CAMBRIA

December 20, 2001

Mr. Scott O. Seery
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

DEC 28 2001

Re: **Offsite Monitoring Well Installation Report**
Shell-branded Service Station
1784 150th Avenue
San Leandro, California
Incident #: 98996068
Cambria Project #: 243-0612

Dear Mr. Seery,

Cambria Environmental Technology, Inc. (Cambria) is submitting this *Offsite Monitoring Well Installation Report* on behalf of Equiva Services LLC. The well installation was conducted in accordance with our July 31, 2001 *Offsite Monitoring Well Installation Work Plan* that was approved by the Alameda County Health Care Services Agency in a letter dated August 28, 2001. The objective of this project is to define the lateral extent of the dissolved gasoline plume downgradient of the site and to provide for long-term monitoring of plume stability. Presented below are summaries of the site background, investigation procedures, investigation results, and conclusions.

SITE BACKGROUND

Site Location: The site is an active Shell-branded service station located at the southern corner of the intersection of 150th and Freedom Avenues in San Leandro, California. Site structures include a building, three underground storage tanks (USTs), a waste-oil UST, and two dispenser islands. Land use in the surrounding area is mixed commercial and residential (Figure 1).

Groundwater: Groundwater in the vicinity of the site has been monitored since 1990. Depth to water in monitoring wells has ranged from 8 to 30 feet below grade (fbg) and groundwater flow has ranged from northwest to southwest at a gradient of 0.001 foot per foot (ft/ft) to 0.017 ft/ft.

Oakland, CA
San Ramon, CA
Sonoma, CA

Cambria Environmental Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

1986 Waste Oil UST Replacement: In 1986, a 550-gallon waste oil UST was removed. Soil samples collected from the tank pit contained petroleum oil and grease at 196 parts per million (ppm) at 8 fbg and at 167 ppm at 11 fbg. Groundwater was not encountered during the tank removal and sampling activities. A new 550-gallon fiberglass waste oil UST was installed at the same location.

1990 Well Installation: In March 1990, Weiss Associates (Weiss) installed one monitoring well (MW-1) adjacent to the waste oil UST. Total petroleum hydrocarbons as gasoline (TPHg) and benzene were detected in the initial groundwater sample at 510 parts per billion (ppb) and 1.5 ppb, respectively.

1992 Well Installation: In February 1992, Weiss drilled two borings and converted the borings to monitoring wells (MW-2 and MW-3) to determine groundwater gradient and define extent of hydrocarbons in soil and groundwater. Up to 79 ppm TPHg and 0.59 ppm benzene were detected in soil in MW-2 at 20.5 fbg and 26.5 fbg, respectively. Up to 17,000 ppb TPHg, 6,200 ppb benzene, and 200 ppb 1,2-Dichloroethane (1,2-DCA) were detected in the initial groundwater sample from well MW-3.

1992 Well Survey: In 1992, Weiss reviewed the California Department of Water Resources and Alameda County records to identify water wells within a 1/2 mile radius of the site. A total of twenty-one wells were identified: twelve monitoring wells, eight irrigation wells and one domestic well. No municipal wells were identified.

1994 Subsurface Investigation: In June 1994, Weiss drilled six soil borings (BH-1 through BH-6). No hydrocarbons were detected in any of the soil samples except for 0.013 ppm benzene in a sample collected from boring BH-3 at 16 fbg. The highest TPHg and benzene groundwater concentrations were detected in grab samples from boring BH-3 at 120,000 ppb and 25,000 ppb, respectively. No petroleum hydrocarbons were detected in grab groundwater samples collected from borings BH-1 or BH-4 through BH-6.

1995 Subsurface Investigation and Well Installation: In February and March 1995, Weiss drilled four soil borings (BH-7 through BH-10) and converted BH-10 to monitoring well MW-4. No petroleum hydrocarbons were detected in any of the soil samples. Up to 100 ppb TPHg and 1.0 ppb benzene were detected in grab groundwater samples from BH-7 and BH-9. No TPHg or benzene was detected in the grab groundwater sample from well MW-4. Groundwater was not encountered in soil boring BH-8.

