Geo Group N.W.

III

EVALUATION OF SITE ENVIRONMENTAL CONDITIONS
H & H DIESEL SERVICE, INC., PROPERTY
407 PORTER WAY
MILTON, WASHINGTON

E-1570

Prepared for:

Mr. Dusty Flegel
855 NE Loper Avenue
Prineville, Oregon 97754

September 19, 2002

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GEO Group Northwest, Inc.
Geotechnical Engineers, Geologists & Environmental Scientists

III

September 19, 2002

E-1570

Mr. Dusty Flegel
855 NE Loper Avenue
Prineville, OR 97754

Subject: Evaluation of Site Environmental Conditions
407 Porter Way, Milton, Pierce County, Washington

Dear Mr. Flegel:

Geo Group Northwest, Inc., has reviewed the environmental information provided to us by Mr. Gary Wolfe of H & H Diesel Service, Inc., for the above-referenced project located in Milton, Pierce County, Washington. The information that we reviewed consisted of the following:

1. Phase II Environmental Site Assessment, GTI Property, Milton, Washington. Excepted portions of report prepared by Columbia Environmental, July 1996.

2. Limited Soil and Ground Water Sampling and Testing, The 407 Porter Way Project, Milton, Pierce County, Washington. Report prepared by Saltbush Environmental Services, Inc., dated April 13, 1999.

3. Remedial Investigation (Soil), The 407 Porter Way Project, Milton, Pierce County, Washington. Report prepared by Saltbush Environmental Services, Inc., dated August 26, 1999.

4. Remedial Investigation (Ground Water), The 407 Porter Way Project, Milton, Pierce County, Washington. Report prepared by Saltbush Environmental Services, Inc., dated October 19, 1999.

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5. Limited Phase II Environmental Site Assessment, Truck Operator's Property, 407A Porter Way, Milton, Washington. Report prepared by LSI - ADAPT, dated July 27, 2001.

Items 1 and 5 above were prepared for the adjoining property on the east side of the project site. The excerpts from the report by Columbia Environmental were provided in an appendix to the report by Saltbush Environmental Services, Inc. (Saltbush), dated April 13, 1999. The excerpts included portions of the report text, tabulated soil and water sample analysis results, and a site map that showed sample locations. An appendix to the April 13, 1999, Saltbush report also contained limited information (a sketch map and a laboratory report) about a subsurface investigation performed in 1997 by SECOR. The work by SECOR appears to have been performed on the adjoining property also.

SITE DESCRIPTION

The project site occupies the southwest quadrant of a tract of developed land along the south side of Porter Way immediately east of Hylebos Creek, as illustrated in Plate 1 - Site Location Map. The site (and adjoining lots) is essentially flat and has a reported elevation of approximately 20 feet. The surrounding undeveloped land to the west, east, and south reportedly has an elevation of approximately 11 feet. The south, west, and east perimeter of the developed tract has an earthen berm that is several feet higher than the interior area. The project site is situated on the northern edge of the Puyallup River valley, with upland areas nearby to the west, north, and east. The project site location and local topographic characteristics are illustrated in Plate 2 - Topographic Map.

The project site is occupied by H & H Diesel Service, Inc. (H & H Diesel). The west part of the site, however, is used by another business for bus parking. The adjoining property to the east is occupied by a trucking company. The properties to the north and northeast reportedly have been used for truck washing and parking. The site features and the adjoining lots are illustrated in Plates 3 and 4, which are site plans from 1996 and 2001, respectively.

A chronologic summary of the previous environmental site assessment work that has been performed at the site (and known work that has been performed on the adjacent property) is presented as Attachment A to this report.

SUMMARY OF FINDINGS FROM PREVIOUS INVESTIGATIONS

Soil Conditions

Subsurface soils encountered at the site consist of an 8-feet thick layer of fill underlain with organic silt and clay soils to the maximum explored depth of 11 feet. The fills were reported to consist of 1.5 to 2 feet of gravel over about six feet of a combination of sand, sand with gravel and silt, and wood waste. The native soils were reported to consist of wet, peaty, silty clay.

Groundwater Conditions

Groundwater was encountered in the previously drilled soil borings at approximately 4 to 6 feet below ground surface, according to the previous reports. However, in the test pits that were excavated, the reported depths to groundwater varied between 6 and 11 feet. Groundwater elevations measured in the monitoring wells were reported to be approximately 3 feet below the ground surface. Based a single round of reported measurements, the water elevations in the monitoring wells were reported to vary by less than one foot.

Groundwater flow direction appears to be generally eastward based on the single round of reported measurements from the monitoring wells. However, groundwater flow in the site vicinity is anticipated to be influenced by hydraulic conditions in Hylebos Creek which flows southward past the site. According to a previous hydrogeologic study of the nearby Federal Way area referenced by Robinson & Noble, Inc., Hylebos Creek receives water from local groundwaters in the Federal Way Upland north of the project site area. The hydraulic characteristics of Hylebos Creek in the lowland area of the Puyallup River valley (in which the project site is located) were not discussed in the previous reports.

