



Department of Energy

0030614
9306661

Richland Field Office

P.O. Box 550

Richland, Washington 99352

AUG 16 1993

93-RPS-242



Mr. David C. Nylander
Kennewick Manager
Nuclear and Mixed Waste Program
State of Washington
Department of Ecology
7601 West Clearwater, Suite 102
Kennewick, Washington 99336

Dear Mr. Nylander:

SITE ASSESSMENT CHECKLIST AND REPORT FOR UNDERGROUND STORAGE TANK (UST)
3000-12 REMOVAL

Enclosed are the completed site assessment checklist and report for the UST 3000-12, removed from the 3000 Area on April 2, 1993, per the Washington Administrative Code 173-360-210. The report was prepared per the State of Washington Department of Ecology (Ecology) "Guidance for Site Checks and Site Assessment for Underground Storage Tanks," (October 1992).

Tank 3000-12 contained used oil and had been in temporary closure since May 28, 1992. Assessment of the site after the tank removal indicated petroleum contamination probably from spills and overfills. The assessment was completed on April 28, 1993, when the sample results indicated petroleum contamination in the soil. Your office was notified within 24 hours of the spill by the Occurrence Notification Center. A Final Characterization Report is being prepared and will be submitted to your office.

If you have any questions or require additional information, please call Ms. Annabelle L. Rodriguez on 372-0277.

Sincerely,

Robert G. Holt

Robert G. Holt, Acting Program Manager
Office of Environmental Assurance,
Permits, and Policy

EAP:ALR

Enclosure

- cc w/o encl:
- R. Stanley, Ecology
- J. Phillips, Ecology, w/original
- M. Mihalic, WHC
- T. Wintczak, WHC
- B. Dixon, KEH



UST 3000-12 SITE ASSESSMENT REPORT

UST Site Owner:	U.S. Dept of Energy, Richland Field Office
Owners Address:	825 Jadwin, P.O. Box 550, Richland, WA 99352
Site ID Number:	012763
UST ID Number:	3000-12
Date Removed:	April 2, 1993
Site Assessment Complete:	April 28, 1993



UNDERGROUND STORAGE TANK Site Check/Site Assessment Checklist

For Office Use Only

Owner # _____

Site # _____

INSTRUCTIONS:

When a release has not been confirmed and reported, this Site Check/Site Assessment Checklist must be completed and signed by a person registered with Ecology. The results of the site check or site assessment must be included with this checklist. This form must be submitted to Ecology at the address shown below within 30 days after completion of the site check/site assessment.

SITE INFORMATION: Include the Ecology site ID number if the tanks are registered with Ecology. This number may be found on the tank owner's invoice or tank permit.

TANK INFORMATION: Please list all tanks for which the site check or site assessment is being conducted. Use the owner's tank ID numbers if available, and indicate tank capacity and substance stored.

REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT: Please check the appropriate item.

CHECKLIST: Please initial each item in the appropriate box.

SITE ASSESSOR INFORMATION: This form must be signed by the registered site assessor who is responsible for conducting the site check/site assessment.

Underground Storage Tank Section
Department of Ecology
P. O. Box 47655
Olympia, WA 98504-7655

SITE INFORMATION

Site ID Number (on invoice or available from Ecology if the tanks are registered): 012763

Site/Business Name: U.S. Department of Energy

Site Address: 825 Jadwin Telephone: (509) 376-7387

Street

Richland
CityWA
State99352-0550
ZIP-Code

TANK INFORMATION

Tank ID No.	Tank Capacity	Substance Stored
3000-12	1000 gal	Used Oil

REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT

Check one:

- Investigate suspected release due to on-site environmental contamination
 Investigate suspected release due to off-site environmental contamination.
 Extend temporary closure of UST system for more than 12 months.
 UST system undergoing change-in-service.
 UST system permanently closed-in-place.
 UST system permanently closed with tank removed.
 Abandoned tank containing product.
 Required by Ecology or delegated agency for UST system closed before 12/22/88.
 Other (describe): _____

CHECKLIST

Each item of the following checklist shall be initialed by the person registered with the Department of Ecology whose signature appears below.

	YES	NO
1. The location of the UST site is shown on a vicinity map.	DB	
2. A brief summary of information obtained during the site inspection is provided. (see Section 3.2 in site assessment guidance)	DB	
3. A summary of UST system data is provided. (see Section 3.1)	DB	
4. The soils characteristics at the UST site are described. (see Section 5.2)	DB	
5. Is there any apparent groundwater in the tank excavation?		DB
6. A brief description of the surrounding land use is provided. (see Section 3.1)	DB	
7. Information has been provided indicating the number and types of samples collected, methods used to collect and analyze the samples, and the name and address of the laboratory used to perform the analyses.	DB	
8. A sketch or sketches showing the following items is provided:		
- location and ID number for all field samples collected	DB	
- groundwater samples distinguished from soil samples (if applicable)		n.a.
- samples collected from stockpiled excavated soil	DB	
- tank and piping locations and limits of excavation pit	DB	
- adjacent structures and streets	DB	
- approximate locations of any on-site and nearby utilities	DB	
9. If sampling procedures different from those specified in the guidance were used, has justification for using these alternative sampling procedures been provided? (see Section 3.4)	DB	
10. A table is provided showing laboratory results for each sample collected including; sample ID number, constituents analyzed for and corresponding concentration, analytical method and detection limit for that method.	DB	
11. Any factors that may have compromised the quality of the data or validity of the results are described.	DB	
12. The results of this site check/site assessment indicate that a confirmed release of a regulated substance has not occurred.		DB

SITE ASSESSOR INFORMATION

David B. Blumenkranz

Westinghouse Hanford Company

Person registered with Ecology

Firm Affiliated with

Business Address: P.O. Box 1970

Telephone: (509) 376-7411

Richland
Street

WA

99352

City

State

ZIP+Code

I hereby certify that I have been in responsible charge of performing the site check/site assessment described above. Persons submitting false information are subject to penalties under Chapter 173.360 WAC.

May 28, 1993

Date



Signature of Person Registered with Ecology

This report has been prepared using the latest site check/site assessment checklist (pages SA2-3) from the Washington State Department of Ecology (Ecology 1992a). The numbered items correspond to each question in the site assessment checklist and incorporates several references from the document "Guidance for Site Checks and Site Assessments for Underground Storage Tanks" (Ecology 1992b).

1.0) The location of the UST site is shown on a vicinity map.

The following maps are provided to assist in determining the location of the UST site and its physical characteristics:

Figure 1: Hanford Site Map (Page SA5)

Figure 2: 3000 Area (Page SA6)

Figure 3: 1226 Building and the 3000-12 UST Location (Page SA7)

The system was used to support operations in the 3000 Area (Operable Unit 1100-EM-3) of the Hanford Site. It was located in the southeastern portion of the 3000 Area where it supported activities of a nearby maintenance shop.

2.0) A brief summary of information obtained during the site inspection is provided. (Section 3.2 of the site assessment guidance offers the following data items)

- **Visually inspect for surface indications of a release (pavement patching, pump islands, storm drains, fill boxes or containment areas).**

A visual inspection of the surface soils under the fill funnel indicated the existence of petroleum contamination. The soil under the funnel was lightly stained from probable spills and overfills during waste oil insertion into the tank.

- **Locate and verify above and below-ground components of tank and piping systems are as shown on available plans.**

No plans or drawings were available for the system. Operator interviews determined the tank did not have any piping since it was filled using a funnel permanently attached to the fill opening. The top of the tank was at grade level.

- **Confirm fill status of tank(s).**

The tank contained a heal of oil sludge.

