HAZARD RANKING SYSTEM DOCUMENTATION PACKAGE
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, HUDSON COUNTY, NEW JERSEY

CERCLIS ID No.: NJD092226000

VOLUME 1 of 1

EPA Contract No.: 68-W5-0019
TDD No.: 02-99-08-0015
Document Control No.: START-02-F-04337

JULY 2000

Prepared for:
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II
290 Broadway, 18th Floor
New York, NY 10007

Prepared by:
Region II Superfund Technical Assessment and Response Team
Roy F. Weston, Inc.
Federal Programs Division
Edison, NJ 08837

401543

HRS PACKAGE QC CHECKLIST

✓ 1. Review the site's eligibility for the NPL. Please consider each of the following special circumstances in your review and provide necessary documentation as appropriate.

- Petroleum Exclusion status
- RCRA status - adequate documentation required
- Aggregation issues
- Ground-water plumes - likely sources identified

✓ 2. Check accuracy of math calculations for any factors not included in Prescore.

✓ 3. Evaluate documentation as follows:

✓ a. Verify that all statements of fact or data have a reference with page numbers (primary sources should be used where available).

✓ b. Determine that full copies of all non-publicly available references are included and legible. Please note that the HRS preamble and rule are publicly available and therefore do not need to be included.

✓ c. Verify that the actual reference number appears on the reference itself.

✓ d. Ensure that all maps for each pathway are included and legible (all targets, samples, and sources should be identified on maps, and maps must be reproducible in black and white).

✓ e. Check that the list of references includes: title, author, date, affiliation, and page numbers (or total number of pages if entire reference is included).

✓ f. Remove references not cited.

✓ 4. Include narrative summary and NPL characterization data.

✓ 5. Proofread for spelling and typographical errors.

✓ 6. Ensure that this checklist is attached to 2 full copies of the HRS package and references (along with the diskette containing the scoresheet and documentation).

I certify that, to the best of my knowledge, the attached is a complete and accurate HRS package.

Dennis W. Munhall — 7/25/00

(EPA Regional Reviewer Signature) (Date)

Dennis W. Munhall

I certify that Region 2 requests Diamond Head Oil Ref. Div be evaluated for placement on the NPL.

(Site name)

R F Vaughn — 7/25/00

(EPA Regional Superfund Branch Chief Signature) (Date)

Please type Branch Chief name below

Robert Vaughn, Chief Special Projects Branch

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SECTION I: SITE SUMMARY

SITE SUMMARY

The Diamond Head Oil Refinery Div. (Diamond Head) site is located at 1401 Harrison Ave. in Kearny, Hudson County, New Jersey. Currently, the site is inactive and consists of approximately 15 acres of undeveloped land that is bordered by Harrison Avenue to the north, entrance ramp M of Interstate 280 (I-280) to the east, I-280 to the south, and Campbell Distribution Foundry to the west. The site is comprised of wetland areas and drainage ditches, a small wetland/pond, a vegetated landfill area along the western border of the site, and the remnants of the former Diamond Head Oil Refinery on the eastern portion of the site. The abandoned refinery portion of the site contains various construction debris, including foundations of the former on-site building and two former aboveground storage tanks. The site is currently owned by the Hudson Meadows Urban Development Corporation (HMURDC).

The site was in operation from February 1, 1946 to early 1979. The facility operated under several company names including PSC Resources, Inc., Ag-Met Oil Service, Inc., and Newtown Refining Corporation. All of these companies were owned by Mr. Robert Mahler. In January 1985, Newtown Refining Corporation sold the property to Mimi Urban Development Corporation, which changed its name to Hudson Meadows Urban Development Corporation.

During facility operations, two aboveground storage tanks (conflicting reports of volumes of 30,000 and 100,000 gallons) and possibly underground pits were used to store oily wastes. These wastes were intermittently discharged directly to adjacent properties, including the wetland area to the south of the site, creating an oil lake. The New Jersey Department of Transportation (NJDOT) acquired the property south of the site on March 6, 1968. In 1977, NJDOT began construction of I-280 and was reported to have removed 9 million gallons of oil-contaminated water and 5 to 6 million cubic yards of oily sludge from the lake. The material was reportedly transported to Newtown Refining Corporation's facility on Long Island to be recycled; however, there are no reports stating that this recycling process occurred. It is also reported that during the construction of I-280, an underground lake of oil-contaminated groundwater was found extending from the eastern limits of the NJDOT right-of-way to Frank's Creek on the west. It is reported that, prior to abandoning the site, Diamond Head cleaned out the two aboveground tanks; however, there is no known documentation of this activity. From the close of operations in 1979 until 1982, the abandoned site was not completely fenced. During this time, it was reported that dumping of waste oils and other debris took place on site. A contractor was hired to clean up the site in May 1982. In order to do so, the material in the tanks was analyzed and found to contain polychlorinated biphenyls (PCBs) at a concentration of 206 parts per million (ppm). Subsequent analyses revealed the presence of PCBs at concentrations over 3,100 ppm. Approximately 7,500 gallons of material were reportedly pumped out of the tanks and disposed off site by a Resource Conservation and Recovery Act (RCRA) permitted Treatment, Storage, and Disposal Facility (TSDF). In addition, 27 tons of contaminated soil were reportedly removed from the site in May 1982.

Background information indicates that previous investigations have been conducted at the Diamond Head Oil Refinery Div. site. These investigations include a sampling event conducted by the New Jersey Department of Environmental Protection (NJDEP), an Environmental Site Characterization conducted by a contractor hired by HMURDC, and a Site Inspection conducted by the U.S. Environmental Protection Agency (EPA) Region II Field Investigation Team (FIT). During these

investigations, groundwater, surface water/sediment, surface/subsurface soil, liquid waste and solid waste samples were collected. Analytical results of these samples indicated the presence of volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs), pesticides, PCBs, and metals.

In December 1999 EPA conducted an Expanded Site Inspection (ESI) at the Diamond Head Oil Refinery Div. site. During the ESI, EPA collected surface/subsurface soil and ground water samples from 20 borings advanced throughout the site. EPA also collected sediment samples from the on-site wetland/pond area as well as from the wetland area extending along the southern perimeter of the site. Analytical results indicated the presence of VOCs, SVOCs, pesticides, PCBs, and metals.

An observed release to surface water is documented by chemical analyses of sediment samples collected from wetlands along the southern and western boundaries of the site. Level II concentrations of lead, mercury, and zinc are documented to 0.20 mile of wetland frontage extending along the southern and western boundaries of the site.

SECTION II: HRS SCORESHEETS

PREScore 4.1

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	550
2. Potential to Release by Overland Flow		
2a. Containment	10	
2b. Runoff	25	
2c. Distance to Surface Water	25	
2d. Potential to Release by Overland Flow [lines 2a(2b+2c)]	500	
3. Potential to Release by Flood		
3a. Containment (Flood)	10	0
3b. Flood Frequency	50	0
3c. Potential to Release by Flood (lines 3a x 3b)	500	0
4. Potential to Release (lines 2d+3c)	500	
5. Likelihood of Release	550	550
Waste Characteristics		
6. Toxicity/Persistence	*	0
7. Hazardous Waste Quantity	*	0
8. Waste Characteristics	100	0
Targets		
9. Nearest Intake	50	0.00E+00
10. Population		
10a. Level I Concentrations	**	0.00E+00
10b. Level II Concentrations	**	0.00E+00
10c. Potential Contamination	**	0.00E+00
10d. Population (lines 10a+10b+10c)	**	0.00E+00
11. Resources	5	0.00E+00
12. Targets (lines 9+10d+11)	**	0.00E+00
13. DRINKING WATER THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.

** Maximum value not applicable.

PREScore 4.1

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
14. Likelihood of Release (same as line 5)	550	550
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	*	0
16. Hazardous Waste Quantity	*	0
17. Waste Characteristics	1000	0
Targets		
18. Food Chain Individual	50	0.00E+00
19. Population		
19a. Level I Concentrations	**	0.00E+00
19b. Level II Concentrations	**	0.00E+00
19c. Pot. Human Food Chain Contamination	**	0.00E+00
19d. Population (lines 19a+19b+19c)	**	0.00E+00
20. Targets (lines 18+19d)	**	0.00E+00
21. HUMAN FOOD CHAIN THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

PREScore 4.1

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
22. Likelihood of Release (same as line 5)	550	550
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioacc. 24. Hazardous Waste Quantity 25. Waste Characteristics	* * 1000	5.00E+08 1.00E+06 1000
Targets		
26. Sensitive Environments 26a. Level I Concentrations 26b. Level II Concentrations 26c. Potential Contamination 26d. Sensitive Environments (lines 26a+26b+26c) 27. Targets (line 26d)	 ** ** ** ** **	 0.00E+00 2.50E+01 2.50E+00 2.75E+01 2.75E+01
28. ENVIRONMENTAL THREAT SCORE	60	60.00
29. WATERSHED SCORE	100	60.00
30. SW: OVERLAND/FLOOD COMPONENT SCORE (Sof)	100	60.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SECTION III: DOCUMENTATION RECORD

HRS DOCUMENTATION RECORD--REVIEW COVER SHEET

Name of Site:	Diamond Head Oil Refinery Div.
Contact Persons	
Site Investigation:	Dennis J. Foerter (732) 225-6116 Roy F. Weston, Inc. - Region II START Edison, NJ
Documentation Record:	Dennis Munhall (212) 637-4343 U.S. Environmental Protection Agency New York, NY
	Dennis J. Foerter (732) 225-6116 Roy F. Weston, Inc. - Region II START Edison, NJ

Pathways, Components, or Threats Not Scored

The Ground Water, Soil Exposure, and Air Pathways were not scored because the site score would not be significantly impacted by those pathways.

HRS DOCUMENTATION RECORD--REVIEW COVER SHEET

Name of Site: Diamond Head Oil Refinery Div.

Contact Persons

Site Investigation: Dennis J. Foerter (732) 225-6116
Roy F. Weston, Inc. - Region II START
Edison, NJ

Documentation Record: Dennis Munhall (212) 637-4343
U.S. Environmental Protection Agency
New York, NY

Dennis J. Foerter (732) 225-6116
Roy F. Weston, Inc. - Region II START
Edison, NJ

Pathways, Components, or Threats Not Scored

The Ground Water, Soil Exposure, and Air Pathways were not scored because the site score would not be significantly impacted by those pathways.

HRS DOCUMENTATION RECORD

Name of Site: Diamond Head Oil Refinery Div.

EPA Region: 2 Date Prepared: May 2000

Street Address of Site: 1401 Harrison Turnpike, Kearny

County and State: Hudson, NJ

General Location in the State: northern NJ

Topographic Map: Elizabeth, NJ (Ref. 5)

Latitude: 40° 44' 50.0" North Longitude: 74° 07' 55.9" West

(Ref. 4)

EPA ID No.: NJD092226000

Scores

Ground Water Pathway	Not Scored
Surface Water Pathway	60.00
Soil Exposure Pathway	Not Scored
Air Pathway	Not Scored

HRS SITE SCORE 30.00

WORKSHEET FOR COMPUTING HRS SITE SCORE

		S	S^2
1.	Ground Water Migration Pathway Score (S_{gw}) (from Table 3-1, line 13)	Not Scored	
2a.	Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	60.00	3,600
2b.	Ground Water to Surface Water Migration Component (from Table 4-25, line 28)	Not Scored	
2c.	Surface Water Migration Pathway Score (S_{sw}) Enter the larger of lines 2a and 2b as the pathway score.	60.00	3,600
3.	Soil Exposure Pathway Score (S_s) (from Table 5-1, line 22)	Not Scored	
4.	Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	Not Scored	
5.	Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		3,600
6.	**HRS Site Score** Divide the value on line 5 by 4 and take the square root	30.00	

PREScore 4.1
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	550
2. Potential to Release by Overland Flow		
2a. Containment	10	
2b. Runoff	25	
2c. Distance to Surface Water	25	
2d. Potential to Release by Overland Flow [lines 2a(2b+2c)]	500	
3. Potential to Release by Flood		
3a. Containment (Flood)	10	0
3b. Flood Frequency	50	0
3c. Potential to Release by Flood (lines 3a x 3b)	500	0
4. Potential to Release (lines 2d+3c)	500	
5. Likelihood of Release	550	550
Waste Characteristics		
6. Toxicity/Persistence	*	0
7. Hazardous Waste Quantity	*	0
8. Waste Characteristics	100	0
Targets		
9. Nearest Intake	50	0.00E+00
10. Population		
10a. Level I Concentrations	**	0.00E+00
10b. Level II Concentrations	**	0.00E+00
10c. Potential Contamination	**	0.00E+00
10d. Population (lines 10a+10b+10c)	**	0.00E+00
11. Resources	5	0.00E+00
12. Targets (lines 9+10d+11)	**	0.00E+00
13. DRINKING WATER THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

PREScore 4.1
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
14. Likelihood of Release (same as line 5)	550	550
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	*	0
16. Hazardous Waste Quantity	*	0
17. Waste Characteristics	1000	0
Targets		
18. Food Chain Individual	50	0.00E+00
19. Population		
19a. Level I Concentrations	**	0.00E+00
19b. Level II Concentrations	**	0.00E+00
19c. Pot. Human Food Chain Contamination	**	0.00E+00
19d. Population (lines 19a+19b+19c)	**	0.00E+00
20. Targets (lines 18+19d)	**	0.00E+00
21. HUMAN FOOD CHAIN THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
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SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
22. Likelihood of Release (same as line 5)	550	550
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioacc. 24. Hazardous Waste Quantity 25. Waste Characteristics	* * 1000	5.00E+08 1.00E+06 1000
Targets		
26. Sensitive Environments 26a. Level I Concentrations 26b. Level II Concentrations 26c. Potential Contamination 26d. Sensitive Environments (lines 26a+26b+26c) 27. Targets (line 26d)	 ** ** ** ** **	 0.00E+00 2.50E+01 2.50E+00 2.75E+01 2.75E+01
28. ENVIRONMENTAL THREAT SCORE	60	60.00
29. WATERSHED SCORE	100	60.00
30. SW: OVERLAND/FLOOD COMPONENT SCORE (Sof)	100	60.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

REFERENCES

Reference Number	Description of the Reference
1.	U.S. Environmental Protection Agency (USEPA), Revised Hazard Ranking System, Final Rule, 55 *FR* 51532, December 14, 1990. [9 pp.]
2.	U.S. EPA, Superfund Chemical Data Matrix, SCDM Data Version: JUN96. [8 pp.]
3.	Foerter, D., Region II Superfund Technical Assessment and Response Team (START), Project Note to Diamond Head Oil Refinery Div. File, Subject: Latitude and Longitude Calculations, May 25, 2000. [1 p. and 1 topographic map]
4.	Halliburton NUS Environmental Corporation, Final Draft Site Inspection Report, Diamond Head Oil Refinery Div., Kearny, New Jersey (excluding attachments), December 31, 1991. [42 pp.]
5.	Germine, Thomas J. Deputy Attorney General, State of New Jersey, Department of Law and Public Safety, Memorandum of Meeting, August 17, 1979. [4 pp.]
6.	Allen, H., Region II START, Project Note to Diamond Head Oil Refinery Div. File, Subject: Calculation of the Total Area of the Former Oil Lake at the Diamond Head Oil Site, June 15, 2000. [5 pp.]
7.	Trotter, J., Region II ESAT/RSCC, Record of Communication to Smita Sumbaly, Subject: Quality Assured Data, Diamond Head Oil Refinery, Case 27633, (includes inorganic laboratory data), 10 February, 2000. [164 pp.]
8.	U.S. EPA, Functional Guidelines for Evaluating Organic Analysis, Case No. 27633, Diamond Head Oil Refinery (includes organic laboratory data), 10 March 2000. [292 pp.]
9.	Nova Consultants, Report for Harbor Consultants, To Conduct a Non-Tidal Wetland Delineation on a Tract Designated as: Block 294, Lots 3, 14, and 15, Kearny, NJ, September 1990 [42 pp. and 1 map]
10.	EPA, Office of Emergency and Remedial Response, Quick Reference Fact Sheet, Using Qualified Data to Document an Observed Release and Observed Contamination, EPA 540-F-94-028, OSWER 9285.7-14FS, PB94-963311, November 1996. [18 pp.]
11.	Roy F. Weston, Inc., Region II START, ESI Field Logbook - Diamond Head Oil Refinery Div., Document Control No. START-02-423, October-December 1999. [17 pp.]

REFERENCES (cont'd)

Reference Number	Description of the Reference
12.	Foerter, D., Region II START, Project Note to Diamond Head Oil Refinery Div. File, Subject: Observations of Oil Discharge and Oil Stained Soil at Diamond Head Oil, May 30, 2000. [4 pp.]
13.	Foerter, D., Region II START, Project Note to Diamond Head Oil Refinery Div. File, Subject: Non-Contaminated Portion of Wetland C, June 16, 2000. [2 pp.]
14.	Foerter, D., Region II START, Project Note to Diamond Head Oil Refinery Div. File, Subject: Analytical Data/Sample Quantitation Limits (Diamond Head Oil Refinery), June 16, 2000. [8 pp.]
15.	Foerter, D., Region II START, Project Note to Diamond Head Oil Refinery Div. File, Subject: Background ESI Sediment Samples, December 6, 1999. [1 p.]

