ENVIRONMENTAL ASSOCIATES, INC.

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JN 8125-4

September 18, 2000

Ballard Land Management
30115 First Avenue East
Roy, Washington 98580

Attention: Mr. Dana Bostwick

Subject: **SECOND SEMI-ANNUAL GROUNDWATER MONITORING EVENT**
Marine Fluid Systems
801 Northwest 42nd Street
Seattle (Ballard), Washington

Dear Mr. Bostwick:

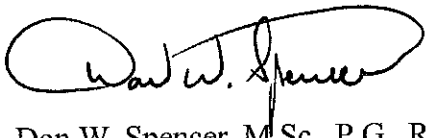
Environmental Associates, Inc. (EAI) has completed groundwater sampling and analysis from four (4) monitoring wells installed by EAI on April 1, 1998 on the property located in Seattle, King County, Washington. This report, prepared in accordance with the terms of our proposal dated January 31, 2000, summarizes our approach to this phase of the project along with results and conclusions.

The contents of this report are confidential and are intended solely for your use and the use of your representatives. Three (3) copies of this report are being distributed to you, and in accordance with your instructions, one (1) copy is being forwarded to Mr. Ron Timm, Washington Department of Ecology (WDOE), Northwest Regional Office, 3190 160th Avenue Southeast, Bellevue, Washington 98008-5452. The report will become a public record upon receipt by WDOE. Additional copies are available for a small fee.

Based upon the results of this sampling event, performed in accordance with the requirements of WDOE's determination of "no further action" (NFA) in their draft letter dated June 14, 1999, which included sampling of groundwater from each of four (4) monitoring wells at the property along with laboratory analysis of each of the groundwater samples for the presence of petroleum hydrocarbon contamination in the diesel and oil boiling ranges, it would appear that groundwater at the four well locations is compatible with current cleanup guidelines published in the Model Toxics Control Act (MTCA), Chapter 173-340 WAC. In accordance with the draft WDOE NFA letter, the completion of the August 2000, sampling event appears to fulfill the terms of the NFA.

We appreciate the opportunity to be of service on this assignment. If you have any questions or if we may be of additional service, please do not hesitate to contact us.

Respectfully submitted,
ENVIRONMENTAL ASSOCIATES, INC.



Don W. Spencer, M.Sc., P.G., R.E.A.
Principal

EPA-Certified Asbestos Inspector/Management Planner
I.D. # AM 48151

Registered Site Assessor/Licensed UST Supervisor
State Certification #947458636

License: W000010	(Washington)
License: 11464	(Oregon)
License: 876	(California)
License: 5195	(Illinois)
License: 0327	(Mississippi)

SECOND SEMI-ANNUAL GROUNDWATER MONITORING EVENT

Marine Fluid Systems
801 Northwest 42nd Street
Seattle (Ballard), Washington

Prepared for:

Ballard Land Management
30115 First Avenue East
Roy, Washington 98580

Questions regarding this investigation, the conclusions reached and the recommendations given should be addressed to one of the following undersigned.

Robert B. Roe, Project Manager, M.Sc.
Environmental Geologist
WDOE Registered Site Assessor

Don W. Spencer, M.Sc., P.G., R.E.A.
Principal

EPA-Certified Asbestos Inspector/Management Planner
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Reference Job Number: JN 8125-4

September 18, 2000

ENVIRONMENTAL ASSOCIATES, INC.

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INTRODUCTION/SCOPE OF WORK

SITE/PROJECT DESCRIPTION

The subject property includes an irregular-shaped parcel covering approximately 2.53 acres (110,533 square feet) of land located along the north shore of the Lake Washington Ship Canal as indicated on the Vicinity Topographic Map, Plate 1. Approximately 10,590 square feet of the parcel are inundated by the Lake Washington Ship Canal. The site is developed with several buildings as indicated on the Site Exploration Plan, Plate 2. The western-most machine and carpenter shop building, occupied by Marine Fluid Systems - a boat repair and painting company, is located partially atop a wooden wharf, is two stories in height, and was reportedly constructed in 1919. The northern-most office/warehouse building is one-story in height and was reportedly erected in 1920 of wood-frame construction. The eastern-most warehouse building is one-story in height and was reportedly erected in 1942 of wood-frame construction. The general storage building to the west of the eastern warehouse building was reportedly erected in the 1950s and is of wood-frame construction with metal siding. Additional developments include a marine railway and winch house, and a small wooden wharf along the south side of the marine railway.

The site is utilized primarily by Marine Fluid Systems, which became the master tenant in 1997, and has maintained a shop at the property since 1994 in Building D (see the Site Exploration Plan, Plate 2), however, the northern office/warehouse (Building A) is occupied by a marine software company and an ornamental iron shop. An artist (welding) and general storage occupy the eastern warehouse (Building B). General storage occurs in the central warehouse building (Building C). Currently, electricity is utilized to provide heat to portions of each of the buildings with an above-ground tank providing fuel storage for the northern office-warehouse building. Formerly, the northern office/warehouse used heating fuel stored in an approximately 300-gallon capacity underground tank (UST) as indicated on the Site Exploration Plan, Plate 2, with an in-use above-ground tank located just west of the former underground storage tank location. Additionally, an approximately 1,200-gallon capacity gasoline underground storage tank was located generally at the northwest corner of the central general warehouse building (Building C) as indicated on Plate 2. These underground storage tanks (USTs) were removed in 1988, following receipt of the required permits from the Seattle Fire Department.

Referring to the Site Exploration Plan, Plate 2, the site is predominantly covered with paving of various types. Three areas of the property are un-paved including the submerged area of the property, the northeast corner of the site, and a small area south of the eastern warehouse. Within the fenced area north of the concrete-paved marine railway is a large concrete pad. A concrete pad also extends several feet south of the marine railway. The southern portion of the property is paved by very tough asphaltic concrete. The eastern drive between the general storage warehouse and the eastern warehouse south to just east of the winch house is asphalt -paved, as is the extreme northwest corner

of the property at the entrance to the site from Northwest 42nd Street. The drive located north of the fenced area south of the northern office/warehouse building is paved by concrete that was reportedly brought in by Salmon Bay Sand and Gravel.

