CAMBRIA

20129

Alameda County
AUG 2 [illegible]
Environmental Health

August 12, 2003

Mr. ~~Barney M. Chan~~ DH
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Work Plan Addendum – Proposed Feasibility Testing**
Douglas Parking
1721 Webster Street
Oakland, California 94612
ACHCSA Site # 4070
Cambria Project # 580-0197

Dear Mr. Chan:

On behalf of Mr. Douglas, Cambria Environmental Technology, Inc. (Cambria) is submitting this *Work Plan Addendum* in response to the Alameda County Heath Care Services Agency letter dated April 29, 2002 (Attachment A). The *Work Plan Addendum* provides the requested additional information regarding the proposed feasibility testing for the above referenced site.

Feasibility Testing

As described in Cambria's Feasibility Testing and Feasibility Study Plan dated February 2, 2001, one day of soil vapor extraction (SVE) / air sparge (AS) testing will be performed in the vicinity of the former USTs (Figure 1). A SVE test will be performed on well SV-1 and a combined SVE/AS test will be performed on wells SV-1, AS-1, AS-2, and AS-3 (Figure 1). See Cross Section A-A' (Figure 2) and the soil boring/well logs for well construction details and soil lithology (Attachment B)

Test Protocol: Cambria will first perform a SVE "step-test" on well SV-1. The step test will consist of a minimum of three steps to determine the optimal vapor extraction rate and vacuum versus flow characteristics of the subsurface soils. The applied well vacuum will be increased sequentially until the optimal vapor extraction rate is determined. The optimal vapor extraction rate is defined as the level of vacuum that produces the maximum sustained flow rate. The applied vacuum, hydrocarbon concentrations, vapor flow rate, and water depth in SV-1 will be measured at the end of each step.

After completion of the step test (approximately 60 minutes), Cambria will conduct a constant vacuum test on well SV-1 at the determined optimal vapor extraction rate. The SVE test will be performed until well vacuums have stabilized observation wells. During this test, Cambria will measure the vapor extraction flow rate, hydrocarbon concentration, applied vacuum, and

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groundwater depth in extraction well SV-1, and the vacuum influence on nearby observation wells MW-1, MW-2, MW-3, MW-6, and MW-7. Additionally, a hydrocarbon vapor sample will be collected in a Tedlar bag at the beginning and end of the constant vacuum test.

Following completion of the SVE constant vacuum test on SV-1 (approximately 120 minutes), a combined SVE/AS test will be conducted. The constant vacuum will remain applied to well SV-1 while air is injected into well AS-1. Air will be injected beneath the water at two injection pressures, approximately 1.5 times the hydrostatic pressure (approximately 3.2 psi) and 2.5 times the hydrostatic pressure (approximately 5.3 psi). To avoid fracturing and loss of well control, the injection pressure will not exceed 0.7 psi/ft of overburden (approximately 17.5 psi). After completion of air sparging in AS-1 (approximately 30 to 60 minutes), air will be injected separately into wells AS-2 and AS-3. During the combined SVE/AS test, Cambria will monitor the air sparge injection pressure and flow rate and the vapor extraction flow rate, hydrocarbon concentration, applied vacuum, and water level in well SV-1. The vacuum/pressure influence and dissolved oxygen in nearby observation wells will also be measured periodically. A hydrocarbon vapor sample will be collected in a Tedlar bag from SV-1 while sparging at the maximum pressure into each air sparge well.

Test Equipment and Instrumentation: A regenerative blower will be utilized to generate a vacuum on SV-1 and extract soil vapors from the high permeability native sandy soil beneath the site. Granular activated carbon will be use to treat the extracted hydrocarbon vapors. An air compressor will be used to inject compressed air into the saturated zone, approximately 5 to 10 feet below the groundwater table (Figure 2). A Horiba hydrocarbon analyzer, calibrated to iso-butlylene, will be used to field measure hydrocarbon vapor concentrations from the extraction well. A TSI thermoanemometer will be used to measure vapor flow rates. Magnehelic gauges will be used to measure the vacuum applied at the wellhead and induced in the observation wells. A Solinist water level meter or pressure transducer will be used to measure the depth of groundwater in the extraction and observation wells. A Thomas Industries vacuum pump will be used to collect soil vapor samples in one-liter Tedlar bags for laboratory analysis. Vapor samples will be submitted to a state certified laboratory for analysis of total petroleum hydrocarbons as gasoline by EPA Method 8015 (Modified), and benzene, toluene, ethylbenzene, and xylenes by EPA Method 8021B.

Permits: Cambria will obtain the necessary approval from the Bay Area Air quality Management District (BAAQMD) prior to performing the feasibility testing. If necessary, an encroachment will be collected from the City of Oakland prior to perform testing within the sidewalk.

