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SITE CHARACTERIZATION REPORT

Northwest Construction, Inc.
15800 Woodinville-Redmond Rd. N.E.
Woodinville, Washington

NORTHWEST CONSTRUCTION, INC.

ENVIRONMENTAL
ASSOCIATES, INC.

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February 15, 1993 JN 2177

Northwest Construction, Inc.
P.O. Box 1570
Woodinville, Washington 98072-1570

Attention: Mr. John Merlino

Subject: Site Characterization Report
Northwest Construction, Inc.
15800 Woodinville-Redmond Road N.E.
Woodinville, Washington

Dear Mr. Merlino:

This report presents the findings during the removal and closure of the underground storage tank (UST) system located at Northwest Construction, Inc., 15800 Woodinville-Redmond Road, Woodinville, Washington. This document includes the results of the latest site assessment and cleanup activities.

Initial involvement of Environmental Associates, Inc., with this project began with field observation, documentation, and laboratory analysis associated with formal closure of two (2) underground storage tanks on the subject site. This activity was initiated to satisfy requirements imposed under state and federal regulations (Chapter 173-360 WAC/40 CFR 280.72) pertaining to site assessment at the time of closure.

At the time of this writing, approximately 30 cubic yards of petroleum contaminated soil had been over-excavated from the former pump-island area and, following approval by the Bremerton-Kitsap County Health District, were transported to Olympic View Sanitary Landfill. "Clean" confirmation samples were obtained from the UST excavation, and also from the pump-island area after over-excavation of the relatively small amount of contaminated soil. No groundwater was encountered during tank removal or over-excavation of contaminated soil, although a small amount of water was noted seeping from the gravel fill just below the asphalt surface in the vicinity of the former pump island.

We appreciate the opportunity to be of service on this project and trust that the information provided here will be of value in your site management efforts. If you have any questions, please do not hesitate to contact us.

Respectfully Submitted,
ENVIRONMENTAL ASSOCIATES, INC.,

Don W. Spencer, M.Sc., P.G., CEI
President

Registered Site Assessor/Licensed UST Supervisor
Washington Department of Ecology

License: W000010 (Washington)
License: 11464 (Oregon)
License: 876 (California)

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PROJECT DESCRIPTION

The Vicinity Map, Plate 1 appended to this report, illustrates the general location of this project. For purposes of orientation for the reader, the site is located approximately one mile southeast of Woodinville along the east side of Highway 202 Woodinville-Redmond Road).

At this time, the following tasks have been completed at the site:

* Two (2) UST's were "closed" by removal, December 22 and 23, 1992. These tanks contained unleaded gasoline and diesel fuel. Clean-confirmation samples were obtained from the tank-hold areas.

* All UST associated piping was removed December 22 and 23, 1992.

* Approximately 30 cubic yards of contaminated material were over-excavated from the former pump-island area and stockpiled on site for subsequent removal to Olympic View Sanitary Landfill. Clean-confirmation samples were obtained from the pump-island excavation after the removal of the contaminated soil.

* The tank-hold and pump-island areas were backfilled with clean material, following verification that confirmation samples were clean.

METHODOLOGY/SCOPE OF WORK

Objectives

Objectives for the project completed to date included:

1. Photo documentation of the condition of the UST's along with soil and groundwater appearance in the tank excavation and piping/pump island excavations.

2. Identification of contaminated soils and groundwater (where applicable) during excavation activities using "field screening" techniques including visual indications, odors, and use of reagent tube detector (Gastec Sensidyne) measurements.

3. Sampling of soils during excavation for "confirmation" laboratory analysis in accordance with WDOE guidelines.

5. Preparation of a report summarizing the tank closure, site exploration, and remediation activities completed to date.

Agency Notification

In compliance with Chapter 173-360-385 WAC, a letter of notification of intent to close two tanks on the subject site was forwarded to the Washington Department of Ecology (WDOE) by Environmental Associates, Inc. on behalf of the owner on October 15, 1992 (at least 30 days prior to commencement of the closure activity).