A small concrete patched area is located at the northwest corner of the general storage warehouse and is thought to represent the former location of the noted 1,200 gallon capacity gasoline underground storage tank. The following paragraphs provide a brief description of land uses on neighboring properties.

North: The site is bordered on the north by the former Birmingham Steel Ballard Mill, a former manufacturer of rolled steel and re-bar. This property was recently occupied by Alaska Outport Transportation, a dry goods barge company providing services to Southeast Alaska, and by a stage and production design and construction company. Bowles Company NW, a plumbing supply company is located across Northwest 42nd Street from the subject site. Northwest Nut and Bolt formerly occupied the property to the northeast of the site.

East: Trident Seafoods currently occupies the property to the east and southeast of the subject site. Salmon Bay Sand and Gravel has a small storage yard east of the northeastern portion of the eastern property line.

South: Located to the south of the subject site is the Lake Washington Ship Canal.

West: Again, the Lake Washington Ship Canal is located to the west of the site.

According to the City of Seattle Department of Construction and Land Use Zoning Map, the subject property is zoned as general industrial.

BACKGROUND/SCOPE OF WORK

On March 17, 1999, Environmental Associates, Inc. (EAI) presented a report to Ballard Land Management regarding the property titled Subsurface Environmental Study, which was submitted to the Washington Department of Ecology (WDOE) for review under the Voluntary Cleanup Program (VCP). The findings of the work described in that report are summarized below:

- Soil and groundwater at the localities tested did not contain concentrations of metals and VOCs in excess of the appropriate Method A Industrial and/or Method B cleanup levels, and soil did not contain concentrations of PCBs and PAHs in excess of the Method A Industrial cleanup levels published in the Model Toxics Control Act (MTCA), Chapter 173-340 WAC.

- Groundwater at the localities tested did not contain concentrations of petroleum hydrocarbons in excess of the MTCA Method A cleanup level. Trace concentrations of petroleum hydrocarbons in the diesel boiling range were detected in two of the monitoring wells completed on the property, however, the concentrations reported by the laboratory were well below the Method A cleanup level.

- Shallow soil (less than approximately 5 feet in depth) at the unpaved northeastern and now paved northwestern portions of the property, and shallow soil (less than approximately 4 feet in depth) beneath the paved portion of the property south of the marine railway contain concentrations of diesel and oil boiling range petroleum hydrocarbons in excess of the MTCA Method A cleanup level. Laboratory analysis of selected soil samples from these areas using the Washington Department of Ecology (WDOE) Interim Interpretive and Policy Statement - Cleanup of Total Petroleum Hydrocarbons (TPH) methodology (the "Method B" approach to TPH contamination) suggests that these soils do not present a significant potential for impacts to human health or groundwater using the industrial risk assessment criteria inherent in the Method B TPH cleanup approach. As noted above, groundwater was confirmed to contain concentrations of petroleum below the Method A cleanup level.

Following WDOE review of our March 17, 1999 report under the Voluntary Cleanup Program (VCP), a draft "no further action" (NFA) determination letter dated June 14, 1999 was presented by WDOE regarding the site, as long as a restrictive covenant was filed with local government (King County/City of Seattle) identifying the presence of diesel, heavy oil, carcinogenic polynuclear aromatic hydrocarbons (PAHs) and metals in soil at the property, and the requirement of semi-annual groundwater monitoring for the presence of diesel and oil boiling range petroleum hydrocarbons for a period of one year. The restrictive covenant has reportedly been filed by Ballard Land Management with King County/City of Seattle.

In February 2000, EAI performed the first semi-annual sampling event in compliance with the terms of Ecology's draft NFA. Results from that effort, as summarized in our February 24, 2000 report and presented in Table 2 (attached) confirm that the four (4) subject site wells were in compliance with MTCA Method-A target cleanup levels at that time.

Your expressed interests, which included the desire to conduct the second semi-annual groundwater monitoring in accordance with WDOE's June 14, 1999 draft NFA letter, formed the basis for the following scope of work:

- Groundwater sampling of the four (4) existing monitoring wells installed by EAI on April 1, 1998.

- Laboratory analysis of a groundwater sample obtained from each of the four monitoring wells for the presence of total petroleum hydrocarbons (TPH) in the diesel and oil boiling ranges using gas chromatography by Method NWTPH-Dx for TPH as diesel and oil.

- Preparation of this summary report documenting the methodology and results of the sampling event.

FINDINGS

GEOLOGIC SETTING

Physiographically, the site is situated on a gently rolling plain (the Seattle Drift Plain) which was formed during the last period of continental glaciation that ended approximately 13,500 years ago.

Published geologic maps for the site vicinity (Liesch, et al., 1963) suggest that much of the material underlying the subject site at some depth is glacial till, a dense heterogenous mixture of silt, sand, and gravel. Typically, the till exhibits relatively low vertical hydraulic conductivity that frequently results in formation of a "perched" water table along its upper contact. The "perched" water table (if present) is frequently seasonal and derives recharge primarily from infiltration of precipitation through more permeable overlying soils.

During subsurface sampling at the subject site by Environmental Associates, Inc. (EAI) as summarized in our March 17, 1999 report, we encountered varying amounts of interpreted fill materials predominantly consisting of sand, although some silts and sand with gravel was encountered. The fill was typically less than approximately 5 to 6 feet in thickness, although at boring B-4/MW-4 (near the ship canal) and at boring B-5 (near the former heating oil UST installation), the fill is interpreted to be approximately 8 feet in thickness. Below the fill material, sand, silt and clay were encountered to the maximum depth explored of 19 feet at B-1/MW-1.

Topographically, the site is situated on a generally level surface approximately 17 feet above sea level. Based upon inference from topography and local drainage patterns, along with information developed by through our work at the property, it appears that shallow-seated groundwater in the vicinity of the subject property flows in a southwesterly direction perpendicular to the Ship Canal. A copy of the U.S. Geological Survey Topographic Map depicting the subject property is attached to this report as Plate 1, Vicinity Topographic Map.