Data Evaluation

The following data from testing will be tabulated/charted and calculated by Cambria:

- Vapor extraction flow rates, applied vacuum levels, and hydrocarbon concentrations during SVE testing;
- Vapor extraction flow rates, applied vacuum levels, air sparge injection pressures, air sparge flow rates, and hydrocarbon concentrations during SVE/AS testing;
- Hydrocarbon mass removal rates (HC removal over time);
- Radius of influence (observation well vacuum over distance);
- Groundwater upwelling potential (water depths versus applied vacuum levels); and,
- Air sparging influence (HC removal versus air sparge data).

Evaluation of the test data listed above will determine if SVE/AS is the most appropriate technology to remediate the site. The test results will also assist in the selection of the proper extraction, injection, and treatment equipment for the installation of a potential remediation system. Upon completion of SVE/AS testing, Cambria will prepare Feasibility Test Report that will summarize all testing activities, evaluate test results, and present conclusions and recommendations to either proceed with the biosparge test, implement SVE/AS, or consider an alternative remedial method.

Schedule

Cambria plans to obtain any permits and conduct feasibility testing activities during the third quarter. If you have any further questions or comments regarding this report, please contact me at (510) 420-3327.

Sincerely,
Cambria Environmental Technology, Inc.

Ron Scheele, R.G.
Senior Geologist

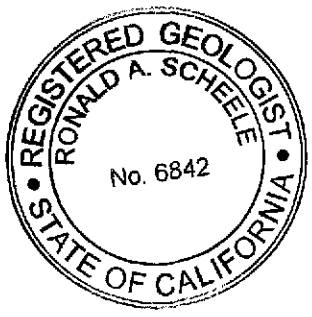

Figure 1 – Well Location Map
Figure 2 – Cross section A-A'
Attachment A: ACHCS Letter dated April 29, 2002
Attachment B: Soil Boring/Well Logs

cc: Mr. Lee Douglas, Douglas Parking, 1721 Webster Street, Oakland, California 94612

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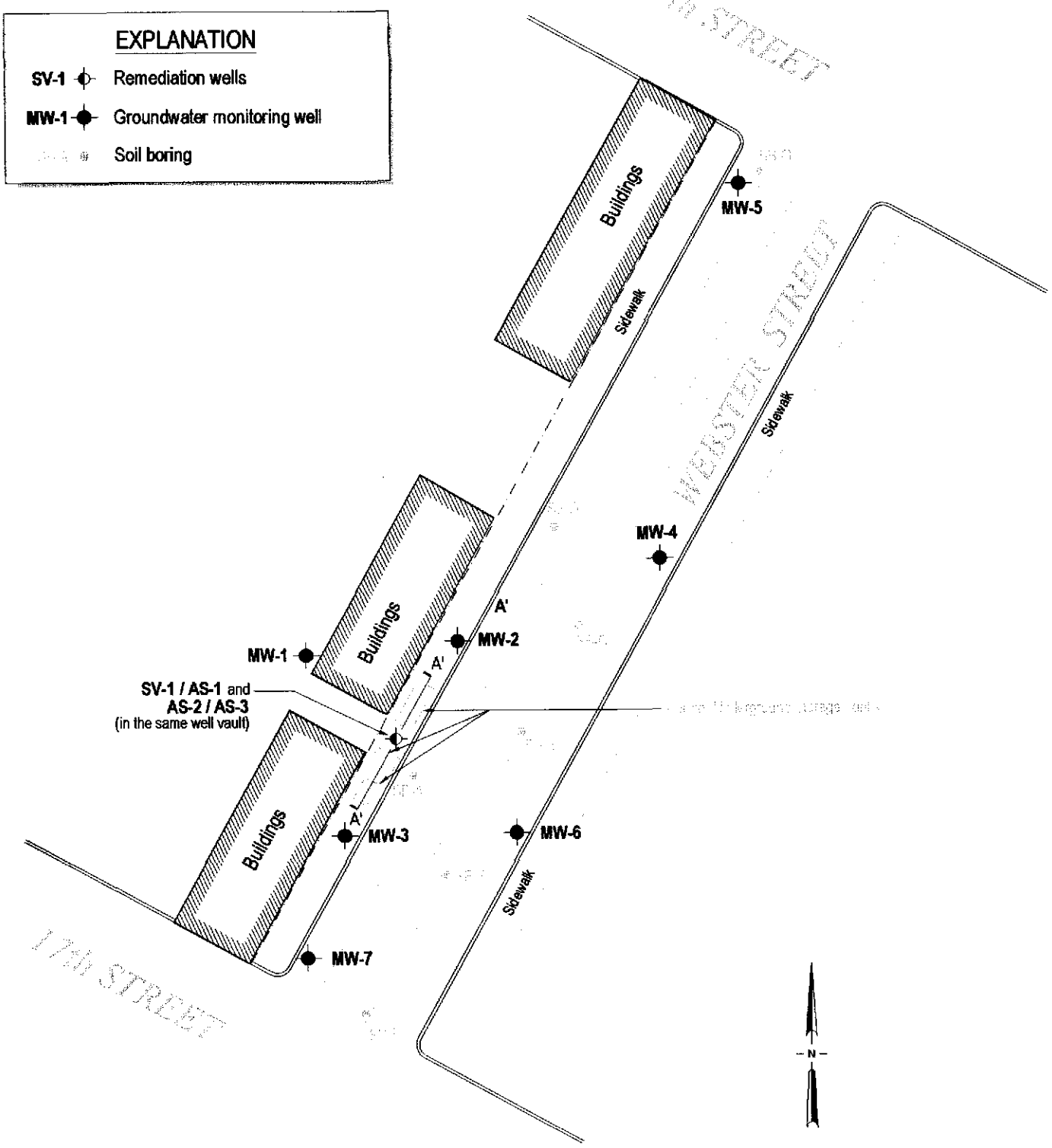