Nature and Extent of Contamination

Subsurface soil contamination at the site primarily consists of diesel- and oil-range petroleum hydrocarbons (up to 6,350 ppm), and appears to originate from the vicinity of the former above-ground storage tank. The extent of the soil contamination appears to be include the east portion of the site (east of the building) and continues eastward into a portion of the adjoining property. The lateral extent of the petroleum hydrocarbon contamination is illustrated in Plate 5 - Hydrocarbons in Soil.

Relatively low concentrations of volatile organic compounds were detected in a soil sample that was collected from a boring near the tank. Detected metals concentrations in soil samples that contained detected hydrocarbons did not exceed MTCA Method A cleanup levels.

Water samples collected from soil borings and test pits have contained diesel- and oil-range petroleum hydrocarbons(up to 45,000 ppb), and gasoline-range petroleum hydrocarbons (up to 680 ppb) over a lateral extent generally similar to the soil contamination. The lateral extent of petroleum hydrocarbons in groundwater, based on the available information, is illustrated in Plate 6 - Hydrocarbons in Water. No water samples were reported to have been analyzed for volatile organic compounds.

COMMENTS REGARDING THE EXISTING INFORMATION

Geo Group Northwest, Inc., has developed the following comments and conclusions regarding the environmental conditions at the project site, based on our review of the documents provided to us.

Existing Groundwater Elevation Data

The available groundwater elevation information is limited to one round of measurements performed in September 1999. This information is not adequate to characterize the groundwater flow regime at the site. The relatively flat groundwater surface apparent from the data reported by Saltbush suggests that groundwater flow direction may vary over time, such as in association with seasonal changes in precipitation and streamflow in Hylebos Creek.

Existing Groundwater Sample Analysis Data

The available groundwater sampling and analysis data for the site is limited to one round of groundwater samples collected from monitoring wells in September 1999, and some grab samples collected from groundwater encountered in soil borings in 1996, 1999, and 2001. Some of the grab samples reportedly contained substantial concentrations of petroleum hydrocarbons (up to 45,000 parts per billion [ppb]), but the set of groundwater samples from the monitoring wells reportedly did not contain petroleum hydrocarbons at or above laboratory reporting limits. It is possible that the water samples collected from the soil borings were contaminated by soil cuttings carried downward during drilling.

The laboratory reporting limit for oil-range petroleum hydrocarbons (1,000 ppb), however, was above the current Model Toxics Control Act Method A cleanup level (500 ppb), for the samples collected from the monitoring wells. The groundwater sample analysis that was done, therefore, may not have detected groundwater contamination with diesel- or oil-range petroleum hydrocarbons at levels below 1,000 ppb if it were present. However, higher levels of contamination would be expected to be detected.

Completeness of Existing Soil Sample Data

Soil samples collected from the borings and test pits on the H & H Diesel property and the adjoining property to the east appear to have generally delineated the areal extent of petroleum hydrocarbons in the subsurface soil. The remaining area that has not been investigated is the area west of the above-ground storage tank. This area is occupied by a building and by a storage area that has a concrete slab and a canopy.

The area of contamination identified by Saltbush Environmental Services, Inc., is only partially supported by the reported soil and groundwater sample laboratory analysis results. The reported contamination extent is consistent with the detection of petroleum hydrocarbons in samples from borings W-1, W-2, and B-1, and test pit TP-5. However, a soil sample collected from boring B-7 was reported to show field indication of contamination, but laboratory analysis of the soil sample did not detect the presence of petroleum hydrocarbons (groundwater samples were not collected from these borings). Also, no soil samples collected from soil borings B-5 and B-8 were submitted for laboratory analysis. Soil samples collected from these borings, however, did show similar field indications of the presence of petroleum hydrocarbons as did the samples from boring B-7. Yet, borings B-5 and B-8 are outside the reported extent of contamination and boring B-7 is inside the reported extent of contamination. It is the opinion of Geo Group Northwest, Inc., that the areal extent of contamination reported by Saltbush is approximate and may vary somewhat from that shown in its reports.

SITE STATUS PER THE WASHINGTON DEPARTMENT OF ECOLOGY

We understand that the Washington Department of Ecology (WDOE) has listed the project site on its Confirmed and Suspected Contaminated Sites List (CSCSL) database. The site is listed in the database as having suspected soil and groundwater contamination with metals, and suspected groundwater with petroleum hydrocarbons. According to the database, the site has confirmed soil

contamination with petroleum hydrocarbons. The site is listed as undergoing an independent remedial action, and an interim (i.e., partial or preliminary) assessment or remediation report has been received.