During our earlier groundwater sampling completed on May 6, 1998, we encountered groundwater at depths of approximately 2 feet below the ground surface in most of our explorations, although at B-1/MW-1, groundwater was not encountered until approximately 13 feet below the ground surface. Groundwater stabilized at all wells completed at the site at a depth of approximately 1.5 to 3.5 feet below the ground surface at that time. During the course of groundwater sampling for this work, groundwater was encountered at depths from 1.25 feet below the ground surface at MW-1 to 4.67 feet below the ground surface at MW-4.

With respect to surface water resources, The Lake Washington Ship Canal is adjacent to the property on the southwest. Salmon Bay lies further to the west of the property, with both of these waterways discharging into Shilshole Bay of the Puget Sound approximately 1.5 miles to the northwest of the subject property. The great majority of site drainage and runoff is diverted to the municipal sewer

system (Metro) through catch basins. All catch basins at the site reportedly discharge to the Metro sewer system, including runoff from the marine railway, following treatment by an on-site wastewater treatment system.

METHODOLOGY: GROUNDWATER SAMPLING

The wells at the site, following drilling and soil sampling in April 1998, were completed as two-inch diameter PVC wells with 0.010-inch slots installed to the total depth of the boring. A blank riser casing was then used in the upper several feet. The annulus of the well casing was sand packed two to three feet above well screens; a bentonite seal was placed above the sand and carried to within two (2) feet of the ground surface to prevent infiltration of surface contamination along the well casing. A concrete plug stabilizes the upper two-foot section of the well. A protective casing with provisions for locking access to the well head were included. Design and construction methods conformed to requirements and specifications outlined in revisions of WAC 173-160 for "resource protection wells" in the state of Washington. Copies of the logs for the wells at the site are included as Appendix A.

Prior to sampling, a peristaltic pump with sterilized polyethylene tubing was used to purge each well by removing a minimum of three (3) well volumes of water. This was done in an effort to assure that samples obtained were generally representative of ambient groundwater conditions. A total of 15 to 20 gallons of water was purged from each well. Following developmental purge pumping, water was pumped directly into preconditioned labeled glassware (two (2) 0.5 liter amber jars that were preserved with hydrochloric acid) furnished by the project laboratory. Samples were stored in an iced chest on-site and transported to the project laboratory in this condition. EPA recommended sample-management protocol including maintenance of chain-of-custody records for samples formed an integral part of the field sampling effort.

Upon opening of the casing at each well, no odors suggestive of the presence of contamination were noted. At each well, pumped groundwater was relatively free of turbidity following 5 to 8 gallons of purging. At MW-1, some minor iron fouling was noted in the water column. No sheens or odors were noted in groundwater obtained from each of the wells during purging or sampling. Purge water was placed into the on-site wastewater treatment plant, which according to Mr. Dana Bostwick of Marine Fluid Systems/Ballard Land Management, has the ability to trap petroleum hydrocarbons present in groundwater (if any) through a carbon filter.

Surface water had accumulated in the monument casing for wells MW2 and MW4. This water was pumped prior to removing the "water tight" well cap. The trapped water in the MW4 monument had a slight hydrocarbon sheen. The asphalt and concrete in the vicinity of MW4 was stained with oil. According to an employee of Marine Fluid Systems, an engine had recently been removed from a crane that was parked within a few feet of well MW4. The maintenance on the crane appears to be a logical source for the stained pavement and oily water trapped in MW4's protective monument.

It should be noted that the groundwater sample collected at MW4 on August 4, 2000 contained heavy oil at a concentration slightly above Ecology's target cleanup level. Heavy oil had not been detected in well MW4 during past sampling events. As noted previously, oily water was encountered in the well monument. Though the oily water was pumped from the monument prior to removing the "water tight" cap to the well, it would be EAI's opinion that the detected heavy oil in the water sample may have been an artifact related to the oily water found trapped in the monument. Upon advising the client of our findings, EAI was authorized to re-sample well MW4. On August 15, 2000, EAI re-sampled well MW4. These results appear under the August 18, 2000 cover letter from the lab also appended herewith.

Prior to sampling, depth to groundwater was measured in each well. A summary of water table data obtained at the site to date is provided in the table below.

TABLE 1: Results of Groundwater Table Survey[1]

Date	Measurement	MW-1	MW-2	MW-3	MW-4
May 6, 1998	Casing elevation	19.76	19.59	18.45	18.40
	Depth to water	1.34	7.72	3.29	6.19
	Elevation of Water table	18.42	11.87	15.16	12.21
February 4, 2000	Depth to water	1.12	1.75	3.14	5.61
	Elevation of Water table	18.64	17.84	15.31	12.79
August 4, 2000	Depth to water	1.25	2.70	3.60	4.67
	Elevation of Water table	18.51	16.89	14.85	13.73

1 - Assumed vertical datum of 20 feet above sea level at the northeast corner of the concrete slab located south of the eastern bay door of the northern office/warehouse building. Casing elevations surveyed May 6, 1998. All values in feet.

Through interpolation of plotted relative water table elevations for each well on a scale map, approximate contours of equal elevation on the water table were interpreted. As groundwater is known to flow from areas of higher potential toward areas of lower potential along lines "normal" (right angles) to such contours, the direction of flow and approximate gradient was deduced. Similar to the results of previous water table surveys, the interpreted results of our water table survey suggest that groundwater at the site flows toward the southwest, nearly perpendicular to the shoreline of the Lake Washington Ship Canal.

LABORATORY ANALYSIS

As petroleum hydrocarbons as diesel and/or heavy oil have been detected in groundwater at the site, and in accordance with the requirements of the WDOE's draft NFA letter dated June 14, 1999, a groundwater sample obtained from each well was submitted to the project laboratory for the presence

of TPH as diesel and oil using gas chromatography (GC) performed in accordance with NWTPH-Dx. We refer the reader to the Site Exploration Plan, Plate 2, for the locations of the monitoring wells in relation to site developments.

The laboratory report and chain-of-custody is included as Appendix B at the end of this report. Table 2, attached to this report summarizes the results of laboratory testing of groundwater for the presence of diesel and oil boiling range hydrocarbons obtained at the site to date.

Referring to Table 2 above, it would appear that groundwater at monitoring wells MW1 through MW4 contain non-detectable concentrations of diesel or heavy oil and therefore remain in compliance with Ecology's Method-A target groundwater compliance levels.