SOURCE DESCRIPTION

2.2 Source Characterization

Number of the source: 1

Name and description of the source: Surface impoundment (buried/backfilled)

Source 1 consists of a former surface impoundment which is also referred to as the oil lake. Background information indicates that oily wastes were discharged directly to adjacent properties (including the wetland area in the southern portion of the site) forming the oil lake (Ref. 4, p. 5). The New Jersey Department of Transportation (NJDOT) acquired the property adjacent to the site in 1968. In 1977, NJDOT began construction of Interstate 280 and reportedly pumped approximately 9 million gallons of oil and oil/water emulsion from the lake. In addition, approximately 5 to 6 million cubic yards of oil sludge were removed from the lake by mudwaving and backfilling with compressed sand (Ref. 4, p. 5; 5, p. 2).

Analytical results of the oil lake's oil layer indicated 32 percent oil and 68 percent water and sediment. In addition, the sample indicated a high lead and zinc content (Ref. 5, p. 3). In addition, soil/sediment samples collected from Wetland A during the 1991 SI indicated the presence of VOCs (Ref. 4, pp. 16, 17).

During ESI activities conducted by EPA in December 1999, petroleum odors, oil saturated soil, and free product were observed in several borings advanced in the area of the former oil lake (Ref. 11, pp. 13, 14, Figure 3).

A review of aerial photographs indicate that the area of the on-site pond/wetland (wetland A) was a part of the oil lake surface impoundment (Ref. 6, p. 5). Based on the fact that this area was an isolated water body and was intended to be used as a waste management area, and the fact that hazardous substances in the pond were the result of deposition, the on-site pond is evaluated as part of the oil lake surface impoundment.

The oil lake is not excluded as a source at the site due to the fact that contaminants not associated with petroleum products (i.e., PCBs, chlorinated solvents) were detected in samples collected from the oil lake. In addition, the oil lake consists of waste oils and is not the result of a petroleum product spill (Ref. 5; 12).

Location of the source, with reference to a map of the site:

The former oil lake was located in the southeast portion of the site and extended off site to the south and east (see Figure 3). A portion of the oil lake appears to have existed in the area of Wetland A, which is an on-site palustrine wetland (Wetland A) located in the southeast portion of the site (Ref. 6, p. 5; Figure 3).

Containment

Release via overland migration and/or flood:

Based on the fact that there are no containment features associated with source 1, the containment factor for the surface water migration pathway is 10 (Ref. 1, p. 51610).

2.4.1 Hazardous Substances

Hazardous substance	Evidence	Reference
Lead (max. = 84,300J mg/kg SD04)	ESI Sampling Event* December 1999: SD04, SD05, SD06, SD08, SD09, SD10, SD11, SD12, SD13, SD14, SD15	7, pp. 54-56
Zinc (max. = 17,700J mg/kg SD04)	ESI Sampling Event* December 1999: SD04, SD05	7, p. 54
PCBs (max. = 13.0 D mg/kg SD10)	ESI Sampling Event* December 1999: SD05, SD06, SD07, SD10, SD11, SD12, SD13, SD14	8, pp. 67-75
Mercury (max. = 3.9 mg/kg SD08)	ESI Sampling Event* December 1999: SD08, SD11, SD13, SD14, SD15	7, pp. 54-56
Tetrachloroethylene (max.= 25,000E ug/kg S10)	SI Sampling Event (1991): S10	4, pp. 16, 17
1,1,1-trichloroethane (max.= 3,200E ug/kg SD10)	SI Sampling Event (1991): S10	4, pp. 16, 17

* ESI Sample locations are provided in Figure 3.

Notes: J or E qualifiers indicate an estimated value. D qualifiers indicate that a dilution was performed prior to analysis.

2.4.2 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

The information available is not sufficient to evaluate Tier A source hazardous waste quantity.

Hazardous Constituent Quantity Value (S): N/A

2.4.2.1.2 Hazardous Wastestream Quantity

The information available is not sufficient to evaluate Tier B source hazardous waste quantity.

Hazardous Wastestream Quantity (W): N/A

Hazardous Wastestream Quantity Assigned Value: N/A

2.4.2.1.3 Volume

Prior to removal activities conducted by NJDOT, the oil lake consisted of 9 million gallons of oil and oil/water emulsion, and approximately 5 to 6 million cubic yards of oil sludge (Ref. 4, p. 5; 5, p. 2). During ESI sampling activities, petroleum odors, oil saturated soil, and free product were observed in borings advanced in the area of the former oil lake (Ref. 11, pp. 13, 14). Based on this information, the following hazardous waste calculations are made:

1 cubic yard = 200 gallons; therefore,
9 million gallons/200 gallons = 45,000 cubic yards

5 million cubic yards of oil sludge + 45,000 cubic yards =5,045,000

Based on this information the volume of the oil lake was 5,045,000 cubic yards. The source type is a surface impoundment (buried/backfilled), so the equation for assigning hazardous waste value is V/2.5, according to Table 2-5 of the HRS rule (Ref. 1, p. 51591). This results in a value of 2,018,000.

Dimension of source (yd^3): 5,045,000

Reference(s): 1, p. 51591

Volume Assigned Value: 5,045,000 / 2.5 = 2,018,000

2.4.2.1.4 Area

Since the volume of the waste source can be determined, a value of 0 is given for area measurement (Ref. 1, p.51591). It should be noted that an aerial photograph from 1976 indicates that the area of the oil lake was approximately 4 acres (Ref. 6, pp. 1-4).

Area of source (ft^2): Not evaluated

Reference(s): 1, p. 51591

Area Assigned Value: 0

2.4.2.1.5 Source Hazardous Waste Quantity Value

Prior to removal activities conducted by NJDOT, the oil lake consisted of 9 million gallons of oil and oil/water emulsion, and approximately 5 to 6 million cubic yards of oil sludge (Ref. 4, p. 5; 5, p. 2). During ESI sampling activities, petroleum odors, oil saturated soil, and free product were observed in borings advanced in the area of the former oil lake (Ref. 11, pp. 13, 14). Based on this information, and the volume calculation made in section 2.4.2.1.3, a hazardous waste quantity value of 2,018,000 is assigned for the oil lake.

Source Hazardous Waste Quantity Value: 2,018,000

SOURCE DESCRIPTION

2.2 Source Characterization

Number of the source: 2

Name and description of the source: Contaminated Soil

Source 2 consists of contaminated soil. Inspections conducted by the New Jersey Department of Environmental Protection in the 1970s and 1980s noted discharges of oil to the surface in the area of the former building and tanks, as well as in the western property boundary adjacent to the right-of-way. Oil-stained soil was also noted in several locations throughout the property (Ref. 12, pp.1-4).

Soil samples were collected from the areas of the building and tank foundations during the 1991 SI and the 1999 ESI (Ref. 4, p. 16; Figure 3). Analytical results from these sampling events indicated the presence of contaminants, including VOCs, PCBs, and metals, in on-site soils (Ref. 4, pp. 16-36; 7, pp. 38-58; 8, pp. 42-76; 11, p. 16; Figure 3).

Contaminated soil is not excluded as a source at the site due to the fact that contaminants not associated with petroleum products (i.e., PCBs, chlorinated solvents) were detected in soil samples collected on site (Ref. 4, pp. 16-18, 29, 32, 36).

Location of the source, with reference to a map of the site:

Areas of contaminated soil are defined by SI soil sample locations S2 through S8, and ESI soil boring Nos. 1, 3, 6, 7, 8, 12, and 13 (Ref. 4, p. 16; Figure 3). Contaminated soil areas are primarily located in the northern portion of the site near the former building and tank foundations (Ref. 4, pp. 16-36; 7, pp. 38-58; 8, pp. 42-76; Figure 3).

Containment

Release via overland migration and/or flood:

Based on the fact that there are no containment structures associated with source 2, the containment factor for the surface water migration pathway is 10 (Ref. 1, p. 51609).

2.4.1 Hazardous Substances

Hazardous substance	Evidence	Reference
Lead (max. = 52,300J mg/kg, S5)	SI soil samples (1991): S3, S4, S5, S6, S8	4, pp. 16, 18, 36
	ESI soil samples (1999): SS12, SS13, S12, S01 S06, S08, SS03	7, pp. 38, 40, 46-48; Figure 3
Zinc (max. = 5,550 mg/kg S5)	SI soil samples (1991): S4, S5, S6	4, pp. 16, 18, 36
	ESI soil samples (1999): S07, S08	7, pp. 47; Figure 3
PCBs (max. = 110,000E mg/kg S5, S6)	SI soil samples (1991): S4, S5, S6	4, pp. 16, 32
Tetrachloroethylene (max. = 270E ug/kg S6)	SI soil samples (1991): S2, S4, S5, S6	4, pp. 16-17, 29
1,1,1-trichloroethane (max. = 9J ug/kg S4)	SI soil samples (1991): S4	4, pp. 16, 29

Note: J or E qualifiers indicated an estimated value.

2.4.2 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

The information available is not sufficient to evaluate Tier A source hazardous waste quantity.

Hazardous Constituent Quantity Value (S): N/A

2.4.2.1.2 Hazardous Wastestream Quantity

The information available is not sufficient to evaluate Tier B source hazardous waste quantity.

Hazardous Wastestream Quantity (W): N/A

Hazardous Wastestream Quantity Assigned Value: N/A

2.4.2.1.2 Hazardous Wastestream Quantity

The information available is not sufficient to evaluate Tier B source hazardous waste quantity.

Hazardous Wastestream Quantity (W): N/A

Hazardous Wastestream Quantity Assigned Value: N/A

2.4.2.1.3 Volume

Based on analytical results of soil samples collected during the SI in July 1991 and during the ESI conducted in December 1999, it is apparent that some amount of contamination is present at depth; however, the exact volume is unknown (Ref. 4, pp. 17-36; 7, pp. 38-58; 8, pp. 42-76; 11, p. 16; Figure 3). A source waste quantity of >0 will therefore be assigned.

Dimension of source (yd^3): >0

Reference(s): 1, p. 51591

Volume Assigned Value: N/A

2.4.2.1.4 **Area**

Since the volume of the waste source can be determined, a value of 0 is given for area measurement.

Area of source (ft^2): Not evaluated

Reference(s): 1, p. 51591

Area Assigned Value: 0

2.4.2.1.5 Source Hazardous Waste Quantity Value

Based on analytical results of soil samples collected during the SI in July 1991 and during the ESI conducted in December 1999, it is apparent that some amount of contamination is present at depth; however, the exact volume is unknown (Ref. 4, pp. 17-36; 7, pp. 38-58; 8, pp. 42-76; 11, p. 16; Figure 3). A source waste quantity of >0 will therefore be assigned.

Source Hazardous Waste Quantity Value: >0

SITE SUMMARY OF SOURCE DESCRIPTIONS

Source No.	Source Hazardous Waste Quantity Value	Containment: Ground Water	Containment: Surface Water	Containment: Gas	Containment: Air Particulate
1	2,018,000	NE	10	NE	NE
2	>0	NE	10	NE	NE

NE = Not Evaluated

2.4.2.2 Source Hazardous Waste Quantity Factor Value

The hazardous waste quantity factor value is determined by summing the source hazardous waste quantity values, rounding to the nearest integer, and referring to Table 2-6 of the HRS rule. The rounded sum of the hazardous waste quantity values (2,018,000) corresponds to a hazardous waste quantity factor value of 1,000,000 (Ref. 1, p. 51591).

4.1 OVERLAND/FLOOD MIGRATION COMPONENT

4.1.1.1 DEFINITION OF HAZARDOUS SUBSTANCE MIGRATION PATH FOR OVERLAND/FLOOD COMPONENT

The on-site palustrine wetland (i.e., wetland A) is believed to have been part of the former oil lake, which is being evaluated as a waste source (i.e., surface impoundment) (Ref. 6, p. 5). Runoff from this wetland A drains southeast and enters another wetland (i.e., Wetland C), which extends along the southern perimeter of the property (Ref. 4, pp. 16, 39; 9, Wetland Location Map; Figure 3). Wetland C also extends north along the western property boundary adjacent to the right-of-way, and south and west toward Frank's Creek (Ref. 9, Wetland Location Map). There are two points of entry (PPEs) to wetland C. One PPE is approximately 45 feet southwest of wetland A. The other PPE is located in Wetland C, at its most northern point, along the western property boundary near the right-of-way (Ref. 9, Wetland Location Map; 11, p. 17; Figure 3).

Sediment samples collected during the ESI in December 1999 indicate an observed release by chemical analysis to wetland C, which extends along the southern and western boundaries of the site property. Sediment samples contained lead, mercury, and zinc at concentrations significantly above the background concentrations (Ref. 7, pp. 53, 54, 56, 57). Background samples were collected from an off-site wetland which was deemed not affected by past activities at the Diamond Head Oil Refinery Div. site (Ref. 11, pp. 6, 16). Background sediment samples were collected from a wetland which had similar vegetation indicative of palustrine emergent wetlands. This wetland was similar in appearance to Wetland A and Wetland C, which are both palustrine emergent wetlands located on the Diamond Head Oil Refinery property. Background and contaminated sediment samples were similar in sediment type and percent moisture. Background samples and contaminated samples were both collected utilizing the same sampling procedures. In addition, both background and contaminated sediment samples were analyzed for TCL and TAL contaminants through the U.S. EPA Contract Laboratory Program (Ref. 15). See Figure 3 for the locations of wetland sediment samples.

The observed release indicated by sediment sample data constitutes Level II contamination of approximately 0.20 mile of wetland (Ref. 11, pp. 17). The remainder of the wetland outside of those sample locations, which has a frontage of approximately 600 feet (0.11 mile), is evaluated under potential contamination (Ref. 13). Based on the fact that there is no information to support if Wetland C is in perennial connection with Frank's Creek at this time, Wetland C is being evaluated as an isolated wetland.

4.1.2.1 LIKELIHOOD OF RELEASE

4.1.2.1.1 Observed Release

Background Concentration

Sample ID	Sampling Location	Depth	Date	Reference
SD01	off-site wetland	surface	12/2/99	7, p. 53
SD02	off-site wetland	surface	12/2/99	7, p. 53
SD03	off-site wetland	surface	12/2/99	7, p. 54

Sample ID	Hazardous Substance	Conc (ppb)	Sample Quantitation Limit (ppb)*	Reference
SD01	Lead	116 J (167.04)	1.42	7, p. 53
	Zinc	235 J (352.50)	9.46	7, p. 53
	Mercury	0.24 U	0 .008	7, p. 53
SD02	Lead	49.3	0.79	7, p. 53
	Zinc	77.2	5.27	7, p. 53
	Mercury	0.13 U	0.015	7, p. 53
SD03	Lead	98.7	0.87	7, p. 54
	Zinc	102	5.81	7, p. 54
	Mercury	0.14 U	0.014	7, p. 54

Contaminated Samples

Sample ID	Sampling Location	Depth	Date	Reference
SD16	wetland C	surface	12/2/99	7, p. 56
SD17	wetland C	surface	12/2/99	7, p. 56
SD18	wetland C	surface	12/2/99	7, p. 57

Contaminated Samples (cont'd)

Sample ID	Hazardous Substance	Conc (ppb)	Sample Quantitation Limit (ppb)*	Reference
SD16	Lead	869 J	1.24	7, p. 56
	Zinc	1,240 J	8.3	7, p. 56
	Mercury	2.9 J	0.10	7, p. 56
SD17	Lead	766 J	1.21	7, p. 56
	Zinc	1,170 J	8.1	7. P. 56
	Mercury	3.3 J	0.10	7, p. 56
SD18	Lead	552	0.93	7, p. 57
	Zinc	1,120	6.2	7, p. 57
	Mercury	2.1	0.10	7, p. 57

Note - All sediment samples were collected at 0-6 inches below ground surface (Ref. 11, p. 16).

U- not detected; number preceding U qualifier indicates detection limit.

J- Samples SD01, SD16, and SD17 were flagged with a (J) qualifier due to the fact that the percent solids for these samples were below 50 but above 10 (Ref. 7, pp. 6). Based on this information, the reported results are biased low (Ref. 14, p. 1). In accordance with the fact sheet EPA 540-F-94-028 (i.e., Using Qualified Data to Document an Observed Release and Observed Contamination), the reported concentrations for release samples were used. The concentrations for background samples are to be multiplied by the factor specified in the fact sheet, which is 1.44 for lead and 1.50 for zinc (Ref. 10, pp. 8, 18). This results in background sediment sample SD01 having a concentration of 167.04 mg/kg for lead and 352.50 mg/kg for zinc. Adjusted values for sediment sample SD01 are in parentheses in the table above

* - The Sample Quantitation Limits (SQLs) for inorganic contaminants are given in micrograms per liter(ug/l) prior to conversion.