Figure 1: Hanford Site Map

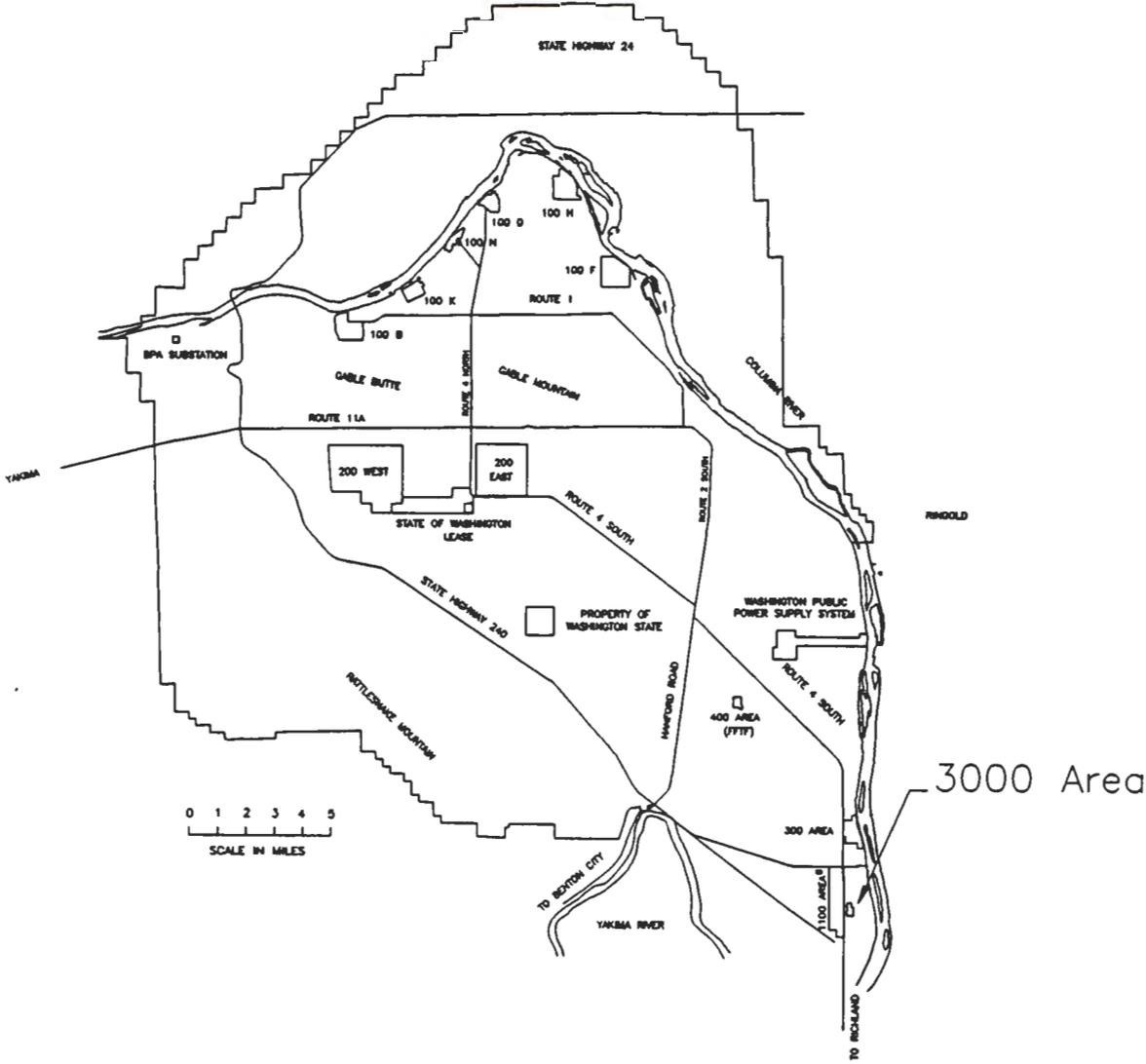


Figure 2: 3000 Area

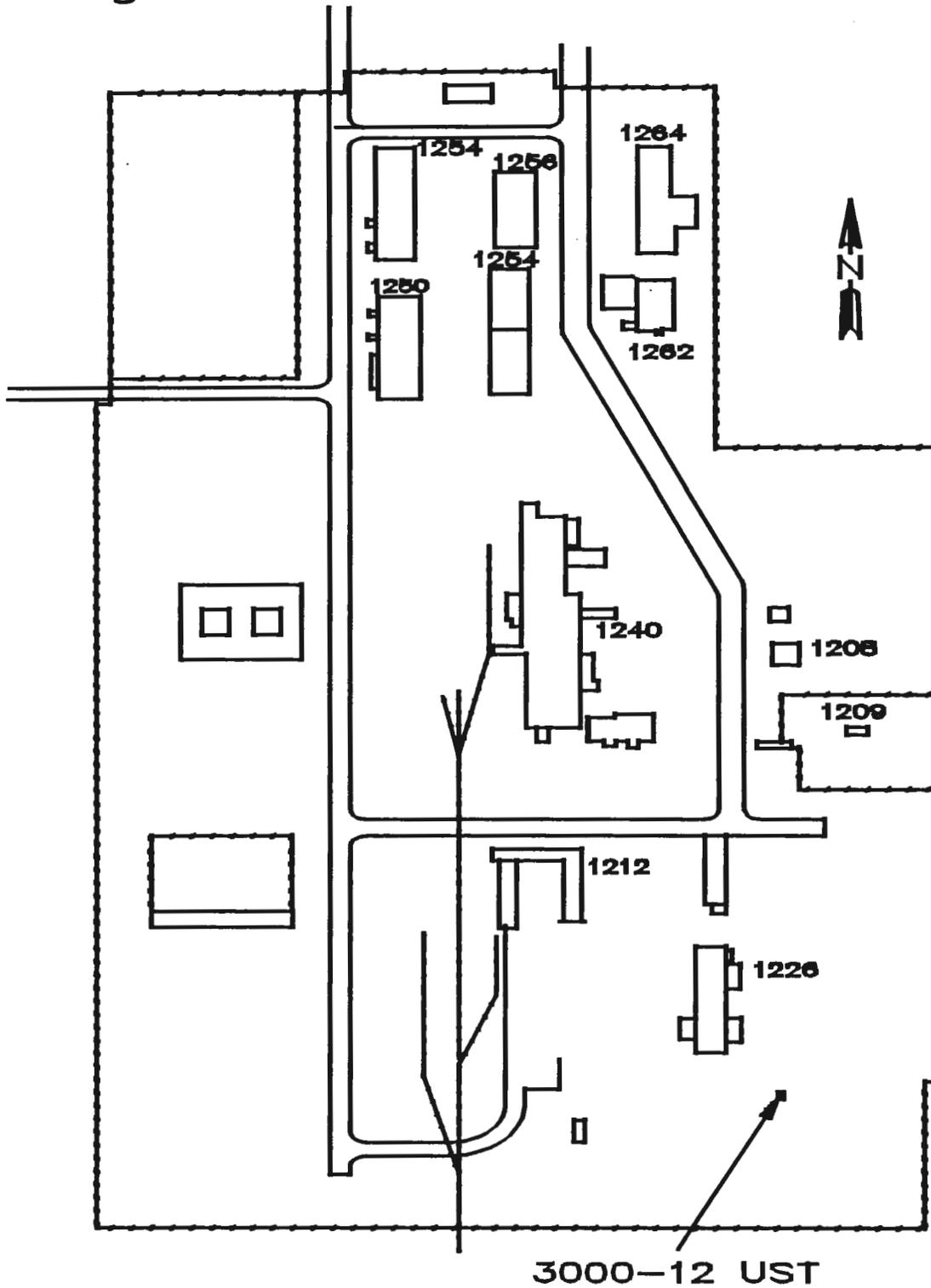
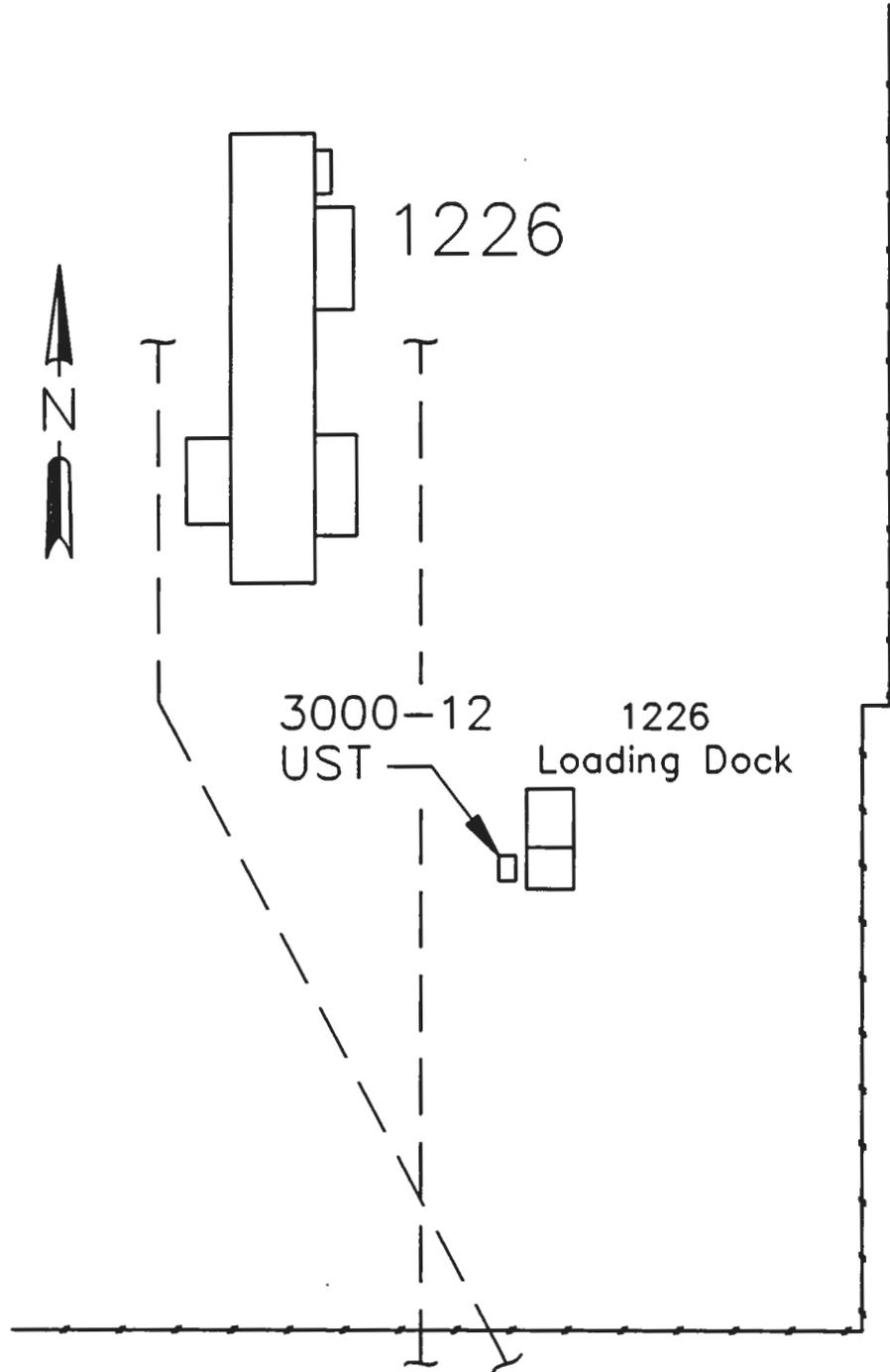


Figure 3: 1226 Building and
and 3000-12 UST Location



- **Determine tank size - If tank system specifications are not available, estimate tank size (measure tank height through vent for fill pipe).**

The tank is 65 inches in diameter and 75 inches in length for a capacity of approximately 1000 gallons.

- **Inspect site for above-ground utilities (such as power lines), and look for surface indications of below-ground utilities**

No above or below ground utilities were found. According to site plans and interviews, the closest underground utility (sanitary water) is more than 25 feet away as seen in Figure 3.

3.0) **A summary of UST system data is provided. (Section 3.1 of the site assessment guidance offers the following data items)**

- **Date of installation and name of installer.**

Installation was completed in ~1983 by the J.A. Jones Company.

- **Dates of use and current status.**

The tank was used from 1983 until the tank entered temporary closure in May of 1992. The temporary closure period extended from May 1992 until April 2, 1993. The 30 Day Notice of Intent to Close/Decommission Tanks was submitted with an anticipated closure date of March 29, 1993. The tank was excavated and removed on April 2, 1993 with closure activities continuing such as cleaning and rinsing the tank.

