Maul Foster & Alongi, Inc.

Environmental & Engineering Services

December 20, 2001
Project 9077.15.01

Dr. Mark Brearley
Unocal RRMC
P.O. Box 2004
Edmonds, Washington 98020

Re: Remediation System Installation Report, Former Unocal Bulk Fuel Terminal #0082, Chelan, Washington

Dear Mark:

Maul Foster & Alongi, Inc. (MFA) has prepared this report to describe the air sparging and soil vapor extraction system that was installed at the above-referenced site in May and July 2001. The purpose of the system is to remediate the petroleum hydrocarbon-impacted groundwater beneath the site.

BACKGROUND

Former Unocal Bulk Fuel Terminal #0082 is located at the intersection of Highway 97 and East Street in Chelan, Washington. The site is approximately 200 feet south of Lake Chelan. The location of the site is shown on Figure 1. The site is bounded to the north by Highway 97 and the Lady of the Lake ferry terminal; to the east and west by private residences; and to the south by a recreational area parking lot. From at least 1927 to 1989, Unocal used the site for bulk petroleum fuel storage and distribution. The structures at the site included an office, a warehouse, three gasoline aboveground storage tanks (ASTs), a diesel AST, a stove oil (heating oil) AST, four dispenser pumps, a heating oil underground storage tank (UST), two truck loading racks, and a truck unloading rack. The site was closed in 1989, and all of the tanks and structures were demolished and removed by 1992. The locations of the former tanks and structures are shown on Figure 2. The site is currently vacant.

In 1989, GeoEngineers conducted a subsurface investigation at the site to evaluate the potential presence of petroleum hydrocarbons in the soil and groundwater. The investigation consisted of collecting one surface soil sample (designated WH-1), excavating and sampling three test pits (TP-1, TP-2, and TP-3), and drilling and sampling three soil borings that were completed as groundwater monitoring wells (MW-1, MW-2, and MW-3). Groundwater samples were collected from the three wells. The locations of the monitoring wells are shown on Figure 2. The soil sample analytical results showed that samples from boring MW-1 [collected at depths of 15 and 20 feet below ground surface (bgs)] and from test pits TP-1 (collected at a depth 11 feet bgs), TP-2 (collected at depths of 5 and 11 feet bgs), and TP-3 (collected at a depth of less than 6 inches bgs) contained total petroleum hydrocarbon (TPH)

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concentrations that exceeded the Model Toxics Control Act (MTCA) Method A cleanup level. MW-1 was located near the former truck unloaders, TP-1 was located near the former truck loading rack, TP-2 was located near the pre-1968 former truck loading rack, and TP-3 was located at the former barrel storage area. The groundwater sample analytical results showed that the sample from MW-1 contained TPH, and benzene, toluene, ethylbenzene, and total xylenes (BTEX) concentrations that exceeded the Method A cleanup levels. The groundwater sample from well MW-3 contained a TPH concentration that exceeded the Method A cleanup level. The results of the investigation were presented in GeoEngineers' report, *Report of Geotechnical Services, Subsurface Contamination Study*, dated March 14, 1990.

In April 1991, GeoEngineers drilled and sampled three additional soil borings that were completed as groundwater monitoring wells (MW-4, MW-5, and MW-6), and collected groundwater samples from all of the wells at the site. The well locations are shown on Figure 2. The soil sample analytical results showed that the sample collected from boring MW-5, at a depth of 20 feet bgs, contained benzene, TPH, TPH as gasoline (TPH-G), and TPH as diesel (TPH-D) concentrations above the MTCA Method A cleanup levels. MW-5 was located near the former truck unloaders. The groundwater sample analytical results showed that the samples from wells MW-1 and MW-5 contained BTEX and TPH-G concentrations that exceeded the Method A cleanup levels. The samples from wells MW-1, MW-2, MW-3 and MW-4 contained dissolved lead concentrations that exceeded the Method A cleanup level. The results of the assessment activities were presented in GeoEngineers' report, *Supplemental Report of Geotechnical Services, Subsurface Contamination Study*, dated September 3, 1991.

In November 1992, GeoEngineers collected a surface soil sample (designated S-1), and drilled and sampled an additional soil boring that was completed as a groundwater monitoring well (MW-7). The location of MW-7 is shown on Figure 2. The soil sample analytical results showed that S-1 contained total xylenes, TPH-G, and TPH-D concentrations that exceeded the MTCA Method A cleanup levels. S-1 was located near the former ASTs. The results of the investigation activities were described in GeoEngineers' report, *Progress Report No. 2, Quarterly Groundwater Monitoring and Supplemental Subsurface Explorations*, dated May 14, 1993.

In August 1995, GeoEngineers excavated and sampled 15 test pits (TP-1 through TP-15) to assess the lateral extents of the shallow, hydrocarbon-impacted soil at the site. The soil sample analytical results showed that samples from test pits TP-4 (collected at a depth of 6 feet bgs) and TP-5 (collected at a depth of 13.5 feet bgs) contained TPH-G, TPH-D, and TPH as oil (TPH-O) concentrations that exceeded the MTCA Method A cleanup levels. A sample collected from TP-9, at a depth of approximately 10 feet bgs, contained a TPH-G concentration that exceeded the Method A cleanup level. A sample collected from TP-11, at a depth of approximately 6 feet bgs, contained a TPH-O concentration that exceeded the

Method A cleanup level. TP-4 was located near the former truck loading rack, TP-5 was located near the former truck unloaders, TP-9 was located near the former ASTs, and TP-11 was located near the former heating oil UST. The results of the investigation were described in GeoEngineers' report, *Report of Environmental Services, Supplemental Subsurface Contamination and In-situ Testing*, dated January 18, 1996.

From 1991 to 1999, GeoEngineers collected groundwater samples from all of the monitoring wells at the site on a quarterly to semi-annual basis. From 1991 to 1999, the groundwater samples from wells MW-1 and MW-5 typically contained benzene, total xylenes, TPH-G, and TPH-D concentrations that exceeded the MTCA Method A cleanup levels. Between 1991 and 1997, several of the samples from MW-1 and MW-4 contained dissolved lead concentrations that exceeded the Method A cleanup level. However, after December 1997, the groundwater samples from MW-1 and MW-4 contained dissolved lead concentrations that were below the Method A cleanup level. The results of the quarterly and semi-annual sampling events were described in several GeoEngineers' reports from 1991 to 1999.

In April and May 2001, MFA conducted soil excavation activities at six areas of the site to remove the petroleum hydrocarbon-impacted soil that occurred at depths above the high seasonal groundwater table (approximately 14 feet bgs). A total of approximately 300 cubic yards of impacted soil from the six excavations was hauled off site for disposal at the Waste Management landfill in East Wenatchee, Washington. MFA collected sidewall and/or floor samples at the extents of each of the excavations for laboratory analysis. The soil sample analytical results showed that the final excavation sidewall and floor samples contained petroleum hydrocarbon concentrations below the MTCA Method A cleanup levels. The results of the excavation activities were described in MFA's report, *Results of Soil Excavation Activities*, dated August 23, 2001.

In May 2001, MFA conducted subsurface investigation activities at the site to evaluate the eastern extent of the petroleum hydrocarbon-impacted groundwater. The work consisted of installing a groundwater monitoring well (MW-8) near the eastern property line and collecting groundwater samples from all of the monitoring wells at the site. The location of MW-8 is shown on Figure 2. The soil sample analytical results showed that the sample from boring MW-8 did not contain petroleum hydrocarbon concentrations above the method reporting limits (MRLs). The groundwater sample analytical results showed that the samples from wells MW-1 and MW-5 contained benzene, TPH-G, and/or TPH-D concentrations that exceeded the MTCA Method A cleanup levels. Based on the groundwater sample analytical results, the lateral extent of the impacted groundwater has been defined in all directions. The results of the investigation activities were described in MFA's report, *Results of Subsurface Investigation Activities*, dated October 5, 2001.

Based on the geologic conditions encountered during the previous investigation and remediation activities, the soil beneath the site consists of gravel and sand with local silty zones to a depth of at least 33 feet bgs. Unconfined groundwater occurs at depths ranging from approximately 14 to 29 feet bgs. Due to fluctuations of the Lake Chelan water level, the groundwater level beneath the site fluctuates up to 14 feet. The horizontal hydraulic gradient is relatively flat (less than 0.004 feet per foot), and the groundwater flow direction is variable.

DRILL AND INSTALL AIR SPARGING POINTS

Based on the limited area of the petroleum hydrocarbon-impacted groundwater (approximately 1,800 square feet; Figure 2) and the gravelly soil conditions, MFA determined that air sparging and soil vapor extraction (SVE) would be an effective method of remediating the groundwater beneath the site. The system would also remediate the hydrocarbon-impacted soil that occurs within the zone of groundwater fluctuation (approximately 14 to 29 feet bgs). On May 24 and 25, 2001, three air sparging points (AS-1, AS-2, and AS-3) were drilled and installed at the site. The air sparging points were located within the area of impacted groundwater, and spaced so that the area would be effectively remediated (Figure 2). Cascade Drilling, Inc., of Woodinville, Washington, conducted the drilling and sparging point installation activities under the direction of an MFA geologist. The soil borings were drilled by using air rotary drilling methods, and soil samples were collected at 5-foot intervals by using a split-spoon sampler. Each boring extended to a depth of approximately 31 feet bgs, and was completed with 2-inch-diameter, schedule 40 PVC casing and micro-porous bubbler screen. Each 2-foot-long micro-porous screen was installed at a depth of approximately 29 to 31 feet bgs.

MFA screened each soil sample for the presence of petroleum hydrocarbons by using visual appearance, odor, and a photoionization detector (PID). Based on the screening results, a selected soil sample, collected at a depth of approximately 12 feet bgs (above the high seasonal groundwater table), from each soil boring was submitted to North Creek Analytical, Inc. (NCA), in Bothell, Washington, for analysis. The samples were analyzed for BTEX by EPA Method 8021B, TPH-G by Ecology Method NWTPH-Gx, and for TPH-D and TPH-O by Ecology Method NWTPH-Dx (after sulfuric acid/silica gel cleanup). The analytical results showed that the sample from boring AS-1 (designated AS1-12.0-0501) contained ethylbenzene, total xylenes, TPH-G and TPH-D concentrations [6.93, 112, 1,530, and 9,570 milligrams per kilogram (mg/kg), respectively] that exceeded the MTCA Method A cleanup levels[1] (6, 9, 30, and 2,000 mg/kg, respectively). The samples from borings AS-2 and AS-3 (designated AS2-12.0-0501 and AS3-12.0-0501) contained petroleum hydrocarbon concentrations that were below the Method A cleanup levels or the MRLs. The soil sample

[1] Chapter 173-340 WAC, "Model Toxics Control Act Cleanup Regulation; Method A Cleanup Levels." Amended February 12, 2001.

analytical results are presented in Table 1. A copy of the laboratory report is attached. Soil boring logs that include the sparging point construction details are attached. The soil cuttings are temporarily stored on site in 55-gallon drums, pending off-site disposal.

PERMITTING

Prior to installing the air sparging and SVE system equipment, MFA obtained a temporary air quality permit from the Washington Department of Ecology to construct and operate the system. The system installation contractor, Wyser Construction, Inc. (Wyser) obtained an electrical work permit from the Washington Department of Labor and Industries to allow for the installation of a temporary electrical power drop at the site and the installation of the electrical system control equipment.

SYSTEM INSTALLATION

In July 2001, the air sparging and SVE system piping and equipment were installed at the site. The air sparging system consists of a 7.5-horsepower, rotary vane air compressor that is plumbed, via underground piping, to the three air sparging points (AS-1, AS-2, and AS-3). The SVE system consists of a 2-horsepower, regenerative blower that is plumbed, via underground piping, to three of the groundwater monitoring wells (MW-1, MW-5, and MW-8). MW-1, MW-5, and MW-8 are located less than 20 feet from sparging points AS-3, AS-2, and AS-1, respectively, and should capture the volatile hydrocarbons that are stripped from the groundwater (Figure 2). To comply with the air emission requirement of the temporary air quality permit (TPH-G concentrations must be less than 50 parts per million), the extracted soil vapors are treated by two, 1,000-pound carbon-filled canisters in series prior to emission to the atmosphere. The air sparging compressor, the SVE blower, and the carbon canisters are located in a fenced enclosure along the eastern boundary of the site. The locations of the underground piping and the system equipment are shown on Figure 2. A process flow diagram for the system is shown on Figure 3. Photographs of the system are attached.

The air sparging and SVE system was initially activated on August 9, 2001. However, the system was shut off on August 15th due to the overheating of the sparge compressor. After installing a more effective cooling system in the compressor enclosure, the system was reactivated on September 5, 2001.

GROUNDWATER SAMPLING

On August 9, 2001, MFA collected groundwater samples from all of the monitoring wells (MW-1 through MW-8) at the site for laboratory analysis. Prior to sampling, the depths to groundwater were measured in the wells by using an electronic water level probe. The depths to groundwater ranged from 14.50 to 20.12 feet. The depth to groundwater measurements

were converted to groundwater elevations by using the results of a well elevation survey conducted by Erlandsen Associates Inc., of Chelan, Washington. The groundwater elevations in the wells ranged from 1,097.26 to 1,097.33 feet above mean sea level (msl). The groundwater table was flat and the general groundwater flow direction beneath the site was too variable to reliably contour. The groundwater monitoring data from the August 2001 sampling event are presented in Table 2, and the groundwater elevations are shown on Figure 4.

The depth to groundwater measurements were used to calculate the volume of standing water in each well casing (pore volume). Before sample collection, at least three pore volumes were removed from each well by using a disposable PVC bailer. Field parameters of pH, specific conductance, and temperature were measured following removal of each pore volume. A groundwater sample was collected following stabilization of the field parameters to less than a 10 percent variation in parameter measurements between pore volumes. Each sample was labeled, placed into an iced cooler, and submitted to NCA by using standard chain-of-custody protocol. A new disposable bailer was used to collect the sample set at each well. The purge water is temporarily stored on site in properly labeled, 55-gallon drums, pending off-site disposal.