1996 Soil Vapor Survey and Soil Sampling: In July 1996, Weiss conducted a subsurface investigation to obtain site-specific data for a risk-based corrective action (RBCA) evaluation of the site. Soil vapor and soil samples were collected from the vadose zone at 10 onsite and offsite

locations (SVS-1 through SVS-10). The highest soil vapor hydrocarbon concentrations were detected near the northwest corner of the UST complex (SVS-5 at 3.0 ft bgs contained 7,600 parts per billion by volume [ppmv] benzene). No TPHg, benzene, toluene, ethylbenzene, or xylenes (BTEX), or methyl tertiary butyl ether (MTBE) was detected in any of the soil samples except for 1.1 ppm TPHg detected in sample SVS-5 at 18-20 fbg. Weiss concluded that depleted oxygen concentrations and elevated carbon dioxide and methane concentrations in the vadose zone indicated that biodegradation was occurring.

1997 RBC) Evaluation: In 1997, Weiss prepared a RBCA evaluation for the site. Results of the RBCA analysis indicated that concentrations of BTEX, MTBE, 1,2-DCA, and tetrachloroethane detected in soil and groundwater beneath the site did not exceed a target risk level of 10^{-5} for residential indoor or outdoor air exposure pathways. However, a risk threshold exceedance was identified associated with ingestion of groundwater from a hypothetical well 25 feet downgradient of the source. Weiss recommended preparation of a corrective action plan to address this potential risk.

1997 Dispenser and Turbine Sump Upgrade: The dispensers and turbine sumps at the station were upgraded in December 1997. Cambria collected soil samples Disp-A through Disp-D from beneath the dispenser islands during upgrade activities. Up to 590 ppm TPHg (Disp-C at 4.5 feet bgs), 1.8 ppm benzene (Disp-C at 2.0 feet bgs) and 1.4 ppm MTBE (Disp-C at 2.0 feet bgs) were detected.

1998 Soil Vapor Survey and Soil Sampling: In November 1998, Cambria conducted a subsurface investigation to obtain site-specific data for a RBCA evaluation of the site. Soil samples, soil vapor samples and grab groundwater samples were collected from the vadose zone at three onsite and three offsite locations (SVS-11 through SVS-16). In soil vapor, maximum concentrations of 2.7 ppmv TPHg (C5 + hydrocarbons) and 0.17 ppmv TPHg (C2-C4 hydrocarbons) were detected in borings SVS-14 and SVS-15, respectively, at 10 fbg. A maximum concentration 0.0099 ppmv benzene was detected in SVS-16 at 5 fbg. In soil, 1.6 ppm TPHg and 0.005 ppm benzene 0.005 was detected in boring SVS-11 at 19.5 fbg. No TPHg or benzene was detected in any other soil samples. MTBE was detected at 0.029 ppm in boring SVS-14 at 19 fbg; however, MTBE was not detected in this sample by EPA Method 8260. In groundwater, maximum concentrations of 130,000 ppb TPHg, 18,000 ppb benzene, and 1,500 ppb MTBE were detected in boring SVS-11.

1999 RBCA Evaluation: In September 1999, Cambria prepared a RBCA evaluation for the site.

Cambria analyzed the following potential exposure pathways: offsite ingestion of groundwater, onsite ingestion of surficial soil, volatilization of benzene from soil or groundwater into onsite or offsite indoor air, and migration of benzene soil vapor to onsite or offsite outdoor air. Results of

Tier 1 and Tier 2 RBCA analysis indicated that contaminants within soil and groundwater do not present significant health risks.

INVESTIGATION PROCEDURES

On October 24th, 2001, Cambria advanced two offsite soil borings downgradient of the site and completed the borings as groundwater monitoring wells. Well MW-5 is located approximately 100 feet southwest of the site, at the southwest corner of 150th Avenue and the private driveway of the neighboring townhouse complex. Well MW-6 is located approximately 80 feet southwest of the site, along the north side of the private driveway. Soil samples for lithologic description were collected from each boring at 5-foot intervals. In addition, one sample was collected from each boring from the capillary fringe directly above the saturated zone and submitted for chemical analysis.

Specific procedures for this investigation, described in Cambria's approved work plan, are summarized below. Soil analytical results are summarized in Table 1, and laboratory analytical reports are included as Attachment A. Boring logs and well permits are included as Attachments B and C, respectively. Cambria's standard field procedures for installation of monitoring wells are included as Attachment D.

Drilling Date: October 24, 2001.

Drilling Company: Gregg Drilling of Martinez, California (C-57 License #485165).

Personnel Present:

Name:	***Title:***	***Company:***
Sue Landsittel	Staff Geologist	Cambria
Bobby Deason	Driller	Gregg Drilling

Permits: Alameda County Public Works Agency Drill Permits #WO1-853 and WO1-854 (Attachment C).

Access Agreements: An access agreement dated September 14, 2001 was signed by H. Lem of the Casa Leandro Homeowner's Association on October 17th, 2001, granting Equilon Enterprises LLC permission to enter the property for environmental investigation.