FIGURE
1

Base map from Piers Environmental Services

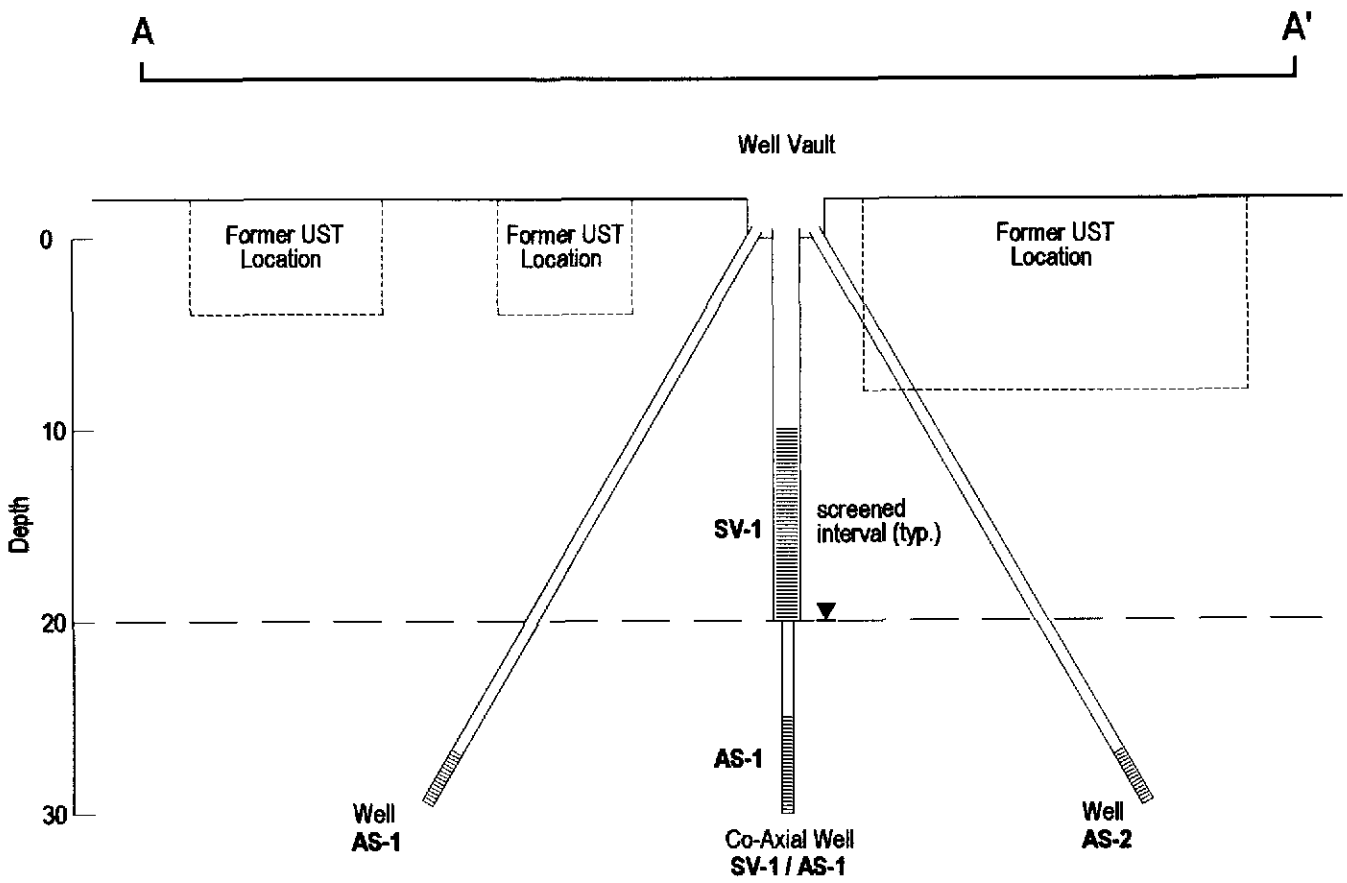
H:\SB-2004\DOUGLAS\1721 Webster\FIGURES\SITEPLAN.DWG