The groundwater samples were analyzed for BTEX, TPH-G, TPH-D, and TPH-O. The analytical results showed that the samples from wells MW-1 and MW-5 contained TPH-D concentrations (2,370 and 8,600 micrograms per liter [µg/L], respectively) that exceeded the MTCA Method A cleanup level (500 µg/L). The sample from MW-5 also contained benzene, TPH-G, and TPH-O concentrations (50.3, 1,030, and 502 µg/L, respectively) that exceeded the Method A cleanup levels (5, 800, and 500 µg/L, respectively). The samples from wells MW-2, MW-3, MW-4, MW-6, MW-7, and MW-8 did not contain petroleum hydrocarbon concentrations above the MRLs. The groundwater sample analytical results from the August 2001 event, and the previous groundwater sampling events, are presented in Table 3. The benzene concentrations from the August 2001 sampling event are presented on Figure 4. A copy of the laboratory report is attached.

CONCLUSIONS

In May and July 2001, MFA installed an air sparging and SVE system to remediate the petroleum hydrocarbon-impacted groundwater beneath the site. The system should also remediate the hydrocarbon-impacted soil that occurs within the zone of groundwater fluctuation. On May 24 and 25, 2001, three air sparging points (AS-1, AS-2, and AS-3) were drilled and installed at the site. The air sparging points were located within the estimated area of impacted groundwater, and spaced so that the area would be effectively remediated. Each soil boring extended to a depth of approximately 31 feet bgs, and was completed with 2-inch-diameter, schedule 40 PVC casing and micro-porous bubbler screen. Each 2-foot-long micro-

porous screen was installed at a depth of approximately 29 to 31 feet bgs. Based on field screening results, a selected soil sample, collected at a depth of approximately 12 feet bgs, from each soil boring was submitted to NCA for analysis. The analytical results showed that the sample from boring AS-1 contained ethylbenzene, total xylenes, TPH-G and TPH-D concentrations (6.93, 112, 1,530, and 9,570 mg/kg, respectively) that exceeded the MTCA Method A cleanup levels (6, 9, 30, and 2,000 mg/kg, respectively). The samples from borings AS-2 and AS-3 contained petroleum hydrocarbon concentrations that were below the Method A cleanup levels or the MRLs.

In July 2001, the air sparging and SVE system piping and equipment were installed at the site. The air sparging system consists of a 7.5-horsepower, rotary vane air compressor that is plumbed, via underground piping, to the three air sparging points (AS-1, AS-2, and AS-3). The SVE system consists of a 2-horsepower, regenerative blower that is plumbed, via underground piping, to three of the groundwater monitoring wells (MW-1, MW-5, and MW-8). MW-1, MW-5, and MW-8 are located less than 20 feet from sparging points AS-3, AS-2, and AS-1, respectively, and should capture the volatile hydrocarbons that are stripped from the groundwater. To comply with the air emission requirement of the temporary air quality permit (TPH-G concentrations must be less than 50 parts per million), the extracted soil vapors are treated by two, 1,000-pound carbon-filled canisters in series prior to emission to the atmosphere. The air sparging compressor, the SVE blower, and the carbon canisters are located in a fenced enclosure along the eastern boundary of the site. The system was initially activated on August 9, 2001; however, the system was shut off on August 15th due to the overheating of the sparge compressor. After installing a more effective cooling system in the compressor enclosure, the system was reactivated on September 5, 2001.

On August 9, 2001, MFA collected groundwater samples from all of the monitoring wells (MW-1 through MW-8) at the site for laboratory analysis. At the time of sampling, the depths to groundwater in the wells ranged from 14.50 to 20.12 feet. The groundwater elevations in the wells ranged from 1,097.26 to 1,097.33 feet above msl. The groundwater table was flat and the general groundwater flow direction beneath the site was too variable to reliably contour. The groundwater sample analytical results showed that the samples from wells MW-1 and MW-5 contained TPH-D concentrations (889 and 8,250 µg/L, respectively) that exceeded the MTCA Method A cleanup level (500 µg/L). The sample from MW-5 also contained benzene, TPH-G, and TPH-O concentrations (50.3, 1,030, and 502 µg/L, respectively) that exceeded the Method A cleanup levels (5, 800, and 500 µg/L, respectively). The samples from wells MW-2, MW-3, MW-4, MW-6, MW-7, and MW-8 did not contain petroleum hydrocarbon concentrations above the MRLs.

If you have any questions, please call us at (425) 744-1489.

Sincerely,

Maul Foster & Alongi, Inc.

Elisabeth Silver
Senior Geologist

Michael D. Staton, R.G.
Principal Geologist

Attachments: Limitations
Table 1 – Soil Sample Analytical Results
Table 2 – Groundwater Monitoring Data
Table 3 – Groundwater Sample Analytical Results
Figure 1 – Site Location Map
Figure 2 – Air Sparging Point Locations
Figure 3 – Air Sparging/Soil Vapor Extraction System Process Flow Diagram
Figure 4 – Groundwater Monitoring Data – August 9, 2001
Laboratory Reports
Soil Boring Logs
Photographs

LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreements with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

Table 1
Soil Sample Analytical Results
Former Unocal Bulk Fuel Terminal #0082
Chelan, Washington

Sample ID	Sample Date	Sample Location	Approximate Sample Depth (feet)	Benzene[a] (mg/kg)	Toluene[a] (mg/kg)	Ethylbenzene[a] (mg/kg)	Total Xylenes[a] (mg/kg)	TPH-G[b] (mg/kg)	TPH-D[c] (mg/kg)	TPH-O[c] (mg/kg)
MTCA Method A Cleanup Levels[d]				0.03	7	6	9	30	2000	2,000
AS1-12.0-0501	05/24/01	AS-1	11.5 to 12.5	<1.0[e]	1.07	6.93	112	1,530	9,570	<1,020
AS2-12.0-0501	05/25/01	AS-2	11.5 to 12.2	<0.05[e]	<0.05	<0.05	<0.10	<5.0	<10.0	<25.0
AS3-12.0-0501	05/25/01	AS-3	11.5 to 12.5	<0.05[e]	<0.05	<0.05	<0.10	<5.0	75.0	<25.0

NOTES:

mg/kg = milligrams per kilogram (ppm).

Shaded values exceed MTCA Method A cleanup levels.

[a] BTEX by EPA Method 8021B.

[b] TPH-G by Ecology Method NWTPH-Gx.

[c] TPH-D and TPH-O by Ecology Method NWTPH-Dx (after sulfuric acid/silica gel cleanup).

[d] Chapter 173-340 WAC, "The Model Toxics Control Act Cleanup Regulations; Method A Cleanup Levels." Amended February 12, 2001.

[e] Method reporting limit exceeded the MTCA Method A cleanup level.

Table 2

Groundwater Monitoring Data
Former Unocal Bulk Fuel Terminal #0082
Chelan, Washington

Well Number	Top of Well Casing Elevation[a] (feet)	Date	Depth to Groundwater[b] (feet)	Groundwater Elevation (feet)
MW-1	1,112.38	05/25/01	20.02	1,092.36
		08/09/01	15.09	1,097.29
		11/14/01	20.62	1,091.76
MW-2	1,111.78	05/25/01	19.46	1,092.32
		08/09/01	14.50	1,097.28
		11/13/01	20.01	1,091.77
MW-3	1,112.15	05/25/01	19.82	1,092.33
		08/09/01	14.89	1,097.26
		11/13/01	20.45	1,091.70
MW-4	1,112.35	05/25/01	20.06	1,092.29
		08/09/01	15.07	1,097.28
		11/14/01	20.67	1,091.68
MW-5	1,112.20	05/25/01	19.84	1,092.36
		08/09/01	14.94	1,097.26
		11/13/01	20.42	1,091.78
MW-6	1,112.18	05/25/01	19.92	1,092.26
		08/09/01	14.89	1,097.29
		11/14/01	20.49	1,091.69
MW-7	1,117.45	05/25/01	25.02	1,092.43
		08/09/01	20.12	1,097.33
		11/13/01	25.61	1,091.84
MW-8	1,112.66	05/25/01	20.37	1,092.29
		08/09/01	15.39	1,097.27
		11/14/01	20.99	1,091.67

NOTE:

[a] Well elevations were surveyed relative to mean sea level.

[b] The depths to groundwater were measured from the tops of the well casings.

Table 3

Groundwater Sample Analytical Results
Former Unocal Bulk Fuel Terminal #0082
Chelan, Washington

Well Number	Date Collected	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	TPH-G[b] (µg/L)	TPH-D[c] (µg/L)	TPH-O[d] (µg/L)	Dissolved Lead[e] (µg/L)
MTCA Method A Cleanup Levels[f]		5	1,000	700	1,000	800	500	500	15
MW-1	12/04/1989	270	150	94	700	NA	NA	3,800[i]	NA
	04/09/1991	280	50	41	270	2,800[g]	<1,000[h,j]	NA	10
	08/27/1991	84	8.3	6.8	57	3,000[g]	15,000[h]	5,300[i]	12
	11/23/1991	250	71	43	350	12,000[g]	19,000[h]	14,000[i]	59
	02/20/1992	Well was dry at time of sampling.							
	05/21/1992	1.2	<0.5	0.57	4.3	1,200	9,900	25,000	19
	08/19/1992	28	5.0	4.7	24	570	16,000	NA	
	11/12/1992	75	53	19	150	1,600	12,000	NA	NA
	02/25/1993	Well was dry at time of sampling.							
	08/24/1993	15	1.6	2.2	9.1	240	18,000	<3,800[j]	NA
	07/08/1994	0.88	<0.5	<0.5	<1.0	<50	3,200	930	6.4
	01/04/1995	27	0.83	2.4	4.9	730	2,000	1,900	7.1
	06/29/1995	0.69	<0.5	<0.5	<1.0	<50	5,600	2,000	5.5
	12/29/1995	28	4.4	1.2	33	200	21,000	6,800	6.2
	06/19/1996	18.7	<0.5	<0.5	2.29	411	15,500	4,020	4.1
	12/13/1996	65	9.2	15.8	112	1,290	1,910	<750[j]	<10
	07/01/1997	5.4	<0.5	<0.5	1.0	94.8	1,200	<750[j]	2.9
	12/30/1997	33.6	<25	<25	124	10,490	4,800	<750[j]	7.4
	06/12/1998	1.29	<0.5	<0.5	<1.0	<50	<250	<750[j]	4.6
	12/07/1998	34.4	7.21	15.8	115	841	792	<750[j]	4.7
	06/21/1999	1.31	0.10	<0.5	1.09	<50	<250	<750[j]	2.6
	05/25/2001	0.67	<0.5	<0.5	1.24	117	889	<500	NA
	08/09/2001	1.89	<0.5	1.67	7.70	114	2,370	<500	NA

Table 3

Groundwater Sample Analytical Results
Former Unocal Bulk Fuel Terminal #0082
Chelan, Washington

Well Number	Date Collected	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	TPH-G[b] (µg/L)	TPH-D[c] (µg/L)	TPH-O[d] (µg/L)	Dissolved Lead[e] (µg/L)
MTCA Method A Cleanup Levels[f]		5	1,000	700	1,000	800	500	500	15
MW-2	12/04/1989	<0.5	<0.5	<0.5	<0.5	NA	NA	230[i]	NA
	04/09/1991	<0.5	<0.5	<0.5	<0.5	<1,000[g,j]	<1,000[h,j]	NA	9.0
	08/27/1991	<0.5	<0.5	<0.5	<0.5	<1,000[g,j]	<1,000[h,j]	<1,000[i,j]	<2.0
	11/23/1991	<0.5	<0.5	<0.5	<0.5	<1,000[g,j]	<1,000[h,j]	<1,000[i,j]	<3.0
	02/20/1992	Well was dry at time of sampling.							
	05/21/1992	<0.5	<0.5	<0.5	<0.5	<50	<500	<1,000[j]	3.3
	08/19/1992	Well was not sampled.							
	11/12/1992	<0.5	<0.5	<0.5	<0.5	<100	1,000	NA	NA
	02/25/1993	Well was dry at time of sampling.							
	08/24/1993	<0.5	<0.5	<0.5	<0.5	<100	<250	<750[j]	NA
	07/08/1994	<0.5	<0.5	<0.5	<1.0	<50	<250	<750[j]	NA
	01/04/1995	<0.5	<0.5	<0.5	<1.0	<50	340	720	NA
	06/29/1995	<0.5	<0.5	<0.5	<1.0	<50	<250	<750[j]	NA
	12/29/1995	<0.5	<0.5	<0.5	<1.0	<50	2,000	1,400	NA
	06/19/1996	<0.5	<0.5	<0.5	<1.0	<50	518	<750[j]	NA
	12/13/1996	<0.5	<0.5	<0.5	<1.0	<50	<250	<750[j]	NA
	07/01/1997	<0.5	<0.5	<0.5	<1.0	<50	<250	<750[j]	NA
	12/30/1997	NA	NA	NA	NA	NA	287	<750[j]	NA
	06/12/1998	NA	NA	NA	NA	<50	<250	<750[j]	NA
	12/07/1998	NA	NA	NA	NA	NA	<250	<750[j]	NA
	06/21/1999	NA	NA	NA	NA	NA	<250	<750[j]	NA
	05/25/2001	<0.5	<0.5	<0.5	<1.0	<50	<250	<500	NA
	08/09/2001	<0.5	<0.5	<0.5	<1.0	<50	<301	<602[j]	NA

Table 3

Groundwater Sample Analytical Results
Former Unocal Bulk Fuel Terminal #0082
Chelan, Washington