It is our opinion that subsurface soil and groundwater conditions will need to be evaluated west of the location of the former above-ground storage tank (i.e., west of existing well MW-4) and at least one year of quarterly groundwater monitoring will be needed before the WDOE will issue a letter of No Further Action (NFA) for the site. However, it is possible to perform a voluntary partial, or "interim," cleanup of the site that involves excavating and removing the accessible contaminated soil at the. A partial cleanup of this type likely will not result in receiving an NFA letter from the WDOE, but it will decrease the potential that the WDOE would choose to pursue enforcement action to impose a full cleanup of the site.

OPTIONS FOR VOLUNTARY CORRECTIVE ACTION

The following paragraphs present a range of possible actions that can be performed toward a voluntary partial remediation of the existing contamination at the site.

Survey of Wells and Selected Site Features

Geo Group Northwest, Inc., recommends that H & H Diesel Service, Inc., retain a licensed surveyor to record the location and elevations of the existing monitoring wells and a limited number of pertinent site features. The monitoring well monument covers and the top of the PVC casings below the covers both should be surveyed for elevation; the well locations should be measured at the center of the PVC casing. The elevations should be expressed as actual elevations accurate to the nearest 0.01 foot, and not as relative elevations to a temporary or arbitrary datum.

Groundwater Monitoring Program Using Existing Wells

Groundwater elevations in the four existing monitoring wells should be measured, and groundwater samples should be collected from each of the wells for laboratory analysis. The samples should be analyzed for diesel- and oil-range petroleum hydrocarbons. Laboratory reporting limits for the analysis should not exceed the MTCA Method A cleanup levels for the constituents of analysis.

Geo Group Northwest, Inc., recommends that groundwater monitoring be performed on a quarterly basis. Following each groundwater monitoring round, a groundwater elevation contour map should be prepared using the groundwater elevation data for the round, to evaluate the groundwater flow regime below the site at the time of the monitoring.

Excavation and Removal of Accessible Contaminated Soils

Although the extent of the contamination to soil at the site has not been delineated (the extent of contamination below the building on site is unknown), Geo Group Northwest, Inc., suggests that it is desirable to excavate and remove the accessible contaminated soils from the site. The apparent source of the contamination is leakage from the former above-ground storage tank onto the ground at the east side of the building on site. We suggest that excavation and removal of contaminated soil be started at the source location and expanded outward to the north, east, and south (away from the building), as necessary based on periodic sampling and analysis of soils from the excavation walls as work proceeds. When soil sampling and analysis verify that petroleum hydrocarbon concentrations at the excavation limits are below MTCA Method A cleanup levels, the excavation work can be terminated.

A limitation of implementing this alternative is the ability to excavate soils near the building may undermine the building foundations or floors. As a result, it is possible that contaminated soil will be left in place below or near the building after the excavation work is completed.

If there is evidence of groundwater contamination with petroleum hydrocarbons in the excavation (either based on laboratory analysis data or observation of an oil sheen or odor to the water), the water in the excavation should be pumped out using a vacuum truck and hauled to an appropriate disposal or processing facility. After the groundwater pumping work is completed, a verification water sample can be collected from the excavation for laboratory testing, and the excavation can be backfilled with non-contaminated imported fill soil.

SUMMARY

A review of Attachment A - Summary of Previous Environmental Investigations for this report indicates that the site is not grossly contaminated. Table 1 shows that soils samples collected by Columbia Environmental were all below current cleanup standards. Table 2 indicates one water sample exceeding the cleanup standard, however, the test method used may not be accurate.

Table 3 shows three soil samples collected by SECOR that exceed the cleanup criteria by a small margin. Table 4 indicates that all samples by Saltbush were below current cleanup levels. Table 5 indicates that the soil sample from Boring B-1 does not exceed cleanup criteria for volatile organics. Table 6 shows two water samples that exceed cleanup criteria, however, there may be some laboratory error involved. Table 7 shows one soil sample that exceeds the arsenic cleanup level by a small margin. Table 8 shows two water samples that exceed regulated levels for lead, chromium, cadmium and arsenic, however the samples were obtain from backhoe test pits and not from wells, as proper water samples should be taken. One sample on Table 8 exceeds oil cleanup standards in the soil.

Due to the relatively minor levels of contamination present at the site, it is our opinion that the site will receive a low ranking in the Department of Ecology's list of contaminated sites, and that enforcement action is unlikely, unless it impacts drinking water wells in the site's vicinity. Since the approximate area of contamination extends into the property to the east of the site, there are some liability issues involved.

Geo Group Northwest, Inc., appreciates this opportunity to provide you with environmental consulting services. Please call us if you have any questions regarding this letter.

Sincerely,

Geo Group Northwest, Inc.