- **Number of tanks, location, capacity, dimensions, age, and material of construction of existing UST system(s), including fill pipes, vent piping, pumps, valves, distribution piping and flex connectors.**

Underground storage tank plans or drawings were not available for this tank. Information presented here was obtained during operator interviews and the site assessment. The 3000-12 UST system consisted of one STI_{p3} (™) cathodically protected steel tank and no piping. The top of the tank was at grade with a 12" square funnel permanently attached to a 4" diameter fill opening for oil insertion, a 24" diameter manway and a vent line. The tank inlet funnel was capped and locked. The manway had a ½ inch thick bolted steel plate cover. The location of the tank can be seen in Figures 5 and 6 (Pages SA16 and SA18, respectively).

- **Numbers and location of any previously removed USTs.**

3000-1,2,3,4 750' NW
3000-7,8,9,10,11,13 3600' NNW
3000-5,6 600' WNW

- **Types of substances stored in UST (current and historical).**

3000-12 was used for the disposal of used oils and lubricants generated from the vehicle maintenance activities in the 1226 building. Prior to removal, a sludge analysis did show the presence of small amounts of chlorinated aromatic hydrocarbons and heavy metals associated with wear particles in engines and transmissions.

- **Depth, width, and type of bedding/backfill materials used to surround the tank(s) and piping.**

The tank was bedded in silty-sand, designated "SM" by the Unified Soil Classification System. This backfill extended past the limits of the excavation.

- **Types and locations of leak detections systems, secondary containment systems, and groundwater monitoring wells located on site.**

The 3000-12 single shell UST system did not yet require leak detection (required by 12/22/93 per WAC 173-360) and did not have any systems in place. Figure 4 (Page SA10) shows monitor well locations in the immediate area. This drawing was produced in 1989 and may not reflect current groundwater levels due to the mounding effects of the recharge basins located nearby. The recharge basins and other groundwater related items are discussed on page SA12.

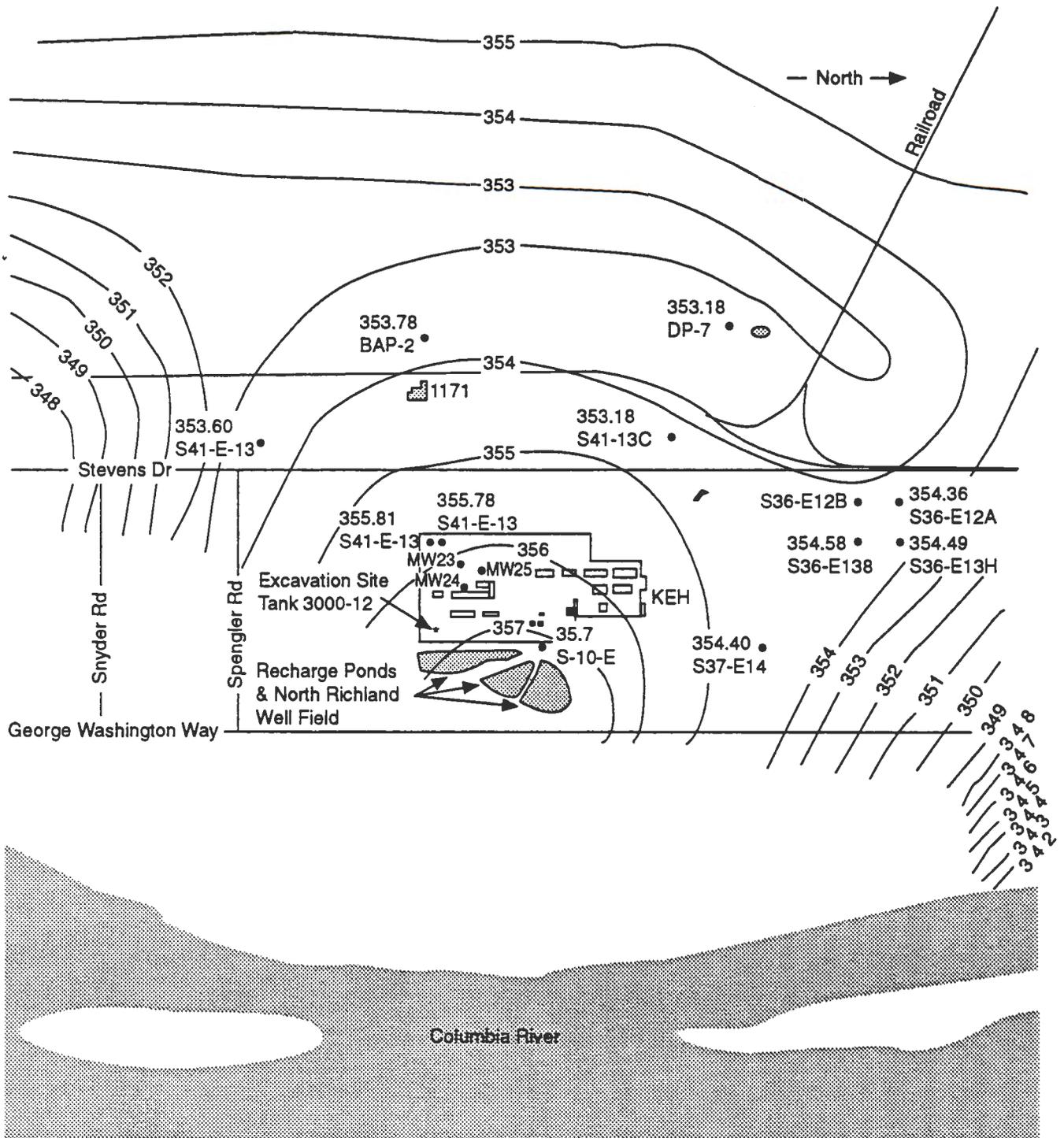
- **Location of any hold-down pads or deadman anchoring systems.**

There were no hold-down pads or deadman anchoring systems associated with this tank.

- **History of compliance and performance:**

Installation date: ~1983
Period of use: 1983 - 1992
Temporary closure: 5/92 - 4/93
30 day NOI to close: 2/24/93
Removal date: 4/2/93

Figure 4: Water Table and Monitor Well Locations at the 3000 Area



- **Status of regulatory compliance.**

The tank has been in temporary closure since May 1992.

- **Repair records.**

No repairs have been made to this tank.

- **Current permits, including permit issue dates.**

The 1991-1992 operating permit was returned to Ecology when the tank was placed in temporary closure per WAC 173-360-380(6).

- **Previous known leaks (type, volume or leak rate, and date) and:**

The UST did not have any known leaks.

- **Inventory records**

Used oil was placed in the tank without the use of a metering device. Oil was periodically removed for recycling purposes.

- **Tightness testing records**

The tank was scheduled to start release detection by 12/22/93. Therefore, no records have been generated for tightness testing.

- **Records of water pumpouts from tanks**

The UST system records do not indicate water intrusion.

- **Records of neighbors complaints**

None

- **Records of fire department inspections**

None

- 4.0) The soils characteristics at the UST site are described. (Section 5.2.1 *Soils Characterization*, of the site assessment guidance states:)

"For Ecology to adequately review site assessment reports, qualitative descriptions of the surface gradient and soils at the UST site need to be provided. To ensure that all site assessment reports use consistent language for characterizing soils, the terminology shown in the United Soil Classification System (Table 5.1) shall be used. Contaminant fate and transport is determined by soil characteristics and can influence the selection of sampling locations."

Section 3.1 of the site assessment guidance document offers the following data items:

- Soil types and characteristics.

The native soils in this area are coarse grained Pasco gravels of the upper Hanford formation, a Quaternary age, glacio-fluvial flood deposit (WHC 1992). This soil would be classified as "GM, silty gravels, gravel-sand-silt mixtures" as designated by the Unified Soil Classification System. The Hanford formation in the vicinity of the 3000 area is estimated to be approximately 50 feet thick and is in disconformable contact with sands and gravels of the upper Ringold Formation (RL 1989).

- Depth to groundwater, including seasonal fluctuations.

Groundwater in the 3000 Area occurs in an unconfined aquifer approximately 50 to 60 feet below ground surface. The unconfined aquifer exhibits high permeability, particularly in the Pasco gravels (WHC 1992). Studies conducted at the 3000 Area estimate maximum groundwater flow velocity at 170 feet/year (RL 1989).

The groundwater flow direction is complicated by the groundwater mounding resulting from the city of Richland's well field and recharge basins. When the basins are active and mounding occurs, this introduces a reversing or stalling westward component to the natural west to east flow direction. Normal groundwater flow is also effected by spacial differences in the hydraulic conductivity of the unconfined aquifer and variations in river stage (WHC 1992).

- **Potential hydraulic connections between groundwater and nearby surface water.**

Several subsurface water and sewer lines exist in the 3000 area which are serviced by the City of Richland. These lines are shown leaving the 3000 Area as depicted on Figure 3 (Page SA7). These possible contamination routes are above the mounding effects of the recharge basins which eventually flow into the Columbia River, approximately 1 mile east of the site.

5.0) **Is there any apparent groundwater in the tank excavation?**

No.

6.0) **A brief description of the surrounding land use if provided. (Section 3.1 of the site assessment guidance offers the following data)**

- **Property line locations.**

The 3000-12 UST was located in the 3000 Area, within the 1100-EM-3 Operable Unit. The 3000 Area is part of the Hanford Site which is largely an industrial area. Refer to Figure 1 for details of the Hanford Site boundaries.

- **Distances from tank(s) to nearby structures.**

The UST system was located approximately 5' west of the loading dock associated with the 1226 maintenance shop. The maintenance shop is approximately 150' northwest of the loading dock as seen in Figure 3 (Page SA7).

- **Type and location of below-ground utility lines such as water, sewer, electric, telephone and gas service lines.**

There is a sanitary water line approximately 25' west of the UST system and a sanitary sewer line approximately 150' west of the UST system as seen on Figure 3 (Page SA7).

- **Location of paved areas.**

The tank was located in a graveled parking lot/loading dock area. The nearest paved area is the 1226 maintenance shop driveway approximately 100 yards north.