Well Number	Date Collected	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	TPH-G[b] (µg/L)	TPH-D[c] (µg/L)	TPH-O[d] (µg/L)	Dissolved Lead[e] (µg/L)
MTCA Method A Cleanup Levels[f]		5	1,000	700	1,000	800	500	500	15
MW-3	12/04/1989	<0.5	<0.5	<0.5	<0.5	NA	NA	9,300	NA
	04/09/1991	3.9	<0.5	<0.5	1.6	<1,000[g,j]	<1,000[h,j]	NA	12
	08/27/1991	<0.5	<0.5	<0.5	<0.5	<1,000[g,j]	<1,000[h,j]	<1,000[i,j]	<2.0
	11/23/1991	1.2	<0.5	<0.5	<0.5	<1,000[g,j]	<1,000[h,j]	<1,000[i,j]	<3.0
	02/20/1992	<0.5	<0.5	<0.5	<0.5	<1,000[g,j]	12,000[h]	6,600[i]	<3.0
	05/21/1992	1.0	<0.5	<0.5	<0.5	100	3,500	9,000	2.9
	08/19/1992	4.4	<0.5	<0.5	<1.0	<50	1,800	NA	<2.0
	11/12/1992	<0.5	<0.5	<0.5	<0.5	<100	1,800	NA	NA
	02/25/1993	1.4	<0.5	<0.5	<0.5	<100	2,600	NA	NA
	08/24/1993	1.6	<0.5	<0.5	<0.5	<100	1,000	<750[j]	NA
	07/08/1994	0.95	<0.5	<0.5	<1.0	<50	2,000	1,200	NA
	01/04/1995	2.8	<0.5	<0.5	<1.0	59	11,000	2,400	NA
	06/29/1995	<0.5	<0.5	<0.5	<1.0	<50	2,300	1,700	NA
	12/29/1995	<0.5	<0.5	<0.5	<1.0	<50	5,100	2,900	NA
	06/19/1996	<0.5	<0.5	<0.5	<1.0	<50	4,790	1,940	NA
	12/13/1996	<0.5	<0.5	<0.5	<1.0	<50	<250	<750[j]	NA
	07/01/1997	<0.5	<0.5	<0.5	<1.0	<50	<250	<750[j]	NA
	12/30/1997	NA	NA	<0.5	NA	NA	280	<750[j]	NA
	06/12/1998	NA	NA	NA	NA	NA	<250	<750[j]	NA
	12/07/1998	NA	NA	NA	NA	NA	<250	<750[j]	NA
	06/21/1999	NA	NA	NA	NA	NA	<250	<750[j]	NA
	05/25/2001	<0.5	<0.5	<0.5	<1.0	<50	<250	<500	NA
	08/09/2001	<0.5	<0.5	<0.5	<1.0	<50	<250	<500	NA

Table 3

Groundwater Sample Analytical Results
Former Unocal Bulk Fuel Terminal #0082
Chelan, Washington

Well Number	Date Collected	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	TPH-G[b] (µg/L)	TPH-D[c] (µg/L)	TPH-O[d] (µg/L)	Dissolved Lead[e] (µg/L)
MTCA Method A Cleanup Levels[f]		5	1,000	700	1,000	800	500	500	15
MW-4	04/09/1991	<0.5	<0.5	<0.5	<0.5	<1,000[g,j]	<1,000[h,j]	NA	5
	08/27/1991	<0.5	<0.5	<0.5	<0.5	<1,000[g,j]	<1,000[h,j]	<1,000[i,j]	15
	11/23/1991	<0.5	<0.5	<0.5	<0.5	<1,000[g,j]	<1,000[h,j]	<1,000[i,j]	15
	02/20/1992	Well was dry at time of sampling.							
	05/21/1992	<0.5	<0.5	<0.5	<0.5	<50	600	2,100	41
	08/19/1992	Well was not sampled.							
	11/12/1992	Well was not sampled.							
	02/25/1993	Well was dry at time of sampling.							
	08/24/1993	<0.5	<0.5	<0.5	<0.5	<100	280	<750[j]	NA
	07/08/1994	<0.5	<0.5	<0.5	<1.0	<50	630	910	2.9
	01/04/1995	<0.5	<0.5	<0.5	<1.0	<50	750	880	6.4
	06/29/1995	<0.5	<0.5	<0.5	<1.0	<50	490	1,500	2.2
	12/29/1995	<0.5	<0.5	<0.5	<1.0	<50	1,700	1,400	6.3
	06/19/1996	<0.5	<0.5	<0.5	<1.0	<50	2,530	1,840	5.7
	12/13/1996	<0.5	<0.5	<0.5	<1.0	<50	<250	<750[j]	<10
	07/01/1997	<0.5	<0.5	<0.5	<1.0	<50	<250	<750[j]	4.2
	12/30/1997	NA	NA	NA	NA	NA	<250	<750[j]	3.2
	06/12/1998	NA	NA	NA	NA	NA	<250	<750[j]	2.4
	12/07/1998	NA	NA	NA	NA	NA	<250	<750[j]	2.4
	06/21/1999	NA	NA	NA	NA	NA	<250	<750[j]	NA
	05/25/2001	<0.5	<0.5	<0.5	<1.0	<50	<250	<500	NA
	08/09/2001	<0.5	<0.5	<0.5	<1.0	<50	<250	<500	NA

Table 3

Groundwater Sample Analytical Results
Former Unocal Bulk Fuel Terminal #0082
Chelan, Washington

Well Number	Date Collected	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	TPH-G[b] (µg/L)	TPH-D[c] (µg/L)	TPH-O[d] (µg/L)	Dissolved Lead[e] (µg/L)
MTCA Method A Cleanup Levels[f]		5	1,000	700	1,000	800	500	500	15
MW-5	04/09/1991	300	20	78	410	3,200[g]	<1,000[h,j]	NA	<5.0
	08/27/1991	270	21	38	460	7,000[g]	20,000[h]	2,500[i]	<4.0
	11/23/1991	280	12	100	350	6,000[g]	17,000[h]	9,400[i]	<3.0
	02/20/1992	220	28	120	440	4,000[g]	8,000[h]	5,200[i]	<3.0
	05/21/1992	160	11	170	190	2,500	9,900	6,800	5.3
	08/19/1992	130	6.1	70	180	2,200	NA	NA	<2.0
	11/12/1992	91	5.8	<0.5	110	2,100	15,000	NA	NA
	02/25/1993	Well was dry at time of sampling.							
	08/24/1993	86	4.1	47	92	1,500	11,000	<3,800[j]	NA
	07/08/1994	67	3.5	43	130	3,000	16,000	3,000	NA
	01/04/1995	<0.5	0.91	20	53	1,000	13,000	2,300	NA
	06/29/1995	73	9.5	110	260	3,300	11,000	2,900	NA
	12/29/1995	70	2.6	37	47	1,300	23,000	8,900	NA
	06/19/1996	43.1	3.85	55.7	122	2,200	17,500	5,540	NA
	12/13/1996	51.8	2.94	34	65	1,130	853	<750[j]	NA
	07/01/1997	87.7	14.4	144	294	3,890	557	<750[j]	NA
	12/30/1997	62.8	6.01	55	155	1,920	525	<750[j]	NA
	06/12/1998	88.1	13.4	76.6	400	3,800	295	<750[j]	NA
	12/07/1998	77	8.74	68	260	1,860	388	<750[j]	NA
	06/21/1999	81.1	1.24	<0.5	74.9	1,050	468	<750[j]	NA
	05/25/2001	56.2	8.18	88.2	221	1,740	8,250	<500	NA
	08/09/2001	50.3	2.69	34.1	71.8	1,030	8,600	502	NA

Table 3

Groundwater Sample Analytical Results
Former Unocal Bulk Fuel Terminal #0082
Chelan, Washington

Well Number	Date Collected	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	TPH-G[b] (µg/L)	TPH-D[c] (µg/L)	TPH-O[d] (µg/L)	Dissolved Lead[e] (µg/L)
MTCA Method A Cleanup Levels[f]		5	1,000	700	1,000	800	500	500	15
MW-6	04/09/1991	<0.5	<0.5	<0.5	<0.5	<1,000[g,j]	<1,000[h,j]	NA	<5.0
	08/27/1991	<0.5	<0.5	<0.5	<0.5	<1,000[g,j]	<1,000[h,j]	<1,000[i,j]	<2.0
	11/23/1991	<0.5	<0.5	<0.5	<0.5	<1,000[g,j]	<1,000[h,j]	<1,000[i,j]	<3.0
	02/20/1992	<0.5	<0.5	<0.5	<0.5	<1,000[g,j]	<1,000[h,j]	<1,000[i,j]	<3.0
	05/21/1992	<0.5	<0.5	<0.5	<0.5	<50	<500	**1,700**	4.7
	08/19/1992	<0.5	<0.5	<0.5	<0.5	<50	<250	NA	<2.0
	11/12/1992	<0.5	<0.5	<0.5	<0.5	<100	<500	NA	NA
	02/25/1993	Well was dry at time of sampling.							
	08/24/1993	<0.5	<0.5	<0.5	<0.5	<100	NA	NA	NA
	07/08/1994	<0.5	<0.5	<0.5	<1.0	<50	360	**840**	NA
	01/04/1995	<0.5	<0.5	<0.5	<1.0	<50	470	**800**	NA
	06/29/1995	<0.5	<0.5	<0.5	<1.0	<50	260	**1,000**	NA
	12/29/1995	<0.5	<0.5	<0.5	<1.0	<50	270	**890**	NA
	06/19/1996	<0.5	<0.5	<0.5	<1.0	<50	NA	NA	NA
	12/13/1996	<0.5	<0.5	<0.5	<1.0	<50	<250	<750[j]	NA
	07/01/1997	<0.5	<0.5	<0.5	<1.0	<50	<250	<750[j]	NA
	12/30/1997	NA	NA	NA	NA	NA	<250	<750[j]	NA
	06/12/1998	NA	NA	NA	NA	NA	<250	<750[j]	NA
	12/07/1998	NA	NA	NA	NA	NA	<250	<750[j]	NA
	06/21/1999	NA	NA	NA	NA	NA	<250	<750[j]	NA
	05/25/2001	<0.5	<0.5	<0.5	<1.0	<50	<250	<500	NA
	08/09/2001	<0.5	<0.5	<0.5	<1.0	<50	<250	<500	NA

Table 3

Groundwater Sample Analytical Results
Former Unocal Bulk Fuel Terminal #0082
Chelan, Washington

Well Number	Date Collected	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	TPH-G[b] (µg/L)	TPH-D[c] (µg/L)	TPH-O[d] (µg/L)	Dissolved Lead[e] (µg/L)
MTCA Method A Cleanup Levels[f]		5	1,000	700	1,000	800	500	500	15
MW-7	11/15/1992	<0.5	<0.5	<0.5	0.7	<100	1,700	NA	NA
	02/25/1993	Well was dry at time of sampling.							
	08/24/1993	<0.5	<0.5	<0.5	<0.5	<100	<250	<750[j]	NA
	07/08/1994	<0.5	<0.5	<0.5	<1.0	<50	600	1,300	2.0
	01/04/1995	<0.5	<0.5	<0.5	<1.0	<50	1,300	1,200	<2.0
	06/29/1995	<0.5	<0.5	<0.5	<1.0	<50	370	1,000	NA
	12/29/1995	<0.5	<0.5	<0.5	<1.0	<50	510	1,000	NA
	06/19/1996	<0.5	<0.5	<0.5	<1.0	<50	841	789	NA
	12/13/1996	<0.5	<0.5	<0.5	<1.0	<50	<250	<750[j]	NA
	07/01/1997	<0.5	<0.5	<0.5	<1.0	<50	<250	<750[j]	NA
	12/30/1997	NA	NA	NA	NA	NA	<250	<750[j]	NA
	06/12/1998	NA	NA	NA	NA	NA	<250	<750[j]	NA
	12/07/1998	NA	NA	NA	NA	NA	<250	<750[j]	NA
	06/21/1999	NA	NA	NA	NA	NA	<250	<750[j]	NA
	05/25/2001	<0.5	<0.5	<0.5	<1.0	<50	<250	<500	NA
	08/09/2001	<0.5	<0.5	<0.5	<1.0	<50	<250	<500	NA

Table 3

Groundwater Sample Analytical Results
Former Unocal Bulk Fuel Terminal #0082
Chelan, Washington

Well Number	Date Collected	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	TPH-G[b] (µg/L)	TPH-D[c] (µg/L)	TPH-O[d] (µg/L)	Dissolved Lead[e] (µg/L)
MTCA Method A Cleanup Levels[f]		5	1,000	700	1,000	800	500	500	15
MW-8	05/25/2001	<0.5	<0.5	<0.5	<1.0	<50	<250	<500	NA
	08/09/2001	<0.5	<0.5	<0.5	<1.0	<50	<250	<500	NA
	11/14/2001	<0.5	<0.5	<0.5	<1.0	<50	<250	<500	NA

NOTES:

µg/L = micrograms per liter; approximates parts per billion.

Shaded values exceed MTCA Method A cleanup levels.

NA = Not analyzed.

[a] Benzene, toluene, ethylbenzene, and total xylenes by EPA Methods 8020 or 8021B.

[b] TPH as gasoline (TPH-G) by Ecology Methods WTPH-G or NWTPH-Gx.

[c] TPH as diesel (TPH-D) by Ecology Methods WTPH-D or NWTPH-Dx (after sulfuric acid/silica gel cleanup).

[d] TPH as oil (TPH-O) by Ecology Methods WTPH-418.1 or NWTPH-Dx (after sulfuric acid/silica gel cleanup).

[e] Dissolved lead by EPA Method 7421.