Douglas Parking Facility

1721 Webster Street
Oakland, California

CAMBRIA

Site Plan



0 5 10

Scale (ft)

FIGURE

2

H:\SB-2004\DOUGLAS\ANGLE.DWG

Douglas Parking Facility

1721 Webster Street

Oakland, California

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Cross Section A - A'

Well Cluster Schematic

Attachment A

ACHCS Letter dated April 29, 2002

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

April 29, 2002
StID 4070/RO0000129

Mr. Lee Douglas
Douglas Parking
1721 Webster St.

Re: Subsurface Investigation Workplan, 1721 Webster St., Oakland, CA 94607

Dear Mr. Douglas:

Our office has received and reviewed the March 28, 2002 Subsurface Investigation Workplan for the referenced site prepared by Cambria Environmental, your consultant. The work plan proposes the installation of two monitoring wells (MW-6 and MW-7) to further characterize the hydrocarbon contaminant plume. This work plan is approved and the wells should be installed as soon as possible. Please include the analysis of the following oxygenates and lead scavengers, TAME, ETBE, DIPE, TBA, EDB and EDC in addition to MTBE in the two highest impacted wells.

Our office would also like additional information regarding the proposed soil vapor extraction/air sparge tests, which we have previously approved. Please provide a cross-sectional diagram of the existing remediation wells and describe how each of the tests will be performed and evaluated. We understand that based upon the results of the tests, a recommendation for the most appropriate remediation will be made. These results may also affect our prior recommendation to not proceed with a three month biosparge test.

You may contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M Chan

Barney M. Chan
Hazardous Materials Specialist

C: B. Chan, files
Mr. B. Clark-Riddell, Cambria Environmental, 1144 65th St., Suite B, Oakland CA 94608
Mr. H. Patel, SWRCB, 1001 I St., 17th Floor, Sacramento, CA 95814-2828
Wpap1721WebsterSt

Cambria Environmental Technology, Inc.
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Telephone: (510) 420-0700
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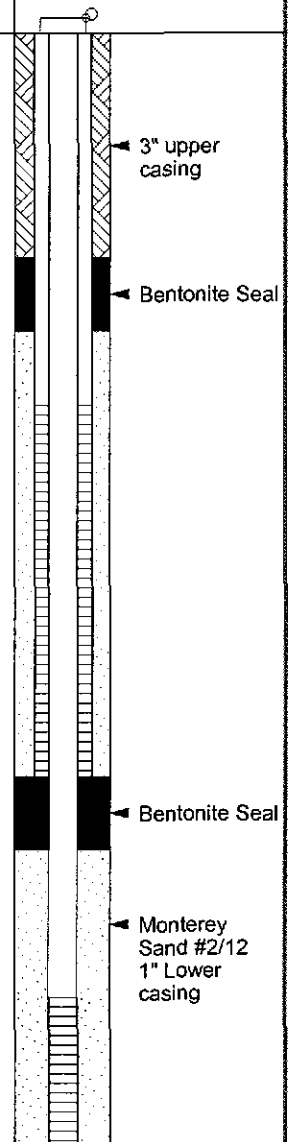
BORING/WELL LOG

CLIENT NAME	Douglas Parking Company	**BORING/WELL NAME**	SV-1/AS-1 (formerly RW-1)
JOB/SITE NAME	Webster	**DRILLING STARTED**	04-Mar-00
LOCATION	1721 Webster Street, Oakland, CA.	**DRILLING COMPLETED**	04-Mar-00
PROJECT NUMBER	580-0197	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger Limited Access Rhino	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	8"	**SCREENED INTERVAL**	NA
LOGGED BY	J. Riggi	**DEPTH TO WATER (First Encountered)**	20.0 ft (04-Mar-00)
REVIEWED BY	R. Clark-Riddell, PE# 49629	**DEPTH TO WATER (Static)**	NA

REMARKS Hand Augered to 5' bgs., boring located in Webster street sidewalk in garage entrance. Well is a co-axial SVE/AS well.