7.0) Information has been provided indicating the number and types of samples collected (7.1), methods used to collect and analyze the samples (7.2), and the name and address of the laboratory used to perform the analyses (7.3).

7.1) Information has been provided indicating the number and types of samples collected.

7 soil samples:

Sample ID	Sample Location
B08C91	Far Spoils Pile, SW of Tank
B08C92	Near Spoils Pile, SW of Tank
B08C93	Spoils Pile, N of Tank
B08C94	East Side of Tank Cradle
B08C95	Center of Tank Cradle
B08C96	West Side of Tank Cradle
B08C97	Center of Tank Cradle, Duplicate of B08C95

- 7.2) Information has been provided indicating the methods used to collect and analyze the samples.

All sampling was done in accordance with procedures in the Westinghouse Hanford Company Control Manual 7-7 (WHC-CM-7-7), Environmental Investigation Instruction 5.2, "Soil and Sediment Sampling." Sample analyses, analytical methods, containers, preservation techniques, and holding times are listed below.

Analysis	Analytical Methods	Container Volume	Preservation	Holding Time
TPH	WTPH-418.1	G 250 ml	4 °C	14 days
TCLP (Benzene & Lead)	EPA 1311 EPA 8020 EPA 6010	G 250 ml	4 °C	14 days
PCB's	EPA 8080	G 250 ml	4 °C	7 days
Total Lead	EPA 7421	G 250 ml	4 °C	6 months
VOA by GC/MS	EPA 8240	G 250 ml	4 °C	14 days
Total Activity	LA-548-111 LA-508-121	P 1 gram	none	ASAP

G = Glass Container

P = Plastic (polyethylene) Container

- 7.3) Information has been provided indicating the name and address of the laboratory used to perform the analyses.

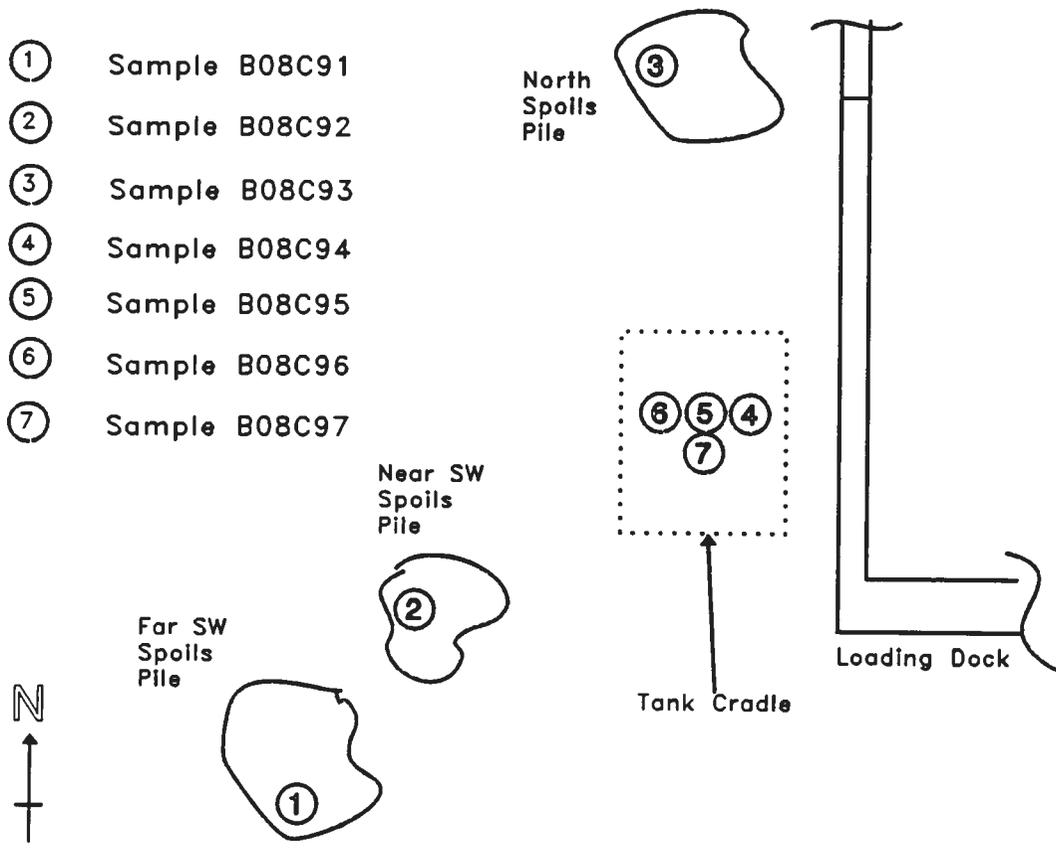
Sound Analytical, 4813 Pacific Highway East, Tacoma, WA 98424

- 8.0) A sketch or sketches showing the following items is provided:

- 8.1) Location and ID number for all field samples collected.

Figure 5: 3000-12 Spoils and Samples (Page SA16)

Figure 5: 3000-12 Spoils and Samples



- 8.2) **Groundwater samples distinguished from soil samples (if applicable).**

Not applicable.

- 8.3) **Samples collected from stockpiled excavated soil.**

Figure 5: 3000-12 Spoils and Samples (Page SA16)

- 8.4) **Tank and piping locations and limits of excavation pit.**

Figure 6: 3000-12 Excavation (Page SA18)

- 8.5) **Adjacent structures and streets.**

Figure 2: 3000 Area (Page SA6)

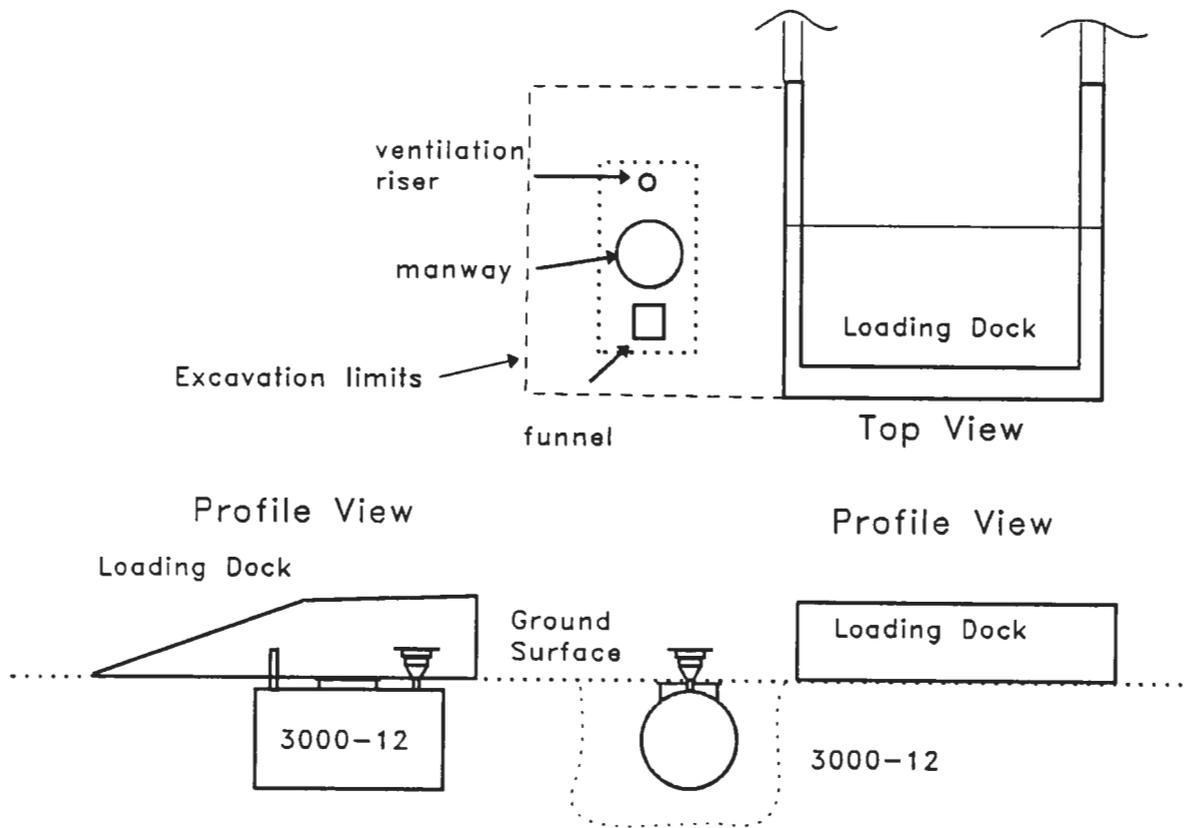
- 8.6) **Approximate locations of any on-site and nearby utilities.**

Figure 3: 1226 Building and the 3000-12 UST Location (Page SA7)

- 9.0) **If sampling procedures different from those specified in the guidance were used, has justification for using these alternative sampling procedures been provided? (Section 3.4 in the site assessment guidelines)** Justification of adequate sampling must be made for technical reasons, not economic. The site assessor must demonstrate the alternative sampling procedures are equally as likely to determine if a release from the UST system has occurred as the sampling procedure specified in the guidance.

Sampling was done in accordance with site assessment guidelines.

Figure 6: 3000-12 Excavation



- 10.0) A table is provided showing laboratory results for each sample collected including; sample ID number, constituents analyzed for and corresponding concentration, analytical method and detection limit for that method.

Appendix A: "Raw Sample Data" contains the raw data for each sample in table form. This data was provided by Sound Analytical Services, Inc., who provided the sample analysis services.

- 11.0) Any factors that may have compromised the quality of the data or validity of the results are described.

No factors were apparent that may have compromised the quality or validity of the data and results.

- 12.0) The results of this site check/site assessment indicate that a confirmed release of a regulated substance has not occurred.

The field conditions and near perfect condition of the tank (installation instructions were easily read) indicate that overfills and spills of used oil have occurred during the operating life of this tank. Discolored soil was found in the tank cradle leading down from the funnel. The sample of this segregated soil (B08C94) had a 2400ppm concentration of heavy petroleum oils (C24+). This soil failed the TCLP test as defined in the dangerous waste regulations (WAC 173-303) and was designated as a "problem waste". Further investigations did not locate the extent of the contamination plume so a 90 day report will be prepared describing these efforts.