CONCLUSIONS/RECOMMENDATIONS

Relying upon information developed during the course of this groundwater sampling event at the four wells completed on the property along with laboratory analysis of the groundwater sample obtained from each well, it appears that groundwater quality remains compatible with the current Method A cleanup guidelines for groundwater quality published in the Model Toxics Control Act (MTCA), Chapter 173-340 WAC. As this second semi-annual sampling event completes the requirements from Ecology for receiving an NFA, EAI would simply recommend forwarding a copy of this report to Ecology.

LIMITATIONS

This report has been prepared for the exclusive use of Mr. Dana Bostwick and Ballard Land Management along with their several representatives for specific application to this site. Our work for this project was conducted in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area, and in accordance with the terms and conditions set forth in our proposal dated January 31, 2000. The opinions offered here rely solely upon observations and assessment of conditions encountered at separated well/sampling localities and depths. Conditions may vary at other localities. No other warranty, expressed or implied, is made. If new information is developed in future site work which may include excavations, borings, studies, etc., Environmental Associates, Inc., must be retained to reevaluate the conclusions of this report and to provide amendments as required.

REFERENCES

Environmental Associates, Inc., March 17, 1999, Subsurface Environmental Study, Marine Fluid Systems, 801 Northwest 42nd Street, Seattle (Ballard), Washington. Prepared for Ballard Land Management, 41 pps., 17 tables, 17 plates, appendices.

Environmental Associates, Inc., February 24, 2000, First Semi-Annual Groundwater Monitoring Event, Marine Fluid Systems, 801 Northwest 42nd Street, Seattle, Washington. 11 pps, attachments.

United States Geologic Survey, 1983, Seattle North, Washington 7.5x15 Minute (1:25,000 scale) Topographic Quadrangle Map. From aerial photographs obtained in 1977, 1 sheet.

Washington Department of Ecology, June 14, 1999, Draft Determination of No Further Action, Marine Fluid Systems Property, 801 Northwest 42nd Street, Seattle, Washington. Presented to Ballard Land Management, 2 pps.

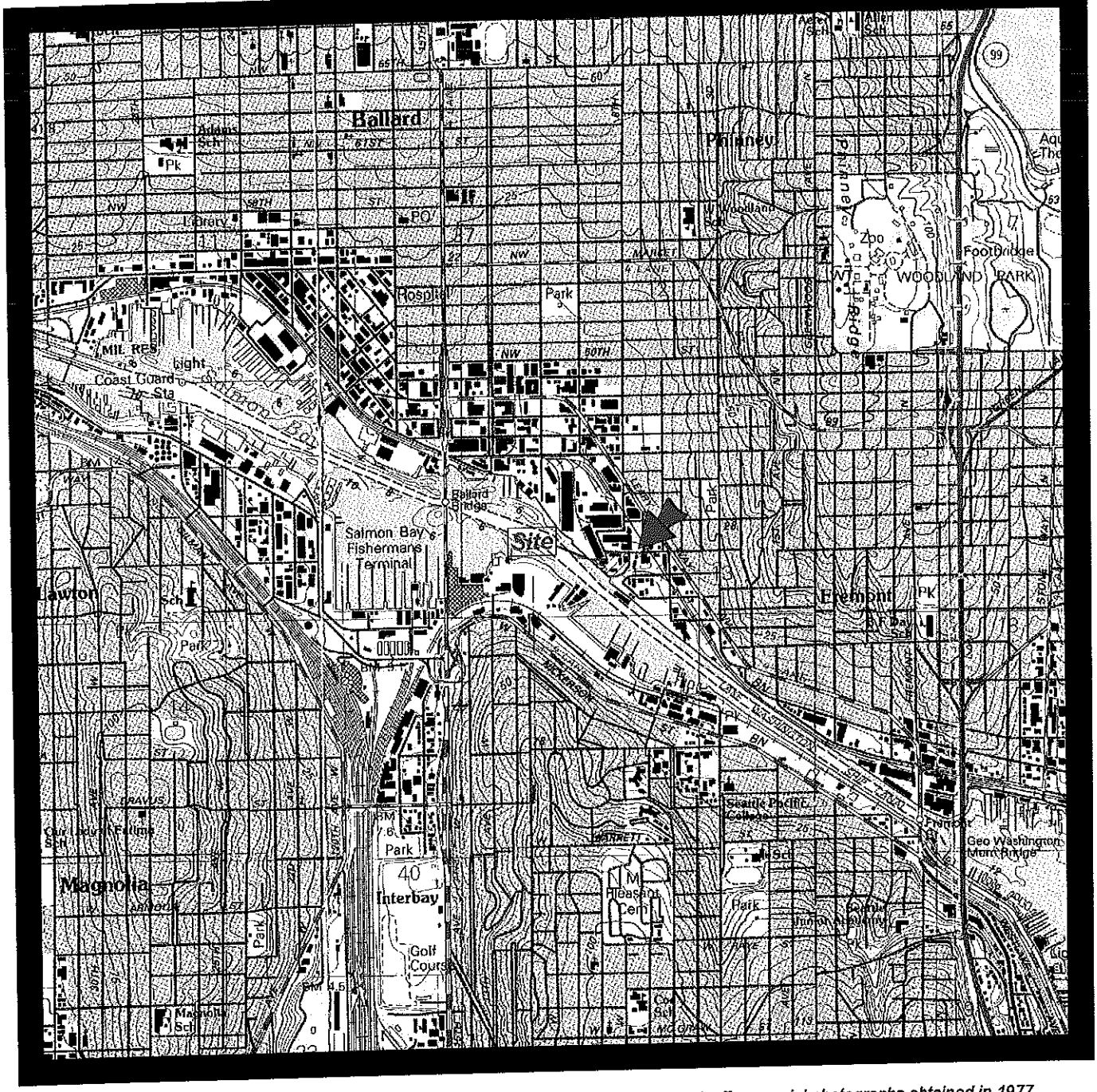
TABLE 2 - Marine Fluid Systems - Seattle
Groundwater Sampling Results
All results and limits in parts per million (ppm)