Keith Johnson
Geologist

William Chang, PE
Principal

Attachments:

Plate 1 - Site Location Map
Plate 2 - Topographic Map
Plate 3 - Site Plan - 1996
Plate 4 - Site Plan - 2001
Plate 5 - Hydrocarbons in Soil
Plate 6 - Hydrocarbons in Water

Attachment A - Summary of Previous Environmental Investigations
-includes the following tables and plates:

Table 1 - Laboratory Analysis Results for Soil Samples Collected During 1996
Table 2 - Laboratory Analysis Results for Water Samples Collected During 1996
Table 3 - Laboratory Analysis Results for Soil Samples Collected During 1997
Table 4 - Laboratory Analysis Results for Soil Samples Collected During 1999
Table 5 - Volatile Organic Compounds and Metals Detected in Soil Sample Collected from Boring B-1 (1999)
Table 6 - Laboratory Analysis Results for Groundwater Samples Collected During 1999
Table 7 - Laboratory Analysis Results for Soil Samples Collected During 2001
Table 8 - Laboratory Analysis Results for Groundwater Samples Collected During 2001
Plate A1 - Boring/Well Location Map

ATTACHMENT A

SUMMARY OF PREVIOUS ENVIRONMENTAL INVESTIGATIONS

E-1570

ATTACHMENT A

SUMMARY OF PREVIOUS ENVIRONMENTAL INVESTIGATIONS

The H & H Diesel Service property and the adjacent property to the east have undergone multiple phases of environmental assessment between 1996 and 2001. A chronological summary of the previous assessments for which Geo Group Northwest, Inc., was provided records is presented below.

Phase II Environmental Assessment of Adjoining Property by Columbia Environmental

In July 1996, Columbia Environmental performed an investigation on the adjoining property east of the H & H Diesel property. Three shallow soil borings (SP-1, SP-2, and SP-3) were advanced along the west side of the property (near to the H & H Diesel property), and two borings (SP-4 and SP-5) were advanced in the north part of the adjoining property. A total of three soil samples were collected at depths between 5 and 8 feet from borings SP-1 and SP-2, and a soil sample was collected from each SP-4 and SP-5 at a depth of 2 feet. The samples were analyzed for total petroleum hydrocarbons and for diesel-range petroleum hydrocarbons. Both total petroleum hydrocarbons and diesel-range hydrocarbons were detected in the soil samples at concentrations that exceeded regulatory cleanup levels at the time of the assessment (July 1996), but are below present-day cleanup levels. Soil analysis results are presented in Table 1.

Water samples were collected from the three soil borings located along the west side of the property and were analyzed for total petroleum hydrocarbons (analyzed and reported as Total Recoverable Petroleum Hydrocarbons [TRPH], which was a more frequently used test in previous years), and for gasoline-range hydrocarbons. Both hydrocarbon types were detected in the samples, and the detected TRPH concentrations were above existing cleanup levels for diesel- and oil-range hydrocarbons. Water analysis results are presented in Table 2.

A site plan included in the Columbia report excerpt referred to a Phase I environmental site assessment for the property that was performed in June 1996. However, Geo Group Northwest, Inc., was not provided with a copy of the Phase I assessment report, and the Phase I assessment is not mentioned in subsequent reports that we reviewed. A copy of a site plan from 1996 which apparently was used in Columbia's assessment reports is provided as Plate 3 in the main body of our report. This site plan shows some site features that involved the handling or storage of petroleum products and other business related operations.

Soil Assessment by SECOR

In March 1997, SECOR apparently performed limited soil assessment work on the adjacent property east of the H & H Diesel site. The only record of this work provided to Geo Group Northwest, Inc., consisted of a hand-drawn site sketch and a portion of a laboratory analysis report. There is no mention of SECOR's work in subsequent environmental reports that we reviewed.

The limited available information indicates that SECOR excavated five test pits along the western edge of the adjacent property located east of the H & H Diesel property. The depths of the test pits and the soils encountered are not known. A soil sample was collected from each of the test pits and was analyzed for diesel- and oil-range petroleum hydrocarbons. Petroleum hydrocarbons were detected in each of the analyzed samples. The petroleum hydrocarbon concentrations in three of these samples exceeded current MTCA Method A cleanup levels, as illustrated in Table 3.

Limited Soil and Water Sampling and Testing by Saltbush Environmental Services, Inc.

In March 1999, Saltbush Environmental Services, Inc. (Saltbush), performed a limited environmental assessment of soil and groundwater conditions at the site. Two shallow soil borings, W-1 and W-2, were drilled on site in an area that was treated in 1998 at the ground surface with a spray that was claimed to increase soil microbial activity, and thereby reduce petroleum hydrocarbons via bio-remediation. Soil and groundwater samples were collected at a depth of 4 feet from both borings. The boring locations are illustrated in Plate A1 - Boring/Well Location Map. Both soil and both groundwater samples collected from the borings were analyzed for diesel- and oil-range petroleum hydrocarbons. Oil-range petroleum hydrocarbons were detected in each sample at concentrations above regulatory cleanup criteria in effect at the time of the work, but below current MCTA Method A cleanup levels. Soil analysis results are summarized in Table 4.

Soil Investigation by Saltbush Environmental Services, Inc.

