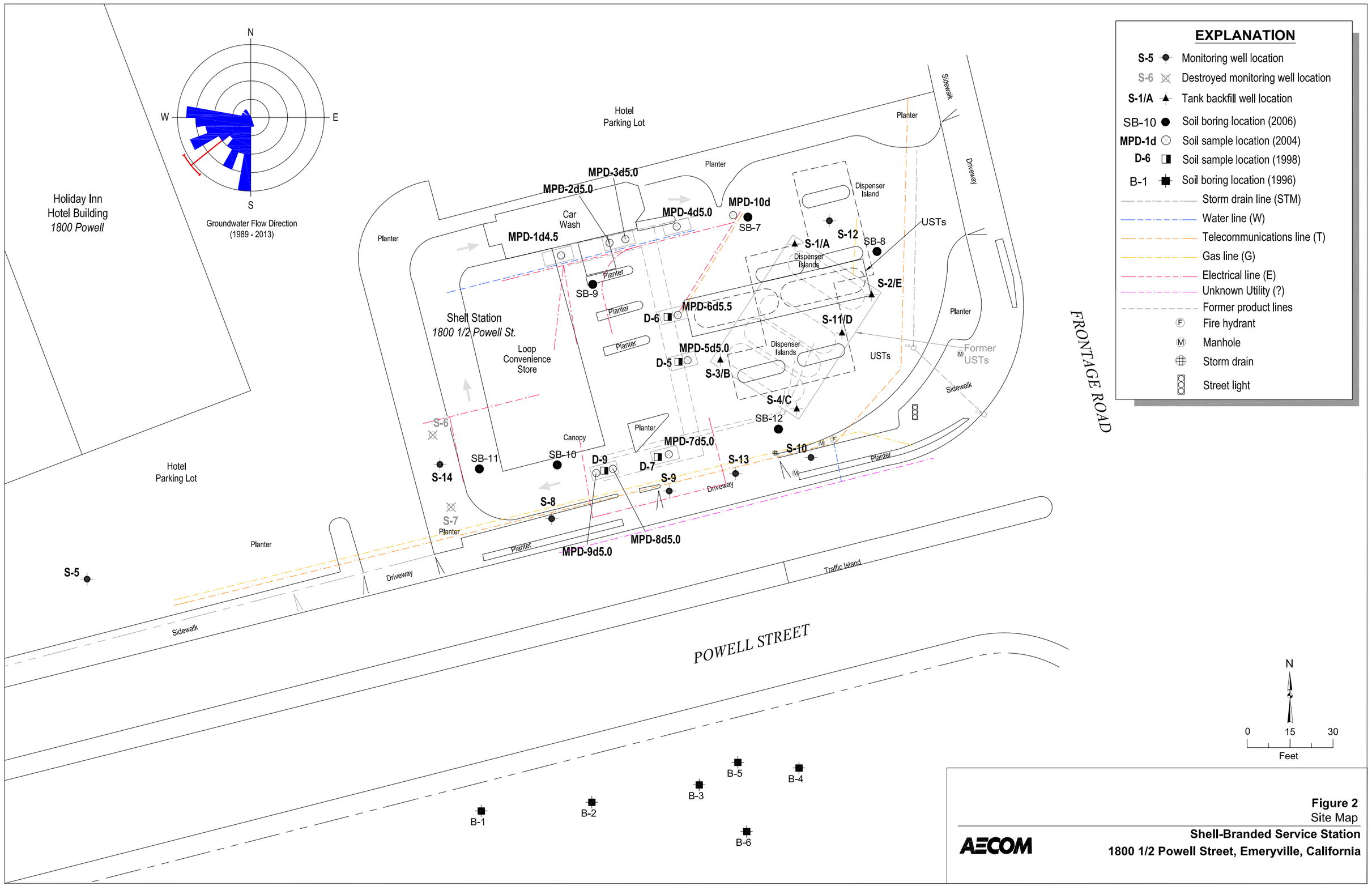


Figure 2
Site Map

AECOM

Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

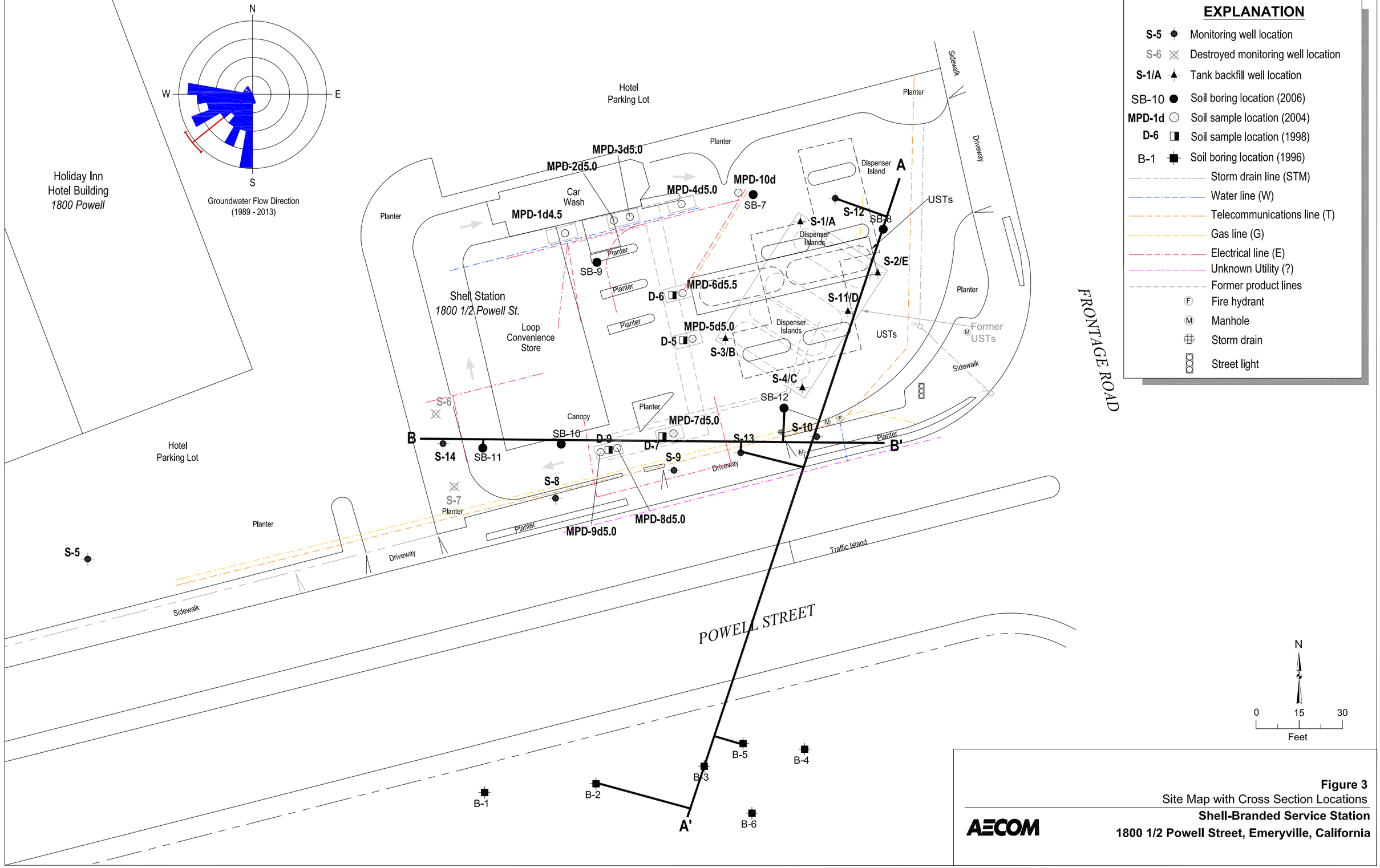
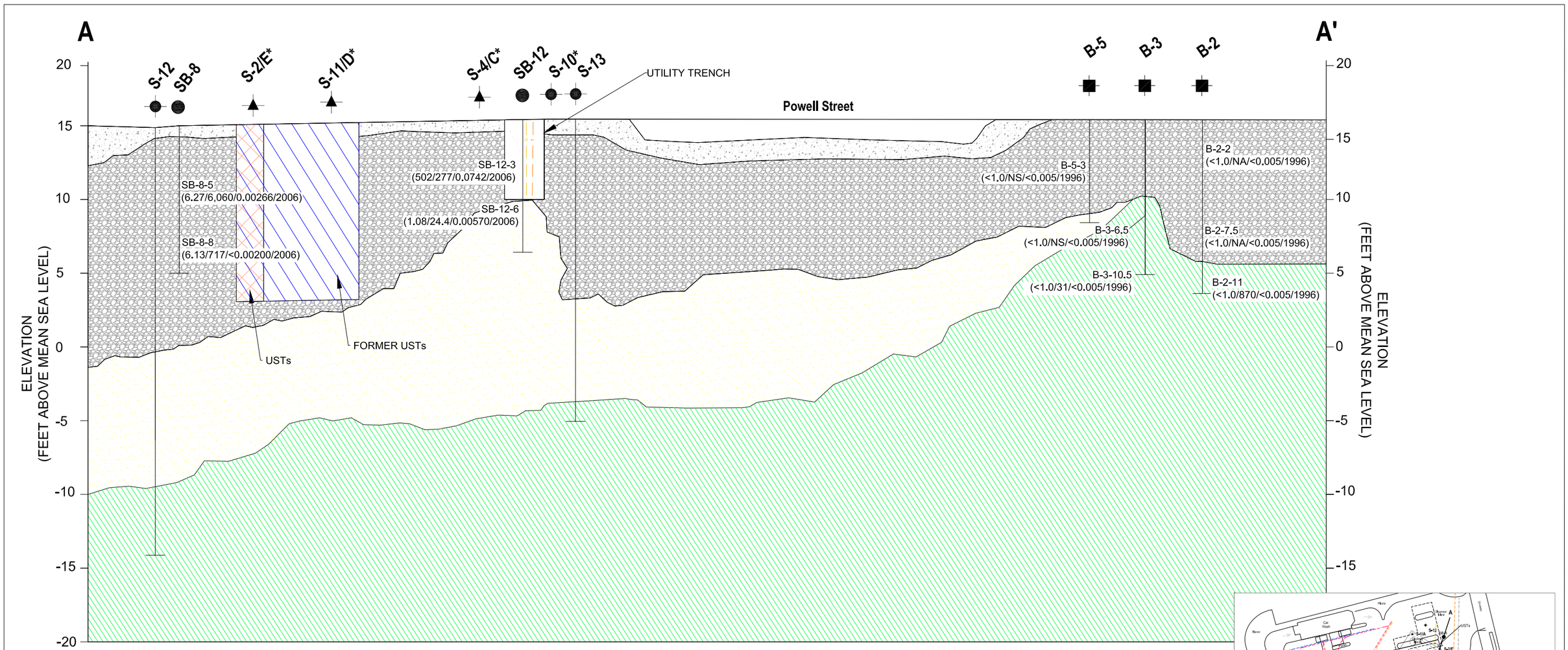
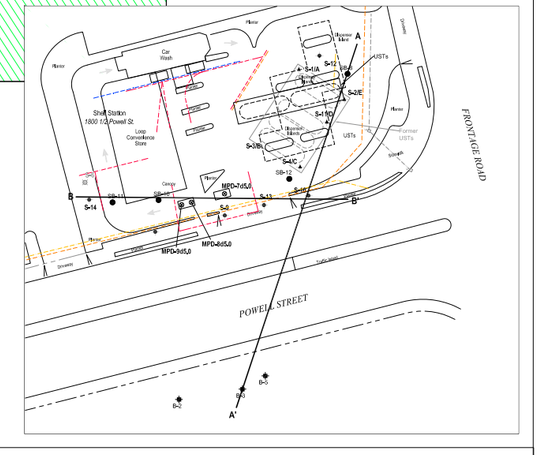


Figure 3
Site Map with Cross Section Locations
Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

AECOM





EXPLANATION

S-5	Monitoring well location
S-1/A	Tank backfill well location
SB-10	Soil boring location (4/18-19/06)
MPD-1d	Soil sample location (3/19/98)
B-1	Soil boring location (5/20/96)
	Telecommunications line (T)
	Gas line (G)
	Current USTs
	Former USTs
	Pavement
	Fill
	Coarse
	Fine

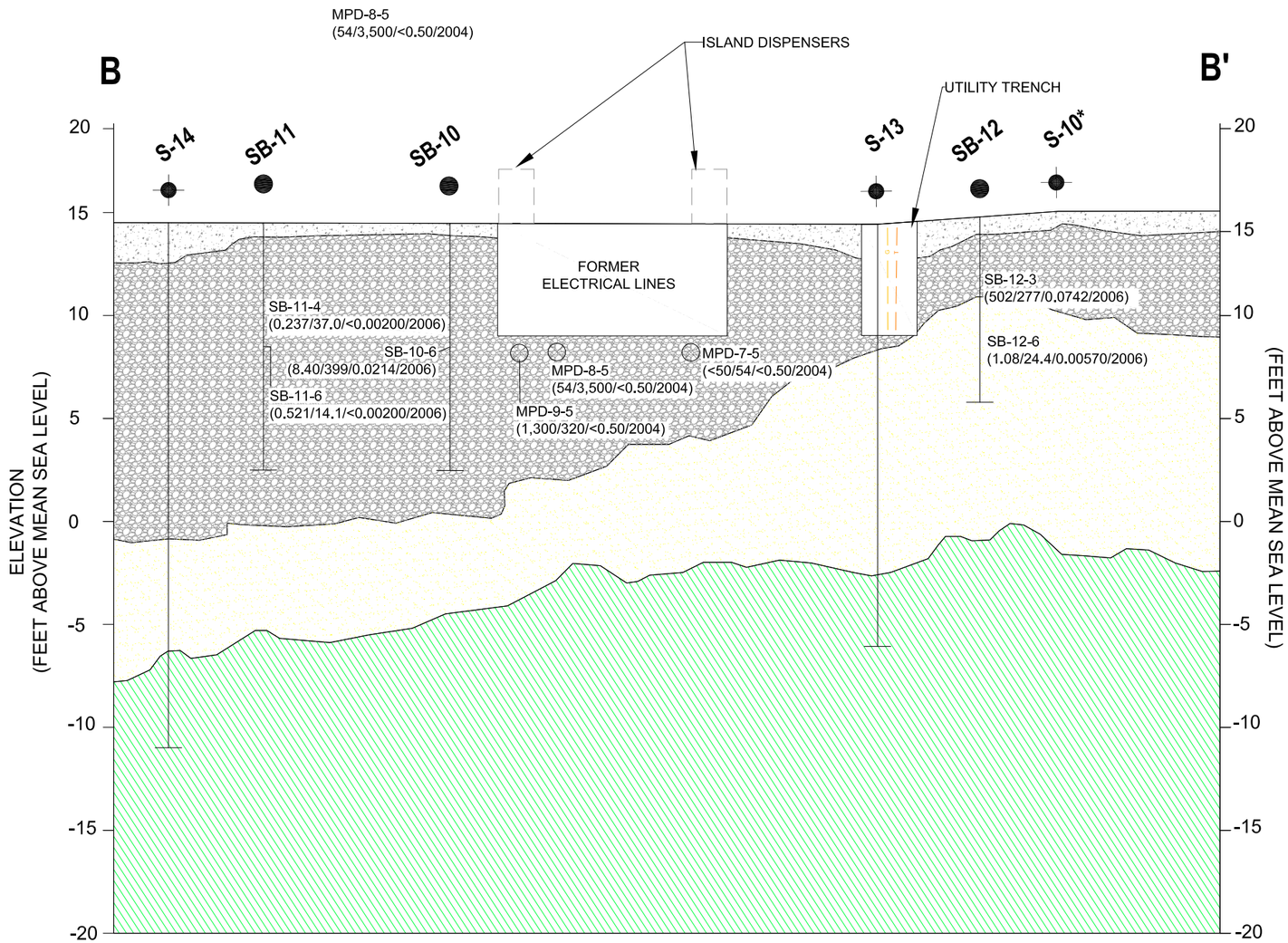
Notes:
Soil data in the following format
Sample ID-Depth (TPHg/TPHd/Benzene/Year)
All soil concentrations in milligrams per kilogram
<X.XX Not detected at or above laboratory reporting limits
* = Well construction details and boring log not available

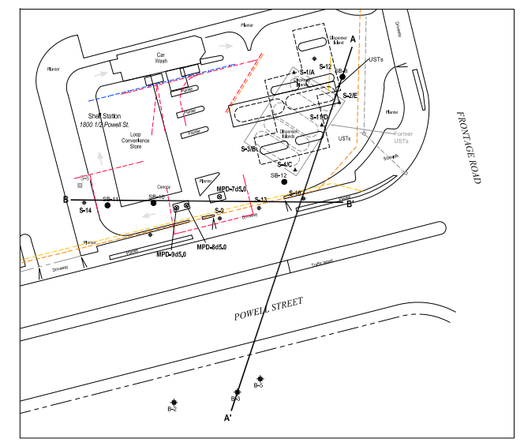
0 10 20
Horizontal Scale in Feet

2.5X Vertical Exaggeration

Figure 4
Cross Section A-A'
Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

AECOM





EXPLANATION

- S-5 — Monitoring well location
- S-1/A — Tank backfill well location
- SB-10 — Soil boring location (4/18-19/06)
- MPD-1d — Soil sample location (3/19/98)
- B-1 — Soil boring location (5/20/96)
- Telecommunications line (T)
- Gas line (G)
- Current USTs
- Former USTs
- Pavement
- Fill
- Coarse
- Fine

Notes:
Soil data in the following format
Sample ID-Depth (TPHg/TPHd/Benzene/Year)
All soil concentrations in milligrams per kilogram
<X.XX Not detected at or above laboratory reporting limits
* = Well construction details and boring log not available

0 10 20
Horizontal Scale in Feet

2.5X Vertical Exaggeration

Figure 5
Cross Section B-B'
Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

AECOM

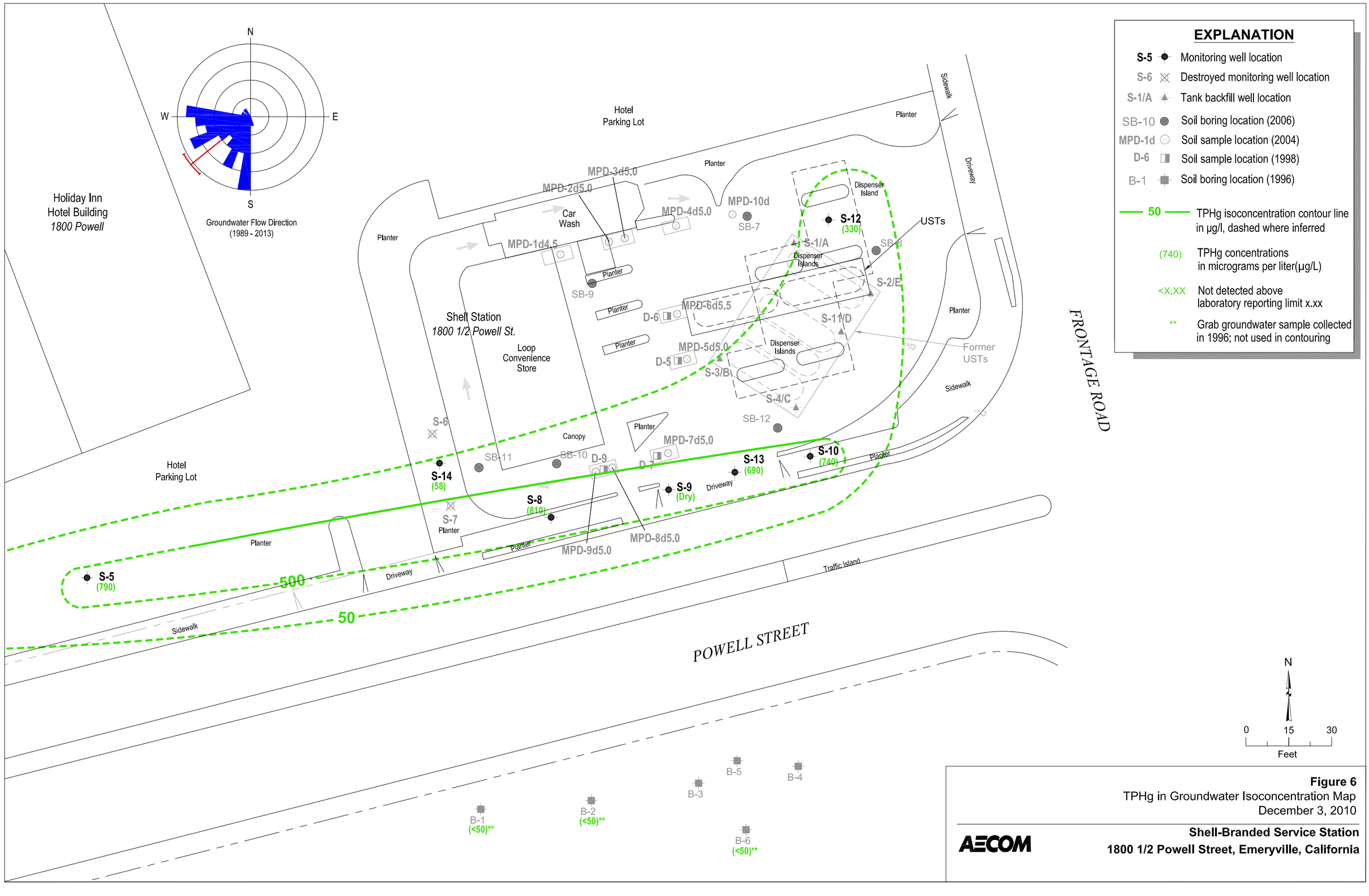


Figure 6
TPHg in Groundwater Isoconcentration Map
December 3, 2010

AECOM

Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

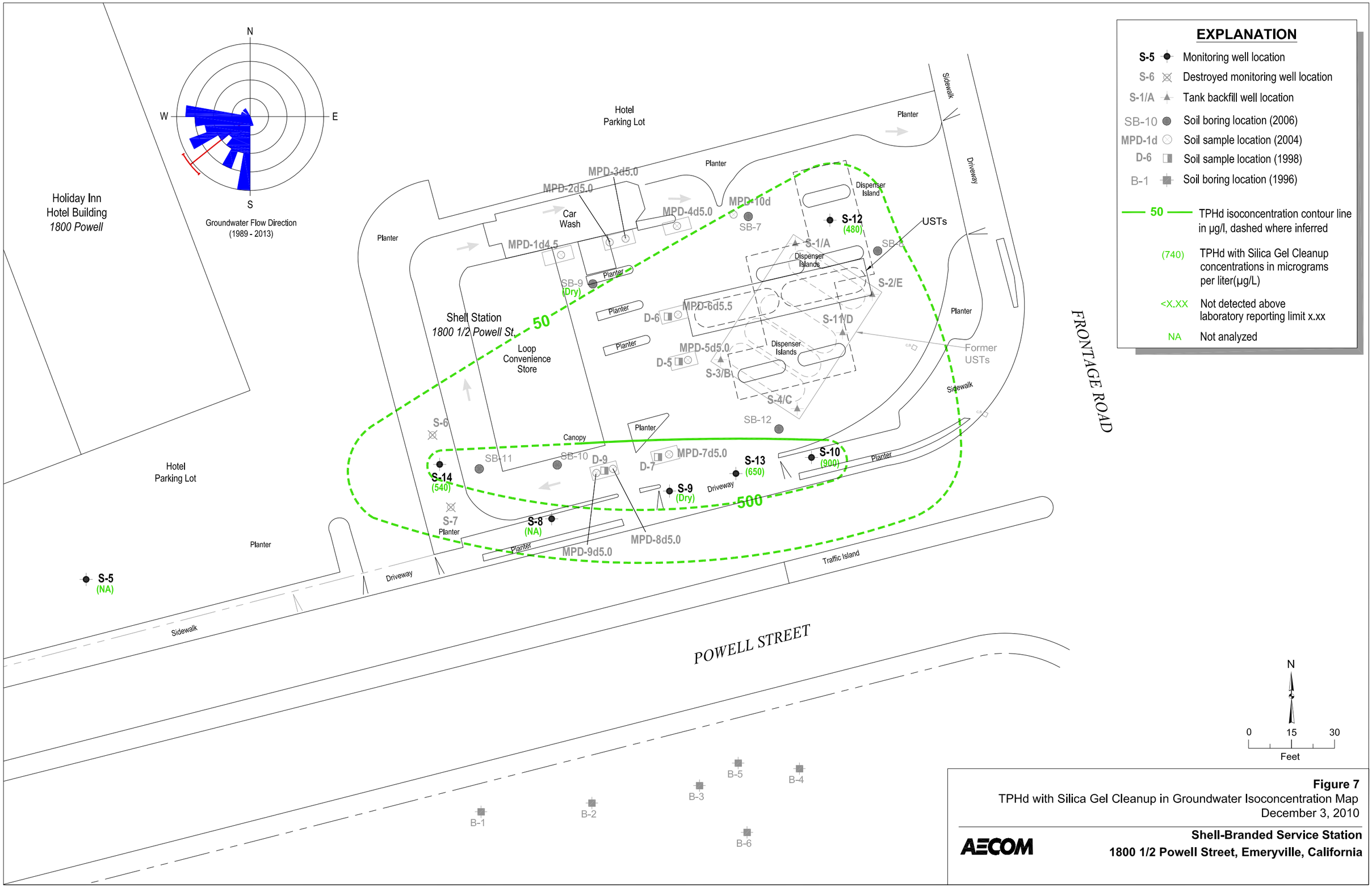


Figure 7
TPHd with Silica Gel Cleanup in Groundwater Isoconcentration Map
December 3, 2010

AECOM

Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

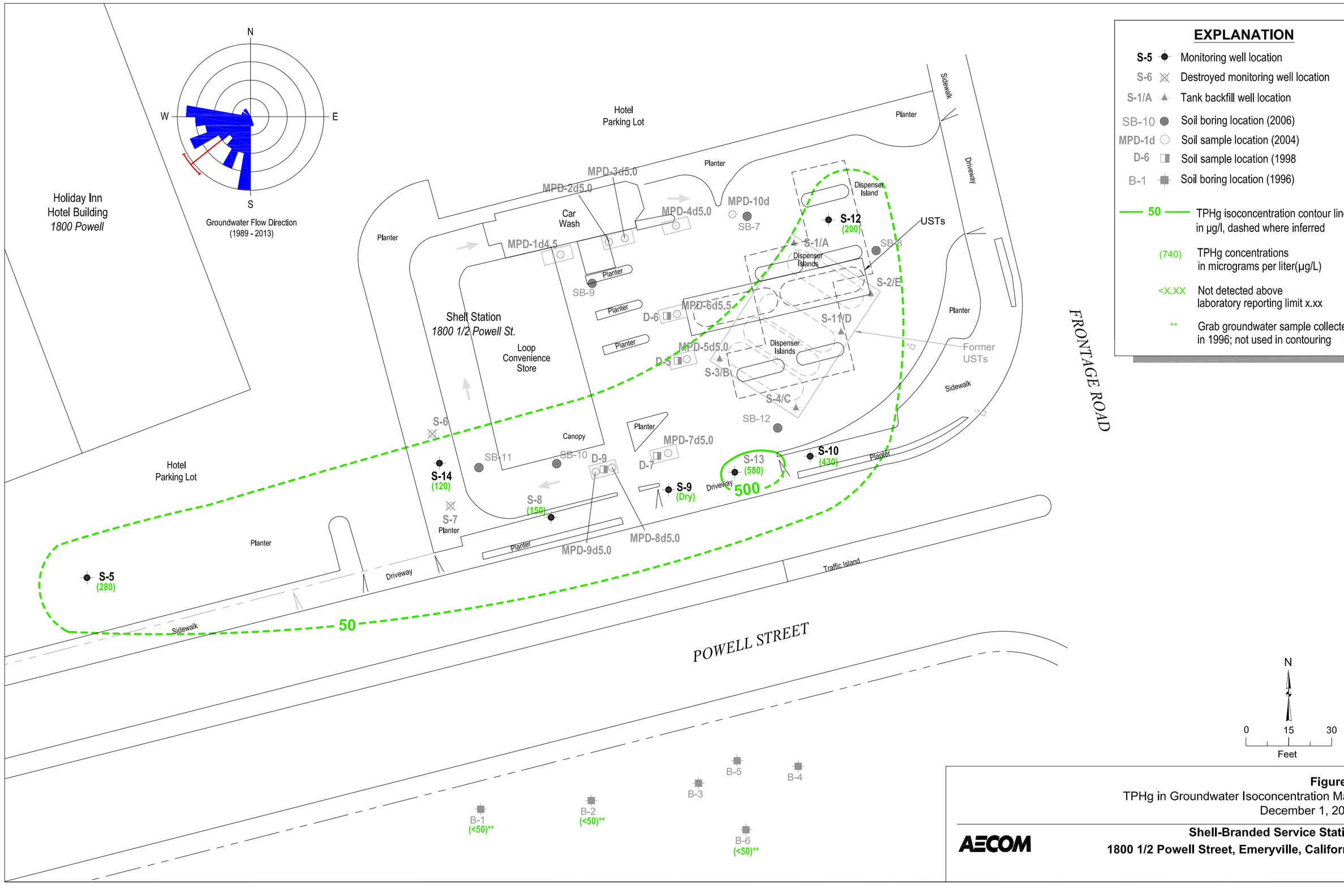


Figure 8
TPHg in Groundwater Isoconcentration Map
December 1, 2011

AECOM

Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

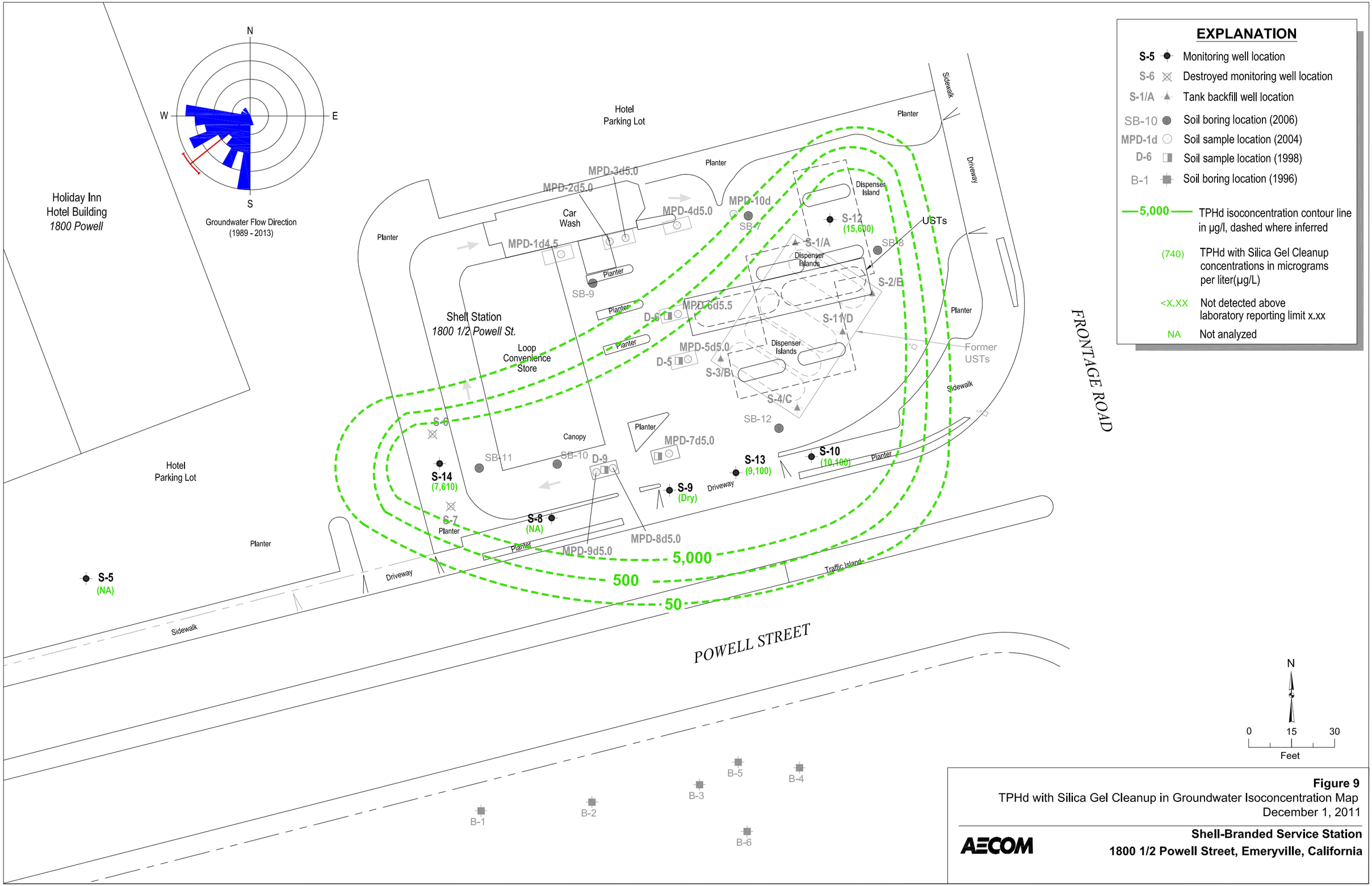


Figure 9
TPHd with Silica Gel Cleanup in Groundwater Isoconcentration Map
December 1, 2011

AECOM

Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

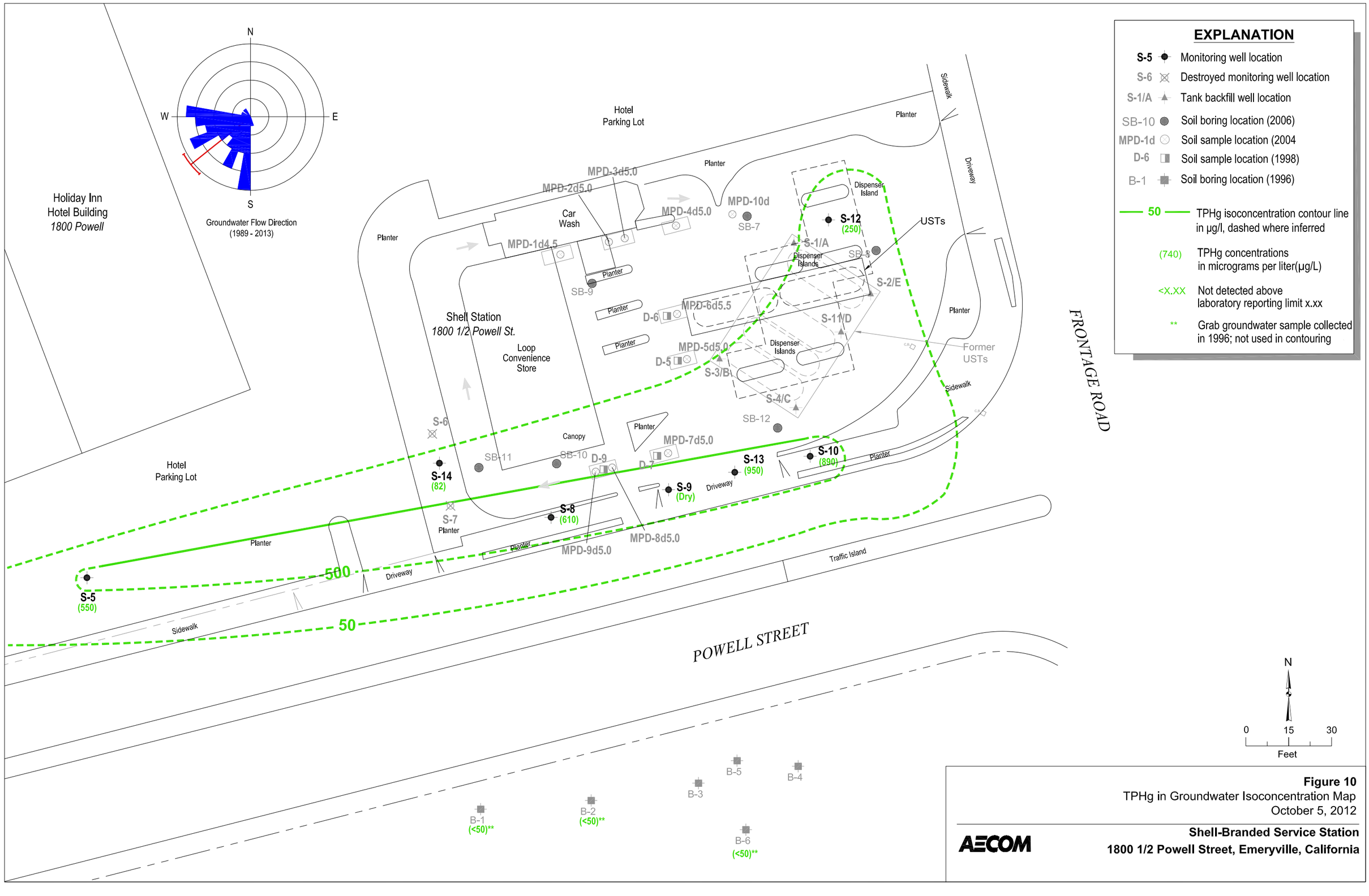


Figure 10
TPHg in Groundwater Isoconcentration Map
October 5, 2012

AECOM

Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

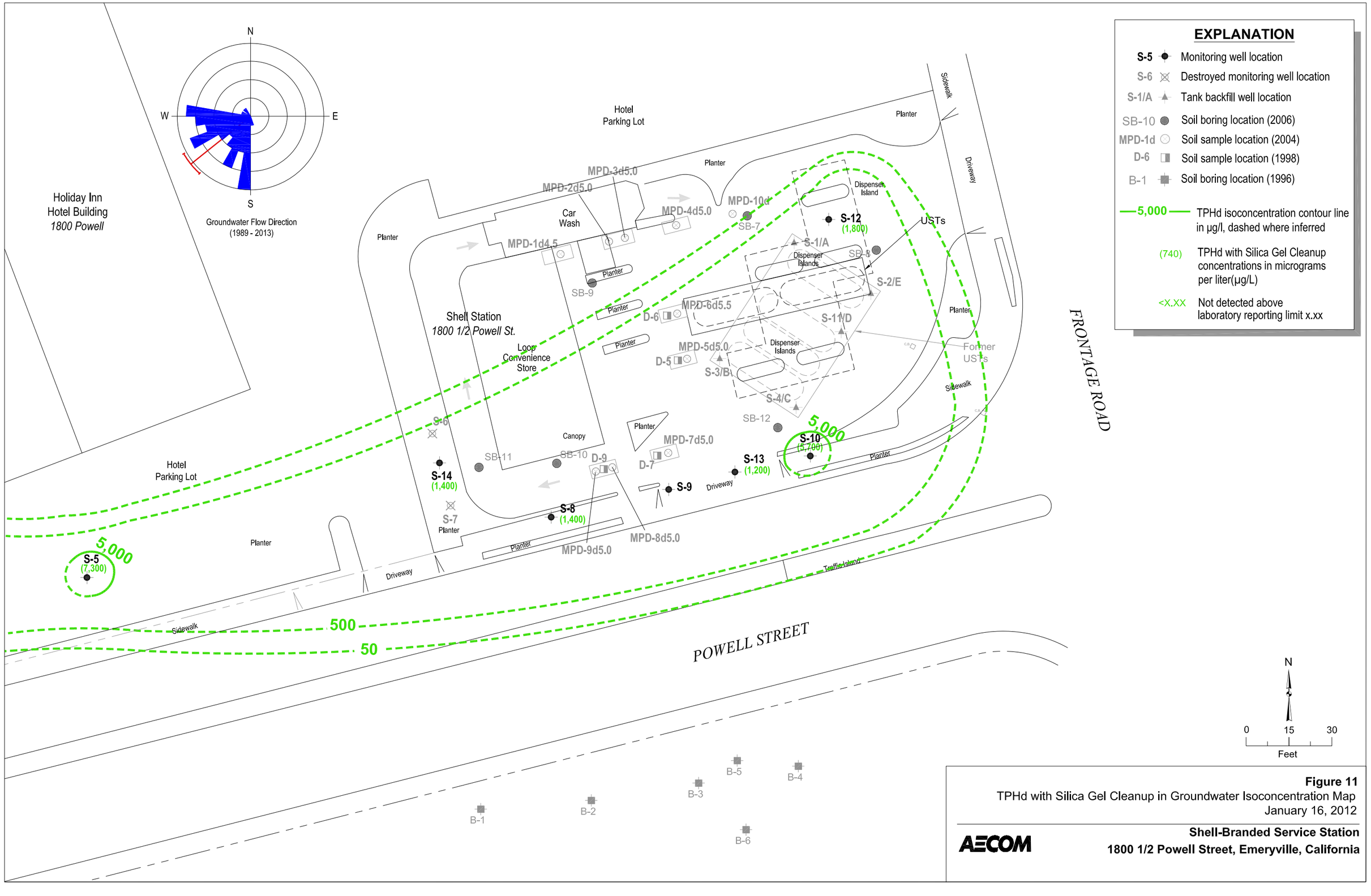


Figure 11
TPHd with Silica Gel Cleanup in Groundwater Isoconcentration Map
January 16, 2012

AECOM

Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

EXPLANATION

- S-5 — Monitoring well location
- S-6 — Destroyed monitoring well location
- S-1/A — Tank backfill well location
- SB-10 — Soil boring location (2006)
- MPD-1d — Soil sample location (2004)
- D-6 — Soil sample location (1998)
- B-1 — Soil boring location (1996)
- 50 — TPHd isoconcentration contour line in µg/l, dashed where inferred
- (740) — TPHd with Silica Gel Cleanup concentrations in micrograms per liter(µg/L)
- <X.XX — Not detected above laboratory reporting limit x.xx
- NA — Not analyzed

N
W E
S

Groundwater Flow Direction
(1989 - 2013)

Holiday Inn
Hotel Building
1800 Powell

Hotel
Parking Lot

Shell Station
1800 1/2 Powell St.