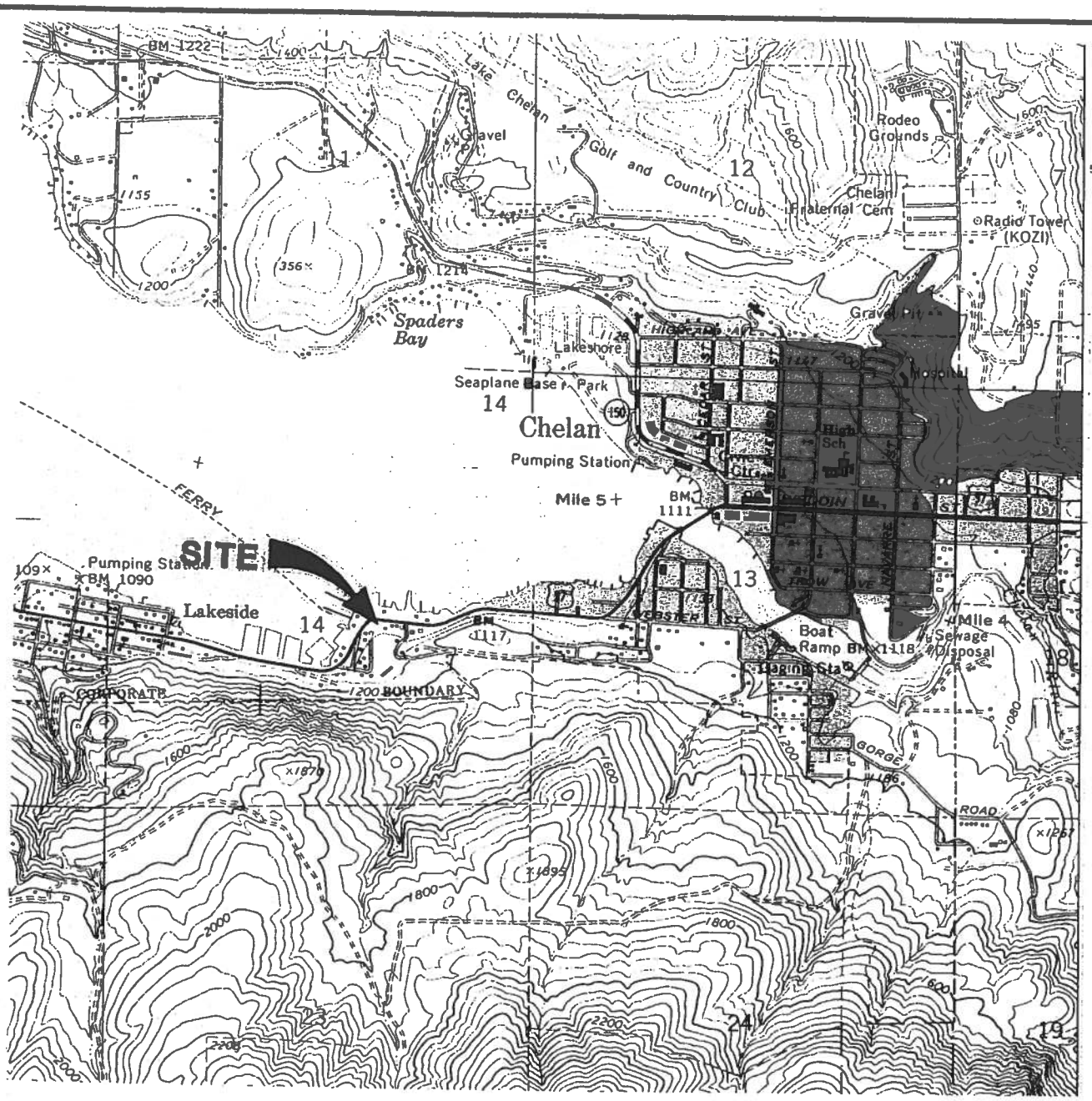
[f] Chapter 173-340 WAC, "Model Toxics Control Act Cleanup Regulation; Method A Cleanup Levels for Ground Water." Amended February 12, 2001.

[g] TPH-G by EPA Method 8015 modified.

[h] TPH-D by EPA Method 8015 modified.

[i] TPH-O by EPA Method 418.1.

[j] Method reporting limit exceeded the MTCA Method A cleanup level.



Base map prepared from USGS 7.5–minute Quadrangle of Chelon Washington (1987).

Maul Foster & Alongi, Inc.
Environmental & Engineering Services

DATE 06/26/01
DWN. AJY
APPR. MDS
REVIS. ____
PROJECT NO. 9077.015.001

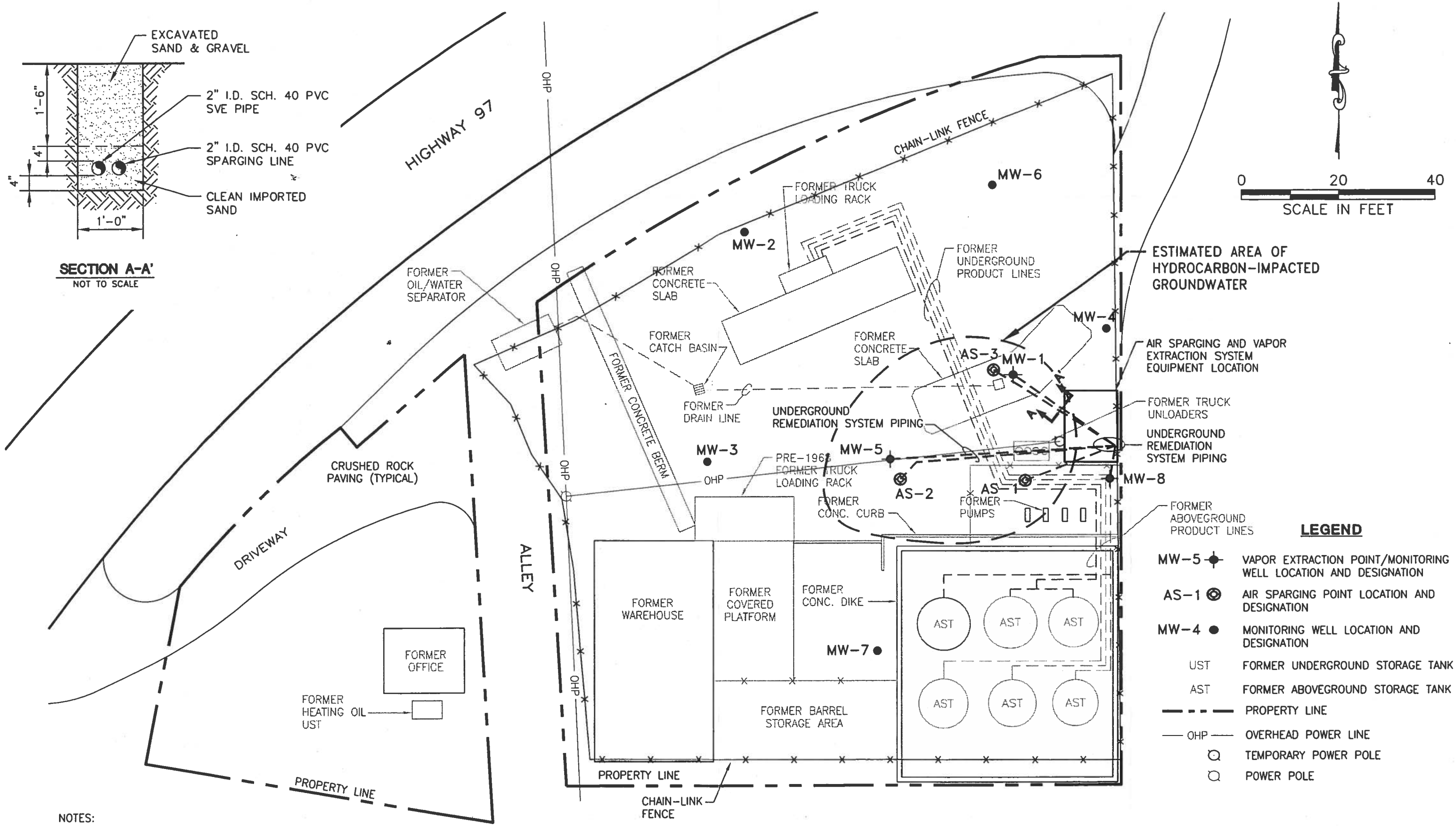
Figure 1
FORMER UNOCAL BULK FUEL TERMINAL #0082
CHELAN, WASHINGTON

SITE LOCATION MAP

File: G:\9000\9077-015_UNOCAL CHELAN\001\001-01-A.DWG Last edited: JUN. 26, 01 @ 2:15 p.m. by: ayoung Xrefs: none Black/White

LAYOUT: 1

SECTION A-A'
NOT TO SCALE



LEGEND

- MW-5 — VAPOR EXTRACTION POINT/MONITORING WELL LOCATION AND DESIGNATION
- AS-1 — AIR SPARGING POINT LOCATION AND DESIGNATION
- MW-4 — MONITORING WELL LOCATION AND DESIGNATION
- UST — FORMER UNDERGROUND STORAGE TANK
- AST — FORMER ABOVEGROUND STORAGE TANK
- PROPERTY LINE
- OHP — OVERHEAD POWER LINE
- TEMPORARY POWER POLE
- POWER POLE

NOTES:

1. THE LOCATIONS OF ALL FORMER SITE FEATURES ARE APPROXIMATE.
2. ALL FACILITIES WERE DEMOLISHED AND REMOVED IN NOVEMBER 1992.

BASE MAP REFERENCE: DRAWING ENTITLED "FORMER SITE FACILITIES AND EXPLORATIONS", BY GEOENGINEERS, DATED MAY 7, 1998.

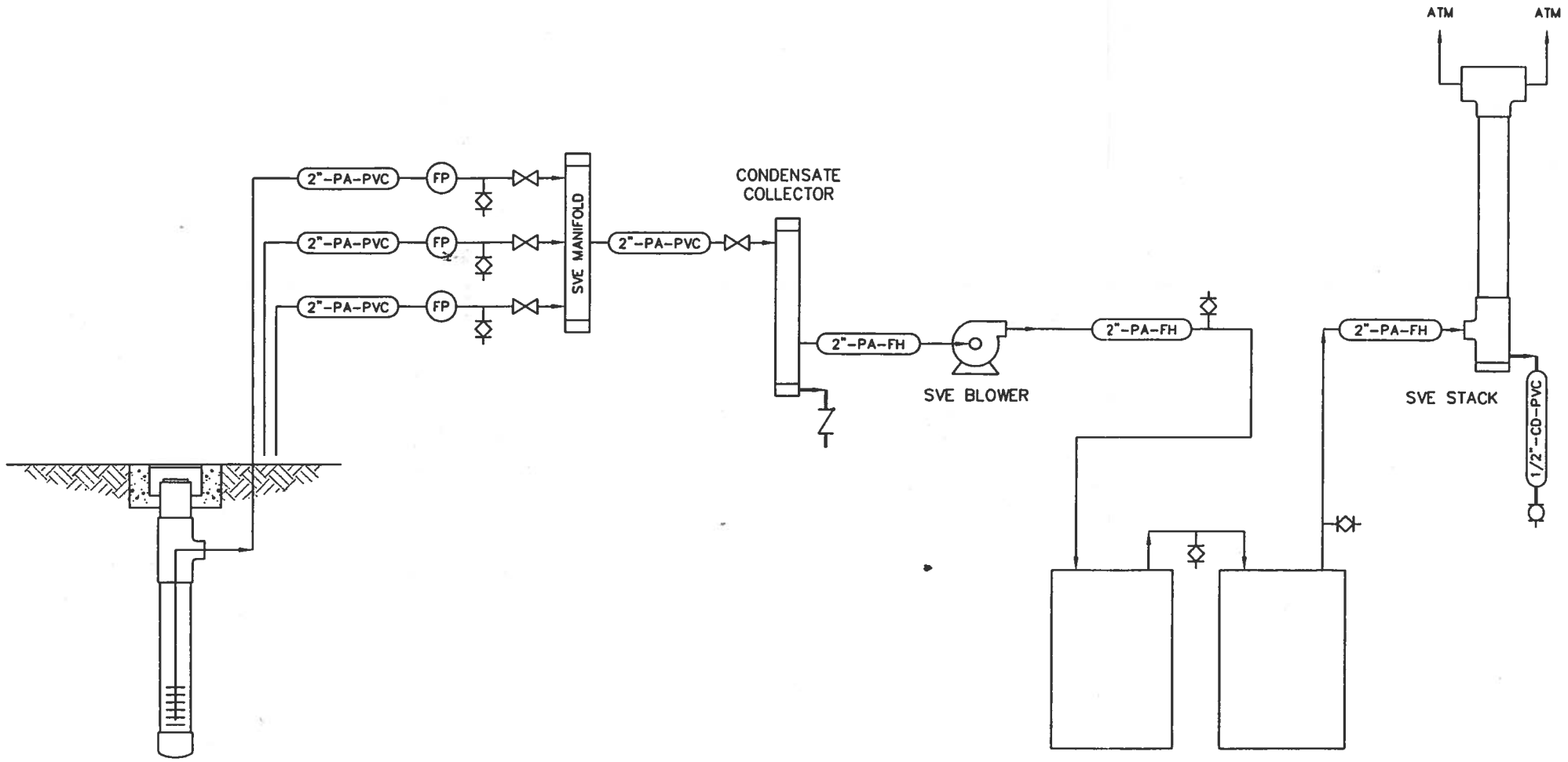
Maul Foster & Alongi, Inc.
Environmental & Engineering Services
17171 Bothell Way NE, Suite 264
Seattle, Washington 98155 (425) 744-1489

DATE 12/01
DWN. BDT
APPR. MDS
REVIS.
PROJECT NO.
9077.15.01

Figure 2
FORMER UNOCAL BULK FUEL TERMINAL #0082
CHELAN, WASHINGTON

AIR SPARGING POINT LOCATIONS

File: \9077\015.001\002-02.dwg Last Edited: DEC 15, 2001 By: btookey Xrefs: None Black/White



SOIL VAPOR EXTRACTION POINT
(MW-1, MW-5, AND MW-8)

(2) 1,000-POUND
CARBON-FILLED
CANISTERS

AIR SPARGING POINT
(AS-1, AS-2, AND AS-3)

ABBREVIATIONS

BA	BLOWER AIR
CD	CONDENSATE
FP	FLOW POINT
PA	PROCESS AIR
FH	FLEXIBLE HOSE
HRH	HEAT RESISTANT HOSE

LINE DESIGNATION

2"-PA-PVC
- LINE MATERIAL
- SERVICE
- LINE SIZE

LINE SYMBOLS

- WATER
- VAPOR

VALVE SYMBOLS

- GATE VALVE
- CHECK VALVE
- SAMPLING PORT
- BALL VALVE

INSTRUMENTATION SYMBOLS

- FP — FLOW POINT

Maul Foster & Alongi, Inc.
Environmental & Engineering Services
17171 Bothell Way NE, Suite 264
Seattle, Washington 98155 (425) 744-1489