During July 1999, Saltbush drilled 14 exploratory soil borings (B-1 through B-14) on the site and adjoining property to the east. The borings reportedly were drilled to depths of 6 to 8 feet, but no boring logs were provided. None of the borings were completed as groundwater monitoring wells, and no groundwater samples were collected from the borings. The boring locations are shown on Plate A1 - Boring/Well Location Map.

According to the report, a total of 30 soil samples were collected from the borings, but all of the collected samples were not identified in the report. Saltbush reported that the soil samples were field screened by using a hydrocarbon test kit produced by Beacon Analytical, Inc., that is designed to detect the presence of diesel- and oil-range petroleum hydrocarbons. Several of the samples tested positive for the presence of petroleum hydrocarbons using the kit. However, three of the samples were submitted to an analytical laboratory for analysis of diesel- and oil-range petroleum hydrocarbons, and these hydrocarbons were not detected at concentrations above laboratory reporting limits (these laboratory results are summarized in Table 4). Saltbush determined later that the field screening tests were affected by the presence of organic matter in the soil samples.

The soil sample collected from boring B-1 was also analyzed for volatile organic compounds and selected metals. Relatively low concentrations of toluene, ethylbenzene, xylenes, various benzene polymers, barium, chromium, and lead were detected in the sample. The laboratory results for detected constituents from these analyses are summarized in Table 5.

Groundwater Investigation by Saltbush Environmental Services, Inc.

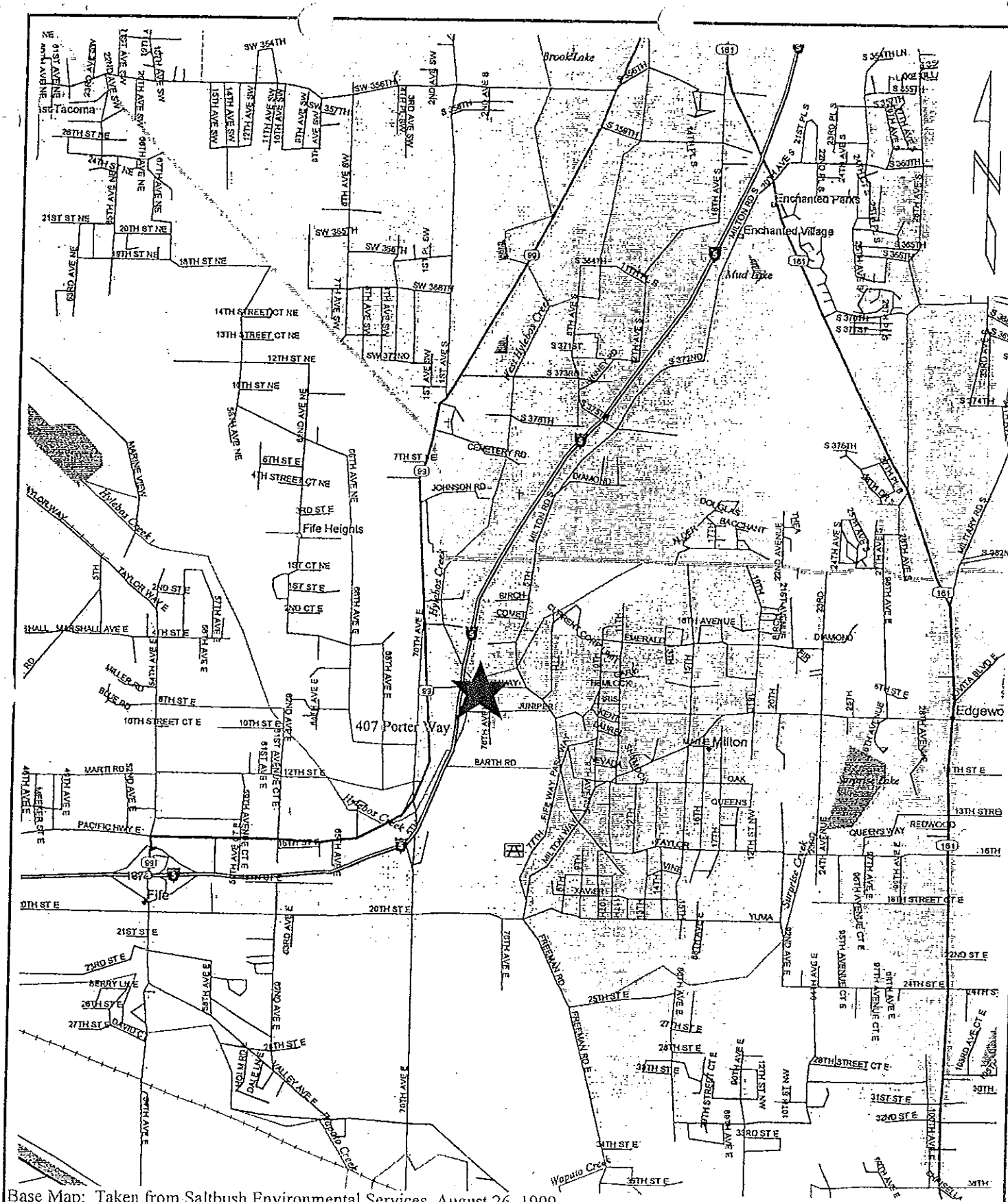
During September 1999, Saltbush installed four groundwater monitoring wells, MW-1 through MW-4, at the site and on the adjoining property to the east. The wells were installed with on-site consultation by a representative of Robinson & Noble, Inc., hydrogeological consultants. The wells were installed to depths of approximately 9.5 feet (for MW-1) and 11.5 feet (for MW-2, MW-3, and MW-4) below ground surface (bgs), and constructed with 2-inch diameter PVC casing. Perforated casing was set in MW-1 at 3 to 8 feet bgs, and in the other wells at 3 to 10 feet bgs. The well locations are illustrated in Plate A1 - Boring/Well Location Map.