Loop
Convenience
Store

Car
Wash

Canopy

Dispenser
Islands

Dispenser
Island

USTs

Former
USTs

Planter

Sidewalk

Driveway

Traffic Island

MPD-3d5.0
MPD-2d5.0
MPD-4d5.0
MPD-10d
MPD-1d4.5
MPD-6d5.5
MPD-5d5.0
MPD-7d5.0
MPD-8d5.0
MPD-9d5.0

S-1/A
S-2/E
S-3/B
S-4/C
S-5 (NA)
S-6
S-7
S-8 (NA)
S-9 (Dry)
S-10 (510)
S-11/D
S-12 (280)
S-13 (990)
S-14 (1,300)

SB-7
SB-8
SB-9
SB-10
SB-11
SB-12

D-5
D-6
D-7
D-9

500
50

FRONTAGE ROAD

POWELL STREET

B-1
B-2
B-3
B-4
B-5
B-6

N
0 15 30
Feet

Figure 12
TPHd with Silica Gel Cleanup in Groundwater Isoconcentration Map
October 5, 2012

AECOM

Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

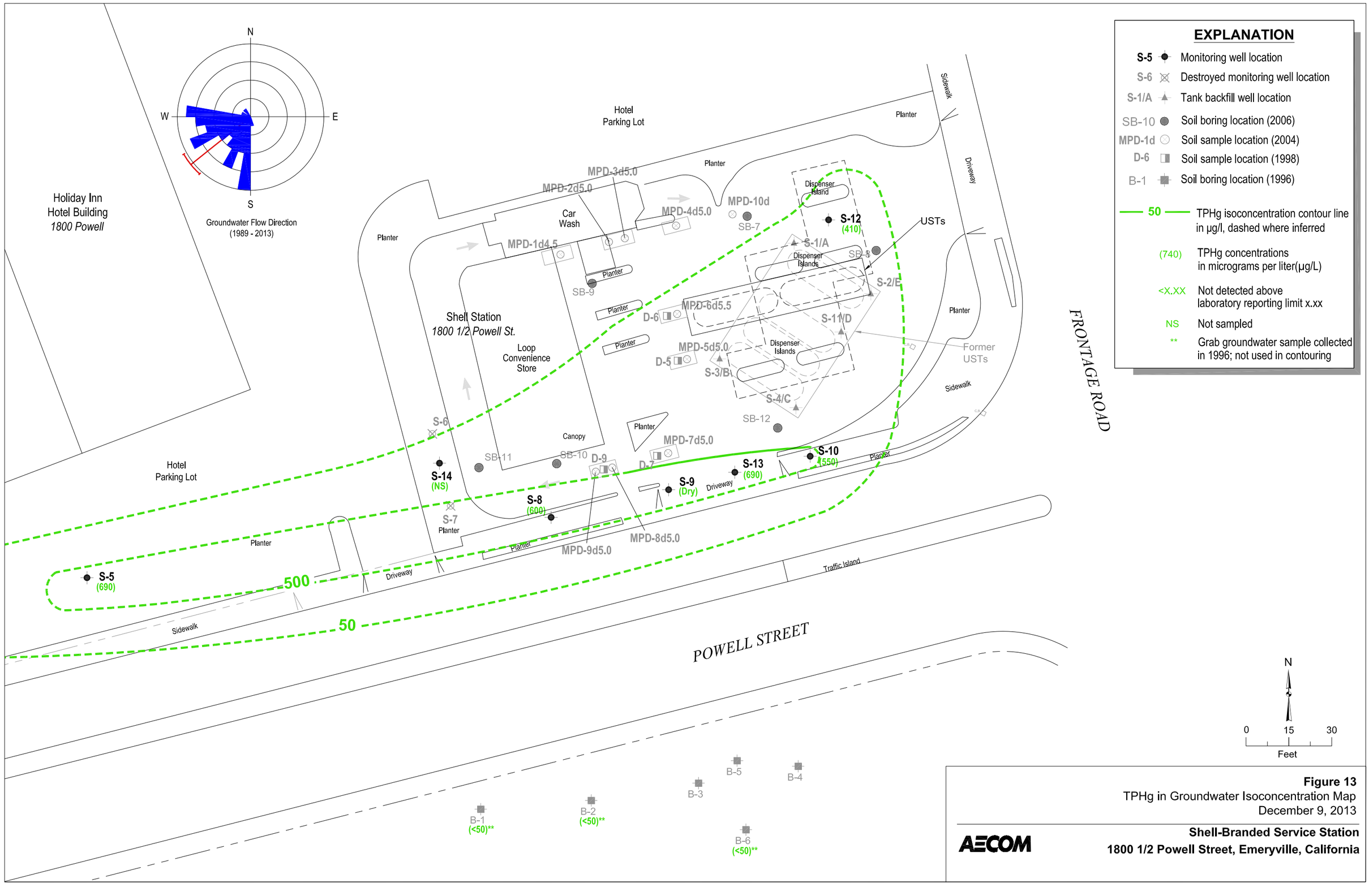


Figure 13
TPHg in Groundwater Isoconcentration Map
December 9, 2013

AECOM

Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

EXPLANATION

- S-5 — Monitoring well location
- S-6 — Destroyed monitoring well location
- S-1/A — Tank backfill well location
- SB-10 — Soil boring location (2006)
- MPD-1d — Soil sample location (2004)
- D-6 — Soil sample location (1998)
- B-1 — Soil boring location (1996)
- 50 — TPHd isoconcentration contour line in µg/l, dashed where inferred
- (740) — TPHd with Silica Gel Cleanup concentrations in micrograms per liter(µg/L)
- <X.XX — Not detected above laboratory reporting limit x.xx
- NA — Not analyzed
- NS — Not sampled

N
W
E
S

Groundwater Flow Direction
(1989 - 2013)

Holiday Inn
Hotel Building
1800 Powell

Hotel
Parking Lot

Shell Station
1800 1/2 Powell St.

Loop
Convenience
Store

Canopy

Car
Wash

Hotel
Parking Lot

Planter

Sidewalk

Driveway

Traffic Island

Dispenser
Island

Dispenser
Islands

USTs

Former
USTs

MPD-3d5.0
MPD-2d5.0
MPD-4d5.0
MPD-10d
MPD-1d4.5
MPD-6d5.5
MPD-5d5.0
MPD-7d5.0
MPD-8d5.0
MPD-9d5.0

S-1/A
S-2/E
S-11/D
S-3/B
S-4/C
S-5 (NA)
S-6
S-7
S-8
S-9 (Dry)
S-10 (2,100)
S-11
S-12 (250)
S-13 (640)
S-14 (NS)

SB-7
SB-8
SB-9
SB-10
SB-11
SB-12

D-5
D-6
D-7
D-9

500
50

B-1
B-2
B-3
B-4
B-5
B-6

FRONTAGE ROAD

POWELL STREET

N
0 15 30
Feet

Figure 14
TPHd with Silica Gel Cleanup in Groundwater Isoconcentration Map
December 9, 2013

AECOM

Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

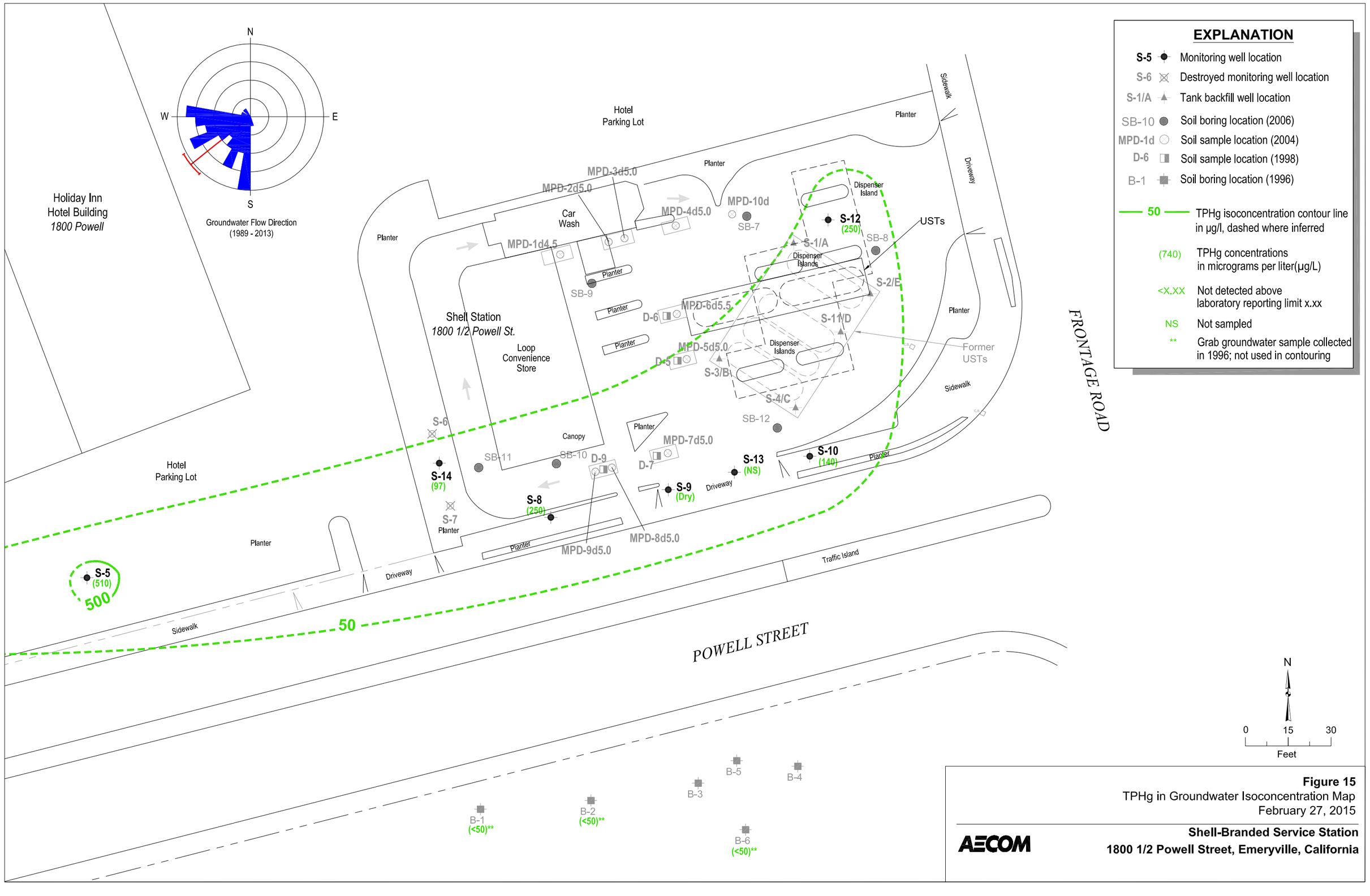


Figure 15
TPHg in Groundwater Isoconcentration Map
February 27, 2015

AECOM

Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

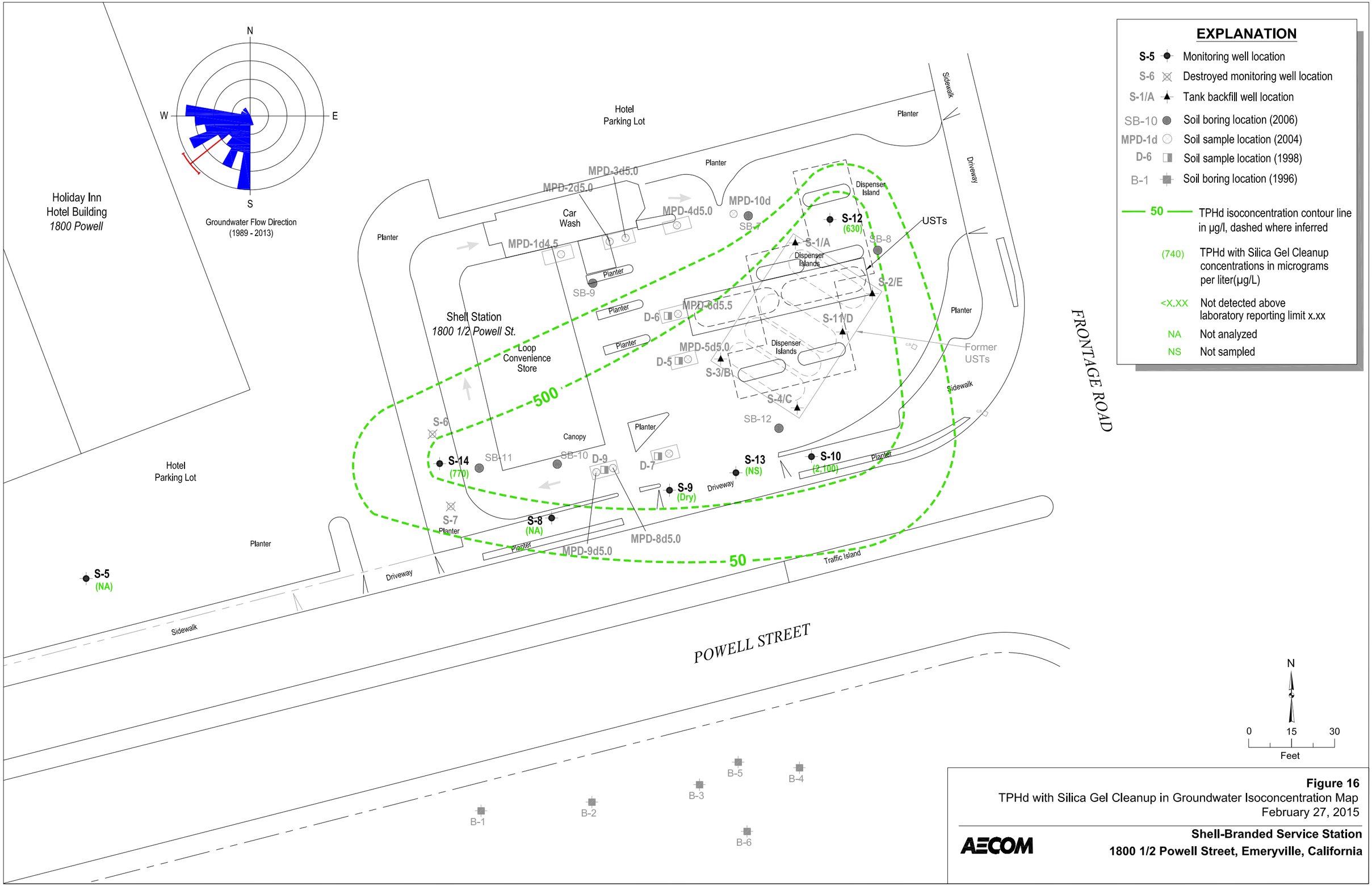


Figure 16
TPHd with Silica Gel Cleanup in Groundwater Isoconcentration Map
February 27, 2015

AECOM

Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

EXPLANATION

- S-5 — Monitoring well location
- S-6 — Destroyed monitoring well location
- S-1/A — Tank backfill well location
- SB-10 — Soil boring location (2006)
- MPD-1d — Soil sample location (2004)
- D-6 — Soil sample location (1998)
- B-1 — Soil boring location (1996)
- 440 — TPHg water quality objective isoconcentration contour line in µg/l, dashed where inferred
- (740) — TPHg concentrations in micrograms per liter(µg/L)
- <X.XX — Not detected above laboratory reporting limit x.xx
- NS — Not sampled
- ** — Grab groundwater sample collected in 1996; not used in contouring

N
W
E
S
Groundwater Flow Direction
(1989 - 2013)

Holiday Inn
Hotel Building
1800 Powell

Hotel
Parking Lot

Shell Station
1800 1/2 Powell St.

Loop
Convenience
Store

Car
Wash

Canopy

Dispenser
Islands

Dispenser
Island

USTs

Former
USTs

Planter

Sidewalk

Driveway

Traffic Island

MPD-3d5.0
MPD-2d5.0
MPD-4d5.0
MPD-10d
MPD-1d4.5
MPD-6d5.5
MPD-5d5.0
MPD-7d5.0
MPD-8d5.0
MPD-9d5.0

SB-7
SB-8
SB-9
SB-10
SB-11
SB-12

S-1/A
S-2/E
S-3/B
S-4/C
S-5 (510)
S-6
S-7
S-8 (250)
S-9 (Dry)
S-10 (140)
S-11/D
S-12 (250)
S-13 (NS)
S-14 (97)

D-5
D-6
D-7
D-9

52.75 FT

440

270 feet to
San Francisco Bay Shoreline

B-1 (<50)**
B-2 (<50)**
B-3
B-4
B-5
B-6 (<50)**

FRONTAGE ROAD

POWELL STREET

N
0
15
30
Feet

Figure 17
TPHg Water Quality Objective Isoconcentration Map

AECOM

Shell-Branded Service Station
1800 1/2 Powell Street, Emeryville, California

Tables

Table 1
Historical Groundwater Analytical Data
Shell-Branded Service Station, 1800½ Powell Street, Emeryville, California

Well ID	Date	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	SPH Thickness (ft)	GW Elevation (ft MSL)
S-5	10/27/1988	---	---	3,000	660	20	20	70	---	---	---	---	---	---	11.72	---	---	---
S-5	02/10/1989	---	---	2,900	550	20	20	30	---	---	---	---	---	---	11.72	---	---	---
S-5	04/28/1989	---	---	4,300	750	10	20	<30	---	---	---	---	---	---	11.72	---	---	---
S-5	07/07/1989	---	---	1,500	300	8	7	9	---	---	---	---	---	---	11.72	---	---	---
S-5	10/25/1989	---	---	2,100	760	10	40	50	---	---	---	---	---	---	11.72	---	---	---
S-5	01/04/1990	---	---	1,300	520	9.0	8.0	10	---	---	---	---	---	---	11.72	---	---	---
S-5	07/06/1990	---	---	1,400	500	10	4	<10	---	---	---	---	---	---	11.72	8.36	---	3.36
S-5	10/19/1990	---	---	4,200	1,100	9	14	7	---	---	---	---	---	---	11.72	---	---	---
S-5	01/14/1991	<10,000	6,100	4,500	1,100	15	30	25	---	---	---	---	---	---	11.72	---	---	---
S-5	04/23/1991	---	---	2,800	500	8.0	14	10	---	---	---	---	---	---	11.72	---	---	---
S-5	07/08/1991	---	---	3,200	1,000	16	9.0	12	---	---	---	---	---	---	11.72	9.15	---	2.57
S-5	10/11/1991	---	---	1,700	16	5.7	5.2	8.9	---	---	---	---	---	---	11.72	9.67	---	2.05
S-5	02/12/1992	---	---	1,300	300	5.0	<5	<5	---	---	---	---	---	---	11.72	9.00	---	2.72
S-5	05/11/1992	---	---	1,900	490	<0.5	<5	<5	---	---	---	---	---	---	11.72	8.61	---	3.11
S-5	09/01/1992	---	---	6,700	760	26	<25	<25	---	---	---	---	---	---	11.72	9.61	---	2.11
S-5	12/04/1992	---	---	2,900	890	5.3	7.3	13	---	---	---	---	---	---	11.72	9.47	---	2.25
S-5	02/17/1993	---	---	1,300	280	3.0	3.4	9.4	---	---	---	---	---	---	11.72	8.29	---	3.43
S-5	05/29/1993	---	---	460	130	<0.5	<0.5	2.9	---	---	---	---	---	---	11.72	9.16	---	2.56
S-5	08/11/1993	---	---	1,700	530	5.5	<5	5.8	---	---	---	---	---	---	11.72	9.30	---	2.42
S-5	11/12/1993	---	---	---	---	---	---	---	---	---	---	---	---	---	11.72	9.42	---	2.30
S-5	02/21/1994	---	---	1,000	250	<5	<5	<5	---	---	---	---	---	---	11.72	7.95	---	3.77
S-5 (D)	02/21/1994	---	---	1,300	220	<5	<5	11	---	---	---	---	---	---	11.72	7.95	---	3.77
S-5	05/16/1994	---	---	1,200	230	<5	<5	<5	---	---	---	---	---	---	11.72	8.00	---	3.72
S-5	08/09/1994	Well inaccessible		---	---	---	---	---	---	---	---	---	---	---	11.72	---	---	---
S-5	11/09/1994	---	---	1,600	220	3.2	1.8	5.0	---	---	---	---	---	---	11.72	8.32	---	3.40
S-5 (D)	11/09/1994	---	---	1,600	250	3.3	1.9	5.9	---	---	---	---	---	---	11.72	8.32	---	---
S-5	02/22/1995	Well inaccessible		---	---	---	---	---	---	---	---	---	---	---	11.72	---	---	---
S-5	05/02/1995	Well inaccessible		---	---	---	---	---	---	---	---	---	---	---	11.72	---	---	---
S-5	05/10/1995	---	---	910	170	1.5	1.3	5.2	---	---	---	---	---	---	11.72	---	---	---

Table 1
Historical Groundwater Analytical Data
Shell-Branded Service Station, 1800½ Powell Street, Emeryville, California

Well ID	Date	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	SPH Thickness (ft)	GW Elevation (ft MSL)
S-5	08/24/1995	---	---	620	210	<0.5	1.2	5.3	---	---	---	---	---	---	11.72	8.78	---	2.94
S-5	12/08/1995	---	---	1,600	510	3.3	1.5	6.6	---	---	---	---	---	---	11.72	9.78	---	1.94
S-5 (D)	12/08/1995	---	---	1,600	530	1.8	1.1	5.4	---	---	---	---	---	---	11.72	9.78	---	1.94
S-5	02/29/1996	---	---	1,900	470	5.8	<5.0	<5.0	46	---	---	---	---	---	11.72	7.64	---	4.08
S-5 (D)	02/29/1996	---	---	1,700	440	5.4	<5.0	<5.0	40	---	---	---	---	---	11.72	7.64	---	4.08
S-5	05/22/1996	---	---	1,200	490	<10	<10	<10	<50	---	---	---	---	---	11.72	8.60	---	3.12
S-5	07/30/1996	---	---	1,100	400	<5.0	<5.0	6.9	<25	---	---	---	---	---	11.72	9.40	---	2.32
S-5	11/11/1996	Well inaccessible		---	---	---	---	---	---	---	---	---	---	---	11.72	---	---	---
S-5	11/03/1997	Well inaccessible		---	---	---	---	---	---	---	---	---	---	---	11.72	---	---	---
S-5	11/06/1998	---	---	620	91	<0.50	0.64	4.0	<2.5	---	---	---	---	---	11.72	8.25	---	3.47
S-5	12/07/1999	Well inaccessible		---	---	---	---	---	---	---	---	---	---	---	11.72	---	---	---
S-5	11/02/2000	---	---	1,120	191	2.78	<2.50	3.56	<12.5	---	---	---	---	---	11.72	8.55	---	3.17
S-5	12/27/2001	---	---	760	110	2.4	<0.50	5.8	---	<5.0	---	---	---	---	11.72	7.64	---	4.08
S-5	11/26/2002	Well inaccessible		---	---	---	---	---	---	---	---	---	---	---	14.07	---	---	---
S-5	12/06/2002	---	---	860	130	2.3	<0.50	6.0	---	<5.0	---	---	---	---	14.07	8.62	---	5.45
S-5	11/25/2003	---	---	920	180	3.0	<1.0	6.2	---	<1.0	---	---	---	---	14.07	9.32	---	4.75
S-5	11/10/2004	---	---	530	2.4	0.68	<0.50	6.3	---	<0.50	---	---	---	---	14.07	9.35	---	4.72
S-5	11/23/2005	---	---	1,630	102	2.42	0.540	5.71	---	<0.500	<10.0	<0.500	<0.500	<0.500	14.07	9.62	---	4.45
S-5	11/21/2006	---	---	1,100	91	2.4	<0.50	5.3	---	<0.50	<5.0	<2.0	<2.0	<2.0	14.07	9.60	---	4.47
S-5	11/14/2007	---	---	1,700 m	92	2.9	0.33 n	6.2	---	<1.0	<10	<2.0	<2.0	<2.0	14.07	8.60	---	5.47
S-5	11/17/2008	---	---	810	30	1.6	<1.0	4.4	---	<1.0	<10	<2.0	<2.0	<2.0	14.07	8.10	---	5.97
S-5	11/12/2009	---	---	1,000	24	1.5	<1.0	3.8	---	<1.0	<10	<2.0	<2.0	<2.0	14.07	8.52	---	5.55
S-5	12/03/2010	---	---	790	16	<1.0	<1.0	4.2	---	<1.0	<10	<2.0	<2.0	<2.0	14.07	8.04	---	6.03
S-5	12/01/2011	---	---	280	<0.500	<0.500	<0.500	2.23	---	<0.500	<10.0	<0.500	<0.500	<0.500	14.07	8.80	---	5.27
S-5	01/16/2012	---	7,300 l	---	---	---	---	---	---	---	---	---	---	---	14.07	8.87	---	5.20
S-5	10/05/2012	---	---	550	14	<0.50	<0.50	4.4	---	<0.50	<10	<0.50	<0.50	<0.50	14.07	9.60	---	4.47
S-5	12/09/2013	---	---	690	7.4	<0.50	<0.50	2.8	---	<0.50	<10	<0.50	<0.50	<0.50	14.07	8.15	---	5.92
S-5	**02/27/2015**	**---**	**---**	**510**	**3.8**	**<0.50**	**<0.50**	**2.2**	**---**	**<0.50**	**<10**	**<0.50**	**<0.50**	**<0.50**	**14.07**	**7.76**	**---**	**6.31**

Table 1
Historical Groundwater Analytical Data
Shell-Branded Service Station, 1800½ Powell Street, Emeryville, California

Well ID	Date	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	SPH Thickness (ft)	GW Elevation (ft MSL)
S-6	10/27/1988	---	---	6,000	1,700	50	80	420	---	---	---	---	---	---	---	---	---	---
S-6	02/10/1989	---	---	2,800	740	20	20	140	---	---	---	---	---	---	---	---	---	---
S-6	04/28/1989	---	---	6,500	2,400	30	50	210	---	---	---	---	---	---	---	---	---	---
S-6	07/07/1989	---	---	3,700	1,700	34	55	200	---	---	---	---	---	---	---	---	---	---
S-6	10/25/1989	---	---	<50	23	<5.0	<5.0	10	---	---	---	---	---	---	---	---	---	---
S-6	11/10/1989	Well abandoned		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
S-7	10/27/1988	---	---	50	1.1	<1	<1	4	---	---	---	---	---	---	---	---	---	---
S-7	02/10/1989	---	---	50	0.9	<1	<1	<3	---	---	---	---	---	---	---	---	---	---
S-7	04/28/1989	---	---	<50	1.0	<1	<1	<3	---	---	---	---	---	---	---	---	---	---
S-7	07/07/1989	---	---	70	2.2	<1	<1	<3	---	---	---	---	---	---	---	---	---	---
S-7	10/25/1989	---	---	6,200	2,200	130	190	660	---	---	---	---	---	---	---	---	---	---
S-7	11/10/1989	Well abandoned		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
S-8	10/27/1988	---	---	1,000	610	9.0	1.0	42	---	---	---	---	---	---	12.76	---	---	---
S-8	02/10/1989	---	---	500	160	5.0	<2	17	---	---	---	---	---	---	12.76	---	---	---
S-8	04/28/1989	---	---	2,700	1,500	20	10	40	---	---	---	---	---	---	12.76	---	---	---
S-8	07/07/1989	---	---	440	180	5.0	2.0	12	---	---	---	---	---	---	12.76	---	---	---
S-8	10/25/1989	---	---	2,000	1,100	17	5	70	---	---	---	---	---	---	12.76	---	---	---
S-8	01/04/1990	---	---	1,900	1,300	20	<10	70	---	---	---	---	---	---	12.76	---	---	---
S-8	07/06/1990	---	---	1,600	920	30	<10	60	---	---	---	---	---	---	12.76	9.50	---	3.26
S-8	10/19/1990	---	---	1,400	640	<10	<10	30	---	---	---	---	---	---	12.76	---	---	---
S-8	01/14/1991	600	760	670	190	5.8	<0.5	19	---	---	---	---	---	---	12.76	---	---	---
S-8	04/23/1991	---	---	2,400	740	54	5.7	59	---	---	---	---	---	---	12.76	---	---	---
S-8	07/08/1991	---	---	1,100	450	15	<2.5	42	---	---	---	---	---	---	12.76	10.45	---	2.31
S-8	10/11/1991	---	---	340	4.0	0.60	<0.5	17	---	---	---	---	---	---	12.76	10.83	---	1.93
S-8	02/12/1992	---	---	<1,000	260	<10	<10	11	---	---	---	---	---	---	12.76	10.44	---	2.32
S-8	05/11/1992	---	---	1,800	700	14	<5	46	---	---	---	---	---	---	12.76	10.17	---	2.59
S-8	09/01/1992	---	---	---	---	---	---	---	---	---	---	---	---	---	12.76	10.81	a	1.95

Table 1
Historical Groundwater Analytical Data
Shell-Branded Service Station, 1800½ Powell Street, Emeryville, California

Well ID	Date	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	SPH Thickness (ft)	GW Elevation (ft MSL)
S-8	12/04/1992	---	---	960	250	4.3	<2.5	14	---	---	---	---	---	---	12.76	10.81	---	1.95
S-8	02/17/1993	---	---	2,700	800	35	10	83	---	---	---	---	---	---	12.76	9.65	---	3.11
S-8	05/29/1993	---	---	960	710	25	84	80	---	---	---	---	---	---	12.76	10.46	---	2.30
S-8	08/11/1993	---	---	1,300	630	17	<5	46	---	---	---	---	---	---	12.76	10.59	---	2.17
S-8	11/12/1993	---	---	910	180	8.0	<2.5	15	---	---	---	---	---	---	12.76	10.29	---	2.47
S-8	02/21/1994	---	---	3,200	480	52	<5	130	---	---	---	---	---	---	12.76	9.52	---	3.24
S-8	05/16/1994	---	---	1,000	220	7.3	<5	28	---	---	---	---	---	---	12.76	9.49	---	3.27
S-8 (D)	05/16/1994	---	---	1,000	280	10	<5	29	---	---	---	---	---	---	12.76	9.49	---	3.27
S-8	08/09/1994	---	---	400	27	6.6	<0.5	18	---	---	---	---	---	---	12.76	10.37	---	2.39
S-8	11/09/1994	---	---	650	170	5.3	<0.5	17	---	---	---	---	---	---	12.76	9.58	---	3.18
S-8	02/22/1995	---	---	650	210	10	1.2	22	---	---	---	---	---	---	12.76	9.02	---	3.74
S-8	05/02/1995	---	---	1,000	280	17	1.4	32	---	---	---	---	---	---	12.76	8.45	---	4.31
S-8	08/24/1995	---	---	480	180	11	1.0	19	---	---	---	---	---	---	12.76	10.02	---	2.74
S-8 (D)	08/24/1995	---	---	700	180	6.5	<0.5	17	---	---	---	---	---	---	12.76	10.02	---	2.74
S-8	12/08/1995	---	---	740	230	6.9	0.70	15	---	---	---	---	---	---	12.76	10.65	---	2.11
S-8	02/29/1996	---	---	740	260	8.1	<5.0	19	58	---	---	---	---	---	12.76	9.10	---	3.66
S-8	05/22/1996	---	---	1,200	350	10	<5.0	23	74	---	---	---	---	---	12.76	10.14	---	2.62
S-8	07/30/1996	---	---	530	220	20	6.3	36	69	---	---	---	---	---	12.76	10.51	---	2.25
S-8	11/11/1996	---	---	540	140	3.7	<2.0	17	42	---	---	---	---	---	12.76	10.23	---	2.53
S-8	11/03/1997	---	---	480	54	3.5	<0.50	12	40	---	---	---	---	---	12.76	9.40	---	3.36
S-8	11/06/1998	---	---	740	110	10	2.8	26	31	---	---	---	---	---	12.76	9.78	---	2.98
S-8	12/07/1999	---	---	770	270	16	<2.0	33	75	---	---	---	---	---	12.76	10.14	---	2.62
S-8	11/02/2000	---	---	436	75.8	6.18	0.549	14.9	81.5	---	---	---	---	---	12.76	9.45	---	3.31
S-8	12/27/2001	---	---	1,300	62	11	1.8	31	---	86	---	---	---	---	12.76	9.19	---	3.57
S-8	11/26/2002	---	---	970	58	3.8	0.51	15	---	35	---	---	---	---	15.00	10.10	---	4.90
S-8	11/25/2003	---	---	400	19	4.4	<0.50	15	---	34	---	---	---	---	15.00	10.49	---	4.51
S-8	11/10/2004	---	---	430	28	3.4	<0.50	11	---	25	---	---	---	---	15.00	10.45	---	4.55
S-8	11/23/2005	---	---	476	8.72	3.15	1.03	12.6	---	35.2	20.1	<0.500	<0.500	<0.500	15.00	10.46	---	4.54
S-8	11/21/2006	---	---	280	5.9	1.9	4.9	7.9	---	27	47	<2.0	<2.0	<2.0	15.00	10.61	---	4.39

Table 1
Historical Groundwater Analytical Data
Shell-Branded Service Station, 1800½ Powell Street, Emeryville, California

Well ID	Date	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	SPH Thickness (ft)	GW Elevation (ft MSL)
S-8	11/14/2007	---	---	520 m	2.2	0.66 n	<1.0	4.9	---	29	38	<2.0	<2.0	<2.0	15.00	10.01	---	4.99
S-8	11/17/2008	---	---	550	6.9	1.8	<1.0	8.0	---	36	23	<2.0	<2.0	<2.0	15.00	9.64	---	5.36
S-8	11/12/2009	---	---	640	8.1	3.5	<1.0	9.8	---	72	23	<2.0	<2.0	<2.0	15.00	10.00	---	5.00
S-8	12/03/2010	---	---	810	5.3	4.2	<1.0	14	---	37	23	<2.0	<2.0	<2.0	15.00	9.32	---	5.68
S-8	12/01/2011	---	---	150	1.05	<0.500	<0.500	3.94	---	24.7	<10.0	<0.500	<0.500	<0.500	15.00	9.90	---	5.10
S-8	01/16/2012	---	1,400 l	---	---	---	---	---	---	---	---	---	---	---	15.00	8.34	---	6.66
S-8	10/05/2012	---	---	610	4.8	1.9	<0.50	6.5	---	4.5	<10	<0.50	<0.50	<0.50	15.00	10.39	---	4.61
S-8	12/09/2013	---	---	600	6.3	0.97	<0.50	2.5	---	1.3	<10	<0.50	<0.50	<0.50	15.00	5.85	---	9.15
S-8	**02/27/2015**	**---**	**---**	**250**	**<0.50**	**<0.50**	**<0.50**	**1.3**	**---**	**1.8**	**<10**	**<0.50**	**<0.50**	**<0.50**	**15.00**	**6.81**	**---**	**8.19**
S-9	10/27/1988	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	---	a	---
S-9	02/10/1989	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	---	1.30	---
S-9	04/28/1989	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	---	1.25	---
S-9	07/07/1989	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	---	1.20	---
S-9	10/25/1989	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	---	a	---
S-9	01/04/1990	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	---	a	---
S-9	04/12/1990	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	---	a	---
S-9	07/06/1990	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	9.67	a	3.08
S-9	10/19/1990	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	---	a	---
S-9	01/14/1991	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	---	a	---
S-9	04/23/1991	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	---	a	---
S-9	07/08/1991	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	---	a	---
S-9	10/11/1991	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	22.30	a	-9.55
S-9	02/24/1994	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	---	a	---
S-9	05/16/1994	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	---	1.50	---
S-9	08/09/1994	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	11.80	2.00	---
S-9	11/09/1994	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	---	a	---
S-9	02/22/1995	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	11.40	2.38	---
S-9	05/02/1995	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	11.83	2.12	---

Table 1
Historical Groundwater Analytical Data
Shell-Branded Service Station, 1800½ Powell Street, Emeryville, California