Monitoring Well	Sample Quarter/Date	Diesel	Heavy Oil
MW1	5/6/98	ND	ND
	2/4/00 1st Semi-Annual	ND	ND
	8/4/00 2nd Semi-Annual	ND	ND
MW2	5/6/98	0.468	ND
	2/4/00 1st Semi-Annual	0.31	ND
	8/4/00 2nd Semi-Annual	ND	ND
MW3	5/6/98	ND	ND
	2/4/00 1st Semi-Annual	ND	ND
	8/4/00 2nd Semi-Annual	ND	ND
MW4	5/6/98	0.731	ND
	2/4/00 1st Semi-Annual	ND	ND
	8/15/00 2nd Semi-Annual	ND	ND
Reporting Limit [3]		0.25	0.50
Cleanup Level [4]		1[(5)]	

Notes:

1 - "ND" denotes analyte not detected at or above listed Reporting Limit.
2- "NA" denotes sample not analyzed for specific analyte.
3- "Reporting Limit" represents the laboratory lower quantitation limit.
4- Method A groundwater cleanup levels as published in the Model Toxics Control Act (MTCA) 173-340-WAC.
5- The MTCA Method A groundwater cleanup level for total petroleum hydrocarbons (TPH) (gas through heavy oil) is 1.0 ppm.

Bold and Italics denotes concentrations above MTCA Method A groundwater cleanup levels.



(Source: USGS, 1983, Seattle North, WA 7.5x15 Minute {1:25,000 scale} Quadrangle. From aerial photographs obtained in 1977, 1 sheet. Contour Interval = 5 meters {16.4 feet} feet)

Probable Direction of Shallow-Seated Groundwater Flow

Scale

0 — *1/2* — *1 mile*

N

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Vicinity Topographic Map

Marine Fluid Systems
801 Northwest 42nd Street
Seattle (Ballard), Washington

Job Number:	*Date:*		*Plate:*
JN 8125	March 1999		1

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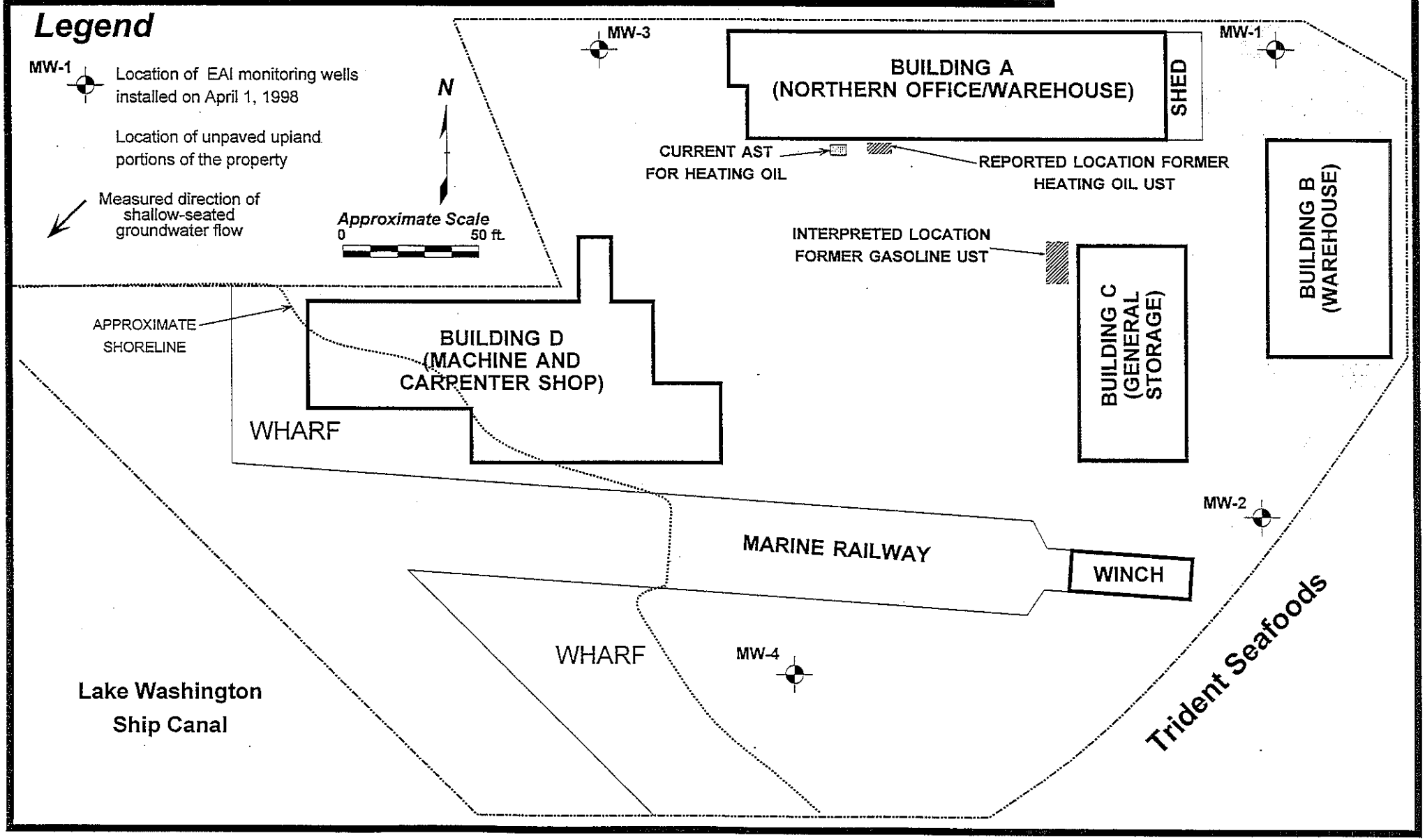
SITE EXPLORATION PLAN