Groundwater elevations in the wells were measured one week after the wells were installed. Groundwater samples also were collected from the wells and analyzed by an analytical laboratory for diesel- and oil-range petroleum hydrocarbons. No soil samples were collected from the borings for the wells. No petroleum hydrocarbons were detected in the groundwater samples. Low concentrations of five volatile organic compounds (VOCs) were detected in the groundwater sample from well MW-4 located in proximity to the above-ground storage tank. The groundwater sample analysis results are summarized in Table 6.

Additional Environmental Assessment of Adjoining Property by LSI-ADAPT

In June 2001, LSI-ADAPT performed a limited assessment of the soil and groundwater conditions at the adjoining property east of the site. Five test pits (TP-1 through TP-5) were excavated to depths of 8.5 to 13 feet at various locations on the property. One of the test pits, TP-5, was excavated on the west side of the property near the H & H Diesel building. The test pit locations are shown in Plate A1 - Boring/Well Location Map.

One or two soil samples were collected from each test pit, and groundwater samples were collected from four of the test pits. Groundwater was encountered at depths ranging between 6 and 11 feet, according to LSI-ADAPT. The soil and water samples were tested for petroleum hydrocarbons, metals, and BTEX. The soil sample collected from test pit TP-2 (near the H & H Diesel property) did not contain petroleum hydrocarbons or metals at concentrations above laboratory reporting levels. The soil sample collected from test pit TP-5 contained oil-range petroleum hydrocarbons, lead, and chromium at concentrations below regulatory cleanup levels. The soil and the groundwater analysis results are presented in Tables 7 and 8, respectively.



Base Map: Taken from Saltbush Environmental Services, August 26, 1999.

Group Northwest, Inc.
Geotechnical Engineers, Geologists, & Environmental Scientists

SITE LOCATION MAP

H & H DIESEL SERVICE, INC.
407 PORTER WAY
MILTON, PIERCE COUNTY, WASHINGTON

SCALE:	unk	DATE:	8/26/02	MADE:	KJ	CHKD:	WC	JOB NO:	E-1570	PLATE	1

TABLE 1

LABORATORY ANALYSIS RESULTS FOR SOIL SAMPLES COLLECTED DURING 1996

407 Porter Way, Milton, Pierce County, Washington

E-1570

Boring No.	Drilled by	Depth (feet)	Date Collected	TRPH (ppm)	TPH-G (ppm)	TPH-D (ppm)	TPH-O (ppm)
SP-1	Columbia	5	7/10/96	650	NT	NT	NT
		8	7/10/96	1900	NT	NT	NT
SP-2	Columbia	6	7/10/96	ND	ND	NT	NT
SP-4	Columbia	2	7/10/96	NT	NT	140	NT
SP-5	Columbia	2	7/10/96	NT	NT	63	NT
Regulatory Criteria				2000 [1]	100/30 [2]	2000 [3]	2000 [3]

Notes:

NT = Not tested.

ND = Not detected. Refer to laboratory report for detection limits.

ppm = parts per million.

Concentrations exceeding regulatory criteria are shown in **bold** print.

TRPH = Total Petroleum Hydrocarbons analyzed using WTPH - 418.1

TPH-G analyses performed using WTPH-G Method;

TPH-D and TPH-O analyses performed using WTPH-Dx Method.

Regulatory Criteria: Washington State Model Toxics Control Act Method A Cleanup Levels.

[1] No established cleanup level is established for this method; TPH-D and TPH-O cleanup levels are used here for general guidance.

[2] Cleanup level is 100 ppm if no benzene is present and if total of toluene, ethylbenzene, and xylenes is less than 1% of the gasoline mixture; otherwise, the cleanup level is 30 ppm.

[3] Cleanup level applies to the combination of diesel and oil hydrocarbons.