Drilling Method: 8-inch hollow-stem auger.

Number of Wells: Two, MW-5 and MW-6. (Figure 1).

Well Depths: MW-5 was installed to a depth of 25.0 fbg. MW-6 was installed to a depth of 20.0 fbg (Attachment B.).

Soil Sampling Method: Soil samples were collected at 5-foot intervals using a split-spoon sampler with brass sample tubes.

Sediment Lithology: Soil encountered in the borings consisted predominantly of fill to 2-3 fbg, silty clay to 7-10 fbg, and clayey silts and clayey sandy silts interlayed with sands and gravels to the total explored depth of 20-25 fbg (Attachment B).

Groundwater Depths: Groundwater was encountered at approximately 20 fbg in MW-5 and approximately 8 fbg in MW-6 during drilling activities. Static groundwater depths in the new wells will be measured by Blaine Tech Services (Blaine) of San Jose, California during the next quarterly monitoring event.

Well Materials: MW-5 and MW-6 were constructed using 2-inch diameter, Schedule 40, PVC casing with 0.010-inch slotted screen. In MW-5, the filter pack consisted of Monterey 2/12 sand from 25 to 8 fbg, the casing was sealed with bentonite from 8 to 6 fbg, and Portland Type I neat cement was placed from 6 to 1 fbg. In MW-6, the filter pack consisted of Monterey 2/12 sand from 20 to 3.5 fbg, the casing was sealed with bentonite from 3.5 to 2 fbg, and Portland Type I neat cement was placed from 2 to 1 fbg. A traffic-rated well box was installed over each well (Attachment B).

Screened Interval: MW-5 was screened from 10 to 25 fbg. MW-6 was screened from 5 to 20 fbg (Attachment B).

Well Elevation Survey The top of casing elevations will be surveyed by Virgil Chavez Land Surveying of Vallejo, California. Results of the survey will be included in Cambria's next quarterly monitoring report.

Well Development and Sampling: Blaine will develop the wells using surge-block agitation and pump evacuation. Wells will be developed at least 72 hours after installation and at least 72 hours prior to sampling. Blaine will sample the new wells during the next regularly scheduled groundwater monitoring event.

Chemical Analyses: Selected soil samples collected from the borings were analyzed by a State-certified laboratory for TPHg, BTEX, and MTBE using EPA Method 8260B.

To characterize stockpiled soil cuttings from the boring for disposal, four brass tubes of soil were collected, then composited and analyzed by the analytical laboratory for TPHg, BTEX and MTBE using EPA Method 8260B, and for total threshold limit concentration lead.

Soil Handling: Soil cuttings produced from the boring were temporarily stored in drums on the site and were transported by Manley Trucking of Sacramento, California for disposal at Forward Landfill in Manteca, California. Disposal confirmation will be included in Cambria's next quarterly monitoring report.

INVESTIGATION RESULTS

Analyte Results in Soil: No TPHg or BTEX was detected in the soil samples collected during this investigation. No MTBE was detected in boring MW-5. **MTBE was detected in MW-6 at a concentration of 0.012 ppm at a depth of 5.5 fbg.** Analytical results for soil are summarized in Table 1, and the certified laboratory analytical report is included as Attachment A.

CONCLUSIONS AND RECOMMENDATIONS

Soil sample results collected during this investigation indicate only minimal MTBE impact to offsite soil southwest of the site. This finding is corroborated by Cambria's 1998 subsurface investigation, in which no TPHg or benzene and only very low concentrations of MTBE were detected in soil from three borings along the private driveway (SVS-14 through 16).

Though no groundwater samples were collected during this investigation, incorporation of MW-5 and MW-6 into the quarterly sampling regimen will enable further definition of the lateral extent of the dissolved gasoline plume downgradient of the site and provide data for further study of plume attenuation and stability.

CLOSING

Please call Melody Munz at (510) 420-3324 if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc.

