PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT
UNOCAL SERVICE STATION 4511
BELLEVUE, WASHINGTON

Prepared for
UNOCAL Corporation
September 5, 1990

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Project U24-08.01

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Introduction and Scope of Work

This report presents the results of Sweet-Edwards/EMCON, Inc.'s (SE/E) preliminary environmental site assessment at UNOCAL Service Station 4511. The site is located at 10605 Northeast 8th Street, Bellevue, Washington (Figure 1). Locations of former and also existing underground storage tanks (USTs), pump islands and other site features are presented on the Site and Exploration Plan, Figure 2.

The purpose of this work scope was to assess subsurface soil and ground water quality at the site for the potential presence of petroleum-related hydrocarbons. The work effort completed for this project is presented below:

- Drilled five exploration soil borings to depths ranging from approximately 27 to 32 feet below ground surface (bgs) using a hollow-stem auger drilling rig.

- Collected soil samples at approximately 5-foot-depth intervals, and field screened each sample for evidence of petroleum hydrocarbons using visual, odor, and photoionization detector (PID) sample jar headspace screening methods.

- Coordinated laboratory analysis of soil samples (total of six) for benzene, toluene, ethylbenzene, and total xylenes (BTEX, EPA Method 8020), and for total petroleum hydrocarbons (TPH, EPA Method 418.1) with Sound Analytical Services, Inc. (SAS). One soil sample from boring MW-5 was also analyzed for purgeable halogenated volatile organics (EPA Method 8010). Boring MW-5

was advanced adjacent to the former and existing waste oil and heating oil USTs. Boring MW-5 is also adjacent to an existing oil/water separator.

- Installed 2-inch diameter PVC ground water monitoring wells in each boring, and completed each wellhead at the ground surface with flush-mounted, gasket-sealed, aluminum monuments with tamper-proof bolts.

- Developed each monitoring well to minimize sediment inside the well casing.

- Surveyed the well casing rim elevations, measured the depths to ground water in each well, and determined the direction of ground water elevations in each well on July 31, 1990.

- Sampled the water table surface for the potential presence of free (floating) petroleum product.

- Screened the headspace of monitoring wells which contained water with a PID device for the potential presence of volatile organic vapors.

- Obtained ground water samples from monitoring wells which contained water and coordinated laboratory analysis for BTEX (EPA Method 602) and TPH (EPA Method 418.1).

- Conducted a visual survey to identify potential sources of off-site petroleum-related hydrocarbons and to identify potential sensitive receptors near the project site.

- Reviewed water well reports on file at the Washington State Department of Ecology (Ecology) to identify water supply wells within one mile of the site.

- Evaluated the field and laboratory data with regard to current environmental regulatory criteria.

- Prepared this report.

Site Setting and Background

General

Service station 4511 is located in downtown Bellevue at 10605 Northeast 8th Street (Figure 1). The site is bounded by Northeast 8th Street to the north, retail shops to the east, an alley and parking lot to the south, and 106th Avenue Northeast to the west (Figure 2).

The site slopes gently to the south and east and is paved with asphalt with the exception of the concrete fueling bays and surface hold-down slabs over the USTs. The concrete hold-down slab over the two gasoline USTs covers approximately one-half the UST complex. The site is approximately 150 feet above mean sea level (MSL) as interpreted from the Bellevue South 7.5 x 15 minute quadrangle (USGS, 1983).

Site History

Land use prior to the 1958 construction of service station 4511 is not known. A 1968 site survey map, provided by UNOCAL, shows the former UNOCAL station consisted of separate shop and station buildings. These former buildings were situated in the east-central portion of the property, with two pump islands located to the north, three gasoline USTs to the west, and the waste oil and oil USTs to the south (Figure 2). The original fuel storage and delivery system reportedly consisted of steel USTs and steel project delivery and vent lines.

Service Station 4511 was completely reconstructed in 1969. New steel product lines, two 10,000-gallon steel gasoline tanks, a 550-gallon waste oil tank, and a 550-gallon heating oil tank were reportedly installed at that time. The renovation included the addition of one pump island to the west of the new station building, for a total of three pump islands (Figure 2). The steel product lines were replaced with fiberglass product lines in 1981.

Current Conditions

Station 4511 is currently an active retail service station. A drawing provided by UNOCAL ("General Arrangement Service Station 4511, Northeast 8th Street and 106th Avenue Northeast, Bellevue, Washington, No. SS-4511") indicates that two 10,000-gallon underground gasoline storage tanks (USTs) are located in one complex northwest of the station building between the

pump islands. Two 550-gallon oil USTs are located south of the station building. One UST reportedly contains waste oil and one contains heating oil. An oil/water separator is located to the south of the oil USTs and the existing station building (Figure 2).

Visual Survey of Surrounding Area

The site is located near the bottom of an east facing, gently sloping hill. The site also lies near the head of a north-south trending, shallow ravine which has apparently been partially filled during the development of the surrounding area. Surface topography generally slopes southward toward Meydenbauer Bay on Lake Washington.

The surrounding area is occupied by high rise office buildings, a regional mall, a mixture of small retail and office buildings, and several banks. A retail pet store (Pet-Pro's) occupies the northeastern corner of the intersection between Northeast 8th Street and 106th Avenue Northeast. Based on the existing configuration of the Pet-Pro's building, the site was apparently a former service station. The northwest corner of the intersection is occupied by a First Pacific Bank, and the southwest corner occupied by a Seafirst Bank. Immediately south of the station is a parking area serving Belle Lanes Bowling Alley and John Danz Theater. A 2- to 8-foot-high concrete wall, which forms the western wall of a three-story retail building, is located on the approximate eastern property boundary.

Verbal communications with Jim Pruss (Service Station 4511 franchise owner) suggest that the former service station to the north (Pet-Pro's site) has not been active for 10 to 15 years. Mr. Pruss was unable to recall the specific date when the former service station closed operations or when the USTs were last replaced. The gasoline pumps have been removed and the product lines capped at the surface. The gasoline, waste oil, and heating oil USTs have apparently not been removed based on the presence of the concrete surface slab, vent lines, and fill caps. The product lines also appear to be in place. We were unable to determine if the USTs or product lines have been abandoned in place.

Northeast 8th Street is a major utility corridor for water, sewer, telephone, and power serving downtown Bellevue. A secondary water and sewer utility corridor is located along 106th Avenue Northeast.

No environmentally sensitive receptors were identified within one-quarter mile of the project site during the visual site vicinity survey. Lake Washington is located approximately one mile south of the site.

Water Well Reports at Ecology

The Washington State Department of Ecology has no record of any existing water wells on file within one mile of the site.

Exploration Program

Soil Borings

Subsurface soil conditions were evaluated by drilling five soil borings on July 12, 13, and 17, 1990, at the approximate locations shown on Figure 2. Boring MW-1 was advanced east of the northern pump islands to an approximate depth of 28 feet bgs. Boring MW-2 was advanced north of the existing tank complex to an approximate depth of 32 feet bgs. Boring MW-3 was advanced immediately south of the existing tank complex in the area identified as the former UST complex to an approximate depth of 30 feet bgs. The first attempt to advance boring MW-4 south of the western pump island was abandoned at 17 feet bgs due to gradual deflection of the auger alignment away from vertical. A suspected cast iron water pipe was observed in the borehole sidewall at approximately 7.5 feet bgs after the auger was removed. A new boring location was selected 2 feet to the south and the hole was advanced to an approximate depth of 27 feet bgs. Boring MW-5 was advanced to a depth of approximately 32 feet bgs south of the existing oil water separator, existing waste oil and heating oil USTs, and the former location of removed waste oil and heating oil tanks.

Subsurface Soil Conditions

Gravelly sand (FILL) was encountered from below the asphalt paving to an approximate depth of 1 foot bgs in each boring. Very dense, silty SAND was encountered beneath the FILL and was present throughout the remainder of the borings, with the exceptions of borings MW-2 and MW-3. In boring MW-3, loose, silty sand (FILL) was encountered from 1 foot bgs to approximately 13 feet bgs and likely represents material used to backfill the pre-1969 tank complex excavation. Below the loose, silty sand FILL, very dense, silty SAND was encountered, which extended to the bottom of the boring. In boring MW-2, a zone of interbedded SILT and silty SAND was encountered between approximately 20 and 24 feet bgs. Very dense, silty SAND extended from 24 feet bgs to the bottom of the boring.

Ground Water Conditions

Depth to ground water was measured in each well on July 31, 1990, 15 days after the wells were completed. The depth to water beneath the site ranged from 21.30 feet bgs in MW-3 to 31.35 feet bgs in MW-2. No ground water was detected in well MW-5.

Well casing rim elevations were surveyed to the nearest 0.01-foot and referenced to a local site datum by an SE/E survey team. The surveyors selected an assumed elevation of 100 feet referenced to the north side of the top fire hydrant flange located at the southwestern corner of the site. The survey data are presented in Table 1, and Appendix C.