Well ID	Date	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	SPH Thickness (ft)	GW Elevation (ft MSL)
S-9	12/08/1995	---	---	---	---	---	---	---	---	---	---	---	---	---	12.75	11.92	1.06	---
S-9	02/29/1996	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	12.75	12.10	2.79	2.88
S-9	05/22/1996	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	12.75	11.71	1.75	2.44
S-9	07/30/1996	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	12.75	---	a	---
S-9	11/11/1996	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	12.75	---	9.00	---
S-9	11/03/1997	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	12.75	---	a	---
S-9	11/06/1998	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	12.75	---	a	---
S-9	12/07/1999	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	12.75	---	---	---
S-9	11/02/2000	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	12.75	---	---	---
S-9	12/27/2001	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	12.75	---	---	---
S-9	11/26/2002	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	14.83	---	---	---
S-9	11/25/2003	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	14.83	---	---	---
S-9	11/25/2003	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	14.98 i	---	---	---
S-9	11/23/2005	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	14.98	---	---	---
S-9	11/21/2006	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	14.98	---	---	---
S-9	11/14/2007	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	14.98	---	---	---
S-9	11/17/2008	Tar-like substance in well, probably from previous landfill activities; not gasoline.									---	---	---	---	14.98	---	---	---
S-9	11/12/2009	Well dry	---	---	---	---	---	---	---	---	---	---	---	---	14.98	---	---	---
S-9	12/03/2010	Well dry	---	---	---	---	---	---	---	---	---	---	---	---	14.98	---	---	---
S-9	12/01/2011	Well dry	---	---	---	---	---	---	---	---	---	---	---	---	14.98	---	---	---
S-9	10/05/2012	Well dry	---	---	---	---	---	---	---	---	---	---	---	---	14.98	---	---	---
S-9	12/09/2013	Well dry	---	---	---	---	---	---	---	---	---	---	---	---	14.98	---	---	---
S-9	**02/27/2015**	**Well dry**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**14.98**	**---**	**---**	**---**
S-10	10/27/1988	---	---	700,000	37,000	100,000	20,000	110,000	---	---	---	---	---	---	12.58	---	---	---
S-10	02/10/1989	---	---	6,500	480	700	100	1,800	---	---	---	---	---	---	12.58	---	---	---
S-10	04/28/1989	---	---	13,000	1,300	500	600	3,700	---	---	---	---	---	---	12.58	---	---	---
S-10	07/07/1989	---	---	14,000	1,300	310	270	2,400	---	---	---	---	---	---	12.58	---	---	---
S-10	10/25/1989	---	---	4,200	580	34	4.0	440	---	---	---	---	---	---	12.58	---	---	---

Table 1
Historical Groundwater Analytical Data
Shell-Branded Service Station, 1800½ Powell Street, Emeryville, California

Well ID	Date	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	SPH Thickness (ft)	GW Elevation (ft MSL)
S-10	01/04/1990	---	---	1,700	360	10	7.8	170	---	---	---	---	---	---	12.58	---	---	---
S-10	04/12/1990	---	---	---	---	---	---	---	---	---	---	---	---	---	12.58	---	0.01	---
S-10	07/06/1990	---	---	---	---	---	---	---	---	---	---	---	---	---	12.58	9.16	0.01	3.42
S-10	10/19/1990	---	---	---	---	---	---	---	---	---	---	---	---	---	12.58	---	0.03	---
S-10	01/14/1991	---	---	---	---	---	---	---	---	---	---	---	---	---	12.58	---	0.03	---
S-10	04/23/1991	---	---	---	---	---	---	---	---	---	---	---	---	---	12.58	---	0.01	---
S-10	07/08/1991	---	---	---	---	---	---	---	---	---	---	---	---	---	12.58	9.41	0.03	3.17
S-10	10/11/1991	---	---	---	---	---	---	---	---	---	---	---	---	---	12.58	7.77	a	4.81
S-10	02/12/1992	---	---	1,200	470	16	<5	14	---	---	---	---	---	---	12.58	6.41	---	6.17
S-10	05/11/1992	---	---	1,100	100	6.0	4.0	19	---	---	---	---	---	---	12.58	9.04	---	3.54
S-10	09/01/1992	---	---	---	---	---	---	---	---	---	---	---	---	---	12.58	9.38	0.01	3.20
S-10	12/04/1992	---	---	---	---	---	---	---	---	---	---	---	---	---	12.58	6.89	a	5.69
S-10	02/17/1993	---	---	530	89	8.5	1.6	4.5	---	---	---	---	---	---	12.58	7.34	---	5.24
S-10	05/29/1993	---	---	240	65	3.8	2.2	8.6	---	---	---	---	---	---	12.58	6.60	---	5.98
S-10	08/11/1993	---	---	250	23	4.1	<1	6.4	---	---	---	---	---	---	12.58	9.09	---	3.49
S-10	11/12/1993	---	---	320	1.6	1.3	1.4	6.2	---	---	---	---	---	---	12.58	6.58	---	6.00
S-10	02/21/1994	---	---	1,400	190	9.9	<2.5	19	---	---	---	---	---	---	12.58	8.32	---	4.26
S-10	05/16/1994	---	---	300	45	8.6	6.2	19	---	---	---	---	---	---	12.58	8.35	---	4.23
S-10	08/08/1994	---	---	700	57	14	<0.5	9.3	---	---	---	---	---	---	12.58	8.66	---	3.92
S-10	11/09/1994	---	---	640	130	2.0	1.6	4.1	---	---	---	---	---	---	12.58	6.68	---	5.90
S-10	02/22/1995	---	---	500	65	5.9	1.0	8.2	---	---	---	---	---	---	12.58	9.12	---	3.46
S-10	05/02/1995	---	---	530	59	2.3	0.80	8.2	---	---	---	---	---	---	12.58	9.50	---	3.08
S-10	08/24/1995	---	---	350	35	4.6	<0.5	6.7	---	---	---	---	---	---	12.58	10.06	---	2.52
S-10	12/08/1995	---	---	690	28	4.6	0.90	8.6	---	---	---	---	---	---	12.58	10.08	---	2.50
S-10	02/29/1996	---	---	430	32	1.8	0.50	5.8	16	---	---	---	---	---	12.58	5.32	---	7.26
S-10	05/22/1996	---	1,200	100	19	0.63	<0.5	1.4	5.3	---	---	---	---	---	12.58	6.04	---	6.54
S-10	07/30/1996	---	13,000	240	17	<1.2	<1.2	7.8	11	---	---	---	---	---	12.58	10.48	---	2.10
S-10	11/11/1996	---	4,800	370	16	1.1	<0.5	7.0	94	---	---	---	---	---	12.58	10.31	---	2.27
S-10	11/03/1997	---	1,100	340	6.7	2.1	<0.50	3.3	19	---	---	---	---	---	12.58	9.53	---	3.05

Table 1
Historical Groundwater Analytical Data
Shell-Branded Service Station, 1800½ Powell Street, Emeryville, California

Well ID	Date	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	SPH Thickness (ft)	GW Elevation (ft MSL)
S-10 (D)	11/03/1997	---	1,100	310	7.8	1.3	<0.50	3.1	19	---	---	---	---	---	12.58	9.53	---	3.05
S-10	11/06/1998	---	2,000	<250	<2.5	<2.5	<2.5	6.5	900	---	---	---	---	---	12.58	5.12	---	7.46
S-10	12/07/1999	---	2,230	400	47	33	10	29	90	---	---	---	---	---	12.58	7.95	---	4.63
S-10	11/02/2000	---	14,500	536	32.0	3.08	<0.500	2.98	42.3	---	---	---	---	---	12.58	7.05	---	5.53
S-10	12/27/2001	---	6,600	870	61	4.9	2.5	15	---	26	---	---	---	---	12.58	7.43	---	5.15
S-10	11/26/2002	---	9,800	720	56	3.5	<0.50	8.4	---	52	---	---	---	---	15.11	9.75	---	5.36
S-10	11/25/2003	---	530 k	550	29	2.7	<0.50	8.4	---	49	---	---	---	---	15.11	9.00	---	6.11
S-10	11/10/2004	---	1,500 k	660	64	5.0	0.61	14	---	54	---	---	---	---	14.93 i	9.50	---	5.43
S-10	11/23/2005	---	---	866	47.0	3.44	0.600	12.6	---	61.9	<10.0	<0.500	<0.500	<0.500	14.93	10.23	---	4.70
S-10	11/21/2006	---	12,000	490	21	2.3	5.8	9.6	---	48	34	<2.0	<2.0	<2.0	14.93	10.04	---	4.89
S-10	11/14/2007	---	1,300 k,l	740 m	19	2.1	<1.0	8.0	---	44	20	<2.0	<2.0	<2.0	14.93	9.49	---	5.44
S-10	11/17/2008	---	2,000 l	630	7.3	1.0	<1.0	7.0	---	32	11	<2.0	<2.0	<2.0	14.93	10.03	---	4.90
S-10	11/12/2009	---	2,100 l	600	7.9	1.1	<1.0	5.7	---	23	12	<2.0	<2.0	<2.0	14.93	10.31	---	4.62
S-10	12/03/2010	---	900 l	740	6.0	1.3	<1.0	9.3	---	19	12	<2.0	<2.0	<2.0	14.93	9.60	---	5.33
S-10	12/01/2011	---	10,100 h,l	430	2.87	0.680	<0.500	6.85	---	22.0	<10.0	<0.500	<0.500	<0.500	14.93	10.60	---	4.33
S-10	01/16/2012	---	5,700 l	---	---	---	---	---	---	---	---	---	---	---	14.93	9.96	---	4.97
S-10	10/05/2012	---	510 l	890	10	2.9	<0.50	19	---	31	13	<0.50	<0.50	1.6	14.93	10.19	---	4.74
S-10	12/09/2013	---	2,100 l	550	2.0	0.61	<0.50	6.0	---	7.4	<10	<0.50	<0.50	<0.50	14.93	8.14	---	6.79
S-10	**02/27/2015**	**---**	**2,100 l**	**140**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**---**	**0.89**	**<10**	**<0.50**	**<0.50**	**<0.50**	**14.93**	**9.65**	**---**	**5.28**
S-12	07/07/1989	---	2,200	<250	0.71	<0.5	<0.5	<3.6	---	---	---	---	---	---	12.84	8.22	---	---
S-12	11/17/1989	---	1,400	<250	18	<2	<2	<5	---	---	---	---	---	---	12.84	---	---	---
S-12	01/04/1990	---	---	<250	24	2.0	<2	<5	---	---	---	---	---	---	12.84	---	---	---
S-12	07/06/1990	---	---	80	15	0.70	<0.5	2.0	---	---	---	---	---	---	12.84	8.27	---	4.57
S-12	10/19/1990	---	---	150	12	9.0	<0.5	3.6	---	---	---	---	---	---	12.84	---	---	---
S-12	01/14/1991	600	1,000	120	3.6	0.8	<0.5	2.9	---	---	---	---	---	---	12.84	9.74	---	3.10
S-12	04/23/1991	800	820	100	3.7	3.8	0.80	11	---	---	---	---	---	---	12.84	---	---	---
S-12	07/08/1991	---	---	70	2.5	0.80	<0.5	2.4	---	---	---	---	---	---	12.84	9.50	---	3.34
S-12	10/11/1991	5,100	2,500	220	2.1	0.70	<0.5	1.2	---	---	---	---	---	---	12.84	9.90	---	2.94

Table 1
Historical Groundwater Analytical Data
Shell-Branded Service Station, 1800½ Powell Street, Emeryville, California

Well ID	Date	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	SPH Thickness (ft)	GW Elevation (ft MSL)
S-12	02/12/1992	1,400	2,500	110	0.80	<0.5	<0.5	1.3	---	---	---	---	---	---	12.84	9.43	---	3.41
S-12	05/11/1992	---	3,800 b	140	0.80	0.80	<0.5	2.5	---	---	---	---	---	---	12.84	8.65	---	4.19
S-12	09/01/1992	---	2,600 b	190	3.0	15	0.50	4.5	---	---	---	---	---	---	12.84	9.86	---	2.98
S-12	12/04/1992	---	3,900 b	180	1.2	1.0	1.0	7.7	---	---	---	---	---	---	12.84	9.93	---	2.91
S-12	02/17/1993	---	2,100 b	350 k	0.60	<0.5	0.50	5.5	---	---	---	---	---	---	12.84	8.08	---	4.76
S-12	05/29/1993	---	2,200	290	2.0	1.6	4.4	6.0	---	---	---	---	---	---	12.84	9.08	---	3.76
S-12	08/11/1993	---	720	240	0.70	<0.5	<0.5	1.1	---	---	---	---	---	---	12.84	9.35	---	3.49
S-12	11/12/1993	---	4,100	210 k	0.70	0.50	<0.5	3.4	---	---	---	---	---	---	12.84	9.28	---	3.56
S-12	02/21/1994	---	2,200 c	240 o	0.70	<0.5	<0.5	3.6	---	---	---	---	---	---	12.84	8.22	---	4.62
S-12	05/16/1994	---	2,200	96	1.5	<0.5	<0.5	2.0	---	---	---	---	---	---	12.84	8.92	---	3.92
S-12	08/08/1994	---	3,500 e	110 d	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	12.84	9.56	---	3.28
S-12	11/09/1994	---	5,400 e	80	80	<0.5	<0.5	0.60	---	---	---	---	---	---	12.84	7.56	---	5.28
S-12	02/22/1995	---	2,900 e,f	110	0.70	<0.5	<0.5	3.7	---	---	---	---	---	---	12.84	7.98	---	4.86
S-12 (D)	02/22/1995	---	3,400 e,f	110	4.8	7.1	<0.5	2.1	---	---	---	---	---	---	12.84	7.98	---	4.86
S-12	05/02/1995	---	2,800	140	2.4	1.1	0.80	4.3	---	---	---	---	---	---	12.84	8.44	---	4.40
S-12	08/24/1995	---	1,600	200	19	12	5.6	24	---	---	---	---	---	---	12.84	9.00	---	3.84
S-12	12/08/1995	---	2,700	170	2.2	0.70	0.90	3.6	---	---	---	---	---	---	12.84	9.62	---	3.22
S-12	02/29/1996	---	2,200	1,700	<5.0	<5.0	<5.0	<5.0	5,600	---	---	---	---	---	12.84	7.64	---	5.20
S-12	05/22/1996	---	5,700	<1,000	<10	<10	<10	<10	2,400	---	---	---	---	---	12.84	8.94	---	3.90
S-12	07/30/1996	---	3,200	<500	<5.0	<5.0	<5.0	<5.0	1,500	---	---	---	---	---	12.84	9.71	---	3.13
S-12 (D)	07/30/1996	---	2,900	<500	<5.0	<5.0	<5.0	<5.0	---	2,000	---	---	---	---	12.84	9.71	---	3.13
S-12	11/11/1996	---	6,900	<500	<5.0	<5.0	<5.0	<5.0	1,400	---	---	---	---	---	12.84	9.65	---	3.19
S-12	11/03/1997	---	2,800	110	2.1	<0.50	<0.50	1.3	---	---	---	---	---	---	12.84	8.73	---	4.11
S-12	11/06/1998	---	2,900	<500	<5.0	<5.0	<5.0	<5.0	2,700	---	---	---	---	---	12.84	8.85	---	3.99
S-12	12/07/1999	---	2,800	<500	<5.0	<5.0	<5.0	<5.0	1,900	---	---	---	---	---	12.84	8.32	---	4.52
S-12	11/02/2000	---	4,000	132	0.642	<0.500	<0.500	1.07	1,900	2,230 h	---	---	---	---	12.84	7.50	---	5.34
S-12	12/27/2001	---	2,700	230	<2.0	<2.0	<2.0	<2.0	---	760	---	---	---	---	12.84	7.00	---	5.84
S-12	11/26/2002	---	540	180	<1.0	<1.0	<1.0	1.7	---	390	---	---	---	---	14.87	8.35	---	6.52
S-12	11/25/2003	---	2,600 k	<250	<2.5	<2.5	<2.5	<5.0	---	310	---	---	---	---	14.87	6.04	---	8.83

Table 1
Historical Groundwater Analytical Data
Shell-Branded Service Station, 1800½ Powell Street, Emeryville, California

Well ID	Date	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	SPH Thickness (ft)	GW Elevation (ft MSL)
S-12	11/10/2004	---	1,000 k	290	<1.0	1.2	<1.0	5.0	---	140	---	---	---	---	14.87	7.80	---	7.07
S-12	11/23/2005	---	---	<50.0	<0.500	<0.500	<0.500	2.63	---	93.3	398	<0.500	<0.500	<0.500	14.87	7.22	---	7.65
S-12	11/21/2006	---	220	280	<1.0	<1.0	<1.0	<2.0	---	110	600	<4.0	<4.0	<4.0	14.87	8.53	---	6.34
S-12	11/14/2007	---	660 k,l	360 m	0.23 n	<1.0	<1.0	0.51 n	---	83	830	<2.0	<2.0	<2.0	14.87	7.40	---	7.47
S-12	11/17/2008	---	2,600 l	390	<0.50	<1.0	<1.0	<1.0	---	44	350	<2.0	<2.0	<2.0	14.87	6.80	---	8.07
S-12	11/12/2009	---	690 l	200	<0.50	<1.0	<1.0	<1.0	---	61	370	<2.0	<2.0	<2.0	14.87	8.00	---	6.87
S-12	12/03/2010	---	480 k,l	330	<0.50	<1.0	<1.0	<1.0	---	31	280	<2.0	<2.0	<2.0	14.87	7.47	---	7.40
S-12	12/01/2011	---	15,600 h,l	200	<0.500	<0.500	<0.500	0.970	---	54.3	<10.0	<0.500	<0.500	<0.500	14.87	8.60	---	6.27
S-12	01/16/2012	---	1,800 l,o	---	---	---	---	---	---	---	---	---	---	---	14.87	8.56	---	6.31
S-12	10/05/2012	---	280 l	250	<0.50	<0.50	<0.50	<1.0	---	37	290	<0.50	<0.50	<0.50	14.87	8.58	---	6.29
S-12	12/09/2013	---	250 l	410	<0.50	<0.50	<0.50	<1.0	---	33	240	<0.50	<0.50	<0.50	14.87	8.52	---	6.35
S-12	**02/27/2015**	**---**	**630**	**250**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**---**	**33**	**260**	**0.59**	**<0.50**	**<0.50**	**14.87**	**7.91**	**---**	**6.96**
S-13	07/07/1989	---	3,600	700	200	<5	<5	45	---	---	---	---	---	---	12.59	9.26	---	---
S-13	11/17/1989	5,000	2,000	1,900	700	160	70	340	---	---	---	---	---	---	12.59	---	---	---
S-13	01/04/1990	---	---	2,800	1,400	130	10	500	---	---	---	---	---	---	12.59	---	---	---
S-13	07/06/1990	---	---	3,100	1,800	60	40	270	---	---	---	---	---	---	12.59	9.47	---	3.12
S-13	10/24/1990	---	---	3,400	1,500	28	28	250	---	---	---	---	---	---	12.59	---	---	---
S-13	01/14/1991	1,600	900	1,900	830	15	<10	99	---	---	---	---	---	---	12.59	11.22	---	1.37
S-13	04/23/1991	640	770 f	2,900 k	1,100	20	30	140	---	---	---	---	---	---	12.59	---	---	---
S-13	07/08/1991	---	---	1,500	880	10	6.0	160	---	---	---	---	---	---	12.59	10.38	---	2.21
S-13	10/11/1991	4,900	2,400	480	830	15	<0.5	120	---	---	---	---	---	---	12.59	10.78	---	1.81
S-13	02/12/1992	1,300	1,300	1,300	510	<10	<10	86	---	---	---	---	---	---	12.59	10.48	---	2.11
S-13	05/11/1992	---	1,300 b	1,000	470	<0.5	<5	50	---	---	---	---	---	---	12.59	9.48	---	3.11
S-13	09/01/1992	---	---	---	---	---	---	---	---	---	---	---	---	---	12.59	10.74	a	1.85
S-13	12/04/1992	---	2,400 b	900	290	4.6	<2.5	20	---	---	---	---	---	---	12.59	10.30	---	2.29
S-13	02/17/1993	---	1,200 b	840 k	310	3.5	<2.5	27	---	---	---	---	---	---	12.59	7.60	---	4.99
S-13	05/29/1993	---	4,600	2,100	1,100	19	50	350	---	---	---	---	---	---	12.59	10.60	---	1.99
S-13	08/11/1993	---	2,300	900	230	16	6.9	65	---	---	---	---	---	---	12.59	10.58	---	2.01

Table 1
Historical Groundwater Analytical Data
Shell-Branded Service Station, 1800½ Powell Street, Emeryville, California

Well ID	Date	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	SPH Thickness (ft)	GW Elevation (ft MSL)
S-13	11/12/1993	---	2,800	2,800	200	15	8.6	58	---	---	---	---	---	---	12.59	9.84	---	2.75
S-13	02/21/1994	---	1,800 o	700	200	<5	<5	45	---	---	---	---	---	---	12.59	9.26	---	3.33
S-13	05/16/1994	---	1,700	650	180	2.5	<2.5	21	---	---	---	---	---	---	12.59	9.62	---	2.97
S-13	08/08/1994	---	2,600 e	470	12	1.5	0.50	14	---	---	---	---	---	---	12.59	10.32	---	2.27
S-13	11/09/1994	Well inaccessible		---	---	---	---	---	---	---	---	---	---	---	12.59	---	---	---
S-13	02/22/1995	---	2,400 e,f	550	190	4.0	<0.5	17	---	---	---	---	---	---	12.59	8.92	---	3.67
S-13	05/02/1995	---	2,100	790	250	6.9	1.2	22	---	---	---	---	---	---	12.59	9.52	---	3.07
S-13	08/24/1995	---	1,500	330	93	<0.5	<0.5	2.0	---	---	---	---	---	---	12.59	10.02	---	2.57
S-13	12/08/1995	---	2,400	440	110	2.2	0.80	23	---	---	---	---	---	---	12.59	10.75	---	1.84
S-13	02/29/1996	---	2,500	560	130	<5.0	<5.0	30	30	---	---	---	---	---	12.59	9.02	---	3.57
S-13	05/22/1996	---	3,700	430	55	1.6	310	27	<5.0	---	---	---	---	---	12.59	10.20	---	2.39
S-13	07/30/1996	---	1,600	230	30	2.0	1.4	17	15	---	---	---	---	---	12.59	10.42	---	2.17
S-13	11/11/1996	---	2,700	320	19	1.1	<0.5	14	3.5	---	---	---	---	---	12.59	10.28	---	2.31
S-13 (D)	11/11/1996	---	2,400	360	24	1.3	<0.5	15	4.5	---	---	---	---	---	12.59	10.28	---	2.31
S-13	11/03/1997	---	1,900	300	25	1.4	0.63	12	5.0	---	---	---	---	---	12.59	9.36	---	3.23
S-13	11/06/1998	---	1,300	390	53	2.9	1.1	13	17	---	---	---	---	---	12.59	9.85	---	2.74
S-13	12/07/1999	---	1,430	420	15	6.2	2.6	15	42	---	---	---	---	---	12.59	9.72	---	2.87
S-13	11/02/2000	---	4,240	257	4.89	1.92	<0.500	5.17	45.1	---	---	---	---	---	12.59	7.15	---	5.44
S-13	12/27/2001	---	6,400	300	7.2	0.84	<0.50	6.0	---	34	---	---	---	---	12.59	9.35	---	3.24
S-13	11/26/2002	---	850	160	<0.50	<0.50	<0.50	2.6	---	23	---	---	---	---	14.47	9.80	---	4.67
S-13	11/25/2003	---	5,100 k	180	0.57	0.55	<0.50	3.0	---	26	---	---	---	---	14.47	9.94	---	4.53
S-13	11/10/2004	---	1,900 k	220	<0.50	0.71	<0.50	2.8	---	26	---	---	---	---	14.47	10.05	---	4.42
S-13	11/23/2005	---	---	<50.0	4.33	1.24	0.700	5.40	---	27.2	30.3	<0.500	<0.500	<0.500	14.47	10.02	---	4.45
S-13	11/21/2006	---	840	370	19	2.3	0.60	4.9	---	77	73	<2.0	<2.0	5.1	14.47	10.30	---	4.17
S-13	11/14/2007	---	590 k,l	650 m	8.0	1.8	<1.0	4.7	---	32	13	<2.0	<2.0	1.8 n	14.47	9.60	---	4.87
S-13	11/17/2008	---	1,500 l	510	3.0	1.1	<1.0	4.2	---	25	13	<2.0	<2.0	<2.0	14.47	9.24	---	5.23
S-13	11/12/2009	---	1,000 l	410	2.6	1.0	<1.0	2.1	---	32	17	<2.0	<2.0	<2.0	14.47	9.82	---	4.65
S-13	12/03/2010	---	650 k,l	690	3.8	1.6	<1.0	6.3	---	44	22	<2.0	<2.0	3.8	14.47	9.30	---	5.17
S-13	12/01/2011	---	9,100 h,l	580	4.20	1.02	<0.500	5.80	---	67.0	<10.0	<0.500	<0.500	<0.500	14.47	10.02	---	4.45

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Shell-Branded Service Station, 1800½ Powell Street, Emeryville, California

Well ID	Date	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	SPH Thickness (ft)	GW Elevation (ft MSL)
S-13	01/16/2012	---	1,200 l	---	---	---	---	---	---	---	---	---	---	---	14.47	9.80	---	4.67
S-13	10/05/2012	---	990 l	950	23	6.4	0.91	16	---	120	36	<0.50	<0.50	11	14.47	10.02	---	4.45
S-13	12/09/2013	---	640 l	690	14	1.4	<0.50	5.2	---	27	27	<0.50	<0.50	1.8	14.47	9.08	---	5.39
S-13	**02/27/2015**	**Unable to locate**		**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**14.47**	**---**	**---**	**---**
S-14	11/17/1989	3,000	<400	<250	3.0	<2	<2	<5	---	---	---	---	---	---	12.69	---	---	---
S-14	01/04/1990	---	---	<250	3.0	2.0	<2	<5	---	---	---	---	---	---	12.69	---	---	---
S-14	04/23/1991	<5,000	18,000	1,200	7.4	2.7	15	110	---	---	---	---	---	---	12.69	---	---	---
S-14	07/08/1991	---	---	190	6.5	0.60	1.9	26	---	---	---	---	---	---	12.69	10.32	---	2.37
S-14	10/11/1991	<500	21,000	4,900	7.0	1.2	<0.5	25	---	---	---	---	---	---	12.69	10.77	---	1.92
S-14	02/12/1992	2,500	12,000 k	370	4.6	<2.5	<2.5	26	---	---	---	---	---	---	12.69	10.40	---	2.29
S-14	05/11/1992	---	2,200 b	660	2.9	<2.5	<2.5	24	---	---	---	---	---	---	12.69	9.66	---	3.03
S-14	09/01/1992	---	7,900	700	3.2	<2.5	<2.5	15	---	---	---	---	---	---	12.69	10.74	---	1.95
S-14	12/04/1992	---	11,000 b	210	<0.5	<0.5	0.80	6.8	---	---	---	---	---	---	12.69	10.69	---	2.00
S-14	02/17/1993	---	5,700 b	130 k	<0.5	<0.5	<0.5	4.4	---	---	---	---	---	---	12.69	9.69	---	3.00
S-14	05/29/1993	---	5,200	770	<0.5	<0.5	<0.5	4.5	---	---	---	---	---	---	12.69	10.42	---	2.27
S-14	08/11/1993	---	8,800	920	<1	<1	1.6	17	---	---	---	---	---	---	12.69	10.54	---	2.15
S-14	11/12/1993	---	28,000	710	20	57	25	69	---	---	---	---	---	---	12.69	9.91	---	2.78
S-14	02/21/1994	---	3,600	2,800	<5	<5	<5	14	---	---	---	---	---	---	12.69	9.30	---	3.09
S-14	02/21/1994	---	3,600 c	2,300 o	<5.0	<5	<5	14	---	---	---	---	---	---	12.69	9.30	---	3.39
S-14	05/16/1994	---	6,700	310	<2.5	<2.5	<2.5	3.1	---	---	---	---	---	---	12.69	9.54	---	3.15
S-14	08/08/1994	---	2,900	480 g	<0.5	0.60	<0.5	0.8	---	---	---	---	---	---	12.69	10.29	---	2.40
S-14 (D)	08/08/1994	---	2,900	590 g	<0.5	0.60	<0.5	1.5	---	---	---	---	---	---	12.69	10.29	---	2.40
S-14	11/09/1994	---	6,400 e	170 g	0.70	<0.5	<0.5	2.7	---	---	---	---	---	---	12.69	9.52	---	3.07
S-14	02/22/1995	---	7,000 e,f	550	<0.5	<0.5	<0.5	1.6	---	---	---	---	---	---	12.69	9.18	---	3.51
S-14	05/02/1995	---	2,300	210	1.0	0.90	1.1	6.3	---	---	---	---	---	---	12.69	9.49	---	3.20
S-14 (D)	05/02/1995	---	2,600	160	0.60	0.60	0.70	3.8	---	---	---	---	---	---	12.69	9.49	---	3.20
S-14	08/24/1995	---	3,700	180	0.50	<0.5	<0.5	1.3	---	---	---	---	---	---	12.69	9.94	---	2.75
S-14	12/08/1995	---	4,900	190	1.0	<0.5	0.60	4.6	---	---	---	---	---	---	12.69	10.65	---	2.04

Table 1
Historical Groundwater Analytical Data
Shell-Branded Service Station, 1800½ Powell Street, Emeryville, California

Well ID	Date	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	SPH Thickness (ft)	GW Elevation (ft MSL)
S-14	02/29/1996	---	11,000	200	<0.5	<0.5	<0.5	2.0	3.0	---	---	---	---	---	12.69	8.90	---	3.79
S-14	05/22/1996	---	3,800	93	<0.5	<0.5	<0.5	1.6	<2.5	---	---	---	---	---	12.69	10.10	---	2.59
S-14 (D)	05/22/1996	---	3,900	150	<0.5	<0.5	<0.5	1.8	<2.5	---	---	---	---	---	12.69	10.10	---	2.59
S-14	07/30/1996	---	2,500	<50	<0.5	<0.5	<0.5	0.89	<2.5	---	---	---	---	---	12.69	10.37	---	2.32
S-14	11/11/1996	---	27,000	2,600	<2.5	<2.5	<2.5	3.9	<12	---	---	---	---	---	12.69	10.29	---	2.40
S-14	11/03/1997	---	1,800	430	<0.50	<0.50	<0.50	1.7	<2.5	---	---	---	---	---	12.69	9.52	---	3.17
S-14	11/06/1998	Well inaccessible		---	---	---	---	---	---	---	---	---	---	---	12.69	---	---	---
S-14	12/07/1999	---	5,920	970	1.0	1.1	0.59	3.5	2.6	---	---	---	---	---	12.69	9.73	---	2.96
S-14	11/02/2000	---	535,000	273	<0.500	<0.500	<0.500	1.59	<2.50	---	---	---	---	---	12.69	9.98	---	2.71
S-14	12/27/2001	---	20,000	68	<0.50	<0.50	<0.50	1.3	---	<5.0	---	---	---	---	12.69	9.33	---	3.36
S-14	11/26/2002	---	2,400	<50	<0.50	<0.50	<0.50	0.91	---	<5.0	---	---	---	---	14.51	9.70	---	4.81
S-14	11/25/2003	---	4,400 k	78 k	<0.50	<0.50	<0.50	1.2	---	1.6	---	---	---	---	14.51	9.99	---	4.52
S-14	11/10/2004	---	2,500 k	74 k	<0.50	<0.50	<0.50	<1.0	---	1.9	---	---	---	---	14.51	10.05	---	4.46
S-14	11/23/2005	---	---	<50.0	<0.500	<0.500	<0.500	<0.500	---	1.02	<10.0	<0.500	<0.500	<0.500	14.51	9.92	---	4.59
S-14	11/21/2006	---	5,000	62 j	<0.50 j	<0.50 j	<0.50 j	<1.0 j	---	1.9 j	<5.0 j	<2.0 j	<2.0 j	<2.0 j	14.51	10.26	---	4.25
S-14	11/14/2007	---	550 k,l	120 m	0.98	<1.0	<1.0	0.23 n	---	2.2	<10	<2.0	<2.0	<2.0	14.51	9.63	---	4.88
S-14	11/17/2008	---	1,700 l	<50	<0.50	<1.0	<1.0	<1.0	---	1.4	<10	<2.0	<2.0	<2.0	14.51	9.25	---	5.26
S-14	11/12/2009	---	1,200 l	<50	<0.50	<1.0	<1.0	<1.0	---	1.2	<10	<2.0	<2.0	<2.0	14.51	9.67	---	4.84
S-14	12/03/2010	---	540 l	58	<0.50	<1.0	<1.0	<1.0	---	1.1	<10	<2.0	<2.0	<2.0	14.51	9.12	---	5.39
S-14	12/01/2011	---	7,610 h,l	120	<0.500	<0.500	<0.500	<0.500	---	1.46	<10.0	<0.500	<0.500	<0.500	14.51	9.88	---	4.63
S-14	01/16/2012	---	1,400 l	---	---	---	---	---	---	---	---	---	---	---	14.51	9.69	---	4.82
S-14	10/05/2012	---	1,300 l	82	<0.50	<0.50	<0.50	<1.0	---	1.7	<10	<0.50	<0.50	<0.50	14.51	9.92	---	4.59
S-14	12/09/2013	Well inaccessible		---	---	---	---	---	---	---	---	---	---	---	14.51	---	---	---
S-14	**02/27/2015**	**---**	**770 l**	**97**	**0.94**	**0.55**	**<0.50**	**<1.0**	**---**	**1.5**	**<10**	**<0.50**	**<0.50**	**<0.50**	**14.51**	**9.91**	**---**	**4.60**

Notes: See following page

Table 1
Groundwater Data
Shell-Branded Service Station, 1800½ Powell Street, Emeryville, California

Notes:

TPHmo = Total petroleum hydrocarbons as motor oil analyzed by modified EPA Method 8015
TPHd = Total petroleum hydrocarbons as diesel analyzed by modified EPA Method 8015
TPHg = Total petroleum hydrocarbons as gasoline analyzed by EPA Method 8260B; prior to December 27, 2001, analyzed by EPA Method 8015 unless otherwise noted.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8260B; prior to December 27, 2001, analyzed by EPA Method 8020.
MTBE = Methyl tertiary-butyl ether analyzed by method noted
TBA = Tertiary-butyl alcohol analyzed by EPA Method 8260B
DIPE = Di-isopropyl ether analyzed by EPA Method 8260B
ETBE = Ethyl tertiary-butyl ether analyzed by EPA Method 8260B
TAME = Tertiary-amyl methyl ether analyzed by EPA Method 8260B
TOC = Top of casing elevation, in feet relative to mean sea level
SPH = Separate-phase hydrocarbon
GW = Groundwater
µg/L = Micrograms per liter
ft = Feet
MSL = Mean sea level
<x = Not detected at reporting limit x
--- = Not analyzed or available
(D) = Duplicate sample

a = SPH present but not measured
b = Compounds detected within the chromatographic range appear to be weathered diesel.
c = The concentration reported as diesel is due to the presence of a combination of diesel and a heavier petroleum product of hydrocarbon range C18 - C36, possibly motor oil.
d = The result for gasoline is an unknown hydrocarbon which consists of several peaks.
e = The positive result appears to be a heavier hydrocarbon than diesel.
f = Compounds detected within the chromatographic range of diesel appear to include gasoline compounds.
g = The positive result appears to be a heavier hydrocarbon than gasoline.
h = Sample analyzed outside of EPA recommended holding time.
i = TOC altered due to wellhead maintenance.
j = The sample, as received, was not preserved in accordance to the referenced analytical method.
k = Sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard. Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.
l = The sample extract was subjected to silica gel treatment prior to analysis.
m = Analyzed by EPA Method 8015B (M).
n = Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
o = Hydrocarbon result partly due to individual peak(s) in quantitation range

Beginning November 26, 2002, depth to water referenced to TOC instead of top of well box.