REFERENCES

- Ecology, 1992a, *UNDERGROUND STORAGE TANK Site Check/Site Assessment Checklist*, Form ECY 010-158, October 1992, Washington Department of Ecology, Olympia, Washington.
- Ecology, 1992b, *Guidance for Site Checks and Site Assessments for Underground Storage Tanks*, February 1991; Revised October 1992, Washington State Department of Ecology, Olympia, Washington.
- RL, 1989, *Remedial Investigation/Feasibility Study Work Plan for the 1100-EM-1 Operable Unit, Hanford Site, Richland, Washington*, DOE/RL-88-23, U.S. Department of Energy, Field Office, Richland, Washington.
- WHC, 1992, *Year End Report for 3000 Area Underground Storage Tanks*, WHC-SD-EN-TI-064 Rev. 0, September 30, 1992, Westinghouse Hanford Company, Richland, Washington.

APPENDIX A: RAW SAMPLE DATA

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4811 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 • TELEPHONE (206)922-2110 • FAX (206)922-5067

Report To: Westinghouse Hanford

Date: April 19, 1993

Report On: Analysis of Soil

Lab No.: 31237

Page 1 of 35

IDENTIFICATION:

Samples Received on 04-06-93

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

ANALYSIS:

Lab Sample No. 31237-1

Client ID: B08C91

Volatile Organics Per EPA Method 8240

Date Extracted: 4-11-93

Date Analyzed: 4-11-93

Compound	Concentration ug/kg	PQL	Flag
Chloromethane	ND	400	
Bromomethane	ND	400	
Vinyl Chloride	ND	400	
Chloroethane	ND	400	
Methylene Chloride	1,000	200	B1
Acetone	120	2,000	B1, J
Carbon Disulfide	ND	200	
1,1-Dichloroethene	ND	200	
1,1-Dichloroethane	ND	200	
1,2-Dichloroethene (Total)	ND	200	
Chloroform	ND	200	
1,2-Dichloroethane	ND	200	
2-Butanone	ND	1,000	
1,1,1-Trichloroethane	ND	200	
Carbon Tetrachloride	ND	200	
Vinyl Acetate	ND	1,000	
Bromodichloromethane	ND	200	
1,2-Dichloropropane	ND	200	
Cis-1,3-Dichloropropene	ND	200	
Trichloroethene	ND	200	
Dibromochloromethane	ND	200	
1,1,2-Trichloroethane	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

Page 2 of 35

Lab No. 31237

April 19, 1993

Lab Sample No. 31237-1

Client ID: B08C91

8240 Continued . . .

Compound	Concentration ug/kg	PQL	Flag
Benzene	ND	200	
Trans-1,3-Dichloropropene	ND	200	
Bromoform	ND	200	
4-Methyl-2-Pentanone	ND	1,000	
2-Hexanone	ND	200	
Tetrachloroethene	ND	200	
1,1,2,2-Tetrachloroethane	ND	200	
Toluene	ND	200	
Chlorobenzene	ND	200	
Ethyl Benzene	ND	200	
Styrene	ND	200	
Total Xylenes	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	103	88 - 110	81 - 117
Bromofluorobenzene	94	86 - 115	74 - 121
1,2-Dichloroethane-D4	84	76 - 114	70 - 121

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

Page 3 of 35

Lab No. 31237

April 19, 1993

Lab Sample No. 31237-1

Client ID: B08C91

Toxicity Characteristic Leaching Procedure (TCLP) Method 1311

Volatile Organics per EPA SW-846 Method 8240

Date Extracted: 4-12-93

Date Analyzed: 4-15-93

Compound	Concentration (mg/l)	PQL (mg/l)	Max. Conc. (mg/l)	Flags
Benzene	ND	0.005	0.5	

Volatile Surrogates

Surrogate	Percent Recovery	Control Limits
Toluene - D8	106	88 - 110
Bromofluorobenzene	96	86 - 115
1,2-Dichloroethane D4	93	76 - 114

Toxicity Characteristic Leaching Procedure (TCLP) Method 1311

ICP Metals by EPA Method 6010

Date Extracted: 4-12-93

Date Analyzed: 4-14-93

<u>Contaminant</u>	<u>Concentration (mg/l)</u>	<u>PQL</u>	<u>Max Conc., (mg/l)</u>
Lead	ND	0.05	5.0

PQL - Practical Quantitation Limit

ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford
 Project: SAF #93-094 3000-12 Underground Storage Tank Removal
 Page 4 of 35
 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237-1

Client ID: B08C91

PCB'S Per EPA Method 8080

Date Extracted: 4-8-93

Date Analyzed: 4-8-93

<u>PCB Compounds</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Aroclor 1016	ND	0.1
Aroclor 1221	ND	0.1
Aroclor 1232	ND	0.1
Aroclor 1242	ND	0.1
Aroclor 1248	ND	0.1
Aroclor 1254	ND	0.1
Aroclor 1260	ND	0.1

SURROGATE RECOVERY, %

2,4,5,6-Tetrachloro-m-xylene	110
Decachlorobiphenyl	111

PQL - Practical Quantitation Limit
 ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford
 Project: SAF #93-094 3000-12 Underground Storage Tank Removal
 Page 5 of 35
 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237-1

Client ID: B08C91

WTPH-418.1 Modified
 Date Extracted: 4-12-93
 Date Analyzed: 4-13-93

<u>Parameter</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Heavy petroleum oils (C24+)	140	100

ICP Metals Per EPA Method 6010
 Date Digested: 4-8-93
 Date Analyzed: 4-9-93

<u>Parameter</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Lead	6.0	1.1

PQL - Practical Quantitation Limit
 ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-2

Client ID: 808C92

Volatile Organics Per EPA Method 8240

Date Extracted: 4-11-93

Date Analyzed: 4-11-93

Compound	Concentration ug/kg	PQL	Flag
Chloromethane	ND	400	
Bromomethane	ND	400	
Vinyl Chloride	ND	400	
Chloroethane	ND	400	
Methylene Chloride	1,100	200	B1
Acetone	130	2,000	B1, J
Carbon Disulfide	ND	200	
1,1-Dichloroethene	ND	200	
1,1-Dichloroethane	ND	200	
1,2-Dichloroethene (Total)	ND	200	
Chloroform	ND	200	
1,2-Dichloroethane	ND	200	
2-Butanone	ND	1,000	
1,1,1-Trichloroethane	ND	200	
Carbon Tetrachloride	ND	200	
Vinyl Acetate	ND	1,000	
Bromodichloromethane	ND	200	
1,2-Dichloropropane	ND	200	
Cis-1,3-Dichloropropene	ND	200	
Trichloroethene	ND	200	
Dibromochloromethane	ND	200	
1,1,2-Trichloroethane	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-2

Client ID: B08C92

8240 Continued . . .

Compound	Concentration ug/kg	PQL	Flag
Benzene	ND	200	
Trans-1,3-Dichloropropene	ND	200	
Bromoform	ND	200	
4-Methyl-2-Pentanone	ND	1,000	
2-Hexanone	ND	200	
Tetrachloroethene	ND	200	
1,1,2,2-Tetrachloroethane	ND	200	
Toluene	ND	200	
Chlorobenzene	ND	200	
Ethyl Benzene	ND	200	
Styrene	ND	200	
Total Xylenes	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	103	88 - 110	81 - 117
Bromofluorobenzene	97	86 - 115	74 - 121
1,2-Dichloroethane-D4	81	76 - 114	70 - 121

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford
 Project: SAF #93-094 3000-12 Underground Storage Tank Removal
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 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237-2

Client ID: B08C92

Toxicity Characteristic Leaching Procedure (TCLP) Method 1311
 Volatile Organics per EPA SW-846 Method 8240
 Date Extracted: 4-12-93
 Date Analyzed: 4-15-93

Compound	Concentration (mg/l)	PQL (mg/l)	Max. Conc. (mg/l)	Flags
Benzene	ND	0.005	0.5	

Volatile Surrogates

Surrogate	Percent Recovery	Control Limits
Toluene - D8	98	88 - 110
Bromofluorobenzene	95	86 - 115
1,2-Dichloroethane D4	97	76 - 114

Toxicity Characteristic Leaching Procedure (TCLP) Method 1311
 ICP Metals by EPA Method 6010
 Date Extracted: 4-12-93
 Date Analyzed: 4-14-93

<u>Contaminant</u>	<u>Concentration (mg/l)</u>	<u>PQL</u>	<u>Max Conc., (mg/l)</u>
Lead	ND	0.05	5.0

PQL - Practical Quantitation Limit
 ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford
 Project: SAF #93-094 3000-12 Underground Storage Tank Removal
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 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237-2

Client ID: B08C92

PCB'S Per EPA Method 8080
 Date Extracted: 4-8-93
 Date Analyzed: 4-8-93

<u>PCB Compounds</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Aroclor 1016	ND	0.1
Aroclor 1221	ND	0.1
Aroclor 1232	ND	0.1
Aroclor 1242	ND	0.1
Aroclor 1248	ND	0.1
Aroclor 1254	ND	0.1
Aroclor 1260	ND	0.1

SURROGATE RECOVERY, %

2,4,5,6-Tetrachloro-m-xylene	112
Decachlorobiphenyl	118

PQL - Practical Quantitation Limit
 ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-2

Client ID: B08C92

WTPH-418.1 Modified
Date Extracted: 4-12-93
Date Analyzed: 4-13-93

<u>Parameter</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Heavy petroleum oils (C24+)	ND	100

ICP Metals Per EPA Method 6010
Date Digested: 4-8-93
Date Analyzed: 4-9-93

<u>Parameter</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Lead	5.1	1.2

PQL - Practical Quantitation Limit
ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford
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 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237-3