Stephan Bork
for: Sue Landsittel
Staff Geologist

Stephan Bork, C.E.G., C.HG.
Associate Hydrogeologist

REGISTERED GEOLOGIST
STEPHAN A. BORK
No. EG 2058
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Figure: 1- Monitoring Well Location Map

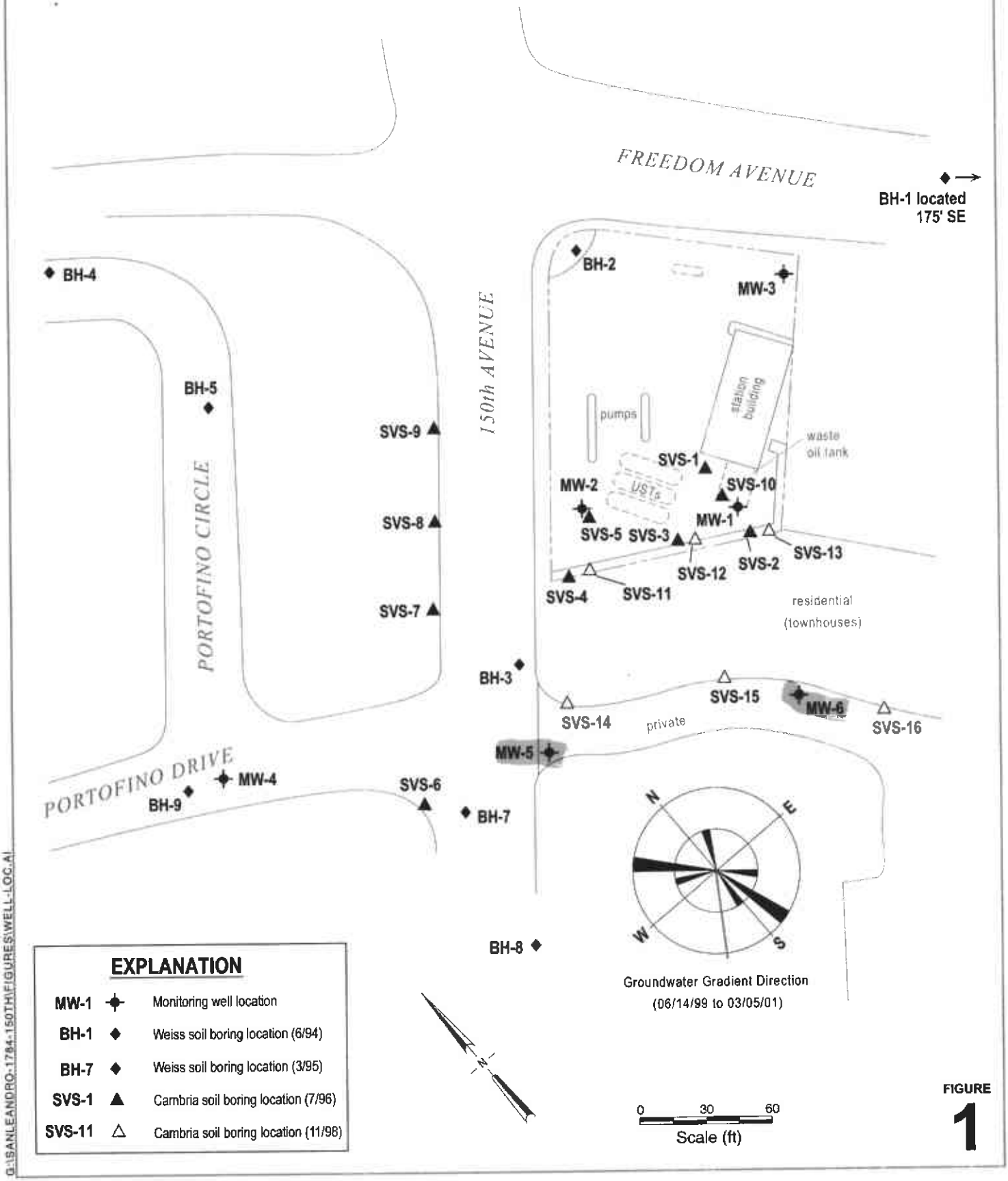
Table: 1 - Soil Analytical Results

Attachments: A - Laboratory Analytical Reports
B - Boring Logs
C - Well Permits
D - Standard Field Procedures for Installation of Monitoring Wells

cc: Karen Petryna, Equiva Services LLC, P.O. Box 7869, Burbank, CA 91510-7869

G:\San Leandro 1784 150th\Well Installation 2001\1784 MWInstall report 11-01.doc

12/20/01



EXPLANATION

MW-1	⌖	Monitoring well location
BH-1	◆	Weiss soil boring location (6/94)
BH-7	◆	Weiss soil boring location (3/95)
SVS-1	▲	Cambria soil boring location (7/96)
SVS-11	△	Cambria soil boring location (11/98)

G:\SANLEANDRO-1784-150TH\FIGURES\WELL-LOC.AI

FIGURE
1

Shell-branded Service Station
1784 150th Avenue
San Leandro, California
Incident #98996068

CAMBRIA

Monitoring Well Location Map

Table 1. Soil Analytical Results - Shell-branded Service Station, 1784 150th St., San Leandro, California - Incident #98996068

Sample ID	Date	Depth (fbg)	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
			←			(ppm)		→
MW-5-15.5	10/24/01	15.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-6-5.5	10/24/01	5.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	**0.012**

Abbreviations and Notes:

ppm = parts per million (milligrams per kilogram).