For all metals, the following formula is used to convert the SQLs to mg/kg:

{(C X V X F /((1000mL X W) X (% solids/100))}

where:

C= CRDL in ug/l
V= final volume (200mL for all analytes except mercury, which is 100mL)
F= dilution factor (normally 1)
W= wet weight of sample in grams (normally 1)

Ref. No. 14

The following table lists the % solids of each sample:

Sample No.	% Solids	Ref. No.
SD01	42.3	7, p. 53
SD02	76.1	7, p. 53
SD03	68.8	7, p. 54
SD16	48.2	7, p. 56
SD17	49.4	7, p. 56
SD18	64.5	7, p. 57

Attribution:

Background information indicates that oily wastes were discharged directly to adjacent properties (including the wetland area in the southern portion of the site) forming the oil lake (Ref. 4, p. 5). Analytical results of the oil lake's oil layer indicated 32 percent oil and 68 percent water and sediment. In addition, the sample indicated a high lead and zinc content (Ref. 5, p. 3).

During ESI activities conducted by EPA in December 1999, petroleum odors, oil saturated soil, and free product were observed in several borings advanced in the area of the former oil lake (Ref. 11, pp. 13, 14, Figure 3). Analytical results from sediment samples collected from the on-site wetland (i.e., wetland A), which is believed to have been a part of the oil lake, indicated concentrations of lead up to 84,300J mg/kg, mercury up to 3.9 mg/kg, and zinc up to 17,700J mg/kg (Ref. 7, pp. 54, 55; Figure 3).

Inspections conducted by the New Jersey Department of Environmental Protection in the 1970s and 1980s noted discharges of oil to the surface in the area of the former building and tanks, as well as in the western property boundary adjacent to the right-of-way. Oil-stained soil was also noted in several locations throughout the property (Ref. 12, pp.1-4).

Hazardous Substances Released:

Lead
Mercury
Zinc

==========

Observed Release Factor Value: 550

4.1.4.2 WASTE CHARACTERISTICS

4.1.4.2.1 Ecosystem Toxicity/Persistence/Bioaccumulation

Hazardous Substance	Source No.	Ecosystem Toxicity Factor Value	Persistence Factor Value***	Ecosystem Toxicity/ Persistence Factor Value (Table 4-20)	Ref.
Lead	1, 2	1,000	1	1,000	2, p. B-13
PCBs	1, 2	10,000	1	10,000	2, p. B-16
Zinc	1, 2	10	1	10	2, p. B-20
Mercury	1	10,000	1	10,000	2, p. B-13
PCE*	1, 2	100	1	100	2, B-18
1,1,1-TCA**	1, 2	10	1	10	2, B-19

* = Tetrachloroethylene
** = 1,1,1-trichloroethane
*** = The PPEs are into an isolated wetland. Therefore, the persistence value for lake is used to calculate the ecosystem toxicity/persistence/bioaccumulation factor value.

Hazardous Substance	Ecosystem Toxicity/ Persistence Factor Value	Bio-accumulation Factor Value (Section 4.1.3.2.1.2)	Ref. No.2, p.	Ecosystem Toxicity/ Persistence/ Bioaccum Factor Value (Table 4-21)
Lead	1,000	5,000	B-13	5×10^6
PCBs	10,000	50,000	B-16	5×10^8
Zinc	10	500	B-20	5,000
Mercury	10,000	50,000	B-13	5×10^8
PCE*	100	50	B-18	5,000
1,1,1-TCA**	10	5	B-19	50

* = Tetrachloroethylene
** = 1,1,1-trichloroethane

==========

Ecosystem Toxicity/Persistence/Bioaccumulation Factor Value: 5×10^8

4.1.4.2.2 Hazardous Waste Quantity

Source Number	Source Hazardous Waste Quantity Value (Section 2.4.2.1.5.)	Is source hazardous constituent quantity data complete? (yes/no)
1	2,018,000	no
2	>0	no

Sum of Values: 2,018,000

The sum corresponds to a hazardous waste quantity factor value of 1,000,000 in Table 2-6 of the HRS rule (Ref. 1, p.51591).

4.1.4.2.3 Waste Characteristics Factor Category Value

Ecosystem toxicity/persistence factor value
X hazardous waste quantity factor value

$10,000 \times 1,000,000 = 1 \times 10^{10}$ (subject to a maximum value of 1×10^{8})

(Ecosystem toxicity/persistence X hazardous waste quantity)
X bioaccumulation potential factor value

$(1 \times 10^{8}) \times 50,000 = 5 \times 10^{12}$ (subject to a maximum value of 1×10^{12})

The value exceeds the maximum of 1×10^{12} for the waste characteristics product. The corresponding waste characteristics factor category value from Table 2-7 of the HRS rule is 1,000 (Ref. 1, p. 51592).

==========

Hazardous Waste Quantity Factor Value: 1,000,000
Waste Characteristics Factor Category Value: 1,000

4.1.4.3 ENVIRONMENTAL THREAT - TARGETS

Level I Concentrations

N/A

Sample ID: N/A
Sample Medium: N/A
Location: N/A
Reference: N/A

Hazardous Substance	Hazardous Substance Concentration	Benchmark Concentration	Benchmark
N/A			

Reference for Benchmark: N/A

Most Distant Level II Sample

Sample ID: N/A
Distance from the probable point of entry: N/A
Reference: N/A

Hazardous Substance	Hazardous Substance Concentration
N/A	

4.1.4.3.1 Sensitive Environments

4.1.4.3.1.1 Level I Concentrations

Sensitive Environments

Sensitive Environment	Distance from Probable Point of Entry to Nearest Point of Sensitive Environment	Reference	Sensitive Environment Value(s)
N/A			

Sum of Sensitive Environments Value: 0

Wetlands

Wetland	Wetland Frontage	Reference
N/A		

Total Wetland Frontage: N/A

Wetland Value: 0

Sum of Sensitive Environments Value + Wetland Value: 0

Ref. N/A

==========

Level I Concentrations Factor Value: 0

4.1.4.3.1.2 Level II Concentrations

Sensitive Environments

Sensitive Environment	Distance from Probable Point of Entry to Nearest Point of Sensitive Environment	Reference	Sensitive Environment Value(s)
N/A			

Sum of Sensitive Environments Value: 0

Wetlands

Wetland	Wetland Frontage	Reference
Wetland C (contaminated portion)	0.20 mile*	7, pp. 53-54, 56-57; 11, p. 17 Figure 3

* Wetland frontage was measured starting at the eastern PPE to surface water of Wetland C, located approximately 45 feet west of Wetland A. From this point a single line measurement was made between the eastern PPE and sediment sample location SD16. This resulted in a measurement of 555 feet. In addition, a single line measurement was made from wetland C's northern PPE, located along the western boundary of the site, to sediment sample location SD16. This resulted in a measurement of 480 feet. Based on these measurements, a single line measurement of 1,035 feet (0.20 mile) of wetland C is considered the contaminated portion (Ref. 11, p. 17). To be conservative, single line measurements were made in lieu of wetted perimeter for wetland C, which is evaluated as an isolated wetland.

Total Wetland Frontage: 0.20 mile

Wetland Value: 25

Sum of Sensitive Environments Value + Wetland Value: 25

Ref. 1, p. 51625

==========

Level II Concentrations Factor Value: 25

4.1.4.3.1.3 Potential Contamination

Sensitive Environments

Type of Surface Water Body	Sensitive Environment	Reference(s)	Sensitive Environment Value(s)
N/A			

Wetlands

Type of Surface Water Body	Wetlands Frontage	Reference(s)	Wetlands Value for Type of Surface Water Body
Wetland C (non-contaminated portion)	0.11 mile*	13	25

* The non-contaminated portion of wetland C was measured from sediment sample location SD16 to the west (along Wetland C) toward Frank's Creek. To be conservative, a single line measurement was made, resulting in a measurement of 600 feet or 0.11 mile (Ref. 13, pp. 1, 2; Figure 3).

Type of Surface Water Body	Sum of Sensitive Environment Values (S_j)	Wetland Frontage Value (W_j)	Dilution Weight (D_j)	$D_j(W_j + S_j)$
Wetland C	0	25	1	25

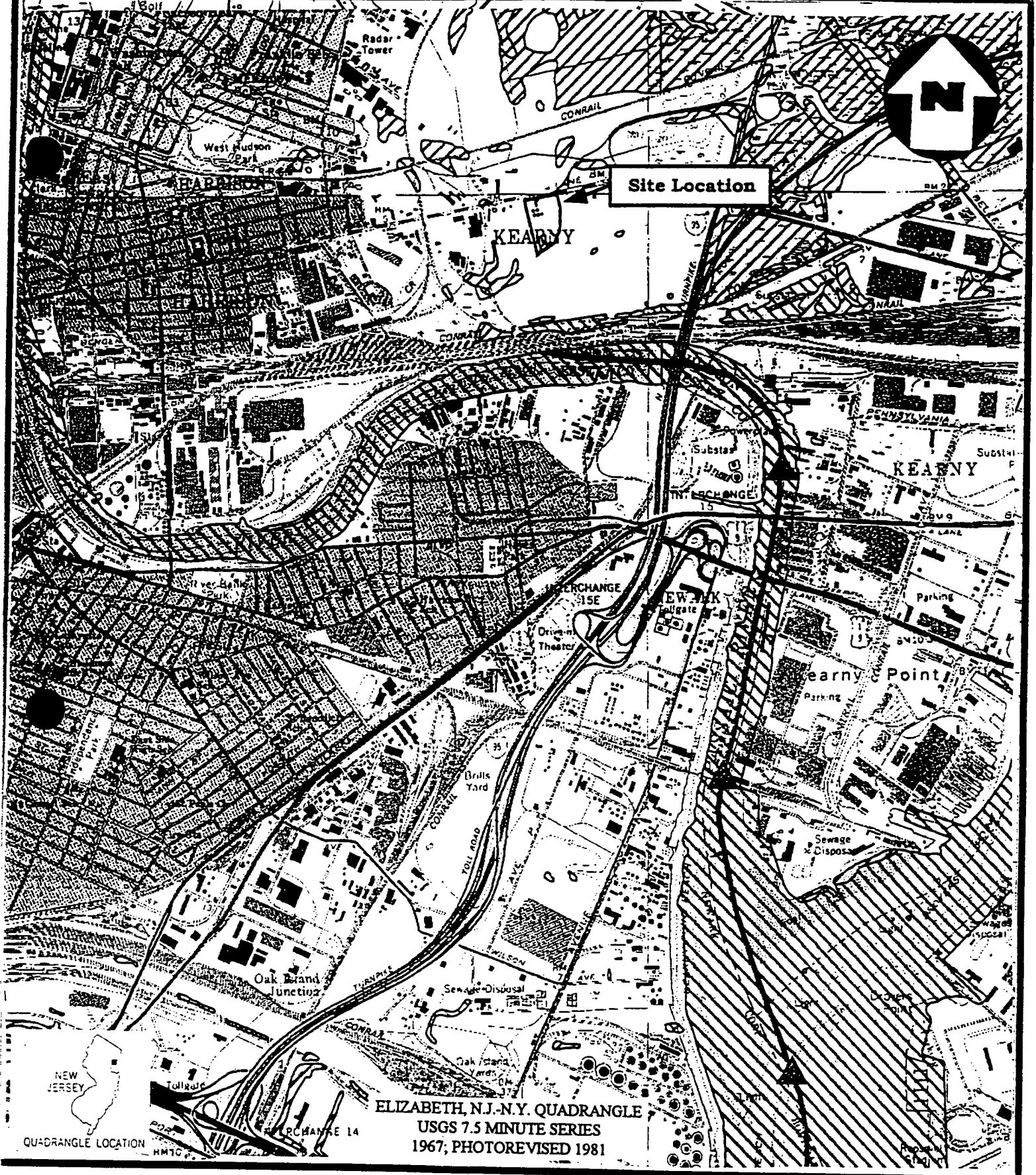
Sum of $D_j(W_j + S_j)$: 25
(Sum of $D_j(W_j + S_j)$)/10: 2.5

Ref. 1, p. 51625

==========

Potential Contamination Factor Value: 2.5

SECTION IV: MAPS AND FIGURES



WESTON MANAGERS DESIGNERS/CONSULTANTS	Roy F. Weston, Inc. FEDERAL PROGRAMS DIVISION	EPA TM D. MUNHALL
IN ASSOCIATION WITH RESOURCE APPLICATION, INC., C.C. JOHNSON & MALHOTRA, P.C., R.E. SARRIERA ASSOCIATES, TETRATECH INC., AND GRB ENVIRONMENTAL SERVICES, INC.		START PM D. FOERTER