TABLE 2

LABORATORY ANALYSIS RESULTS FOR WATER SAMPLES COLLECTED DURING 1996

407 Porter Way, Milton, Pierce County, Washington

E-1570

Boring No.	Collected by	Date Collected	Sample Depth (feet)	TRPH (ppb)	TPH-G (ppb)
SP-1	Columbia	7/10/96	UNK	ND	NT
SP-2	Columbia	7/10/96	UNK	700	130
SP-3	Columbia	7/10/96	3	**45000**	NT
W1[1]	Columbia	7/2/96	0	ND	NT
W2[1]	Columbia	7/2/96	0	ND	NT
Regulatory Criteria				2000 [2]	800/1000 [3]

Notes:

All samples are grab samples collected from either soil borings or from surface water.

Laboratory results stated in parts per billion (ppb);
divide stated results by 1000 to convert to parts per million (ppm).

UNK = Unknown.

ND = Not detected. Laboratory reporting limit unknown.

NT = Not tested.

Concentrations exceeding regulatory criteria are shown in **bold** print.

TPH-G analysis performed using WTPH-G Method; TRPH analyses performed using WTPH-418.1 Method.

Regulatory Criteria: Washington State Model Toxics Control Act Method A Cleanup Levels for Groundwater.

[1] Surface water sample collected from drainage ditch.

[2] No established cleanup level is established for this method; TPH-D and TPH-O cleanup levels are used here for general guidance.

[3] Cleanup level is 1,000 ppb if no benzene is present; otherwise, the cleanup level is 800 ppb.

TABLE 3

LABORATORY ANALYSIS RESULTS FOR SOIL SAMPLES COLLECTED DURING 1997

407 Porter Way, Milton, Pierce County, Washington

E-1570

Boring No.	Drilled by	Depth (feet)	Date Collected	TPH-D (ppm)	TPH-O (ppm)
TP-1	SECOR	6*	3/1/97	117	269
TP-2	SECOR	6*	3/1/97	**747**	**1510**
TP-3	SECOR	6*	3/1/97	**2880**	**6350**
TP-4	SECOR	6*	3/1/97	**665**	**1390**
TP-5	SECOR	6*	3/1/97	715	1030
Regulatory Criteria				2000 [1]	2000 [1]

Notes:

NT = Not tested.

ND = Not detected. Refer to laboratory report for detection limits.

ppm = parts per million.

Concentrations exceeding regulatory criteria are shown in **bold** print.

TPH-D and TPH-O analyses performed using WTPH-Dx Method.

Regulatory Criteria: Washington State Model Toxics Control Act Method A Cleanup Levels.

* Inferred sample depth, read from photocopy of facsimile copy of laboratory analysis report.

[1] Cleanup level applies to the combination of diesel and oil hydrocarbons.

TABLE 4

LABORATORY ANALYSIS RESULTS FOR SOIL SAMPLES COLLECTED DURING 1999

407 Porter Way, Milton, Pierce County, Washington

E-1570

Boring No.	Drilled by	Depth (feet)	Date Collected	TPH-D (ppm)	TPH-O (ppm)
W-1	Saltbush	3.5	3/15/99	150	930
W-2	Saltbush	3.5	3/15/99	49	390
B-1	Saltbush	4	7/22/99	400	410
B-7	Saltbush	6	7/22/99	<25	<100
B-12	Saltbush	2	7/22/99	<25	<100
B-14	Saltbush	6	7/22/99	<25	<100
Regulatory Criteria				2000 [1]	2000 [1]

Notes:

ppm = parts per million.

Where hydrocarbons were not detected, the result is reported as less than the detection limit (i.e., <25).

Concentrations exceeding regulatory criteria are shown in **bold** print.

TPH-D and TPH-O analyses performed using WTPH-Dx Method.

Regulatory Criteria: Washington State Model Toxics Control Act Method A Cleanup Levels.

[1] Cleanup level applies to the combination of diesel and oil hydrocarbons.

TABLE 5

VOLATILE ORGANIC COMPOUNDS AND METALS DETECTED IN SOIL SAMPLE COLLECTED FROM BORING B-1 (1999)

407 Porter Way, Milton, Pierce County, Washington

E-1570

Detected Compound	Detected Concentration (ppm)	Regulatory Criteria (ppm)
1,2-dichlorobenzene	0.275	NE
1,4-dichlorobenzene	0.23	NE
Ethylbenzene	0.91	6
Isopropylbenzene	0.82	NE
p-Isopropylbenzene	3.5	NE
Toluene	0.5	7
1,2,4-trimethylbenzene	10.95	NE
1,3,5-trimethylbenzene	5.15	NE
Xylenes	6.1	9
Barium	29	NE
Chromium (III)	28	2000
Lead	8.0	250

Notes:

ppm = parts per million.
Other target analytes for the analyses performed were not detected; for metals analyses, these included arsenic, cadmium, and mercury.
Concentrations exceeding regulatory criteria are shown in **bold** print.
Volatile organics analysis performed using USEPA Method 8260.
Metals analysis performed using USEPA Methods 6010 and 7470.
Regulatory Criteria: Washington State Model Toxics Control Act Method A Cleanup Levels.