Survey results indicate relative ground water elevations range from approximately 78.42 feet in well MW-3 to 70.62 feet in well MW-2 on July 31, 1990. Water levels measured in wells MW-1, MW-3, and MW-4 are similar and suggest that these wells are screened in the same water-bearing zone at approximately 23 feet bgs. Interpretation of the ground water elevation data for these three monitoring wells indicates ground water flow direction is to the southeast. Borings MW-2 did not encounter this same water-bearing zone and MW-5 was "dry" to the maximum depth explored at 33 feet suggesting local variation and complexity of the hydrogeology underlying the site.

Soil and Ground Water Quality

Field Screening

No visual evidence of petroleum-related hydrocarbons were detected during field screening of soil samples from borings MW-1, MW-2, MW-4, and MW-5. Discoloration of the soil sample collected at 7.5 feet bgs in MW-3 was noted. Strong petroleum-like odors were detected during drilling of borings MW-2 and MW-3. Although no petroleum-like odors were detected, a PID headspace measurement of 165 ppm at 7.5 feet bgs was obtained in boring MW-4, and 100 ppm at 2.5 feet bgs in boring MW-5.

Soils Analysis

Soil samples collected at 7.5 feet bgs in borings MW-1, at 2.5 feet bgs in borings MW-3, MW-4, and MW-5, and at 2.5 feet and 7.5 feet bgs in boring MW-2 were selected for BTEX and TPH analysis at Sound Analytical

Services, Inc. (SAS). The soil sample collected at 7.5 feet bgs in boring MW-5 adjacent to the existing heating oil and waste oil USTs and also the existing oil/water separator was also analyzed for purgeable halogenated volatiles analysis (EPA Method 8010). The soil samples were selected for analysis based on field PID readings, (Appendix A, Boring Logs). The soil sample analytical results are presented in Table 2 and Appendix B.

Laboratory analysis did not detect benzene, toluene, or ethylbenzene at concentrations at or above the method detection limit (MDL) in any of the soil samples analyzed. Total xylenes were not detected in the samples from MW-1 and MW-4. However, total xylenes were detected at a concentration of 90 ppm in sample MW-2, S-1 at 2.5 feet bgs, and 240 ppb in sample MW-2. S-2 at 7.5 feet bgs. Total xylenes were reported at 900 ppb in sample MW-3, S-1 at 2.5 feet bgs. Reported concentrations of TPH ranged from 7.5 ppm in sample MW-1, S-2 at 7.5 feet bgs to 810 ppm in sample MW-2, S-1 at 2.5 feet bgs. No halogenated volatile organics were detected in the sample analyzed from boring MW-5.

Ground Water Analysis

No free (floating) petroleum product was detected in any monitoring well on July 31, 1990, using an electronic water/product interface probe. Ground water samples were collected from wells MW-1 through MW-4 in accordance with the procedure described in Appendix A and submitted to SAS for BTEX and TPH analysis. Well MW-5 was dry on July 31, 1990. The Field Data Sampling Sheets are presented in Appendix A.

BTEX and TPH concentrations were not detected at or above the MDL in water samples obtained from borings MW-1, MW-2, and MW-4. Toluene and TPH concentrations were also below the MDL in the water sample collected from well MW-3. Benzene (3 ppb), ethylbenzene (15 ppb), and total xylenes (14 ppb) were detected in the water sample from well MW-3.

A summary of laboratory analytical data for soil and water samples is presented in Table 2. Laboratory data sheets and chain-of-custody records are included in Appendix B.

Findings and Conclusions

- Ecology had no record of any wells within 1 mile of the project site.

- Beneath the pavement, the site is underlain by approximately 1 foot of FILL overlying very dense, silty SAND. Boring MW-3 penetrated approximately 13 feet of loose, silty sand FILL which may represent the location of former USTs. Boring MW-2 penetrated interbedded SILT and SAND between approximately 20 and 24 feet bgs.

- Petroleum-like odors were detected during drilling of borings MW-2 and MW-3.

- No free (floating) product was detected in any of the five ground water monitoring wells.

- Water levels measured in wells MW-1, MW-3, and MW-4 are similar and suggest that these wells are screened in the same water-bearing zone at approximately 23 feet bgs. Interpretation of the ground water elevation data for these three monitoring wells indicates ground water flow direction is to the southeast. Boring MW-2 did not encounter this same water-bearing zone and MW-5 was "dry" to the maximum depth explored at 33 feet suggesting local variation and complexity of the hydrogeology underlying the site.

- BTEX concentrations in analyzed soil samples were below Ecology's Draft 1988 cleanup guideline concentrations and also the proposed Table 2 Method A Compliance Cleanup Levels for soil as presented in the July 18, 1990, version of the Model Toxics Control Act (MTCA). TPH concentrations in soil samples from borings MW-1, MW-3, MW-4, and MW-5 were also below current regulatory action levels. However, TPH concentrations of 203 ppm and 810 ppm reported in samples from boring MW-2 do exceed the 200 ppm action level. Table 3 summarizes these cleanup standards.

- BTEX and TPH were not detected in any of the water samples at currently regulated concentrations.

- Well purge water was placed into the sanitary sewer system by SE/E personnel after verbal authorization from Metro.

- At UNOCAL's request, soil drill cuttings have been removed by A. L. Sleister and Sons, Inc., and transferred to the former UNOCAL Station 3965 site located at 20658 Pacific Highway South in Des Moines, Washington, for appropriate treatment.

- On behalf of UNOCAL, SE/E verbally notified Ecology on August 10, 1990, of the soil quality results (Appendix D).

Recommendations

- SE/E recommends that UNOCAL review product inventory and tank testing records to assess the possibility of past and/or present leakage from the product storage and delivery system.

- SE/E understands that the USTs and associated underground piping are scheduled to be removed in the future. Consequently, we recommend that soil quality in the vicinity of boring MW-2 be assessed and remediated at the time the USTs are removed.

- SE/E recommends that ground water samples be obtained from all the wells at the time the USTs are removed to confirm that current ground water quality standards have been met.

Table 1

Monitoring Well Elevation Survey

Monitoring Well No.	Elevation at Measuring Point[1,3] (feet)	Depth to Ground Water[2] (feet)	Ground Water Elevation[3] (feet)
MW-1	101.72	23.66	78.06
MW-2	101.97	31.35	70.62
MW-3	99.72	21.30	78.42
MW-4	98.89	23.26	75.63
MW-5	98.75	Dry	--

Notes:
(1) Measuring point is at the south edge of the 2-inch PVC, surveyed by Sweet-Edwards/EMCON, Inc.
(2) Depth to ground water measurements obtained July 31, 1990.
(3) Elevations are relative to site datum: north side of the top flange on the fire hydrant at the southwestern corner of the project site. Assumed elevation is 100 feet.

Table 2

Summary of Analytical Results
Unocal Station Number 4511

Soil Quality Data[1]

Boring Number	Sample Number	Depth Collected (ft bgs)	Benzene[2] (ppb)	Toluene[2] (ppb)	Ethyl-[2] Benzene (ppb)	Total[2] Xylenes (ppb)	TPH[3] (ppm)	Purgeable Halogenated Volatile Organics[4] (ppm)	Sample Jar Headspace Organic Vapor Concentrations[5] (ppm)
MW-1	MW-1, S-2	7.5	ND	ND	ND	ND	7.5	NA	25.2
MW-2	MW-2, S-1	2.5	ND	ND	ND	90	810	NA	28
	MW-2, S-2	7.5	ND	ND	ND	240	203	NA	20
MW-3	MW-3, S-1	2.5	ND	ND	ND	900	87.9	NA	22
MW-4	MW-4, S-2	7.5	ND	ND	ND	ND	65.3	NA	169
MW-5	MW-5, S-2	7.5	ND	ND	ND	ND	95.0	ND	255

Water Quality Data[6]

Boring/ Well Number	Sample Number	Benzene[7] (ppb)	Toluene[7] (ppb)	Ethyl-Benzene[7] (ppb)	Total Xylenes[7] (ppb)	TPH[3] (ppm)	Well Headspace Organic Vapor Concentrations[5] (ppm)
MW-1	U4511-79-1	ND	ND	ND	ND	ND	(8)
MW-2	U4511-79-2	ND	ND	ND	ND	ND	
MW-3	U4511-79-3	3	ND	15	14	ND	
MW-4	U4511-79-4	ND	ND	ND	ND	ND	
MW-5	Not sampled						

Notes: ND means Not Detected at or above the Method Reporting Limit
NA means Not Analyzed for particular analyte.

(1) Soil samples collected July 12, 13, and 17, 1990.
(2) Analysis by EPA Method 8020, method reporting limit of 0.05 ppm.
(3) TPH means Total Petroleum Hydrocarbons, EPA Method 418.1.
(4) EPA Method 8010, method detection limit of 0.05 ppm.
(5) Volatile organic vapor concentrations measured with a photoionization detector (Photovac MP-100 microtip) calibrated to 100 ppm isobutylene. Background reading = <1 ppm.
(6) Water samples collected July 31, 1990.
(7) Analysis by EPA Method 602, method reporting limit of 0.01 ppm.
(8) Due to high water vapor (moisture) concentrations in the wellheads, PID measurements were not obtained.