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)
							CONCRETE	0.5
					SP		**SAND**; (SP); brown; damp; 5% clay, 10%silt, 80% fine grained sand, 5% gravel; very high estimated permeability.	
12		RW-1@ 5'		5			**SAND**; (SP); brown; damp to wet; 5% clay, 5% silt, 90% fine to medium grained sand; very high estimated permeability.	5.0
63		RW-1@ 10'		10				
116		RW-1@ 15'		15	SP			
427		RW-1@ 20'		20			@20'- wet.	
103		RW-1@ 25'		25				
109		RW-1@ 29.5'		30	SM		**Silty SAND with Clay**; (SM); brown; wet; 15% clay, 30% silt, 55% medium grained sand; very high estimated permeability.	29.5 30.0

WELL DIAGRAM



WELL LOG (PID) H:\SB-2004 (UST FUND)\DOUGLAS PARKING\1721 WEBSTER\FIGURES\580-0197.GPJ DEFAULT.GDT 8/14/03

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BORING/WELL LOG

CLIENT NAME	Douglas Parking Company	**BORING/WELL NAME**	AS-2 (formerly AS-1)
JOB/SITE NAME	Webster	**DRILLING STARTED**	04-Mar-00
LOCATION	1721 Webster Street, Oakland, CA.	**DRILLING COMPLETED**	04-Mar-00
PROJECT NUMBER	580-0197	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger Limited Access Rhino	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	8"	**SCREENED INTERVAL**	31 to 34 ft bgs
LOGGED BY	J. Riggi	**DEPTH TO WATER (First Encountered)**	20.0 ft (04-Mar-00) ▽
REVIEWED BY	R. Clark-Riddell, PE# 49629	**DEPTH TO WATER (Static)**	NA ▼

REMARKS Hand Augered to 5' bgs. Boring located in Webster street sidewalk in garage entrance.

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
				0			**SAND**		
				5					
				10			Air Sparge wells were installed 30 degrees from vertical to a total depth of 30 feet bgs. No samples were collected. Soil was logged from cuttings.		
				15	SP				
				20					
				25					
				30				34.0	Bottom of Boring @ 34 ft

2" diam., Schedule 40 PVC

Bentonite Seal

Monterey Sand #2/12

2"-diam., 0.010" Slotted

WELL LOG (PID) H:\SB-2004 (UST FUND)\DOUGLAS PARKING\1721 WEBSTER\FIGURES\580-0197.GPJ DEFAULT.GDT 8/14/03

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BORING/WELL LOG

CLIENT NAME	Douglas Parking Company	**BORING/WELL NAME**	AS-3 (formerly AS-2)
JOB/SITE NAME	Webster	**DRILLING STARTED**	04-Mar-00
LOCATION	1721 Webster Street, Oakland, CA.	**DRILLING COMPLETED**	04-Mar-00
PROJECT NUMBER	580-0197	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger Limited Access Rhino	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	8"	**SCREENED INTERVAL**	31 to 34 ft bgs
LOGGED BY	J. Riggi	**DEPTH TO WATER (First Encountered)**	20.0 ft (04-Mar-00) ▽
REVIEWED BY	R. Clark-Riddell, PE# 49629	**DEPTH TO WATER (Static)**	NA ▼

REMARKS Hand Augered to 5' bgs. Boring located in Webster street sidewalk in garage entrance.

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
				0			**SAND**		
				5					
				10			Air Sparge wells were installed 30 degrees from vertical to a total depth of 30 feet bgs. No samples were collected. Soil was logged from cuttings.		
				15	SP				
				20			▽		
				25					
				30				34.0	2" diam., Schedule 40 PVC; Bentonite Seal; Monterey Sand #2/12; 2"-diam., 0.010" Slotted; Bottom of Boring @ 34 ft