Tank Excavation

On December 22 and 23, 1992, two (2) UST's were "conditioned" and removed from the site. The tanks were each of single wall, coated steel construction, and were removed from a single excavation (please refer to Plate 2). The tanks included the following:

Tank #	Size (gal)	Contents
T-1	10,000	unleaded gasoline
T-2	10,000	diesel fuel

It is our understanding that both tanks were installed in 1978.

The tank removal was performed using a track-hoe operated by Northwest Construction, Inc. Prior to beginning the closure effort, the tanks were conditioned in a manner consistent with guidelines for such work provided in API Recommended Practice 1604 (Removal and Disposal of Underground Petroleum Storage Tanks), and API Publication 2015. Prior to removal, the oxygen concentration within the tanks was verified by Environmental Associates, Inc. to be in the non-explosive range, to ensure that the potential for explosion was eliminated.

Excavation Sampling

Soil

With respect to details of soil sampling, following current Washington Department of Ecology (WDOE) guidelines (Guidance for Site Checks and Site Assessments for UST's, February, 1991, Publication 90-52, and July 1991, Publication 91-30), we obtained the following confirmation samples (see Plate 2, Site Exploration Plan) in an effort to ensure that no contaminated soils were present in the tank-hold excavation and that over-excavation of contaminated soils was achieved in the fuel-pump island\piping run areas:

* Three samples from the vicinity of the diesel tank (one from beneath the tank and two from the excavation walls).
* Three samples from the vicinity of the unleaded gasoline tank (one from beneath the tank and two from the excavation walls).
* Two samples from the pump island/piping areas.
* Four composite samples from stockpiled soil excavated from the tank-hold and pump-island areas.

Samples were placed in sterilized glass jars with teflon-sealed lids furnished by the project laboratory. Samples were stored in an iced chest at or below four (4) degrees centigrade at the site and taken to the laboratory in this condition in an effort to preserve sample integrity. Each jar was clearly labeled as to sampling location, time of sampling, sampling person, project number, etc. EPA-recommended protocol for sample management, including maintenance of chain-of-custody documentation, was observed during the course of the project.

Groundwater in Tank Excavation Area

As mentioned earlier in this report, no groundwater was encountered during UST or associated piping removal. A small amount of water was noted in the former pump-island area seeping from a layer of gravel immediately below the surface asphalt, however it quickly slowed and stopped prior to the accumulation of any appreciable amount. These small amounts of water were not thought to be significant enough to sample.

Excavation of Contaminated Soils

Following tank removal, the tank-hold area was observed for signs of a release of petroleum hydrocarbons. No evidence of a release was observed, and confirmation samples for laboratory analysis were obtained. After verification by the project laboratory that the confirmation samples were clean, the tank-hold excavation was backfilled with clean fill material.

Following over-excavation of contaminated soils in the tank-hold area, the pump-island piping/distribution lines were removed. At the time of removal of the piping, strong petroleum hydrocarbon odors were noted emanating from the pump island area. A decision was made at this juncture of the project to explore the pump island and piping areas with a track-hoe in an attempt to over-excavate and remove contaminated soils. After removal of the contaminated soils until clean soils were encountered, confirmation samples were obtained. After verification by the project laboratory that the samples were clean, the area was backfilled with clean fill material.

Laboratory Analysis

According to Mr. John Merlino of Northwest Construction, Inc., and also to WDOE records, petroleum products stored in the two UST's which were removed had included unleaded gasoline and diesel fuel. Analytical methodology responsive to this situation therefore consisted of the following:

Unleaded Gasoline

Tanks T-1 reportedly stored unleaded gasoline. Soil samples collected from beneath the tank and along sidewalls near the tank were analyzed by gas chromatography (GC) in accordance with WTPH-Gasoline along with results for benzene, toluene, ethylbenzene, and total xylenes (BTEX).

Diesel Fuel

Tank T-2 reportedly stored diesel fuel. Soil samples collected from beneath the tank and along sidewalls near the tank were analyzed by GC in accordance with method WTPH-Diesel.

Soil samples collected for confirmation analysis in the pump island and piping areas were analyzed by GC in accordance with WTPH-Diesel, and WTPH-Gasoline along with results for BTEX.

The methods described above were intended to provide a basis for comparison of site soil quality to guideline allowable residual hydrocarbon concentrations at UST sites published in the Model Toxics Control Act (MTCA), Chapter 173-340 WAC.