Client ID: B08C93

Volatile Organics Per EPA Method 8240

Date Extracted: 4-11-93

Date Analyzed: 4-11-93

Compound	Concentration ug/kg	PQL	Flag
Chloromethane	ND	400	
Bromomethane	ND	400	
Vinyl Chloride	ND	400	
Chloroethane	ND	400	
Methylene Chloride	950	200	B1
Acetone	77	2,000	B1, J
Carbon Disulfide	ND	200	
1,1-Dichloroethene	ND	200	
1,1-Dichloroethane	ND	200	
1,2-Dichloroethene (Total)	ND	200	
Chloroform	ND	200	
1,2-Dichloroethane	ND	200	
2-Butanone	ND	1,000	
1,1,1-Trichloroethane	ND	200	
Carbon Tetrachloride	ND	200	
Vinyl Acetate	ND	1,000	
Bromodichloromethane	ND	200	
1,2-Dichloropropane	ND	200	
Cis-1,3-Dichloropropene	ND	200	
Trichloroethene	ND	200	
Dibromochloromethane	ND	200	
1,1,2-Trichloroethane	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

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 Project: SAF #93-094 3000-12 Underground Storage Tank Removal
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 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237-3

Client ID: B08C93

8240 Continued . . .

Compound	Concentration ug/kg	PQL	Flag
Benzene	ND	200	
Trans-1,3-Dichloropropene	ND	200	
Bromoform	ND	200	
4-Methyl-2-Pentanone	ND	1,000	
2-Hexanone	ND	200	
Tetrachloroethene	ND	200	
1,1,2,2-Tetrachloroethane	ND	200	
Toluene	ND	200	
Chlorobenzene	ND	200	
Ethyl Benzene	ND	200	
Styrene	ND	200	
Total Xylenes	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	100	88 - 110	81 - 117
Bromofluorobenzene	96	86 - 115	74 - 121
1,2-Dichloroethane-D4	84	76 - 114	70 - 121

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-3

Client ID: B08C93

Toxicity Characteristic Leaching Procedure (TCLP) Method 1311

Volatile Organics per EPA SW-846 Method 8240

Date Extracted: 4-12-93

Date Analyzed: 4-15-93

Compound	Concentration (mg/l)	PQL (mg/l)	Max. Conc. (mg/l)	Flags
Benzene	ND	0.005	0.5	

Volatile Surrogates

Surrogate	Percent Recovery	Control Limits
Toluene - D8	98	88 - 110
Bromofluorobenzene	89	86 - 115
1,2-Dichloroethane D4	101	76 - 114

Toxicity Characteristic Leaching Procedure (TCLP) Method 1311

ICP Metals by EPA Method 6010

Date Extracted: 4-12-93

Date Analyzed: 4-14-93

<u>Contaminant</u>	<u>Concentration (mg/l)</u>	<u>PQL</u>	<u>Max Conc., (mg/l)</u>
Lead	ND	0.05	5.0

PQL - Practical Quantitation Limit

ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-3

Client ID: B08C93

PCB'S Per EPA Method 8080

Date Extracted: 4-8-93

Date Analyzed: 4-8-93

<u>PCB Compounds</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Aroclor 1016	ND	0.1
Aroclor 1221	ND	0.1
Aroclor 1232	ND	0.1
Aroclor 1242	ND	0.1
Aroclor 1248	ND	0.1
Aroclor 1254	ND	0.1
Aroclor 1260	ND	0.1

SURROGATE RECOVERY, %

2,4,5,6-Tetrachloro-m-xylene	112
Decachlorobiphenyl	118

PQL - Practical Quantitation Limit

ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-3

Client ID: B08C93

WTPH-418.1 Modified

Date Extracted: 4-12-93

Date Analyzed: 4-13-93

<u>Parameter</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Heavy petroleum oils (C24+)	ND	100

ICP Metals Per EPA Method 6010

Date Digested: 4-8-93

Date Analyzed: 4-9-93

<u>Parameter</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Lead	3.8	1.1

PQL - Practical Quantitation Limit

ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford
 Project: SAF #93-094 3000-12 Underground Storage Tank Removal
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 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237-4

Client ID: B08C94

Volatile Organics Per EPA Method 8240

Date Extracted: 4-11-93

Date Analyzed: 4-11-93

Compound	Concentration ug/kg	PQL	Flag
Chloromethane	ND	400	
Bromomethane	ND	400	
Vinyl Chloride	ND	400	
Chloroethane	ND	400	
Methylene Chloride	1,000	200	B1
Acetone	74	2,000	B1, J
Carbon Disulfide	ND	200	
1,1-Dichloroethene	ND	200	
1,1-Dichloroethane	ND	200	
1,2-Dichloroethene (Total)	ND	200	
Chloroform	ND	200	
1,2-Dichloroethane	ND	200	
2-Butanone	ND	1,000	
1,1,1-Trichloroethane	ND	200	
Carbon Tetrachloride	ND	200	
Vinyl Acetate	ND	1,000	
Bromodichloromethane	ND	200	
1,2-Dichloropropane	ND	200	
Cis-1,3-Dichloropropene	ND	200	
Trichloroethene	ND	200	
Dibromochloromethane	ND	200	
1,1,2-Trichloroethane	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-4

Client ID: B08C94

8240 Continued . . .

Compound	Concentration ug/kg	PQL	Flag
Benzene	ND	200	
Trans-1,3-Dichloropropene	ND	200	
Bromoform	ND	200	
4-Methyl-2-Pentanone	ND	1,000	
2-Hexanone	ND	200	
Tetrachloroethene	ND	200	
1,1,2,2-Tetrachloroethane	ND	200	
Toluene	ND	200	
Chlorobenzene	ND	200	
Ethyl Benzene	ND	200	
Styrene	ND	200	
Total Xylenes	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	102	88 - 110	81 - 117
Bromofluorobenzene	95	86 - 115	74 - 121
1,2-Dichloroethane-D4	82	76 - 114	70 - 121

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-4

Client ID: B08C94

Toxicity Characteristic Leaching Procedure (TCLP) Method 1311
Volatile Organics per EPA SW-846 Method 8240

Date Extracted: 4-12-93

Date Analyzed: 4-15-93

Compound	Concentration (mg/l)	PQL (mg/l)	Max. Conc. (mg/l)	Flags
Benzene	ND	0.005	0.5	

Volatile Surrogates

Surrogate	Percent Recovery	Control Limits
Toluene - D8	97	88 - 110
Bromofluorobenzene	99	86 - 115
1,2-Dichloroethane D4	104	76 - 114

Toxicity Characteristic Leaching Procedure (TCLP) Method 1311
ICP Metals by EPA Method 6010

Date Extracted: 4-12-93

Date Analyzed: 4-14-93

<u>Contaminant</u>	<u>Concentration (mg/l)</u>	<u>PQL</u>	<u>Max Conc., (mg/l)</u>
Lead	ND	0.05	5.0

PQL - Practical Quantitation Limit

ND - Not Detected

Continued

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford
 Project: SAF #93-094 3000-12 Underground Storage Tank Removal
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 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237-4

Client ID: B08C94

PCB'S Per EPA Method 8080
 Date Extracted: 4-8-93
 Date Analyzed: 4-8-93

<u>PCB Compounds</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Aroclor 1016	ND	0.1
Aroclor 1221	ND	0.1
Aroclor 1232	ND	0.1
Aroclor 1242	ND	0.1
Aroclor 1248	ND	0.1
Aroclor 1254	ND	0.1
Aroclor 1260	ND	0.1

SURROGATE RECOVERY, %

2,4,5,6-Tetrachloro-m-xylene	109
Decachlorobiphenyl	118

PQL - Practical Quantitation Limit
 ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford
 Project: SAF #93-094 3000-12 Underground Storage Tank Removal
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 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237-4

Client ID: B08C94

WTPH-418.1 Modified
 Date Extracted: 4-12-93
 Date Analyzed: 4-13-93

<u>Parameter</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Heavy petroleum oils (C24+)	2,400	100

ICP Metals Per EPA Method 6010
 Date Digested: 4-8-93
 Date Analyzed: 4-9-93

<u>Parameter</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Lead	3.7	1.1

PQL - Practical Quantitation Limit
 ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-5

Client ID: B08C95

Volatile Organics Per EPA Method 8240

Date Extracted: 4-11-93

Date Analyzed: 4-11-93

Compound	Concentration ug/kg	PQL	Flag
Chloromethane	ND	400	
Bromomethane	ND	400	
Vinyl Chloride	ND	400	
Chloroethane	ND	400	
Methylene Chloride	1,000	200	B1
Acetone	93	2,000	B1, J
Carbon Disulfide	ND	200	
1,1-Dichloroethene	ND	200	
1,1-Dichloroethane	ND	200	
1,2-Dichloroethene (Total)	ND	200	
Chloroform	ND	200	
1,2-Dichloroethane	ND	200	
2-Butanone	ND	1,000	
1,1,1-Trichloroethane	ND	200	
Carbon Tetrachloride	ND	200	
Vinyl Acetate	ND	1,000	
Bromodichloromethane	ND	200	
1,2-Dichloropropane	ND	200	
Cis-1,3-Dichloropropene	ND	200	
Trichloroethene	ND	200	
Dibromochloromethane	ND	200	
1,1,2-Trichloroethane	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-5

Client ID: B08C95

8240 Continued . . .

Compound	Concentration ug/kg	PQL	Flag
Benzene	ND	200	
Trans-1,3-Dichloropropene	ND	200	
Bromoform	ND	200	
4-Methyl-2-Pentanone	ND	1,000	
2-Hexanone	ND	200	
Tetrachloroethene	ND	200	
1,1,2,2-Tetrachloroethane	ND	200	
Toluene	ND	200	
Chlorobenzene	ND	200	
Ethyl Benzene	ND	200	
Styrene	ND	200	
Total Xylenes	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	103	88 - 110	81 - 117
Bromofluorobenzene	98	86 - 115	74 - 121
1,2-Dichloroethane-D4	83	76 - 114	70 - 121

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

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 Project: SAF #93-094 3000-12 Underground Storage Tank Removal
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 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237-5

Client ID: B08C95

Toxicity Characteristic Leaching Procedure (TCLP) Method 1311
 Volatile Organics per EPA SW-846 Method 8240