FIGURE 1
SITE
LOCATION MAP

DIAMOND HEAD OIL
REFINERY DIV.
KEARNY, NJ

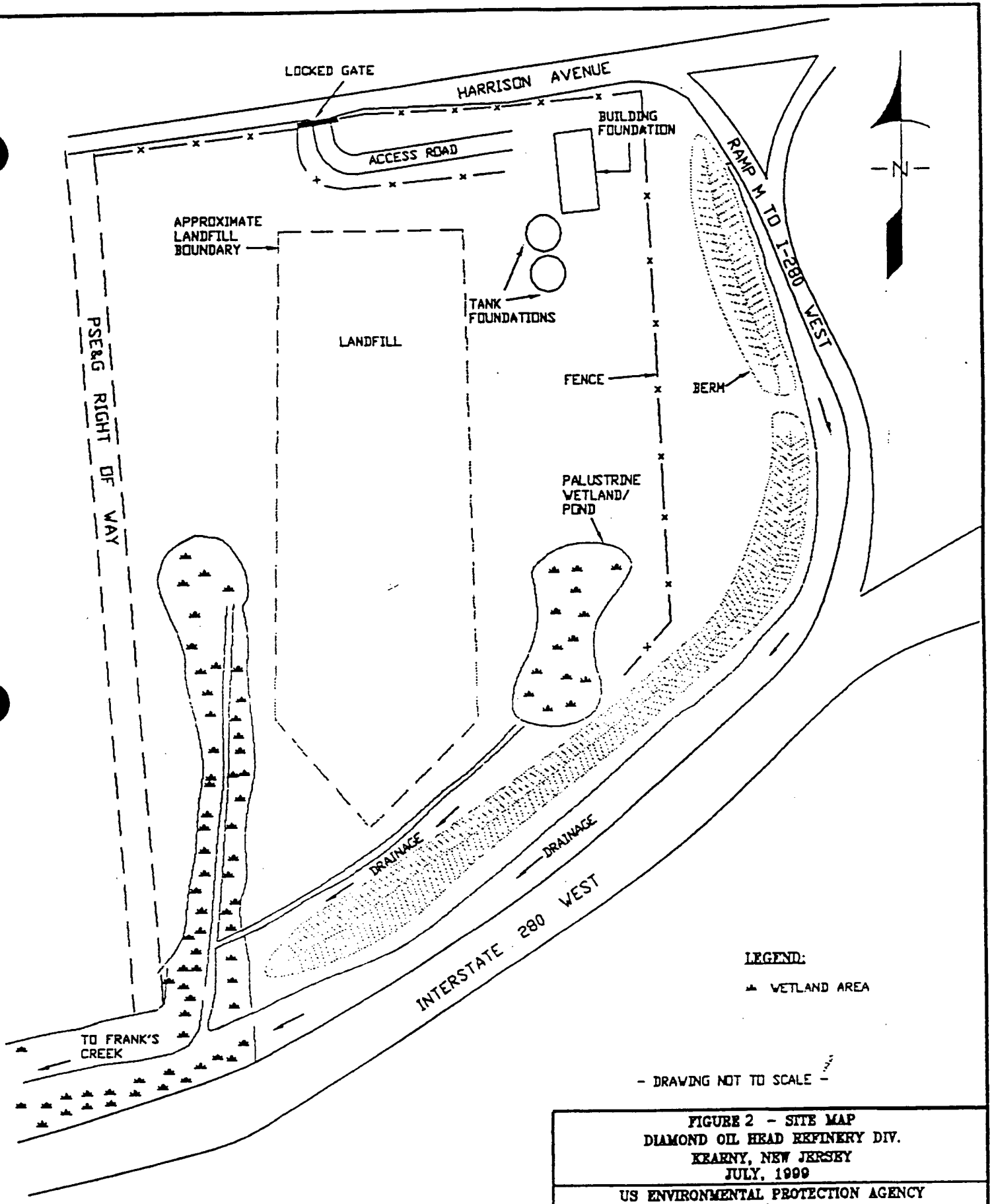


FIGURE 2 - SITE MAP
DIAMOND OIL HEAD REFINERY DIV.
KEARNY, NEW JERSEY
JULY, 1999

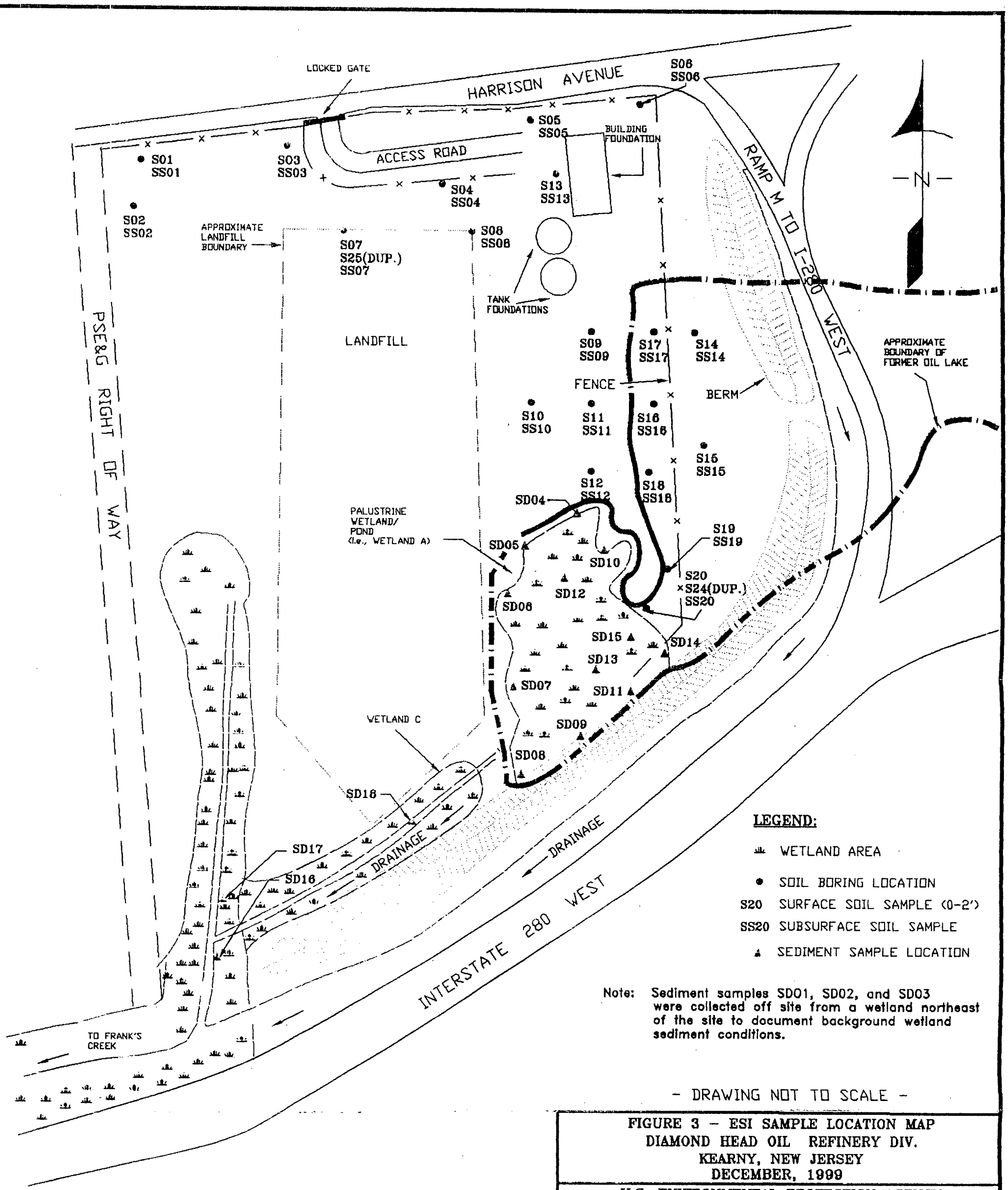
US ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
CONTRACT# 68-W5-0018

WESTON
Roy F. Weston, Inc.
FEDERAL PROGRAMS DIVISION

IN ASSOCIATION WITH PRC ENVIRONMENTAL MANAGEMENT, INC., C.C. JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC., R.E. SARRIERA ASSOCIATES, AND GRB ENVIRONMENTAL SERVICES, INC.

DRAWN BY: J. HAMPTON JR.
EPA TASK MONITOR: B. CONETTA
START PROJECT MANAGER: D. FOERTER

D:\CADFILE\4630.DWG



Note: Sediment samples SD01, SD02, and SD03 were collected off site from a wetland northeast of the site to document background wetland sediment conditions.

- DRAWING NOT TO SCALE -

FIGURE 3 – ESI SAMPLE LOCATION MAP
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
DECEMBER, 1999

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
CONTRACT# 68-W5-0019

WESTON
Roy F. Weston, Inc.
FEDERAL PROGRAMS DIVISION

IN ASSOCIATION WITH TETRA TECH EM, INC.,
C.C. JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC.,
R.E. SARRIERA ASSOCIATES, AND GRB ENVIRONMENTAL SERVICES, INC.

DRAWN BY : J. HAMPTON JR.
EPA TASK MONITOR: B. CONETTA
START PROJECT MANAGER: D. FOERTER

D:\CADFILE\4630smp.DWG

SECTION V: REFERENCES

REFERENCE 1

12-14-90
Vol. 55 No. 241

federal register

Friday
December 14, 1990

Book 2

United States
Government
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SUPERINTENDENT
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SECOND CLASS NEWSPAPER

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U.S. Government Printing Office
(ISSN 0097-6326)

–If the hazardous waste exhibits only the characteristic of toxicity (or only the characteristic of EP toxicity), include only the mass of constituents in the hazardous waste that are CERCLA hazardous substances and not the mass of the entire hazardous waste.

–If the hazardous waste exhibits any other characteristic identified under section 3001 (including any other characteristic plus the characteristic of toxicity [or the characteristic of EP toxicity]), include the mass of the entire hazardous waste.

Based on this mass, designated as C, assign a value for hazardous constituent quantity as follows:

• For the migration pathways, assign the source a value for hazardous constituent quantity using the Tier A equation of Table 2–5.

• For the soil exposure pathway, assign the area of observed contamination a value using the Tier A equation of Table 5–2 (section 5.1.2.2).

If the hazardous constituent quantity for the source (or area of observed contamination) is adequately determined (that is, the total mass of all CERCLA hazardous substances in the source and releases from the source (or in the area of observed contamination) is known or is estimated with reasonable confidence), do not evaluate the other three measures discussed below. Instead assign these other three measures a value of 0 for the source (or area of observed contamination) and proceed to section 2.4.2.1.5.

If the hazardous constituent quantity is not adequately determined, assign the source (or area of observed contamination) a value for hazardous constituent quantity based on the available data and proceed to section 2.4.2.1.2.

TABLE 2–5.—HAZARDOUS WASTE QUANTITY EVALUATION EQUATIONS

Tier	Measure	Units	Equation for assigning value [a]
A	Hazardous constituent quantity (C)	lb	C
B [b]	Hazardous wastestream quantity (W)	lb	W/5,000
C [b]	Volume (V)		
	Landfill	yd^3	V/2,500
	Surface impoundment	yd^3	V/2.5
	Surface impoundment (buried/backfilled)	yd^3	V/2.5
	Drums [c]	gallon	V/500
	Tanks and containers other than drums	yd^3	V/2.5
	Contaminated soil	yd^3	V/2,500
	Pile	yd^3	V/2.5
	Other	yd^3	V/2.5
D [b]	Area (A)		
	Landfill	ft^2	A/3,400
	Surface impoundment	ft^2	A/13
	Surface impoundment (buried/backfilled)	ft^2	A/13
	Land treatment	ft^2	A/270
	Pile [d]	ft^2	A/13
	Contaminated soil	ft^2	A/34,000

[a] Do not round to nearest integer.
[b] Convert volume to mass when necessary: 1 ton = 2,000 pounds = 1 cubic yard = 4 drums = 200 gallons.
[c] If actual volume of drums is unavailable, assume 1 drum = 50 gallons.
[d] Use land surface area under pile, not surface area of pile.

2.4.2.1.2 *Hazardous wastestream quantity.* Evaluate hazardous wastestream quantity for the source (or area of observed contamination) based on the mass of hazardous wastestreams plus the mass of any additional CERCLA pollutants and contaminants (as defined in CERCLA section 101[33], as amended) that are allocated to the source (or area of observed contamination). For a wastestream that consists solely of a hazardous waste listed pursuant to section 3001 of RCRA, as amended or that consists solely of a RCRA hazardous waste that exhibits the characteristics identified under section 3001 of RCRA, as amended, include the mass of that entire hazardous waste in the evaluation of this measure.

Based on this mass, designated as W, assign a value for hazardous wastestream quantity as follows:

• For the migration pathways, assign the source a value for hazardous wastestream quantity using the Tier B equation of Table 2–5.

• For the soil exposure pathway, assign the area of observed contamination a value using the Tier B equation of Table 5–2 (section 5.1.2.2).

Do not evaluate the volume and area measures described below if the source is the unallocated source or if the following condition applies:

• The hazardous wastestream quantity for the source (or area of observed contamination) is adequately determined—that is, total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for the source and releases from the source (or for the area of observed contamination) is known or is estimated with reasonable confidence.

If the source is the unallocated source or if this condition applies, assign the volume and area measures a value of 0 for the source (or area of observed contamination) and proceed to section 2.4.2.1.5. Otherwise, assign the source (or area of observed contamination) a value for hazardous wastestream quantity based on the available data and proceed to section 2.4.2.1.3.

2.4.2.1.3 *Volume.* Evaluate the volume measure using the volume of the source (or the volume of the area of observed contamination). For the soil exposure pathway, restrict the use of the volume measure to those areas of observed contamination specified in section 5.1.2.2.

Based on the volume, designated as V, assign a value to the volume measure as follows:

• For the migration pathways, assign the source a value for volume using the appropriate Tier C equation of Table 2–5.

• For the soil exposure pathway, assign the area of observed contamination a value for volume using the appropriate Tier C equation of Table 5–2 (section 5.1.2.2).

If the volume of the source (or volume of the area of observed contamination, if applicable) can be determined, do not evaluate the area measure. Instead, assign the area measure a value of 0 and proceed to section 2.4.2.1.5. If the volume cannot be determined (or is not applicable for the soil exposure pathway), assign the source (or area of observed contamination) a value of 0 for the volume measure and proceed to section 2.4.2.1.4.

2.4.2.1.4 *Area.* Evaluate the area measure using the area of the source (or the area of the area of observed contamination). Based on this area, designated as A, assign a value to the area measure as follows:

• For the migration pathways, assign the source a value for area using the appropriate Tier D equation of Table 2–5.

• For the soil exposure pathway, assign the area of observed contamination a value for area using the appropriate Tier D equation of Table 5–2 (section 5.1.2.2).

2.4.2.1.5 *Calculation of source hazardous waste quantity value.* Select the highest of the values assigned to the source (or area of observed contamination) for the hazardous constituent quantity, hazardous wastestream quantity, volume, and area measures. Assign this value as the source hazardous waste quantity value. Do not round to the nearest integer.

2.4.2.2 *Calculation of hazardous waste quantity factor value.* Sum the source hazardous waste quantity values assigned to all sources (including the unallocated source) or areas of observed contamination for the pathway being evaluated and round this sum to the nearest integer, except: if the sum is greater than 0, but less than 1, round it to 1. Based on this value, select a hazardous waste quantity factor value for the pathway from Table 2–6.

TABLE 2–6.—HAZARDOUS WASTE QUANTITY FACTOR VALUES

Hazardous waste quantity value	Assigned value
0	0
1 [a] to 100	1
Greater than 100 to 10,000	100
Greater than 10,000 to 1,000,000	10,000
Greater than 1,000,000	1,000,000

[a] If the hazardous waste quantity value is greater than 0, but less than 1, round it to 1 as specified in text.
[b] For the pathway, if hazardous constituent quantity is not adequately determined, assign a value as specified in the text; do not assign the value of 1.

For a migration pathway, if the hazardous constituent quantity is adequately determined (see section 2.4.2.1.1) for all sources (or all portions of sources and releases remaining after a removal action), assign the value from Table 2–6 as the hazardous waste quantity factor value for the pathway. If the hazardous constituent quantity is not adequately determined for one or more sources (or one or more portions of sources or releases remaining after a removal action) assign a factor value as follows:

• If any target for that migration pathway is subject to Level I or Level II concentrations (see section 2.5), assign either the value from Table 2–6 or a value of 100, whichever is greater, as the hazardous waste quantity factor value for that pathway.

• If none of the targets for that pathway is subject to Level I or Level II concentrations, assign a factor value as follows:

–If there has been no removal action, assign either the value from Table 2–6 or a value of 10, whichever is greater, as the hazardous waste quantity factor value for that pathway.

–If there has been a removal action:

– –Determine values from Table 2–6 with and without consideration of the removal action.

– –If the value that would be assigned from Table 2–6 without consideration of the removal action would be 100 or greater, assign either the value from Table 2–6 with consideration of the removal action or a value of 100, whichever is greater, as the hazardous waste quantity factor value for the pathway.

– –If the value that would be assigned from Table 2–6 without consideration of the removal action would be less than 100, assign a value of 10 as the hazardous waste quantity factor value for the pathway.

For the soil exposure pathway, if the hazardous constituent quantity is adequately determined for all areas of observed contamination, assign the value from Table 2–6 as the hazardous waste quantity factor value. If the hazardous constituent quantity is not adequately determined for one or more areas of observed contamination, assign either the value from Table 2–6 or a value of 10, whichever is greater, as the hazardous waste quantity factor value.

2.4.3 *Waste characteristics factor category value.* Determine the waste characteristics factor category value as specified in section 2.4.3.1 for all pathways and threats, except the surface water-human food chain threat and the surface water-environmental threat. Determine the waste characteristics factor category value for these latter two threats as specified in section 2.4.3.2.

2.4.3.1 *Factor category value.* For the pathway (or threat) being evaluated, multiply the toxicity or combined factor value, as appropriate, from section 2.4.1.2 and the hazardous waste quantity factor value from section 2.4.2.2, subject to a maximum product of 1×10^{12}. Based on this waste characteristics product, assign a waste characteristics factor category value to the pathway (or threat) from Table 2–7.

TABLE 2–7.—WASTE CHARACTERISTICS FACTOR CATEGORY VALUES

Waste characteristics product	Assigned value
0	0
Greater than 0 to less than 10	1
10 to less than 1×10^2	2
1×10^2 to less than 1×10^3	3
1×10^3 to less than 1×10^4	6
1×10^4 to less than 1×10^5	10
1×10^5 to less than 1×10^6	18
1×10^6 to less than 1×10^7	32
1×10^7 to less than 1×10^8	56
1×10^8 to less than 1×10^9	100
1×10^9 to less than 1×10^{10}	180
1×10^{10} to less than 1×10^{11}	320
1×10^{11} to less than 1×10^{12}	560
1×10^{12}	1,000

2.4.3.2 *Factor category value, considering bioaccumulation potential.* For the surface water-human food chain threat and the surface water-environmental threat, multiply the toxicity or combined factor value, as appropriate, from section 2.4.1.2 and the hazardous waste quantity factor value from section 2.4.2.2, subject to:

• A maximum product of 1×10^{12}, *and*

• A maximum product exclusive of the bioaccumulation (or ecosystem bioaccumulation) potential factor of 1×10^9.

Based on the total waste characteristics product, assign a waste characteristics factor category value to these threats from Table 2–7.

2.5 *Targets.*

The types of targets evaluated include the following:

• Individual (factor name varies by pathway and threat).

• Human population.

• Resources (these vary by pathway and threat).

• Sensitive environments (included for all pathways except ground water migration).

The factor values that may be assigned to each type of target have the same range for each pathway for which that type of target is evaluated. The factor value for most types of targets depends on whether the target is subject to actual or potential contamination for the pathway and whether the actual contamination is Level I or Level II:

• Actual contamination: Target is associated either with a sampling location that meets the criteria for an observed release (or observed contamination) for the pathway or with an observed release based on direct observation for the pathway (additional criteria apply for establishing actual contamination for the human food chain threat in the surface water migration pathway, see sections 4.1.3.3 and 4.2.3.3). sections 3 through 6 specify how to determine the targets associated with a sampling location or with an observed release based on direct observation. Determine whether the actual contamination is Level I or Level II as follows:

–Level I:

– –Media-specific concentrations for the target meet the criteria for an observed release (or observed contamination) for the pathway and are at or above media-specific benchmark values. These benchmark values (see section 2.5.2) include both screening concentrations and concentrations specified in regulatory limits (such as Maximum Contaminant Level (MCL) values), or

– –For the human food chain threat in the surface water migration pathway, concentrations in tissue samples from aquatic human food chain organisms are at or above benchmark values. Such tissue samples may be used in addition to media-specific concentrations only as specified in sections 4.1.3.3 and 4.2.3.3.

–Level II:

– –Media-specific concentrations for the target meet the criteria for an observed release (or observed contamination) for the pathway, but are less than media-specific benchmarks. If none of the hazardous substances eligible to be evaluated for the sampling location has an applicable benchmark, assign Level II to the actual contamination at the sampling location, or

– –For observed releases based on direct observation, assign Level II to targets as specified in sections 3, 4, and 6, or

– –For the human food chain threat in the surface water migration pathway, concentrations in tissue samples from aquatic human food chain organisms, when applicable, are below benchmark values.