RESULTS OF CLOSURE INVESTIGATION

Surface

The subject Northwest Construction, Inc. facility is located at 15800 Woodinville-Redmond Road N.E., Woodinville, Washington. The site is bounded on the west by Burlington Northern Railroad Tracks, and beyond, the Woodinville-Redmond Road. Woodinville Lumber lies to the north, and east of the site is open pasture land, and beyond, the Sammamish River. To the south lies a warehouse/office structure and parking lot. The general location of the property is illustrated in the Vicinity Map, Plate 1 appended herewith.

The ground surface over much of the subject site is generally level and covered by asphalt pavement. Buildings on the site include a modern wood frame office building to the north of the tank area, and two separate concrete warehouse buildings east of the tank area, one used for storage and maintenance for Northwest Construction and the other for classic car storage and maintenance.

A small east-west surface drainage was noted along the south property boundary as shown on Plate 2 appended to this report. Based upon inference from surface topography and local drainage patterns, shallow-seated groundwater in the vicinity of the subject property may flow toward the east-northeast.

Observations During Tank/Piping Removal

Excavation to remove the tanks proceeded on December 22, 1992. Prior to removal, it was verified that the oxygen level inside the tanks reached the recommended "safe" level, i.e., oxygen had been displaced.

Soil stratigraphy at the site was found to be nearly horizontal and consists generally of 3 to 4 feet of fill material overlying 2 to 3 feet of silty-clay. At the base of the silty-clay layer lies a unit of medium-dense silty-sand which extends to the maximum depth explored during excavation work (approximately 10 feet).

As noted earlier in this report, no significant amount of groundwater was seen during excavation of the UST system. Small seeps were noted emanating from gravel immediately underlying the surface asphalt, and some small "pockets" of pooled water were noted in areas surrounding the UST's where concrete "anchors" had been used, apparently for control of buoyant forces associated with the tanks.

The two UST's were constructed of single wall steel. The tanks appeared to be in "good" condition upon removal from the excavation, and a review prior to removal from the site revealed no holes. Upon removal of the UST's from the ground, no evidence of a release was apparent.

Contaminated soils were discovered in the vicinity of the fuel-pump island during piping removal. A release was first evident in the form of strong petroleum hydrocarbon odors below the former pump island. Over-excavation of approximately 30 cubic yards of contaminated soil was accomplished, and clean confirmation samples were obtained from the pump-island area after removal of the soil.

The contaminated soils were segregated from clean soils, as determined using field screening methods, and stockpiled on an impermeable liner on site. Composite samples were then obtained for laboratory analysis to verify the types and levels of contamination. The contaminated-soil stockpile was then covered with a visqueen liner and, following approval by the Bremerton-Kitsap County Health Department, the soil was transported to Olympic View Sanitary Landfill on February 8, 1993.

Hydrocarbon Analysis

Soil

During the excavation activities, our field engineer "screened" excavated soils to delineate petroleum-affected soils from "clean" soils. A reagent-tube detector (Gastec Sensidyne) was utilized to test excavated material. The field screening technique consisted of placing a soil sample in a plastic bag and measuring vapor concentration in the headspace of the plastic bag. Laboratory confirmation of clean and contaminated soils was later accomplished.

As noted earlier, soil samples were collected from the sides of the tank-hold excavation and beneath each tank, as well as directly beneath the distribution pump areas and associated piping. WDOE Guidance Publication 90-52, section 5.2.2 provides the sampling requirements for confirmation analysis at UST sites.

In compliance with this WDOE guideline and at the request of Northwest Construction, Inc., a total of 12 samples were sent to the project laboratory for analysis.

Table A appended to this report provides a summary of the results of confirmation soil sampling on the property, including location and depth of the samples presented for analysis. Plate 2 appended to this report graphically documents sampling locations in support of the table.

CONCLUSIONS

Soil

The results presented in Table A suggest that residual concentrations of petroleum hydrocarbons in all samples submitted for "confirmation" of cleaned areas are below detection limits, and well within the Cleanup Guidelines published in the Model Toxics Control Act (MTCA), Chapter 173-340 WAC. Referring to Plate 2, field observations along with sampling and analysis of selected confirmation soil samples obtained thus far suggest that the excavation area shaded in Plate 2 has been satisfactorily over-excavated to remove contaminated soils from this area.