Table 3

Washington State Department of Ecology

Current Soil and Ground Water Quality Criteria for Petroleum-Related Hydrocarbons

Cleanup Standard	Benzene[1] (ppm)	Toluene[1] (ppm)	Ethyl-benzene[1] (ppm)	Total Xylenes[1] (ppm)	TPH[2] (ppm)	TPH[3] as		
						Gasoline (ppm)	Diesel (ppm)	Other (ppm)
Soil								
August 1, 1988[4]	0.66	143	14	None	200	None	None	None
MTCA[5]	0.5	40	20	20	None	100	200	200
Ground Water								
August 1, 1988[4]	0.066	14.3	1.4	None	15	None	None	None
MTCA[6]	0.005	0.040	0.020	0.020	1[7]	1[7]	1[7]	1[7]

1 EPA Method 8020

2 TPH means Total Petroleum Hydrocarbons, EPA Method 418.1

3 TPH means Total Petroleum Hydrocarbons, Method 8015 (Modified)

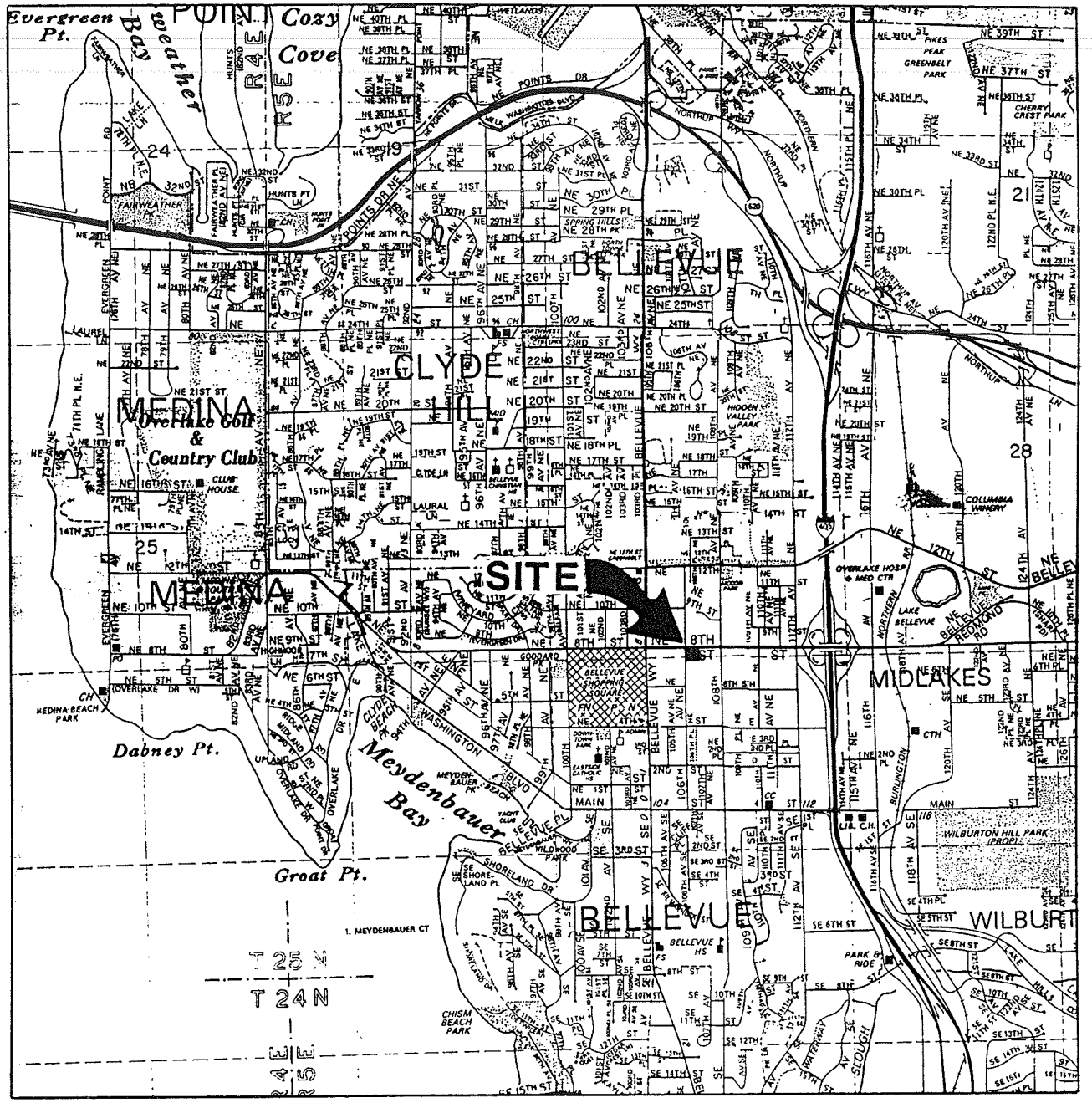
4 From Ecology publication "Policies and Procedures for Underground Storage Tank Removal," dated August 1, 1988, (DRAFT)

5 Model Toxics Control Act "Table 2, Method A Compliance Cleanup Levels—Soil," proposed rule filed July 18, 1990, WSR 90-15-066

6 Model Toxics Control Act, "Table 1, Method A Compliance Cleanup Levels—Ground Water," proposed rule filed July 18, 1990, WSR 90-15-066

7 Table 1 (MTCA) does not specify analytical method for TPH analysis in water

133396

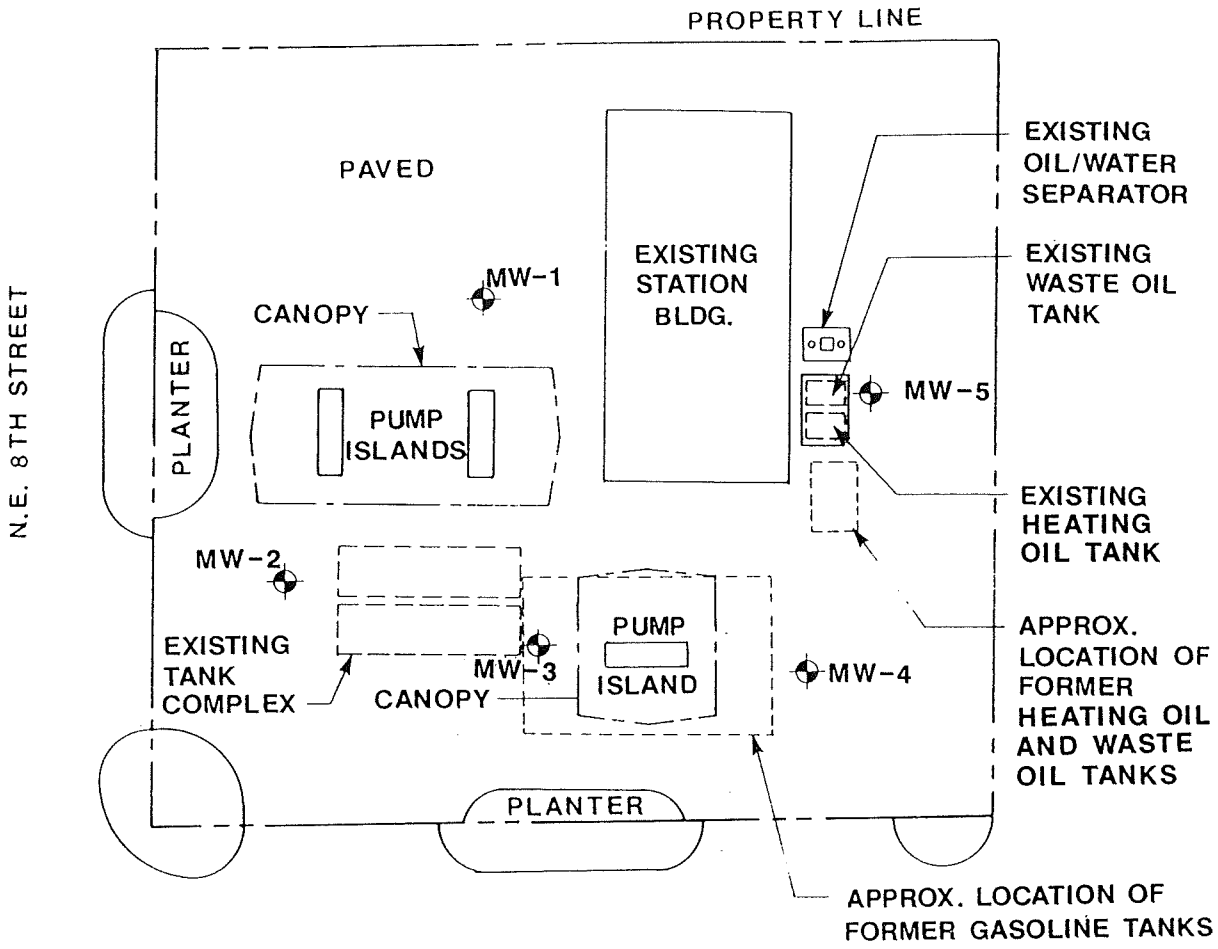


Sweet-Edwards
EMCON

DATE 7-90
DWN. JA
APPR. JK
REVIS.
PROJECT NO.
U2408.01

Figure 1
UNOCAL STATION #4511
BELLEVUE, WASHINGTON

SITE LOCATION MAP



EXPLANATION:

MW-2 ⊕ **Boring/Monitoring Well Locations**

N

0 30 60

SCALE (ft)

Prepared from UNOCAL drawing no. SS-4511

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Figure 2
UNOCAL STATION #4511
BELLEVUE, WASHINGTON
SITE AND EXPLORATION PLAN

Appendix A

Field Explorations and Sampling Methods

Appendix A

FIELD EXPLORATIONS

This appendix documents the procedures Sweet-Edwards/EMCON, Inc. (SE/E) used in performing the field investigation described in this report. The discussion includes information on the following subjects:

- Drilling Methods;
- Monitoring well installation, development, and sampling;
- Sample jars and sample handling;
- Field equipment decontamination procedures;
- Field screening tests; and
- Monitoring well elevation survey

Boring logs and monitoring well as-built drawings are included at the end of this appendix.

Drilling Methods

Borings were advanced by Mc-Garritt Drilling, Inc., Seattle, Washington, under subcontract from R and R Drilling Inc., on July 12, 13 and 17, 1990, using a Gus Peck GP1000R hollow-stem auger equipped with 4-inch inside-diameter auger. All soil boring activities were observed by an experienced SE/E geologist. Soil samples were obtained at approximately 5-foot-depth intervals using a split-spoon sampling device, and a 140-pound hammer free-falling 30 inches. The number of blows required to drive the sampler the last 12 inches is shown on the boring logs at the respective sampling depths. Samples were recovered from the split-spoon sampler and described according to the classification scheme presented in Figure A-1.

Recovered soil samples were split into two approximately equal portions. The first portion was transferred with stainless steel spoons to laboratory-

prepared glass jars with teflon-lined lids and placed in a chilled cooler for transport to the testing laboratory. The second portion was placed in a clean glass jar for field screening. Field screening methods are discussed in a subsequent section of this Appendix.

Drill cuttings from all the borings were placed on plastic in a common stockpile and covered with plastic. The drill cuttings were removed on July 31, 1990, to former UNOCAL Station No. 3965 located at 20658 Pacific Highway South, Des Moines, Washington, for appropriate treatment and disposal by A. L. Sleister and Sons.

Field Screening for Organic Vapors

Field tests consisted of portable photoionization detector (PID) measurements for the presence of volatile organic vapors in the sample jar headspace for each recovered soil sample. The soil samples for field screening were placed in a clean jar and aluminum foil placed over the mouth of the jar . The jar was then allowed to stand in the back of a field vehicle for one-quarter to one-half hour. The aluminum foil was then punctured with the PID probe and the maximum reading in the headspace above the soil was recorded. These measurements are listed on the boring logs at their respective depths.

Each completed monitoring well casing headspace was field screened. Field screening measurements for volatile organic vapors were obtained by first placing aluminum foil over the PVC well head after the completion of well development. The reading was obtained at the time the wells were sampled by puncturing the foil with the PID probe just prior to ground water sampling. Interference from water vapor (moisture) prevented our obtaining reliable wellhead volatile organic vapor concentrations.

The purpose of the field tests was to determine the relative magnitude of volatile organic vapors, if any, in the explorations. This screening equipment was also used for health and safety to monitor air quality in the breathing zone during drilling operations. A Photovac MP-100 Microtip, calibrated daily to 100 ppm isobutylene, was used to obtain the measurements.

Monitoring Well Installation, Development, and Sampling

Installation. All borings advanced for this study were completed as monitoring wells. Wells consist of 2-inch diameter flush-joint, threaded, PVC riser pipe attached to between 3 and 25 feet of 0.020-inch mill cut screen. The screen assembly was installed through the 4-inch inside-diameter drill auger such that the screened interval extends across the water table. Colorado 8x12 silica sand was installed as filter material from approximately 6 inches below, to approximately 18-inches above screen. A hydrated bentonite chip seal was placed above the sand pack to within one foot bgs. A flush-mounted, cast aluminum surface monument with tamper-proof bolts and a rubber gasket seal was cemented in-place at ground level to provide security as required by WAC 173-160. As-built diagrams for each monitoring well are presented on the respective boring logs at the end of this Appendix.

Development. Monitoring wells completed during the field explorations were developed on July 24, 1990, to remove accumulated sediment and to improve the flow of formation water into the well screen. A teflon bailer lowered by new polypropylene rope was raised and lowered to "surge" and develop the well. Information regarding well development for each well is presented in the field data sampling sheets included in this appendix. Development water was placed into 55 gallon drums and stored on site pending laboratory analysis for BTEX and TPH.

Sampling. After calculating the volume of water in each well bore (pore volume), a teflon bailer was employed to remove (purge) a minimum of three casing volumes of water from each well on July 31, 1990. Field parameters (pH, conductivity, and temperature) were measured after each pore volume had been removed. This information is presented on the field sampling data sheets in this Appendix. Purging continued until field parameter measurements stabilized to within $\pm$10 percent, or until the well was purged "dry". Ground water samples were then collected using a teflon bailer, when water levels had recovered sufficiently.

Sample Jars and Sample Handling

Sample jars were obtained from the analytical laboratory specifically for use on this project, and consisted of glass jars with teflon lid inserts. Samples were collected and placed immediately into a chilled cooler for transport to the analytical laboratory. Chain-of-custody records were maintained recording sample number, location, and handling procedures (Appendix B).

Field Equipment Decontamination Procedures

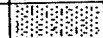
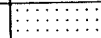
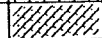
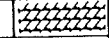
Sampling and drilling equipment were routinely decontaminated after use. The back of the drill rig, auger, sampling rods, and split spoons were thoroughly washed with a high pressure hot water washer between each boring. Monitoring well riser pipe, screens, and caps were washed with a high pressure hot water washer prior to installation. Split-spoon samplers, sampling spoons, and teflon bailers were cleaned between each use with a non-phosphatic soap tap water solution, distilled water rinse, 1:1 methanol to distilled water rinse, 5 minute air dry, and distilled water rinse.

Well Elevation Survey Data

The seven monitoring wells installed for this study were surveyed for vertical elevations to the nearest 0.01-foot by a survey team from SE/E. The wells were surveyed to a local site datum allowing us to determine relative elevations of ground water, and consequently, ground water flow direction at the time the measurements were obtained. The site datum selected was on the north side of the top fire hydrant flange at the southwestern corner of the project site. The Datum elevation was assumed to be 100 feet. The relative ground water elevations at each monitoring well are presented in Table 1. Appendix C contains the well elevation survey results from SE/E.

Sample Descriptions

Classification of soils in this report is based on visual field and laboratory observations which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field or laboratory testing unless stated. Visual-manual classification methods of ASTM D 2488 were used as an identification guide.

SOIL CLASSIFICATION SYSTEM					
MAJOR DIVISIONS			GROUP SYMBOL		GROUP NAME
COARSE GRAINED SOILS More than 50% retained on No. 200 Sieve.	GRAVEL More than 50% of coarse fraction retained on No. 4 sieve.	CLEAN GRAVEL	GW		Well-graded gravel, fine to coarse gravel
			GP		Poorly-graded gravel
		GRAVEL WITH FINES	GM		Silty gravel
			GC		Clayey gravel
	SAND More than 50% of coarse fraction passes No. 4 sieve.	CLEAN SAND	SW		Well-graded sand, fine to coarse sand
			SP		Poorly-graded sand
		SAND WITH FINES	SM		Silty sand
			SC		Clayey sand
FINE GRAINED SOILS More than 50% passes No. 200 sieve.	SILT AND CLAY Liquid limit less than 50.	INORGANIC	ML		Silt
			CL		Clay
		ORGANIC	OL		Organic silt, organic clay
	SILT AND CLAY LIQUID limit 50 or more.	INORGANIC	MH		Silt of high plasticity, elastic silt
			CH		Clay of high plasticity, fat clay
		ORGANIC	OH		Organic clay, organic silt
HIGHLY ORGANIC SOILS			PT		Peat

Density/Consistency

Soil density/consistency in borings is related primarily to the Standard Penetration Resistance Soil density/consistency in test pits is estimated based on visual observation and is presented parenthetically on the test pit logs.