Active wells surveyed on February 12, 2002 by Virgil Chavez Land Surveying

Table 2
Historical Grab Groundwater Analytical Data
Shell-branded Service Station, 1800 1/2 Powell, Emeryville, California

Sample ID	Date	Depth ft bgs	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TBA (µg/L)	MTBE (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
1996 Subsurface Investigation													
B1-GW[a]	5/20/1996	12.5	<50	—	<0.50	<0.50	<0.50	<0.50	—	<2.5	—	—	—
B2-GW[b]	5/20/1996	12	<50	—	<0.50	<0.50	<0.50	<0.50	—	<2.5	—	—	—
B6-GW[b]	5/20/1996	12	<50	—	<0.50	<0.50	<0.50	<0.50	—	<2.5	—	—	—
2006 Subsurface Investigation													
SB-7-W	4/19/2006	6.5	**13,500**	**23,900[c]**	6.64	3.39	2.00	18.9	<10.0	<0.500	<0.500	<0.500	<0.500
SB-8-W	4/18/2006	9	<50.0	**30,400[c]**	0.620	<0.500	<0.500	<0.500	50.4	72.7	<0.500	<0.500	<0.500
SB-9-W	4/19/2006	8.5	<500	**66,000[c]**	<5.00	<5.00	<5.00	<5.00	<100	32.7	<5.00	<5.00	<5.00
SB-10-W	4/19/2006	10	**914**	**49,500[c]**	35.5	10.2	3.67	1.55	<10.0	8.07	<5.00	<5.00	<5.00
SB-11-W	4/19/2006	10.5	305	**31,500[c]**	1.80	<0.500	<0.500	0.500	<10.0	5.40	<0.500	<0.500	<0.500
SB-12-W	4/18/2006	9.0	**3,270**	**1,980**	8.14	5.11	0.850	12.2	<10.0	48.7	<0.500	<0.500	<0.500
Groundwater ESL[d]			**500**	**640**	**46**	**130**	**290**	**100**	**18,000**	**1,800**	**NA**	**NA**	**NA**

Abbreviations and Notes:

ft bgs = feet below ground surface
µg/L = micrograms per liter
TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015M (1996) or 8260B (2004 to present)
TPHd = Total petroleum hydrocarbons as diesel by EPA Method 8015B; samples prepared with silica gel cleanup
Benzene, ethylbenzene, toluene, total xylenes by EPA Method 8020 (1996) and 8260B (2004 to present)
MTBE = Methyl tertiary-butyl ether by EPA Method 8260B.
TBA = Tertiary-butyl alcohol by EPA Method 8260B.
DIPE = Di-isopropyl ether by EPA Method 8260B.
ETBE = Ethyl tertiary-butyl ether by modified EPA Method 8260B.
TAME = Tertiary amyl methyl ether by EPA Method 8260B.
— = Not analyzed
a = Analyzed for Volatile Organic Compounds (VOCs) by EPA Method 8240, Acetone concentration detected at 14 ppb.
b = Sample depth not recorded on boring log. Maximum boring depth reported.
c = The sample required a dilution due to the nature of the sample matrix.
d = San Francisco Bay Regional Water Quality Control Board commercial/industrial Environmental Screening Level where groundwater is not a source of drinking water
BOLD = Concentration exceeds RWQCB ESL
NA = Not available

Table 3
Historical Soil Analytical Data
Shell-branded Service Station, 1800 1/2 Powell Street, Emeryville, California

Sample ID	Date	Depth (feet)	TPHg (mg/kg)	TPHd (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TBA (mg/kg)	MTBE (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)	Lead (mg/kg)	TRPH (mg/kg)	Naphthalene (mg/kg)
1996 Subsurface Investigation																		
B1-2.0	5/20/1996	2.0	<1.0	—	<0.005	<0.005	<0.005	<0.005	—	—	—	—	—	—	—	—	—	—
B1-7.0[a]	5/20/1996	7.0	<1.0	—	<0.005	<0.005	<0.005	<0.005	—	—	—	—	—	—	—	—	—	<0.25
B1-13.0	5/20/1996	13.0	<1.0	160[b]	<0.005	<0.005	<0.005	<0.005	—	—	—	—	—	—	—	—	67	---
B1-15.0	5/20/1996	15.0	43	350[b]	<0.025	<0.025	0.072	0.19	—	—	—	—	—	—	—	—	1,100	---
B2-2.0	5/20/1996	2.0	<1.0	—	<0.005	<0.005	<0.005	<0.005	—	—	—	—	—	—	—	—	—	—
B2-7.5	5/20/1996	7.5	<1.0	—	<0.005	<0.005	<0.005	<0.005	—	—	—	—	—	—	—	—	—	—
B2-11.0	5/20/1996	11.0	<1.0	**870**[b]	<0.005	<0.005	<0.005	<0.005	—	—	—	—	—	—	—	—	1,500	---
B3-6.5	5/20/1996	6.5	<1.0	—	<0.005	<0.005	<0.005	<0.005	—	—	—	—	—	—	—	—	—	—
B3-10.5	5/20/1996	10.5	<1.0	31[b]	<0.005	<0.005	<0.005	<0.005	—	—	—	—	—	—	—	—	82	---
B4-6.5	5/20/1996	6.5	<1.0	—	<0.005	<0.005	<0.005	<0.005	—	—	—	—	—	—	—	—	—	—
B5-3.0	5/20/1996	3.0	<1.0	—	<0.005	<0.005	<0.005	**0.0054**	—	—	—	—	—	—	—	—	—	—
B6-3.5	5/20/1996	3.5	<1.0	—	<0.005	<0.005	<0.005	<0.005	—	—	—	—	—	—	—	—	—	—
B6-6.5	5/20/1996	6.5	<1.0	—	<0.005	<0.005	<0.005	<0.005	—	—	—	—	—	—	—	—	—	—
B6-11.0	5/20/1996	11.0	<1.0	40[b]	<0.005	<0.005	<0.005	<0.005	—	—	—	—	—	—	—	—	380	---
1998 Upgrade Soil Sampling																		
D-7	3/19/1998	2.0	32	220	0.25	0.061	0.53	3.5	—	—	—	—	—	—	—	—	—	—
D-9	3/19/1998	3.5	260	250	0.26	1	2.6	14	—	—	—	—	—	—	—	—	—	—
2004 Upgrade Soil Sampling																		
MPD-1	9/23/2004	4.5	<50	85	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	150	—	—
MPD-2	9/23/2004	5.0	<50	33	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	48	—	—
MPD-3	9/23/2004	5.0	<50	42	<0.50	<0.50	<0.50	<0.50	<2.5	0.64	<1.0	<0.50	<0.50	<0.50	<0.50	39	—	—

Table 3
Historical Soil Analytical Data
Shell-branded Service Station, 1800 1/2 Powell Street, Emeryville, California

Sample ID	Date	Depth (feet)	TPHg (mg/kg)	TPHd (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TBA (mg/kg)	MTBE (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)	Lead (mg/kg)	TRPH (mg/kg)	Naphthalene (mg/kg)
MPD-4	9/23/2004	5.0	<1.0	1.5	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005	<0.010	<0.005	<0.005	<0.005	<0.005	16	—	—
MPD-5	9/23/2004	5.0	<1.0	12	0.031	<0.005	<0.005	<0.005	0.011	0.0064	<0.010	<0.005	<0.005	<0.005	<0.005	15	—	—
MPD-6	9/23/2004	5.5	<1.0	3.6	<0.005	<0.005	<0.005	0.013	0.032	0.027	<0.010	<0.005	<0.005	<0.005	<0.005	5.7	—	—
MPD-7	9/23/2004	5.0	<50	54	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	5.4	—	—
MPD-8	9/23/2004	5.0	54	**3,500**	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	8.3	—	—
MPD-9	9/23/2004	5.0	**1,300**	320	<0.50	<0.50	7.1	**17**	<2.5	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	9.5	—	—
MPD-10	10/13/2004	4.3	**7,900**	**970**	<5.0	**32**	21	**630**	<25	<5.0	<10	<5.0	<5.0	<5.0	<5.0	4.2	—	—
MPD-10	10/13/2004	4.6	**5,600**	110	<5.0	**53**	26	**530**	<25	<5.0	<10	<5.0	<5.0	<5.0	<5.0	20	—	—
2006 Subsurface Investigation																		
SB-7-3	4/18/2006	3	0.539	32.3	<0.00200	0.00223	<0.00200	<0.00500	<0.0500	<0.00200	<0.00200	<0.00500	<0.00200	—	—	—	—	—
SB-7-5.5	4/19/2006	5.5	4.41	123[c]	<0.00200	0.0160	0.0805	0.328	<0.0500	<0.00200	<0.00200	<0.00500	<0.00200	—	—	—	—	—
SB-8-5	4/18/2006	5	6.27	**6,060[c]**	0.00266	0.00666	0.00426	0.0141	<0.0500	0.00513	<0.00200	<0.00500	<0.00200	—	—	—	—	—
SB-8-8	4/18/2006	8	6.13	**717[c]**	<0.00200	0.00582	<0.00200	<0.00500	<0.0500	0.00307	<0.00200	<0.00500	<0.00200	—	—	—	—	—
SB-9-4	4/18/2006	4	0.876	202[c]	<0.00200	<0.0020	0.00205	0.00755	<0.0500	0.00595	<0.00200	<0.00500	<0.00200	—	—	—	—	—
SB-9-7.5	4/19/2006	7.5	0.500	11.3	<0.00200	<0.0020	<0.00200	<0.00500	<0.0500	0.0132	<0.00200	<0.00500	<0.00200	—	—	—	—	—
SB-10-4	4/18/2006	4	307	5.18	0.0987	0.00264	0.123	0.0165	<0.0500	<0.00200	<0.00200	<0.00500	<0.00200	—	—	—	—	—
SB-10-6	4/19/2006	6	8.40	399[c]	0.0124	0.00462	0.0215	0.0140	<0.0500	<0.00200	<0.00200	<0.00500	<0.00200	—	—	—	—	—
SB-11-4	4/18/2006	4	0.237	37.0	<0.00200	<0.00200	<0.00200	<0.00500	<0.0500	<0.00200	<0.00200	<0.00500	<0.00200	—	—	—	—	—
SB-11-6	4/19/2006	6	0.521	14.1	<0.00200	<0.0020	<0.00200	<0.00500	<0.0500	<0.00200	<0.00200	<0.00500	<0.00200	—	—	—	—	—

Table 3
Historical Soil Analytical Data
Shell-branded Service Station, 1800 1/2 Powell Street, Emeryville, California

Sample ID	Date	Depth (feet)	TPHg (mg/kg)	TPHd (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TBA (mg/kg)	MTBE (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)	Lead (mg/kg)	TRPH (mg/kg)	Naphthalene (mg/kg)
SB-12-3	4/18/2006	3	**502**	277[c]	0.0742	0.0156	0.0279	0.150	<0.0500	0.0396	<0.00200	<0.00500	<0.00200	—	—	—	—	—
SB-12-6	4/18/2006	6	1.08	24.4	0.00570	<0.00200	<0.00200	<0.00500	<0.0500	0.00395	<0.00200	<0.00500	<0.00200	—	—	—	—	—
Shallow Soil (≤10 fbg) ESL:[d]			**400**	**640**	**0.38**	**9.3**	**32**	**11**	**110**	**5.6**	**NA**	**NA**	**NA**	**200**	**150**	**750**	**NA**	**3.9**
Deep Soil (>10 fbg) ESL:[d]			**400**	**640**	**0.51**	**9.3**	**32**	**11**	**110**	**5.6**	**NA**	**NA**	**NA**	**200**	**150**	**750**	**NA**	**3.9**

Abbreviations and Notes:

mg/kg = Milligrams per Kilogram

TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015M (1996) and 8260B (2004 to present)

TPHd = Total petroleum hydrocarbons as diesel by EPA Method 8015B (2004 to present); samples prepared with silica gel cleanup

Benzene, ethylbenzene, toluene, total xylenes by EPA Method 8020 (1996) and 8260B (2004 to present)

MTBE = Methyl tertiary-butyl ether by EPA Method 8260B.

TBA = Tertiary-butyl alcohol by EPA Method 8260B.

DIPE = Di-isopropyl ether by EPA Method 8260B.

ETBE = Ethyl tertiary-butyl ether by modified EPA Method 8260B.

TAME = Tertiary-amyl methyl ether by EPA Method 8260B.

1,2-DCA = 1,2-Dichloroethane by EPA Method 8260

EDB = 1,2-Dibromoethane by EPA Method 8260

Lead by EPA Method 6010B

TRPH = Total Recoverable Petroleum Hydrocarbons by Standard Method 5520

— = Not analyzed

a = Analyzed for Semi-Volatile Organic Compounds (VOCs) by EPA Method 8270; Phenol detected at 1.9 ppm

b = Fuel fingerprint between C9 and C40 by Modified EPA Method 8015; sample results expressed as ppm of Extractable Hydrocarbons.

c = The sample required a dilution due to the nature of the sample matrix.

d = San Francisco Bay Regional Water Quality Control Board commercial/industrial Environmental Screening Level for soil where groundwater is not a source of drinking water

BOLD = Concentration exceeds RWQCB ESL

NA = Not available

Appendix A.
Alameda County Water District Correspondence

Jurek, Anne, Env. Health

From: Jurek, Anne, Env. Health
Sent: Monday, August 08, 2016 5:27 PM
To: 'andrea.wing@shell.com'; 'sunny@vintnersdist.com'
Cc: 'Heikkila, Sara'; 'rachel.sultan@aecom.com'; 'Aubrey.Cool@aecom.com'; 'jeff.bullen@shell.com'; 'mark.williams@us.bureauveritas.com'; John Ellis; Roe, Dilan, Env. Health
Subject: Fuel Leak Case No. RO0000254 and GeoTracker Global ID T0600101231, Shell # 13-5266, 1800 Powell Street, Emeryville, CA 94608

Dear Ms. Wing and Mr. Goyal:

Thank you for meeting with Alameda County Department of Environmental Health (ACDEH) on July 28, 2016 to discuss the above referenced fuel leak case. The case concerns two unauthorized releases: 1) the release in September 1982 of 3,200 gallons of super unleaded gasoline due to a leak from damaged fiberglass piping connected to an underground storage tank (UST) that occurred during Shell Oil Products US's ownership of the site; and 2) the release of diesel in September 2013 due to a product rupture that occurred during on-site investigative drilling that was conducted by the current property owner, Au Energy LLC.

Investigation of the September 1982 release was performed until 2015 on the behalf of Shell. Investigation and excavation of the September 2013 release on behalf of Au Energy was performed between September 30, 2013 and June 16, 2014. Although both Shell and Au Energy are responsible parties (RPs) for the 1982 fuel leak, Au Energy is the primary/active RP for the 2013 diesel release, as Shell was not the property owner, tank owner, or tank operator at the time of the release.

During our meeting, representatives from Shell stated their belief that all criteria for the State Water Resources Control Board's (State Water Board) Low-Threat Underground Storage Tank Case Closure Policy (LTCP) have been met by Shell for the 1982 release. Representatives for Au Energy stated their belief that soil contaminated from the 2013 diesel release has been excavated as much as was feasible given the extent of the landfill subsurface material and believe that residual TPH may be due to historical industrial waste debris. They also stated that further downgradient characterization of the diesel release is impeded due to the following: 1) extensive utility lines at Powell Street; and 2) inability to install any monitoring wells downgradient due to the California Coastal Commission and the East Bay Regional Park District (EBRPD) not granting permission for access to EBRPD land that is adjacent south of Powell.

Based on our review of the case file and our discussion during the meeting, ACDEH requests the following from each RP in order for us to determine the next course of action:

Shell Oil Products US:

A compilation of the following information pertaining to the 1982 release and the 2004 piping and dispenser upgrade:

Tables that summarize historical analytical data for soil, grab groundwater, and groundwater from monitoring wells. Of note, although groundwater monitoring analytical data is documented in previous reports to have begun on October 24, 1984, the most recent groundwater monitoring report, "Groundwater Monitoring Report- First Quarter 2015," dated April 27, 2015 and prepared by Conestoga-Rovers and Associates, includes historical groundwater analytical data between October 27, 1988 to February 27, 2015. Please include all monitoring well analytical data.

All boring logs for all borings advanced and well construction details for monitoring wells.

Figures delineating the extent of the remaining gasoline and diesel plumes both before and after the 2013 diesel release, which include rose diagrams for groundwater flow direction.

A discussion of historical plume migration of total petroleum hydrocarbons as gasoline (TPH-g) and as diesel (TPH-d).

Hydrographs of water levels and contaminant concentration trends based on monitoring well data.

A review the analytical records of your reports to confirm whether or not naphthalene was analyzed in groundwater and soil. In our review of the case file, including laboratory analytical results, it did not appear that naphthalene was tested in any media except for soil samples collected in 1996, as documented in the report by Weiss Associates entitled "Subsurface Investigation Report" dated August 14, 1996.

A complete map of the utility lines at the site and at Powell Street, including the utility locations identified and discussed in the report by Conestoga-Rovers and Associates entitled, "Attempted Well Reinstallation," dated January 13, 2012. Include all storm drains and outfalls from the site.

Cross-sections that show borings, wells, any excavation, fill, etc.

Verification as to whether or not there were previous generations of tanks at the site.

A discussion of how much residual TPH is due to the 1982 release as compared to historical industrial waste debris at the site.

A discussion comparing current site conditions to LTCP criteria.

Technical Report Request

Please upload technical reports to the ACDEH ftp site (Attention: Anne Jurek), and to the State Water Resources Control Board's GeoTracker website according to the following schedule and file-naming convention:

- September 16, 2016 – Status Report
- File to be named: STAT_R_yyyy-mm-dd RO254

In addition, the 2006 work plan completed by Cambria for installing monitoring wells S-15 and S-16 on the property south of Powell Street is not on file on ACDEH's ftp and the State Water Board's GeoTracker. In addition, all site maps and boring logs have not uploaded onto GeoTracker. Please upload this data, pursuant to California Code of Regulations, Title 23, Division 3, Chapter 16, Article 12, Sections 2729 and 2729.1.

Au Energy LLC:

A compilation of the following information pertaining to the 2013 release and the 2014 redevelopment:

A complete timeline and discussion of investigation and remediation.

A figures of boring and sampling locations which includes the locations of the current USTs that were installed during May and June 2014 in relation to the former USTs.

Tables of all soil analytical results, including those collected during due diligence when the property was purchased to establish baseline conditions. Of note, a table and a laboratory report of the analytical results for samples collected at borings BV-1 through BV-4 that were advanced on September 30, 2013, are not in our case file.

A table of separate phase hydrocarbon (SPH) measurements that were collected using an oil/water separator probe from the UST backfill observation wells in October 2013.

Waste manifests for the 5,000 gallons of water/SPH mixture removed from the UST backfill area for offsite disposal.

A table of groundwater monitoring measurements for SPH taken on October 2,3,4,7,9,15, and 23, 2013, and weekly groundwater monitoring of measureable SPH for monitoring wells S-8, S-10, and S-13. This work is discussed in "Work Plan for Subsurface Investigation at Shell-Branded Gasoline Station," dated October 31,2013, and prepared by Bureau Veritas North America, Inc. (BVNA) but there are not associated tables.

Boring logs for all borings advanced.

Cross-sections that show borings, wells, any excavation, fill, etc.

A discussion of the extent of diesel contamination from the 2013 spill, including a figure delineating the extent of the plume from the remaining diesel.

A discussion of how much residual TPH is due to the 2013 release as compared to historical industrial waste debris at the site.

A discussion comparing current site conditions to LTCP criteria.

Technical Report Request

Please upload technical reports to the ACDEH ftp site (Attention: Anne Jurek), and to the State Water Resources Control Board's GeoTracker website according to the following schedule and file-naming convention:

- September 16, 2016 – Status Report
- File to be named: STAT_R_yyyy-mm-dd RO254

In addition, please upload all documents related to the State Water Board's GeoTracker website including reports, borehole logs, site map, and analytical data (EDF format), and photos pursuant to California Code of Regulations, Title 23, Division 3, Chapter 30, Articles 1 and 2, Sections 3890 to 3895. Details of the submission requirements are discussed in the attachments.

I will be sending out a separate emails by next week to coordinate a tentative meeting date between September 12 and September 23, 2016.

If you have any concerns or questions, please contact me. Thank you.

Sincerely,

Anne Jurek, M.S.
Professional Technical Specialist II (Geology)
Alameda County Department of Environmental Health (ACDEH)
1131 Harbor Bay Pkwy
Alameda, CA 94502
(510) 567-6721; Ext. 36721
anne.jurek@acgov.org

Appendix B.
Boring Logs and Well Construction Diagram

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG

BOREHOLE LOCATION	Project: (facility, address, city, state) Shell pownall St
	Borehole/Well No: B-1
	Job No: 81-0794-205
	Logged By: R. Devany
	Edited By:
	Project Manager: T. Foust
	Drill Rig:
	Drilling Contractor: (name, city, state) Gregg - Martinez CA
	Driller:
	License # : C57-
	Drilling Method: Geoprobe
	Sample Method: Core
	Well Head Completion: NA
	Ground Surface Elevation:
	Hammer Weight/Drop: NA
	Borehole Diameter:
	Started, Time: 10:30 Date: 5/20/96
	Completed, Time: 11:30 Date: 5/20/96
	Water Depth
Approximate Scale:	Boring/Casing Depth
Notes:	Time
	Date

Total Boring Depth:	Total Well Depth:
Screened Interval:	Well Diameter:
Sand Pack (Type and Interval):	
Well Development Method:	
Time: Date:	Flow Rate:
Geophysical Logs, Type:	
By:	Date:

Sample ID	PID / FID (ppm)	Sampler Type / depth	Blows per 6 Inches	Inches Driven	Inches Recovered	Sample Condition	Boring Diameter	Conductor Casing(s) Interval and Diameter	Sand / Grout	Well Casing / Screen	Depth in Feet	Recovery / Sample Loc.	Contact / Hyd. Conduct.	LITHOLOGIC DESCRIPTIONS
		GP 0									1			CLAYEY SILT (ML) DK. Brown (7.5YR 4/2) Med stiff, Dry to damp, 10% vf-m sand, 0-5% SA pebbles to 1/2 in, lowest K, ft, roots, rm.
B1-2											2			to gravelly Silty Clay (CH) Black (7.5YR 2/0) very stiff, damp, 5-20% vf-mg sand 5-25% angular to sub angular pebble to 1 inch, trace to very coarse, 1" ± φ concrete block in shoe
		GP 4		48	35	G					4			
											5			Silty Clay (CH) Lt brownish gray (2.5YR 6/2) w/ 10% gray + blk mottling med stiff, damp, low est ±
											6			
B1-7											7			gravelly clay (CH) as above except softer (stiff)
		GP 8		48	18						8			
B1-10											9			Sandy Silt (ML) Blk (7.5YR 2/0) w/ gray green mottling, soft to med stiff, wet, 10%-20% vf-mg sand
											10			

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG (cont.)

Project / Job No.: 81 0794 - 205

Borehole/Well No.: SB-1

Notes:

PID/FID	Sampler Type	Blows / 6 Inches	Inches Driven	Inches Recov'd	Sample Cond.	Boring Diameter	Conduct. Casing	Sand / Grout	Well Casing	Depth (ft)	Recovery	Contact
SB-13										1		
										2		
										3		
										4		
										5		
SB-15										6		
										7		
										8		
										9		
										10		
										1		
										2		
										3		
										4		
										5		
										6		
										7		
										8		
										9		
										0		

5/20/96 11:45

Silty Sand (SM) gray green to black (5Y 5/1 to 7.5YR 2/0) dense, wet, 20-30 s.ft, modest k (hydrocarbon odor at 14 ft.)

Silt (ML) to clayey silt gray green to black (5Y 5/1 to 7.5YR 2/0) soft, non plastic - mod plast, modest k (hydrocarbon odor)

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG

BOREHOLE LOCATION	Project: (facility, address, city, state) Shell - Powell St
	Borehole/Well No: B-2
	Job No: BL-0794-205
	Logged By: R Devany / Edited By:
	Project Manager: T. Foyt / Drill Rig:
	Drilling Contractor: (name, city, state) Gregs
	Driller: / License # : C57-
	Drilling Method: geoprobe / Sample Method:
	Well Head Completion: / Ground Surface Elevation:
	Hammer Weight/Drop: / Borehole Diameter:
	Started, Time: / Date:
	Completed, Time: / Date:
Approximate Scale:	Water Depth / Boring/Casing Depth / Time / Date
Notes:	

Total Boring Depth:	Total Well Depth:
Screened Interval:	Well Diameter:
Sand Pack (Type and Interval):	
Well Development Method:	
Time: Date:	Flow Rate:
Geophysical Logs, Type:	
By:	Date:

Sample ID	PID / FID (ppm)	Sampler Type / depth	Blows per 6 Inches	Inches Driven	Inches Recovered	Sample Condition	Boring Diameter	Conductor Casing(s) Interval and Diameter	Sand / Grout	Well Casing / Screen	Depth in Feet	Recovery / Sample Loc.	Contact / Hyd. Conduct.	LITHOLOGIC DESCRIPTIONS
		GP 0		48	36	G					0			Gravelly SILT (ML) Dkbrn (7.5YR 4/2), med stiff, dry to damp, 5-10% pebbles to 1" bricks, debris. (Fill)
B2-2											1			
											2			
											3			
		GP 1		48	33	F					4			
											5			
											6			
											7			← 3-4 in sandy gravel layer - lt gray
B2-7.5											8			
		GP 8		48	32	F					9			
											10			

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG (cont.)

Project / Job No.: 81-0794-205

Borehole/Well No.: B-2

Notes:

Sample ID	PID/FID	Sampler Type	Blows / 6 Inches	Inches Driven	Inches Recov'd	Sample Cond.	Boring Diameter	Conduct. Casing	Sand / Grout	Well Casing	Depth (ft)	Recovery	Contact
B2-11		GP 12		6	6						1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20		

Clayey silt (MH) green-gray (5Y 5/1) soft, damp to moist, 0-5% vf-mg sand lowest K

← refusal at 12.5 ft

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG

BOREHOLE LOCATION	Project: (facility, address, city, state)
	Borehole/Well No: B-3
	Job No: 81-0794-205
	Logged By: D. Downey / Edited By:
	Project Manager: T. Foyt / Drill Rig:
	Drilling Contractor: (name, city, state) Gregg Monterey CA
	Driller: / License # : C57-
	Drilling Method: Geoprobe / Sample Method: core
	Well Head Completion: NA / Ground Surface Elevation:
	Hammer Weight/Drop: NA / Borehole Diameter:
	Started, Time: 12:45 / Date: 5/20
	Completed, Time: 13:15 / Date:
	Water Depth
Approximate Scale:	Boring/Casing Depth
Notes:	Time
	Date

Total Boring Depth:	Total Well Depth:
Screened Interval:	Well Diameter:
Sand Pack (Type and Interval):	
Well Development Method:	
Time: Date:	Flow Rate:
Geophysical Logs, Type:	
By: Date:	

Sample ID	PID / FID (ppm)	Sampler Type / depth	Blows per 6 Inches	Inches Driven	Inches Recovered	Sample Condition	Boring Diameter	Conductor Casing(s) Interval and Diameter	Sand / Grout	Well Casing / Screen	Depth in Feet	Recovery / Sample Loc.	Contact / Hyd. Conduct.	LITHOLOGIC DESCRIPTIONS
C		GP 0		48	42						0			Clayey Silt (ML/MH) Med Brown (10YR 4/3) to very dk gray (10YR 3/1), soft to med stiff, 5-20% vf-mg sand, 5-10% pebbles occasional to 1 in, low est K, Brick fragment
B3-3.5		GP 4		48	32						4			Sandy Gravel (GW) 2.5Y 7/0 Light grey dense, dry, 30%-40% sand, Very Fine-Medium Coarse sand, angular-subangular pebbles up to Two inches, High K (concrete?)
B3-6.5		GP 8		30	24						8			Clayey Silt (ML) dark greyish Brn. (2.5YR 4/2) med. stiff 5% V Fine sand, Low K. as described in section at 4' (concrete?)

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG (cont.)

Project / Job No.:

Borehole/Well No.: B-3

Notes:

Sample ID	PID/FID	Sampler Type	Blows / 6 Inches	Inches Driven	Inches Recov'd	Sample Cond.	Boring Diameter	Conduct. Casing	Sand / Grout	Well Casing	Depth (ft)	Recovery	Contact	
B3-10.5											0			Refusal at 10.5 ft
											1			
											2			
											3			
											4			
											5			
											6			
											7			
											8			
											9			
											0			
											1			
											2			
											3			
											4			
											5			
											6			
											7			
											8			
											9			

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG

BOREHOLE LOCATION

Approximate Scale:

Notes:

Project: (facility, address, city, state)	Borehole/Well No: B-4
	Job No: 81-0794-01
Logged By: Yi-Ran Wu	Edited By:
Project Manager: T. Fojut	Drill Rig:
Drilling Contractor: (name, city, state) Gregg Drilling	
Driller:	License # : C57-
Drilling Method: Geoprobe	Sample Method: Core
Well Head Completion: NA	Ground Surface Elevation:
Hammer Weight/Drop: NA	Borehole Diameter:
Started, Time: 13:25	Date: 5/20
Completed, Time: 13:55	Date:
Water Depth	
Boring/Casing Depth	
Time	
Date	

Total Boring Depth:	Total Well Depth:
Screened Interval:	Well Diameter:
Sand Pack (Type and Interval):	
Well Development Method:	
Time: Date:	Flow Rate:
Geophysical Logs, Type:	
By:	Date:

Sample ID	PID / FID (ppm)	Sampler Type / depth	Blows per 6 Inches	Inches Driven	Inches Recovered	Sample Condition	Boring Diameter	Conductor Casing(s) Interval and Diameter	Sand / Grout	Well Casing / Screen	Depth in Feet	Recovery / Sample Loc.	Contact / Hyd. Conduct.	LITHOLOGIC DESCRIPTIONS
														Clayey silt (ML) very dark greyish Brown – Black 7.5YR 2/0 to 10YR 3/2 Subangular - angular pebbles to 1" damp, Low K
B4-4											1			
											2			
											3			
											4			
											5			
B4-6.5											6			
											7			
											8			(Concrete) Clayey silt (ML) very dark greyish Brown (10YR 3/2) to Black (7.5YR 2/0) Low K, damp
											9			Hit refusal at 9' cement in the Shoe
											10			

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG

BOREHOLE LOCATION	Project: (facility, address, city, state)
	Borehole/Well No: B5
	Job No: 81-0794-01
	Logged By: Yi-Ran Wu
	Edited By:
	Project Manager: T. Fojut
	Drill Rig:
	Drilling Contractor: (name, city, state) Gregg Drilling
	Driller:
	License # : C57-
	Drilling Method: Geoprobe
	Sample Method: Core
	Well Head Completion: NA
	Ground Surface Elevation:
	Hammer Weight/Drop: NA
	Borehole Diameter:
	Started, Time: 14:00
	Date:
	Completed, Time: 14:30
	Date:
	Water Depth
Approximate Scale:	Boring/Casing Depth
Notes:	Time
	Date

Total Boring Depth:	Total Well Depth:
Screened Interval:	Well Diameter:
Sand Pack (Type and Interval):	
Well Development Method:	
Time: Date:	Flow Rate:
Geophysical Logs, Type:	
By:	Date:

Sample ID	PID / FID (ppm)	Sampler Type / depth	Blows per 6 Inches	Inches Driven	Inches Recovered	Sample Condition	Boring Diameter	Conductor Casing(s) Interval and Diameter	Sand / Grout	Well Casing / Screen	Depth in Feet	Recovery / Sample Loc.	Contact / Hyd. Conduct.	LITHOLOGIC DESCRIPTIONS
														Clayey silt (ML) very dark grey (10YR 3/1) damp, low K, subangular - angular pebbles up to 1"
													←	6" reddish yellow brick dense
SB											1			
B5-3											2			
											3			
											4			Clayey silt (ML) very dark grey (10YR 3/1) dry to damp subangular - angular pebbles up to 2" (concrete?) on top & bottom of core. 10% - 30% sand, low K
											5			
											6			
											7			hit refusal at 7'
											8			
											9			
											10			

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG

BOREHOLE LOCATION	Project: (facility, address, city, state)
Approximate Scale:	Borehole/Well No: B6
Notes:	Job No: 81-0794-01
	Logged By: Yi-Ran Wu / Edited By:
	Project Manager: T. Fojut / Drill Rig:
	Drilling Contractor: (name, city, state) Gregg Drilling
	Driller: / License # : CS7-
	Drilling Method: Geoprobe / Sample Method: Core
	Well Head Completion: NA / Ground Surface Elevation:
	Hammer Weight/Drop: NA / Borehole Diameter:
	Started, Time: 14:30 / Date:
	Completed, Time: 15:00 / Date:
	Water Depth
	Boring/Casing Depth
	Time
	Date

Total Boring Depth:	Total Well Depth:
Screened Interval:	Well Diameter:
Sand Pack (Type and Interval):	
Well Development Method:	
Time: Date:	Flow Rate:
Geophysical Logs, Type:	
By:	Date:

Sample ID	PID / FID (ppm)	Sampler Type / depth	Blows per 6 Inches	Inches Driven	Inches Recovered	Sample Condition	Boring Diameter	Conductor Casing(s) Interval and Diameter	Sand / Grout	Well Casing / Screen	Depth in Feet	Recovery / Sample Loc.	Contact / Hyd. Conduct.	LITHOLOGIC DESCRIPTIONS
B6-3.5											0–10			Clayey Silt (ML) Very dark gray (10YR 3/1) to Black, low k, damp
B6-6.5														
B6-11														Same as above description with a few exceptions: High moisture content, with increasing silt content

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG (cont.)

Project / Job No.:

Borehole/Well No.: B-6

Notes:

Sample ID	PID/FID	Sampler Type	Blows / 6 Inches	Inches Driven	Inches Recov'd	Sample Cond.	Boring Diameter	Conduct. Casing	Sand / Grout	Well Casing	Depth (ft)	Recovery	Contact

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-7
JOB/SITE NAME	Shell-branded Service Station	**DRILLING STARTED**	18-Apr-06
LOCATION	1800 1/2 Powell Street, Emeryville, CA	**DRILLING COMPLETED**	19-Apr-06
PROJECT NUMBER	248-0894-006	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	Not Surveyed
BORING DIAMETER	2"	**SCREENED INTERVALS**	NA
LOGGED BY	Ron Barone	**DEPTH TO WATER (First Encountered)**	6.5 fbg (19-Apr-06) ▽
REVIEWED BY	David Gibbs PG 7804	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Airknife to 5 fbg		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							CONCRETE	0.7	
					GM		**Silty GRAVEL**(GM); gray; moist; 10% clay, 25% silt, 65% medium gravel.	2.5	
1		SB-7-3					**Clayey SAND**(SC); greenish black; dry; 15% clay, 10% silt, 75% fine to medium sand.		
				5					
30		SB-7-5.5			SC		**Clayey SAND with gravel**(SC); black; dry; 15% clay, 10% silt, 60% fine to medium sand, 15% fine gravel. ▽		Portland Type I/II
							Clayey SAND(SC); black; wet; 15% clay, 85% fine to medium sand.		
				10				10.5	
					SP		**Poorly graded SAND**(SP); greenish gray; wet; 5% silt, 95% fine to medium sand.	12.0	Bottom of Boring @ 12 fbg

WELL LOG (PID) G:\EMERYV~1\GINT\1800 POWELL.GPJ DEFAULT.GDT 5/24/06

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BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-8
JOB/SITE NAME	Shell-branded Service Station	**DRILLING STARTED**	18-Apr-06
LOCATION	1800 1/2 Powell Street, Emeryville, CA	**DRILLING COMPLETED**	18-Apr-06
PROJECT NUMBER	248-0894-006	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	Not Surveyed
BORING DIAMETER	4"	**SCREENED INTERVALS**	NA
LOGGED BY	Ron Barone	**DEPTH TO WATER (First Encountered)**	9.0 fbg (18-Apr-06) ▽
REVIEWED BY	David Gibbs PG 7804	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand augered to 10 fbg		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							CONCRETE	0.7	
					SP SC		**Poorly graded SAND with clay and gravel**(SP-SC); black; moist to wet; 5% clay, 5% silt, 65% medium sand, 25% fine gravel.	3.0	
11		SB-8-5		5			**FILL**; black; moist to wet; 25% clay, 25% silt, 50% roofing and tar paper with wood debris.		Portland Type I/II
12		SB-8-8					**FILL**; brown; moist to wet; 10% clay, 25% silt, 65% roofing and tar paper with wood debris. ▽		
				10				10.0	Bottom of Boring @ 10 fbg

WELL LOG (PID) G:\EMERYV~1\GINT\1800 POWELL.GPJ DEFAULT.GDT 5/24/06

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BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-9
JOB/SITE NAME	Shell-branded Service Station	**DRILLING STARTED**	18-Apr-06
LOCATION	1800 1/2 Powell Street, Emeryville, CA	**DRILLING COMPLETED**	19-Apr-06
PROJECT NUMBER	248-0894-006	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	Not Surveyed
BORING DIAMETER	2"	**SCREENED INTERVALS**	NA
LOGGED BY	Ron Barone	**DEPTH TO WATER (First Encountered)**	8.5 fbg (19-Apr-06) ▽
REVIEWED BY	David Gibbs PG 7804	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Airknife to 5 fbg		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							CONCRETE	0.7	
							Silty GRAVEL(GM); brown; dry; 10% clay, 25% silt, 65% fine to coarse gravel.		
0		SB-9-4		5	GM		**Silty GRAVEL** (GM); brown; dry; 5% clay, 30% silt, 65% fine to coarse gravel.		Portland Type I/II
								7.0	
0		SB-9-7.5			ML		**SILT** (ML); dark brown; moist; 25% clay, 40% silt, 35% wood debris. ▽	8.5	
					SP SM		**Poorly graded SAND with silt and grave**(SP-SM); black; wet; 10% silt, 65% fine to medium sand, 25% fine gravel.	9.5	
				10			**FILL**; brownish black; wet; 100% roof and tar papers.		
								12.0	Bottom of Boring @ 12 fbg

WELL LOG (PID) G:\EMERYV~1\GINT\1800 POWELL.GPJ DEFAULT.GDT 5/24/06

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BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-10
JOB/SITE NAME	Shell-branded Service Station	**DRILLING STARTED**	18-Apr-06
LOCATION	1800 1/2 Powell Street, Emeryville, CA	**DRILLING COMPLETED**	19-Apr-06
PROJECT NUMBER	248-0894-006	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	Not Surveyed
BORING DIAMETER	2"	**SCREENED INTERVALS**	NA
LOGGED BY	Ron Barone	**DEPTH TO WATER (First Encountered)**	10.0 fbg (19-Apr-06) ▽
REVIEWED BY	David Gibbs PG 7804	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Airknife to 5 fbg		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							CONCRETE	0.7	
					GM		**Silty GRAVEL**(GM); greenish gray; moist; 5% clay, 35% silt, 60% fine to coarse gravel.	2.0	
					ML		**Gravelly SILT**(ML); grayish brown; dry; 5% clay, 50% silt, 45% coarse gravel.		
80		SB-10 -4		5			**Gravelly SILT**(ML); grayish brown; 5% clay, 50% silt, 10% fine sand, 35% coarse gravel.	5.0	
					GM		**Silty GRAVEL** (GM); grayish brown; dry; 5% clay, 35% silt, 10% fine sand, 50% medium to coarse gravel.	6.5	◄ Portland Type I/II
0		SB-10 -6.5					**FILL**; black; moist to wet; roofing and tar paper and wood debris.		
				10			▽		
								11.0	
					ML		**SILT with gravel**(ML); brown; moist; 10% clay, 75% silt, 15% fine gravel.	12.0	Bottom of Boring @ 12 fbg

WELL LOG (PID) G:\EMERYV~1\GINT\1800 POWELL.GPJ DEFAULT.GDT 5/24/06

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BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-11
JOB/SITE NAME	Shell-branded Service Station	**DRILLING STARTED**	18-Apr-06
LOCATION	1800 1/2 Powell Street, Emeryville, CA	**DRILLING COMPLETED**	19-Apr-06
PROJECT NUMBER	248-0894-006	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	Not Surveyed
BORING DIAMETER	2"	**SCREENED INTERVALS**	NA
LOGGED BY	Ron Barone	**DEPTH TO WATER (First Encountered)**	10.5 fbg (19-Apr-06) ▽
REVIEWED BY	David Gibbs PG 7804	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Airknife to 5 fbg		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							CONCRETE	0.8	
					GM		**Silty GRAVEL**(GM); greenish gray; dry; 5% clay, 25% silt, 70% fine gravel, trace cobbles.	3.5	
2		SB-11 -4		5	ML		**Gravelly SILT**(ML); grayish brown; moist; 10% clay, 50% silt, 40% fine gravel.		
3		SB-11 -6					**Gravelly SILT**(ML); dark brown; moist; 10% clay, 50%silt, 40% fine gravel.	7.0	◄ Portland Type I/II
							FILL; black; moist; roofing and tar paper and wood debris.		
				10			**FILL**; black; wet; roofing and tar paper and wood debris. ▽		
								12.0	Bottom of Boring @ 12 fbg

WELL LOG (PID) G:\EMERYV~1\GINT\1800 POWELL.GPJ DEFAULT.GDT 5/24/06

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BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-12
JOB/SITE NAME	Shell-branded Service Station	**DRILLING STARTED**	18-Apr-06
LOCATION	1800 1/2 Powell Street, Emeryville, CA	**DRILLING COMPLETED**	18-Apr-06
PROJECT NUMBER	248-0894-006	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	Not Surveyed
BORING DIAMETER	4"	**SCREENED INTERVALS**	NA
LOGGED BY	Ron Barone	**DEPTH TO WATER (First Encountered)**	9.0 fbg (18-Apr-06) ▽
REVIEWED BY	David Gibbs PG 7804	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand augered to 9 fbg		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							CONCRETE	0.7	Portland Type I/II
					SM		**Silty SAND with gravel** (SM); gray; dry; 20% silt, 60% fine and medium sand, 20% fine gravel.		
381		SB-12 -3					**Silty SAND** (SM); brownish gray; dry; 25% silt, 60% fine and medium sand, 15% wood debris.	4.5	
				5					
95		SB-12 -6			SP		**Poorly graded SAND** (SP); gray; dry; 5% silt, 95% fine to medium sand.		
							Poorly graded SAND (SP); gray; wet; 100% fine to medium sand. ▽	9.0	Bottom of Boring @ 9 fbg

WELL LOG (PID) G:\EMERYV~1\GINT\1800 POWELL.GPJ DEFAULT.GDT 5/24/06

Field location of boring: (See Plate 2)	Project No.: 7605	Date: 11/08/89	Boring No: S-12
	Client: Shell Oil Company		
	Location: 1800 Powell Street		
	City: Emeryville, California		Sheet 1 of 2
	Logged by: J. Vargas	Driller: Bayland	
	Casing installation data:		
Drilling method: Hollow-Stem Auger			
Hole diameter: 8-Inches - Reamed to 12-Inches	Top of Box Elevation:		Datum:
	Water Level: 9 feet		
	Time: 8:30		
	Date: 11/09/89		

PID (ppm)	Blows/ft or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
								PAVEMENT SECTION - 19 inches
				1				
				2				FILL - Clayey Sand with Gravel (SC) - very dark gray (5Y 3/1), loose, damp; 35% fine to coarse sand; 25% fine to coarse gravel; 40% clay; trace construction debris; cobbles; moderate chemical odor.
				3				
				4				
	100	S&H		5				Tar Paper at 4.5 feet
25	100	push	S12-5					Increased sand to 55%; moderate chemical odor.
	150			6				
				7				
				8				
	500	S&H		9				
	14							Refuse and tar paper at 9.0 feet; medium dense; weak chemical odor.
17	12		S12-9.5	10				
				11				Water in cuttings - softer drilling
				12				
				13				
				14				
14.5	5	S&H	S12-14					refuse, saturated; weak chemical odor.
	5			15				
	7							
				16				softer at 16 feet.
				17				
				18				
				19				

Remarks:

GeoStrategies Inc.

