

May 17, 2002

Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

MAY 21 2002

RE: EQUILON ENTERPRISES LLC / Equiva Services LLC dba SHELL OIL PRODUCTS US

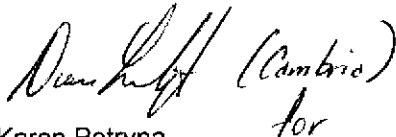
Dear Sir or Madam:

The Shell purchase of Texaco's interest in Equilon Enterprises LLC and Equiva Services LLC has been approved by government authorities and was completed in early February.

Please be advised that effective March 1, 2002, Equilon Enterprises LLC and Equiva Services LLC will begin doing business as (DBA) "Shell Oil Products US." Since Equilon Enterprises LLC will remain the owner and/or the responsible Party of remediation activities at 350 Grand Avenue, Oakland, California, no changes are needed or requested for permits.

If you have any questions please contact Ms. Karen Petryna at 559.645.9306.

Yours truly,

 (Cambria)
for

Karen Petryna
Sr. Environmental Engineer

May 17, 2002

Mr. Don Hwang
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Agency Response**
Shell-branded Service Station
350 Grand Avenue
Oakland, California
Incident # 98995755
Cambria Project #244-0715



Dear Mr. Seery:

On behalf of Shell Oil Products US (Shell), Cambria Environmental Technology, Inc. (Cambria) is submitting this *Agency Response* in reference to a March 29, 2002 Alameda County Health Care Services Agency (ACHCSA) letter. This letter referenced previously collected grab groundwater sampling results and requested an amendment to our December 20, 2001 *Subsurface Investigation Work Plan* to include utility trench sampling. Presented below are the site summary, a discussion of previous results, and our recommendations.

SITE SUMMARY

Site Description: The site is an active Shell-branded Service Station, located at the northeast corner of the intersection of Grand Avenue and Perkins Street in Oakland, California (Figure 1). Lakeside Park is located at the southwest corner of this intersection. The area surrounding the site consists of mixed commercial and residential properties.

Soil Lithology: The site is underlain by silty and sandy clays to an explored depth of 20 feet below grade (fbg).

Groundwater Flow Direction and Depth: Groundwater generally flows in a southerly direction, as illustrated by the rose diagram shown on Figure 2. Depth-to-water has ranged historically between 3.4 and 14.7 fbg.

Oakland, CA
San Ramon, CA
Sonoma, CA

**Cambria
Environmental
Technology, Inc.**

1144 65th Street
Suite B
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Tel (510) 420-0700
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1990 Soil Borings: On May 11, 1990, GeoStrategies Inc. of Hayward, California (GSI) drilled five exploratory soil borings with a hollow-stem auger drilling rig. The highest hydrocarbon concentration in soil was in boring S-A, located at the southwest corner of the property in the vicinity of the gasoline underground storage tanks (USTs). Levels detected at a depth of 9.5 fbg in this area were 2,900 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPHg), 2,400 ppm total petroleum hydrocarbons as diesel (TPHd), and 13 ppm benzene.

1991 Monitoring Well Installation: On January 7, 1991, GSI installed three monitoring wells at the site (Figure 2). The highest hydrocarbon concentrations in soil and groundwater were in well S-2, located at the southwest corner of the property in the vicinity of the gasoline USTs. Detected levels were 440 ppm TPHg, 360 ppm TPHd, and 4.5 ppm benzene in soil at 8.5 fbg; and 2,500 parts per billion (ppb) TPHg, 1,200 ppb TPHd, and 550 ppb benzene in groundwater. No TPHg, TPHd, or benzene was detected in the groundwater sample from well S-1.


1993 Hydropunch Borings: On January 27, 1993, GSI installed three hydropunch borings off site (Figure 2). The highest hydrocarbon concentrations were detected in boring HP-1, located crossgradient of the USTs. Maximum concentrations in that boring were 1,500 ppm TPHg, 18 ppm TPHd, and 0.11 ppm benzene in soil at 6.5 fbg; and 22,000 ppb TPHg, 14,000 ppb TPHd, and 2,500 ppb benzene in groundwater. TPHg and benzene were not detected in soil and groundwater samples from borings HP-2 and HP-3, located downgradient of the USTs.