Marine Fluid Systems
801 Northwest 42nd Street
Seattle, Washington 98107

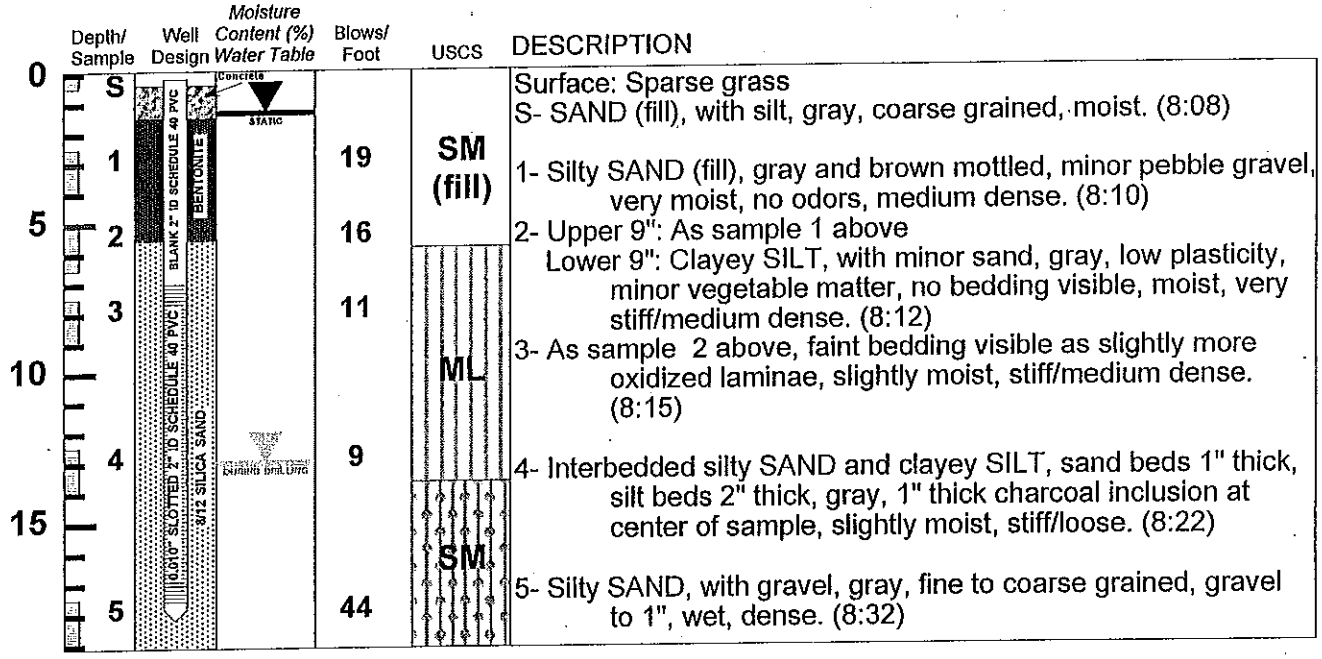
Job Number:	Date:		Plate:
JN 8125-4	February 2000		2



APPENDIX A

Monitoring Well Logs
(from EAI, March 17, 1999)

BORING B-1/MW-1



* Boring/monitoring well located at northeast corner of property, 33.5 feet north of the eastern warehouse, and 41.5 feet east of the northern office/warehouse building.
* Boring terminated at 19.5 feet on April 1, 1998.
* Monitoring well installed. Depth to groundwater approximately 13 feet at the time of drilling. Depth to groundwater measured at 1.34 feet below top of casing on May 6, 1998. Groundwater sample MW-1 obtained May 6, 1998.
* No visual or olfactory indications of contamination in soil or groundwater.
* Numbers in parentheses indicate the time the sample was obtained.

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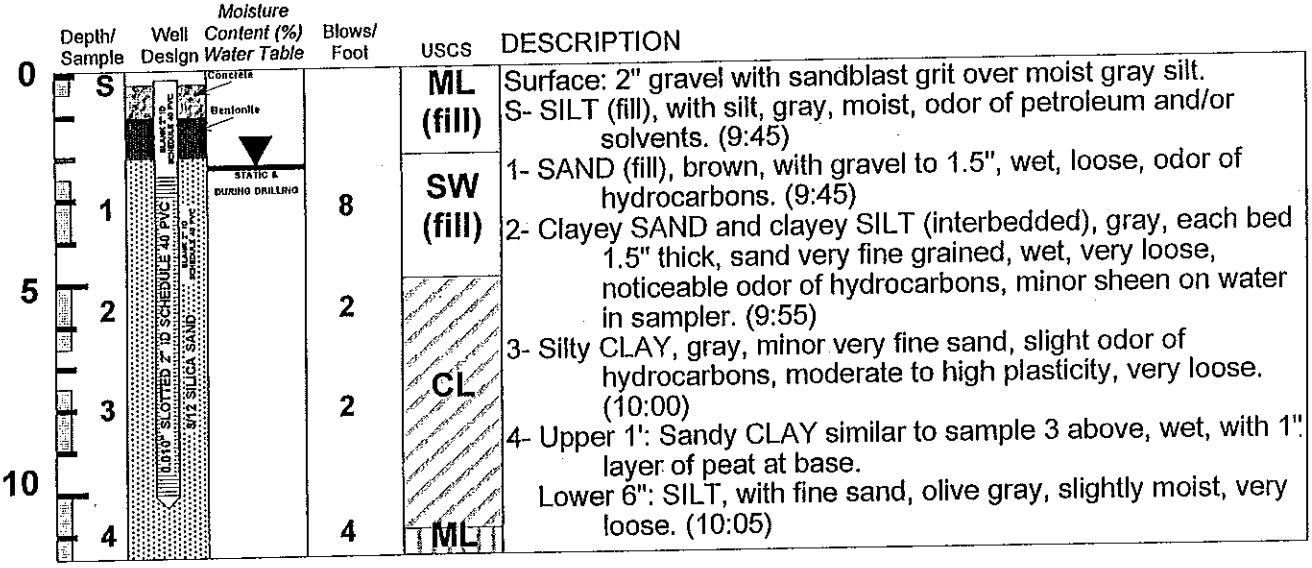
TEST BORING LOG: B-1/MW-1

Marine Fluid Systems
801 Northwest 42nd Street
Seattle (Ballard), Washington

Job Number:	Date:	Logged by:	Plate:
JN 8125	April 1, 1998	D. Holmes	4

BORING B-2/MW-2



* Boring/monitoring well located at southeast corner of property, 36 feet east of the steel shop, and 29.5 feet east of the winch.
* Boring terminated at 11.5 feet on April 1, 1998.
* Monitoring well installed. Depth to groundwater approximately 2.5 feet at the time of drilling. Depth to groundwater measured at 2.28 feet below top of casing on May 6, 1998. Groundwater sample MW-2 obtained May 6, 1998.
* Odors of solvent/hydrocarbons noted in upper few feet of boring, becoming faint below 9 feet in depth.
* Numbers in parentheses indicate the time the sample was obtained.