Log of Boring

BORING NO. S-12

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7605		11/89		

Field location of boring:

(See Plate 2)

Project No.: 7605	Date: 11/08/89	Boring No: S-12	
Client: Shell Oil Company			
Location: 1800 Powell Street			
City: Emeryville, California		Sheet 2 of 2	
Logged by: J. Vargas	Driller: Bayland		

Casing installation data:

Drilling method: Hollow-Stem Auger

Hole diameter:

Top of Box Elevation: Datum:

Water Level				
Time				
Date				

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
NS	2	S&H	S12-19					
	2			20				CLAYEY SAND (SC) - dark gray (5Y 4/1), loose,
	4						SC	saturated; 80% fine to medium sand; 20% clay; no
				21				chemical odor.
				22				
				23				CLAY with SAND (CL) - dark greenish gray (5G 4/1), stiff,
								damp; 80% clay; 20% fine to coarse sand; medium
				24				plasticity; no chemical odor.
	2	S&H						
	6			25				
1.3	6		S12-25				CL	
				26				
				27				
	6	S&H		28				color change to olive yellow (2.5Y 6/6), very stiff, damp;
1.6	12		S12-					no chemical odor.
	14		28.5	29				
								Bottom of boring at 29.0 feet.
				30				Bottom of sample at 29.0 feet.
				31				
				32				
				33				
				34				
				35				
				36				
				37				
				38				
				39				

Remarks:

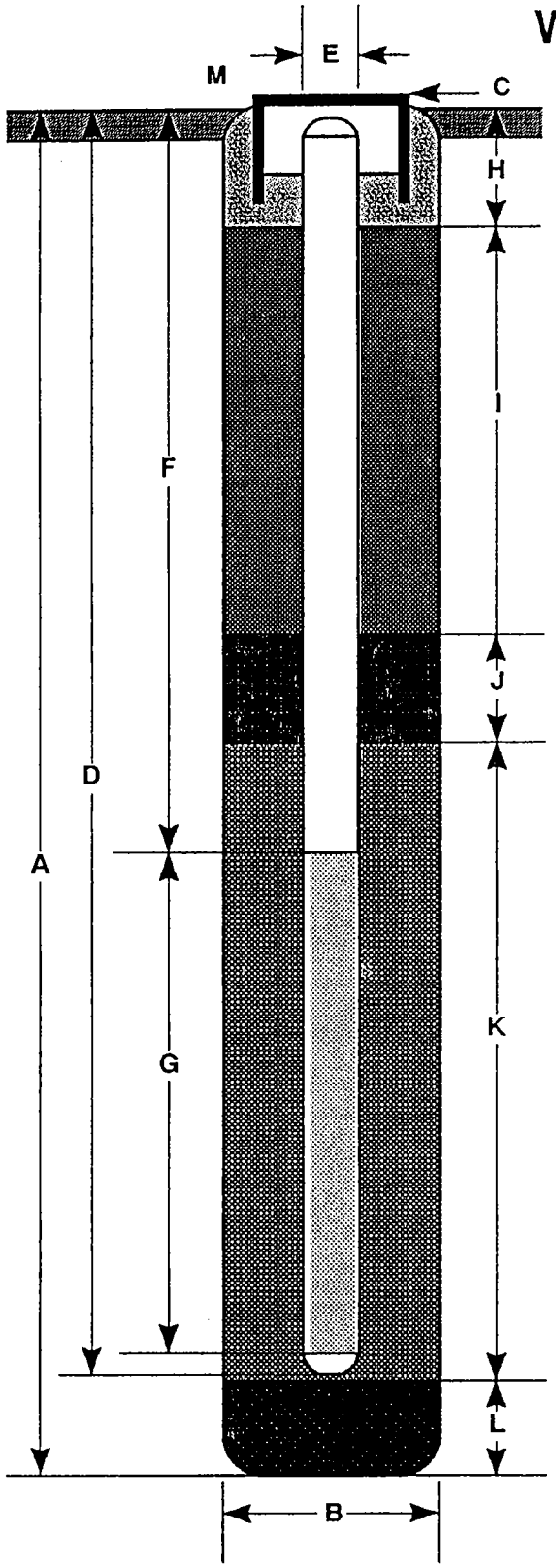
GeoStrategies Inc.

Log of Boring

BORING NO. S-12

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7605		11/89		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 29.0 ft.

B Diameter of Boring 12 in.
Drilling Method Hollow-Stem Auger

C Top of Box Elevation ft.
☐ Referenced to Mean Sea Level
☐ Referenced to Project Datum

D Casing Length 24 ft.
Material Schedule 40 PVC

E Casing Diameter 3 in.

F Depth to Top Perforations 9 ft.

G Perforated Length 15 ft.
Perforated Interval from 9 to 24 ft.
Perforation Type Machine Slot
Perforation Size 0.02 in.

H Surface Seal from 0 to 0.5 ft.
Seal Material Concrete

I Backfill from 0.5 to 5 ft.
Backfill Material Cement Grout

J Seal from 5 to 7 ft.
Seal Material Bentonite

K Gravel Pack from 7 to 24 ft.
Pack Material Lonestar 2/12 Sand

L Bottom Seal 5 ft.
Seal Material Natural Clay

M

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO.
S-12

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7605		11/89		

Field location of boring: (See Plate 2)	Project No.: 7605	Date: 11/09/89	Boring No: S-13
	Client: Shell Oil Company		
	Location: 1800 Powell Street		
	City: Emeryville, California		Sheet 1 of 2
	Logged by: J. Vargas	Driller: Bayland	
Drilling method: Hollow-Stem Auger	Casing installation data:		
Hole diameter: 8-Inches	Top of Box Elevation:		Datum:

Water Level	7.25 feet	
Time	11:30	
Date	11/09/89	

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
								PAVEMENT SECTION - 20 inches
				1				
				2				FILL - Clayey Sand with Gravel (SC) - olive gray (5Y 4/3),
								loose, damp; 45% fine to coarse sand; 20% fine to
				3				coarse gravel; 25% clay; trace cobbles and boulders;
							SC	construction debris; moderate chemical odor.
				4				
				5				
	100	S&H						refuse and tar paper at 6.0 feet
78	150	push	S13-	6				
	150		6.0					
				7				SAND (SP) - olive (5Y 4/3), loose, damp; 100% fine sand;
								moderate chemical odor.
				8				
							SP	
	100		S13-	9				
93	100	S&H	9.0					color change to black (5Y 2.5/2), saturated at 9.0 feet;
				10				stronger chemical odor.
				11				sample refusal at 9.5 feet.
								concrete boulder at 9.5 feet.
				12				
				13				
								CLAYEY SAND (SC) - dark olive gray (5Y 3/2), loose,
				14			SC	saturated; 60% fine to medium sand; 40% clay; weak
	4							chemical odor.
90	2	S&H	S13-	15				
	2		15					
				16				
				17				
				18				SAND (SP) - dark olive gray (5Y 3/2), loose, saturated;
							SP	95% fine sand; 5% clay; trace shells; no chemical odor.
				19				

Remarks:

GeoStrategies Inc.

Log of Boring

BORING NO. S-13

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7605		11/89		

Field location of boring:	Project No.: 7605	Date: 11/09/89	Boring No:
(See Plate 2)	Client: Shell Oil Company		S-13
	Location: 1800 Powell Street		
	City: Emeryville, California		Sheet 2
	Logged by: J. Vargas	Driller: Bayland	of 2
	Casing installation data:		
Drilling method: Hollow-Stem Auger			
Hole diameter: 8-Inches	Top of Box Elevation:		Datum:

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Water Level / Time / Date	Description
	1	S&H	S13-				SP		
	2		19.5	20					
3.9	1		S13-20				CH		CLAY (CH) - dark greenish gray (5BG 4/1), very soft,
				21					damp; trace roots; black organics; strong organic odor;
									no chemical odor.
				22					
									Bottom of boring at
				23					Bottom of sample at
				24					
				25					
				26					
				27					
				28					
				29					
				30					
				31					
				32					
				33					
				34					
				35					
				36					
				37					
				38					
				39					

Remarks:

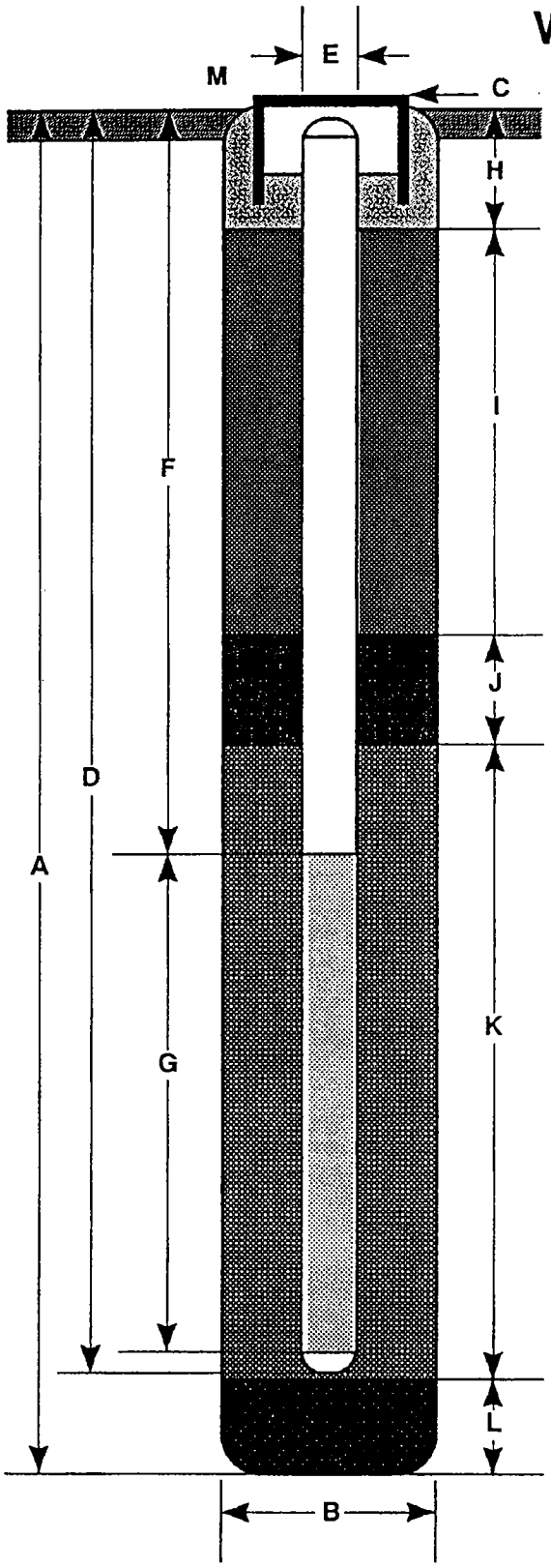
GeoStrategies Inc.

Log of Boring

BORING NO. S-13

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7605		11/89		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 20.5 ft.

B Diameter of Boring 8 in.
Drilling Method Hollow-Stem Auger

C Top of Box Elevation _____ ft.
☐ Referenced to Mean Sea Level
☐ Referenced to Project Datum

D Casing Length 20.5 ft.
Material Schedule 40 PVC

E Casing Diameter 3 in.

F Depth to Top Perforations 7 ft.

G Perforated Length 13.5 ft.
Perforated Interval from 7 to 20.5 ft.
Perforation Type Machine Slot
Perforation Size 0.02 in.

H Surface Seal from 0 to 0.5 ft.
Seal Material Concrete

I Backfill from 0.5 to 4 ft.
Backfill Material Cement Grout

J Seal from 4 to 5 ft.
Seal Material Bentonite

K Gravel Pack from 5 to 20.5 ft.
Pack Material Lonestar 2/12 Sand

L Bottom Seal _____ ft.
Seal Material _____

M Christy Box with locking cap and lock.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO.
S-13

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7605		11/89		

Field location of boring: (See Plate 2)	Project No.: 7605	Date: 11/08/89	Boring No: S-14
	Client: Shell Oil Company		
	Location: 1800 Powell Street		
	City: Emeryville, California		Sheet 1 of 2
	Logged by: J. Vargas	Driller: Bayland	
	Casing installation data:		
Drilling method: Hollow-Stem Auger			
Hole diameter: 8-Inches - Reamed with 12-Inches	Top of Box Elevation:		Datum:
	Water Level: 9.25 feet		
	Time: 8:30		
	Date: 11/09/89		

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				1				PAVEMENT SECTION - 2 feet
5.6								
				2				
1.6								Perched water at 2.0 feet (saturated)
				3				
							SC	FILL - Clayey Sand with Gravel - olive (5Y 4/3), loose,
				4				saturated; 40% fine to coarse gravel; 20% clay; trace
NS	NS	S&H						boulders; moderate chemical odor.
		push		5				
				6				
				7				
				8				
	11	S&H		9				
	21							refuse and tar paper; damp at 9.0 feet; moderate
25.5	22		S14-10	10				chemical odor.
				11				
				12				
				13				
				14				
	13	S&H	S14-					
	15		14.5	15				saturated; weak chemical odor.
4.9	13		S14-15					
				16				
				17				
				18				
				19				

Remarks:

GeoStrategies Inc.

Log of Boring

BORING NO. S-14

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7605		11/89		

Field location of boring: (See Plate 2)	Project No.: 7605	Date: 11/08/89	Boring No: S-14
	Client: Shell Oil Company		
	Location: 1800 Powell Street		
	City: Emeryville, California		Sheet 2 of 2
	Logged by: J. Vargas	Driller: Bayland	
Drilling method: Hollow-Stem Auger	Casing installation data:		
Hole diameter:	Top of Box Elevation:	Datum:	

	Water Level			
	Time			
	Date			

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
	2	S&H		20			SP	SAND (SP) - dark olive gray (5Y 3/2), loose, saturated; 95% fine sand; 5% clay; no chemical odor.
	3							
0.3	4		S14-20					
				21				
				22				
								stiffer at 22.0 feet.
				23				
				24			CH	CLAY (CH) - dark greenish gray (5BG 4/1), very soft, damp; 100% clay; high plasticity; trace roots and black organics; strong organic odor; no chemical odor.
	0							
	0			25				
0	1		S14-25					
				26				Bottom of boring at 25.5 feet.
								Bottom of sample at 25.5 feet.
				27				
				28				
				29				
				30				
				31				
				32				
				33				
				34				
				35				
				36				
				37				
				38				
				39				

Remarks:

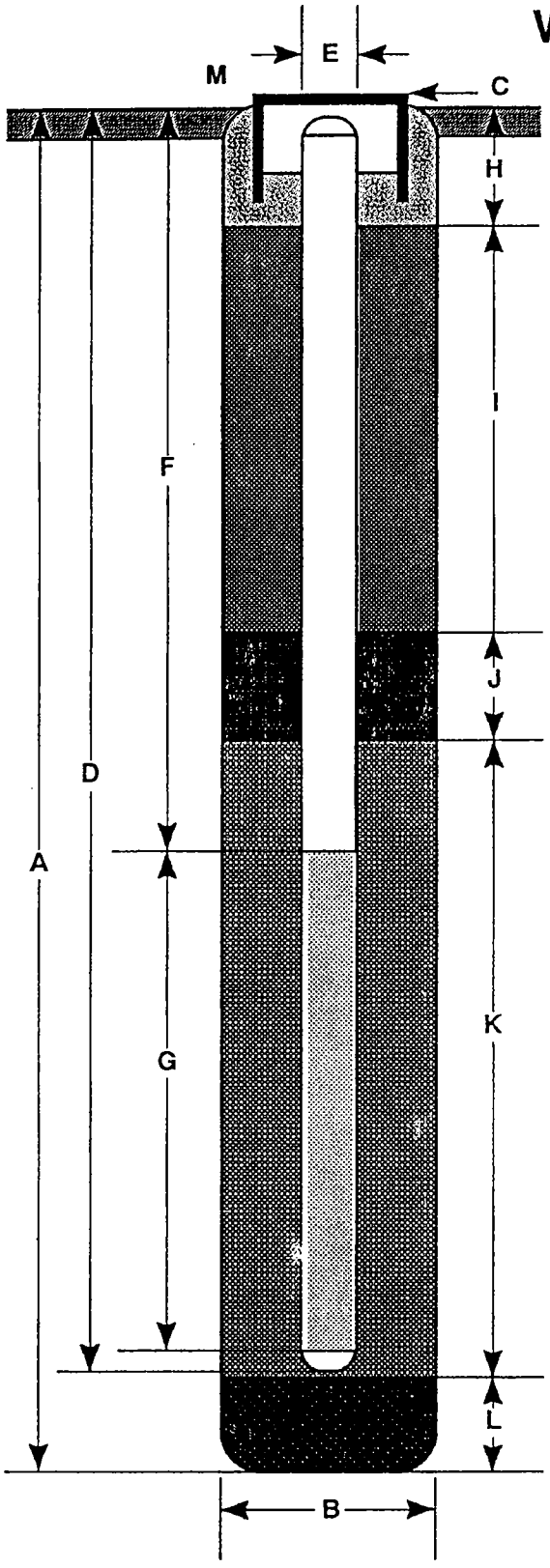
GeoStrategies Inc.

Log of Boring

BORING NO. S-14

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7605		11/89		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 25.5 ft.

B Diameter of Boring 8 in.
Drilling Method Hollow-Stem Auger

C Top of Box Elevation ft.
☐ Referenced to Mean Sea Level
☐ Referenced to Project Datum

D Casing Length 24 ft.
Material Schedule 40 PVC

E Casing Diameter 3 in.

F Depth to Top Perforations 7 ft.

G Perforated Length 17 ft.
Perforated Interval from 7 to 24 ft.
Perforation Type Machine Slot
Perforation Size 0.02 in.

H Surface Seal from 0 to 0.5 ft.
Seal Material Concrete

I Backfill from 0.5 to 4 ft.
Backfill Material Cement Grout

J Seal from 4 to 5 ft.
Seal Material Bentonite

K Gravel Pack from 5 to 24 ft.
Pack Material Lonestar 2/12 Sand

L Bottom Seal 1.5 ft.
Seal Material Natural Clay

M

Note: Depths measured from initial ground surface.

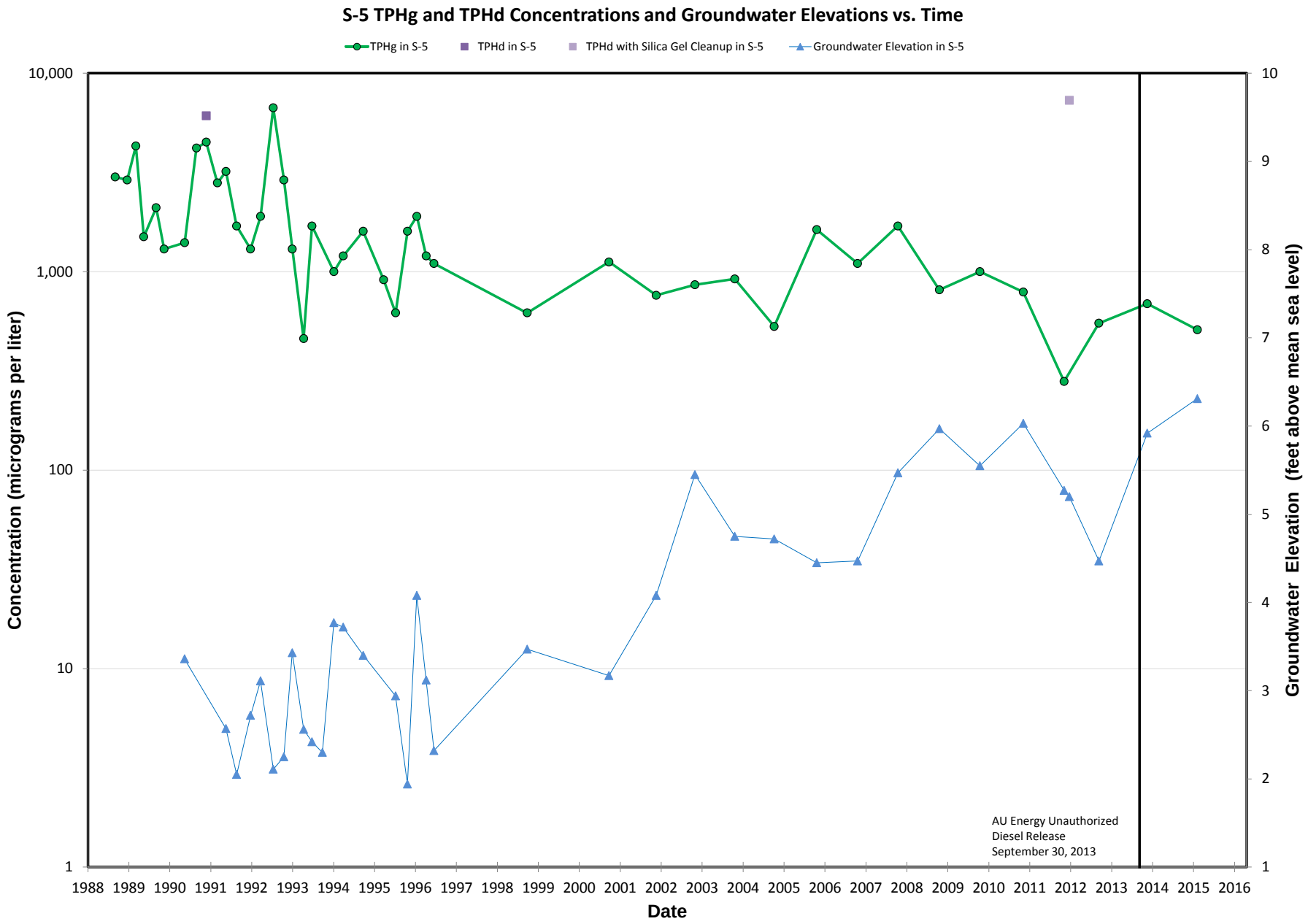
GeoStrategies Inc.

Well Construction Detail

WELL NO.
S-14

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7605		11/89		

Appendix C.
Concentration Trend Graphs


S-5 TPHg and TPHd Concentrations and Groundwater Elevations vs. Time
TPHg in S-5
TPHd in S-5
TPHd with Silica Gel Cleanup in S-5
Groundwater Elevation in S-5
Concentration (micrograms per liter)
Groundwater Elevation (feet above mean sea level)
Date
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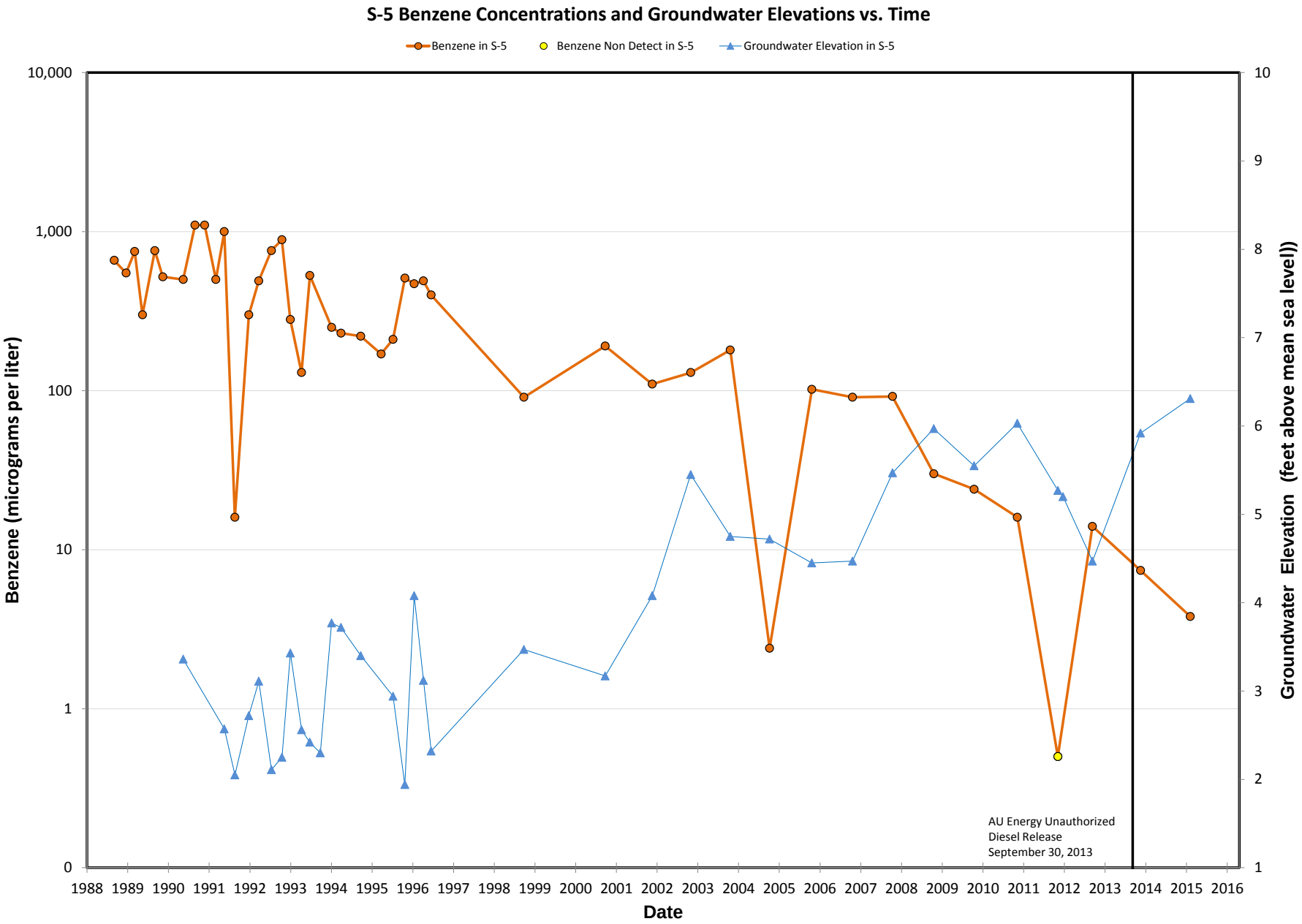
AU Energy Unauthorized
Diesel Release
September 30, 2013


S-5 Benzene Concentrations and Groundwater Elevations vs. Time
Benzene in S-5
Benzene Non Detect in S-5
Groundwater Elevation in S-5
Benzene (micrograms per liter)
Groundwater Elevation (feet above mean sea level))
Date
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AU Energy Unauthorized
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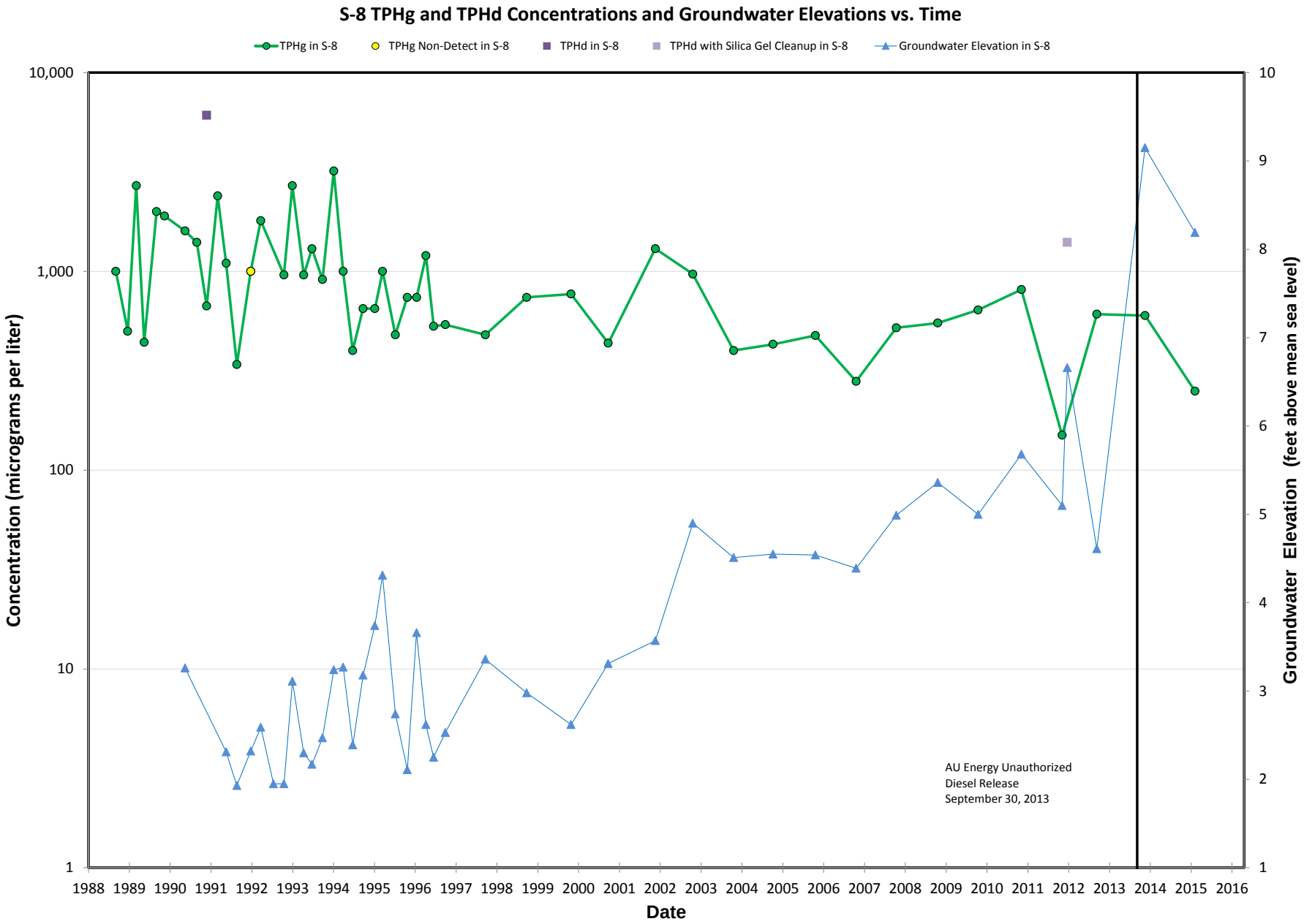
S-8 TPHg and TPHd Concentrations and Groundwater Elevations vs. Time
TPHg in S-8
TPHg Non-Detect in S-8
TPHd in S-8
TPHd with Silica Gel Cleanup in S-8
Groundwater Elevation in S-8
Concentration (micrograms per liter)
Groundwater Elevation (feet above mean sea level)
Date
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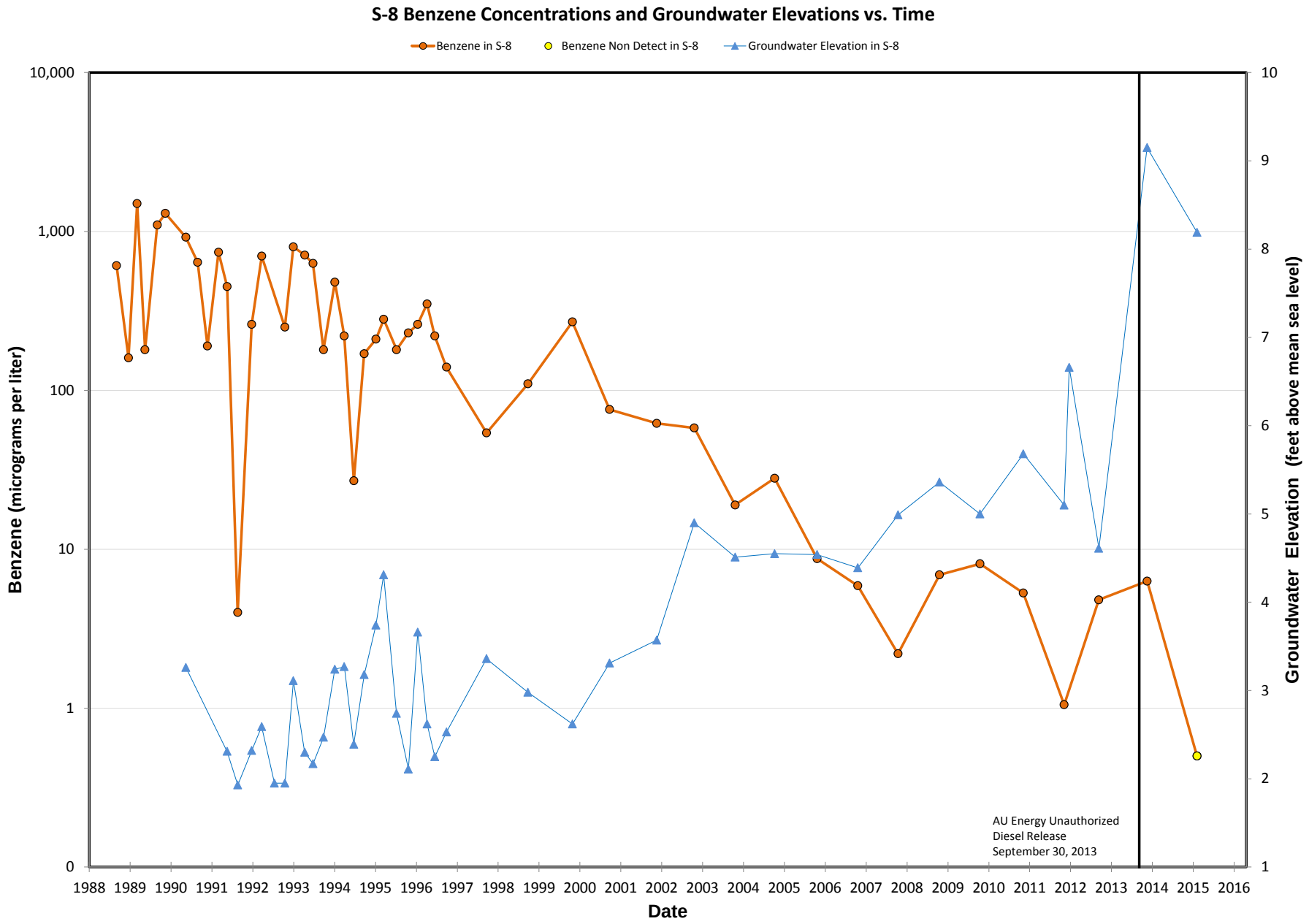
S-8 Benzene Concentrations and Groundwater Elevations vs. Time
Benzene in S-8
Benzene Non Detect in S-8
Groundwater Elevation in S-8
Benzene (micrograms per liter)
Groundwater Elevation (feet above mean sea level)
Date
10,000
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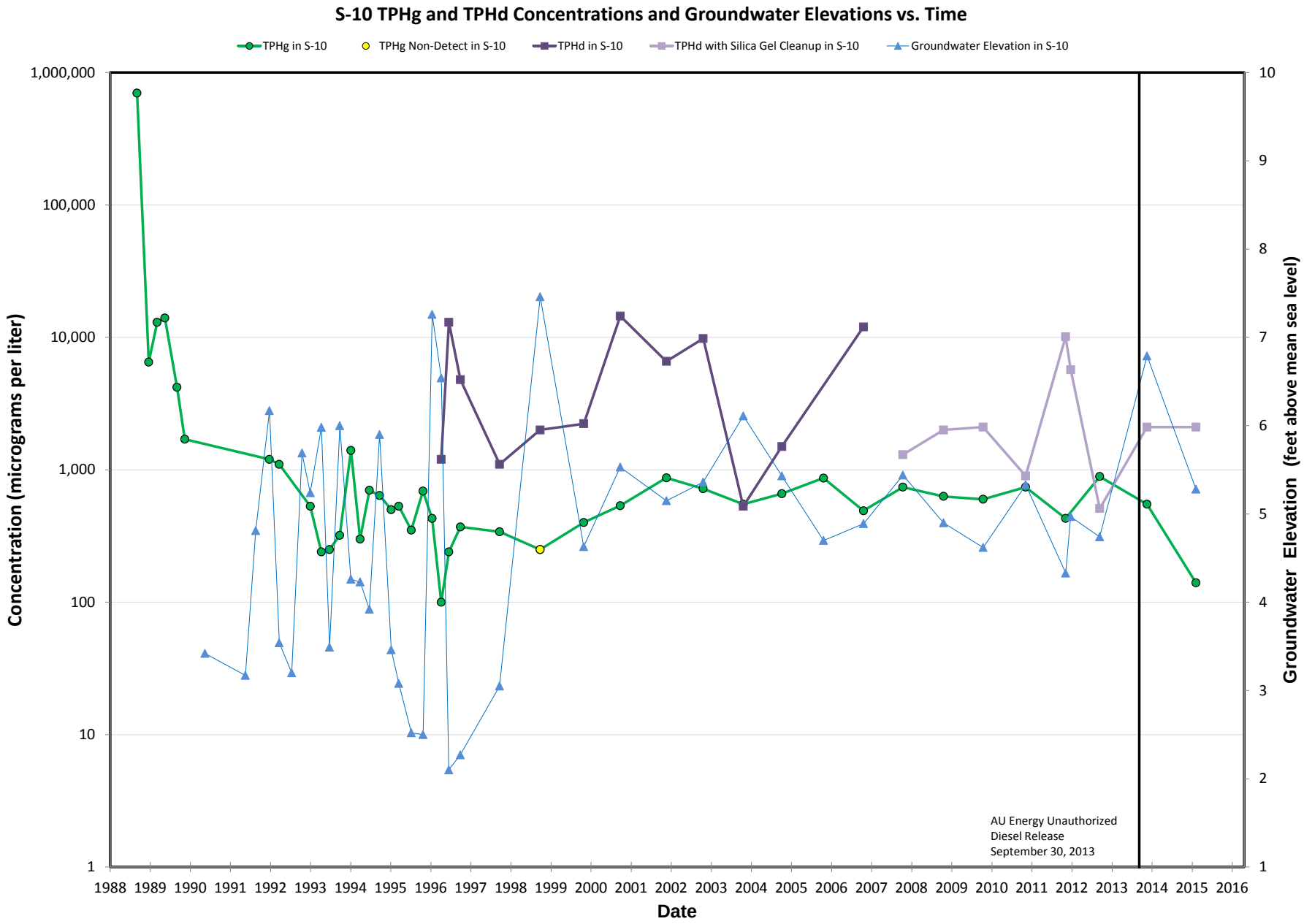
September 30, 2013