–If a target is subject to both Level I and Level II concentrations for a pathway (or threat), evaluate the target using Level I concentrations for that pathway (or threat).

• Potential contamination: Target is subject to a potential release (that is, target is not associated with actual contamination for that pathway or threat).

Assign a factor value for individual risk as follows (select the highest value that applies to the pathway or threat):

• 50 points if any individual is exposed to Level I concentrations.

• 45 points if any individual is exposed to Level II concentrations.

• Maximum of 20 points if any individual is subject to potential contamination. The value assigned is 20 multiplied by the distance or dilution weight appropriate to the pathway.

Assign factor values for population and sensitive environments as follows:

• Sum Level I targets and multiply by 10. (Level I is not used for sensitive environments in the soil exposure and air migration pathways.)

• Sum Level II targets.

• Multiply potential targets by distance or dilution weights appropriate to the pathway, sum, and divide by 10. Distance or dilution weighting accounts for diminishing exposure

If the site is in more than one watershed:

• Calculate a separate overland/flood migration component score for each watershed, using likelihood of release, waste characteristics, and targets applicable to each watershed.

• Select the highest overland/flood migration component score from the watersheds evaluated and assign it as the overland/flood migration component score for the site.

4.1.2 *Drinking water threat.* Evaluate the drinking water threat for each watershed based on three factor categories: likelihood of release, waste characteristics, and targets.

4.1.2.1 *Drinking water threat—likelihood of release.* Evaluate the likelihood of release factor category for each watershed in terms of an observed release factor or a potential to release factor.

4.1.2.1.1 *Observed release.* Establish an observed release to surface water for a watershed by demonstrating that the site has released a hazardous substance to the surface water in the watershed. Base this demonstration on either:

• Direct observation:

–A material that contains one or more hazardous substances has been seen entering surface water through migration or is known to have entered surface water through direct deposition, or

–A source area has been flooded at a time that hazardous substances were present, and one or more hazardous substances were in contact with the flood waters, or

–When evidence supports the inference of a release of a material that contains one or more hazardous substances by the site to surface water, demonstrated adverse effects associated with that release may also be used to establish an observed release.

• Chemical analysis:

–Analysis of surface water, benthic, or sediment samples indicates that the concentration of hazardous substance(s) has increased significantly above the background concentration for the site for that type of sample (see section 2.3).

– –Limit comparisons to similar types of samples and background concentrations—for example, compare surface water samples to surface water background concentrations.

– –For benthic samples, limit comparisons to essentially sessile organisms.

–Some portion of the significant increase must be attributable to the site to establish the observed release, except: when the site itself consists of contaminated sediments with no identified source, no separate attribution is required.

If an observed release can be established for a watershed, assign an observed release factor value of 550 to that watershed, enter this value in Table 4–1, and proceed to section 4.1.2.1.3. If no observed release can be established for the watershed, assign an observed release factor value of 0 to that watershed, enter this value in Table 4–1, and proceed to section 4.1.2.1.2.

4.1.2.1.2 *Potential to release.* Evaluate potential to release only if an observed release cannot be established for the watershed. Evaluate potential to release based on two components: potential to release by overland flow (see section 4.1.2.1.2.1) and potential to release by flood (see section 4.1.2.1.2.2). Sum the values for these two components to obtain the potential to release factor value for the watershed, subject to a maximum value of 500.

4.1.2.1.2.1 *Potential to release by overland flow.* Evaluate potential to release by overland flow for the watershed based on three factors: containment, runoff, and distance to surface water.

Assign potential to release by overland flow a value of 0 for the watershed if:

• No overland segment of the hazardous substance migration path can be defined for the watershed, or

• The overland segment of the hazardous substance migration path for the watershed exceeds 2 miles before surface water is encountered.

If either condition applies, enter a value of 0 in Table 4–1 and proceed to section 4.1.2.1.2.2 to evaluate potential to release by flood. If neither applies, proceed to section 4.1.2.1.2.1.1 to evaluate potential to release by overland flow.

4.1.2.1.2.1.1 *Containment.* Determine the containment factor value for the watershed as follows:

• If one or more sources is located in surface water in the watershed (for example, intact sealed drums in surface water), assign the containment factor a value of 10 for the watershed. Enter this value in Table 4–1.

• If none of the sources is located in surface water in the watershed, assign a containment factor value from Table 4–2 to each source at the site that can potentially release hazardous substances to the hazardous substance migration path for this watershed. Assign the containment factor value for the watershed as follows:

–Select the highest containment factor value assigned to those sources that meet the minimum size requirement described below. Assign this highest value as the containment factor value for the watershed. Enter this value in Table 4–1.

–If, for this watershed, no source at the site meets the minimum size requirement, then select the highest containment factor value assigned to the sources at the site eligible to be evaluated for this watershed and assign it as the containment factor value for the watershed. Enter this value in Table 4–1.

A source meets the minimum size requirement if its source hazardous waste quantity value (see section 2.4.2.1.5) is 0.5 or more. Do not include the minimum size requirement in evaluating any other factor of this surface water migration component, except potential to release by flood as specified in section 4.1.2.1.2.2.3.

4.1.2.1.2.1.2 *Runoff.* Evaluate runoff based on three components: rainfall, drainage area, and soil group.

TABLE 4–2.—CONTAINMENT FACTOR VALUES FOR SURFACE WATER MIGRATION PATHWAY

Source	Assigned value
All Sources (Except Surface Impoundments, Land Treatment, Containers, and Tanks)	
Evidence of hazardous substance migration from source area (i.e., source area includes source and any associated containment structures)	10
No evidence of hazardous substance migration from source area *and:*	
(a) Neither of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system.	10
(b) Any one of the two items in (a) present	9
(c) Any two of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system, or (3) liner with functioning leachate collection and removal system immediately above liner.	7
(d) All items in (c) present	5
(e) All items in (c) present, plus no bulk or non-containerized liquids nor materials containing free liquids deposited in source area	3
No evidence of hazardous substance migration from source area, double liner with functioning leachate collection and removal system above and between liners, *and:*	
(f) Only one of the following deficiencies present in containment: (1) bulk or noncontainerized liquids or materials containing free liquids deposited in source area, or (2) no or nonfunctioning or nonmaintained run-on control system and runoff management system, or (3) no or nonmaintained engineered cover.	3
(g) None of the deficiencies in (f) present	0
Source area inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate is generated, liquids or materials containing free liquids not deposited in source area, and functioning and maintained run-on control present.	

TABLE 4-2.—CONTAINMENT FACTOR VALUES FOR SURFACE WATER MIGRATION PATHWAY—Concluded

Source	Assigned value
Surface Impoundment	
Evidence of hazardous substance migration from surface impoundment	10
Free liquids present with either no diking, unsound diking, or diking that is not regularly inspected and maintained	10
No evidence of hazardous substance migration from surface impoundment, free liquids present, sound diking that is regularly inspected and maintained, adequate freeboard, *and:*	
(a) No liner	9
(b) Liner	7
(c) Liner with functioning leachate collection and removal system below liner	5
(d) Double liner with functioning leachate collection and removal system between liners	3
No evidence of hazardous substance migration from surface impoundment and all free liquids eliminated at closure (either by removal of liquids or solidification of remaining wastes and waste residues).	Evaluate using All Sources criteria (with no bulk or free liquids deposited).
Land Treatment	
Evidence of hazardous substance migration from land treatment zone	10
No functioning and maintained run-on control and runoff management system	10
No evidence of hazardous substance migration from land treatment zone *and:*	
(a) Functioning and maintained run-on control and runoff management system	7
(b) Functioning and maintained run-on control and runoff management system, and vegetative cover established over entire land treatment area.	5
(c) Land treatment area maintained in compliance with 40 CFR 264.230	0
Containers	
All containers buried	Evaluate using All Sources criteria.
Evidence of hazardous substance migration from container area (i.e., container area includes containers and any associated containment structures).	10
No diking (or no similar structure) surrounding container area	10
Diking surrounding container area unsound or not regularly inspected and maintained	10
No evidence of hazardous substance migration from container area and container area surrounded by sound diking that is regularly inspected and maintained.	9
No evidence of hazardous substance migration from container area, container area surrounded by sound diking that is regularly inspected and maintained, *and:*	9
(a) Essentially impervious base under container area with liquids collection and removal system	7
(b) Containment system includes essentially impervious base, liquids collection system, sufficient capacity to contain 10 percent of volume of all containers, and functioning and maintained run-on control; and spilled or leaked hazardous substances and accumulated precipitation removed in timely manner to prevent overflow of collection system, at least weekly inspection of containers, hazardous substances in leaking or deteriorating containers transferred to containers in good condition, and containers sealed except when waste is added or removed.	5
(c) Free liquids present, containment system has sufficient capacity to hold total volume of all containers and to provide adequate freeboard, and single liner under container area with functioning leachate collection and removal system below liner.	5
(d) Same as (c) except double liner under container area with functioning leachate collection and removal system between liners	3
Containers inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate would be generated from any unsealed or ruptured containers, liquids or materials containing free liquids not deposited in any container, and functioning and maintained run-on control present.	0
No evidence of hazardous substance migration from container area, containers leaking, and all free liquids eliminated at closure (either by removal of liquids or solidification of remaining wastes and waste residues).	Evaluate using All Sources criteria (with no bulk or free liquids deposited).
Tank	
Below-ground tank	Evaluate using All Sources criteria
Evidence of hazardous substance migration from tank area (i.e., tank area includes tank, ancillary equipment such as piping, and any associated containment structures).	10
No diking (or no similar structure) surrounding tank and ancillary equipment	10
Diking surrounding tank and ancillary equipment unsound or not regularly inspected and maintained	10
No evidence of hazardous substance migration from tank area and tank and ancillary equipment surrounded by sound diking that is regularly inspected and maintained.	9
No evidence of hazardous substance migration from tank area, tank and ancillary equipment surrounded by sound diking that is regularly inspected and maintained, *and:*	
(a) Tank and ancillary equipment provided with secondary containment (e.g., liner under tank area, vault system, double-wall) with leak detection and collection system.	7
(b) Tank and ancillary equipment provided with secondary containment system that detects and collects spilled or leaked hazardous substances and accumulated precipitation and has sufficient capacity to contain 110 percent of volume of largest tank within containment area, spilled or leaked hazardous substances and accumulated precipitation removed in a timely manner, at least weekly inspection of tank and secondary containment system, and all leaking or unfit-for-use tank systems promptly responded to.	5
(c) Containment system has sufficient capacity to hold total volume of all tanks within the tank containment area and to provide adequate freeboard, and single liner under tank containment area with functioning leachate collection and removal system below liner.	5
(d) Same as (c) except double liner under tank containment area with functioning leachate collection and removal system between liners.	3
Tank is above ground, and inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate would be generated from any material released from tank, liquids or materials containing free liquids not deposited in any tank, and functioning and maintained run-on control present.	0

rainfall. Determine the 2-year, 24-hour rainfall for the site. Use site-specific, 2-year, 24-hour rainfall data if records are available for at least 20 years. If such site-specific data are not available, estimate the 2-year, 24-hour rainfall for the site from a rainfall-frequency map. Do not round the rainfall value to the nearest integer.

TABLE 4-19.—ECOSYSTEM TOXICITY FACTOR VALUES

If an EPA chronic AWQC[a] or AALAC[b] is available, assign a value as follows:[c]

EPA chronic AWQC or AALAC	Assigned value
Less than 1 µg/l	10,000
1 to 10 µg/l	1,000
Greater than 10 to 100 µg/l	100
Greater than 100 to 1,000 µg/l	10
Greater than 1,000 µg/l	1

If neither an EPA chronic AWQC nor EPA chronic AALAC is available, assign a value based on the EPA acute AWQC or AALAC as follows:[c]

EPA acute AWQC or AALAC	Assigned value
Less than 100 µg/l	10,000
100 to 1,000 µg/l	1,000
Greater than 1,000 to 10,000 µg/l	100
Greater than 10,000 to 100,000 µg/l	10
Greater than 100,000 µg/l	1

TABLE 4-19. ECOSYSTEM TOXICITY FACTOR VALUES—Concluded

If neither an EPA chronic or acute AWQC nor EPA chronic or acute AALAC is available, assign a value from the LC_{50} as follows:

EPA acute AWQC or AALAC

LC_{50}	Assigned value
Less than 100 µg/l	10,000
100 to 1,000 µg/l	1,000
Greater than 1,000 to 10,000 µg/l	100
Greater than 10,000 to 100,000 µg/l	10
Greater than 100,000 µg/l	1

If none of the AWQCs and AALACs nor the LC_{50} is available, assign a value of 0.

[a] AWQC—Ambient Water Quality Criteria.
[b] AALAC—Ambient Aquatic Life Advisory Concentrations.
[c] Use the AWQC value in preference to the AALAC when both are available. See text for use of freshwater and marine values.

4.1.4.2.1.2 *Persistence.* Assign a persistence factor value to each hazardous substance as specified in section 4.1.2.2.1.2, except: use the predominant water category (that is lakes; or rivers, oceans, coastal tidal waters, or Great Lakes) between the probable point of entry and the nearest sensitive environment (not the nearest drinking water or resources intake) along the hazardous substance migration path for the watershed to determine which portion of Table 4–10 to use. Determine the predominant water category based on distance as specified in section 4.1.2.2.1.2. For contaminated sediments with no identified source, use the point where measurement begins rather than the probable point of entry.

4.1.4.2.1.3 *Ecosystem bioaccumulation potential.* Assign an ecosystem bioaccumulation potential factor value to each hazardous substance in the same manner specified for the bioaccumulation potential factor in section 4.1.3.2.1.3, except:

- Use BCF data for all aquatic organisms, not just for aquatic human food chain organisms.
- Use the BCF data that corresponds to the type of water body (that is, fresh water or salt water) in which the sensitive environments (not fisheries) are located.

4.1.4.2.1.4 *Calculation of ecosystem toxicity/persistence/bioaccumulation factor value.* Assign each hazardous substance an ecosystem toxicity/persistence factor value from Table 4–20, based on the values assigned to the hazardous substance for the ecosystem toxicity and persistence factors. Then assign each hazardous substance an ecosystem toxicity/persistence/bioaccumulation factor value from Table 4–21, based on the values assigned for the ecosystem toxicity/persistence and ecosystem bioaccumulation potential factors. Select the hazardous substance with the highest ecosystem toxicity/persistence/bioaccumulation factor value for the watershed and use it to assign the value to this factor. Enter this value in Table 4–1.

TABLE 4-20.—ECOSYSTEM TOXICITY/PERSISTENCE FACTOR VALUES[a]

Persistence factor value	Ecosystem toxicity factor value					
	10,000	1,000	100	10	1	0
1.0	10,000	1,000	100	10	1	0
0.4	4,000	400	40	4	0.4	0
0.07	700	70	7	0.7	0.07	0
0.0007	7	0.7	0.07	0.007	0.0007	0

[a] Do not round to nearest integer.

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TABLE 4-21
ECOSYSTEM TOXICITY/PERSISTENCE/BIOACCUMULATION FACTOR VALUES[a]

Ecosystem Toxicity/ Persistence Factor Value	Ecosystem Bioaccumulation Potential Factor Value					
	50,000	5,000	500	50	5	0.5
10,000	5×10^8	5×10^7	5×10^6	5×10^5	5×10^4	5,000
4,000	2×10^8	2×10^7	2×10^6	2×10^5	2×10^4	2,000
1,000	5×10^7	5×10^6	5×10^5	5×10^4	5,000	500
700	3.5×10^7	3.5×10^6	3.5×10^5	3.5×10^4	3,500	350
400	2×10^7	2×10^6	2×10^5	2×10^4	2,000	200
100	5×10^6	5×10^5	5×10^4	5,000	500	50
70	3.5×10^6	3.5×10^5	3.5×10^4	3,500	350	35
40	2×10^6	2×10^5	2×10^4	2,000	200	20
10	5×10^5	5×10^4	5,000	500	50	5
7	3.5×10^5	3.5×10^4	3,500	350	35	3.5
4	2×10^5	2×10^4	2,000	200	20	2
1	5×10^4	5,000	500	50	5	0.5
0.7	3.5×10^4	3,500	350	35	3.5	0.35
0.4	2×10^4	2,000	200	20	2	0.2
0.07	3,500	350	35	3.5	0.35	0.035
0.007	350	35	3.5	0.35	0.035	0.0035
0.0007	35	3.5	0.35	0.035	0.0035	0.00035
0	0	0	0	0	0	0

[a]Do not round to nearest integer.

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4.1.4.2.2 *Hazardous waste quantity.* Assign the same factor value for hazardous waste quantity for the watershed as would be assigned in section 4.1.2.2.2 for the drinking water threat. Enter this value in Table 4–1.