SAND or GRAVEL Density	Standard Penetration Resistance in Blows/Feet	SILT or CLAY Consistency	Standard Penetration Resistance in Blows/Foot
Very loose	0 - 4	Very soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium dense	10 - 30	Medium stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very dense	>50	Very stiff	15 - 30
		Hard	>30

Moisture	
Dry	Little perceptible moisture
Damp	Some perceptible moisture, probably below optimum
Moist	Probably near optimum moisture content
Wet	Much perceptible moisture, probably above optimum

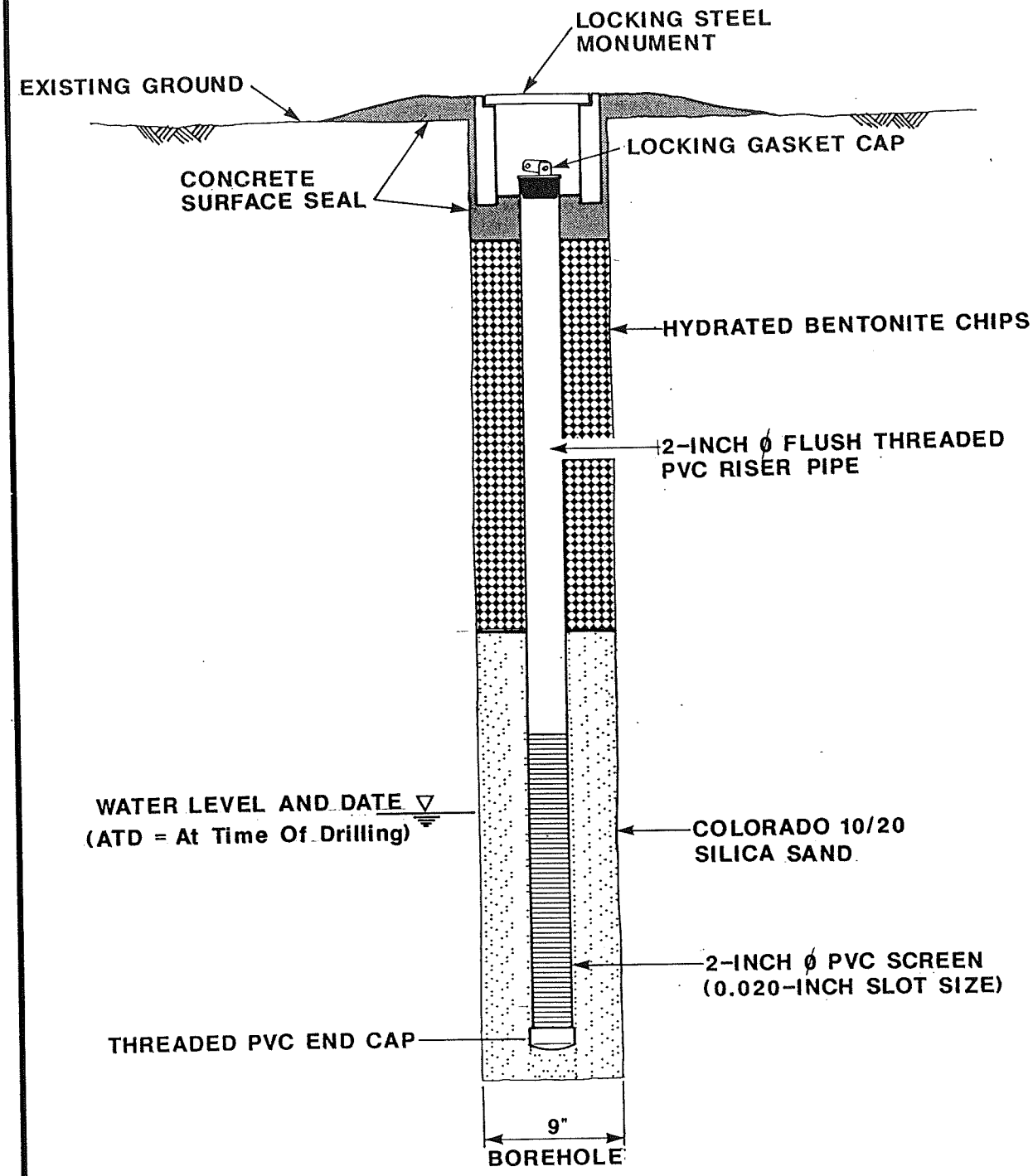
Minor Constituents	Estimated Percentage
Trace	< 5
Few	5 - 10
Little	10 - 25
Some	25 - 45