S-10 TPHg and TPHd Concentrations and Groundwater Elevations vs. Time
TPHg in S-10
TPHg Non-Detect in S-10
TPHd in S-10
TPHd with Silica Gel Cleanup in S-10
Groundwater Elevation in S-10
Concentration (micrograms per liter)
1,000,000
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Groundwater Elevation (feet above mean sea level)
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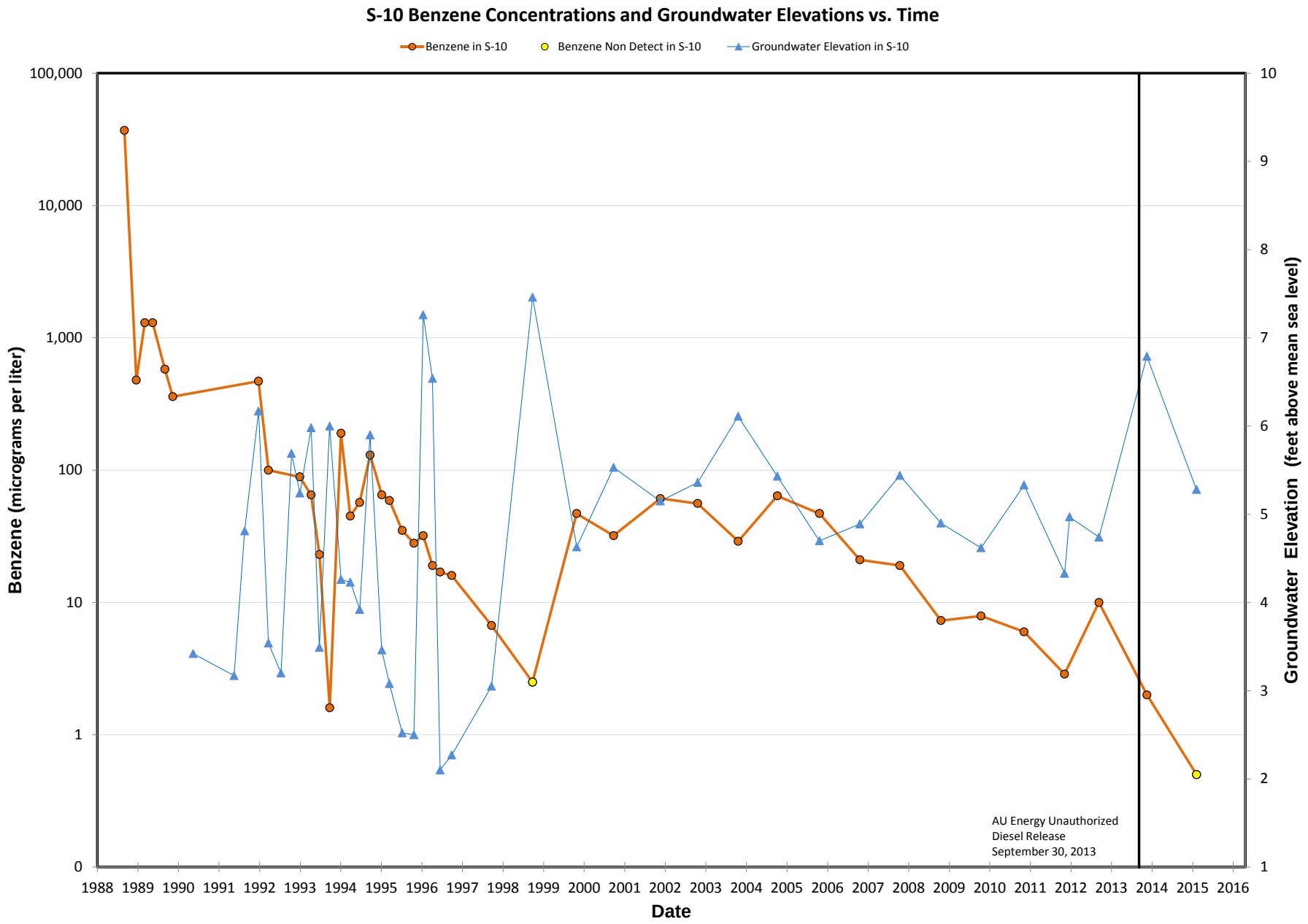
Date
AU Energy Unauthorized
Diesel Release
September 30, 2013


S-10 Benzene Concentrations and Groundwater Elevations vs. Time
Benzene in S-10
Benzene Non Detect in S-10
Groundwater Elevation in S-10
Benzene (micrograms per liter)
100,000
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Groundwater Elevation (feet above mean sea level)
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Date
AU Energy Unauthorized
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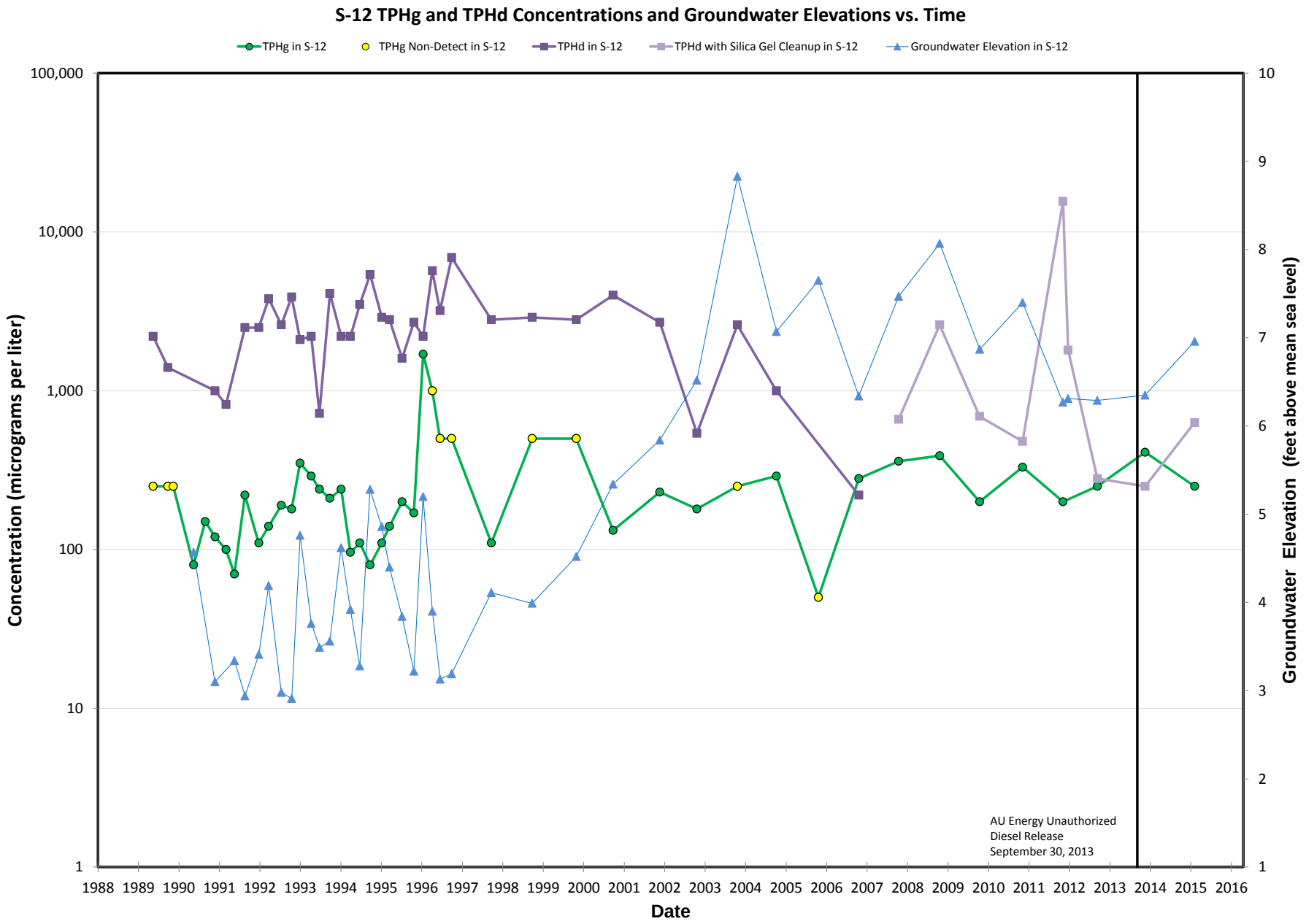
S-12 TPHg and TPHd Concentrations and Groundwater Elevations vs. Time
TPHg in S-12
TPHg Non-Detect in S-12
TPHd in S-12
TPHd with Silica Gel Cleanup in S-12
Groundwater Elevation in S-12
Concentration (micrograms per liter)
Groundwater Elevation (feet above mean sea level)
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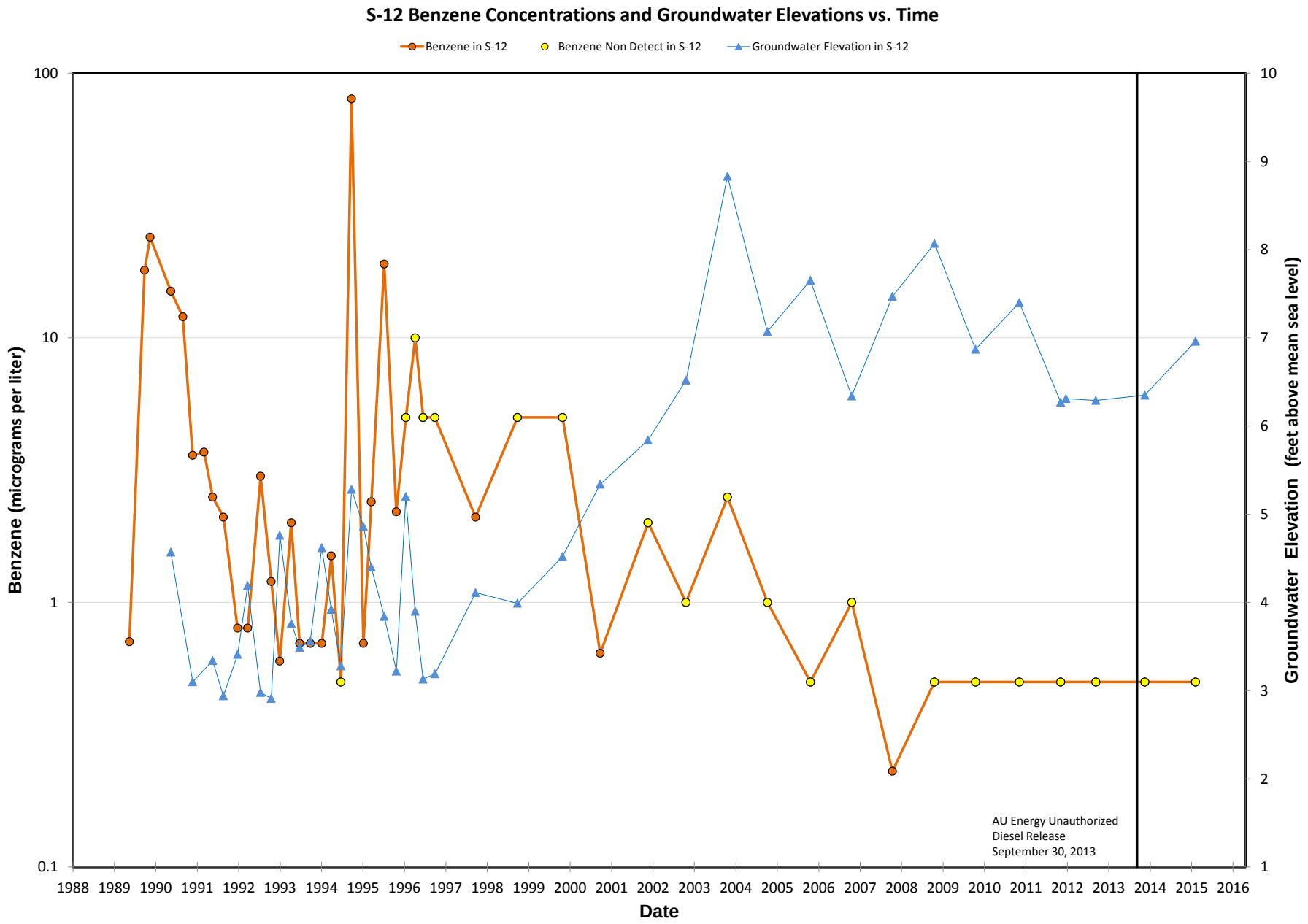
S-12 Benzene Concentrations and Groundwater Elevations vs. Time
Benzene in S-12
Benzene Non Detect in S-12
Groundwater Elevation in S-12
Benzene (micrograms per liter)
Groundwater Elevation (feet above mean sea level)
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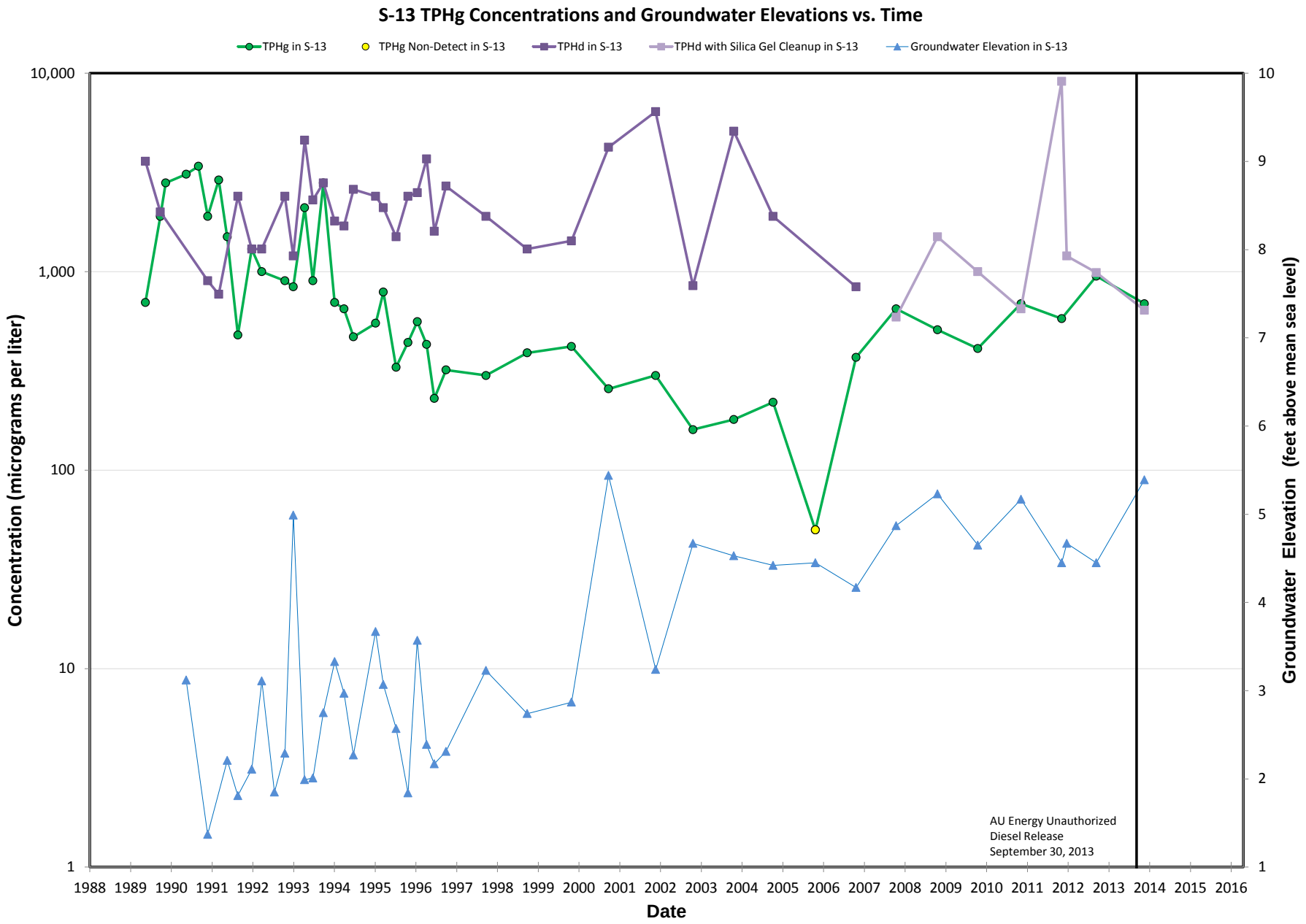
S-13 TPHg Concentrations and Groundwater Elevations vs. Time
TPHg in S-13
TPHg Non-Detect in S-13
TPHd in S-13
TPHd with Silica Gel Cleanup in S-13
Groundwater Elevation in S-13
Concentration (micrograms per liter)
Groundwater Elevation (feet above mean sea level)
Date
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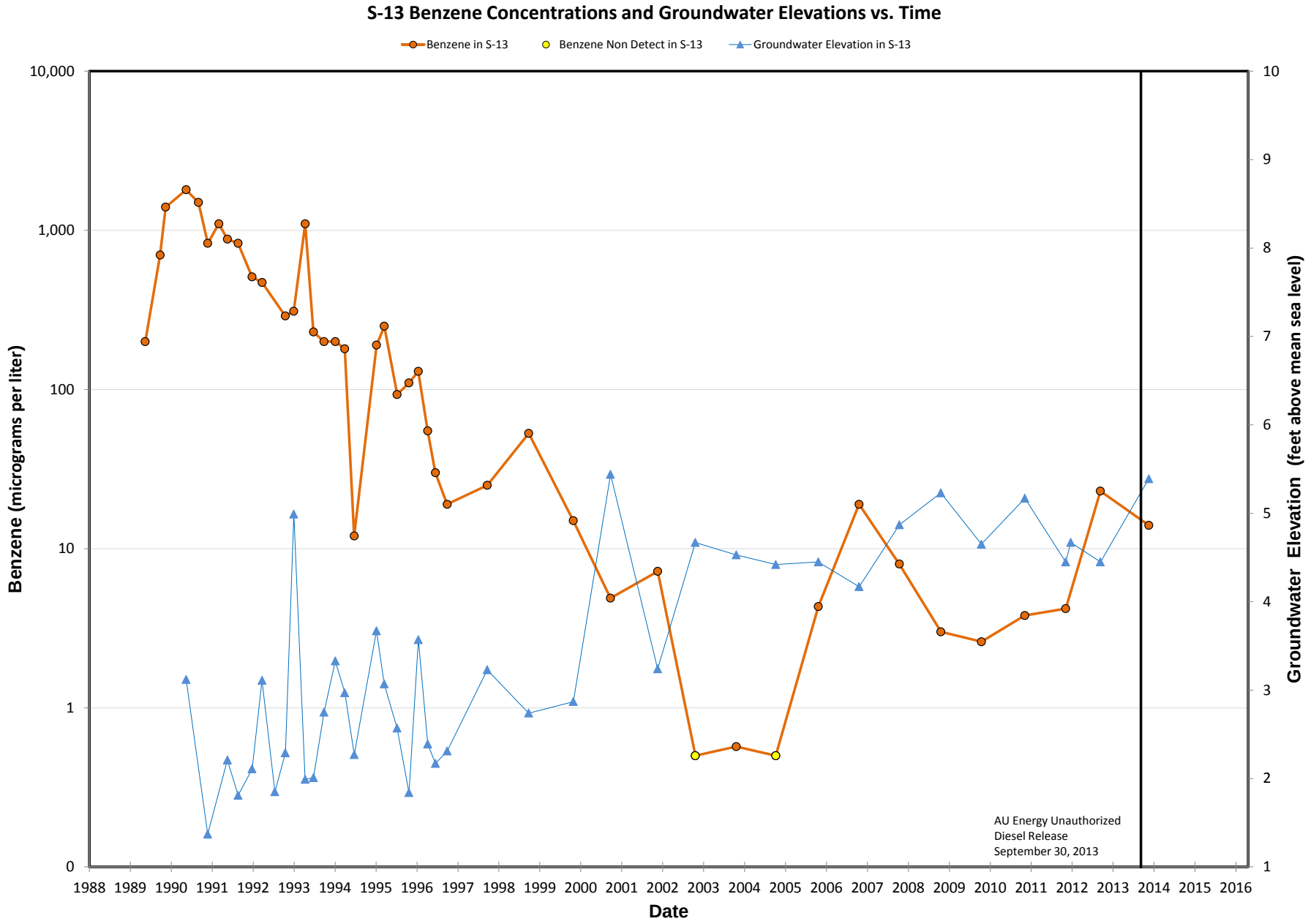
S-13 Benzene Concentrations and Groundwater Elevations vs. Time
Benzene in S-13
Benzene Non Detect in S-13
Groundwater Elevation in S-13
Benzene (micrograms per liter)
Groundwater Elevation (feet above mean sea level)
Date
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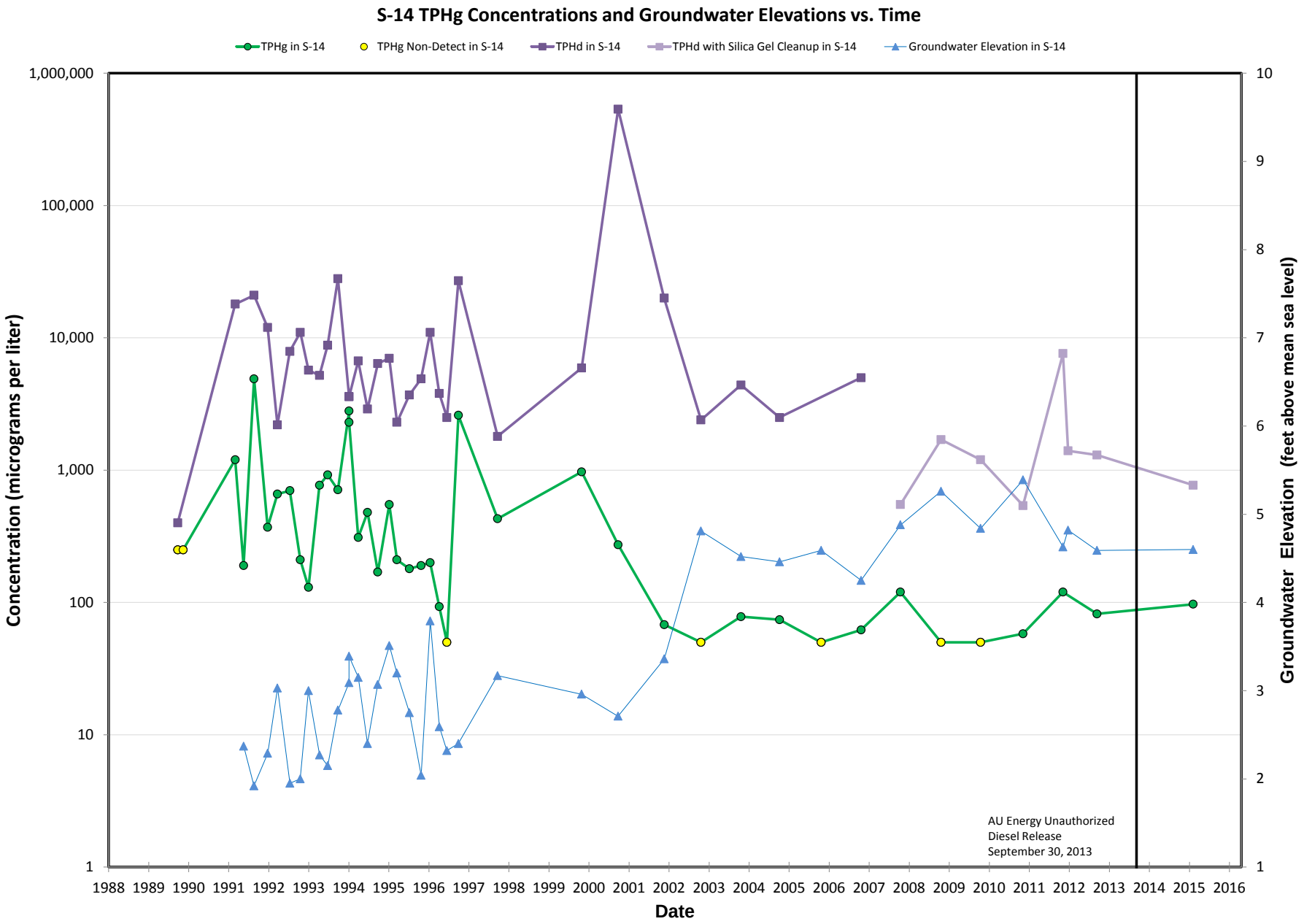
S-14 TPHg Concentrations and Groundwater Elevations vs. Time
TPHg in S-14
TPHg Non-Detect in S-14
TPHd in S-14
TPHd with Silica Gel Cleanup in S-14
Groundwater Elevation in S-14
Concentration (micrograms per liter)
Groundwater Elevation (feet above mean sea level)
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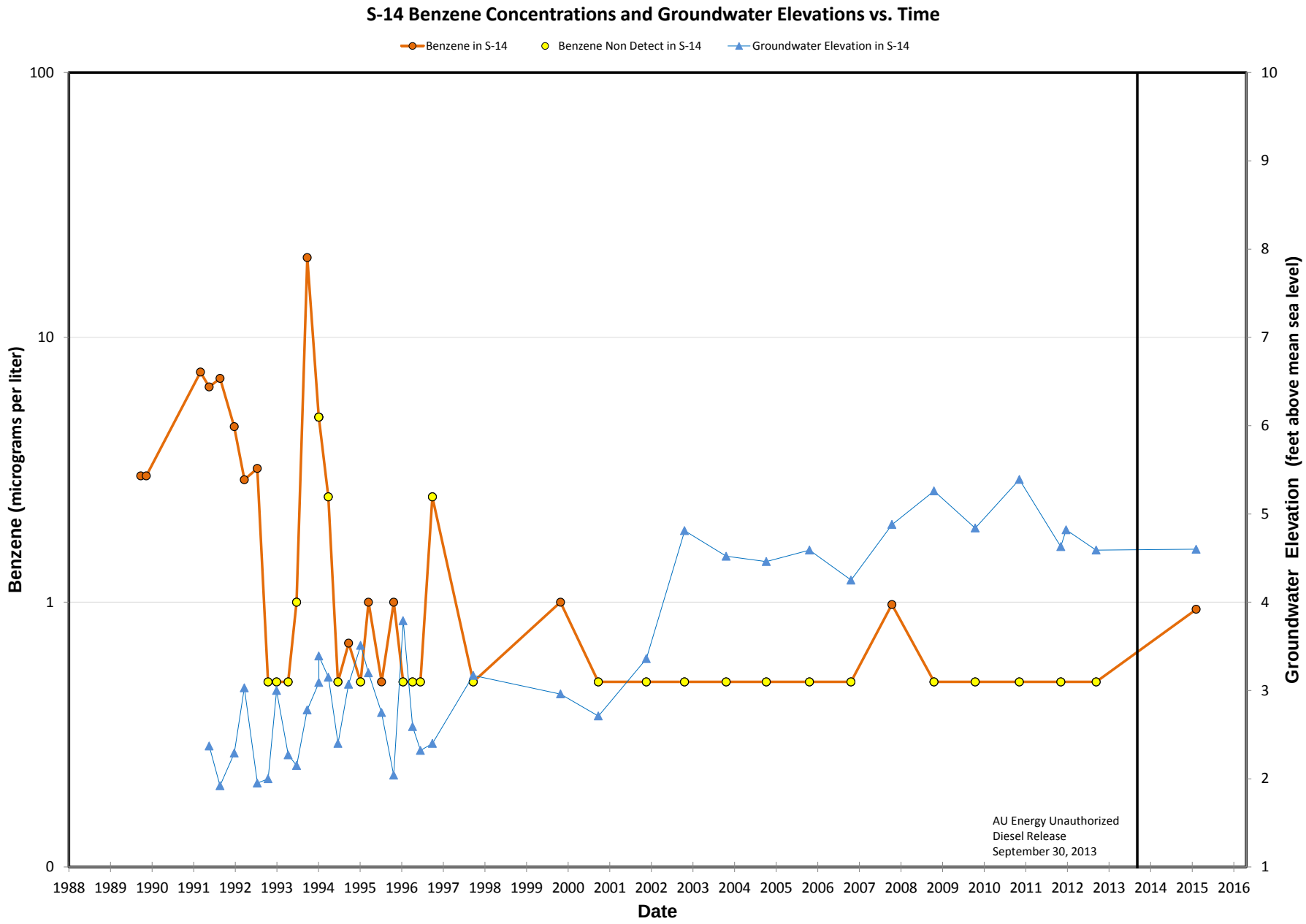
S-14 Benzene Concentrations and Groundwater Elevations vs. Time
Benzene in S-14
Benzene Non Detect in S-14
Groundwater Elevation in S-14
Benzene (micrograms per liter)
Groundwater Elevation (feet above mean sea level)
Date
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September 30, 2013

Appendix D.
Historical Documents

Weiss Associates Environmental and Geologic Services

5500 Shellmound Street, Emeryville, CA 94608-2411 Fax: 510-547-5043 Phone: **510-450-6000**

March 6, 1996

Susan Hugo
Alameda County Department
of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Re: **Investigation Workplan**
Shell Service Station
WIC #204-2495-0101
1800 Powell Street
Emeryville, California
WA Job #81-0794-04

Dear Ms. Hugo:

As you reqested in your meeting with Shell Oil Products Company (Shell) engineer R. Jeff Granberry on November 20, 1995, Weiss Associates (WA) submits this workplan to assess whether petroleum or other hydrocarbons are in soil and ground water downgradient of the Shell site referenced above (Figure 1). To meet this objective, WA proposes to drill and sample up to four soil borings along the south side of Powell Street. The proposed soil boring locations are shown on Figure 2. A brief site history and WA's proposed scope of work are presented below.

Site History

The site is built on fill consisting of imported clayey and sandy soil and industrial and construction waste and refuse. Paraffine Company bought ten acres on the Emeryville waterfront in 1884 and filled areas along the shoreline through 1969. Based on available log data, the fill at the Shell service station site is at least 10 feet deep and appears continuous across the site.

Products manufactured by Paraffine included: linoleum and other hard-surfaced floor coverings, roofing and building materials, paints, varnishes, lacquers and enamels. A 1949 aerial photograph shows two above ground storage tanks located about 700 feet north of the current Shell site. The contents of the former above ground tanks are unknown. Further information about Paraffine Plant is presented in the attached Journal of the Emeryville Historical Society, Volume IV, Number 2, Summer 1993 (Attachment A).

A previously completed site assessment report described a 1957 aerial photograph that showed that the area of the Shell site was completely filled with soil and waste material. Dumping

was active west of the Shell site. According to the site assessment report, a 1969 aerial photograph indicated that all of the above ground tanks observed in earlier photographs had been removed. The removal of the tanks was apparently related to the closure of the Paraffine facility in the 1960s.

By 1970, land use in the area began to convert from industrial complexes to hotels, condominiums, restaurants and office buildings. Given present and historical land use within the vicinity of the Shell service station, it does not appear that the shallow ground water is likely to be used as a potable, industrial or agricultural water source. Also, over 3,000 parts per million (ppm) total dissolved solids (TDS) have been detected in ground water from the Shell wells and therefore the water is not suitable for domestic or municipal supply by state standards.

In September 1982, an underground fuel leak was reported in the Shell service station in which the fiberglass piping connected to the underground storage tank was damaged and about 3,200 gallons of super unleaded gasoline was lost.

Shell has installed seven ground water monitoring wells in the site vicinity since 1988. Quarterly monitoring and sampling of the wells began in 1988. Up to 2.38 feet of separate-phase hydrocarbons (SPH) have been detected on top of ground water in well S-9 (Figure 2) since February 22, 1995. The SPH appears to be an oil consisting of hydrocarbons heavier than gasoline. Thus, it is unlikely that the SPH did not result from Shell's operation onsite because Shell has not operated a garage or waste oil tank.

Ground water depth in the site vicinity ranges from 7.5 to 12 feet below existing grade. Local ground water flow direction is to the south. Up to 4,900 parts per billion (ppb) TPH-D, 1600 ppb TPH-G and 530 ppb benzene were detected in the most recent quarterly monitoring event (Attachment B).

In November 1995, WA collected a SPH sample from monitoring well S-9 (Figure 2) and submitted the sample to Shell's Westhollow analytical laboratory in Houston, Texas for analysis. The analysis indicated that the SPH is about 50% gasoline and 50% of a hydrocarbon mixture with carbon range of n-C_{20} to over n-C_{50}, possibly roofing tar. The laboratory's report is in Attachment C.

Proposed Scope of Work

The scope of work for this investigation includes:

- Locating underground utilities downgradient of the site and preparing a site-specific health and safety plan;
- Obtaining city encroachment permits from the Emeryville Department of Public Works and drilling permits from the Alameda County Zone 7 Water Agency;

- Drilling four soil borings (Figure 2) using a Geoprobe drill rig, collecting soil samples at 5-foot intervals for hydrogeologic description and possible chemical analysis. WA's standard field procedures are included as Attachment D;
- Analyzing selected soil samples for total petroleum hydrocarbons between C_5 and C_{32}, petroleum oil and grease, metals, volatile organic compounds, and semi-volatile organic compounds;
- Collecting one ground water sample from each boring for possible laboratory analysis;
- Preparing a subsurface investigation report that will include the site background, and present the results of the investigation.

WA will implement this workplan once Shell receives your written approval. Please call Tom Fojut at (510)450-6000 if you have any questions or comments.

Sincerely,
Weiss Associates

Yi-Ran Wu
Staff Engineer

James W. Carmody, C.H.G.
Senior Project Hydrogeologist

Encl.: Figures
Attachments A - Journal of the Emeryville Historical Society
Attachment B - Fourth Quarter 1995 Monitoring Report
Attachment C - Separate-Phase Hydrocarbon Analysis Report
Attachment D - Standard Field Procedures

cc: R. Jeff Granberry, Shell Oil Company, P.O. Box 4023, Concord, California 94524
Kevin Graves, Regional Water Quality Control Board - San Francisco Bay Region, 2101 Webster Street, Suite 500, Oakland, California 94612

YEW/JWC:all
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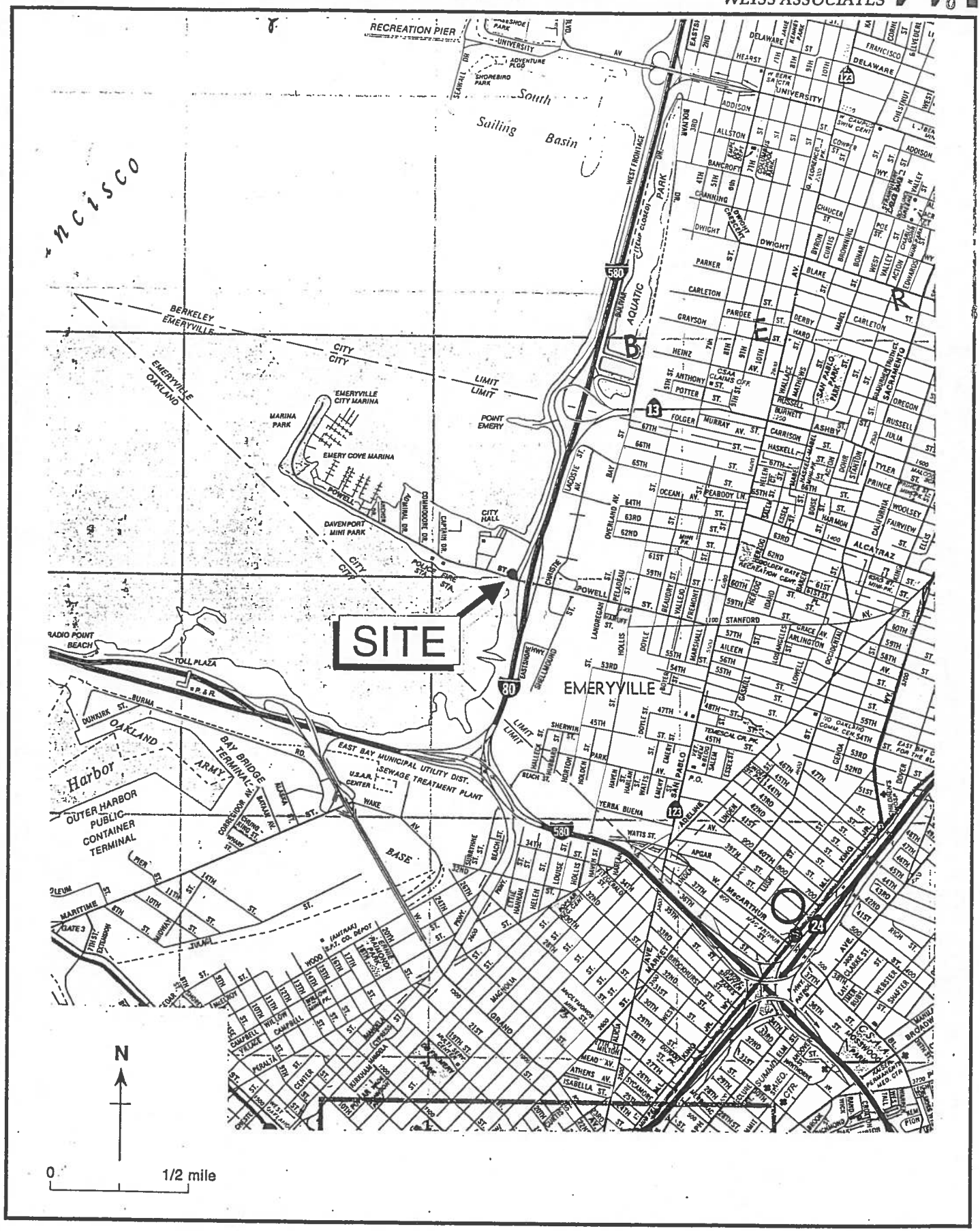


Figure 1. Site Location Map - Shell Service Station WIC# 204-2495-01, 1800 Powell Street, Emeryville, California

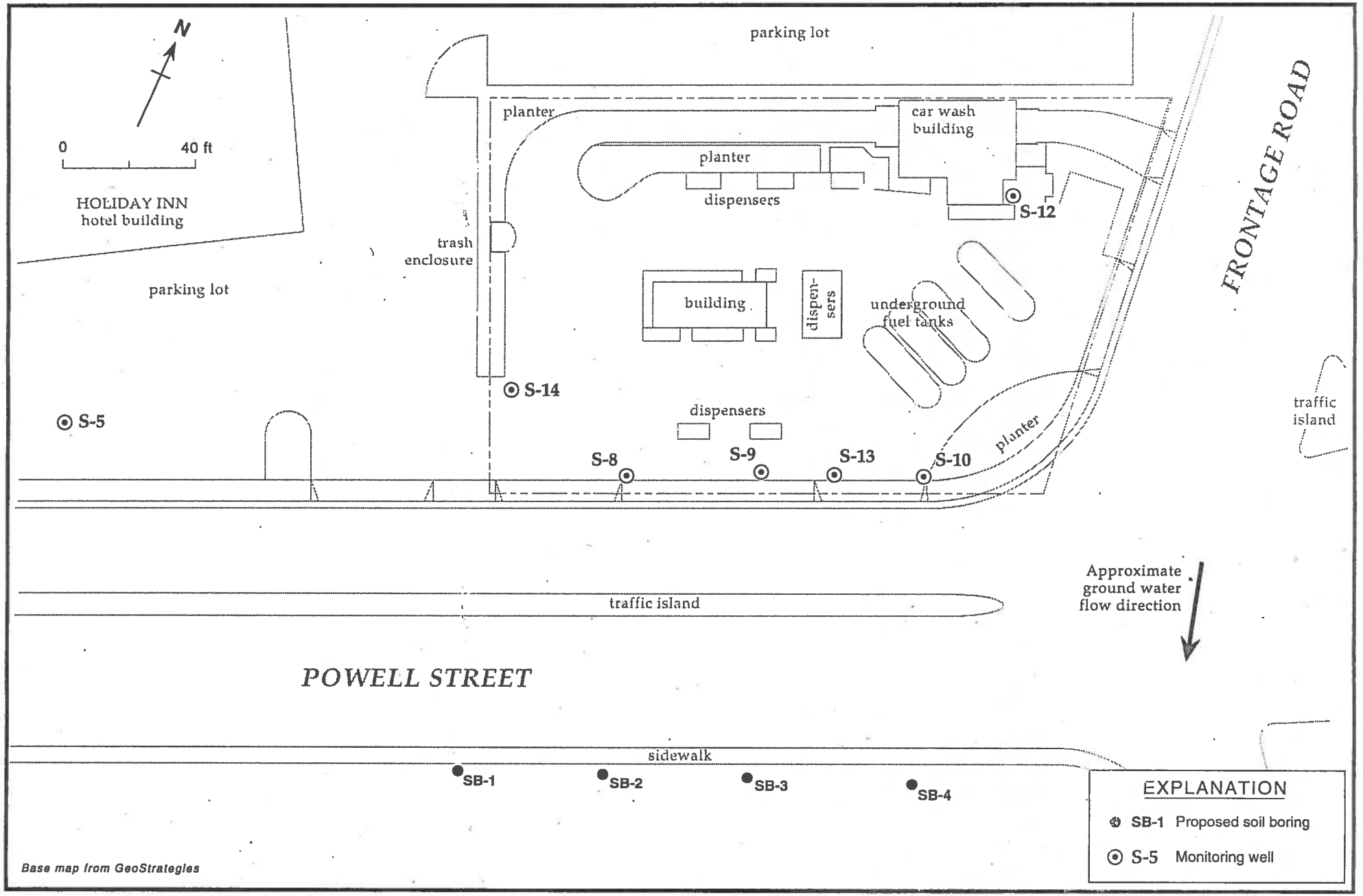


Figure 2. Proposed Soil Boring Locations - Shell Service Station - WIC# 204-2495-0107, 1800 Powell Street, Emeryville, California