4.1.4.2.3 *Calculation of environmental threat-waste characteristics factor category value.* For the hazardous substance selected for the watershed in section 4.1.4.2.1.4, use its ecosystem toxicity/persistence factor value and ecosystem bioaccumulation potential factor value as follows to assign a value to the waste characteristics factor category. First, multiply the ecosystem toxicity/persistence factor value and the hazardous waste quantity factor value for the watershed, subject to a maximum product of 1×10^8. Then multiply this product by the ecosystem bioaccumulation potential factor value for this hazardous substance, subject to a maximum product of 1×10^{12}. Based on this second product, assign a value from Table 2–7 (section 2.4.3.1) to the environmental threat-waste characteristics factor category for the watershed. Enter this value in Table 4–1.

TABLE 4–22.—ECOLOGICAL-BASED BENCHMARKS FOR HAZARDOUS SUBSTANCES IN SURFACE WATER

- Concentration corresponding to EPA Ambient Water Quality Criteria (AWQC) for protection of aquatic life (fresh water or marine).
- Concentration corresponding to EPA Ambient Aquatic Life Advisory Concentrations (AALAC).
- Select the appropriate AWQC and AALAC as follows:
  - –Use chronic value, if available; otherwise use acute value.
  - –If the sensitive environment being evaluated is in fresh water, use fresh water value, except: if no fresh water value is available, use marine value if available.
  - –If the sensitive environment being evaluated is in salt water, use marine value, except: if no marine value is available, use fresh water value if available.
  - –If the sensitive environment being evaluated is in both fresh water and salt water, or is in brackish water, use lower of fresh water or marine values.

TABLE 4–23.—SENSITIVE ENVIRONMENTS RATING VALUES

Sensitive environment	Assigned value
Critical habitat [a] for Federal designated endangered or threatened species Marine Sanctuary National Park Designated Federal Wilderness Area Areas identified under Coastal Zone Management Act [b] Sensitive areas identified under National Estuary Program [c] or Near Coastal Waters Program [d] Critical areas identified under the Clean Lakes Program [e] National Monument [f] National Seashore Recreational Area National Lakeshore Recreational Area	100
Habitat known to be used by Federal designated or proposed endangered or threatened species National Preserve National or State Wildlife Refuge Unit of Coastal Barrier Resources System Coastal Barrier (undeveloped) Federal land designated for protection of natural ecosystems Administratively Proposed Federal Wilderness Area Spawning areas critical [g] for the maintenance of fish/shellfish species within river, lake, or coastal tidal waters Migratory pathways and feeding areas critical for maintenance of anadromous fish species within river reaches or areas in lakes or coastal tidal waters in which the fish spend extended periods of time Terrestrial areas utilized for breeding by large or dense aggregations of animals [h] National river reach designated as Recreational	75
Habitat known to be used by State designated endangered or threatened species Habitat known to be used by species under review as to its Federal endangered or threatened status Coastal Barrier (partially developed) Federal designated Scenic or Wild River	50
State land designated for wildlife or game management State designated Scenic or Wild River State designated Natural Areas Particular areas, relatively small in size, important to maintenance of unique biotic communities	25
State designated areas for protection or maintenance of aquatic life [i]	5

[a] Critical habitat as defined in 50 CFR 424.02.
[b] Areas identified in State Coastal Zone Management plans as requiring protection because of ecological value.
[c] National Estuary Program study areas (subareas within estuaries) identified in Comprehensive Conservation and Management Plans as requiring protection because they support critical life stages of key estuarine species (Section 320 of Clean Water Act, as amended).
[d] Near Coastal Waters as defined in Sections 104(b)(3), 304(1), 319, and 320 of Clean Water Act, as amended.
[e] Clean Lakes Program critical areas (subareas within lakes, or in some cases entire small lakes) identified by State Clean Lake Plans as critical habitat (Section 314 of Clean Water Act, as amended).
[f] Use only for air migration pathway.
[g] Limit to areas described as being used for intense or concentrated spawning by a given species.
[h] For the air migration pathway, limit to terrestrial vertebrate species. For the surface water migration pathway, limit to terrestrial vertebrate species with aquatic or semi-aquatic foraging habits.
[i] Areas designated under Section 305(a) of Clean Water Act, as amended.

TABLE 4–24.—WETLANDS RATING VALUES FOR SURFACE WATER MIGRATION PATHWAY

Total length of wetlands * (miles)	Assigned value
Less than 0.1	0
0.1 to 1	25
Greater than 1 to 2	50
Greater than 2 to 3	75
Greater than 3 to 4	100
Greater than 4 to 8	150
Greater than 8 to 12	250
Greater than 12 to 16	350
Greater than 16 to 20	450
Greater than 20	500

* Wetlands as defined in 40 CFR Section 230.3.

4.1.4.3 *Environmental threat-targets.* Evaluate the environmental threat-targets factor category for a watershed using one factor: sensitive environments.

4.1.4.3.1 *Sensitive environments.* Evaluate sensitive environments along the hazardous substance migration path for the watershed based on three factors: Level I concentrations, Level II concentrations, and potential contamination.

Determine which factor applies to each sensitive environment as specified in section 4.1.2.3, except: use ecological-based benchmarks (Table 4–22) rather than health-based benchmarks (Table 3–10) in determining the level of contamination from samples. In determining the level of actual contamination, use a point of direct observation anywhere within the sensitive environment or samples (that is, surface water, benthic, or sediment samples) taken anywhere within or beyond the sensitive environment for anywhere adjacent to or beyond the sensitive environment if it is contiguous to the migration path).

4.1.4.3.1.1 *Level I concentrations.* Assign value(s) from Table 4–23 to each sensitive environment subject to Level I concentrations.

For those sensitive environments that are wetlands, assign an additional value from Table 4–24. In assigning a value from Table 4–24, include only those portions of wetlands located along the hazardous substance migration path in the area of Level I concentrations. If a wetland is located partially along the area of Level I concentrations and partially along the area of Level II concentrations and/or potential contamination, then solely for purposes of Table 4–24, count the portion(s) along the areas of Level II concentrations or potential contamination under the Level II concentrations factor (section 4.1.4.3.1.2) or potential contamination factor (section 4.1.4.3.1.3), as appropriate.

Estimate the total length of wetlands along the hazardous substance migration path (that is, wetland frontage) in the area of Level I concentrations and assign a value from Table 4–24 based on this total length. Estimate this length as follows:

- For an isolated wetland or for a wetland where the probable point of entry to surface water is in the wetland, use the perimeter of the portion of the wetland subject to Level I concentrations as the length.
- For rivers, use the length of the wetlands contiguous to the in-water segment of the hazardous substance migration path (that is, wetland frontage).
- For lakes, oceans, coastal tidal waters, and Great Lakes, use the length of the wetlands along the shoreline within the target distance limit (that is, wetland frontage along the shoreline).

Calculate the Level I concentrations factor value (SH) for the watershed as follows:

$$SH = 10(WH + \sum_{i=1}^{n} S_i)$$

where:

WH = Value assigned from Table 4–24 to wetlands along the area of Level I concentrations.

S_i = Value(s) assigned from Table 4–23 to sensitive environment i.

n = Number of sensitive environments from Table 4–23 subject to Level I concentrations.

Enter the value assigned in Table 4–1.

4.1.4.3.1.2 *Level II concentrations.* Assign value(s) from Table 4–23 to each sensitive environment subject to Level II concentrations. Do not include sensitive environments already counted for Table 4–23 under the Level I concentrations factor for this watershed.

For those sensitive environments that are wetlands, assign an additional value from Table 4–24. In assigning a value from Table 4–24, include only those portions of wetlands located along the hazardous substance migration path in the area of Level II concentrations, as specified in section 4.1.4.3.1.1.

Estimate the total length of wetlands along the hazardous substance migration path (that is, wetland frontage) in the area of Level II concentrations and assign a value from Table 4–24 based on this total length. Estimate this length as specified in section 4.1.4.3.1.1, except: for an isolated wetland or for a wetland where the probable point of entry to surface water is in the wetland, use the perimeter of that portion of the wetland subject to Level II (not Level I) concentrations as the length.

Calculate the Level II concentrations value (SL) for the watershed as follows:

$$SL = WL + \sum_{i=1}^{n} S_i$$

where:

WL = Value assigned from Table 4–24 to wetlands along the area of Level II concentrations.

S_i = Value(s) assigned from Table 4–23 to sensitive environment i.

n = Number of sensitive environments from Table 4–23 subject to Level II concentrations.

Enter the value assigned in Table 4–1.

4.1.4.3.1.3 *Potential contamination.* Assign value(s) from Table 4–23 to each sensitive environment subject to potential contamination. Do not include sensitive environments already counted for Table 4–23 under the Level I or Level II concentrations factors.

For each type of surface water body in Table 4–13 (section 4.1.2.3.1), sum the value(s) assigned from Table 4–23 to the sensitive environments along that type of surface water body, except: do not use the surface water body type "3-mile mixing zone in quiet flowing river." If a sensitive environment is along two or more types of surface water bodies (for example, Wildlife Refuge contiguous to both a moderate stream and a large river), assign the sensitive environment only to that surface water body type having the highest dilution weight value from Table 4–13.

For those sensitive environments that are wetlands, assign an additional value from Table 4–24. In assigning a value from Table 4–24, include only those portions of wetlands located along the hazardous substance migration path in the area of potential contamination, as specified in section 4.1.4.3.1.1. Aggregate these wetlands by type of surface water body, except: do not use the surface water body type "3-mile mixing zone in quiet flowing river." Treat the wetlands aggregated within each type of surface water body as separate sensitive environments solely for purposes of applying Table 4–24. Estimate the total length of the wetlands within each surface water body type as specified in section 4.1.4.3.1.1, except: for an isolated wetland or for a wetland where the probable point of entry to surface water is in the wetland, use the perimeter of that portion of the wetland subject to potential contamination (or the portion of that perimeter that is within the target distance limit) as the length. Assign a separate value from Table 4–24 for each type of surface water body in the watershed.

Calculate the potential contamination factor value (SP) for the watershed as follows:

$$SP = \frac{1}{10} \sum_{j=1}^{m} ([W_j + S_j]D_j)$$

where:

$$S_j = \sum_{i=1}^{n} S_{ij}$$

S_{ij} = Value(s) assigned from Table 4–23 to sensitive environment i in surface water body type j.

n = Number of sensitive environments from Table 4–23 subject to potential contamination.

W_j = Value assigned from Table 4–24 for wetlands along the area of potential contamination in surface water body type j.

D_j = Dilution weight from Table 4–13 for surface water body type j.

m = Number of different surface water body types from Table 4–13 in the watershed.

If SP is less than 1, do not round it to the nearest integer; if SP is 1 or more, round to the nearest integer. Enter this value for the potential contamination factor in Table 4–1.

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REFERENCE 2

HAZARD RANKING SYSTEM
Hazardous Substance Factor Values
376 Substances

Substance Name	CAS Number	Toxicity	Ground Water Mobility: Liquid: Karst	Ground Water Mobility: Liquid: Non-Karst	Ground Water Mobility: Non-Liquid: Karst	Ground Water Mobility: Non-Liquid: Non-Karst	Persistence: River	Persistence: Lake	Bioaccumulation: Food Chain: Fresh	Bioaccumulation: Food Chain: Salt	Bioaccumulation: Environmental: Fresh	Bioaccumulation: Environmental: Salt	Ecotoxicity: Fresh	Ecotoxicity: Salt	Air Gas Migration	Air Gas Mobility	Gas	Par
Isophorone	000078-59-1	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	1.0000	5.0	5.0	5.0	5.0	1	1	11	1.0000	Yes	No
KENZENE**	000000000000	...	1.0E+00	1.0E+00	2.0E-05	2.0E-05												
Kepone	000143-50-0	10000	1.0E+00	1.0E-02*	2.0E-01	2.0E-01*	1.0000*	1.0000*	50000.0	50000.0	50000.0	50000.0	...	...	NA	NA	No	No
Lead	007439-92-1	10000	1.0E+00	1.0E-02	2.0E-05	2.0E-05	1.0000	1.0000	50.0	5000.0	5000.0	5000.0	10000	10000	0	0.0020	Yes	Yes
Lindane	000058-89-9	10000	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	1.0000	1.0000	500.0	500.0	500.0	500.0	1000	1000	NA	NA	No	Yes
Magnesium	007439-95-4	...	1.0E+00	1.0E+00	...	...	1.0000	1.0000	0.5	0.5	0.5	0.5	10000	10000	11	0.0200	Yes	Yes
Malathion	000121-75-5	100	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	1.0000	0.4000*	50.0	50.0	50.0	50.0	...	...	NA	NA	No	Yes
Maleic anhydride	000108-31-6	10	1.0E+00	...	...	...	0.0007	0.0007	0.5	0.5	0.5	0.5	1	1	11	1.0000	Yes	Yes
Maleic hydrazide	000123-33-1	1	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000	0.5	0.5	0.5	0.5	10	10	17	1.0000	Yes	No
Manganese	007439-96-5	10000	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	0.5	0.5	50000.0	50000.0	...	...	NA	NA	No	Yes
Mercury	007439-97-6	10000	1.0E+00	1.0E-02*	2.0E-05	2.0E-07*	0.4000*	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	17*	0.2000	Yes	Yes
Methacrylonitrile	000126-98-7	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000	0.5	0.5	0.5	0.5	...	...	17	1.0000	Yes	No
Methanol	000067-56-1	1	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	0.4000	0.5	0.5	0.5	0.5	10*	1	11	1.0000	Yes	No
Methomyl	016752-77-5	100	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000	0.5	0.5	0.5	0.5	10000	10000	17	1.0000	Yes	No
Methoxychlor	000072-43-5	100	1.0E+00	1.0E-02*	2.0E-05	2.0E-05*	1.0000	1.0000	50000.0	5000.0	50000.0	5000.0	10000	10000	6	0.0020	Yes	Yes
Methyl chlorocarbonate	000079-22-1	100	1.0E+00	...	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	...	...	17	1.0000	Yes	No
Methyl ethyl ketone	000078-93-3	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.4000	0.5	0.5	0.5	0.5	1	1	17	1.0000	Yes	No
Methyl isobutyl ketone	000108-10-1	100	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.4000*	5.0	5.0	5.0	5.0	1	1	17	1.0000	Yes	No
Methyl methacrylate	000080-62-6	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000*	5.0	5.0	5.0	5.0	1	1	17	1.0000	Yes	No

* Indicates difference between previous version of chemical data (JUN96) and current version of chemical data (JUN96).
** Indicates hazardous substance in current version of chemical data (JUN96).

SUPERFUND CHEMICAL DATA MATRIX

APPENDIX B TABLES

June 1996

HAZARD RANKING SYSTEM
Hazardous Substance Factor Values
376 Substances

Substance Name	CAS Number	Toxicity	Ground Water Mobility: Liquid: Karst	Ground Water Mobility: Liquid: Non-Karst	Ground Water Mobility: Non-Liquid: Karst	Ground Water Mobility: Non-Liquid: Non-Karst	Persistence: River	Persistence: Lake	Bioaccumulation: Food Chain: Fresh	Bioaccumulation: Food Chain: Salt	Bioaccumulation: Environmental: Fresh	Bioaccumulation: Environmental: Salt	Ecotoxicity: Fresh	Ecotoxicity: Salt	Air Gas Migration	Air Gas Mobility	Gas	Part
Parathion, methyl-	000298-00-0	10000	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	1.0000	0.4000	50.0	50.0	50.0	50.0	10000	10000	6	0.0200	Yes	Yes
PCBs	001336-36-3	10000	1.0E+00	1.0E-04	2.0E-01	2.0E-07	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	11	0.0200	Yes	Yes
Pentachlorinated dibenzo-p-dioxin, 1,2,3,7,8-	040321-76-4	10000*	1.0E+00	1.0E-04*	2.0E-01*	2.0E-07*	1.0000*	1.0000*	50000.0*	50000.0*	50000.0*	50000.0*	10000*	10000*	NA	NA	No	Yes
Pentachlorinated dibenzofuran, 1,2,3,7,8-	50719-77-9	10000*	1.0E+00	1.0E-04*	2.0E-05*	2.0E-09*	1.0000*	1.0000*	50000.0*	50000.0*	50000.0*	50000.0*	...	...	NA	NA	No	Yes
Pentachlorinated dibenzofuran, 2,3,4,7,8-	057117-41-6	10000*	1.0E+00	1.0E-04*	2.0E-05*	2.0E-09*	1.0000*	1.0000*	50000.0*	50000.0*	50000.0*	50000.0*	...	...	NA	NA	No	Yes
Pentachlorobenzene	000608-93-5	1000	1.0E+00	1.0E-02	2.0E-01	2.0E-03	1.0000	1.0000	5000.0	5000.0	5000.0	5000.0	1000*	1000	11	0.2000	Yes	Yes
Pentachloroethane	000076-01-7	10	1.0E+00	1.0E+00*,	1.0E+00	1.0E+00*	0.4000	0.4000*	50.0	50.0	50.0	50.0	100	1	17	1.0000	Yes	No
Pentachloronitrobenzene	000082-68-8	1000	1.0E+00	1.0E-02	2.0E-03	2.0E-05	1.0000	1.0000	500.0	500.0	500.0	500.0	...	...	11	0.0200	Yes	Yes
Pentachlorophenol	000087-86-5	100	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	1.0000	1.0000	500.0	500.0	5000.0	500.0	100	1000*	6	0.0200	Yes	Yes
Phenanthrene	000085-01-8	...	1.0E+00	1.0E-02*	2.0E-01	2.0E-03*	1.0000*	1.0000*	50.0	50.0	5000.0	50.0	1000	1000	11	0.0200	Yes	Yes
Phenol	000108-95-2	1	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	0.4000	5.0	5.0	5.0	5.0	10000	100	11	1.0000	Yes	No
Phenyl sulfide	000139-66-2	10	1.0E+00	1.0E-02*	2.0E-01*	2.0E-03*	1.0000	1.0000	500.0	500.0	500.0	500.0	...	...	11	0.2000*	Yes	Yes
Phenylenediamine, m-	000108-45-2	100	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	1.0000	0.5	0.5	0.5	0.5	...	...	6	0.2000	Yes	Yes
Phenylmercuric acetate	000062-38-4	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.0700	50.0*	50.0*	50.0*	50.0*	10000	1000	6	0.0002*	Yes	Yes
Phorate	000298-02-2	10000	1.0E+00	1.0E-02	2.0E-01	2.0E-03	1.0000	0.4000	500.0	500.0	500.0*	500.0*	10000	10000	11	0.0200	Yes	Yes
Phosgene	000075-44-5	1000	1.0E+00	...	...	...	0.0007*	0.0700	0.5	0.5	0.5	0.5	...	...	17	1.0000	Yes	No
Phosphamidon	013171-21-6	1000	1.0E+00	...	1.0E+00*	...	0.4000	0.0700	0.5	0.5	0.5	0.5	10000	10000	11*	0.0200*	Yes*	Yes
Phosphine	007803-51-2	10000	1.0E+00	...	1.0E+00*	...	0.4000	0.0700	5000.0*	5000.0*	5000.0*	5000.0*	...	...	17	1.0000	Yes	No
Phosphorodithioic acid, phenyl-o-ethyl-o-(4-n	002104-64-5	10000	1.0E+00	1.0E-02*	2.0E-01*	2.0E-03*	0.4000	0.0700	50.0*	500.0	5000.0	500.0	10000	10000	NA	NA	No	Yes

* Indicates difference between previous version of chemical data (JUN96) and current version of chemical data (JUN96).
** Indicates new hazardous substance in current version of chemical data (JUN96).