Sweet-Edwards EMCON

DATE 8-90
DWN. JA
APPR. HWS
REVIS. ____
PROJECT NO. U2408.01

Figure A-1

SOIL CLASSIFICATION SYSTEM



Sweet-Edwards EMCON

DATE 8-90
DWN. JA
APPR. HWS
REVIS.
PROJECT NO. U24-08.01

FIGURE A-2

MONITORING WELL CONSTRUCTION DETAILS

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-1
LOCATION	Bellevue, Washington	PAGE	1 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	101.72' (a)
DRILL METHOD	See below	TOTAL DEPTH	27.70'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/13/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 - 0.3 (approximately) feet: ASPHALT.
								0.3 - 1.0 feet: SAND with SILT and GRAVEL (SP-SM), brown, few silt, little fine to medium gravel (up to 1-1/2 inch diameter), loose, dense. (FILL)
SS/S1	19	9						1.0 - 27.7 feet: SILTY SAND (SM), fine, brown, little silt, trace gravel, (rounded to 1 inch diameter), loose, moist.
				5				
SS/S2	25	39						-- @ 8.5 - 11 feet: orange mottling.
				10				
SS/S3	< 1	60						
				15				
SS/S4	1	50/6						-- @ 17.5 - 22.5 feet: orange mottling
				20				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS = Split spoon sampler. PID = Photoionization detector, background reading = <1 ppm. (a) Local datum = assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-1
LOCATION	Bellevue, Washington	PAGE	2 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	101.72' (a)
DRILL METHOD	See below	TOTAL DEPTH	27.70'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/13/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SS/S5	< 1	50/5	▽ 7/31/90	25				SILTY SAND (SM), fine, gray, little silt, trace gravel (up to 1-inch diameter), very dense, damp.
SS/S6	(b)	50/3"		30				Boring terminated at 27.7 feet.
				35				
				40				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS=Split spoon sampler. PID=Photoionization detector, background reading=<1 ppm. (a) Local datum=assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-2
LOCATION	Bellevue, Washington	PAGE	1 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	101.97' (a)
DRILL METHOD	See below	TOTAL DEPTH	32.70'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/13/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SS/S1	28	17		5				0 - 0.3 (approximately) feet: ASPHALT. 0.3 - 1.0 feet: SAND with SILT and GRAVEL (SP-SM), medium to fine, brown, few silt, little gravel (up to 1-1/2 inch diameter), loose, damp. (FILL) 1.0 - 20.0 feet: SILTY SAND (SM), fine, dark gray-brown, little silt, trace gravel (up to 1-1/2-inch diameter), medium dense, moist, slight petroleum-like odor to approximately 12 feet, grades to gray below 8 feet with orange mottling between 8 and 16 feet.
SS/S2	20	36		10				
SS/S3	18	50/4		15				-- @ 12 feet: PID reading in cuttings, 80 ppm.
SS/S4	21	50/6		20				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS=Split spoon sampler. PID=Photoionization detector, background reading=<1 ppm. (a) Local datum=assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW- 2
LOCATION	Bellevue, Washington	PAGE	2 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	101.97' (a)
DRILL METHOD	See below	TOTAL DEPTH	32.70'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/13/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SS/S5	< 1	50/6						20 - 24 feet: INTERBEDDED SILTY SAND (SM) - SANDY SILT (ML): SILTY SAND, as above, beds to 1/2 inch thick. SANDY SILT, gray, little fine sand, hard, moist to wet, beds to 2 inches thick.
				25				24 - 32.7 feet: SILTY SAND (SM), fine, gray, little silt, trace gravel up to 1-1/2-inch diameter, very dense, moist.
SS/S6	< 1	50/6						
				30				-- @ approximately 30 feet: wet cuttings.
			▽ 7/31/90					
SS/S7	(b)	50/3						Boring terminated at 32.7 feet.
				35				
				40				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS=Split spoon sampler. PID=Photoionization detector, background reading= <1 ppm. (a) Local datum=assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-3
LOCATION	Bellevue, Washington	PAGE	1 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	99.72' (a)
DRILL METHOD	See below	TOTAL DEPTH	30.40'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/12/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SS/S1	22	7		5				0 - 0.3 feet: ASPHALT 0.3 - 13 feet: SILTY SAND (SM), fine, gray, little silt, trace gravel (up to 3/4-inch diameter), loose, moist, petroleum-like odor at 2-1/2 feet. (FILL)
SS/S2	15	3		10				-- @ 7.8 feet: orange mottled layer, some soil discoloration noted. -- slight petroleum-like odor between 8.5 and 13 feet.
SS/S3	5	23		15				13 - 30.4 feet: SILTY SAND (SM), medium to fine, gray, little silt, trace gravel (up to 1-inch diameter), very dense, moist.
SS/S4	< 1	50/4		20				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS=Split spoon sampler. PID=Photoionization detector, background reading= <1 ppm. (a) Local datum=assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-3
LOCATION	Bellevue, Washington	PAGE	2 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	99.72' (a)
DRILL METHOD	See below	TOTAL DEPTH	30.40'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/12/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
			▽ 7/31/90					SILTY SAND (SM), medium to fine, gray, little silt, trace gravel (up to 1-inch diameter), very dense, moist.
SS/S5	< 1	50/6						-- becomes wet at 22.0 feet
				25				
SS/S6	(b)	50/3						-- trace orange mottling, becomes moist below 27.5 feet.
SS/S7	< 1	50/3		30				Boring terminated at 30.4 feet.
				35				
				40				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS = Split spoon sampler. PID = Photoionization detector, background reading = < 1 ppm. (a) Local datum = assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW- 4
LOCATION	Bellevue, Washington	PAGE	1 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	98.81' (a)
DRILL METHOD	See below	TOTAL DEPTH	30.30'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/13/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SS/S1	156	9						0 - 0.3 (approximately) feet: ASPHALT.
								0.3 - 7.5 feet: SILTY SAND (SM), medium to fine, brown, little silt, trace gravel (up to 1 inch), loose, moist. (FILL)
SS/S2	169	7		5				
SS/S3	165	50/6						-- @ 7.5 feet: iron pipe encountered.
								7.5 - 8.0 feet: SILTY SAND (SM), as above, trace wood debris, glass fragments. (FILL)
				10				8.0 - 30.4 feet: SILTY SAND (SM), medium to fine, gray, little silt, trace gravel (up to 1-inch diameter), very dense, moist.
SS/S4	< 1	61/6						
				15				
SS/S5	(b)	50/3						-- trace orange mottling at 17.5 to 18.3 feet
				20				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS=Split spoon sampler. PID=Photoionization detector, background reading= <1 ppm. (a) Local datum=assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW- 4
LOCATION	Bellevue, Washington	PAGE	2 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	98.81' (a)
DRILL METHOD	See below	TOTAL DEPTH	30.30'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/13/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SS/S6	< 1	50/3	▽ 7/31/90	25				SILTY SAND (SM), medium to fine, gray, little silt, trace gravel (up to 1-inch diameter), very dense, moist.
SS/S7	82	50/5						-- @ 27.5 feet: trace wood debris.
SS/S9	< 1	50/3		30				-- becomes wet at 30.0 feet
				35				Boring terminated at 30.4 feet. NOTE: Pipe encountered at 7.5 feet. Boring advanced to 17.5 feet before abandoned with bentonite chips. Moved 2 feet south, advanced new boring to 22.5 feet for first sample.
				40				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS=Split spoon sampler. PID=Photoionization detector, background reading= <1 ppm. (a) Local datum=assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW- 5
LOCATION	Bellevue, Washington	PAGE	1 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	98.75' (a)
DRILL METHOD	See below	TOTAL DEPTH	32.70'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/17/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 - 0.3 (approximately) feet: ASPHALT.
								0.3 - 1.0 foot: SAND with SILT and GRAVEL (SP-SM), fine to, medium, brown, few silt, little gravel (up to 1-1/2 inch diameter), loose, damp. (FILL)
SS/S1	100	8						1.0 - 32.7 feet: SILTY SAND (SM), medium to fine, brown, little silt, trace gravel (up to 3/4-inch diameter), loose, moist to wet.
				5				
SS/S2	NONE	47						
				10				-- grades to gray below 10 feet, trace orange mottling
SS/S3	18	50/5						
				15				
SS/S4	34	50/6						
				20				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS=Split spoon sampler. PID=Photoionization detector, background reading= <1 ppm. (a) Local datum=assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW- 5
LOCATION	Bellevue, Washington	PAGE	2 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	98.75' (a)
DRILL METHOD	See below	TOTAL DEPTH	32.70'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/17/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SS/S5	9	50/5		25				SILTY SAND (SM), medium to fine, brown, trace orange mottling, little silt, trace gravel (up to 3/4-inch diameter), very dense, moist to wet.
SS/S6	(b)	50/3		30				
SS/S7	(b)	50/4		35				Boring terminated at 32.7 feet.
				40				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS = Split spoon sampler. PID = Photoionization detector, background reading = <1 ppm. (a) Local datum = assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

Belle

Sweet-Edwards / EMCON, Inc.

Kelso, WA (206) 423-3580
Bothell, WA (206) 485-5000
Portland, OR (503) 624-7200

Field Sampling Data

LOCATION/ADDRESS: UNOCAL 4511 Bellevue
PROJECT NAME: Groundwater Sampling
CLIENT/CONTACT:

Well or Surface Site Number: MW-1
Sample Designation: U4511-[illegible]-1
Date, Time: 8/1/90 800
Weather: Cloudy [illegible]

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method (Level Meter # or Code)/Comments
23.66		7/31/90	O/W Probe

WELL EVACUATION: 0.15 Gallons/Pore Volume

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
		Bailer		

Surface Water Flow Speed ______ Measurement Method Bucket Date, Time ______

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
BTEX	7/31/90	Bailer	40	Glass	1	N	[illegible]	Y
TPH			1000	"	1	N	[illegible]	Y
	8/1/90							
	0800							

Sampler Cleaning Method: Non-Phosphatic detergent wash; H20 rinse; MeOH rinse; Distilled H20 rinse; Hexane rinse if oily

FIELD WATER QUALITY TESTS:

Por Vol. Number	pH	Temp (c°)	Conductivity (uS/cm)	Conductivity @ 25° (uS/cm)				
1	6.10	16	508					
2	6.03	16	503					
1	5.86	[illegible]	[illegible]					

NOTES:

Depth 26.5
Bailed dry at 2 1/2 pore volumes. Will [illegible]
sampling
Cloudy, light [illegible] odor.
Approximately 2.0 gallons of water was purged from the well during development
Sampled [illegible] 800 - 8/1/90 0800

LAB: TAS SAMPLERS: JKK

Total # of Bottles: ______ Signature ______

Sweet-Edwards / EMCON, Inc.

Kelso, WA (206) 423-3580
Bothell, WA (206) 485-5000
Portland, OR (503) 624-7200

Field Sampling Data

LOCATION/ADDRESS [illegible]
PROJECT NAME [illegible]
CLIENT/CONTACT

Well or Surface Site Number MW-2
Sample Designation U4511-79-2
Date, Time 7/31/90 8/1/90
Weather Overcast 70s 830

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method (Level Meter # or Code)/Comments
31.35		7/31/90	O/W Probe

WELL EVACUATION: 0.2 Gallons/Pore Volume

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
		Bailer		

Surface Water Flow Speed ______ Measurement Method Bucket Date, Time ______

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preserva-tive	Iced (yes,no)
BTEX	7/31/90	Bail	40	glass		N	HCl	Y
TPH	"		1000	"		N	H_2SO_4	Y
	8/1/90							
	830							

Sampler Cleaning Method
Non-Phosphatic detergent wash
H20 rinse
MeOH rinse*
Distilled H20 rinse
*Hexane rinse if oily

FIELD WATER QUALITY TESTS:

Por Vol. Number	pH	Temp (c°)	Conductivity (uS/cm)	Conductivity @ 25° (uS/cm)				
1	5.94	16	55[illegible]					
2	6.03	17	567					
1	[illegible]	16	55[illegible]					

NOTES:

Depth 32
Bailed dry at 2 pore volumes [illegible]

Sample taken 8/1/90 830
Approximately ½ gallon of water was purged from the well during development.

LAB: [illegible] SAMPLERS: [illegible]

Total # of Bottles: 3 Signature

Sweet-Edwards / EMCON, Inc.

Kelso, WA (206) 423-3580
Bothell, WA (206) 485-5000
Portland, OR (503) 624-7200

Field Sampling Data

Well or Surface Site Number MW-4
Sample Designation U4511-79-4
Date, Time 7/31/90 - 8/1/90 900
Weather Overcast 70s

LOCATION/ADDRESS UNOCAL 4511 Bellevue
PROJECT NAME Groundwater Sampling
CLIENT/CONTACT

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method (Level Meter # or Code)/Comments
23.26		7/31/90	O/W probe

WELL EVACUATION: 1 Gallons/Pore Volume

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time

Surface Water Flow Speed ____, Measurement Method ____, Date, Time ____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
BTEX	7/31/90	Bailer	40	glass	/	N	HCl	Y
TPH			1000	"		N	H_2SO_4	Y
	8/1/90							Y
	900							

Sampler Cleaning Method: Non-Phosphatic detergent wash; ~~H20 rinse~~; MeOH rinse*; Distilled H20 rinse; *Hexane rinse if oily

FIELD WATER QUALITY TESTS:

Por Vol. Number	pH	Temp (c°)	Conductivity (uS/cm)	Conductivity @ 25° (uS/cm)
1	5.78	16	762	
2	5.88	17	799	
	6.03	16	763	

NOTES:

Depth 30 ft

Bailed dry at [illegible]

[illegible]

Sample taken 8/1/90

Approximately 3 gallons of water was purged from the well during development.