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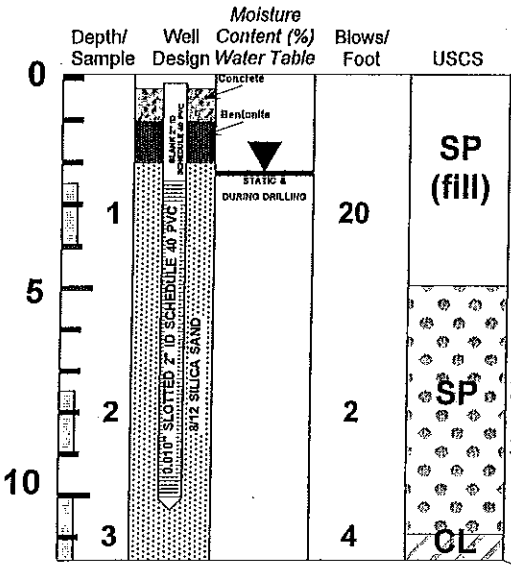
TEST BORING LOG: B-2/MW-2

Marine Fluid Systems
801 Northwest 42nd Street
Seattle (Ballard), Washington

Job Number:	Date:	Logged by:	Plate:
JN 8125	April 1, 1998	D. Holmes	5

BORING B-3/MW-3



* Boring/monitoring well located at northwest corner of property, 48 feet west of northern office/warehouse building, just south of the northern property line.
* Boring terminated at 11.5 feet on April 1, 1998.
* Monitoring well installed. Depth to groundwater approximately 4 feet at the time of drilling. Depth to groundwater measured at 3.29 feet below top of casing on May 6, 1998. Groundwater sample MW-3 obtained May 6, 1998.
* No visual or olfactory indications of contamination in soil or groundwater.
* Numbers in parentheses indicate the time the sample was obtained.

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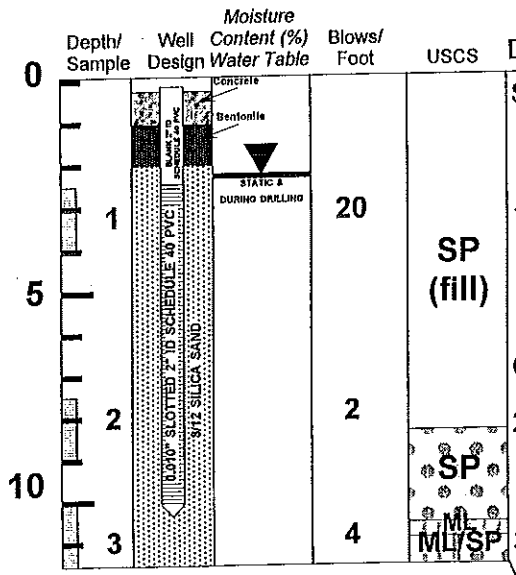
2122 - 112th Avenue N.E., Ste. B-100
Bellevue, Washington 98004

TEST BORING LOG: B-3/MW-3

Marine Fluid Systems
801 Northwest 42nd Street
Seattle (Ballard), Washington

Job Number:	Date:	Logged by:	Plate:
JN 8125	April 1, 1998	D. Holmes	6

BORING B-4/MW-4



Surface: 1.5" asphalt over 2" 5/8 minus crushed rock over 2" dark gray-brown sand with minor gravel to 1".

1- SAND (fill), with gravel, brown, minor fragments of red brick. medium grained, moist, medium dense. (13:30)

@ 7' - cuttings (sand) have slight sheen and are wet.

2- Upper 9": SAND (fill), as above
Lower 9": SAND, gray, medium grained, wet, medium dense. (13:32)

3- Upper 4": SAND, as above, wet.
Middle 5": Clayey SILT, olive gray, faint bedding, moist.
Lower 9": Interbedded SAND and SILT, sand medium grained, abundant shell fragments, silt beds to 1/4", wet, medium dense/stiff. (13:35)

* Boring/monitoring well located 27.5 feet south of marine railway, 17 feet east of machine and carpenter shop.
* Boring terminated at 11.5 feet on April 1, 1998.
* Monitoring well installed. Depth to groundwater approximately 6 feet at the time of drilling. Depth to groundwater measured at 4.31 feet below top of casing on May 6, 1998. Groundwater sample MW-4 obtained May 6, 1998.
* Visual indications of contamination (slight sheen) noted in soil at approximately 7 feet below ground surface. No visual or olfactory indications of contamination in groundwater.
* Numbers in parentheses indicate the time the sample was obtained.

ENVIRONMENTAL ASSOCIATES, INC.

2122 - 112th Avenue N.E., Ste. B-100
Bellevue, Washington 98004

TEST BORING LOG: B-4/MW-4

Marine Fluid Systems
801 Northwest 42nd Street
Seattle (Ballard), Washington

Job Number:	Date:	Logged by:	Plate:
JN 8125	April 1, 1998	D. Holmes	7

APPENDIX B

Laboratory Report & Chain-of-Custody

OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

August 10, 2000

Rob Roe
Environmental Associates, Inc.
2122 112th Avenue NE, Suite B-100
Bellevue, WA 98004

Re: Analytical Data for Project JN8125-4
Laboratory Reference No. 0008-048

Dear Rob:

Enclosed are the analytical results and associated quality control data for samples submitted on August 4, 2000.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: August 10, 2000
Samples Submitted: August 4, 2000
Lab Traveler: 08-048
Project: JN8125-4

NWTPH-Dx

Date Extracted:	8-7-00		
Date Analyzed:	8-7-00		
Matrix:	Water		
Units:	mg/L (ppm)		
Client ID:	MW1	MW2	MW3
Lab ID:	08-048-01	08-048-02	08-048-03
Diesel Fuel:	ND	ND	ND
PQL:	0.25	0.25	0.25
Heavy Oil:	ND	ND	ND
PQL:	0.50	0.50	0.50
Surrogate Recovery:			
o-Terphenyl	50%	120%	111%
Flags:	Y	Y	Y