Date Extracted: 4-12-93

Date Analyzed: 4-15-93

Compound	Concentration (mg/l)	PQL (mg/l)	Max. Conc. (mg/l)	Flags
Benzene	ND	0.005	0.5	

Volatile Surrogates

Surrogate	Percent Recovery	Control Limits
Toluene - D8	100	88 - 110
Bromofluorobenzene	99	86 - 115
1,2-Dichloroethane D4	106	76 - 114

Toxicity Characteristic Leaching Procedure (TCLP) Method 1311
 ICP Metals by EPA Method 6010

Date Extracted: 4-12-93

Date Analyzed: 4-14-93

<u>Contaminant</u>	<u>Concentration (mg/l)</u>	<u>PQL</u>	<u>Max Conc., (mg/l)</u>
Lead	ND	0.05	5.0

PQL - Practical Quantitation Limit
 ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-5

Client ID: B08C95

PCB'S Per EPA Method 8080

Date Extracted: 4-8-93

Date Analyzed: 4-8-93

<u>PCB Compounds</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Aroclor 1016	ND	0.1
Aroclor 1221	ND	0.1
Aroclor 1232	ND	0.1
Aroclor 1242	ND	0.1
Aroclor 1248	ND	0.1
Aroclor 1254	ND	0.1
Aroclor 1260	ND	0.1

SURROGATE RECOVERY, %

2,4,5,6-Tetrachloro-m-xylene	109
Decachlorobiphenyl	121

PQL - Practical Quantitation Limit

ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

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 Project: SAF #93-094 3000-12 Underground Storage Tank Removal
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 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237-5

Client ID: B08C95

WTPH-418.1 Modified
 Date Extracted: 4-12-93
 Date Analyzed: 4-13-93

<u>Parameter</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Heavy petroleum oils (C24+)	ND	100

ICP Metals Per EPA Method 6010
 Date Digested: 4-8-93
 Date Analyzed: 4-9-93

<u>Parameter</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Lead	4.0	1.2

PQL - Practical Quantitation Limit
 ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-6

Client ID: B08C96

Volatile Organics Per EPA Method 8240

Date Extracted: 4-12-93

Date Analyzed: 4-12-93

Compound	Concentration ug/kg	PQL	Flag
Chloromethane	ND	400	
Bromomethane	ND	400	
Vinyl Chloride	ND	400	
Chloroethane	ND	400	
Methylene Chloride	290	200	B1
Acetone	ND	2,000	
Carbon Disulfide	ND	200	
1,1-Dichloroethene	ND	200	
1,1-Dichloroethane	ND	200	
1,2-Dichloroethene (Total)	ND	200	
Chloroform	ND	200	
1,2-Dichloroethane	ND	200	
2-Butanone	ND	1,000	
1,1,1-Trichloroethane	ND	200	
Carbon Tetrachloride	ND	200	
Vinyl Acetate	ND	1,000	
Bromodichloromethane	ND	200	
1,2-Dichloropropane	ND	200	
Cis-1,3-Dichloropropene	ND	200	
Trichloroethene	ND	200	
Dibromochloromethane	ND	200	
1,1,2-Trichloroethane	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

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 Project: SAF #93-094 3000-12 Underground Storage Tank Removal
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 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237-6

Client ID: B08C96

8240 Continued . . .

Compound	Concentration ug/kg	PQL	Flag
Benzene	ND	200	
Trans-1,3-Dichloropropene	ND	200	
Bromoform	ND	200	
4-Methyl-2-Pentanone	ND	1,000	
2-Hexanone	ND	200	
Tetrachloroethene	ND	200	
1,1,2,2-Tetrachloroethane	ND	200	
Toluene	ND	200	
Chlorobenzene	ND	200	
Ethyl Benzene	ND	200	
Styrene	ND	200	
Total Xylenes	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	101	88 - 110	81 - 117
Bromofluorobenzene	95	86 - 115	74 - 121
1,2-Dichloroethane-D4	94	76 - 114	70 - 121

Continued . . .

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Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-6

Client ID: B08C96

Toxicity Characteristic Leaching Procedure (TCLP) Method 1311

Volatile Organics per EPA SW-846 Method 8240

Date Extracted: 4-12-93

Date Analyzed: 4-15-93

Compound	Concentration (mg/l)	PQL (mg/l)	Max. Conc. (mg/l)	Flags
Benzene	ND	0.005	0.5	

Volatile Surrogates

Surrogate	Percent Recovery	Control Limits
Toluene - D8	99	88 - 110
Bromofluorobenzene	88	86 - 115
1,2-Dichloroethane D4	108	76 - 114

Toxicity Characteristic Leaching Procedure (TCLP) Method 1311

ICP Metals by EPA Method 6010

Date Extracted: 4-12-93

Date Analyzed: 4-14-93

<u>Contaminant</u>	<u>Concentration (mg/l)</u>	<u>PQL</u>	<u>Max Conc., (mg/l)</u>
Lead	ND	0.05	5.0

PQL - Practical Quantitation Limit

ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-6

Client ID: B08C96

PCB'S Per EPA Method 8080

Date Extracted: 4-8-93

Date Analyzed: 4-8-93

<u>PCB Compounds</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Aroclor 1016	ND	0.1
Aroclor 1221	ND	0.1
Aroclor 1232	ND	0.1
Aroclor 1242	ND	0.1
Aroclor 1248	ND	0.1
Aroclor 1254	ND	0.1
Aroclor 1260	ND	0.1

SURROGATE RECOVERY, †

2,4,5,6-Tetrachloro-m-xylene	113
Decachlorobiphenyl	123

PQL - Practical Quantitation Limit

ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-6

Client ID: B08C96

WTPH-418.1 Modified
Date Extracted: 4-12-93
Date Analyzed: 4-13-93

<u>Parameter</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Heavy petroleum oils (C24+)	ND	100

ICP Metals Per EPA Method 6010
Date Digested: 4-8-93
Date Analyzed: 4-9-93

<u>Parameter</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Lead	3.9	1.2

PQL - Practical Quantitation Limit
ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-7

Client ID: B08C97

Volatile Organics Per EPA Method 8240

Date Extracted: 4-12-93

Date Analyzed: 4-12-93

Compound	Concentration ug/kg	PQL	Flag
Chloromethane	ND	400	
Bromomethane	ND	400	
Vinyl Chloride	ND	400	
Chloroethane	ND	400	
Methylene Chloride	300	200	B1
Acetone	ND	2,000	
Carbon Disulfide	ND	200	
1,1-Dichloroethene	ND	200	
1,1-Dichloroethane	ND	200	
1,2-Dichloroethene (Total)	ND	200	
Chloroform	ND	200	
1,2-Dichloroethane	ND	200	
2-Butanone	ND	1,000	
1,1,1-Trichloroethane	ND	200	
Carbon Tetrachloride	ND	200	
Vinyl Acetate	ND	1,000	
Bromodichloromethane	ND	200	
1,2-Dichloropropane	ND	200	
Cis-1,3-Dichloropropene	ND	200	
Trichloroethene	ND	200	
Dibromochloromethane	ND	200	
1,1,2-Trichloroethane	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford

Project: SAF #93-094 3000-12 Underground Storage Tank Removal

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Lab No. 31237

April 19, 1993

Lab Sample No. 31237-7

Client ID: B08C97

8240 Continued . . .

Compound	Concentration ug/kg	PQL	Flag
Benzene	ND	200	
Trans-1,3-Dichloropropene	ND	200	
Bromoform	ND	200	
4-Methyl-2-Pentanone	ND	1,000	
2-Hexanone	ND	200	
Tetrachloroethene	ND	200	
1,1,2,2-Tetrachloroethane	ND	200	
Toluene	ND	200	
Chlorobenzene	ND	200	
Ethyl Benzene	ND	200	
Styrene	ND	200	
Total Xylenes	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	102	88 - 110	81 - 117
Bromofluorobenzene	96	86 - 115	74 - 121
1,2-Dichloroethane-D4	94	76 - 114	70 - 121

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford
 Project: SAF #93-094 3000-12 Underground Storage Tank Removal
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 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237-7

Client ID: B08C97

Toxicity Characteristic Leaching Procedure (TCLP) Method 1311
 Volatile Organics per EPA SW-846 Method 8240
 Date Extracted: 4-12-93
 Date Analyzed: 4-15-93

Compound	Concentration (mg/l)	PQL (mg/l)	Max. Conc. (mg/l)	Flags
Benzene	ND	0.005	0.5	

Volatile Surrogates

Surrogate	Percent Recovery	Control Limits
Toluene - D8	98	88 - 110
Bromofluorobenzene	96	86 - 115
1,2-Dichloroethane D4	107	76 - 114

Toxicity Characteristic Leaching Procedure (TCLP) Method 1311
 ICP Metals by EPA Method 6010
 Date Extracted: 4-12-93
 Date Analyzed: 4-14-93

<u>Contaminant</u>	<u>Concentration (mg/l)</u>	<u>PQL</u>	<u>Max Conc., (mg/l)</u>
Lead	ND	0.05	5.0

QL - Practical Quantitation Limit
) - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford
 Project: SAF #93-094 3000-12 Underground Storage Tank Removal
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 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237-7

Client ID: B08C97

PCB'S Per EPA Method 8080
 Date Extracted: 4-8-93
 Date Analyzed: 4-8-93

<u>PCB Compounds</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Aroclor 1016	ND	0.1
Aroclor 1221	ND	0.1
Aroclor 1232	ND	0.1
Aroclor 1242	ND	0.1
Aroclor 1248	ND	0.1
Aroclor 1254	ND	0.1
Aroclor 1260	ND	0.1

SURROGATE RECOVERY, †

2,4,5,6-Tetrachloro-m-xylene	112
Decachlorobiphenyl	121

PQL - Practical Quantitation Limit
 ND - Not Detected

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Westinghouse Hanford
 Project: SAF #93-094 3000-12 Underground Storage Tank Removal
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 Lab No. 31237
 April 19, 1993

Lab Sample No. 31237 7

Client ID: B08C97

WTPH-418.1 Modified
 Date Extracted: 4-12-93
 Date Analyzed: 4-13-93

<u>Parameter</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Heavy petroleum oils (C24+)	ND	100