WELL LOG (PID) H:\SB-2004 (UST FUND)\DOUGLAS PARKING\1721 WEBSTER\FIGURES\580-0197.GPJ DEFAULT.GDT 8/14/03

Gen Tech Environmental, Inc. San Jose, CA

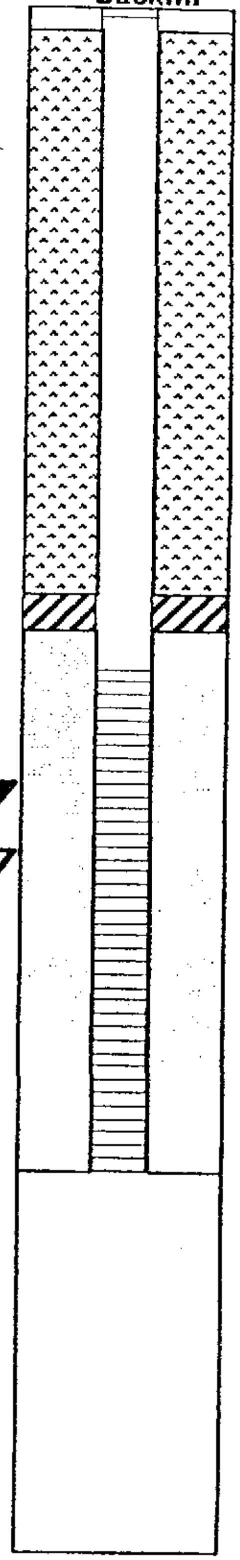
Exploratory Boring Log

Project No. 9432 **Boring/Well No.** MW-1
Client: Douglas Parking **Date Drilled:** Sept. 8, 1994
Location: 1721 Webster St., Oakland, CA **Logged by:** EL
Drilling Method: Hollowstem **Permit:** Zone 7 #94501
Water Levels: 1st Enc:23' Static: 21.7

Borehole Completion
Well Installed: 2"dia. Sch 40 PVC
Total Depth: 30.5' Casing Depth: 30.5'
Screen Length: 10' 0.020" Blank Length: 20.5'
Top Sand Pack: 16.5' Top Bentonite: 15.5
Grout Seal: 15.5" to 0.5' vault box
Top of Casing Elev. 29.25' MSL

Sample No.	OV	Blow Count	Depth	Lithology Log
			0	Concrete Surface
				SM-SC - Silty SAND to CLayey SAND, olive brown to dark olive brown 2.5Y3/3 to 4/4, drills loose to medium dense damp
	-	grab	5	Clay content increases with depth
MW-1 @10'	-	24	10	Same as above, oxidation mottles, few burrows, medium dense, damp.
MW-1 @15'	-	53	15	SM - Silty SAND, olive brown 2.5Y4/4, fine to med. grained, 20% silt, very dense, damp.
MW-1 @20'	-	73	20	SP - SAND, dark greenish gray 5GY(4/1), fine to med. grained, very dense, moist.
MW-1 @25'	-	40	25	Same as above, dark grayish brown 2.5Y(4/2), very dense, saturated, flowing conditions.
			28	Driller calls penetration rate change at 28 feet.
MW-1 @30'	-	44	30	CL - Silty CLAY, pale olive 5Y(6/3), 15% silt, med. to higly plastic, hard, damp.
				Bottom of Boring = 30.5 feet

Well Detail/ Backfill



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Gen Tech Environmental, Inc. San Jose, CA

Exploratory Boring Log

Project No. 9432 **Boring/Well No.** MW-2
Client: Douglas Parking **Date Drilled:** Sept. 8, 1994
Location:1721 Webster St., Oakland, CA **Logged by:** EL
Drilling Method: Hollowstem **Permit:** Zone 7 #94501
Water Levels: 1st Enc: 24' Static: 20.1'

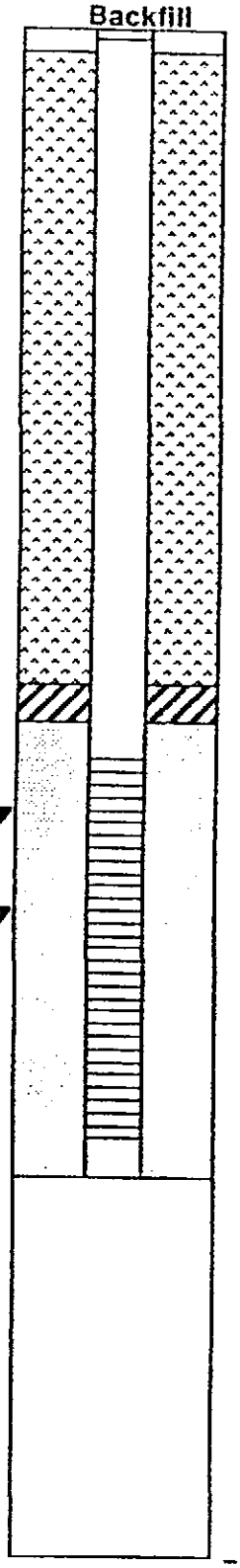
Borehole Completion
Well Installed: 2"dia. Sch 40 PVC
Total Depth:30.5 Casing Depth: 29.5
Screen Length: 10' 0.020" Blank Length: 19.5
Top Sand Pack: 18.5' Top Bentonite: 17.5'
Grout Seal:17.5' to 0.5' vault box
Top of Casing Elev. 27.10' MSL