1996 Tank Removal: On April 22, 1996, Weiss Associates of Emeryville, California (WA) observed the removal of three 10,000-gallon gasoline USTs and one 10,000-gallon diesel UST and collected soil samples. Up to 4,800 ppm TPHg, 2,800 ppm TPHd, and 22 ppm benzene were detected in samples collected from the UST excavation, product piping trenches, and beneath the product dispensers.

1998 Potential Receptor Survey: In April 1998, Cambria identified wells and surface water bodies within a ½-mile radius of the site. Three water producing wells are located between 2,640 feet and 3,960 feet crossgradient of the site. Lake Merritt is located approximately 900 feet downgradient of the site. The results of the potential receptor survey were presented in Cambria's May 31, 1998 *MTBE Investigation Report*.

1998 Geoprobe Well Installation: On April 16, 1998, Cambria installed two ¾-inch diameter pre-packed wells within the Grand Avenue right-of-way, downgradient of the site. No TPHg, benzene, toluene, ethylbenzene, or xylenes (BTEX), or MTBE were detected in soil or groundwater in the borings.






1999 Geoprobe Boring Installation: In March 1999, Cambria installed three Geoprobe borings to evaluate whether utility conduit trenches serve as preferential pathways for the migration of impacted groundwater. Two borings (HP-4 and HP-5) were advanced within the sanitary sewer conduit trench along the north sidewalk on Grand Ave, and the third boring (HP-6) was advanced within Perkins Street. The maximum TPHg concentration detected in soil was 408 ppm in soil sample HP-4-10. The maximum MTBE concentration reported in soil (by EPA Method 8020) was 2.52 ppb in soil sample HP-4-10. Grab groundwater samples collected from HP-4 contained 100,000 ppb TPHg, 83,000 ppb TPHd, and 2,000 ppb MTBE (by EPA Method 8020). Grab groundwater samples from HP-5, near the diesel UST complex, contained 160 ppb TPHg. TPHg, BTEX, and MTBE were below detection limits in grab groundwater samples from HP-5 and HP-6.

2001 Dual-Phase Vapor Extraction (DVE) Pilot Test: In June 2001, Cambria conducted an 8-hour DVE pilot test on groundwater monitoring well S-2. DVE is the process of applying high vacuum through an airtight well seal to simultaneously extract soil vapors from the vadose zone and enhance groundwater extraction from the saturated zone. Approximately 50 gallons of groundwater were extracted during the 8-hour test. This data is consistent with the low permeability soil (sandy silt and silt) encountered at this site. Estimated mass removal through groundwater extraction of TPHg, benzene and MTBE was 0.008 pounds, 0.0004 pounds and 0.009 pounds, respectively. Estimated mass removal through vapor extraction of TPHg, benzene and MTBE was 2.44 pounds, 0.002 pounds and 0.005 pounds, respectively. Based on this data, DVE from monitoring well S-2 does not appear to effectively recover hydrocarbons and MTBE from the subsurface.

DISCUSSION

As stated above, GSI installed three hydropunch borings offsite in 1993 to delineate the vertical and lateral extent of hydrocarbons in groundwater. While boring HP-1 was installed in the general location of a water main identified during a 1998 conduit study, no backfill was encountered during installation and no mention of the water main was reported by GSI. Based on measurements collected during the first quarter 2002 monitoring event, depth-to-groundwater at the site currently ranges between 6.4 and 7.7 fbg. Since water mains are typically buried between 3 and 5 fbg, groundwater is not expected to be encountered in the water main trench; therefore, the trench is not expected to provide a pathway for contaminant migration. Groundwater collected from boring HP-1 contained 22,000 ppb TPHg and 2,500 ppb benzene. A soil sample collected from 6.5 fbg in boring HP-1 contained 1,500 ppm TPHg and 0.11 ppm benzene. Boring




HP-3 was installed downgradient of boring HP-1 and was also installed in the general location of the same water main. No backfill was encountered during the drilling, nor was the water main mentioned in GSI's investigation report. No TPHg or benzene was reported in soil and groundwater samples collected from boring HP-3. Since HP-3 was installed downgradient of HP-1 and in the vicinity of the same utility trench, the non-detect results in samples collected from boring HP-3 provide downgradient definition of the contamination encountered in boring HP-1 and indicate that the water main is not likely providing a preferential pathway for contaminant migration. Boring HP-2 was installed further crossgradient of the site than HP-1, and no TPHg or benzene was reported in soil and groundwater samples collected from boring HP-2. Samples collected from boring HP-2 provide lateral definition of the contamination reported in samples collected from boring HP-1.