ATTACHMENT A

JOURNAL OF THE EMERYVILLE HISTORICAL SOCIETY

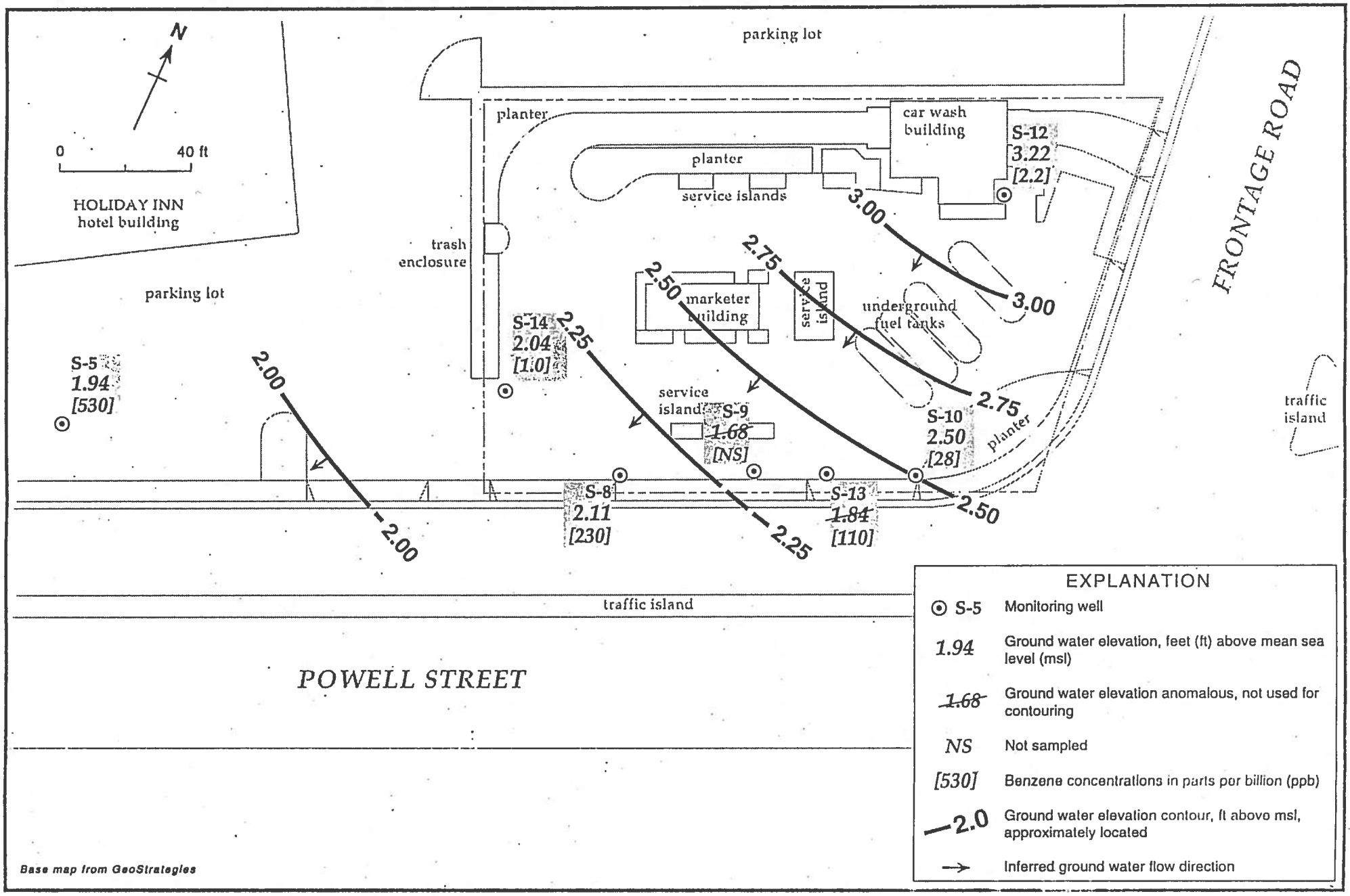
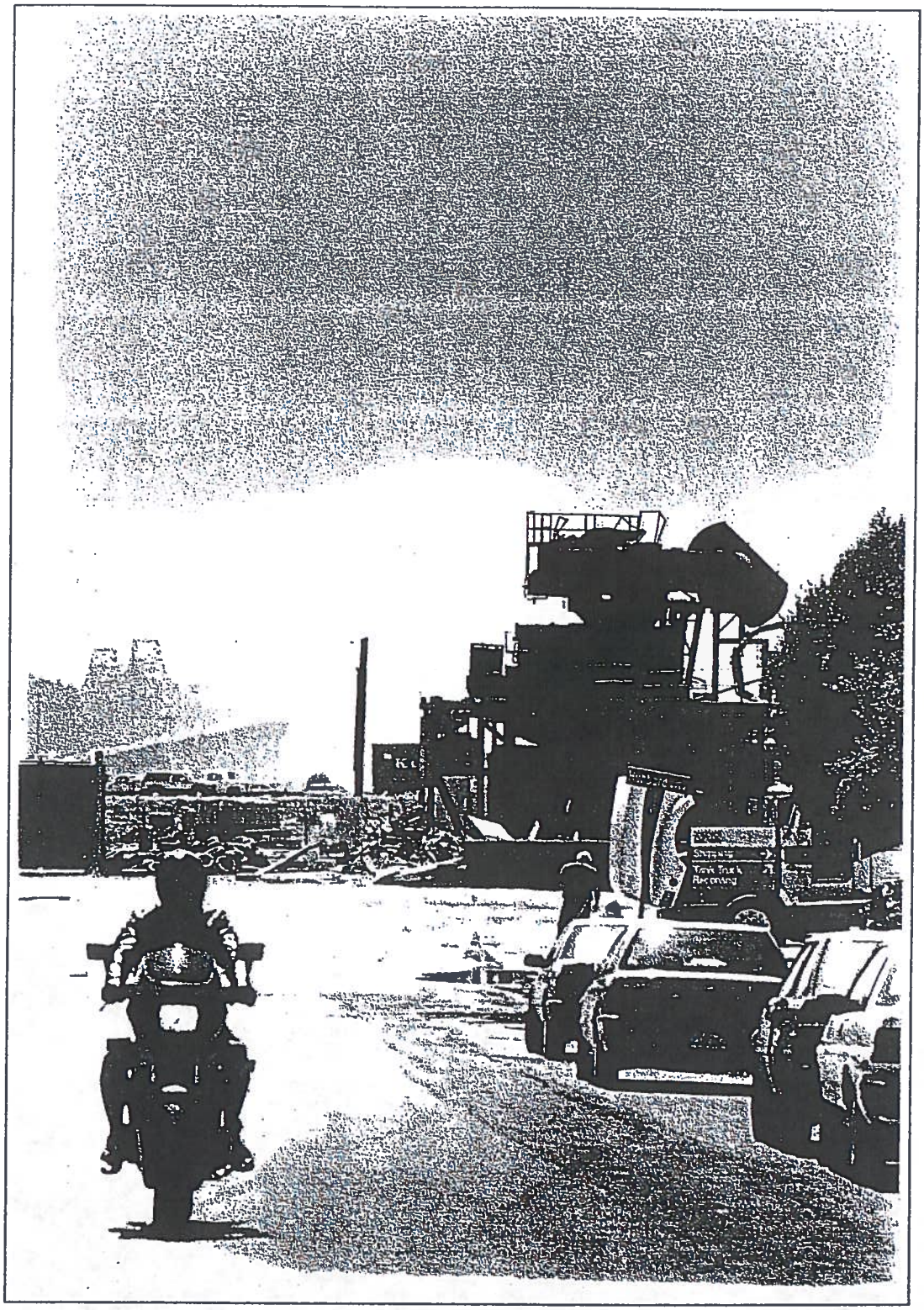


Figure 2. Monitoring Well Locations, Ground Water Elevation Contours, and Benzene Concentrations in Ground Water, December 8, 1995 - Shell Service Station - WIC# 204-2495-0107, 1800 Powell Street, Emeryville, California

THE JOURNAL OF THE EMERYVILLE HISTORICAL SOCIETY
VOLUME IV, NUMBER 2
SUMMER 1993

Gophers
. . . AND THE MARCH OF INDUSTRY
A HISTORY OF THE PARAFFINE PAINT CO.



What's coming and what's going: . This 1993 photograph by Beatriz Coll shows the ruins of Judson Steel Works silhouetted between Hubbard Street and the Bay Bridge (Copyright 1993 by Coll Photography).

JOURNAL
of the
EMERYVILLE HISTORICAL SOCIETY

Volume IV, Number 2 Summer 1993

Gophers
. . . AND THE MARCH OF INDUSTRY

(A History of the Paraffine Paint Company)
By Ward Hill.....Page 4

Goodbye Westinghouse
By Arrol Gellner.....Page 8

Credits:
Historical photographs courtesy of the Oakland Public Library and Vernon J. Sappers
Contemporary photographs by Donald Hausler
Editing, design, and production by Arrol Gellner, Donald Hausler, and Nancy Smith
Screening and printing by Copymat, Berkeley, California

The Journal of the Emeryville Historical Society is a quarterly publication sent to members and subscribers of the Emeryville Historical Society, a nonprofit corporation.
Back issues are available from the EHS.

Gophers
. . . AND THE MARCH OF INDUSTRY

A History of the Paraffine Paint Company
By Ward Hill

What do gopher poison, one of the largest industrial complexes in Alameda County, and the Emery Bay Public Market have in common?

The answer to this question involves one of the earliest industries in the history of Emeryville, the Paraffine Paint Company, which opened its manufacturing facility in 1884 on a 2-acre site adjacent to both San Francisco Bay and the Northern Railroad tracks. This site today is the eastern section of the Emery Bay Public Market's parking lot.

The Paraffine Paint Company was founded by Truman Pierce, a drug store owner, and Melvin Beardsley, an oil expert. Pierce and Beardsley spent most of the year 1883 trying to figure out what to do with the black, tarry, insoluble residue left as a byproduct after refining California petroleum (which has a particularly high asphalt content).

One day Mr. Pierce accidentally knocked over a can of gopher poison into a barrel of the petroleum residue, which immediately began to dissolve. The two men immediately realized that the liquefied asphalt produced by combining the gopher poison (which is largely carbon disulphide) with the petroleum residue made an excellent acid-proof paint. The next step was to form a company and begin manufacture.

The Paraffine Paint Company initially produced only asphalt paint from the simple wood-frame building the company erected in 1884 in Emeryville. The asphalt paint, known as P&B

An aerial view of the Pabco plant in its heyday. The plant extended from the Southern Pacific main line to the waterfront and beyond, as space requirements dictated. The filled-in wharf area at foreground is the approximate location of the present Charley Brown's Restaurant. At background is the Westinghouse building with its colossal roof sign.

paint for the initials of the company's founders, proved to be an excellent preservative and waterproofing material for both metal and wood. The company's first major contract was waterproofing the piers along the San Francisco waterfront with P&B paint. By 1887, the Paraffine Paint Company was producing 15,000 gallons of asphalt paint from its recently-opened plant.

Although the company's main office was in San Francisco, the Paraffine Paint Company decided to locate their factory in Emeryville for the same reasons that eventually drew many other industries to the city: cheap land; proximity to raw materials; access to both local and international markets; and excellent rail and water transportation connections. Another advantage of the Emeryville site for Paraffine was that when the company needed more land for expansion, they simply filled in San Francisco Bay.

During the 1890s, the firm's original wood-frame buildings were replaced with 5 more substantial brick structures and an oil refinery (none of these structures are extant today). As the company increased the size of its facility, it also increased its product line, which during the 1890s included a variety of waterproof roofing and building papers it had developed by soaking burlap with the asphalt paint it had invented in 1883. When burlap became too expensive, the company replaced it with felt. When felt prices got too high, it constructed its own felt manufacturing plant.

Although the 1906 earthquake destroyed Paraffine's' main office in San Francisco, the Emeryville factory was not damaged, thus permitting it to take advantage of the significant increase in demand for building materials needed for the rebuilding of San Francisco. After 1906, the company created several new divisions to produce

a wide range of new products including a full line of paints, floor covering, roofing material, and box board. As revenues increased substantially with this expansion, starting in 1912, Paraffine began buying up companies that were not related to the building materials business. In 1918, the Paraffine Paint Company and its now 8 subsidiaries combined to become the Paraffine Companies, Inc.

As a result of a capital restructuring and a new stock offering when the subsidiaries were merged, the Paraffine companies raised new funds for even more expansion of their plant facilities. The company expanded the Emeryville operation with a new linoleum plant and a large brick warehouse in 1919. This building was almost doubled in size in 1923 with additions to the north and south elevations. It is still standing today as part of the Emery Bay Public Market.

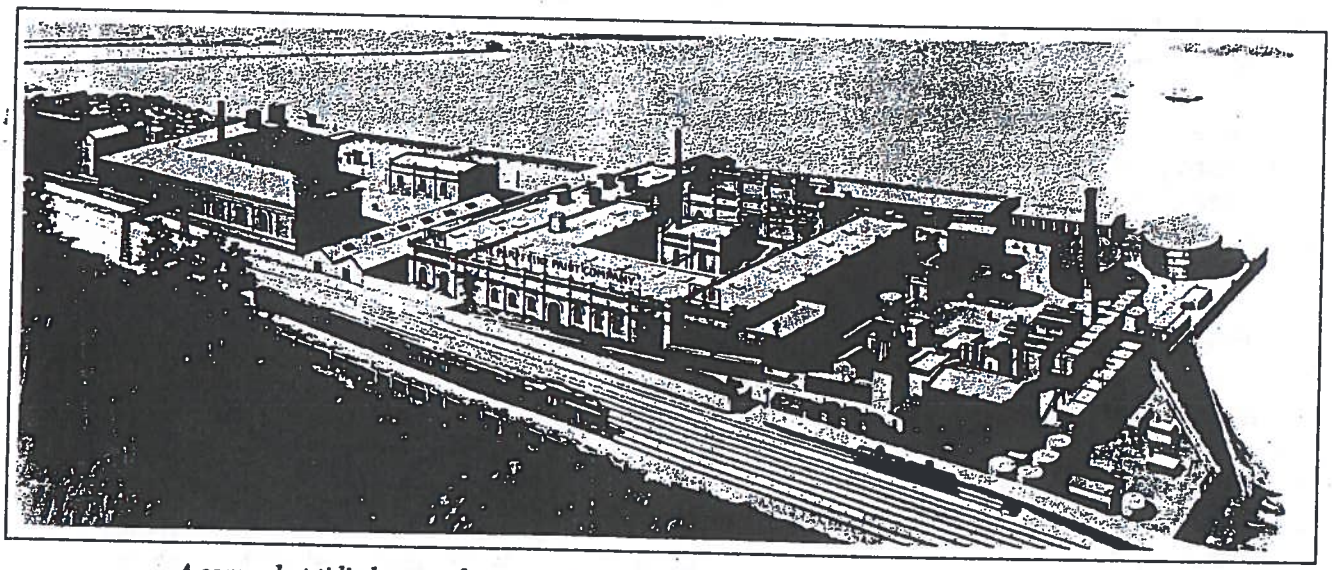
During the economic boom of the 1920s, the Paraffine Companies grew to be the largest building materials manufacturing firm in the West, with 6,000 different products. According to an article in the January 1928 Oakland Outlook, Paraffine was also the second-largest industrial firm in Alameda County. Its products were sold throughout the United States and were exported to South America, China, India, and Australia.

In 1938, the Paraffine Companies had 11 manufacturing plants on 38 of the 150 acres the company had assembled in Emeryville through filling the Bay and buying adjacent parcels. During the years before World War II, the company again expanded its line of products to include fiber shipping cases, corrugated cartons, glass bottle, paper pails and cartons, and insulation materials. This expansion led to the Paraffine Companies changing the company's name to Pabco, the brand name for most of its product line.

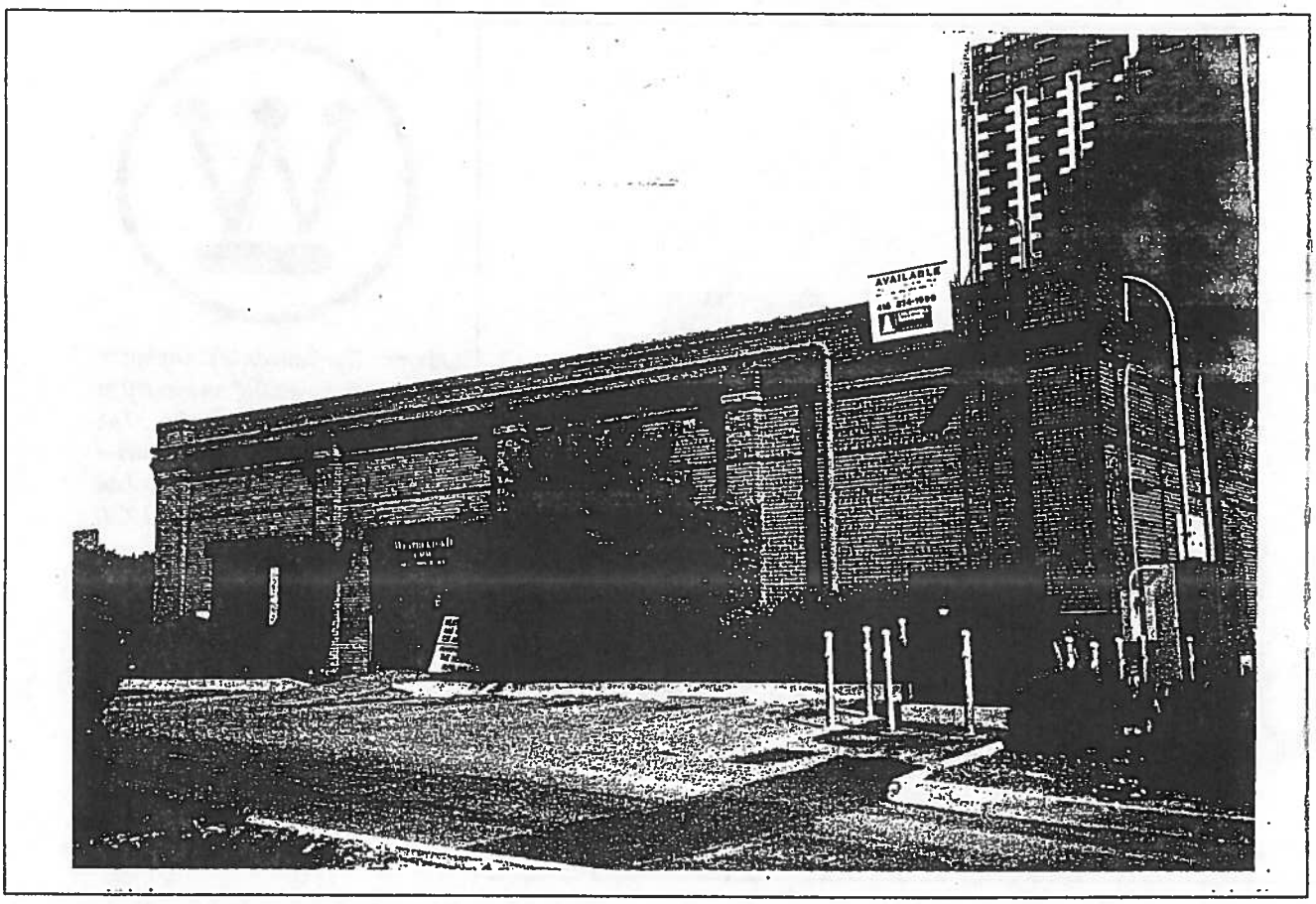
After the United States became involved in World War II, Pabco's Emeryville factory operated 24 hours a day, employing 3,000 people (in three 8-hour shifts) in support of the war effort. The concrete-block warehouse that is today part of the Emery Bay Public Market was built during the war years expansion of the Pabco complex.

Pabco also prospered and grew during the building boom that occurred after the war years. By 1956, Pabco had plants in 3 California cities besides Emeryville, and in another 5 cities outside California. 1956 was also the year Pabco acquired a 100% interest in the Fibreboard Corporation, a manufacturer of cardboard boxes.

Fibreboard had a number of strikes and other union problems during the 1960s that disrupted work at Pabco's Emeryville factory, where 9 unions represented the workers. The Emeryville facility also ran into a number of problems complying



A somewhat tidied-up rendering of the Pabco complex as it appeared during the twenties.



A contemporary photo of Weatherford BMW, which occupies one of the few remaining buildings of the Pabco plant.

with the new environmental laws.

In 1972, Pabco closed the Emeryville plant and moved some of its operation to Antioch. Pabco stopped producing building materials after the Emeryville plant closed. The company is today a division of the Fibreboard Corporation (based in Concord, California) and manufactures only specialized, high-temperature insulation.

During the 1970s, the Emeryville property was subdivided for primarily non-industrial uses, and many of the over 30 Pabco buildings were demolished. By 1975, a number of retail and restaurant tenants had opened in the Pabco warehouses that now comprise the Emery Bay Public Market. The two Pabco warehouse buildings were joined by a gabled arcade as part of the extensive 1988 renovation designed by Brocchini Architects, Oakland, which created the main retail/restaurant complex of the Emery Bay Public Market.

And now you know what gopher poison, one of the largest industrial complexes in Alameda County, and Emery Bay Public Market have in common.

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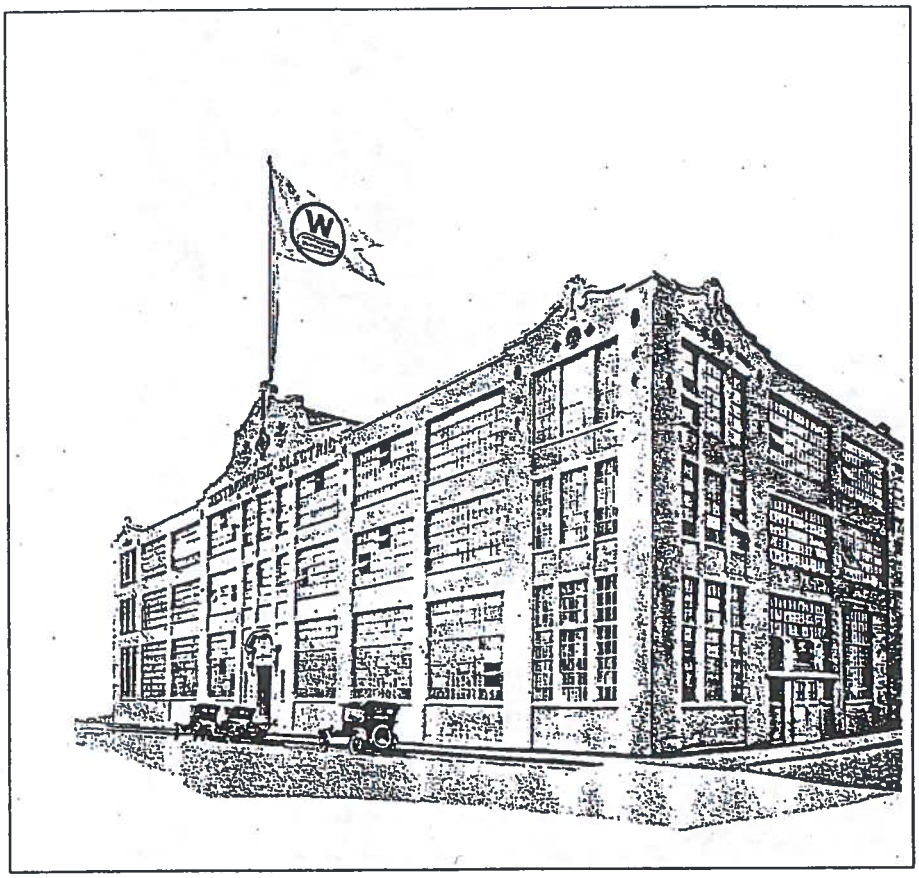

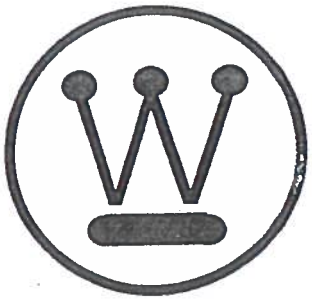

Above: The familiar Westinghouse "W" logo, suggesting an electrical circuit schematic. Left: The Westinghouse Building strikes a proud pose in this photo taken shortly after its completion in 1924.

goodbye WESTINGHOUSE

AN EMERYVILLE LANDMARK BITES THE DUST

By Arrol Gellner

Like most grownup boys, I still love a good building-wrecking show, and the demolition of the quake-damaged Westinghouse Building thruout May provided one. Carried out by the Thomas D. Eychner Wrecking Co., the demolition work was highly visible from surrounding areas. Today, the Westinghouse Building is only a memory.

But what do we really know about Westinghouse the company? Most of us associate it with refrigerators and washing machines. But there is much more to the story.

The Westinghouse Electric Corporation was once one of the world's leading manufacturers of electric motors and electrical switching equipment. Its founder, George Westinghouse, made his

facilities for the repair of transformers, turbines, and electric motors (including the Westinghouse traction motors which power BART). The additions, the last of them built of wood to conserve steel for the war effort, ultimately extended the building nearly to 53rd Street.

Unfortunately, in 1924 little was known about how concrete-frame structures would react to earthquakes. Like many other warehouses, the Westinghouse Building was designed for very heavy gravity loads but lacked "shearwalls" — sections of solid wall designed to resist the sideways or "lateral" movement which earthquakes impart to structures.

The result could be seen after the 1989 Loma Prieta earthquake. The building's facade was severely damaged, showing the telltale X-shaped cracks characteristic of shear failure. The bases of several structural columns on the south wall were sheared completely through, making repair impractical.

Fortunately, the building was no longer in use at the time of the quake. Soon afterward, the heavily-damaged front bay of the building was removed. Faced with astronomical estimates for seismic upgrading and little hope of finding a buyer, Westinghouse finally opted to demolish the structure.

The vacant Westinghouse site will require detoxification due to its contamination by hazardous materials once used in the manufacture and repair of electrical gear (in particular, Polychlorinated Biphenyls or PCBs). These materials, once used routinely and without special precautions, are now classified as extremely toxic.

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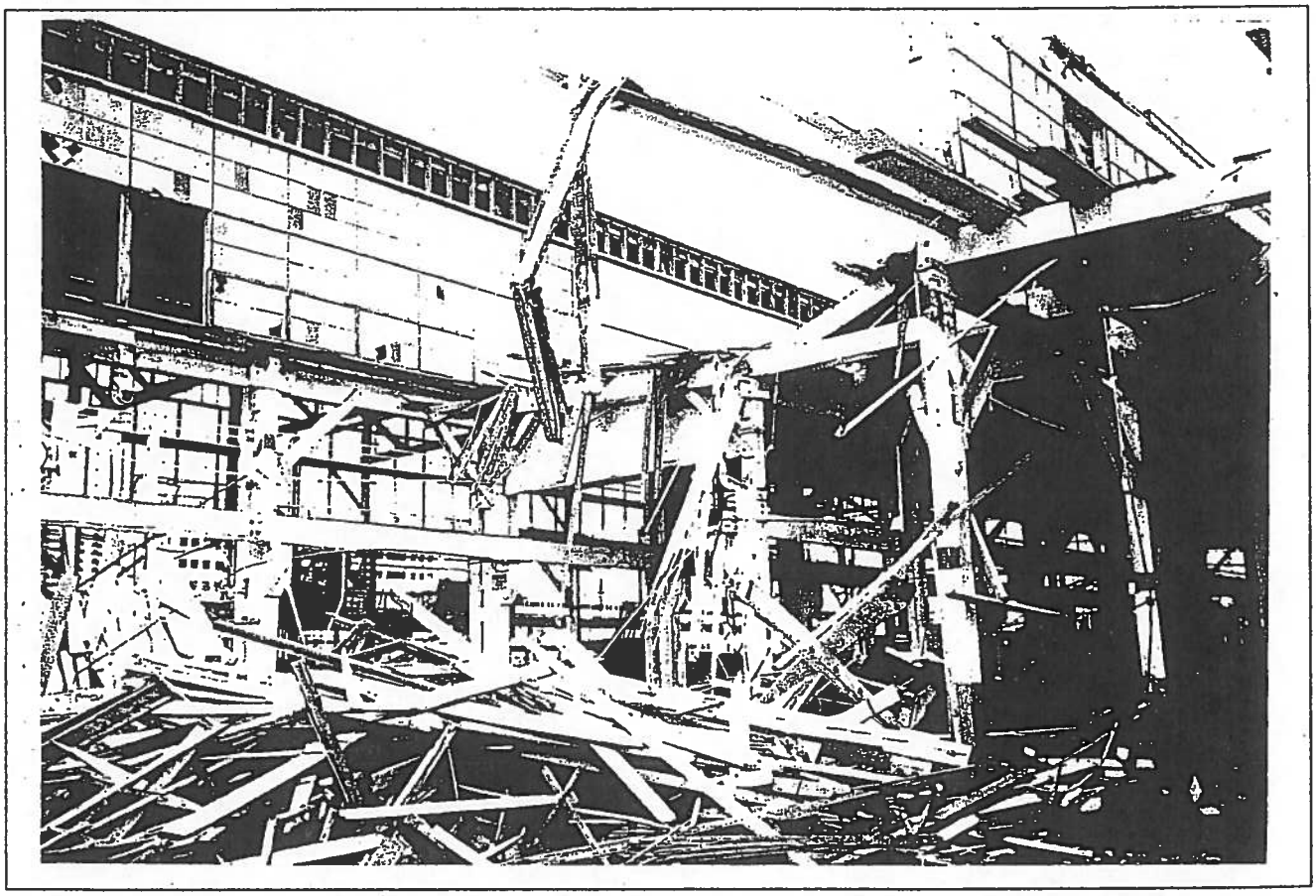
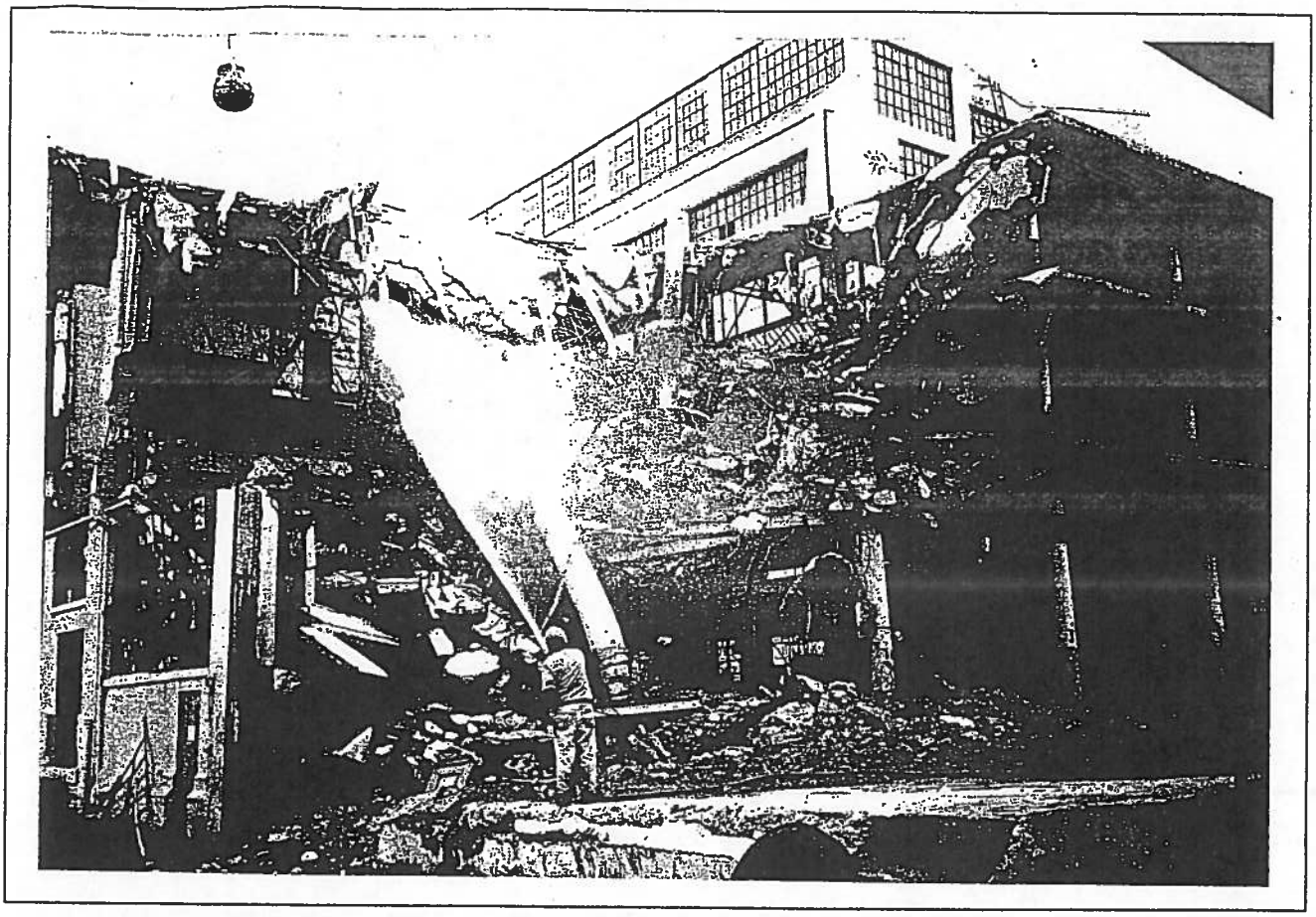


The northern annex of the Westinghouse plant during demolition. This portion, built during World War II, was of wooden construction in order to conserve steel for the war effort.



May, 1993: Another piece of U.S. industrial history yields to the demolition ball.

reputation— and his first fortune — with his invention of the railroad air brake in the late 1860s. It was a device which revolutionized American railroading and halted a fifty-year long trend of increasing fatalities in railroad-related accidents.

After founding the Westinghouse Air Brake Company, George Westinghouse went on to develop automatic railroad signalling apparatus which had an equally profound effect on the safety of railroading.

In 1885 Westinghouse co-invented the alternating-current transformer, which made long-distance transmission of electricity possible. In the late 1890s he founded the Westinghouse Electric Corporation, which rapidly became one of the giants of the budding American electrical industry.

Westinghouse was the prototypical American self-made industrialist. A contemporary once noted of him:

"Like a lion in the forest, he breathed deep and with delight the smoky air of his factories. . .he was transformed into a giant when confronted with difficulties which seemed insurmountable."

Westinghouse Electric Corporation's Emeryville facility was constructed in 1924 as a regional warehouse for Westinghouse products, which by this time included light bulbs, home appliances, and many other items in addition to electrical distribution equipment.

The original three-story building used a concrete-frame construction system featuring a patented mushroom-head column which was very popular for industrial buildings from the twenties through the fifties. The building's interior featured a four-story-high crane bay with its own spur track for the unloading of railroad flatcars, allowing massive transformers and other equipment to be brought directly into the building for reconditioning.

Subsequent additions to the north end of the plant during World War II contained repair

About the Emeryville Historical Society. . .

The Emeryville Historical Society was established in 1989 by a small group of people interested in historical research and preservation. Incorporated as a non-profit educational corporation, it is funded by memberships, subscriptions, and donations, including a Community Projects Grant from the City of Emeryville. The society produces a quarterly journal, back issues of which are available for $2.50. Other society projects include exhibits and oral history interviews. Phone messages may be left at 655-9320.

The Society welcomes new active members as well as subscribers. Subscribers will receive the quarterly newsletter as well as notices of other Historical Society activities. Dues are $10.00 per year. Submissions of historical materials and information are also greatly appreciated.

Core members of the Society are: Donald Hausler, Nancy Smith, Tony Molatore, Vernon Sappers, Paul Herzoff, Ray Raineri, Arrol Gellner, Phil Stahlman, and Richard Ambro.

The Emeryville Historical Society
New Member Information

Name_____

Address_____

City_____

Phone(s)_____Date_____

Number of Years in Emeryville____Special Interests_____

I am interested in: __Active Membership __Subscriber Membership

Please enclose a check for $10.00 payable to The Emeryville Historical Society and mail to:

The Emeryville Historical Society
6389 Racine Street
Oakland, CA 94609

GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545
(510) 352-4800

October 25, 1991

Ms. Susan Hugo
Alameda County
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Reference: Shell Service Station
1800 Powell Street
Emeryville, California
WIC 204-2495-0101

Ms. Hugo:

As requested by Mr. Jack Brastad of Shell Oil Company, we are forwarding a copy of the Site Update report, dated October 22, 1991, for the above referenced location. The report presents the results of the ground-water sampling conducted during the third quarter of 1991.

Should have any questions or comments please do not hesitate to call.

Sincerely,

John Werfal
Project Manager

enclosure

cc: Mr. Thomas Callaghan, S.F. Regional Water Quality Control Board
Mr. Jack Brastad, Shell Oil Company

GeoStrategies Inc.

SITE UPDATE

Shell Service Station
1800 Powell Street
Emeryville, California
WIC 204-2495-0101

760501-12

October 22, 1991

GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545
(415) 352-4800

October 22, 1991

Gettler-Ryan Inc.
2150 West Winton Avenue
Hayward, California 94545

Attn: Mr. John Werfal

Re: SITE UPDATE
Shell Service Station
1800 Powell Street
Emeryville, California

Gentlemen:

This Site Update has been prepared by GeoStrategies Inc. (GSI) and presents the results of the 1991 third quarter ground-water sampling performed by Gettler-Ryan Inc. (G-R) for the above-referenced site (Plate 1). The scope of work presented in this document was performed at the request of Shell Oil Company. Field work and laboratory analysis methods were performed to comply with current State of California Water Resources Control Board guidelines.