Sample No.	Han	Blow Count	Sample	Depth	Lithology Log
					Concrete
MW-2 @5'	-	grab	X	5	SM - Silty SAND, very dark grayish brown 2.5Y(3/2), sand med. to fine grained, 15% silt, drills loose, damp.
MW-2 @10'	-	27		10	SC - Clayey SAND, 10YR (4/3), clay 35-40%, silt 10% fines show low plasticity, medium dense, moist.
					SM - Silty SAND, light olive brown 2.5Y(4/4), 15-20% silt, dense, moist.
MW-2 @15'	500 ppm	31		15	SP - SAND, dark grayish brown, 5GY (4/1), silt<5%, petroleum odor, dense, moist.
MW-2 @20'	-	34		20	Same as above, dense, moist.
MW-2 @25'	-	38		25	Same as above, dense nearly saturated.
					Same as above, dense nearly saturated, flowing conditions.
MW-2 @30'	-	44		30	CL - Silty CLAY, pale olive brown, 5Y(6/3), 20% silt, higly plastic, hard, damp.
					Bottom of Boring = 30.5 feet

Han- Hanby Field Analytical Chemical Colometric Test, in parts per million

GWP 2EG.202

Well Detail/ Backfill



Gen Tech Environmental, Inc. San Jose, CA

Exploratory Boring Log

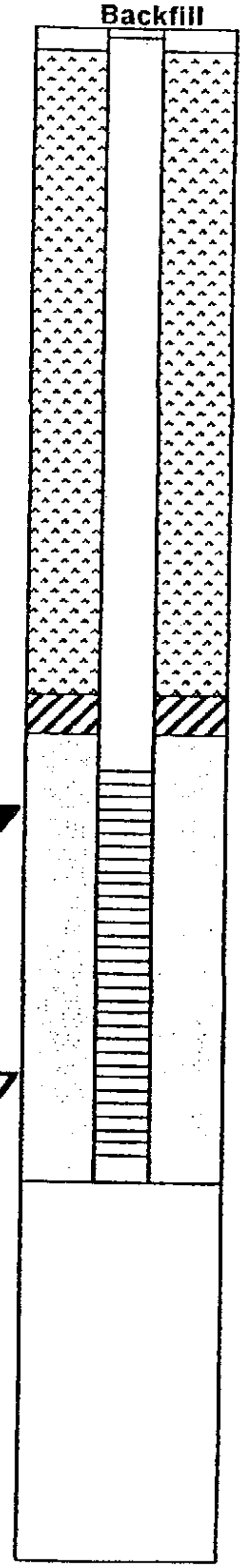
Project No. 9432 **Boring/Well No.** MW-3
Client: Douglas Parking **Date Drilled:** Sept. 8, 1994
Location: 1721 Webster St., Oakland, CA **Logged by:** EL
Drilling Method: Hollowstem **Permit:** Zone 7 #94501
Water Levels: 1st Enc: 28.20' Static: 21.60'

Borehole Completion
Well Installed: 2"dia. Sch 40 PVC
Total Depth: 30.5' Casing Depth: 30'
Screen Length: 10' 0.020" Blank Length: 20'
Top Sand Pack: 19' Top Bentonite: 18'
Grout Seal: 18' to 0.5' vault box
Top of Casing Elev. 29.50' MSL

Sample No.	OV	Blow Count	Depth	Lithology Log
			0	Concrete
				SM - Silty SAND, very dark grayish brown 2.5Y(3/2), sand med. to fine grained, 15% silt, drills loose, damp.
MW-3 @5'	-	grab	5	
MW-3 @10'	-	30	10	SC - Clayey SAND, 10YR (4/3), clay 35-40%, silt 10% fines show low plasticity, medium dense, moist.
				SM - Silty SAND, light olive brown 2.5Y(4/4), 15-20% silt, dense, moist.
MW-3 @15'	-	28	15	SP - SAND, dark grayish brown, 5GY (4/1), silt<5%, petroleum odor, dense, moist.
MW-3 @20'	-	32	20	Same as above, dense, moist. Slight petroleum odor at 23 feet.
MW-3 @25'	-	25	25	Same as above, petroleum odor, dense, nearly saturated.
				Same as above, dense, saturated, flowing conditions.
MW-3 @30'	-	24	30	CL - Silty CLAY, pale olive brown, 5Y(6/3), 20% silt, higly plastic, hard, damp.

Bottom of Boring = 30.5 feet, water enters borehole slowly, lower 0.5 feet fill with sand from overlying strata.