LIMITATIONS

This report has been prepared for the exclusive use of Northwest Construction, Inc., 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. 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. We accept no responsibility or liability for independent interpretations or opinions formulated by reviewers of this document.

We appreciate the opportunity to be of service on this interesting project and trust that the information provided here will be of value in management and planning efforts. If you have any questions or if we may be of further service, please do not hesitate to contact us.

Respectfully submitted,
ENVIRONMENTAL ASSOCIATES, INC.

James R. Ruef
Environmental Geologist

Don W. Spencer, M.Sc., P.G., CEI
President

Registered Site Assessor/Licensed UST Supervisor
Washington Department of Ecology

cc: Mr. Joe Hickey, WDOE
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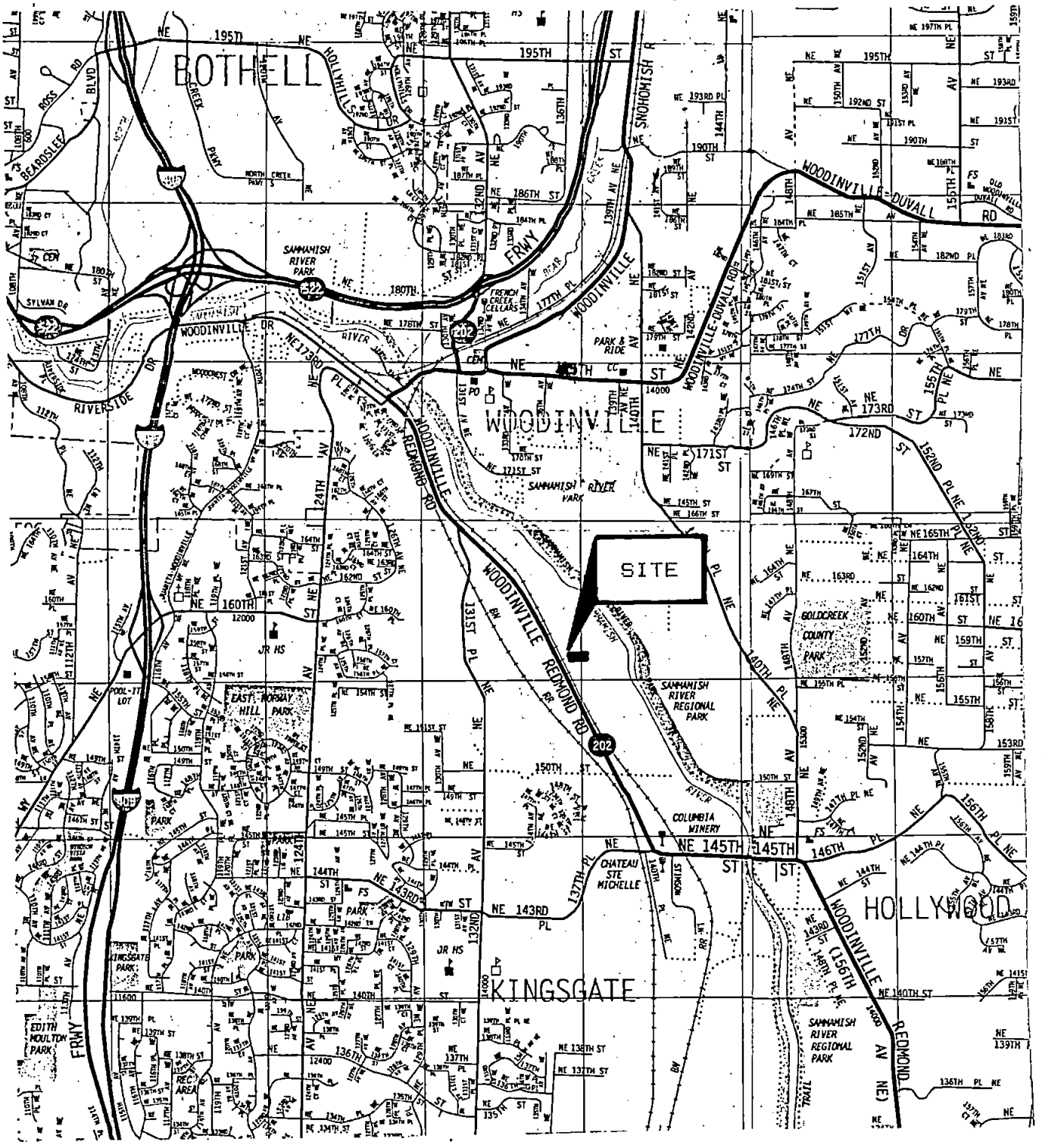
TABLE 4 - RESULTS OF LABORATORY TESTING
Northwest Construction, Inc.
15800 Woodinville-Redmond Road N.E.
Woodinville, Washington