TABLE 6

LABORATORY ANALYSIS RESULTS FOR GROUNDWATER SAMPLES COLLECTED DURING 1999

407 Porter Way, Milton, Pierce County, Washington

E-1570

Boring No.	Date Collected	Top of Casin Elevation[1] (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	TPH-G (ppb)	N-propyl-benzene (ppb)	1,2,4-trimethyl-benzene (ppb)	1,3,5-trimethyl-benzene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	TPH-D (ppb)	TPH-O (ppb)
W-1*	3/15/99	N/A	4	N/A	NT	NT	NT	NT	NT	NT	1600	**12000****
W-2*	3/15/99	N/A	4	N/A	NT	NT	NT	NT	NT	NT	2000	**1600**
MW-1	9/7/99	99.59	3.25	96.34	<250	ND	ND	ND	ND	ND	<250	<1000
	10/14/99		3.37	96.22	NT	NT	NT	NT	NT	NT	NT	NT
MW-2	9/7/99	99.49	3.15	96.34	<250	ND	ND	ND	ND	ND	<250	<1000
	10/14/99		3.42	96.07	NT	NT	NT	NT	NT	NT	NT	NT
MW-3	9/7/99	99.75	3.21	96.54	<250	ND	ND	ND	ND	ND	<250	<1000
	10/14/99		3.30	96.45	NT	NT	NT	NT	NT	NT	NT	NT
MW-4	9/7/99	99.33	2.85	96.48	<250	5	39	11	4***	28	<250	<1000
	10/14/99		2.98	96.35	NT	NT	NT	NT	NT	NT	NT	NT
Regulatory Criteria					800/1000[2]	NE	NE	NE	700	1000	500[3]	500[3]

Notes:

Laboratory results stated in parts per billion (ppb); divide stated results by 1000 to convert to parts per million (ppm).

ND = Not detected. Refer to laboratory report for detection limits.

NT = Not tested.

NE = None established.

Concentrations exceeding regulatory criteria are shown in **bold** print.

TPH-G analysis performed using NWTPH-G Method; TPH-D and TPH-O analyses performed using NWTPH-Dx Method.

Volatile Organic Compounds analysis performed using USEPA Method 8260.

Regulatory Criteria: Washington State Model Toxics Control Act Method A Cleanup Levels for Groundwater.

* Samples W-1 and W-2 were grab samples collected at depths of 4 feet below ground surface from soil borings; no wells were installed.

** Reported quality control data for this sample was significantly out of range.

*** Estimated value, below reporting limit.

[1] Reported surface elevation is relative to a temporary benchmark assigned an elevation of 100.00 feet.

[2] Cleanup level is 1,000 ppb if no benzene is present; otherwise, the cleanup level is 800 ppb.

[3] Cleanup level applies to the combination of diesel and oil hydrocarbons.

TABLE 7

LABORATORY ANALYSIS RESULTS FOR SOIL SAMPLES COLLECTED DURING 2001

407 Porter Way, Milton, Pierce County, Washington

E-1570

Boring No.	Excavated by	Depth (feet)	Date Collected	TPH-G (ppm)	TPH-D (ppm)	TPH-O (ppm)	Lead (ppm)	Chromium (ppm)	Cadmium (ppm)	Arsenic (ppm)
TP-1	LSI-ADAPT	3	6/28/01	<23	<58	100	55	42	<0.58	12
TP-2	LSI-ADAPT	1.5	6/28/01	<22	<54	<110	<5.4	<0.54	<0.54	<11
TP-3	LSI-ADAPT	3	6/28/01	<25	<63	<130	12	25	<0.63	<13
		7	6/28/01	NT	NT	NT	<14	50	<1.4	**43**
TP-4	LSI-ADAPT	2	6/28/01	<22	<56	330	28	32	<0.56	<11
TP-5	LSI-ADAPT	2	6/28/01	<22	<56	380	56	26	<0.56	<11
Regulatory Criteria				100/30 [1]	2000 [2]	2000 [2]	250	2000	2	20

Notes:

ppm = parts per million.
NT = Not tested.
Where hydrocarbons were not detected, the result is reported as less than the detection limit (i.e., <25).
Concentrations exceeding regulatory criteria are shown in **bold** print.
TPH analyses performed using NWTPH-HCID (Hydrocarbon Identification) Method, except where indicated by *.
* = TPH-D and TPH-O analyses performed using WTPH-Dx Method.
Metals analyses performed using
Regulatory Criteria: Washington State Model Toxics Control Act Method A Cleanup Levels.

[1] Cleanup level is 100 ppm if no benzene is present and if total of toluene, ethylbenzene, and xylenes is less than 1% of the gasoline mixture; otherwise, the cleanup level is 30 ppm.

[2] Cleanup level applies to the combination of diesel and oil hydrocarbons.