SITE BACKGROUND

There are currently seven monitoring wells at the site; Wells S-5, S-8, S-9, S-10, S-12, S-13 and S-14 (Plate 2). Wells S-1 through S-5 were installed prior to 1982. GSI installed Wells S-12 through S-14 in 1989. Wells S-1 through S-4 and S-11 were redesignated as tank backfill wells S-A through S-E, respectively. Wells S-6 and S-7 were abandoned in 1989. Wells S-8 through S-10 and S-12 through S-14 are onsite and Well S-5 is offsite. These wells were installed to evaluate the vertical and horizontal extent of petroleum hydrocarbons in soils and shallow groundwater beneath the site.

Quarterly monitoring and sampling of wells began in 1988. Ground-water samples have been analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) according to EPA Method 8015 (Modified) and Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) according to EPA Method 8020.

CURRENT QUARTERLY SAMPLING RESULTS

Potentiometric Data

Prior to ground-water sampling, depth to water-level measurements were obtained in each monitoring well using an electronic oil-water interface probe. Static ground-water levels were measured from the surveyed top of the well box and recorded to the nearest ± 0.01 foot. Corresponding elevations, referenced to Mean Sea Level (MSL) datum are presented in Table 1. Water-level data were used to construct a quarterly potentiometric map (Plate 3). Shallow ground-water flow is to the southwest at a calculated hydraulic gradient of 0.01.

Floating Product Measurements

Each well was checked for the presence of floating product using an electronic oil-water interface probe. A clear acrylic bailer was used to confirm probe results. Floating product was observed in Well S-10 at 0.03 feet in measured thickness. Well S-9 contained a black sludge substance, and was not monitored or sampled.

The sludge has been observed in Well S-9 since June 1986. Due to its high viscosity, an accurate thickness cannot be measured in Well S-9 at this time.

Ground-water Analytical Data

Ground-water samples were collected on July 8, 1991. The samples were analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline), according to EPA Method 8015 (Modified) and for BTEX according to EPA Method 8020. The ground-water samples were analyzed by International Technology (IT) Analytical Services, a California State-certified laboratory located in San Jose, California.

TPH-Gasoline was detected in Wells S-5, S-8, S-12, S-13 and S-14, at concentrations ranging from 0.07 to 3.2 parts per million (ppm). Benzene concentrations in these wells ranged from 0.0025 ppm to 1.0 ppm. These data are summarized in Table 2 and presented in Appendix A. Chemical isoconcentration maps for TPH-Gasoline and benzene are presented on Plates 4 and 5. Historical chemical analytical data are presented in Table 3.

Quality Control

The Quality Control (QC) samples for this quarter's ground-water sampling included a duplicate sample (SD-5) and a trip blank. The duplicate sample was collected as a split (second) sample to assess laboratory analytical precision. The trip blank was prepared in the laboratory using organic-free water to evaluate laboratory handling procedures. The results of QC sample analyses are presented in Table 2.

If you have any questions, please call.

GeoStrategies Inc. by,

Ellen C. Fostersmith

Ellen C. Fostersmith
Geologist

John F. Vargas

John F. Vargas
Senior Geologist
R.G. 5046

REGISTERED GEOLOGIST
JOHN F. VARGAS
NO. 5046
STATE OF CALIFORNIA

ECF/JFV/kjj

Plate 1. Vicinity Map
Plate 2. Site Plan
Plate 3. Potentiometric Map
Plate 4. TPH-G Isoconcentration Map
Plate 5. Benzene Isoconcentration Map

Appendix A: Analytical Laboratory Report and Chain-of-Custody

QC Review: JFV

760501-12

TABLE 1

FIELD MONITORING DATA

WELL NO.	MONITORING DATE	CASING DIA. (IN)	TOTAL WELL DEPTH (FT)	WELL ELEV. (FT)	DEPTH TO WATER (FT)	PRODUCT THICKNESS (FT)	STATIC WATER ELEV. (FT)	PURGED WELL VOLUMES	pH	TEMPERATURE (F)	CONDUCTIVITY (uMHOS/cm)
S-5	08-Jul-91	10	12.1	11.72	9.15	----	2.57	5	7.05	68.8	2400
S-8	08-Jul-91	3	19.3	12.76	10.45	----	2.31	3	7.28	69.3	6330
S-10	08-Jul-91	6	----	12.58	9.41	0.03	3.19	----	----	----	----
S-12	08-Jul-91	3	24.4	12.84	9.50	----	3.34	5	6.90	67.0	5810
S-13	08-Jul-91	3	20.1	12.59	10.38	----	2.21	3	7.27	68.9	9150
S-14	08-Jul-91	3	23.2	12.69	10.32	----	2.37	5	7.35	67.7	8210

Notes:
1. Static water elevations referenced to Mean Sea Level (MSL).
2. Physical parameter measurements represent stabilized values.
3. Static water-levels corrected for floating product (conversion factor = 0.80).
4. Well S-9 contained a tar-like substance, and was not monitored or sampled.

TABLE 2

GROUND-WATER ANALYSIS DATA

WELL NO	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
S-5	08-Jul-91	11-Jul-91	3.2	1.0	0.016	0.009	0.012
S-8	08-Jul-91	12-Jul-91	1.1	0.45	0.015	<0.0025	0.042
S-12	08-Jul-91	12-Jul-91	0.07	0.0025	0.0008	<0.0005	0.0024
S-13	08-Jul-91	12-Jul-91	1.5	0.88	0.010	0.006	0.16
S-14	08-Jul-91	13-Jul-91	0.19	0.0065	0.0006	0.0019	0.026
SD-5	08-Jul-91	11-Jul-91	3.1	1.1	0.018	0.010	0.011
TB	----	11-Jul-91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMUM CONTAMINANT LEVELS
Benzene 0.001 ppm Xylenes 1.750 ppm Ethylbenzene 0.680 ppm

CURRENT DHS ACTION LEVELS
Toluene 0.1000 ppm

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPM = Parts Per Million
SD = Duplicate Sample
TB = Trip Blank

Note: 1. All data shown as <x are reported as ND (none detected).
2. DHS Action Levels and MCLs are subject to change pending State review.

TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE WELL	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	TPH-D (PPM)	OIL (PPM)
27-Oct-88	S-5	3.	0.66	0.02	0.02	0.07	N/A	N/A
10-Feb-89	S-5	2.9	0.55	0.02	0.02	0.03	N/A	N/A
28-Apr-89	S-5	4.3	0.75	0.01	0.02	<0.03	N/A	N/A
07-Jul-89	S-5	1.5	0.30	0.008	0.007	0.009	N/A	N/A
25-Oct-89	S-5	2.1	0.76	0.01	0.04	0.05	N/A	N/A
04-Jan-90	S-5	1.3	0.52	0.009	0.008	0.01	N/A	N/A
06-Jul-90	S-5	1.4	0.5	0.01	0.004	<0.01	N/A	N/A
19-Oct-90	S-5	4.2	1.1	0.009	0.014	0.007	N/A	N/A
14-Jan-91	S-5	4.5	1.1	0.015	0.030	0.025	6.1	N/A
23-Apr-91	S-5	2.8	0.50	0.008	0.014	0.010	N/A	N/A
08-Jul-91	S-5	3.2	1.0	0.016	0.009	0.012	N/A	N/A
27-Oct-88	S-6	6.	1.7	0.05	0.08	0.42	N/A	N/A
10-Feb-89	S-6	2.8	0.74	0.02	0.02	0.14	N/A	N/A
28-Apr-89	S-6	6.5	2.4	0.03	0.05	0.21	N/A	N/A
07-Jul-89	S-6	3.7	1.7	0.034	0.055	0.20	N/A	N/A
25-Oct-89	S-6	<0.05	0.023	<0.005	<0.005	0.01	N/A	N/A
27-Oct-88	S-7	0.05	0.0011	<0.001	<0.001	0.004	N/A	N/A
10-Feb-89	S-7	0.05	0.0009	<0.001	<0.001	<0.003	N/A	N/A
28-Apr-89	S-7	<0.05	0.001	<0.001	<0.001	<0.003	N/A	N/A
07-Jul-89	S-7	0.07	0.0022	<0.001	<0.001	<0.003	N/A	N/A
25-Oct-89	S-7	6.2	2.2	0.13	0.19	0.66	N/A	N/A
27-Oct-88	S-8	1.	0.61	0.009	0.001	0.042	N/A	N/A
10-Feb-89	S-8	0.5	0.16	0.005	<0.002	0.017	N/A	N/A
28-Apr-89	S-8	2.7	1.5	0.02	0.01	0.04	N/A	N/A
07-Jul-89	S-8	0.44	0.18	0.005	0.002	0.012	N/A	N/A
25-Oct-89	S-8	2.	1.1	0.017	0.005	0.07	N/A	N/A
04-Jan-90	S-8	1.9	1.3	0.02	<0.01	0.07	N/A	N/A

TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE WELL	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	TPH-D (PPM)	OIL (PPM)
06-Jul-90	S-8	1.6	0.92	0.03	<0.01	0.06	N/A	N/A
19-Oct-90	S-8	1.4	0.64	<0.01	<0.01	0.03	N/A	N/A
14-Jan-91	S-8	0.67	0.19	0.0058	<0.0005	0.019	0.76	0.6
23-Apr-91	S-8	2.4*	0.74	0.054	0.0057	0.059	N/A	N/A
08-Jul-91	S-8	1.1	0.45	0.015	<0.0025	0.042	N/A	N/A
27-Oct-88	S-10	700.	37.	100.	20.	110.	N/A	N/A
10-Feb-89	S-10	6.5	0.48	0.7	0.1	1.8	N/A	N/A
28-Apr-89	S-10	13.	1.3	0.5	0.6	3.7	N/A	N/A
07-Jul-89	S-10	14.	1.3	0.31	0.27	2.4	N/A	N/A
25-Oct-89	S-10	4.2	0.58	0.034	0.044	0.44	N/A	N/A
04-Jan-90	S-10	1.7	0.36	0.010	0.0078	0.17	N/A	N/A
17-Nov-89	S-12	<0.25	0.018	<0.002	<0.002	<0.005	1.4	N/A
04-Jan-90	S-12	<0.25	0.024	0.002	<0.002	<0.005	N/A	N/A
06-Jul-90	S-12	0.08	0.015	0.0007	<0.0005	0.002	N/A	N/A
19-Oct-90	S-12	0.15	0.012	0.009	<0.0005	0.0036	N/A	N/A
14-Jan-90	S-12	0.12	0.0036	0.0008	<0.0005	0.0029	1.0	0.6
23-Apr-91	S-12	0.10	0.0037	0.0038	0.0008	0.011	0.82^	0.80
08-Jul-91	S-12	0.07	0.0025	0.0008	<0.0005	0.0024	N/A	N/A
17-Nov-89	S-13	1.9	0.70	0.16	0.07	0.34	2.0	5.
04-Jan-90	S-13	2.8	1.4	0.13	0.010	0.50	N/A	N/A
06-Jul-90	S-13	3.1	1.8	0.06	0.04	0.27	N/A	N/A
24-Oct-90	S-13	3.4	1.5	0.028	0.028	0.25	N/A	N/A
14-Jan-90	S-13	1.9	0.83	0.015	<0.01	0.099	0.9	1.6
23-Apr-91	S-13	2.9*	1.1	0.02	0.03	0.14	0.77&	0.64
08-Jul-91	S-13	1.5	0.88	0.010	0.006	0.16	N/A	N/A
17-Nov-89	S-14	<0.25	0.003	<0.002	<0.002	<0.005	<0.4	3.
04-Jan-90	S-14	<0.25	0.003	0.002	<0.002	<0.005	N/A	N/A

TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

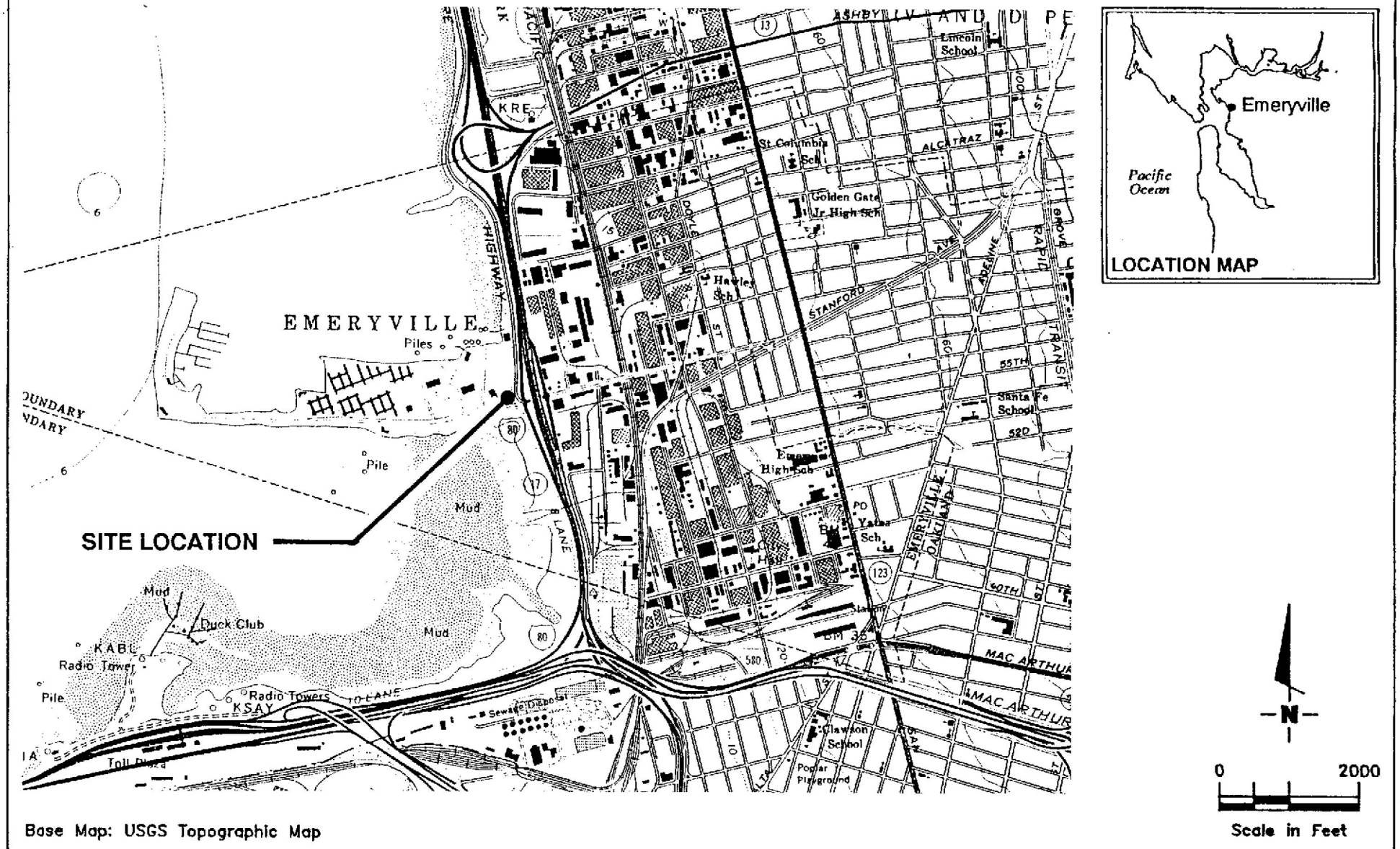
SAMPLE DATE	SAMPLE WELL	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	TPH-D (PPM)	OIL (PPM)
23-Apr-91	S-14	1.2	0.0074	0.0027	0.015	0.11	18.&	<5.0
08-Jul-91	S-14	0.19	0.0065	0.0006	0.0019	0.026	N/A	N/A

Current Regional Water Quality Control Board Maximum Contaminant Levels
Benzene 0.001 ppm Xylenes 1.750 ppm Ethylbenzene 0.680 ppm

Current DHS Action Levels Toluene 0.1000 ppm

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
TPH-D = Total Petroleum Hydrocarbons calculated as Diesel
PPM = Parts Per Million
* Compounds detected and calculated as low boiling hydrocarbons consist of compounds eluting within the chromatographic range of gasoline, but are not characteristic of the standard gasoline pattern.
^ Chromatographic pattern of compounds detected and calculated as diesel is similar to but does not match that of the diesel standard used for calibration; pattern is characteristic of weathered diesel.
& Results include compounds apparently due to gasoline as well as those due to diesel.

NOTE: 1. DHS Action levels and MCL's are subject to change pending State of California review.
2. All data shown as <X are reported as ND (none detected).



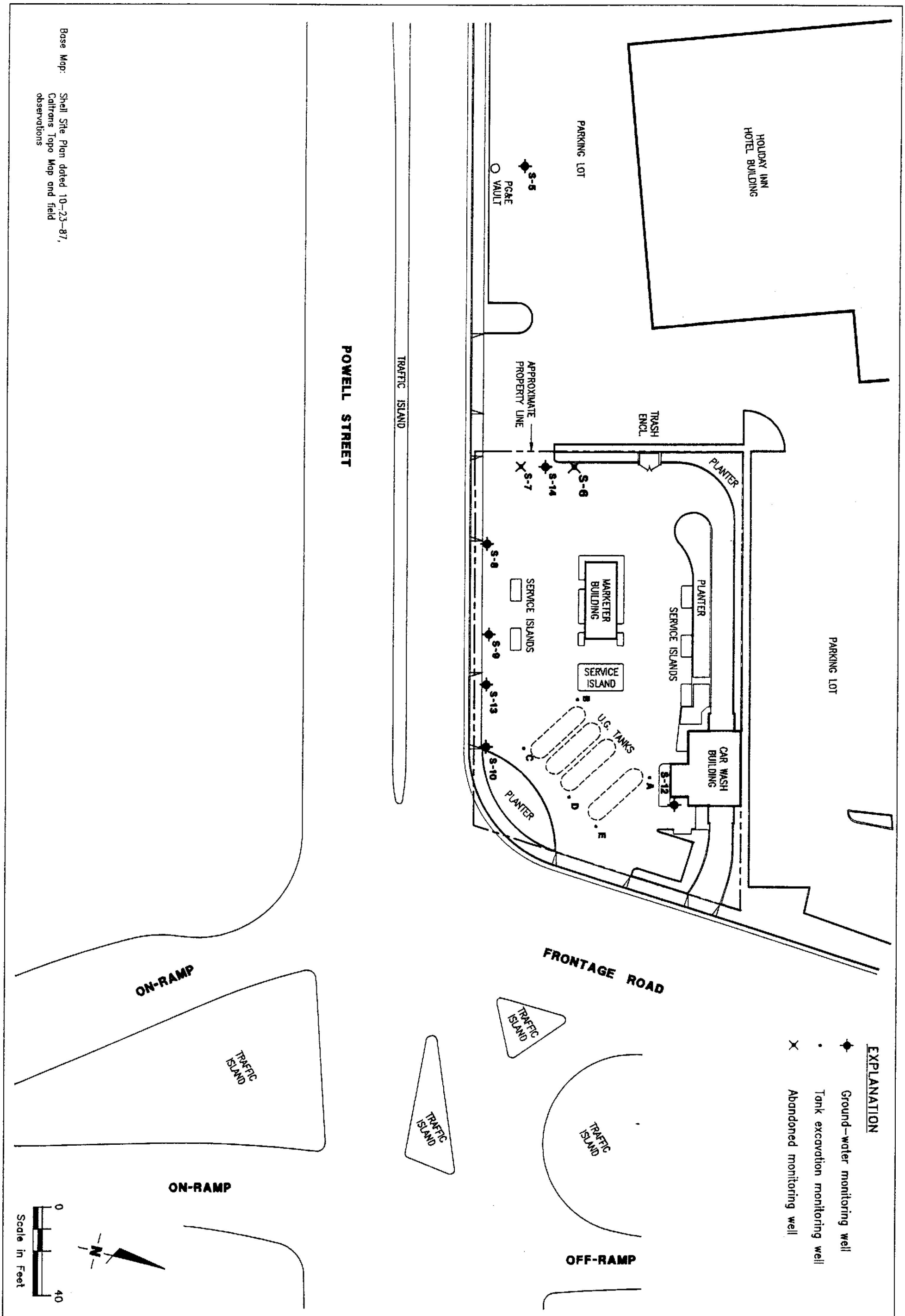
Base Map: USGS Topographic Map

GeoStrategies Inc.

VICINITY MAP
Shell Service Station
1800 Powell Street
Emeryville, California

PLATE
1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7605			



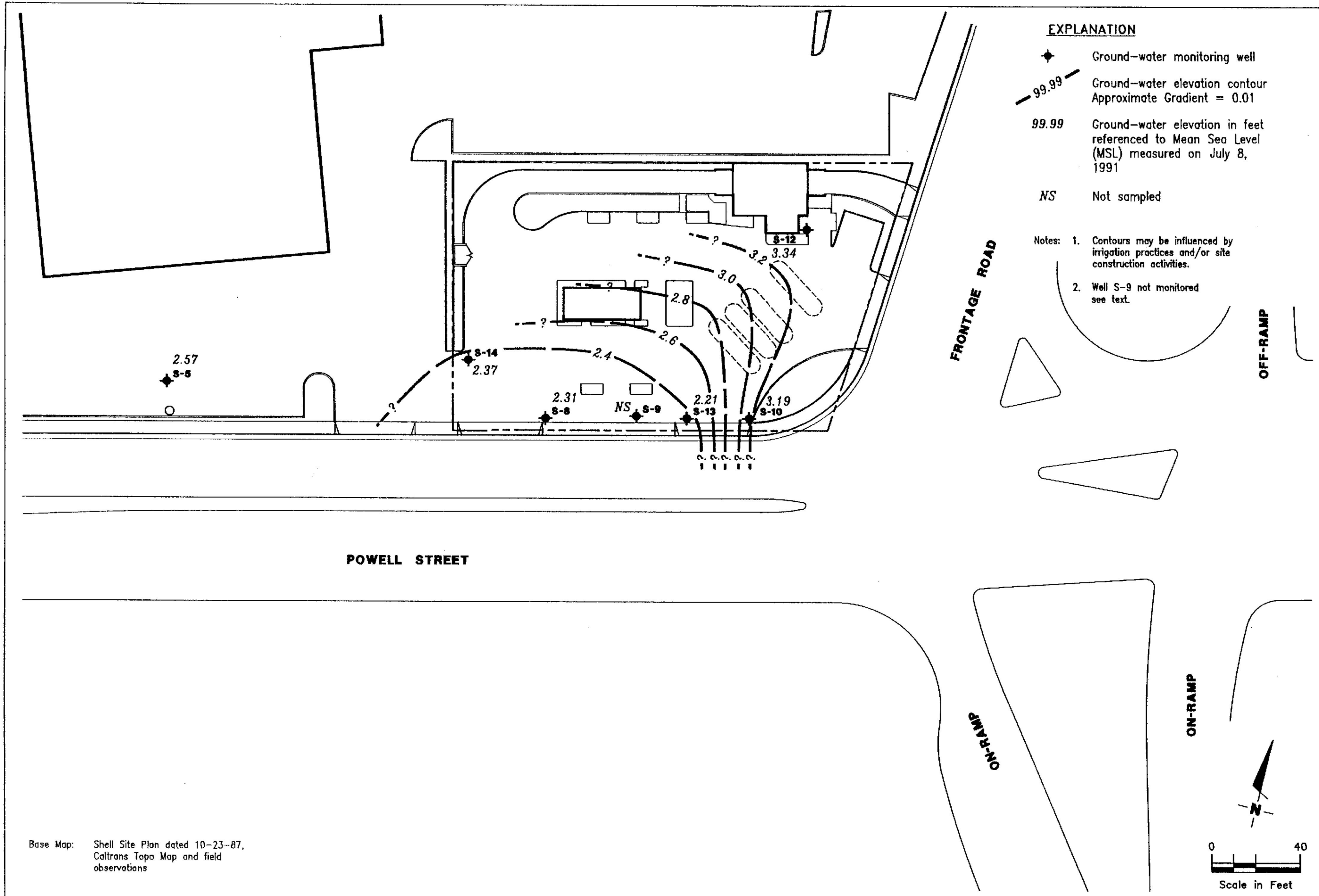
Base Map: Shell Site Plan dated 10-23-87, Caltrans Topo Map and field observations

GeoStrategies Inc.

SITE PLAN
Shell Service Station
1800 Powell Street
Emeryville, California

PLATE **2**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
760501-12	EFS	10/91	



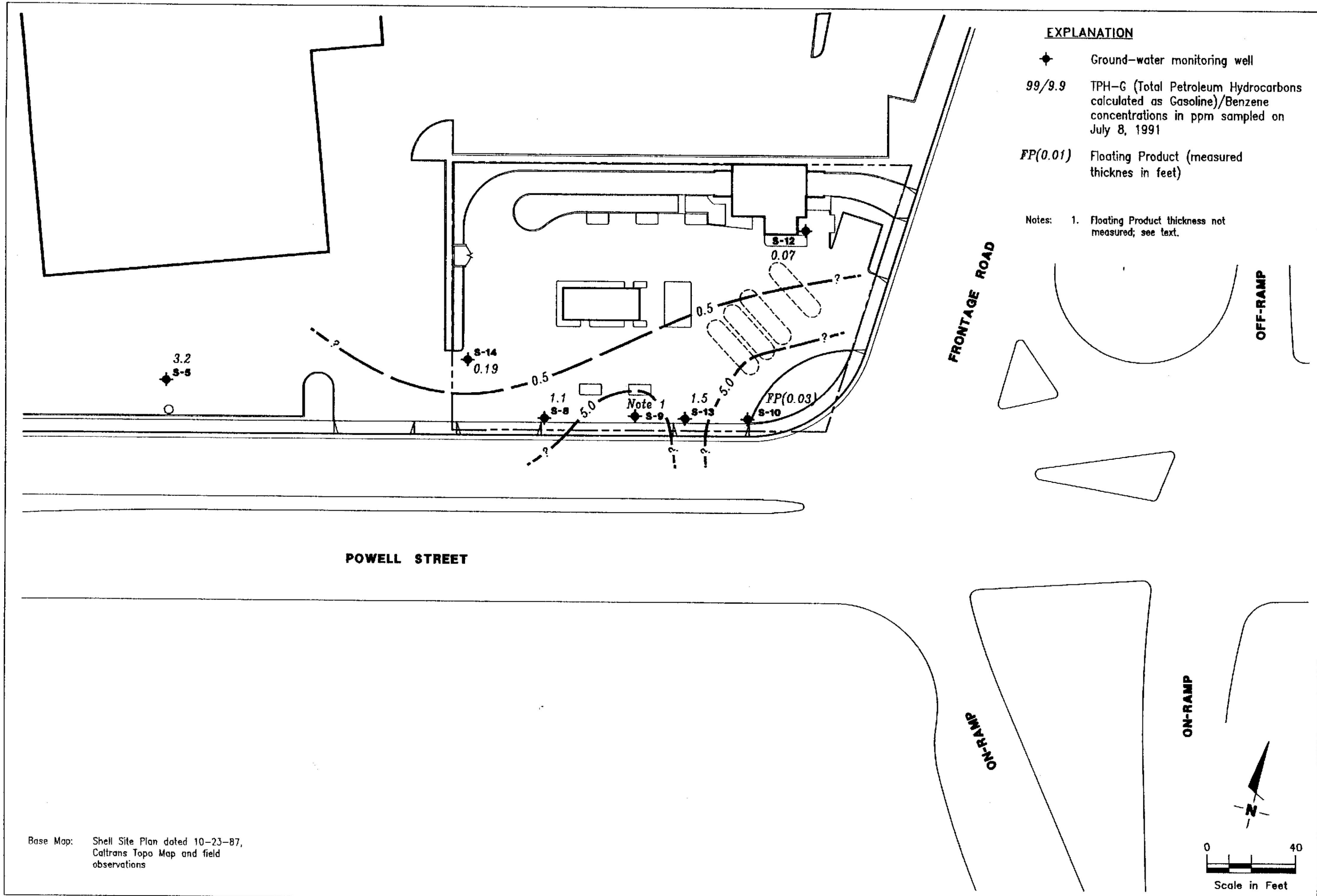
Base Map: Shell Site Plan dated 10–23–87, Caltrans Topo Map and field observations

PLATE 3

POTENTIOMETRIC MAP
Shell Service Station
1800 Powell Street
Emeryville, California

GeoStrategies Inc.

JOB NUMBER 760501–12
REVIEWED BY
DATE 10/91
REVISED DATE



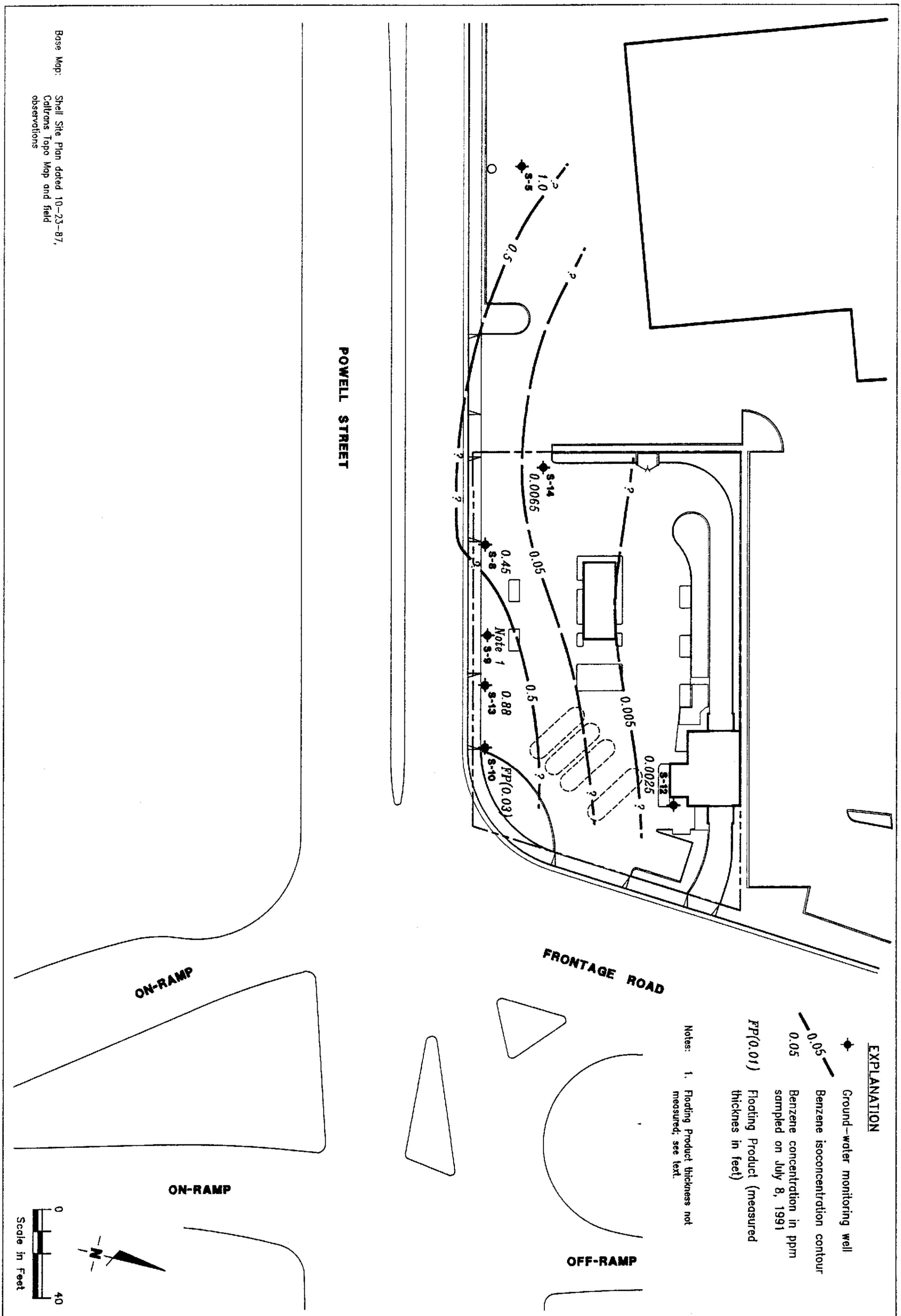
Base Map: Shell Site Plan dated 10–23–87, Caltrans Topo Map and field observations

PLATE 4

TPH–G ISOCONCENTRATION MAP
Shell Service Station
1800 Powell Street
Emeryville, California

GeoStrategies Inc.

JOB NUMBER 760501–12
REVIEWED BY
DATE 10/91
REVISED DATE



GeoStrategies Inc.

BENZENE ISOCONCENTRATION MAP
Shell Service Station
1800 Powell Street
Emeryville, California

PLATE **5**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
760501-12	EFS	10/91	

APPENDIX A
ANALYTICAL LABORATORY REPORT
AND CHAIN-OF-CUSTODY

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

GETTLER-RYAN INC.
GENERAL CONTRACTORS

CERTIFICATE OF ANALYSIS

Shell Oil Company
Gettler-Ryan
2150 West Winton
Hayward, CA 94545
Tom Paulson

Date: 07/22/91

Work Order: T1-07-113 P.O. Number: MOH 880-021 Vendor #I0002402

This is the Certificate of Analysis for the following samples:

Client Work ID: GR3605, 1800 Powell St.Emryvl
Date Received: 07/10/91
Number of Samples: 7
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Suzanne Veaudry
Project Manager

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3605, 1800 Powell St.Emryvl

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-113

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-5**
SAMPLE DATE: **07/08/91**
LAB SAMPLE ID: **T107113-01**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/11/91
Low Boiling Hydrocarbons	Mod.8015		07/11/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.5	3.2
BTEX		
Benzene	0.005	1.0
Toluene	0.005	0.016
Ethylbenzene	0.005	0.009
Xylenes (total)	0.005	0.012

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	108.
1,3-Dichlorobenzene (BTEX)	95.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3605, 1800 Powell St.Emryvl

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-113

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-8**
SAMPLE DATE: **07/08/91**
LAB SAMPLE ID: **T107113-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH > 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/12/91
Low Boiling Hydrocarbons	Mod.8015		07/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.25	1.1
BTEX		
Benzene	0.0025	0.45
Toluene	0.0025	0.015
Ethylbenzene	0.0025	None
Xylenes (total)	0.0025	0.042

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	101.
1,3-Dichlorobenzene (BTEX)	99.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3605, 1800 Powell St.Emryvl

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-113

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-12**
SAMPLE DATE: **07/08/91**
LAB SAMPLE ID: **T107113-03**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/12/91
Low Boiling Hydrocarbons	Mod.8015		07/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	**0.07**
BTEX		
Benzene	0.0005	**0.0025**
Toluene	0.0005	**0.0008**
Ethylbenzene	0.0005	**None**
Xylenes (total)	0.0005	**0.0024**

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	111.
1,3-Dichlorobenzene (BTEX)	101.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3605, 1800 Powell St.Emryvl

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-113

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-13**
SAMPLE DATE: **07/08/91**
LAB SAMPLE ID: **T107113-04**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH > 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/12/91
Low Boiling Hydrocarbons	Mod.8015		07/12/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.5	1.5
BTEX		
Benzene	0.005	0.88
Toluene	0.005	0.010
Ethylbenzene	0.005	0.006
Xylenes (total)	0.005	0.16

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	100.
1,3-Dichlorobenzene (BTEX)	98.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3605, 1800 Powell St.Emryvl

Work Order: T1-07-113

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-14**
SAMPLE DATE: **07/08/91**
LAB SAMPLE ID: **T107113-05**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH > 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/13/91
Low Boiling Hydrocarbons	Mod.8015		07/13/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	**0.19**
BTEX		
Benzene	0.0005	**0.0065**
Toluene	0.0005	**0.0006**
Ethylbenzene	0.0005	**0.0019**
Xylenes (total)	0.0005	**0.026**

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	110.
1,3-Dichlorobenzene (BTEX)	103.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3605, 1800 Powell St.Emryvl

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-113

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **SD-5**
SAMPLE DATE: **07/08/91**
LAB SAMPLE ID: **T107113-06**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/11/91
Low Boiling Hydrocarbons	Mod.8015		07/11/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.5	3.1
BTEX		
Benzene	0.005	1.1
Toluene	0.005	0.018
Ethylbenzene	0.005	0.010
Xylenes (total)	0.005	0.011

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	105.
1,3-Dichlorobenzene (BTEX)	99.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3605, 1800 Powell St.Emryvl

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-113

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **Trip Blank**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: T107113-07
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/11/91
Low Boiling Hydrocarbons	Mod.8015		07/11/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	**None**
BTEX		
Benzene	0.0005	**None**
Toluene	0.0005	**None**
Ethylbenzene	0.0005	**None**
Xylenes (total)	0.0005	**None**

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	100.
1,3-Dichlorobenzene (BTEX)	98.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3605, 1800 Powell St.Emryvl

Work Order: T1-07-113

TEST NAME: **Spike and Spike Duplicates**

SAMPLE ID: **Quality Control**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: T107113-08A
EXTRACTION DATE:
ANALYSIS DATE: 07/11/91
ANALYSIS METHOD: **Mod. 8015**

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	MS Result	MSD Result	MS %Rec	MSD %Rec	RPD
Gasoline	ND<50.	500.	442.	425.	88.	85.	3.

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichlorobenzene	106.	109.

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3605, 1800 Powell St.Emryvl

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order: T1-07-113

TEST NAME: **Spike and Spike Duplicates**

SAMPLE ID: **Quality Control**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: T107113-08B
EXTRACTION DATE:
ANALYSIS DATE: 07/12/91
ANALYSIS METHOD: 8020

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	MS Result	MSD Result	MS %Rec	MSD %Rec	RPD
Benzene	ND<0.5	50.0	49.4	50.3	99.	101.	2.
Toluene	ND<0.5	50.0	49.9	50.5	100.	101.	1.
Ethyl benzene	ND<0.5	50.0	50.5	51.1	101.	102.	1.
Xylenes	ND<0.5	150.	160.	162.	107.	108.	1.

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichlorobenzene	100.	99.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 07/22/91
Client Work ID: GR3605, 1800 Powell St.Emryvl

Work Order: T1-07-113

TEST CODE **TPHVB** TEST NAME **TPH Gas,BTEX by 8015/8020**

The method of analysis for low boiling hydrocarbons is taken from EPA Methods modified 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatography using a flame ionization detector in series with a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline. Results in soils are corrected for moisture content and are reported on a dry soil basis unless otherwise noted.

Gettler - Ryan Inc. ENVIRONMENTAL DIVISION — **2599 Chain of Custody**

COMPANY Shell Oil Co — JOB NO. _____

JOB LOCATION 1800 Powell St

CITY Emeryville — PHONE NO. 783-7500

AUTHORIZED Tom Poulson — DATE 7-2-91 — P.O. NO. 3605.01

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
S-5	3	liquid	7-8-91/1336	TPH(D) BTEX	OK/Cool
S-8			/1347		
S-12			/1155		
S-13			/1350		
S-14			/1310		
SD-5			/ —		
Trip Blank	1		—		

RELINQUISHED BY: [signature] 7-8-91 1500

RECEIVED BY: Petry #1 7-8-91 1500

RELINQUISHED BY: [signature] Petry #1 7-10-91 10.00

RECEIVED BY: [signature] 7-10-91 10 00

RELINQUISHED BY: [signature] 7-10-91 1400

RECEIVED BY LAB: J DeHaven 7/10/91 14:00

DESIGNATED LABORATORY: IT (SCV) — DHS #: 137

REMARKS: rush TAT — WIC #: 2041-2495-0101

Exp: 5461

Eng: J Bristad

DATE COMPLETED _____ — FOREMAN [signature]

DUPLICATE