TPHg = Total Petroleum Hydrocarbons as gasoline, analyzed by EPA Method 8260B.

Benzene, toluene, ethylbenzene, and xylene analyzed by EPA Method 8260B.

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

ATTACHMENT A

Laboratory Analytical Reports

KIFF ANALYTICAL LLC

Report Number : 23033
Date : 11/2/2001

Melody Munz
Cambria Environmental Technology, Inc.
1144 65th Street, Suite B
Oakland, CA 94608

Subject : 2 Soil Samples
Project Name : 1784 150th, San Leandro
Project Number : 243-0612
P.O. Number : 99896068

Dear Ms. Munz,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

Joel Kiff

KIFF ANALYTICAL LLC

Report Number : 23033
Date : 11/2/2001

Project Name : **1784 150th, San Leandro**
Project Number : **243-0612**

Sample : **MW-5-15.5** Matrix : Soil Lab Number : 23033-01
Sample Date :10/24/2001

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	10/30/2001
Toluene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	10/30/2001
Ethylbenzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	10/30/2001
Total Xylenes	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	10/30/2001
Methyl-t-butyl ether (MTBE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	10/30/2001
TPH as Gasoline	**< 1.0**	1.0	mg/Kg	EPA 8260B	10/30/2001
Toluene - d8 (Surr)	103		% Recovery	EPA 8260B	10/30/2001
4-Bromofluorobenzene (Surr)	92.5		% Recovery	EPA 8260B	10/30/2001

Sample : **MW-6-5.5** Matrix : Soil Lab Number : 23033-02
Sample Date :10/24/2001

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	10/30/2001
Toluene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	10/30/2001
Ethylbenzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	10/30/2001
Total Xylenes	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	10/30/2001
Methyl-t-butyl ether (MTBE)	**0.012**	0.0050	mg/Kg	EPA 8260B	10/30/2001
TPH as Gasoline	**< 1.0**	1.0	mg/Kg	EPA 8260B	10/30/2001
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	10/30/2001
4-Bromofluorobenzene (Surr)	93.2		% Recovery	EPA 8260B	10/30/2001

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Report Number : 23033

Date : 11/2/2001

Project Name : **1784 150th, San Leandro**

Project Number : **243-0612**

23033 Quality Control Data - Method Blank

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	10/28/2001
Toluene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	10/28/2001
Ethylbenzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	10/28/2001
Total Xylenes	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	10/28/2001
Methyl-t-butyl ether (MTBE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	10/28/2001
TPH as Gasoline	**< 1.0**	1.0	mg/Kg	EPA 8260B	10/28/2001
Toluene - d8 (Surr)	97.5		% Recovery	EPA 8260B	10/28/2001
4-Bromofluorobenzene (Surr)	90.1		% Recovery	EPA 8260B	10/28/2001

Approved By: Joel Kiff

Report Number : 23033

Date : 11/2/2001

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **1784 150th, San Leandro**

Project Number : **243-0612**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Spike Recovery Data														
Benzene	23066-01	<0.0050	0.0357	0.0368	0.0353	0.0330	mg/Kg	EPA 8260B	10/28/2009	9.0	89.6	10.0	70-130	25
Toluene	23066-01	<0.0050	0.0357	0.0368	0.0336	0.0316	mg/Kg	EPA 8260B	10/28/2009	4.0	85.8	9.18	70-130	25
Tert-Butanol	23066-01	<0.0050	0.178	0.184	0.161	0.152	mg/Kg	EPA 8260B	10/28/2009	0.2	82.4	9.00	70-130	25
Methyl-t-Butyl Ether	23066-01	<0.0050	0.0357	0.0368	0.0340	0.0319	mg/Kg	EPA 8260B	10/28/2009	5.3	86.6	9.59	70-130	25

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Report Number : 23033

Date : 11/2/2001

QC Report : Laboratory Control Sample (LCS)