A 1998 conduit study conducted by Cambria identified several utilities in the site vicinity, including an eastward-flowing, 8-inch diameter sanitary sewer located immediately downgradient of the site. The remaining identified utilities were either not expected to encounter groundwater, or are located crossgradient of the site instead of downgradient. Since the sanitary sewer trench immediately downgradient of the site was expected to encounter groundwater, Cambria recommended collecting soil and groundwater samples within the sanitary sewer backfill. In March 1999, Cambria installed three soil borings. HP-4 and HP-5 were installed within the backfill of the sanitary sewer south of the site along Grand Avenue, and HP-6 was installed within the backfill of the sanitary sewer beneath the center of Perkins Street. Boring HP-4 was also located approximately 10 feet downgradient of the gasoline USTs, and HP-5 was located approximately 10 feet downgradient of the diesel USTs. Groundwater samples collected from boring HP-4 contained 83,000 ppb TPHg, 1,000 ppb benzene and 2,000 ppb MTBE. Groundwater samples collected from boring HP-5, located east of HP-4 within the same eastward-flowing sanitary sewer trench, did not contain any TPHg, benzene or MTBE. Based on the flow direction of the sanitary sewer, non-detect results in groundwater samples collected from boring HP-5 indicate that the contamination detected in boring HP-4 is not migrating through the sanitary sewer backfill. The concentrations detected in boring HP-4 were likely a result of proximity to the UST complex. Groundwater samples collected from boring HP-6 contained no TPHg or benzene. These non-detect results provide crossgradient definition of the contamination encountered in boring HP-1, and show that the sanitary sewer beneath Perkins Street does not appear to be providing a preferential migration pathway for groundwater contamination.

RECOMMENDATIONS

The March 29, 2002 ACHCSA letter requests an amended work plan to include a proposal of utility sampling. Cambria completed utility sampling in 1998 and, as stated above, utilities in the site vicinity do not appear to provide preferential migration pathways for groundwater contamination. Based on this, Cambria believes that additional utility trench sampling at the site is redundant and unnecessary.



The ACHCSA letter also requests additional plume definition. Downgradient lateral plume definition of groundwater contamination is provided by wells S-4 and S-5 and by grab groundwater samples collected from boring HP-3. Crossgradient plume definition to the west is provided by grab groundwater samples collected from borings HP-2 and HP-6, and to the east by well S-1 and grab groundwater samples collected from boring HP-5. Upgradient plume definition is provided by well S-3. Based on this, Cambria does not recommend further offsite investigation at this time.

Since previous groundwater monitoring results at the site indicate that the highest hydrocarbon and MTBE concentrations are located in the vicinity of the USTs, Cambria instead recommends moving forward with tank backfill well installation. Wells installed in the porous tank backfill will not only better define the UST area, but will also provide a possible remediation tool for both groundwater and vapor extraction. Remediation using well MW-2, installed within the native soil at the site, was not feasible, likely due to the low permeability of the site subsurface. Further definition in the UST area will help determine the best remediation option for the site. Shell voluntarily submitted the December 29, 2002 *Work Plan* without a regulatory request for work, and is anxious to move forward with the proposed scope which should provide a remedial alternative for the site.


CLOSING

Please call Jacquelyn Jones at (510) 420-3316 if you have any questions or comments. Thank you for your assistance.

Sincerely,
Cambria Environmental Technology, Inc.