Well Detail/Backfill



CAMP CEG 1262

Cambria Environmental Technology, Inc.
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BORING/WELL LOG

CLIENT NAME	Douglas Parking Company	**BORING/WELL NAME**	MW-6
JOB/SITE NAME	Webster	**DRILLING STARTED**	27-Jun-03
LOCATION	1721 Webster Street, Oakland, CA.	**DRILLING COMPLETED**	27-Jun-03
PROJECT NUMBER	580-0197	**WELL DEVELOPMENT DATE (YIELD)**	30-Jun-03 (6 gallons)
DRILLER	Woodward Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	8"	**SCREENED INTERVAL**	15 to 30 ft bgs
LOGGED BY	R. Fennell	**DEPTH TO WATER (First Encountered)**	25.0 ft (27-Jun-03)
REVIEWED BY	Mary C. Holland-Ford R.G. #7551	**DEPTH TO WATER (Static)**	19.40 ft (27-Jun-03)
REMARKS	Hand augered to 5' bgs.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)
0							**ASPHALT**: 10 inches thick.	0.8
					SM		**Silty SAND** (SM): brown; very loose; damp; 30% silt, 70% fine to medium grained sand; high estimated permeability; well sorted.	3.0
					SC		**Clayey SAND** (SC): gray brown; very loose; damp; 20% clay, 20% silt, 60% fine to coarse grained sand; low plasticity; medium estimated permeability.	5.0
0	9 6 7			5			**Silty SAND** (SM): brown; medium dense; damp; 30% silt, 70% fine grained sand; high estimated permeability.	
0	6 12 17			10			@ 10' becomes 20% silt, 80% fine to medium grained sand.	
0	50			15	SM		@ 15' becomes gray brown, very dense, 25% silt, 75% fine to medium grained sand.	
88	25 50	MW-6@ 20'		20			@ 20' becomes gray, very dense, moist, 10% silt, 90% fine to medium grained sand.	
0	12 12 12			25	CL		**Sandy CLAY** (CL): gray; very stiff; wet; 60% clay, 10% silt, 30% fine grained sand; medium plasticity; medium estimated permeability.	25.0
0	12 22 35			30	CL		**Silty CLAY** (CL): gray; hard; wet; 50% clay, 40% silt, 10% fine to coarse grained sand; medium plasticity; low estimated permeability.	29.0 30.0

WELL DIAGRAM: Portland Type I/II Cement; Bentonite Seal; Monterey Sand #2/12; 2"-diameter, 0.010" Slotted Schedule 40 PVC; Bottom of Boring @ 30 ft

WELL LOG (PID) H:\SB-2004 (UST FUND)\DOUGLAS\1721 WEBSTER\FIGURES\580-0197.GPJ DEFAULT.GDT 8/4/03

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	Douglas Parking Company	**BORING/WELL NAME**	MW-7
JOB/SITE NAME	Webster	**DRILLING STARTED**	27-Jun-03
LOCATION	1721 Webster Street, Oakland, CA.	**DRILLING COMPLETED**	27-Jun-03
PROJECT NUMBER	580-0197	**WELL DEVELOPMENT DATE (YIELD)**	30-Jun-03 (10 gallons)
DRILLER	Woodward Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	8"	**SCREENED INTERVAL**	15 to 30 ft bgs
LOGGED BY	R. Fennell	**DEPTH TO WATER (First Encountered)**	21.0 ft (27-Jun-03)
REVIEWED BY	Mary C. Holland-Ford R.G. #7551	**DEPTH TO WATER (Static)**	20.40 ft (27-Jun-03)
REMARKS	Hand augered to 5' bgs.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)
0							**ASPHALT**: 10 inches thick.	0.8
							Silty SAND (SM): brown; very loose; damp; 30% silt, 70% fine grained sand; high estimated permeability; well sorted.	
0	10 10 22			5			@ 5' becomes dense, 30% silt, 70% fine to coarse grained sand.	
0	12 15 18			10			@ 10' becomes 5% clay, 35% silt, 60% fine to medium grained sand, low plasticity, medium permeability.	
0	20 50			15	SM		@ 15' becomes very dense, 15% silt, 85% fine grained sand.	
0	20 50			20			@ 20' becomes wet. ▼	
0	12 12 12			25			@ 25' becomes gray, medium dense.	
0	18 18 20			30	CL		**Silty CLAY** (CL): gray; hard; wet; 55% clay, 40% silt, 5% fine grained sand; medium plasticity; low estimated permeability.	29.0 30.0

WELL DIAGRAM

- Portland Type I/II Cement
- Bentonite Seal
- Monterey Sand #2/12
- 2"-diameter, 0.010" Slotted Schedule 40 PVC
- Bottom of Boring @ 30 ft

WELL LOG (PID) H:\SB-2004 (UST FUND)\DOUGLAS\1721 WEBSTER\FIGURES\580-0197.GPJ DEFAULT.GDT 8/4/03