Project Name : **1784 150th, San Leandro**

Project Number : **243-0612**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	0.0386	mg/Kg	EPA 8260B	10/28/200	90.5	70-130
Toluene	0.0386	mg/Kg	EPA 8260B	10/28/200	87.4	70-130
Tert-Butanol	0.193	mg/Kg	EPA 8260B	10/28/200	86.2	70-130
Methyl-t-Butyl Ether	0.0386	mg/Kg	EPA 8260B	10/28/200	84.8	70-130

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

KIFF ANALYTICAL

720 Olive Drive, Suite D

Davis, CA 95616

(530) 297-4800 (530) 297-4803 fax

EQUIVA Services LLC Chain Of Custody Record

Equiva Project Manager to be Invoiced:

☑ SCIENCE & ENGINEERING ☐ TECHNICAL SERVICES ☐ CRMT HOUSTON

Karen Petryna

23033

INCIDENT NUMBER (S&E ONLY): 9 9 8 9 6 0 6 8

SAP or CRMT NUMBER (TS/CRMT):

DATE: 10/24/01

PAGE: 1 of 1

SAMPLING COMPANY:	LOG CODE:	SITE ADDRESS (Street and City):	GLOBAL ID NO.:
Cambria Environmental Technology, Inc.	CETO	1784 150th, San Leandro	

ADDRESS:	EDF DELIVERABLE TO (Responsible Party or Designee):	PHONE NO.:	E-MAIL:	CONSULTANT PROJECT NO.:
1144 65th St., Suite B, Oakland, CA 94608	Sue Landsittel	(510) 420-3333	slandsittel@cambria-env.com	243-0612

PROJECT CONTACT (Hardcopy or PDF Report to):	TELEPHONE:	FAX:	E-MAIL:	SAMPLER NAME(S) (Print):	LAB USE ONLY
Melody Munz	510.420.3324	510.420.9170	mmunz@cambria-env.com	Sue Landsittel	

TURNAROUND TIME (BUSINESS DAYS): ☒ 10 DAYS ☐ 5 DAYS ☐ 72 HOURS ☐ 48 HOURS ☐ 24 HOURS ☐ LESS THAN 24 HOURS

☐ LA - RWQCB REPORT FORMAT ☐ UST AGENCY: _____

GC/MS MTBE CONFIRMATION: HIGHEST _____ HIGHEST per BORING _____ ALL _____

SPECIAL INSTRUCTIONS OR NOTES: TEMPERATURE ON RECEIPT C°

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH - Gas, Purgeable	BTEX	MTBE (8021B - 5ppb RL)	MTBE (8260B - 0.5ppb RL)	Oxygenates (5) by (8260B)	Ethanol (8260B)	Methanol	EDB & 1,2-DCA (8260B)	EPA 5035 Extraction for Volatiles	VOCs Halogenated/Aromatic (8021B)	TRPH (418.1)	Vapor VOCs BTEX / MTBE (TO-15)	Vapor VOCs Full List (TO-15)	Vapor TPH (ASTM 3416m)	Vapor Fixed Gases (ASTM D1946)	Test for Disposal (4B-)		TPH - Diesel, Extractable (8015m)		MTBE (8260B) Confirmation, See Note	UST REPORTING REQUIRED
	MW-5-15.5	10/24	1:52	Soil	1	X	X	X																		-01
	MW-6-5.5	10/24	7:45	Soil	1	X	X	X																		-02

FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
[signature]		10/24/01	6pm
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Sara Dwight	John Cuttle / Kiff Analytical	102501	1250

DISTRIBUTION: White with final report, Green to File, Yellow and Pink to Client.