LAB: SAS
SAMPLERS: JAK

Total # of Bottles: ____ Signature ____

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Bothell, WA (206) 485-5000
Portland, OR (503) 624-7200

Field Sampling Data

LOCATION/ADDRESS UNOCAL 4571 Bellevue
PROJECT NAME Ground Water Sampling
CLIENT/CONTACT

Well or Surface Site Number MW-5
Sample Designation —
Date, Time 7/31/90
Weather Overcast 70's

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method (Level Meter # or Code)/Comments
0		7/31/90	O/W probe.

WELL EVACUATION: ____ Gallons/Pore Volume

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time

Surface Water Flow Speed ____ Measurement Method ____ Date, Time ____

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preserva-tive	Iced (yes,no)

Sampler Cleaning Method
Non-Phosphatic detergent wash
H20 rinse
MeOH rinse*
Distilled H20 rinse
*Hexane rinse if oily

FIELD WATER QUALITY TESTS:

Por Vol. Number	pH	Temp (c°)	Conductivity (uS/cm)	Conductivity @ 25° (uS/cm)				

NOTES:
Depth 27 feet
well is dry.

LAB: STS SAMPLERS: JMK

Total # of Bottles: 0 Signature

Appendix B

Laboratory Reports, Sound Analytical Services, Inc.

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4630 PACIFIC HIGHWAY EAST, SUITE B-14, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922- 5047

Bellevue

Report To: Sweet-Edwards Date: July 18, 1990

Report On: Analysis of Soil Lab No.: 12263

IDENTIFICATION:
Samples Received on 07-16-90
Project: U24080.01' Unocal Station No. 4511

ANALYSIS:

Lab Sample No.	1	2	3	4	5
Client ID	MW-1 S-2	MW-2 S-1	MW-3 S-1	MW-4 S-2	MW-2 S-2
Matrix/Units	Soil ppm	Soil ppm	Soil ppm	Soil ppm	Soil ppm
Benzene	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Toluene	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Ethyl Benzene	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Xylenes	< 0.05	0.09	0.90	< 0.05	0.24
BTEX by EPA SW-846 Method 8020					
Total Petroleum Hydrocarbons, by EPA Method 418.1	7.5	810	87.9	65.3	203

SOUND ANALYTICAL SERVICES

C. LARRY ZURAW

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4630 PACIFIC HIGHWAY EAST, SUITE B-14, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922- 5047

QUALITY CONTROL REPORT

DUPLICATES

Lab No: 12263
Date: July 18, 1990
Client: Sweet-Edwards

Client ID: MW-4 S-2
Matrix: Soil
Units: ppm

Compound	Sample(S)	Duplicate(D)	RPD*	
Benzene	< 0.05	< 0.05	---	
Toluene	< 0.05	< 0.05	---	
Ethyl Benzene	< 0.05	< 0.05	---	
Xylenes	< 0.05	< 0.05	---	
Total Petroleum Hydrocarbons	65.3	59.0	10.1	

*RPD = relative percent difference
= [(S - D) / ((S + D) / 2)] x 100

Bellevue

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS
4630 PACIFIC HIGHWAY EAST, SUITE B-14, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922- 5047

Report To: Sweet-Edwards Date: July 25, 1990

Report On: Analysis of Soil Lab No.: 12354

IDENTIFICATION:
Samples Received on 07-20-90
Project: U2408.01 Unocal Station No. 4511
Client ID: MW5 S2

ANALYSIS:

Halogenated Volatiles Per EPA SW-846 Method 8010.

Contaminant	Concentration (mg/kg) (ppm)
Methylene chloride	< 0.05
1,1-dichloroethylene	< 0.05
1,1-dichloroethane	< 0.05
1,2-transdichloroethylene	< 0.05
1,2-dichloroethane	< 0.05
1,1,1-trichloroethane	< 0.05
Carbon Tetrachloride	< 0.05
1,2-dichloropropane	< 0.05
Trans-1,3-dichloropropene	< 0.05
Trichloroethylene	< 0.05
Cis-1,3-dichloropropene	< 0.05
1,1,2-trichloroethane	< 0.05
Tetrachloroethylene	< 0.05
1,1,2,2-tetrachloroethane	< 0.05
Chlorobenzene	< 0.05
1,2 Dichlorobenzene	< 0.05
1,3 Dichlorobenzene	< 0.05
1,4 Dichlorobenzene	< 0.05

Benzene, ppm	< 0.05
Toluene, ppm	< 0.05
Ethyl Benzene, ppm	< 0.05
Xylenes, ppm	< 0.05

BTEX by EPA SW-846 Method 8020

Total Petroleum Hydrocarbons, ppm by EPA method 418.1	95.0

SOUND ANALYTICAL SERVICES

FOR C. LARRY ZURAW

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4630 PACIFIC HIGHWAY EAST, SUITE B-14, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922- 5047

QUALITY CONTROL REPORT

DUPLICATES

Lab No: 12263
Date: July 18, 1990
Client: Sweet-Edwards

Client ID: MW-4 S-2
Matrix: Soil
Units: ppm

Compound	Sample(S)	Duplicate(D)	RPD*	
Benzene	< 0.05	< 0.05	---	
Toluene	< 0.05	< 0.05	---	
Ethyl Benzene	< 0.05	< 0.05	---	
Xylenes	< 0.05	< 0.05	---	
Total Petroleum Hydrocarbons	65.3	59.0	10.1	

*RPD = relative percent difference
= [(S - D) / ((S + D) / 2)] x 100

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Bothell, WA (206) 485-5000
Portland, OR (503) 624-7200

Chain of Custody / Laboratory Analysis Request

Bell

DATE 7/16/90 PAGE 1 OF 4

PROJECT UNOCAL 4511 # U2408.01
CLIENT INFO. CONTACT Jeff Kirtland
ADDRESS SE/E Bothell
TELEPHONE# 485-5000
SAMPLERS NAME Jeff Kirtland PHONE# 485-5000
SAMPLERS SIGNATURE Jeff Kirtland

SAMPLE I.D.		DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	BTEX 8020	TPH 418.1					NUMBER OF CONTAINERS
1. MW-1	S1	7/13	915		Soil																				1
2.	S2	↓	925		↓														X	X					1
3.	S3		935																						1
4.	S4		945																						1
5.	S5		955																						1
6.	S6	↓		JAK	↓																				1 JAK
7. MW-2	S1	7/13	1220		Soil														X	X					1
8.	S2	↓	1240		Soil														X	X					1

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature: Jeff Kirtland	Signature	Signature	Courier	
Printed Name: Jeff Kirtland	Printed Name	Printed Name	Shipping I.D. No.	Total No. of Containers
Firm: SE/E	Firm	Firm	VIA	Chain of Custody Seals
Date/Time: 7/16/90 845	Date/Time	Date/Time	U2408.01	Received in good condition
			Project	LAB NO.
Received By SGiang	**Received By**	**Received By**	**SPECIAL INSTRUCTIONS/COMMENTS**	
Signature: SGIANG	Signature	Signature	Analyze MW-1 S2; MW2 S2	
Printed Name: SMS	Printed Name	Printed Name	Archive MW-1 S1, S3, S4, S5	
Firm	Firm	Firm	MW-2 S2	
Date/Time: 7-16-90 11:30 AM	Date/Time	Date/Time		

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

S-E/E 400-05

Sweet-Edwards / EMCON, Inc.
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Portland, OR (503) 624-7200

Chain of Custody / Laboratory Analysis Request

DATE 7/16/90 PAGE 2 OF 4

PROJECT LWD CAL 4511 # 12408.01
CLIENT INFO.
CONTACT
ADDRESS See Page #1
TELEPHONE#
SAMPLERS NAME PHONE#
SAMPLERS SIGNATURE Jeff Kirkland

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	BTEX 8020	TPH 418.1					NUMBER OF CONTAINERS
1. MW-2 S3	7/13	1250		soil																				1
2. S4		1300																						1
3. S5		1310																						1
4. S6		1320																						1
5. S7		1600																						1
6. MW-3 S1	7/12	1100		soil														X	X					1
7. S2		1110																						1
8. S3		1120																						1

ANALYSIS REQUESTED — GENERAL CHEMISTRY (Specify) — OTHER (Specify)