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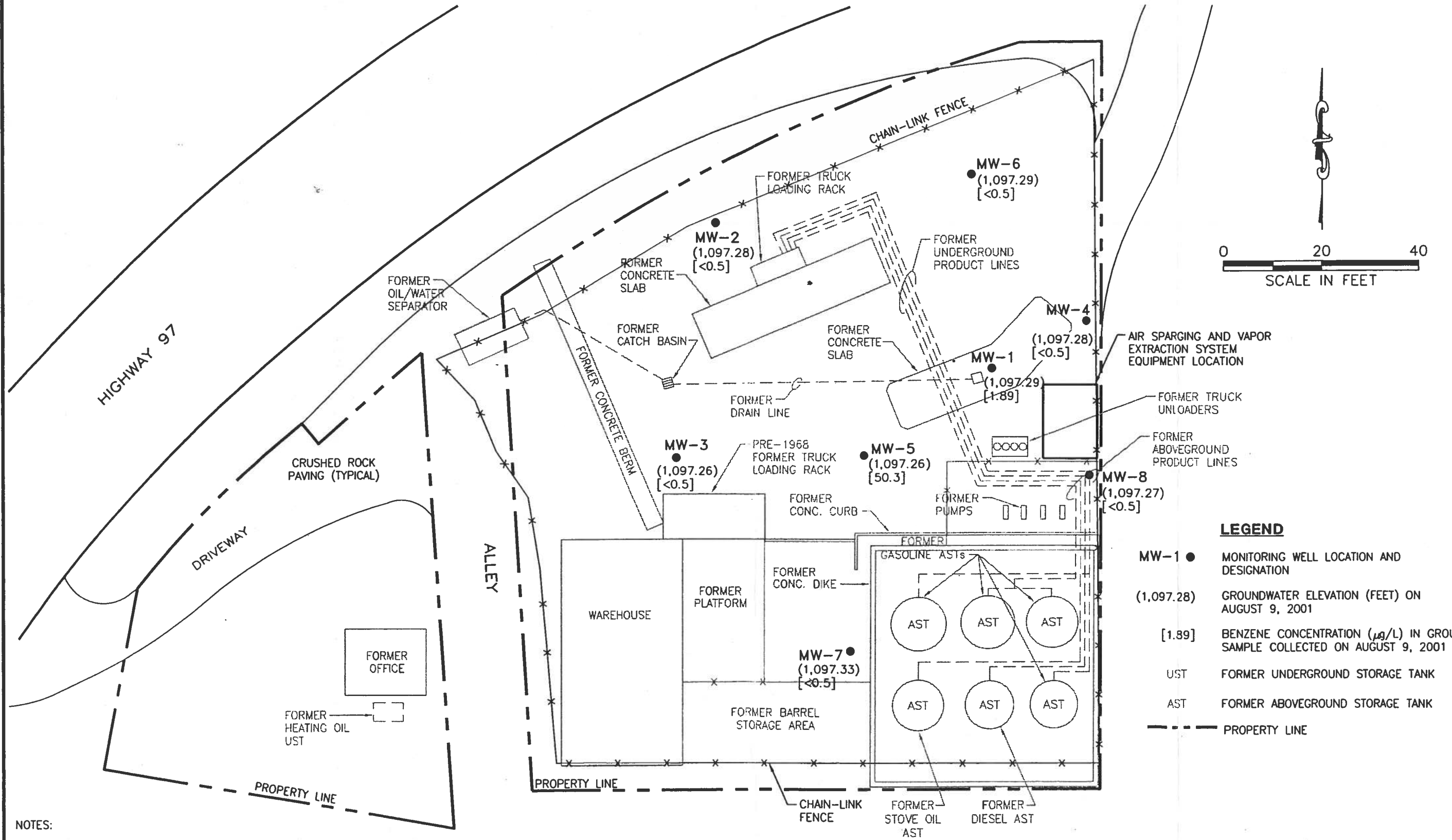
9077.15.01

Figure 3
FORMER UNOCAL BULK FUEL
TERMINAL #0082
CHELAN, WASHINGTON
AIR SPARGING/SOIL VAPOR EXTRACTION
SYSTEM PROCESS FLOW DIAGRAM

File: \9077\15.01\022-03.DWG Last Edited: DEC 15, 2001 By: btookey Xrefs: None Black/White



LEGEND

MW-1 ●	MONITORING WELL LOCATION AND DESIGNATION
(1,097.28)	GROUNDWATER ELEVATION (FEET) ON AUGUST 9, 2001
[1.89]	BENZENE CONCENTRATION (µg/L) IN GROUNDWATER SAMPLE COLLECTED ON AUGUST 9, 2001
UST	FORMER UNDERGROUND STORAGE TANK
AST	FORMER ABOVEGROUND STORAGE TANK
— — —	PROPERTY LINE

NOTES:

1. THE LOCATIONS OF ALL FORMER SITE FEATURES ARE APPROXIMATE.
2. ALL FACILITIES WERE DEMOLISHED AND REMOVED IN NOVEMBER 1992.

BASE MAP REFERENCE: DRAWING ENTITLED "FORMER SITE FACILITIES AND EXPLORATIONS", BY GEOENGINEERS, DATED MAY 7, 1998.

Maul Foster & Alongi, Inc.
Environmental & Engineering Services
17171 Bothell Way NE, Suite 264
Seattle, Washington 98155 (425) 744-1489

DATE 12/01
DWN. BDT
APPR. MDS
REVIS.
PROJECT NO. 9077.15.01

Figure 4
FORMER UNOCAL BULK FUEL TERMINAL #0082
CHELAN, WASHINGTON
GROUNDWATER MONITORING DATA - AUGUST 9, 2001

File: \9077\15.01\002-04.dwg Last Edited: DEC 15, 2001 By: btookey Xrefs: None Black/White

SOIL BORING LOGS

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
9077.015.001	AS-1	1 of 2

Project Name	Former Unocal Bulk Fuel Terminal #0082	TOC Elevation	1,112.76
Project Location	Chelan, Washington	Surface Elevation	1,113.10
Start/End Date	05/24/01 to 05/24/01	Northing	
Driller/Equipment	Cascade Drilling, Inc./Air Rotary	Easting	
Geologist/Engineer	G. Sandberg	Hole Depth	31.0-feet
Sample Method	Split-spoon	Outer Hole Diam	6-inch

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Blow Counts	Type	Name	PID (ppm)	Lithologic Column	Soil Description
1			25%	50/5"	SS		0		0 to 14.0 feet: SANDY GRAVEL (GW); yellow-brown; medium to coarse; few cobbles; few medium-grained sand; dense to very dense; damp; no hydrocarbon-like odors.
2									
3									
4									
5									
6			70%	19	SS		3.1		@ 5.0 feet: gray.
7				23			4.0		
8				30					
9									
10									
11			100%	29	SS		289		@ 11.0 feet: hydrocarbon-like odors.
12				30			308		
13				19		AS1-12.0-0506*	300		
14									14.0 to 31.0 feet: SAND (SP); grayish-brown; medium to coarse; trace medium-grained gravel; very dense; damp; hydrocarbon-like odors.
15									
16			70%	32	SS		106		
17				26			192		
18				29			115		
19									
20	▽								@ 19.5 feet: wet.

NOTES: (1) SS = 3.0-inch O.D. split-spoon sampler driven with a 140-pound hammer and a 30-inch drop.
(2) * = Sample submitted to laboratory for analysis.

▽ Water level at time of drilling.

GBLWC-PID&BLOWS C:\PROGRA~1\GINTWMFA\PROJECTS\CHELAN.GPJ 9/29/01

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
9077.015.001	AS-1	2 of 2

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Blow Counts	Type	Name	PID (ppm)	Lithologic Column	Soil Description
21			70%	36	SS		12		14.0 to 31.0 feet: SAND (SP); continued.
22				29			10		
23				40			13		@ 23.0 feet: yellowish-tan to brown.
24									
25									
26			90%	25	SS		0.2		
27				30			0.3		
28				27			0.2		
29									
30									
31									

Total Depth Drilled = 31.0 feet.
Total Depth Sampled = 27.5 feet.

SPARGE POINT COMPLETION DETAILS

0 to 29.0 feet: 2-inch diameter, flush-threaded, Schedule 40 PVC blank riser pipe.
29.0 to 31.0 feet: 2-inch diameter, flush-threaded, Schedule 40 PVC microbubbler screen.

0 to 0.5 foot: Concrete.
0.5 to 22.0 feet: Hydrated, 3/8-inch bentonite chips.
22.0 to 31.0 feet: #2/12 Sand.

Monument: Traffic-rated, flush-grade in cement base.

NOTES: (1) SS = 3.0-inch O.D. split-spoon sampler driven with a 140-pound hammer and a 30-inch drop.
(2) * = Sample submitted to laboratory for analysis.

▽ **Water level at time of drilling.**

GBLWC-PID&BLOWS C:\PROGRA~1\GINTWMFA\PROJECTS\CHELAN.GPJ 9/29/01

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
9077.015.001	AS-2	1 of 2

Project Name	Former Unocal Bulk Fuel Terminal #0082	TOC Elevation	1,111.76
Project Location	Chelan, Washington	Surface Elevation	1,112.20
Start/End Date	05/25/01 to 05/25/01	Northing	
Driller/Equipment	Cascade Drilling, Inc./Air Rotary	Easting	
Geologist/Engineer	G. Sandberg	Hole Depth	31.0-feet
Sample Method	Split-spoon	Outer Hole Diam	6-inch

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Blow Counts	Type	Name	PID (ppm)	Lithologic Column	Soil Description
1									0 to 19.0 feet: SANDY GRAVEL (GW); medium orange-brown; medium-grained; few cobbles; few medium-grained sand; very dense; damp; no hydrocarbon-like odors.
2			10%	50/5"	SS		0		
3									
4									
5									
6			40%	50/6"	SS		0		
7									
8									
9									
10									
11			70%	41	SS		0		
12				50/4"		AS2-12.0-0501*			
13									
14									
15									
16									
17									
18			50%	36	SS		109		
19				50/5"					19.0 to 31.0 feet: SAND (SP); gray; medium to coarse, few cobbles; dense to very dense; damp; hydrocarbon-like odors.
20									

NOTES: (1) SS = 3.0-inch O.D. split-spoon sampler driven with a 140-pound hammer and a 30-inch drop.
(2) * = Sample submitted to laboratory for analysis.

▽ Water level at time of drilling.

GBLWC-PID&BLOWS C:\PROGRA~1\GINT\WMFA\PROJECTS\CHELAN.GPJ 9/29/01

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
9077.015.001	AS-2	2 of 2

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Blow Counts	Type	Name	PID (ppm)	Lithologic Column	Soil Description
21									19.0 to 31.0 feet: SAND (SP); continued.
									@ 20.5 feet: wet; no cobbles.
			90%	29	SS		126		
22				34			115		
23				34					
24									
25									
26									@ 25.5 feet: medium yellow-tan.
			90%	22	SS				
27				29			12		
28				20			11		
29									
30									
31									

Total Depth Drilled = 31.0 feet.
Total Depth Sampled = 27.5 feet.

SPARGE POINT COMPLETION DETAILS

0 to 29.0 feet: 2-inch diameter, flush-threaded, Schedule 40 PVC blank riser pipe.
29.0 to 31.0 feet: 2-inch diameter, flush-threaded, Schedule 40 PVC microbubbler screen.

0 to 0.5 foot: Concrete.
0.5 to 23.0 feet: Hydrated, 3/8-inch bentonite chips.
23.0 to 31.0 feet: #2/12 Sand.

Monument: Traffic-rated, flush-grade in cement base.

NOTES: (1) SS = 3.0-inch O.D. split-spoon sampler driven with a 140-pound hammer and a 30-inch drop.
(2) * = Sample submitted to laboratory for analysis.

▽ **Water level at time of drilling.**

GBLWC-PID&BLOWS C:\PROGRA~1\GINTW\MFAIPROJECTS\CHELAN.GPJ 9/29/01

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
9077.015.001	AS-3	1 of 2

Project Name	Former Unocal Bulk Fuel Terminal #0082	TOC Elevation	1,112.24
Project Location	Chelan, Washington	Surface Elevation	1,112.70
Start/End Date	05/25/01 to 05/25/01	Northing	
Driller/Equipment	Cascade Drilling, Inc./Air Rotary	Easting	
Geologist/Engineer	G. Sandberg	Hole Depth	31.0-feet
Sample Method	Split-spoon	Outer Hole Diam	6-inch

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Blow Counts	Type	Name	PID (ppm)	Lithologic Column	Soil Description
1									0 to 14.0 feet: SANDY GRAVEL (GW); yellow brown; medium- to coarse-grained; few cobbles; few medium- to coarse-grained sand; very dense; damp; no hydrocarbon-like odors.
2									
3									
4									
5									
6			10%	50/5"	SS		0		
7									
8									
9									
10									
11			20%	50/6"	SS		1.0		
12			60%	40	SS	AS3-12.0-0501*	2.0		
13				50/4"					
14									14.0 to 31.0 feet: SAND (SP); light gray; medium- to coarse-grained; dense to very dense; damp; hydrocarbon-like odors.
15									
16			90%	21	SS		145		
17				22			250		
18				30			182		
19									
20	▽								@ 20.0 feet: wet.

NOTES: (1) SS = 3.0-inch O.D. split-spoon sampler driven with a 140-pound hammer and a 30-inch drop.
(2) * = Sample submitted to laboratory for analysis.

▽ Water level at time of drilling.

GBLWC-PID&BLOWS C:\PROGRA~1\GINT\WMFA\PROJECTS\CHELAN.GPJ 10/1/01

Maul Foster & Alongi, Inc.	Geologic Borehole Log/Well Construction		
	Project Number 9077.015.001	Well Number AS-3	Sheet 2 of 2

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Blow Counts	Type	Name	PID (ppm)	Lithologic Column	Soil Description
21									14.0 to 31.0 feet: SAND (SP); continued.
			100%	26	SS		21		
22				24			16		
				29			18		
23									
24									
25									
26			100%	19	SS		2		@ 26.0 feet: tan; no hydrocarbon-like odors.
27				26			4		
				23			3		
28									
29									
30									
31									

Total Depth Drilled = 31.0 feet.
Total Depth Sampled = 27.5 feet.

SPARGE POINT COMPLETION DETAILS

0 to 29.0 feet: 2-inch diameter, flush-threaded, Schedule 40 PVC blank riser pipe.
29.0 to 31.0 feet: 2-inch diameter, flush-threaded, Schedule 40 PVC microbubbler screen.

0 to 0.5 foot: Concrete.
0.5 to 23.0 feet: Hydrated, 3/8-inch bentonite chips.
23.0 to 31.0 feet: #2/12 Sand.

Monument: Traffic-rated, flush-grade in cement base.

NOTES: (1) SS = 3.0-inch O.D. split-spoon sampler driven with a 140-pound hammer and a 30-inch drop.
(2) * = Sample submitted to laboratory for analysis.