10/15/00 Revision

O&O Graphic (714) 898-9702

ATTACHMENT B

Boring Logs

Cambria Environmental Technology, Inc.
1144 - 65th St.
Oakland, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-5
JOB/SITE NAME	1784 150th Avenue, San Leandro, California	**DRILLING STARTED**	24-Oct-01
LOCATION	1784 150th Avenue, San Leandro, California	**DRILLING COMPLETED**	24-Oct-01
PROJECT NUMBER	243-0612	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	8"	**SCREENED INTERVAL**	10 to 25 ft bgs
LOGGED BY	S. Landsittel	**DEPTH TO WATER (First Encountered)**	20.0 ft (24-Oct-01) ▽
REVIEWED BY	S. Bork, RG# 5620	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand augered to 5' bgs. Located at corner of private driveway and 150th Ave. 100' SW of site.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	0.5	Portland Type I/II Cement
							FILL; yellowish brown; mottled; 10% clay, 10% silt, 60% sand, 20% gravel; no plasiticity; dry.	3.0	
				5	CL		**Silty CLAY** (CL); black; 80% clay, 20% silt, rare gravel; stiff; high plasticity; damp. @ 5 ft bgs - 85% clay, 15% silt.	6.5	Bentonite Seal
					GM		**Silty Sandy GRAVEL** (GM); brown; 10% clay, 25% silt, 25% sand, 40% gravel; no plasticity; damp.	9.5	Monterey Sand #2/12
				10	ML		**Clayey Sandy SILT** (ML); grayish brown; 15% clay, 60% silt, 20% sand, 5% gravel; low plasticity; damp.		
				15	SM		**Silty SAND with Gravel** (SM); light brown; 10% clay, 20% silt, 50% sand, 20% gravel; low plasticity; damp.	16.0	2"-diameter, 0.010" Slotted Schedule 40 PVC
				20	ML		**Clayey Sandy SILT** (ML); brown; 15% clay, 58% silt, 25% sand, 2% gravel; medium plasticity; damp. ▼	19.0	
				25			@ 24.5 ft bgs - 20% clay, 58% silt, 20% sand, 2% gravel.	25.0	Bottom of Boring @ 25 ft

WELL LOG (PID) G:\SANLEA~3\GINT\SNL1784.GPJ DEFAULT.GDT 12/5/01

Cambria Environmental Technology, Inc.
1144 - 65th St.
Oakland, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-6
JOB/SITE NAME	1784 150th Avenue, San Leandro, California	**DRILLING STARTED**	24-Oct-01
LOCATION	1784 150th Avenue, San Leandro, California	**DRILLING COMPLETED**	24-Oct-01
PROJECT NUMBER	243-0612	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	8"	**SCREENED INTERVAL**	5 to 20 ft bgs
LOGGED BY	S. Landsittel	**DEPTH TO WATER (First Encountered)**	8.0 ft (24-Oct-01)
REVIEWED BY	S. Bork, RG# 5620	**DEPTH TO WATER (Static)**	NA

REMARKS Hand augered to 5' bgs. Located in north side of private driveway approximately 70' SW of site and 120' SE of 150th Ave.

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	0.4	Portland Type I/II Cement
							FILL; reddish brown; 5% clay, 5% silt, 55% sand, 35% subangular gravel; no plasticity; damp.	3.0	Bentonite Seal
		MW-6-5.5		5	CL		**Silty CLAY** (CL); black; 75% clay, 20% silt, 5% sand; stiff; high plasticity; moist. @ 4 ft bgs - wet.		Monterey Sand #2/12
				10	GM		**Silty Sandy GRAVEL** (GM); brown; 5% clay, 25% silt, 20% fine sand, 50% subangular gravel; no plasticity; wet.	10.0	
				15	ML		**Clayey SILT** (ML); light brown; 25% clay, 60% silt, 10% sand, 5% gravel; stiff; low to medium plasticity; damp.	13.0	2"-diameter, 0.010" Slotted Schedule 40 PVC
							@ 18.5 ft bgs - 25% clay, 65% silt, 8% sand, 2% gravel.		
				20				20.0	Bottom of Boring @ 20 ft

WELL LOG (PID) G:\SANLEA-3\GINT\SNL1784.GPJ DEFAULT.GDT 12/5/01

ATTACHMENT C

Well Permits

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
399 ELMHURST ST. HAYWARD CA. 94544-1395
PHONE (510) 670-5554
FAX (510)782-1939

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT for gas station at 1784 150th Ave, San Leandro. on northeast side of private driveway of condominium complex at 1784 150th Avenue

CLIENT
Name EQUIVA SERVICES LLC
Address PO BOX 7869 Phone
City BURBANK, CA Zip 91510-7869

APPLICANT
Name CAMBRIA ENVIRONMENTAL TECHNOLOGY SUE LANDSITTEL Fax (510) 420 9170
Address 1144 65th St Phone (510) 420 5377
City OAKLAND, CA Zip 94608

TYPE OF PROJECT
Well Construction
Cathodic Protection ☐
Water Supply ☐
Monitoring ☒
Geotechnical Investigation
General ☐
Contamination ☐
Well Destruction ☐

PROPOSED WATER SUPPLY WELL USE
New Domestic ☐ Replacement Domestic ☐
Municipal ☐ Irrigation ☐
Industrial ☐ Other ________ ☐

DRILLING METHOD:
Mud Rotary ☐ Air Rotary ☐ Auger ☒
Cable ☐ Other ☐

DRILLER'S NAME GREGG DRILLING

DRILLER'S LICENSE NO. C57 485165

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 30 ft.
Surface Seal Depth 5 ft. Owner's Well Number MW-5

GEOTECHNICAL PROJECTS
Number of Borings ________ Maximum
Hole Diameter ________ in. Depth ______ ft.