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature Jeff Kirkland	Signature	Signature	Shipping I.D. No. Courier	Total No. of Containers
Printed Name Jeff Kirkland	Printed Name	Printed Name	VIA	Chain of Custody Seals
Firm SE/E	Firm	Firm	12408.01	Received in good condition
Date/Time 7/16/90 845	Date/Time	Date/Time	Project	LAB NO.
Received By Giang	Received By	Received By	SPECIAL INSTRUCTIONS/COMMENTS	
Signature Giang	Signature	Signature	Analyze: MW-3 S1	
Printed Name SMS	Printed Name	Printed Name	Archive: MW-2 S3, S4, S5, S6, S7 MW-3 S2, S3	
Firm 7-16-90 11:30 AM	Firm	Firm		
Date/Time	Date/Time	Date/Time		

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

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Bothell, WA (206) 485-5000
Portland, OR (503) 624-7200

Chain of Custody / Laboratory Analysis Request

DATE 7/16/90 PAGE 3 OF 4

PROJECT UNOCAL 5511 #42408.01
CLIENT INFO. #1
CONTACT
ADDRESS See Pat
TELEPHONE#
SAMPLERS NAME PHONE#
SAMPLERS SIGNATURE Jeff Kirtland

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	BTEX 8020	TPH 418.1					NUMBER OF CONTAINERS
1. MW-3 S4	7/12	1130		Soil																				1
2. S5		1135																						1
3. S6		1140																						1
4. S7		1300																						1
5. MW-4 S1		745		Soil													SAK							1
6. S2		~~715~~ JAK 750															X	X						1
7. S3		800																						1
8. S4		810																						1

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature Jeff Kirtland	Signature	Signature		
Printed Name Jeff Kirtland	Printed Name	Printed Name	Shipping I.D. No. Courier	Total No. of Containers
Firm SE/E	Firm	Firm	VIA 42408.01	Chain of Custody Seals
Date/Time 7/16/90 845	Date/Time	Date/Time	Project	Received in good condition
				LAB NO.
Received By Siang	**Received By**	**Received By**	**SPECIAL INSTRUCTIONS/COMMENTS**	
Signature Siang	Signature	Signature	Analyze MW-4 S2	
Printed Name SB	Printed Name	Printed Name	Archive: MW-3 S4 S5 S6 S7 MW-4 S1, S3 S4	
Firm ~~SE~~ 7-16-90 11:30	Firm	Firm		
Date/Time	Date/Time	Date/Time		

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

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Portland, OR (503) 624-7200

C..ain of Custody / Laboratory Analysis Request

DATE 7/16/90 PAGE 4 OF 4

PROJECT UNOCAL 4511 # 02408.01
CLIENT INFO. CONTACT
ADDRESS Same as Page #1
TELEPHONE#
SAMPLERS NAME PHONE#
SAMPLERS SIGNATURE Jeff Kintland

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	BTEX 8020	TPH 418.1					NUMBER OF CONTAINERS
1. MW-4 S5	7/12	815		Soil																				1
2. S6		1645																						1
3. S7		1650																						1
4. S9		719		↓																				1
5.																								
6.																								
7.																								
8.																								

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature Jeff Kintland	Signature	Signature	Courier	
Printed Name Jeff Kintland	Printed Name	Printed Name	Shipping I.D. No.	Total No. of Containers
Firm SE/E	Firm	Firm	VIA	Chain of Custody Seals
Date/Time 7/16/90 0845	Date/Time	Date/Time	Project	Received in good condition
Received By Qiang	Received By	Received By	SPECIAL INSTRUCTIONS/COMMENTS	LAB NO.
Signature Qiang	Signature	Signature	Analyze	
Printed Name QA	Printed Name	Printed Name	Archive: MW-4 S5, S6, S7, S9	
Firm 7-16-90 11:30 AM	Firm	Firm		
Date/Time	Date/Time	Date/Time		

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

S-E/E 400-05

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4630 PACIFIC HIGHWAY EAST, SUITE B-14, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922- 5047

Report To: Sweet-Edwards Date: August 3, 1990

Report On: Analysis of Water Lab No.: 12535

IDENTIFICATION:
Samples Received on 08-01-90
Project: U2408.01 Unocal Belle
Unocal Station No. 4511

ANALYSIS:

Lab Sample No.	1	2	3	4
Client Identification	U4511 79-1	U4511 79-2	U4511 79-3	U4511 79-4
Matrix/Units	Water ppm	Water ppm	Water ppm	Water ppm
Benzene	< 0.001	< 0.001	0.003	< 0.001
Toluene	< 0.001	< 0.001	< 0.001	< 0.001
Ethyl Benzene	< 0.001	< 0.001	0.015	< 0.001
Xylenes	< 0.001	< 0.001	0.014	< 0.001
BTEX by EPA SW-846 Method 8020				
Total Petroleum Hydrocarbons by EPA Method 418.1	< 1.0	< 1.0	< 1.0	< 1.0

SOUND ANALYTICAL SERVICES

C. LARRY ZURAW

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4630 PACIFIC HIGHWAY EAST, SUITE B-14, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922- 5047

QUALITY CONTROL REPORT

DUPLICATES

Lab No: 12535
Date: August 3, 1990
Client: Sweet-Edwards

Client ID: U4511 79-4
Matrix: Water
Units: ppm

Compound	Sample(S)	Duplicate(D)	RPD*	
Benzene	< 0.001	< 0.001	---	
Toluene	< 0.001	< 0.001	---	
Ethyl Benzene	< 0.001	< 0.001	---	
Xylenes	< 0.001	< 0.001	---	
Total Petroleum Hydrocarbons	< 1.0	< 1.0	---	

*RPD = relative percent difference
= [(S - D) / ((S + D) / 2)] x 100

Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Bothell, WA (206) 485-5000
Portland, OR (503) 624-7200

Chain of Custody / Laboratory Analysis Request

AUG - 7 1990

DATE 8/1/90 PAGE 1 OF 1

PROJECT UNOCAL 4511 Belle # U2408.01
CLIENT INFO. CONTACT Jeff Kirtland
ADDRESS SE/E Bothell
TELEPHONE# 485-5000
SAMPLERS NAME Jeff Kirtland PHONE# 485-5000
SAMPLERS SIGNATURE Jeff Kirtland

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	BTEX 602	TPH 418.1				NUMBER OF CONTAINERS
1. U4511-79-1	8/1/90	800		Water														✓	✓				3
2. -2	8/1/90	830																✓	✓				3
3. -3	7/31/90	1520																✓	✓				3
4. -4	8/1/90	900																✓	✓				3
5.																							
6.																							
7.																							
8.																							

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature Jeff Kirtland	Signature	Signature	Courier	
Printed Name Jeff Kirtland	Printed Name	Printed Name	Shipping I.D. No.	Total No. of Containers
Firm SE/E	Firm	Firm	VIA	Chain of Custody Seals
Date/Time 8/1/90 1100	Date/Time	Date/Time	U2408.01	Received in good condition
			Project	LAB NO.
Received By Jeff Bolm	**Received By**	**Received By**	**SPECIAL INSTRUCTIONS/COMMENTS**	
Signature Jeff Bolm	Signature	Signature	Report Jobs seperately	
Printed Name Sound Analytical	Printed Name	Printed Name		
Firm 8/1/90 1:30pm	Firm	Firm		
Date/Time	Date/Time	Date/Time		

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

S-E/E 400-05

Appendix C

Monitoring Well Elevation Survey Data
Sweet-Edwards/EMCON, Inc.

MONITORING WELL ELEVATIONS
UNOCAL Station Number 4511
Bellevue, Washington

Elevations shot July 24, 1990

By: M. Hickman
D. Murphy

All shots taken on southside of top of well casing (marked with blue ink).

Datum: Fire hydrant located at southwest corner of UNOCAL property. Datum shot on top of upper flange on north side of hydrant (not on a bolt head)

Arbitrary Datum Elevation: 100.00 feet

Data Point	Reading	Elevation
Datum	4.45	100.00
MW-1	2.73	101.72
MW-2	2.48	101.97
MW-3	4.73	99.72
MW-4	5.64	98.81
MW-5	5.70	98.75

Appendix D

Telephone Record of Ecology Notification of Petroleum-Related Hydrocarbons

Sweet-Edwards
EMCON

Record of Telecon

Job No. 424-08.01
Date 8/10/90 Time
Page 1 of 1

CALL: ☒ To ☐ From ☐ Return Mr. Joe Hickey

Firm / Organization Washington State Department of Ecology

Route to: File

Phone Address

Subject UNOCAL Bellevue Service Station #4511

☐ Message ☐ Reply	CLIENT: ☐ Message ☐ Reply
Am calling on behalf of UNOCAL to notify you of exceedence of 200 ppm TPH guideline for petroleum hydrocarbons in two samples of soil collected from a boring located next to two gasoline USTs. Levels were 810 ppm and 203 ppm TPH. Borings completed as GW monitoring wells. No water data yet, but did not detect any free product or sheen in the well. Several borings/wells were completed at site as part of preliminary assessment. My understanding is that USTs are scheduled to be removed. Not clear on time frame; possibly not for a year or so. Will keep you posted. By	OK fine. Will start file on the site. Let me know as things develop.

ACTION REQUIRED	Deadline (Date)	Responsibility (Last Name)