▽ **Water level at time of drilling.**

GBLWC-PID&BLOWS C:\PROGRA~1\GINT\WMFA\PROJECTS\CHELAN.GPJ 10/1/01

LABORATORY REPORTS

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Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA, 98155	Project Manager: Mike Staton	06/11/01 19:38

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW8-12-0501	B1E0708-01	Soil	05/24/01 09:45	05/29/01 10:55
AS1-12.0-0501	B1E0708-02	Soil	05/24/01 16:40	05/29/01 10:55
AS2-12.0-0501	B1E0708-03	Soil	05/25/01 08:30	05/29/01 10:55
AS3-12.0-0501	B1E0708-04	Soil	05/25/01 11:11	05/29/01 10:55

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Scott A. Woerman, Project Manager

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Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA, 98155	Project Manager: Mike Staton	06/11/01 19:38

Volatile Petroleum Products and BTEX by NWTPH-Gx and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW8-12-0501 (B1E0708-01) Soil	**Sampled: 05/24/01 09:45**		**Received: 05/29/01 10:55**						
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry	1	1F05022	06/05/01	06/06/01	NWTPH-Gx/8021B	
Benzene	ND	0.0500	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	ND	0.0500	"	"	"	"	"	"	
Xylenes (total)	ND	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*89.5 %*	*50-150*			"	"	"	"	
Surrogate: 4-BFB (PID)	*92.0 %*	*50-150*			"	"	"	"	
AS1-12.0-0501 (B1E0708-02) Soil	**Sampled: 05/24/01 16:40**		**Received: 05/29/01 10:55**						
Gasoline Range Hydrocarbons	**1530**	100	mg/kg dry	20	1F05022	06/05/01	06/06/01	NWTPH-Gx/8021B	G-01
Benzene	ND	1.00	"	"	"	"	"	"	
Toluene	**1.07**	1.00	"	"	"	"	"	"	I-06
Ethylbenzene	**6.93**	1.00	"	"	"	"	"	"	
Xylenes (total)	**112**	2.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*%*	*50-150*			"	"	"	"	*S-01*
Surrogate: 4-BFB (PID)	*138 %*	*50-150*			"	"	"	"	
AS2-12.0-0501 (B1E0708-03) Soil	**Sampled: 05/25/01 08:30**		**Received: 05/29/01 10:55**						
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry	1	1F05022	06/05/01	06/06/01	NWTPH-Gx/8021B	
Benzene	ND	0.0500	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	ND	0.0500	"	"	"	"	"	"	
Xylenes (total)	ND	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*86.2 %*	*50-150*			"	"	"	"	
Surrogate: 4-BFB (PID)	*89.2 %*	*50-150*			"	"	"	"	

Scott A. Woerman, Project Manager

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425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA, 98155	Project Manager: Mike Staton	06/11/01 19:38

Volatile Petroleum Products and BTEX by NWTPH-Gx and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AS3-12.0-0501 (B1E0708-04) Soil Sampled: 05/25/01 11:11 Received: 05/29/01 10:55									
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry	1	1F05022	06/05/01	06/06/01	NWTPH-Gx/8021B	
Benzene	ND	0.0500	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	ND	0.0500	"	"	"	"	"	"	
Xylenes (total)	ND	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*87.1 %*	*50-150*			"	"	"	"	
Surrogate: 4-BFB (PID)	*93.5 %*	*50-150*			"	"	"	"	

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Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA, 98155	Project Manager: Mike Staton	06/11/01 19:38

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW8-12-0501 (B1E0708-01) Soil	**Sampled: 05/24/01 09:45 Received: 05/29/01 10:55**								
Diesel Range Hydrocarbons	ND	10.0	mg/kg dry	1	1F02001	06/02/01	06/06/01	NWTPH-Dx SG	
Lube Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	*61.5 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*76.7 %*	*50-150*			"	"	"	"	
AS1-12.0-0501 (B1E0708-02) Soil	**Sampled: 05/24/01 16:40 Received: 05/29/01 10:55**								
Diesel Range Hydrocarbons	**9570**	410	mg/kg dry	41	1F02001	06/02/01	06/07/01	NWTPH-Dx SG	
Lube Oil Range Hydrocarbons	ND	1020	"	"	"	"	"	"	
Surrogate: 2-FBP	*%*	*50-150*			"	"	"	"	*S-01*
Surrogate: Octacosane	*96.7 %*	*50-150*			"	"	"	"	
AS2-12.0-0501 (B1E0708-03) Soil	**Sampled: 05/25/01 08:30 Received: 05/29/01 10:55**								
Diesel Range Hydrocarbons	ND	10.0	mg/kg dry	1	1F02001	06/02/01	06/06/01	NWTPH-Dx SG	
Lube Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	*60.9 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*75.3 %*	*50-150*			"	"	"	"	
AS3-12.0-0501 (B1E0708-04) Soil	**Sampled: 05/25/01 11:11 Received: 05/29/01 10:55**								
Diesel Range Hydrocarbons	**75.0**	10.0	mg/kg dry	1	1F02001	06/02/01	06/06/01	NWTPH-Dx SG	
Lube Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	*79.0 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*81.6 %*	*50-150*			"	"	"	"	

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425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA, 98155	Project Manager: Mike Staton	06/11/01 19:38

Physical Parameters by APHA/ASTM/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW8-12-0501 (B1E0708-01) Soil	**Sampled: 05/24/01 09:45 Received: 05/29/01 10:55**								
Dry Weight	97.2	1.00	%	1	1F05012	06/05/01	06/06/01	BSOPSPL003R07	
AS1-12.0-0501 (B1E0708-02) Soil	**Sampled: 05/24/01 16:40 Received: 05/29/01 10:55**								
Dry Weight	88.3	1.00	%	1	1F05012	06/05/01	06/06/01	BSOPSPL003R07	
AS2-12.0-0501 (B1E0708-03) Soil	**Sampled: 05/25/01 08:30 Received: 05/29/01 10:55**								
Dry Weight	90.3	1.00	%	1	1F05012	06/05/01	06/06/01	BSOPSPL003R07	
AS3-12.0-0501 (B1E0708-04) Soil	**Sampled: 05/25/01 11:11 Received: 05/29/01 10:55**								
Dry Weight	95.6	1.00	%	1	1F05012	06/05/01	06/06/01	BSOPSPL003R07	

Scott A. Woerman, Project Manager

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425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA, 98155	Project Manager: Mike Staton	06/11/01 19:38

Volatile Petroleum Products and BTEX by NWTPH-Gx and EPA 8021B - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F05022: Prepared 06/05/01 Using EPA 5030B (MeOH)										
Blank (1F05022-BLK1)										
Gasoline Range Hydrocarbons	ND	5.00	mg/kg wet							
Benzene	ND	0.0500	"							
Toluene	ND	0.0500	"							
Ethylbenzene	ND	0.0500	"							
Xylenes (total)	ND	0.100	"							
Surrogate: 4-BFB (FID)	*3.49*		"	*4.00*		*87.2*	*50-150*			
Surrogate: 4-BFB (PID)	*3.59*		"	*4.00*		*89.8*	*50-150*			
LCS (1F05022-BS1)										
Gasoline Range Hydrocarbons	25.0	5.00	mg/kg wet	25.0		100	70-130			
Surrogate: 4-BFB (FID)	*3.73*		"	*4.00*		*93.2*	*50-150*			
LCS (1F05022-BS2)										
Benzene	0.480	0.0500	mg/kg wet	0.500		96.0	70-130			
Toluene	0.488	0.0500	"	0.500		97.6	70-130			
Ethylbenzene	0.524	0.0500	"	0.500		105	70-130			
Xylenes (total)	1.58	0.100	"	1.50		105	70-130			
Surrogate: 4-BFB (PID)	*3.66*		"	*4.00*		*91.5*	*50-150*			
LCS Dup (1F05022-BSD1)										
Gasoline Range Hydrocarbons	25.0	5.00	mg/kg wet	25.0		100	70-130	0.00	25	
Surrogate: 4-BFB (FID)	*3.74*		"	*4.00*		*93.5*	*50-150*			
LCS Dup (1F05022-BSD2)										
Benzene	0.481	0.0500	mg/kg wet	0.500		96.2	70-130	0.208	25	
Toluene	0.492	0.0500	"	0.500		98.4	70-130	0.816	25	
Ethylbenzene	0.540	0.0500	"	0.500		108	70-130	3.01	25	
Xylenes (total)	1.59	0.100	"	1.50		106	70-130	0.631	25	
Surrogate: 4-BFB (PID)	*3.66*		"	*4.00*		*91.5*	*50-150*			

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425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA, 98155	Project Manager: Mike Staton	06/11/01 19:38

Volatile Petroleum Products and BTEX by NWTPH-Gx and EPA 8021B - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F05022: Prepared 06/05/01 Using EPA 5030B (MeOH)										
Duplicate (1F05022-DUP1)					**Source: B1F0055-01**					
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry		ND			40.6	50	
Surrogate: 4-BFB (FID)	*3.63*		"	*5.05*		*71.9*	*50-150*			
Duplicate (1F05022-DUP2)					**Source: B1F0055-06**					
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry		ND				50	
Surrogate: 4-BFB (FID)	*3.59*		"	*4.51*		*79.6*	*50-150*			
Matrix Spike (1F05022-MS1)					**Source: B1F0055-05**					
Gasoline Range Hydrocarbons	25.0	5.00	mg/kg dry	32.1	ND	75.0	60-140			
Surrogate: 4-BFB (FID)	*4.04*		"	*5.13*		*78.8*	*50-150*			
Matrix Spike (1F05022-MS2)					**Source: B1F0055-11**					
Benzene	0.507	0.0500	mg/kg dry	0.635	ND	79.4	60-140			
Toluene	0.535	0.0500	"	0.635	ND	83.7	60-140			
Ethylbenzene	0.573	0.0500	"	0.635	ND	90.2	60-140			
Xylenes (total)	1.72	0.100	"	1.91	ND	90.1	60-140			
Surrogate: 4-BFB (PID)	*3.96*		"	*5.08*		*78.0*	*50-150*			
Matrix Spike Dup (1F05022-MSD1)					**Source: B1F0055-05**					
Gasoline Range Hydrocarbons	25.7	5.00	mg/kg dry	32.1	ND	77.2	60-140	2.76	20	
Surrogate: 4-BFB (FID)	*4.01*		"	*5.13*		*78.2*	*50-150*			
Matrix Spike Dup (1F05022-MSD2)					**Source: B1F0055-11**					
Benzene	0.519	0.0500	mg/kg dry	0.635	ND	81.3	60-140	2.34	20	
Toluene	0.542	0.0500	"	0.635	ND	84.8	60-140	1.30	20	
Ethylbenzene	0.583	0.0500	"	0.635	ND	91.8	60-140	1.73	20	
Xylenes (total)	1.75	0.100	"	1.91	ND	91.6	60-140	1.73	20	
Surrogate: 4-BFB (PID)	*4.16*		"	*5.08*		*81.9*	*50-150*			

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Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA, 98155	Project Manager: Mike Staton	06/11/01 19:38

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F02001: Prepared 06/02/01 Using EPA 3550B										
Blank (1F02001-BLK1)										
Diesel Range Hydrocarbons	ND	10.0	mg/kg wet							
Lube Oil Range Hydrocarbons	ND	25.0	"							
Surrogate: 2-FBP	*6.26*		"	*10.7*		*58.5*	*50-150*			
Surrogate: Octacosane	*8.11*		"	*10.7*		*75.8*	*50-150*			
LCS (1F02001-BS1)										
Diesel Range Hydrocarbons	50.0	10.0	mg/kg wet	66.7		75.0	50-150			
Surrogate: 2-FBP	*7.65*		"	*10.7*		*71.5*	*50-150*			
Duplicate (1F02001-DUP1)					**Source: B1E0617-01**					
Diesel Range Hydrocarbons	ND	10.0	mg/kg dry		ND				50	
Lube Oil Range Hydrocarbons	ND	25.0	"		ND				50	
Surrogate: 2-FBP	*7.35*		"	*11.6*		*63.4*	*50-150*			
Surrogate: Octacosane	*8.95*		"	*11.6*		*77.2*	*50-150*			
Duplicate (1F02001-DUP2)					**Source: B1E0700-01**					
Diesel Range Hydrocarbons	124	10.0	mg/kg dry		57.4			73.4	50	Q-14
Lube Oil Range Hydrocarbons	191	25.0	"		88.0			73.8	50	Q-14
Surrogate: 2-FBP	*11.1*		"	*16.1*		*68.9*	*50-150*			
Surrogate: Octacosane	*12.0*		"	*16.1*		*74.5*	*50-150*			

Scott A. Woerman, Project Manager

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Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA, 98155	Project Manager: Mike Staton	06/11/01 19:38

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1F05012: Prepared 06/05/01 Using Dry Weight										
Blank (1F05012-BLK1)										
Dry Weight	100	1.00	%							

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Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA, 98155	Project Manager: Mike Staton	06/11/01 19:38

Notes and Definitions

G-01	Results reported for the gas range are primarily due to overlap from diesel range hydrocarbons.
I-06	The analyte concentration may be artificially elevated due to coeluting compounds or components.
Q-14	Visual examination indicates the RPD and/or matrix spike recovery is outside the control limit due to a non-homogeneous sample matrix.
S-01	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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UNOCAL CHAIN OF CUSTODY REPORT

B1E0708

UNOCAL INFORMATION

Facility Number: Chelan Bulk #0082
Site Address: 500 East Gibson St
City, State, ZIP: Chelan, WA.
Site Release Number: Direct Billing to Mark Brearley-Unocal
Unocal Manager: Mark Brearley
CERT INFO: (check one) [X] Evaluation [ ] Remediation
[ ] Detection [ ] Demolition [ ] Closure [ ] Miscellaneous

CONSULTANT INFORMATION

Firm: Maul, Foster, & Alongi Project# 9077.015.001
Address: 17171 Bothell Way NE, #264
Seattle, WA. 98155
Phone: (425) 744-1489 Fax: (425) 744-0919
Project Manager: Mike Staton
Sample Collection by: G. Saunders

Chain of Custody Record #:

Quality Assurance Data Level: [X] A [ ] B
A: Standard Summary
B: Standard + Chromatograms

Laboratory Turnaround Days: [X] 10 [ ] 5 [ ] 3 [ ] 2 [ ] 1

○ OR ○ WA ○ AK ◉ NW Series

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CON-TAINERS	TPH-HCID	TPH-Gas	BTEX EPA 8021 Mod.	TPH-Gas + BTEX #NWTPH-Gx/SW8021B	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen. Volatiles EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS SemiVols. EPA 8270	PAH's: 8270 SIM or 8310	Lead: Total or Dissolved	TCLP or RCRA Metals (8)	NCA SAMPLE NUMBER
1. ~~MW8-12-0501~~ MW8-12-0501	5/24/01 @ 0945	S	2				X			X								-01
2. ~~AS1-12.0-0501~~ AS1-12.0-0501	" @ 1640	S	2				X			X								-02
3. AS2-12.0-0501	5/25/01 @ 0830	S	2				X			X								-03
4. AS3-12.0-0501	" @ 1111	S	2				X			X								-04
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		

Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1.	MFA	5/29/01 @ 1055		NCA	5/29/01 1055
2.					
3.					