ESTIMATED STARTING DATE 10/18/01
ESTIMATED COMPLETION DATE 10/18/01

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [signature] DATE 9/12/01
PLEASE PRINT NAME SUE LANDSITTEL

FOR OFFICE USE

PERMIT NUMBER W01-853
WELL NUMBER ________
APN ________

PERMIT CONDITIONS
Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources Well Completion Report. (circled)
3. Permit is void if project not begun within 90 days of approval date

B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS (circled)
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL
Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings.

E. CATHODIC
Fill hole anode zone with concrete placed by tremie.

F. WELL DESTRUCTION
Send a map of work site. A separate permit is required for wells deeper than 45 feet.

G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

APPROVED [signature] DATE 9-14-01

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
399 ELMHURST ST. HAYWARD CA. 94544-1395
PHONE (510) 670-5554
FAX (510)782-1939

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT for gas station at 1784 150th AVENUE, @ SAN LEANDRO on private driveway at condominium complex at 1724 150th Ave. at corner of driveway and 150th Ave.

CLIENT
Name EQUIVA SERVICES LLC
Address Po Box 7869 Phone
City BURBANK, CA Zip 91510

APPLICANT
Name CAMBRIA ENVIRONMENTAL TECHNOLOGY
SUE LANDSITTEL Fax (510) 420-9170
Address 1144 65th St, Suite B Phone (510) 420-3333
City OAKLAND, CA Zip 94608

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	0	General	0
Water Supply	0	Contamination	0
Monitoring	X	Well Destruction	0

PROPOSED WATER SUPPLY WELL USE

New Domestic	0	Replacement Domestic	0
Municipal	0	Irrigation	0
Industrial	0	Other	0

DRILLING METHOD:

Mud Rotary	0	Air Rotary	0	Auger	X
Cable	0	Other	0		

DRILLER'S NAME GREGG DRILLING

DRILLER'S LICENSE NO. C57 485165

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 30 ft.
Surface Seal Depth 5 ft. Owner's Well Number MW-6

GEOTECHNICAL PROJECTS
Number of Borings ____ Maximum
Hole Diameter ____ in. Depth ____ ft.

ESTIMATED STARTING DATE 10/18/01
ESTIMATED COMPLETION DATE 10/18/01

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Sue Jotte DATE 9/12/01

PLEASE PRINT NAME SUE LANDSITTEL

Rev. 5-13-00

FOR OFFICE USE

PERMIT NUMBER WO1-854
WELL NUMBER
APN

PERMIT CONDITIONS
Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date

B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL
Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings.

E. CATHODIC
Fill hole anode zone with concrete placed by tremie.

F. WELL DESTRUCTION
Send a map of work site. A separate permit is required for wells deeper than 45 feet.

G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

APPROVED [signature] DATE 9-14-01

ATTACHMENT D

Standard Field Procedures for Installation of Monitoring Wells

CAMBRIA

STANDARD FIELD PROCEDURES FOR INSTALLATION OF MONITORING WELLS

This document presents standard field methods for drilling and sampling soil borings and installing, developing and sampling ground water monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

SOIL BORINGS

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor or staining, and to collect samples for analysis at a State-certified laboratory. All borings are logged using the Unified Soil Classification System by a trained geologist working under the supervision of a California Registered Geologist (RG).

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or direct-push technologies such as the Geoprobe®. Soil samples are collected at least every five ft to characterize the subsurface sediments and for possible chemical analysis. Additional soil samples are collected near the water table and at lithologic changes. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments at the bottom of the borehole.

Drilling and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Analysis

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4° C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable volatile vapor analyzer measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. Volatile vapor analyzer measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples, if they are collected from the boring, are either collected using a driven Hydropunch® type sampler or are collected from the open borehole using bailers. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Construction and Surveying

Ground water monitoring wells are installed to monitor ground water quality and determine the ground water elevation, flow direction and gradient. Well depths and screen lengths are based on ground water depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 ft below and 5 ft above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three ft thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two ft above the well screen. A two ft thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I,II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security.

The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

Wells are generally developed using a combination of ground water surging and extraction. Surging agitates the ground water and dislodges fine sediments from the sand pack. After about ten minutes of surging, ground water is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of ground water are extracted and the sediment volume in the ground water is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Ground Water Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of ground water are purged prior to sampling. Purging continues until ground water pH, conductivity, and temperature have stabilized. Ground water samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

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