SAMPLE NUMBER	LOCATION/DEPTH	SAMPLE TYPE	WTPH-D (ppm)	WTPH-G (ppm)	BENZENE (ppb)	TOLUENE (ppb)	ETHYLBENZENE (ppb)	TOTAL XYLENES (ppb)
1	Below Diesel Tk. @ 10 ft.	Soil	< 25	NA	NA	NA	NA	NA
2	N. Wall - Diesel Tk @ 8 ft.	Soil	< 25	NA	NA	NA	NA	NA
3	Comp. - S. & E. Walls @ 6 ft.	Soil	< 25	NA	NA	NA	NA	NA
4	Below Gas Tk. @ 10 ft.	Soil	NA	< 5	< 50	< 50	< 50	< 50
5	N. Wall - Gas Tk. @ 7 ft.	Soil	NA	< 5	< 50	< 50	< 50	< 50
6	Comp. - S. & W. Walls @ 6 ft.	Soil	NA	< 5	< 50	< 50	< 50	< 50
7	Below Pump Island @ 6 ft.	Soil	< 25	< 5	< 50	< 50	< 50	< 50
8	Comp. - Pump Isl. Walls @ 4 ft.	Soil	< 25	< 5	< 50	< 50	< 50	< 50
9	Comp. - "Clean" Soil Stockpile	Soil	< 25	< 5	< 50	< 50	< 50	< 50
10	Comp. - "Contam." Soil Stockpile	Soil	1,700	170	< 50	< 50	110	490
11	Comp. - "Contam." Soil Stockpile	Soil	210	60	< 50	< 50	< 50	< 50
12	Comp. - "Contam." Soil Stockpile	Soil	1,100	210	< 50	< 50	< 50	57J
	MTCA CLEANUP LEVELS		200	100	500	40,000	20,000	20,000

NOTES:

(ppm) denotes parts per million
(ppb) denotes parts per billion
Clearup guidelines are published in the Model Toxics Control Act (MTCA), Chapter 173-340 WAC.
J = Value indicated was below the practical Quantitation limit. The value is an estimate.