Final Report Approval

Were all requested results provided? [yes] [no] Define
Were results within requested turnaround? [yes] [no] "No"
Final Approval Signature: on back
Firm: Date:

Page ____ of ____
Rev. UNO3.3, 2/99

Comments:
TPH-D & TPH-O by NWTPH-Dx (After Silica Gel cleanup)

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Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA/USA, 98155	Project Manager: Mike Staton	08/24/01 18:04

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1-0801	B1H0240-01	Water	08/09/01 16:30	08/10/01 08:50
MW-2-0801	B1H0240-02	Water	08/09/01 13:15	08/10/01 08:50
MW-3-0801	B1H0240-03	Water	08/09/01 12:20	08/10/01 08:50
MW-4-0801	B1H0240-04	Water	08/09/01 14:50	08/10/01 08:50
MW-5-0801	B1H0240-05	Water	08/09/01 17:20	08/10/01 08:50
MW-6-0801	B1H0240-06	Water	08/09/01 14:00	08/10/01 08:50
MW-7-0801	B1H0240-07	Water	08/09/01 11:30	08/10/01 08:50
MW-8-0801	B1H0240-08	Water	08/09/01 10:50	08/10/01 08:50

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain o custody document. This analytical report must be reproduced in its entirety

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Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA/USA, 98155	Project Manager: Mike Staton	08/24/01 18:04

Volatile Petroleum Products and BTEX by NWTPH-Gx and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1-0801 (B1H0240-01) Water Sampled: 08/09/01 16:30 Received: 08/10/01 08:50									
Gasoline Range Hydrocarbons	**114**	50.0	ug/l	1	1H20008	08/20/01	08/20/01	NWTPH-Gx/8021B	
Benzene	**1.89**	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	**1.67**	0.500	"	"	"	"	"	"	
Xylenes (total)	**7.70**	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*94.8 %*	*62-139*			"	"	"	"	
Surrogate: 4-BFB (PID)	*96.2 %*	*62-125*			"	"	"	"	
MW-2-0801 (B1H0240-02) Water Sampled: 08/09/01 13:15 Received: 08/10/01 08:50									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	1H20008	08/20/01	08/20/01	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*91.2 %*	*62-139*			"	"	"	"	
Surrogate: 4-BFB (PID)	*94.2 %*	*62-125*			"	"	"	"	
MW-3-0801 (B1H0240-03) Water Sampled: 08/09/01 12:20 Received: 08/10/01 08:50									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	1H20008	08/20/01	08/20/01	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*89.2 %*	*62-139*			"	"	"	"	
Surrogate: 4-BFB (PID)	*93.5 %*	*62-125*			"	"	"	"	

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509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
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Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA/USA, 98155	Project Manager: Mike Staton	08/24/01 18:04

Volatile Petroleum Products and BTEX by NWTPH-Gx and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-4-0801 (B1H0240-04) Water Sampled: 08/09/01 14:50 Received: 08/10/01 08:50									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	1H20008	08/20/01	08/20/01	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*89.6 %*	*62-139*			"	"	"	"	
Surrogate: 4-BFB (PID)	*93.8 %*	*62-125*			"	"	"	"	
MW-5-0801 (B1H0240-05) Water Sampled: 08/09/01 17:20 Received: 08/10/01 08:50									
Gasoline Range Hydrocarbons	**1030**	100	ug/l	2	1H20008	08/20/01	08/20/01	NWTPH-Gx/8021B	
Benzene	**50.3**	1.00	"	"	"	"	"	"	
Toluene	**2.69**	1.00	"	"	"	"	"	"	
Ethylbenzene	**34.1**	1.00	"	"	"	"	"	"	
Xylenes (total)	**71.8**	2.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*111 %*	*62-139*			"	"	"	"	
Surrogate: 4-BFB (PID)	*105 %*	*62-125*			"	"	"	"	
MW-6-0801 (B1H0240-06) Water Sampled: 08/09/01 14:00 Received: 08/10/01 08:50									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	1H20008	08/20/01	08/20/01	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*87.5 %*	*62-139*			"	"	"	"	
Surrogate: 4-BFB (PID)	*94.4 %*	*62-125*			"	"	"	"	

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Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA/USA, 98155	Project Manager: Mike Staton	08/24/01 18:04

Volatile Petroleum Products and BTEX by NWTPH-Gx and EPA 8021B

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-7-0801 (B1H0240-07) Water Sampled: 08/09/01 11:30 Received: 08/10/01 08:50									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	1H20008	08/20/01	08/20/01	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*87.3 %*	*62-139*			"	"	"	"	
Surrogate: 4-BFB (PID)	*92.9 %*	*62-125*			"	"	"	"	
MW-8-0801 (B1H0240-08) Water Sampled: 08/09/01 10:50 Received: 08/10/01 08:50									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	1H20008	08/20/01	08/20/01	NWTPH-Gx/8021B	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*85.0 %*	*62-139*			"	"	"	"	
Surrogate: 4-BFB (PID)	*95.0 %*	*62-125*			"	"	"	"	

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Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA/USA, 98155	Project Manager: Mike Staton	08/24/01 18:04

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1-0801 (B1H0240-01) Water	**Sampled: 08/09/01 16:30**		**Received: 08/10/01 08:50**						
Diesel Range Hydrocarbons	**2.37**	0.250	mg/l	1	1H13016	08/13/01	08/17/01	NWTPH-Dx SG	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*92.3 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*57.1 %*	*50-150*			"	"	"	"	
MW-2-0801 (B1H0240-02) Water	**Sampled: 08/09/01 13:15**		**Received: 08/10/01 08:50**						
Diesel Range Hydrocarbons	ND	0.301	mg/l	1	1H13016	08/13/01	08/18/01	NWTPH-Dx SG	
Lube Oil Range Hydrocarbons	ND	0.602	"	"	"	"	"	"	
Surrogate: 2-FBP	*84.7 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*86.8 %*	*50-150*			"	"	"	"	
MW-3-0801 (B1H0240-03) Water	**Sampled: 08/09/01 12:20**		**Received: 08/10/01 08:50**						
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	1H13016	08/13/01	08/17/01	NWTPH-Dx SG	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*83.3 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*73.9 %*	*50-150*			"	"	"	"	
MW-4-0801 (B1H0240-04) Water	**Sampled: 08/09/01 14:50**		**Received: 08/10/01 08:50**						
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	1H13016	08/13/01	08/18/01	NWTPH-Dx SG	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*92.5 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*91.3 %*	*50-150*			"	"	"	"	
MW-5-0801 (B1H0240-05) Water	**Sampled: 08/09/01 17:20**		**Received: 08/10/01 08:50**						
Diesel Range Hydrocarbons	**8.60**	0.250	mg/l	1	1H13016	08/13/01	08/17/01	NWTPH-Dx SG	
Lube Oil Range Hydrocarbons	**0.502**	0.500	"	"	"	"	"	"	D-10
Surrogate: 2-FBP	*101 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*63.5 %*	*50-150*			"	"	"	"	

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509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
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Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA/USA, 98155	Project Manager: Mike Staton	08/24/01 18:04

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-6-0801 (B1H0240-06) Water Sampled: 08/09/01 14:00 Received: 08/10/01 08:50									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	1H13016	08/13/01	08/18/01	NWTPH-Dx SG	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*83.6 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*82.7 %*	*50-150*			"	"	"	"	
MW-7-0801 (B1H0240-07) Water Sampled: 08/09/01 11:30 Received: 08/10/01 08:50									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	1H13016	08/13/01	08/17/01	NWTPH-Dx SG	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*85.1 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*67.7 %*	*50-150*			"	"	"	"	
MW-8-0801 (B1H0240-08) Water Sampled: 08/09/01 10:50 Received: 08/10/01 08:50									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	1H13016	08/13/01	08/18/01	NWTPH-Dx SG	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	*93.5 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*66.6 %*	*50-150*			"	"	"	"	

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Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA/USA, 98155	Project Manager: Mike Staton	08/24/01 18:04

Volatile Petroleum Products and BTEX by NWTPH-Gx and EPA 8021B - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1H20008: Prepared 08/20/01 Using EPA 5030B (P/T)										
Blank (1H20008-BLK1)										
Gasoline Range Hydrocarbons	ND	50.0	ug/l							
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	1.00	"							
Surrogate: 4-BFB (FID)	*40.9*		"	*48.0*		*85.2*	*62-139*			
Surrogate: 4-BFB (PID)	*45.2*		"	*48.0*		*94.2*	*62-125*			
LCS (1H20008-BS1)										
Gasoline Range Hydrocarbons	491	50.0	ug/l	500		98.2	80-120			
Benzene	6.34	0.500	"	6.01		105	80-120			
Toluene	31.9	0.500	"	36.1		88.4	80-120			
Ethylbenzene	8.38	0.500	"	8.37		100	80-120			
Xylenes (total)	39.9	1.00	"	42.0		95.0	80-120			
Surrogate: 4-BFB (FID)	*47.5*		"	*48.0*		*99.0*	*62-139*			
Surrogate: 4-BFB (PID)	*43.9*		"	*48.0*		*91.5*	*62-125*			
LCS Dup (1H20008-BSD1)										
Gasoline Range Hydrocarbons	489	50.0	ug/l	500		97.8	80-120	0.408	25	
Benzene	6.31	0.500	"	6.01		105	80-120	0.474	40	
Toluene	31.7	0.500	"	36.1		87.8	80-120	0.629	40	
Ethylbenzene	8.30	0.500	"	8.37		99.2	80-120	0.959	40	
Xylenes (total)	39.5	1.00	"	42.0		94.0	80-120	1.01	40	
Surrogate: 4-BFB (FID)	*47.7*		"	*48.0*		*99.4*	*62-139*			
Surrogate: 4-BFB (PID)	*43.9*		"	*48.0*		*91.5*	*62-125*			
Matrix Spike (1H20008-MS1)					**Source: B1H0240-03**					
Gasoline Range Hydrocarbons	456	50.0	ug/l	500	ND	91.2	70-130			
Benzene	6.39	0.500	"	6.01	ND	105	80-120			
Toluene	32.0	0.500	"	36.1	ND	88.6	75-117			
Ethylbenzene	8.29	0.500	"	8.37	ND	99.0	80-120			
Xylenes (total)	39.5	1.00	"	42.0	ND	94.0	80-120			
Surrogate: 4-BFB (FID)	*45.6*		"	*48.0*		*95.0*	*62-139*			
Surrogate: 4-BFB (PID)	*43.7*		"	*48.0*		*91.0*	*62-125*			

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

Scott A. Woerman, Project Manager

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Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
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541.383.9310 fax 541.382.7588

Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA/USA, 98155	Project Manager: Mike Staton	08/24/01 18:04

Volatile Petroleum Products and BTEX by NWTPH-Gx and EPA 8021B - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1H20008: Prepared 08/20/01 Using EPA 5030B (P/T)										
Matrix Spike Dup (1H20008-MSD1)					**Source: B1H0240-03**					
Gasoline Range Hydrocarbons	474	50.0	ug/l	500	ND	94.8	70-130	3.87	25	
Benzene	7.10	0.500	"	6.01	ND	116	80-120	10.5	40	
Toluene	35.4	0.500	"	36.1	ND	98.1	75-117	10.1	40	
Ethylbenzene	9.20	0.500	"	8.37	ND	110	80-120	10.4	40	
Xylenes (total)	43.7	1.00	"	42.0	ND	104	80-120	10.1	40	
Surrogate: 4-BFB (FID)	*42.5*		"	*48.0*		*88.5*	*62-139*			
Surrogate: 4-BFB (PID)	*43.9*		"	*48.0*		*91.5*	*62-125*			

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Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA/USA, 98155	Project Manager: Mike Staton	08/24/01 18:04

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1H13016: Prepared 08/13/01 Using EPA 3520C/600 Series										
Blank (1H13016-BLK1)										
Diesel Range Hydrocarbons	ND	0.250	mg/l							
Lube Oil Range Hydrocarbons	ND	0.500	"							
Surrogate: 2-FBP	*0.250*		"	*0.320*		*78.1*	*50-150*			
Surrogate: Octacosane	*0.263*		"	*0.320*		*82.2*	*50-150*			
LCS (1H13016-BS1)										
Diesel Range Hydrocarbons	1.85	0.250	mg/l	2.00		92.5	50-150			
Surrogate: 2-FBP	*0.297*		"	*0.320*		*92.8*	*50-150*			
LCS Dup (1H13016-BSD1)										
Diesel Range Hydrocarbons	1.86	0.250	mg/l	2.00		93.0	50-150	0.539	50	
Surrogate: 2-FBP	*0.296*		"	*0.320*		*92.5*	*50-150*			

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Maul Foster & Alongi-Seattle	Project: Chelan Bulk Terminal #0082	
17171 Bothell Way NE #264	Project Number: 9077.015.001	**Reported:**
Seattle WA/USA, 98155	Project Manager: Mike Staton	08/24/01 18:04

Notes and Definitions

D-10	The heavy oil range organics present are due to hydrocarbons eluting primarily in the diesel range.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210
20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

UNOCAL CHAIN OF CUSTODY REPORT B1H0240

UNOCAL INFORMATION

Facility Number: Chelan Bulk Terminal
Site Address:
City, State, ZIP: Chelan, WA.
Site Release Number: Direct Billing to Mark Brearley, Unocal
Unocal Manager: Mark Brearley
CERT INFO: (check one) ☐ Evaluation ☐ Remediation ☐ Detection ☐ Demolition ☐ Closure ☐ Miscellaneous