ICP Metals Per EPA Method 6010
 Date Digested: 4-8-93
 Date Analyzed: 4-9-93

<u>Parameter</u>	<u>Concentration, mg/kg</u>	<u>PQL</u>
Lead	3.5	1.2

PQL - Practical Quantitation Limit
 ND - Not Detected

SOUND ANALYTICAL SERVICES


 DENNIS L. BEAN

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 • TELEPHONE (206)922-2310 • FAX (206)922-3047

QUALITY CONTROL REPORT

TCLP Lead

Client: Westinghouse Hanford
Lab No: 31237qcl
Units: mg/L
Date: April 19, 1993

METHOD BLANK

Parameter	Result	PQL
Lead	ND	0.05

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

Total Lead

Client: Westinghouse Hanford
Lab No: 31237qc2
Units: mg/kg
Date: April 19, 1993

METHOD BLANK

Parameter	Result	PQL
Lead	ND	1.3

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4811 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-1110 - FAX (206)922-3067

QUALITY CONTROL REPORT

TCLP VOLATILE ORGANICS PER EPA SW-846 METHOD 8240

Client: Westinghouse Hanford
 Lab No: 31237qc3
 Units: ug/L
 Date: April 19, 1993

METHOD BLANK

Compound	Result	PQL	FLAGS
Benzene	ND	0.005	

ND - Not Detected

PQL - Practical Quantitation Limit

VOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Toluene - d8	96	86 - 115	81 - 117
Bromofluorobenzene	88	76 - 114	74 - 121
1,2-Dichloroethane d4	112	88 - 110	70 - 121

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4513 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98404 • TELEPHONE (206)922-2310 • FAX (206)922-5067

QUALITY CONTROL REPORT

WTPH-418.1
Heavy Petroleum Oils (C24+)

Client: Westinghouse Hanford
Lab No: 31237qc4
Units: mg/kg
Date: April 19, 1993

METHOD BLANK

Parameter	Result	PQL
TPH	ND	100

ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

PCB'S by Method 8080

Client: Westinghouse Hanford
 Lab No: 31237qc5
 Units: mg/kg
 Date: April 19, 1993

METHOD BLANK

Compound	Result	PQL
Aroclor 1016	ND	0.1
Aroclor 1221	ND	0.1
Aroclor 1232	ND	0.1
Aroclor 1242	ND	0.1
Aroclor 1248	ND	0.1
Aroclor 1254	ND	0.1
Aroclor 1260	ND	0.1
<u>SURROGATE RECOVERY</u>		
2,4,5,6-TCMX	110	
Decachlorobiphenyl	106	

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-3310 - FAX (206)922-3047

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 1 of 2

Client: Westinghouse Hanford
 Lab No: 31237qc6
 Units: ug/kg
 Date: April 19, 1993
 Blank No:
 Date Analyzed: 4-11-93

METHOD BLANK

Compound	Result	PQL	Flags
Chloromethane	ND	400	
Bromomethane	ND	400	
Vinyl Chloride	ND	400	
Chloroethane	ND	400	
Methylene Chloride	1,100	200	
Acetone	71	2,000	J
Carbon Disulfide	ND	200	
1,1-Dichloroethene	ND	200	
1,1-Dichloroethane	ND	200	
1,2-Dichloroethene (Total)	ND	200	
Chloroform	ND	200	
1,2-Dichloroethane	ND	200	
2-Butanone	ND	1,000	
1,1,1-Trichloroethane	ND	200	
Carbon Tetrachloride	ND	200	
Vinyl Acetate	ND	1,000	
Bromodichloromethane	ND	200	
1,2-Dichloropropane	ND	200	
Cis-1,3-Dichloropropene	ND	200	
Trichloroethene	ND	200	
Dibromochloromethane	ND	200	
1,1,2-Trichloroethane	ND	200	
Benzene	ND	200	
Trans-1,3-Dichloropropene	ND	200	
Bromoform	ND	200	
4-Methyl-2-Pentanone	ND	1,000	
2-Hexanone	ND	200	
Tetrachloroethene	ND	200	
1,1,2,2-Tetrachloroethane	ND	200	
Toluene	ND	200	
Chlorobenzene	ND	200	
Ethyl Benzene	ND	200	
Styrene	ND	200	
Total Xylenes	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 2 of 2

Client: Westinghouse Hanford
Lab No: 31237qc6
Date: April 19, 1993
Blank No:
Date Analyzed: 4-11-93

VOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Toluene - d8	105	86 - 115	81 - 117
Bromofluorobenzene	92	76 - 114	74 - 121
1,2-Dichloroethane d4	86	88 - 110	70 - 121

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

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QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 1 of 2

Client: Westinghouse Hanford
 Lab No: 31237qc7
 Units: ug/kg
 Date: April 19, 1993
 Blank No: V9765
 Date Analyzed: 4-12-93

METHOD BLANK

Compound	Result	PQL	Flags
Chloromethane	ND	400	
Bromomethane	ND	400	
Vinyl Chloride	ND	400	
Chloroethane	ND	400	
Methylene Chloride	780	200	
Acetone	130	2,000	J
Carbon Disulfide	ND	200	
1,1-Dichloroethene	ND	200	
1,1-Dichloroethane	ND	200	
1,2-Dichloroethene (Total)	ND	200	
Chloroform	ND	200	
1,2-Dichloroethane	ND	200	
2-Butanone	ND	1,000	
1,1,1-Trichloroethane	ND	200	
Carbon Tetrachloride	ND	200	
Vinyl Acetate	ND	1,000	
Bromodichloromethane	ND	200	
1,2-Dichloropropane	ND	200	
Cis-1,3-Dichloropropene	ND	200	
Trichloroethene	ND	200	
Dibromochloromethane	ND	200	
1,1,2-Trichloroethane	ND	200	
Benzene	ND	200	
Trans-1,3-Dichloropropene	ND	200	
Bromoform	ND	200	
4-Methyl-2-Pentanone	ND	1,000	
2-Hexanone	ND	200	
Tetrachloroethene	ND	200	
1,1,2,2-Tetrachloroethane	ND	200	
Toluene	36	200	
Chlorobenzene	ND	200	J
Ethyl Benzene	ND	200	
Styrene	ND	200	
Total Xylenes	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 2 of 2

Client: Westinghouse Hanford
Lab No: 31237qc7
Date: April 19, 1993
Blank No: V9765
Date Analyzed: 4-12-93

VOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Toluene - d8	101	86 - 115	81 - 117
Bromofluorobenzene	94	76 - 114	74 - 121
1,2-Dichloroethane d4	97	88 - 110	70 - 121

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98434 • TELEPHONE: (206) 922-3310 • FAX (206) 922-3047

QUALITY CONTROL REPORT

VOLATILE ORGANICS - METHOD 8240

Client: Westinghouse Hanford
 Lab No: 31237qc8
 Units: ug/kg
 Date: April 19, 1993

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

Parameter	Sample Result (SR)	Spiked Sample Result (MS)	Spike Added (SA)	%R	Spike Dup Result (MSD)	Spike Added (SA)	%R	RPD
1,1-DCE	ND	2,300	2,100	110	3,200	2,100	152	32.7
TCE	ND	1,700	2,100	81	1,900	2,100	90.5	11.1
Chloro-benzene	ND	1,600	2,100	76.2	1,800	2,100	85.7	11.8
Toluene	ND	1,600	2,100	76.2	1,800	2,100	85.7	11.8
Benzene	ND	1,600	2,100	76.2	1,900	2,100	90.5	17.1

RPD = Relative Percent Difference

$$= [(MS\%R - MSD\%R) / ((MS\%R + MSD\%R) / 2)] \times 100$$

% R = Percent Recovery

$$= [(MS - SR) / SA] \times 100$$

Advisory Limits:

	<u>RPD</u>	<u>% RECOVERY</u>
1,1-Dichloroethene	22	59 - 172
Trichloroethene	24	62 - 137
Chlorobenzene	21	60 - 133
Toluene	21	59 - 139
Benzene	21	66 - 142

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4812 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98434 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

DATA QUALIFIER FLAGS

- ND: Indicates that the analyte was analyzed for but was not detected. The associated numerical value is the practical quantitation limit, corrected for sample dilution.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- C: The identification of this analyte was confirmed by GC/MS.
- B1: This analyte was also detected in the associated method blank. The reported sample results have been adjusted for moisture, final extract volume, and/or dilutions performed during extract preparation. The analyte concentration was evaluated prior to sample preparation adjustments, and was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was also detected in the associated method blank. However, the analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- E: The concentration of this analyte exceeded the instrument calibration range.
- D: The reported result for this analyte is calculated based on a secondary dilution factor.
- A: This TIC is a suspected aldol-condensation product.
- M: Quantitation Limits are elevated due to matrix interferences.
- S: The calibration quality control criteria for this compound were not met. The reported concentration should be considered an estimated quantity.
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.
- X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.
- X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.
- X4: RPD for duplicates outside QC limits. Sample was re-analyzed with similar results. Sample matrix is nonhomogeneous.
- X4a: RPD for duplicates outside QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike was diluted out during analysis.
- X6: Recovery of matrix spike outside QC limits. Sample was re-analyzed with similar results.
- X7: Recovery of matrix spikes outside QC limits. Matrix interference is indicated by blank spike recovery data.
- X7a: RPD value for MS/MSD outside QC limits due to high contaminant levels.
- X8: Surrogate was diluted out during analysis.
- X9: Surrogate recovery outside QC limits due to matrix composition.
- X10: Surrogate recovery outside QC limits due to high contaminant levels.

CORRESPONDENCE DISTRIBUTION COVERSHEET

Author: R. G. Holt, RL
(S. D. Thoren, 3-4033)

Addressee: D. C. Nylander, Ecology
(J. E. Rasmussen, RL)

Correspondence No.: Incoming 9306661
X Ref. 9353571D

Subject: SITE ASSESSMENT CHECKLIST AND REPORT FOR UNDERGROUND STORAGE TANK
(UST) 3000-12 REMOVAL

INTERNAL DISTRIBUTION

Approval	Date	Name	Location	w/att
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