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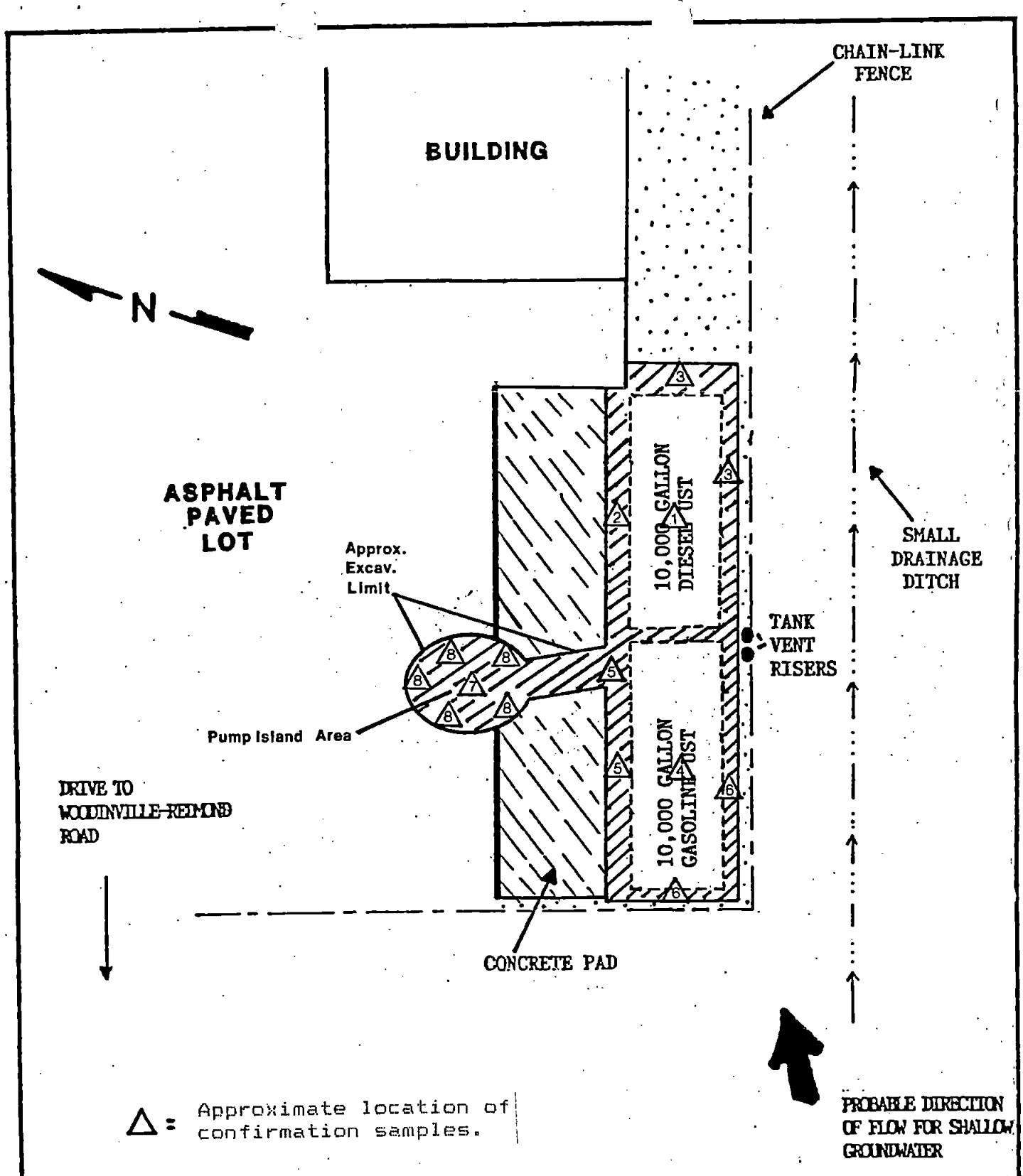
VICINITY MAP

NORTHWEST CONSTRUCTION, INC.
15800 WOODINVILLE-REDMOND RD. N.E.
WOODINVILLE, WASHINGTON

Job No:	Date:		Plate
2177	DEC 92		1



△ = Approximate location of confirmation samples.

ENVIRONMENTAL ASSOCIATES, INC.

SITE EXPLORATION MAP
NORTHWEST CONSTRUCTION, INC.
15800 WOODINVILLE-REDMOND RD. N.E.
WOODINVILLE, WASHINGTON

Job No:	Date:		Plate
2177	DEC 92		2

View looking west at UST's prior to removal from ground.

View looking west at tank-hold area after removal of UST's.