CONSULTANT INFORMATION

Firm: Maul, Foster, & Alongi Project# 9077.615.001
Address: 17171 Bothell Way NE, #264
Seattle, WA. 98155
Phone: (425) 744-1489 Fax: (425) 744-0919
Project Manager: Alice Stolen
Sample Collection by: B Sandberg

Chain of Custody Record #:

Quality Assurance Data Level: (A) B
A: Standard Summary
B: Standard + Chromatograms

Laboratory Turnaround Days: (10) 5 3 2 1

○ OR ○ WA ○ AK (X) NW Series

! SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CON-TAINERS	TPH-HCID	TPH-Gas	BTEX EPA 8021 Mod.	TPH-Gas + BTEX w/NWTPH-G/8021B	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen. Volatiles EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS SemiVols. EPA 8270	PAH's: 8270 SIM or 8310	Lead: Total or Dissolved	TCLP or RCRA Metals (8)	NCA SAMPLE NUMBER
1. MW-1-0801	8/9/01 @ 1630	W	4				X			X								B1H0240-01
2. " -2- "	@ 1315						X			X								-02
3. " -3- "	@ 1220						X			X								-03
4. " -4- "	@ 1450						X			X								-04
5. " -5- "	@ 1720						X			X								-05
6. " -6- "	@ 1400						X			X								-06
7. " -7- "	@ 1130						X			X								-07
8. MW-8-0801	@ 1050						X			X								-08
9.																		
10. VE-Stack-0801	8/9/01 @ 2115	Air	1				X											-09

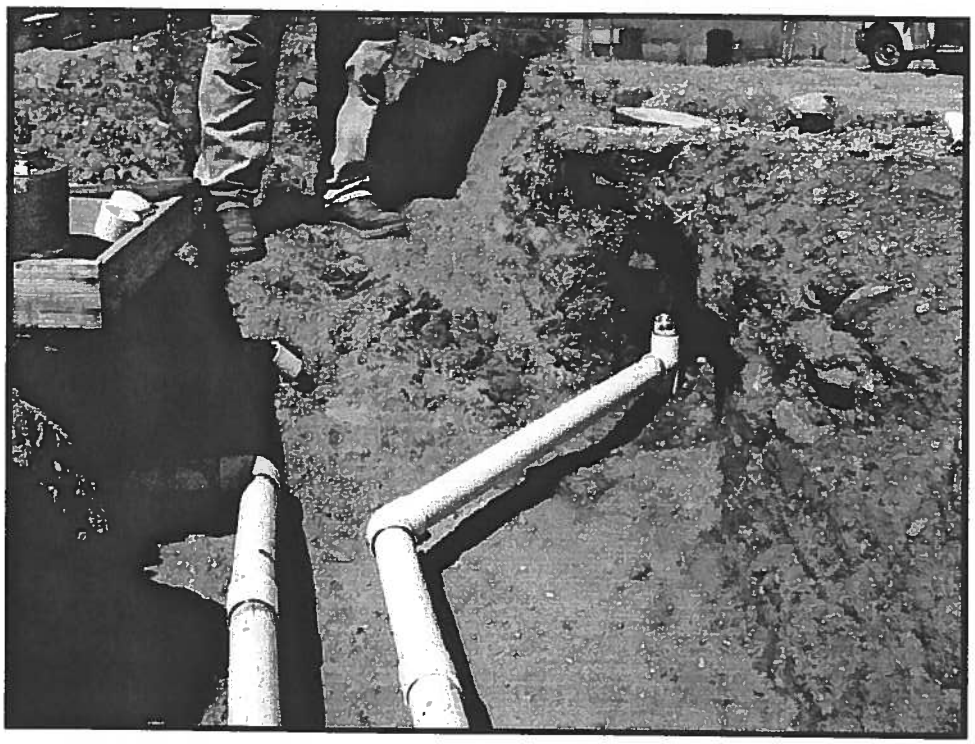
Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1.	MFA	8/10/01 @ 8:50	Cathy Nichols	NCA	8/10/01 8:50
2.					
3.					

Final Report Approval

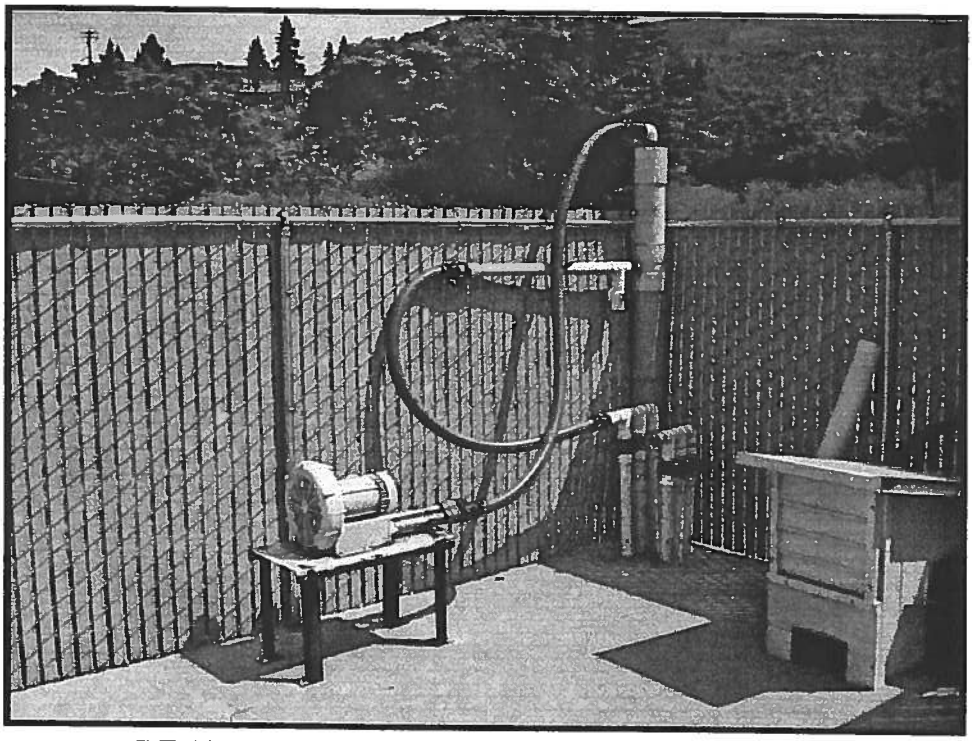
Were all requested results provided? yes no Define
Were results within requested turnaround? yes no "No"
Final Approval Signature: on back
Firm: Date:

Page ____ of ____
Comments:

PHOTOGRAPHS



Installation of underground piping to AS–1 and MW–5 (left and right, respectively).



SVE blower, manifold piping, and condensate knockout.

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DATE 12/01
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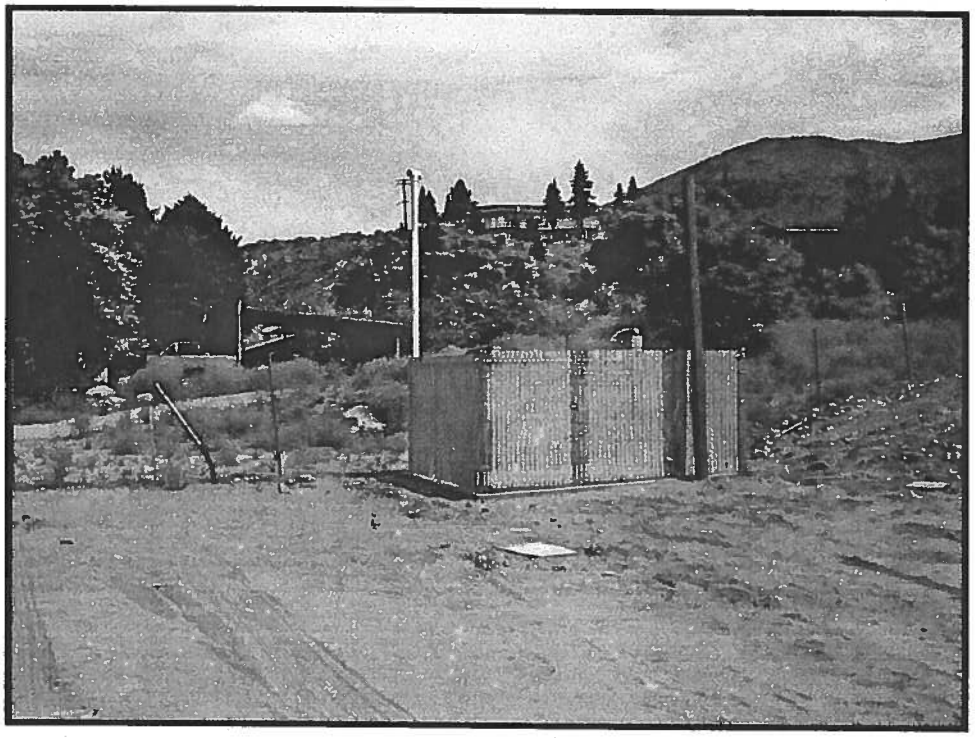
PROJECT NO. 9077.15.01

FORMER UNOCAL BULK
FUEL TERMINAL #0082
CHELAN, WASHINGTON

SITE PHOTOGRAPHS

Carbon–filled canisters inside system enclosure (west to east view).



Completed system enclosure (west to east view).

Maul Foster & Alongi, Inc.
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REVIS. ____
PROJECT NO.
9077.15.01

FORMER UNOCAL BULK
FUEL TERMINAL #0082
CHELAN, WASHINGTON

SITE PHOTOGRAPHS

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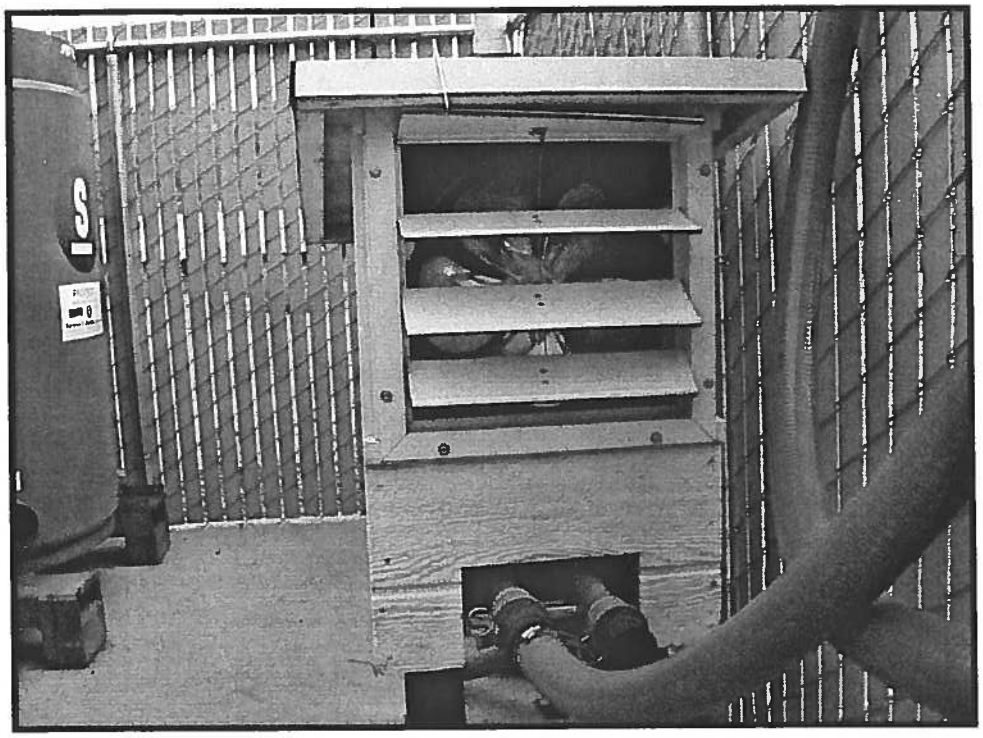
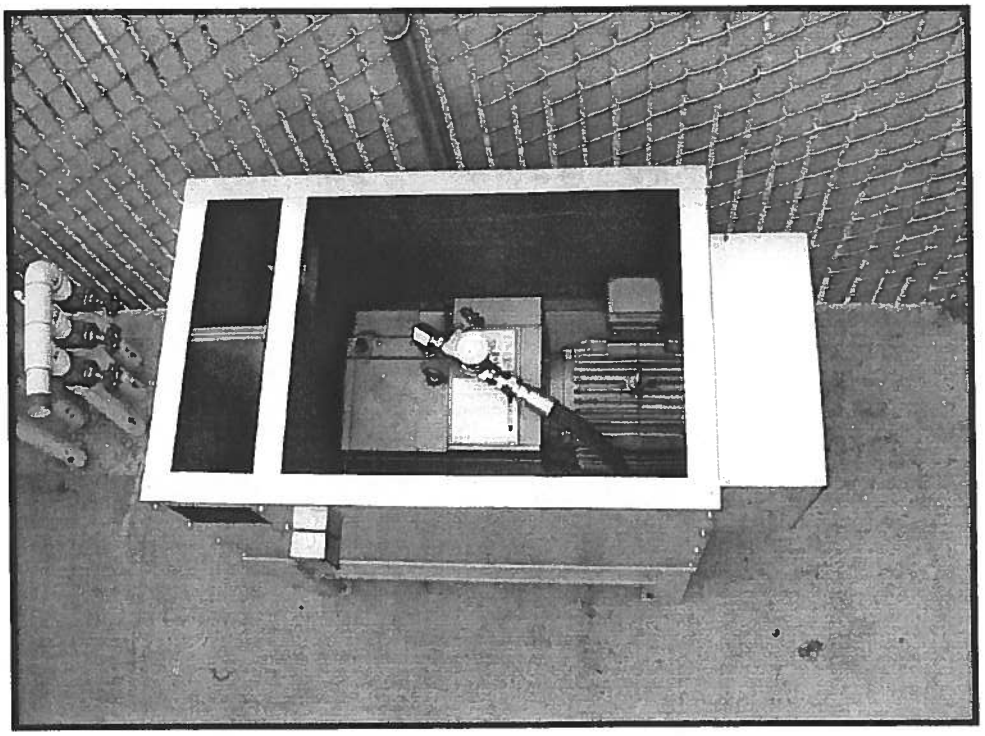


SVE blower within ventilated housing.



Air sparging compressor within housing.

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FORMER UNOCAL BULK
FUEL TERMINAL #0082
CHELAN, WASHINGTON

SITE PHOTOGRAPHS

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