HAZARD RANKING SYSTEM
Hazardous Substance Factor Values
376 Substances

Substance Name	CAS Number	Toxicity	Ground Water Mobility: Liquid Karst	Liquid Non Karst	Non-Liquid Karst	Non-Liquid Non-Karst	Persistence River	Persistence Lake	Bioaccumulation: Food Chain Fresh	Food Chain Salt	Environmental Fresh	Environmental Salt	Ecotoxicity Fresh	Ecotoxicity Salt	Air Gas Migration	Air Gas Mobility Gas	Air Gas Mobility Part
Silver	007440-22-4	100	1.0E+00	1.0E+00*	2.0E-05	2.0E-05*	1.0000	1.0000	50.0	50.0	50.0	50.0	10000	10000	NA	NA	No Yes
Silver Cyanide	000506-64-9	10	1.0E+00	1.0E+00*	2.0E-05	2.0E-05*	1.0000	1.0000	500.0	500.0	500.0	500.0	...	...	NA	NA	No Yes
Sodium	007440-23-5	...	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	0.5	0.5	0.5	0.5	...	...	NA	NA	No Yes
Strontium	007440-24-6	1	1.0E+00	1.0E-02*	1.0E+00*	1.0E-02*	1.0000	1.0000	0.5	0.5	0.5	0.5	...	...	NA	NA	No Yes
Strychnine	000057-24-9	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000*	1.0000*	5.0	5.0	5.0	5.0	1000	1000	NA	NA	No Yes
Styrene	000100-42-5	10	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	100	100	17	1.0000	Yes No
Sulfuric acid	007664-93-9	1000	1.0E+00	1.0E+00	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	10	10	11	0.0200	Yes Yes
TB, 2,4,5-	000093-80-1	...	1.0E+00	2.0E-02	2.0E-01*	2.0E-03*	0.4000	0.0700	500.0	500.0	500.0	500.0	...	...	0	0.0020	Yes Yes
TCDD	001746-01-6	10000	1.0E+00	1.0E-04	2.0E-05	2.0E-09	1.0000	1.0000	5000.0	5000.0	5000.0	5000.0	10000	10000	6	0.0002	Yes Yes
Tetrachlorobenzene, 1,2,4,5-	000095-94-3	10000	1.0E+00	1.0E-02*	2.0E-03	2.0E-05*	1.0000	1.0000	5000.0	5000.0	5000.0	5000.0	100	1000	17	0.2000	Yes Yes
Tetrachlorodibenzofuran, 2,3,7,8-	051207-31-9	10000*	1.0E+00	1.0E-04*	2.0E-03*	2.0E-07*	1.0000*	1.0000*	50000.0*	50000.0*	50000.0*	50000.0*	...	...	NA	NA	No Yes
Tetrachloroethane, 1,1,1,2-	000630-20-6	100	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000*	50.0	50.0	50.0	50.0	10	10	17	1.0000	Yes No
Tetrachloroethane, 1,1,2,2-	000079-34-5	10	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	5.0	5.0	5.0	5.0	100	10	11	1.0000	Yes No
Tetrachloroethylene	000127-18-4	100	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	100	10	17	1.0000	Yes No
Tetrachlorophenol, 2,3,4,6-	000058-90-2	100	1.0E+00	1.0E+00*	2.0E-01*	2.0E-01*	1.0000	0.4000*	500.0	500.0	5000.0	5000.0	1000	100	11	0.2000	Yes Yes
Tetraethyl lead	000078-00-2	10000	1.0E+00	...	2.0E-03	...	0.0700	0.0700	500.0	500.0	500.0	500.0	100	10000	17	1.0000	Yes No
Tetraethyldithiopyrophosphate	003689-24-5	1000	1.0E+00	...	2.0E-01*	...	0.4000	0.0700	5000.0*	5000.0*	5000.0*	5000.0*	1000*	1000*	11*	0.0200*	Yes* Yes
Tetrahydrofuran	000109-99-9	1	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	1.0000	0.5	0.5	0.5	0.5	1	1	17	1.0000	Yes No
Thallium	007440-28-0	100*	1.0E+00	1.0E-04	1.0E+00	1.0E-04	1.0000	1.0000	500.0	50.0	500.0	50.0	1*	100*	NA	NA	No Yes

* Indicates difference between previous version of chemical data (JUN94) and current version of chemical data (JUN96).
** Indicates new hazardous substance in current version of chemical data (JUN96).

HAZARD RANKING SYSTEM
Hazardous Substance Factor Values
376 Substances

Substance Name	CAS Number	Toxicity	Ground Water Mobility: Liquid: Karst	Ground Water Mobility: Liquid: Non Karst	Ground Water Mobility: Non-Liquid: Karst	Ground Water Mobility: Non-Liquid: Non-Karst	Persistence: River	Persistence: Lake	Bioaccumulation: Food Chain: Fresh	Bioaccumulation: Food Chain: Salt	Bioaccumulation: Environmental: Fresh	Bioaccumulation: Environmental: Salt	Ecotoxicity: Fresh	Ecotoxicity: Salt	Air Gas Migration	Air Gas Mobility	Gas	Part
Thiourea	000062-56-6	100	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	0.4000*	0.5	0.5	0.5	0.5	100	100	0*	0.0002*	Yes	Yes
Thiram	000137-26-8	100	1.0E+00	...	2.0E-01	...	1.0000	1.0000*	5000.0	5000.0	5000.0	5000.0	10000	10000	NA	NA	No	Yes
Toluene	000108-88-3	10	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	0.4000	50.0	50.0	50.0	50.0	100	100	17	1.0000	Yes	No
Toluene diisocyanate	000584-84-9	10000*	1.0E+00	...	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	1	1	11	0.2000	Yes	Yes
Toluenediamine, 2,4-**	000095-80-7	1000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	1.0000	0.5	0.5	0.5	0.5	1	1	6	0.0200	Yes	Yes
Toluidine, o-**	000095-53-4	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	0.4000	5.0	5.0	5.0	5.0	1000	1000	11	1.0000	Yes	No
Toluidine, p-**	000106-49-0	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.0700	5.0	5.0	5.0	5.0	1	1	11	1.0000	Yes	No
Toxaphene	008001-35-2	1000	1.0E+00	1.0E-02	2.0E-03	2.0E-05	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	6	0.0020	Yes	Yes
TP, 2,4,5-	000093-72-1	100	1.0E+00	1.0E-02	1.0E+00	1.0E-02	0.4000	0.0700	500.0	500.0	500.0	500.0	1000	1000	0	0.0020	Yes	Yes
Tribromomethane	000075-25-2	100	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	1.0000	50.0	50.0	50.0	50.0	10	100*	11	1.0000	Yes	No
Trichloro-1,2,2-Trifluoroethane, 1,1,2-	000076-13-1	1	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	...	...	17	1.0000	Yes	No
Trichlorobenzene, 1,2,4-	000120-82-1	100*	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	0.4000	1.0000	500.0	500.0	500.0	500.0	1000	1000	17	1.0000	Yes	No
Trichloroethane, 1,1,1-	000071-55-6	1	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	5.0	5.0	5.0	5.0	10	10	17	1.0000	Yes	No
Trichloroethane, 1,1,2-	000079-00-5	1000	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	10	10	17	1.0000	Yes	No
Trichloroethylene	000079-01-6	10	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	100	10	17	1.0000	Yes	No
Trichlorofluoromethane	000075-69-4	10	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	...	...	17	1.0000	Yes	No
Trichlorophenol, 2,3,5-	000933-78-8	...	1.0E+00	1.0E-02*	2.0E-01	2.0E-03*	1.0000	1.0000	500.0*	500.0*	500.0*	500.0*	1000*	100*	6	0.0200	Yes	Yes
Trichlorophenol, 2,3,6-	000933-75-5	...	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	1.0000	1.0000	500.0	500.0	500.0	500.0	100*	100*	6	0.0200	Yes	Yes
Trichlorophenol, 2,4,5-	000095-95-4	10	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	1.0000	0.4000	500.0	500.0	5000.0	5000.0	1000	100	11	0.2000	Yes	Yes

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HAZARD RANKING SYSTEM
Hazardous Substance Factor Values
376 Substances

Substance Name	CAS Number	Toxicity	Ground Water Mobility: Liquid Karst	Liquid Non-Karst	Non-Liquid Karst	Non-Liquid Non-Karst	Persistence River	Persistence Lake	Bioaccumulation: Food Chain Fresh	Food Chain Salt	Environmental Fresh	Environmental Salt	Ecotoxicity Fresh	Ecotoxicity Salt	Air Gas Migration	Air Gas Mobility	Gas	Part
Trichlorophenol, 2,4,6-	000088-06-2	10	1.0E+00	1.0E+01	1.0E+00	1.0E+00	1.0000	1.0000	500.0	500.0	50000.0	50000.0	1000	100	11	0.2000	Yes	Yes
Trichlorophenol, 3,4,5-	609-19-8	...	1.0E+00	1.0E+02	2.0E-01	2.0E-03	1.0000	1.0000	500.0	500.0	500.0	500.0	1000	100*	11	0.0200	Yes	Yes
Trichlorophenoxyacetic acid, 2,4,5-	000093-76-5	100	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	1.0000*	0.4000*	500.0*	500.0*	500.0	500.0	10000	100*	0	0.0020	Yes	Yes
Trichloropropane, 1,2,3-	000096-18-4	10000*	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0*	50.0*	50.0*	50.0*	10	10	11	1.0000	Yes	No
Triethanolamine	000102-71-6	1	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.0700	0.5	0.5	0.5	0.5	1*	10*	0	0.0020	Yes	Yes
Trifluralin	001582-09-8	100	1.0E+00	1.0E+02*	2.0E-01	2.0E-03*	1.0000	1.0000	5000.0	5000.0	50000.0	50000.0	10000	1000	11	0.0200	Yes	Yes
Trinitrobenzene, 1,3,5-	000099-35-4	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.0700	5.0	5.0	5.0	5.0	1000*	1000*	6	0.0200	Yes	Yes
Trinitrotoluene	000118-96-7	1000	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.0700*	0.0700*	5.0	5.0	5.0	5.0	100	100	0*	0.0020*	Yes	Yes
Tris (2,3-dibromopropyl) phosphate	000126-72-7	1000	1.0E+00	1.0E+00*	2.0E-01	2.0E-11*	1.0000	0.4000*	500.0*	500.0*	5.0	5.0	...	...	11	0.0200	Yes	Yes
Vanadium	007440-62-2	1	1.0E+00	1.0E+02	.	...	1.0000	1.0000	0.5	0.5	0.5	0.5	...	...	NA	NA	No	Yes
Vanadium pentoxide	001314-62-1	100	1.0E+00	..	...	.	1.0000	1.0000	0.5	0.5	0.5	0.5	200*	1000*	NA	NA	No	Yes
Vinyl acetate	000108-05-4	10	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.4000	0.5	0.5	0.5	0.5	10	10	17	1.0000	Yes	No
Vinyl chloride	000075-01-4	10000	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.0007	0.0700	5.0	5.0	5.0	5.0	...	...	17	1.0000	Yes	No
Warfarin	000081-81-2	10000	1.0E+00	1.0E+00*	2.0E-01	2.0E-01*	1.0000*	1.0000*	50.0	50.0	50.0	50.0	10	10	NA	NA	No	Yes
Xylene, m-	000108-38-3	1	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	500.0	500.0	500.0	500.0	100	10	17	1.0000	Yes	No
Xylene, o-	000095-47-6	1	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	100	100	17	1.0000	Yes	No
Xylene, p-	000106-42-3	10	1.0E+00	1.0E+00*	1.0E+00	1.0E+00*	0.4000	1.0000	50.0	50.0	50.0	50.0	100	1	17	1.0000	Yes	No
Zinc	007440-66-6	10	1.0E+00	1.0E-02	2.0E-01	2.0E-03	1.0000	1.0000	500.0	50000.0	500.0	50000.0	10	100	NA	NA	No	Yes

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** Indicates new hazardous substance in current version of chemical data (JUN96).

HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks
376 Substances

Substance Name	CAS Number	DRINKING WATER MCL/MCLG (mg/L)	DRINKING WATER Reference Dose Screen Conc (mg/L)	DRINKING WATER Cancer Risk Screen Conc (mg/L)	FOOD CHAIN FDAAL (ppm)	FOOD CHAIN Reference Dose Screen Conc (mg/kg)	FOOD CHAIN Cancer Risk Screen Conc (mg/kg)	ENVIRONMENTAL AWQC/AALAC Freshwater (ug/L)	ENVIRONMENTAL AWQC/AALAC Saltwater (ug/L)
Isophorone	000078-59-1	...	7.3E+00*	9.0E-02*	...	2.7E+02*	3.3E+00*	...	...
KENZENE**	00000000000	...	...	...	...	...	...	...	...
Kepone	000143-50-0	...	...	...	3.0E-01	...	...	...	...
Lead	007439-92-1	1.5E-02	...	...	...	...	...	3.2E+00	3.2E-01*
Lindane	000058-89-9	2.0E-04	1.1E-02*	6.6E-05*	...	4.1E-01*	2.4E-03*	8.0E-02	8.0E-02
Magnesium	007439-95-4	...	...	...	...	...	...	...	...
Malathion	000121-75-5	...	7.3E-01*	...	...	2.7E+01*	...	1.0E-01	1.0E-01
Maleic anhydride	000108-31-6	...	3.7E+00*	...	...	1.4E+02*	...	...	...
Maleic hydrazide	000123-33-1	...	1.8E+01*	...	...	6.8E+02*	...	...	...
Manganese	007439-96-5	..	5.1E+00*	...	...	1.9E+02*	...	...	...
Mercury	007439-97-6	2.0E-03	1.1E-02*	...	1.0E+03	4.1E-01*	...	1.2E-02	1.2E-02*
Methacrylonitrile	000126-98-7	...	3.7E-03*	...	...	1.4E-01*	...	...	...
Methanol	000067-56-1	...	1.8E+01*	...	...	6.8E+02*	...	...	..
Methomyl	016752-77-5	...	9.1E-01*	...	...	3.4E+01*	...	...	...
Methoxychlor	000072-43-5	4.0E-02	1.8E-01*	...	...	6.8E+00*	...	3.0E-02	3.0E-02
Methyl chlorocarbonate	000079-22-1	...	..	...	...	...	...	...	...
Methyl ethyl ketone	000078-93-3	...	2.2E+01*	...	...	8.1E+02*	...	...	...
Methyl isobutyl ketone	000108-10-1	...	2.9E+00*	...	...	1.1E+02*	...	...	..*
Methyl methacrylate	000080-62-6	...	2.9E+00*	...	...	1.1E+02*	...	...	...