Jacquelyn L. Jones
Project Geologist



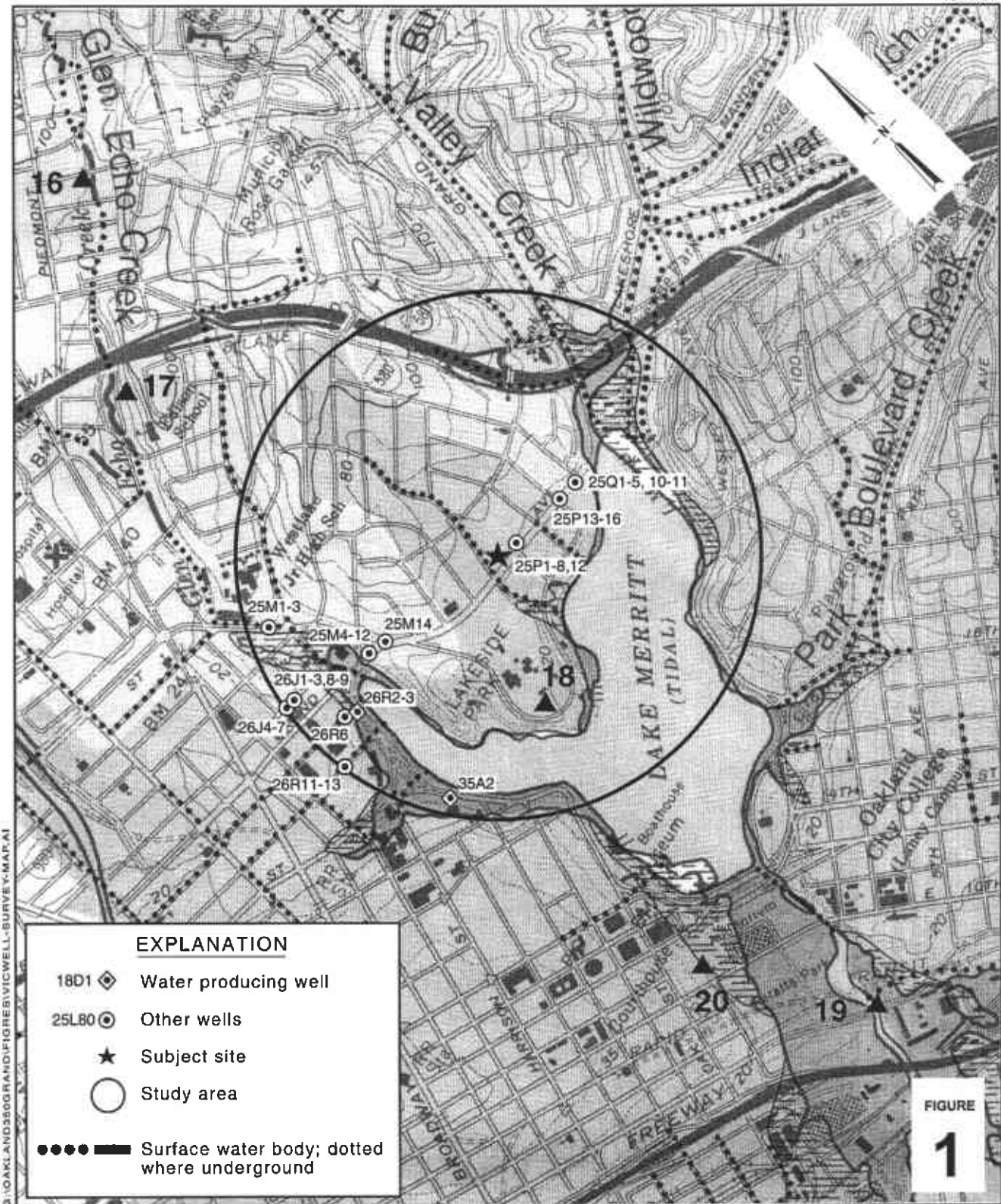
Diane M. Lundquist, P.E.
Principal Engineer



Figures 1 - Vicinity/Area Well Survey Map
 2 - Proposed Boring and Tank Backfill Well Locations

cc: Karen Petryna, Shell Oil Products US, P.O. Box 7869, Burbank, CA 91510-7869
 Gursharnjeet Cheema, 1060 St. Raphael Drive, Bay Point, CA 94565

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EXPLANATION

- 18D1 ◆ Water producing well
- 25L80 ○ Other wells
- ★ Subject site
- Study area
- Surface water body; dotted where underground

0 1/8 1/4 1/2 1
 SCALE : 1" = ~1/4 MILE

FIGURE
1

Shell-branded Service Station
 350 Grand Avenue
 Oakland, California
 Incident #98995755