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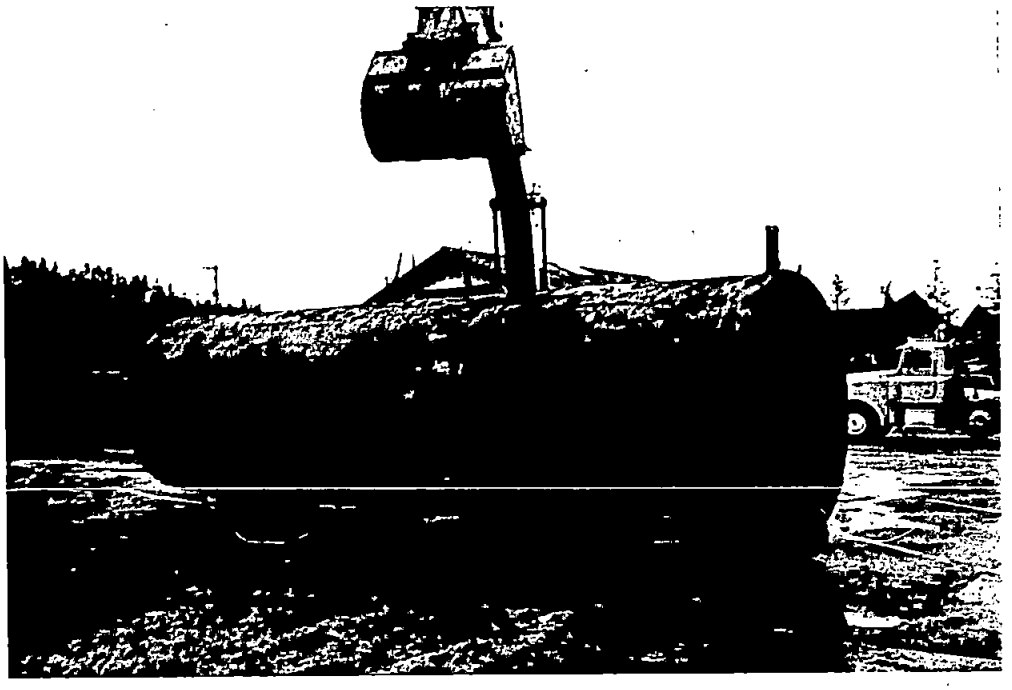
SITE PHOTOS

Job No:	Date:		Plate
2177	DEC 92		3



Tank T-2 (diesel) after removal from ground.

Tank T-1 (unleaded gasoline) during removal from ground.

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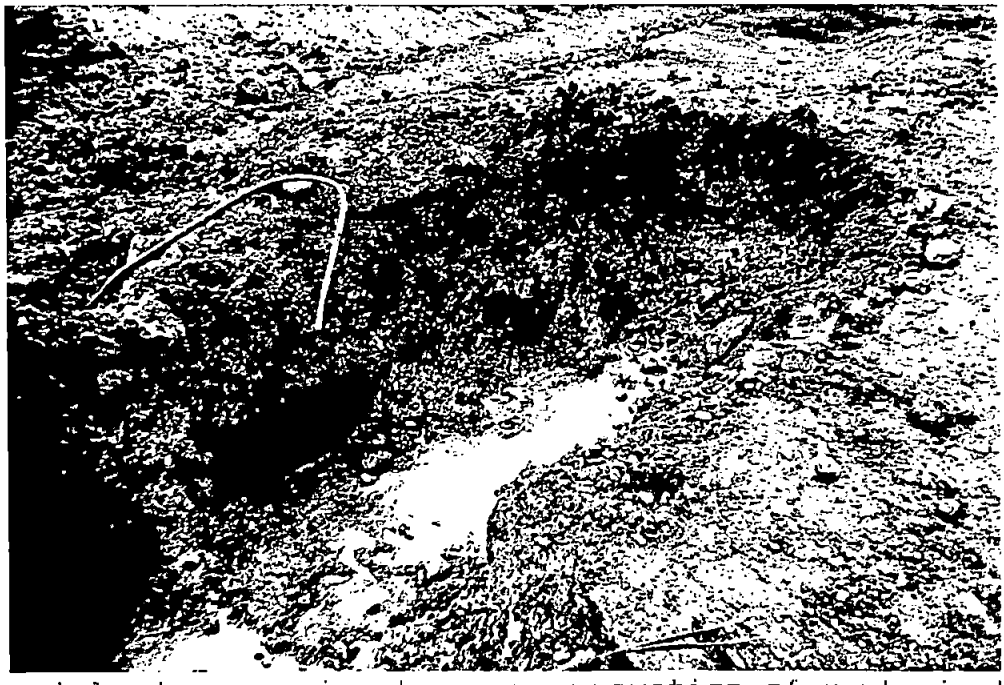
SITE PHOTOS

Job No:	Date:		Plate
2177	DEC 92		4

Tank T-2 (diesel) after preparation for transport.



Pump-island area prior to over-excavation of contaminated soil. Note small amount of water which seeped from gravel layer directly below asphalt.

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SITE PHOTOS

Job No:	Date:		Plate
2177	DEC 92		5