Date of Report: August 10, 2000
Samples Submitted: August 4, 2000
Lab Traveler: 08-048
Project: JN8125-4

NWTPH-Dx

Date Extracted:	8-7-00
Date Analyzed:	8-7-00
Matrix:	Water
Units:	mg/L (ppm)
Client ID:	MW4
Lab ID:	08-048-04
Diesel Fuel:	0.33
PQL:	0.25
Heavy Oil:	1.3
PQL:	0.50
Surrogate Recovery:	
o-Terphenyl	124%
Flags:	Y

Date of Report: August 10, 2000
Samples Submitted: August 4, 2000
Lab Traveler: 08-048
Project: JN8125-4

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-7-00
Date Analyzed:	8-7-00
Matrix:	Water
Units:	mg/L (ppm)
Lab ID:	MB0807W1
Diesel Fuel:	ND
PQL:	0.25
Heavy Oil:	ND
PQL:	0.50
Surrogate Recovery:	
o-Terphenyl	97%
Flags:	Y

Date of Report: August 10, 2000
Samples Submitted: August 4, 2000
Lab Traveler: 08-048
Project: JN8125-4

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted:	8-7-00	
Date Analyzed:	8-7-00	
Matrix:	Water	
Units:	mg/L (ppm)	
Lab ID:	08-045-01	08-045-01 DUP
Diesel Fuel:	ND	ND
PQL:	0.25	0.25
RPD:	N/A	
Surrogate Recovery:		
o-Terphenyl	99%	83%

Flags:

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

D - Data from 1:____ dilution.

E - The value reported exceeds the quantitation range, and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeniety. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page _____ of _____

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Fax: (425) 885-4603 • Phone: (425) 883-3881

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day

☐ 2 Day ☐ 3 Day

☒ Standard
(Hydrocarbon analyses: 5 days, All other analyses: 7 days)

☐ 8/11 (other)

Project Chemist: DB

Laboratory No. 08-048

Company: Environmental Associates, Inc.

Project No.: JN8125-4

Project Name: Ballard Land Management

Project Manager: Robert Roe

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Total RCRA Metals (8)	TCLP Metals	VPH	EPH	% Moisture
1	MW1	8/4/00	AM	H_2O	1			X											
2	MW2	"	PM	"	1			X											
3	MW3	"	"	"	1			X											
4	MW4	"	"	"	1			X											

RELINQUISHED BY	DATE	RECEIVED BY	DATE
	8/4/00		8/4/00
FIRM: EAI	TIME: 3:45 PM	FIRM: OSE	TIME: 3:45
RELINQUISHED BY	DATE	RECEIVED BY	DATE
FIRM	TIME	FIRM	TIME
REVIEWED BY		DATE REVIEWED	

COMMENTS: acid clean-up please!

Chromatographs with final report ☐

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OnSite Environmental Inc.
Analytical Testing and Mobile Laboratory Services

August 18, 2000

Rob Roe
Environmental Associates, Inc.
2122 112th Avenue NE, Suite B-100
Bellevue, WA 98004

Re: Analytical Data for Project 8125-4
Laboratory Reference No. 0008-146

Dear Rob:

Enclosed are the analytical results and associated quality control data for samples submitted on August 15, 2000.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: August 18, 2000
Samples Submitted: August 15, 2000
Lab Traveler: 08-146
Project: 8125-4

NWTPH-Dx

Date Extracted:	8-16-00
Date Analyzed:	8-16-00
Matrix:	Water
Units:	mg/L (ppm)
Client ID:	MW4
Lab ID:	08-146-01
Diesel Fuel:	ND
PQL:	0.25
Heavy Oil:	ND
PQL:	0.50
Surrogate Recovery:	
o-Terphenyl	96%
Flags:	Y

Date of Report: August 18, 2000
Samples Submitted: August 15, 2000
Lab Traveler: 08-146
Project: 8125-4

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	8-16-00
Date Analyzed:	8-16-00
Matrix:	Water
Units:	mg/L (ppm)
Lab ID:	MB0816W1
Diesel Fuel:	ND
PQL:	0.25
Heavy Oil:	ND
PQL:	0.50
Surrogate Recovery:	
o-Terphenyl	120%
Flags:	Y

Date of Report: August 18, 2000
Samples Submitted: August 15, 2000
Lab Traveler: 08-146
Project: 8125-4

NWTPH-Dx
SB/SBD QUALITY CONTROL

Date Extracted:	8-16-00
Date Analyzed:	8-16-00
Matrix:	Water
Units:	mg/L (ppm)
Spike Level:	1.00 ppm

Lab ID:	SB0816W1	SB0816W1 DUP
Diesel Fuel:	0.714	0.691
PQL:	0.25	0.25
Percent Recovery:	71	69
RPD:	3.2	
Surrogate Recovery:		
o-Terphenyl	82%	82%

Flags:

OnSite Environmental Inc.

DATA QUALIFIERS AND ABBREVIATIONS

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MRL - Method Reporting Limit
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page _____ of _____

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Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day

☐ 2 Day ☒ 3 Day

☐ Standard
(Hydrocarbon analyses: 5 days, All other analyses: 7 days)

☐ 8/18
(other)

Project Chemist: JB

Laboratory No. 08-146

Company: Environmental Associates, Inc.

Project No.: 8125-4

Project Name: Callard Land Management

Project Manager: Robert Ruc

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Total RCRA Metals (8)	TCLP Metals	VPH	EPH	% Moisture
1	MW4	8/14/00	PM	H_2O	1			X											

RELINQUISHED BY	DATE 8/15/00	RECEIVED BY	DATE 8.15.00	COMMENTS: Acid Clean-up
FIRM EAI	TIME 9:45 am	FIRM OSE	TIME 9:45 am	
RELINQUISHED BY	DATE	RECEIVED BY	DATE	
FIRM	TIME	FIRM	TIME	
REVIEWED BY		DATE REVIEWED		Chromatographs with final report ☐

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