C A M B R I A

**Vicinity / Area Well
 Survey Map**

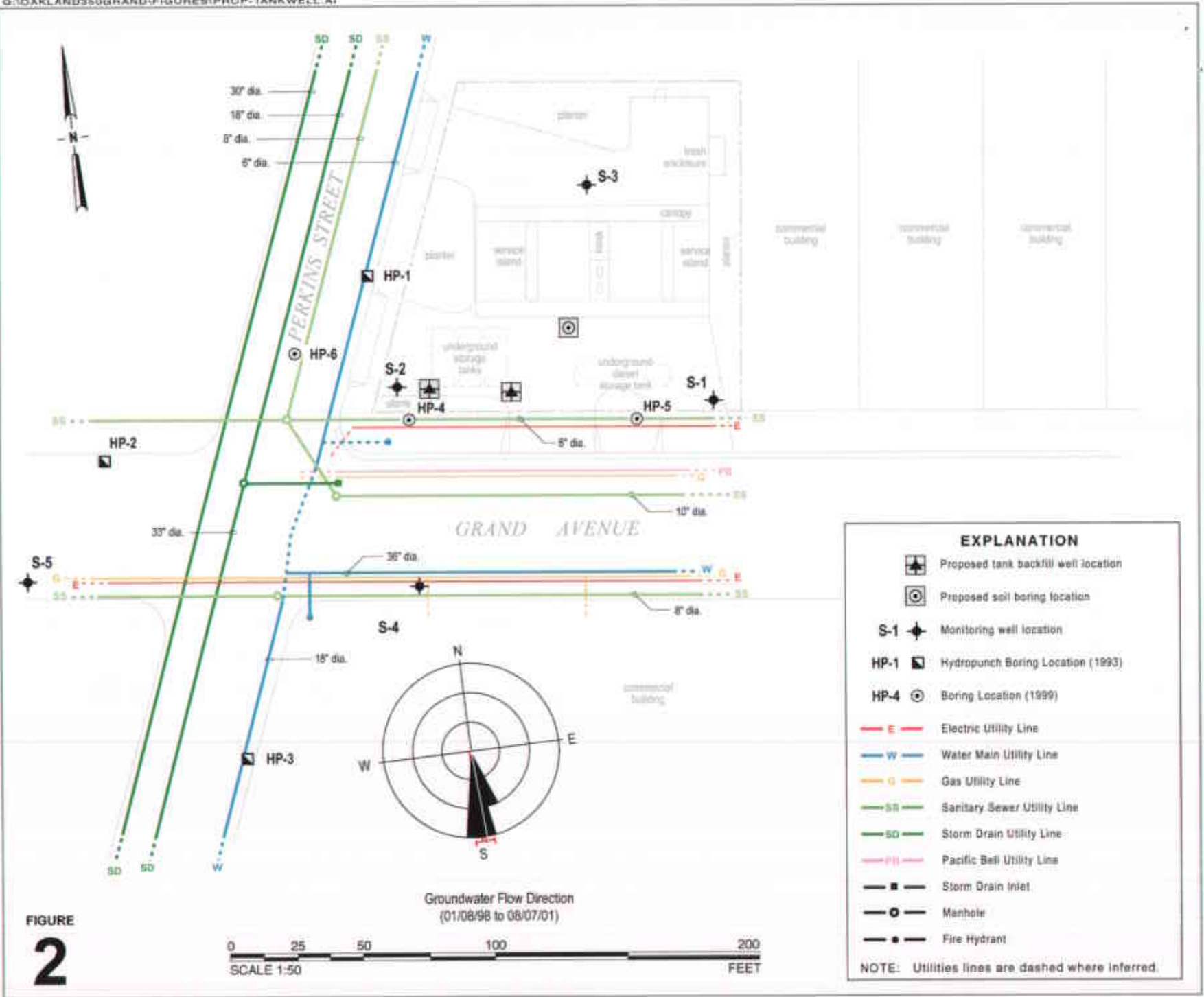


FIGURE
2

Shell-branded Service Station
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C A M B R I A

**Proposed Soil Boring and Tank
 Backfill Well Locations**