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** Indicates [illegible] hazardous substance in current version of chemical data (JUN96).

HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks
376 Substances

Substance Name	CAS Number	DRINKING WATER MCL/MCLG (mg/L)	DRINKING WATER Reference Dose Screen Conc (mg/L)	DRINKING WATER Cancer Risk Screen Conc (mg/L)	FOOD CHAIN FDAAL (ppm)	FOOD CHAIN Reference Dose Screen Conc (mg/kg)	FOOD CHAIN Cancer Risk Screen Conc (mg/kg)	ENVIRONMENTAL AWQC/AALAC Freshwater (ug/L)	ENVIRONMENTAL AWQC/AALAC Saltwater (ug/L)
Parathion, methyl-	000298-00-0	...	9.1E-03*	...	...	3.4E-01*	...	...	...
PCBs	001336-36-3	5.0E-04	7.3E-04*	1.1E-05*	...	2.7E-02*	4.1E-04*	1.4E-02	1.4E-02*
Pentachlorinated dibenzo-p-dioxin, 1,2,3,7	040321-76-4	...	...	1.1E-09*	...	...	3.9E-08*	...	...
Pentachlorinated dibenzofuran, 1,2,3,7,8-	109719-77-9	...	...	1.1E-08*	...	...	3.9E-07*	...	...
Pentachlorinated dibenzofuran, 2,3,4,7,8-	057117-41-6	...	...	1.1E-09*	...	...	3.9E-08*	...	...
Pentachlorobenzene	000608-93-5	...	2.9E-02*	...	...	1.1E+00*	...	...	...
Pentachloroethane	000076-01-7	...	...	...	...	...	...	...	...
Pentachloronitrobenzene	000082-68-8	...	1.1E-01*	3.3E-04*	...	4.1E+00*	1.2E-02*	...	...
Pentachlorophenol	000087-86-5	1.0E-03	1.1E+00*	7.1E-04*	...	4.1E+01*	2.6E-02*	1.3E+01	1.3E+01
Phenanthrene	000085-01-8	...	...	...	...	...	...	...	...
Phenol	000108-95-2	...	2.2E+01*	...	...	8.1E+02*	...	...	...
Phenyl sulfide	000139-66-2	...	...	...	...	...	...	...	...
Phenylenediamine, m-**	000108-45-2	...	2.2E-01	...	...	8.1E+00	...	...	...
Phenylmercuric acetate	000062-38-4	...	2.9E-03*	...	...	1.1E-01*	...	...	...
Phorate	000298-02-2	...	7.3E-03*	...	...	2.7E-01*	...	...	...
Phosgene	000075-44-5	...	...	...	...	...	...	...	...
Phosphamidon	013171-21-6	...	...	...	...	...	...	...	...
Phosphine	007803-51-2	...	1.1E-02*	...	...	4.1E-01*	...	...	...
Phosphonodithioic acid, phenyl-o-ethyl-o-(	002104-64-5	...	3.7E-04*	...	...	1.4E-02*	...	1.0E-01*	1.0E-01*

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** Indicates a hazardous substance in current version of chemical data (JUN

HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks
376 Substances

Substance Name	CAS Number	DRINKING WATER MCL/MCLG (mg/L)	DRINKING WATER Reference Dose Screen Conc (mg/L)	DRINKING WATER Cancer Risk Screen Conc (mg/L)	FOOD CHAIN FDAAL (ppm)	FOOD CHAIN Reference Dose Screen Conc (mg/kg)	FOOD CHAIN Cancer Risk Screen Conc (mg/kg)	ENVIRONMENTAL AWQC/AALAC Freshwater (ug/L)	ENVIRONMENTAL AWQC/AALAC Saltwater (ug/L)
Trichlorophenol, 2,4,6-	000088-06-2	...	...	7.7E-03*	...	...	2.9E-01*	...	...
Trichlorophenol, 3,4,5-	000609-19-8	...	...	...	...	...	...	...	...
Trichlorophenoxyacetic acid, 2,4,5-	000093-76-5	...	3.7E-01*	...	...	1.4E+01*	...	...	...
Trichloropropane, 1,2,3-	000096-18-4	...	2.2E-01*	1.2E-05*	...	8.1E+00*	4.5E-04*	...	...
Triethanolamine	000102-71-6	...	...	...	...	...	...	...	...
Trifluralin	001582-09-8	...	2.7E-01*	1.1E-02*	...	1.0E+01*	4.1E-01*	...	...
Trinitrobenzene, 1,3,5-	000099-35-4	...	1.8E-03*	...	...	6.8E-02*	...	...	...
Trinitrotoluene	000118-96-7	...	1.8E-02*	2.8E-03*	...	6.8E-01*	1.1E-01*	...	...
Tris (2,3-dibromopropyl) phosphate	000126-72-7	...	...	...	...	...	...	...	...
Vanadium	007440-62-2	...	2.6E-01*	...	...	9.5E+00*	...	...	...
Vanadium pentoxide	001314-62-1	...	3.3E-01*	...	...	1.2E+01*	...	...	...
Vinyl acetate	000108-05-4	...	3.7E+01*	...	...	1.4E+03*	...	...	...
Vinyl chloride	000075-01-4	2.0E-03	...	4.5E-05*	...	...	1.7E-03*	...	...
Warfarin	000081-81-2	...	1.1E-02*	...	...	4.1E-01*	...	...	...
Xylene, m-	000108-38-3	1.0E+01	7.3E+01*	...	...	2.7E+03*	...	...	...
Xylene, o-	000095-47-6	1.0E+01	7.3E+01*	...	...	2.7E+03*	...	...	...
Xylene, p-	000106-42-3	1.0E+01	...	...	...	...	...	...	...
Zinc	007440-66-6	...	1.1E+01*	...	...	4.1E+02*	...	1.1E+02	1.1E+02*

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REFERENCE 3

REGION II
SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

PROJECT NOTE

TO: Diamond Head Oil Refienry Div. File (TDD No.: 02-99-08-0015)
FROM: Dennis J. Foerter, CHMM
DATE: 25 May 2000
SUBJECT: Latitude and Longitude Calculations

The location of the Diamond Head Oil Refinery Div. site was plotted on the Elizabeth N.J.-N.Y. (7.5 series) guadrangle (1955); each grid spans 2.5" (or 150"). The site is located between 40° 37' 30" and 40° 45' N latitude and 74° 07' 30' W and 74° 15' longitude. The latitude and logitude was deterimined from the location of the Diamond Head Oil Refinery Div. site as follows:

Longitude: y = 40° 37' 30" N + [(y1/yt) 150"]

Where:

y1 = distance measured from the quadrangle, from latitude 40° 37' 30" N to the site.

yt = distance measured from the quadrangle between latitude 40° 37' 30" and 40° 45" N.

Thus:

y = 40° 37' 30" N + [(56.25 mm/19.15 mm) 150"]
y = 40° 37' 30" N + 440" = <u>40° 44' 50" N</u>

Longitude: x = 74° 07' 30' W + [(x1/xt) 150"]

Where:

x1 = distance measured from the quadrangle, from longitude 74° 07' 30" W to the site.

xt = distance measured from the quadrangle between longitude 74° 07' 30" and 74° 15" W.

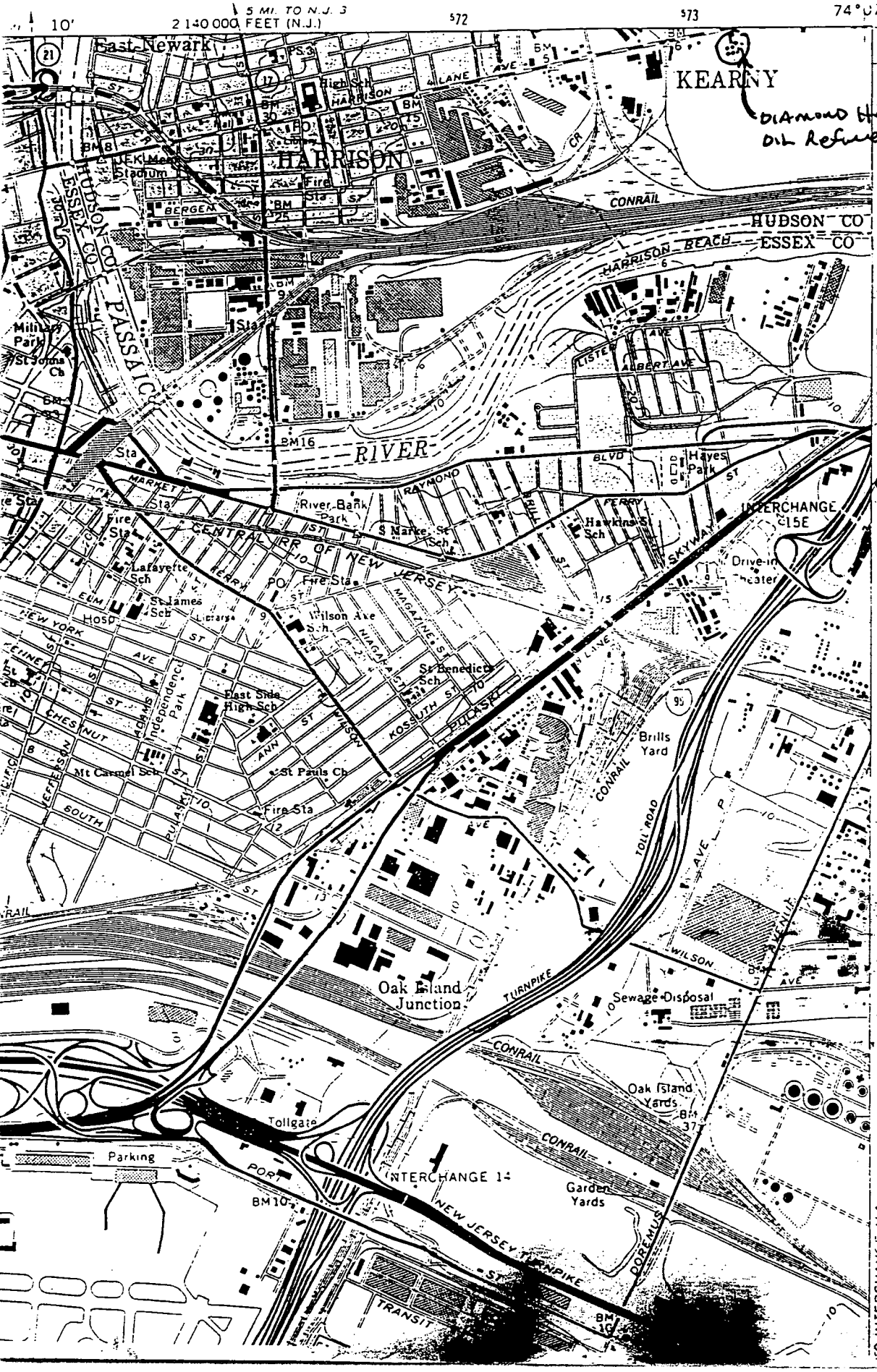
Thus:

x = 74° 07' 30" W + [(2.5 mm / 14.5 mm) 150"]
x = 74° 07' 30" W + 25.9" = <u>74° 07' 55.9" W</u>

Therefore, the Diamond Head Oil Refinery Div. site is located at 40° 44' 50" N latitude and 74° 07' 55.9" W longitude.

Signature/Date: Dennis J. Foerter 5/25/2000

ELIZABETH QUADRANGLE
NEW JERSEY–NEW YORK
7.5 MINUTE SERIES (TOPOGRAPHIC)



REFERENCE 4

J014-SI
Rev. No. 0

✓ AJG
12/31/91

(Final - AJG 2/11/92)

FINAL DRAFT
SITE INSPECTION REPORT
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
VOLUME 1 OF 2

PREPARED UNDER

WORK ASSIGNMENT NO. 019-2JZZ
CONTRACT NO. 68-W9-0051

DECEMBER 31, 1991

SUBMITTED BY:

RICHARD M. SETTINO
SITE MANAGER

DAVID J. GRUPP
PROJECT MANAGER

RONALD M. NAMAN
SUBCONTRACT OFFICE MANAGER

REVIEWED/APPROVED BY:

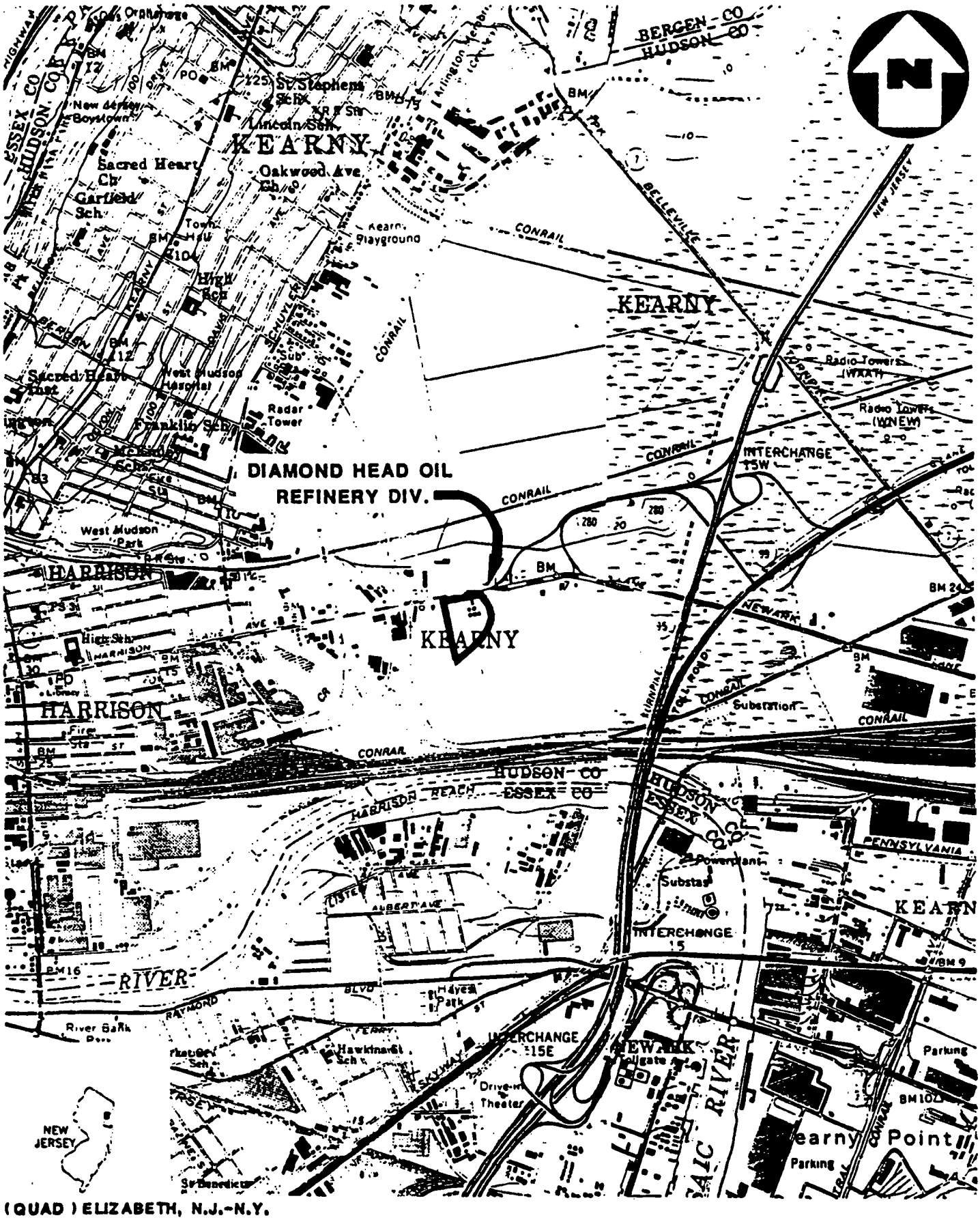
DENNIS STAINKEN, Ph.D.
WORK ASSIGNMENT MANAGER

SITE SUMMARY AND RECOMMENDATIONS

The Diamond Head Oil Refinery Div. (Diamond Head) Site is located at 1401 Harrison Avenue in Kearny, Hudson County, New Jersey. The site is also listed on the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Alias Site Listing as Edgewater Terminal (Ref. No. 1). Figures 1 and 2 present a Site Location Map and Site Map, respectively. Currently the site is inactive and consists of approximately 15 acres of undeveloped land that is bordered by Harrison Avenue to the north, entrance ramp M of Interstate 280 to the east, Interstate 280 (I-280) to the south, and the Campbell Distribution Foundry to the west (Ref. No. 9). The site is completely fenced, with the exception of a break in the fence along the eastern border, and the access road is blocked at Harrison Avenue by a dirt berm and concrete debris (Ref. No. 12). The site is comprised of wetland areas and drainage ditches, a small pond, a vegetated landfill area along the western portion of the site, and the remnants of the former Diamond Head Oil Refinery on the eastern portion. The abandoned refinery portion of the site now contains various construction debris including the concrete foundations of the former on-site building and two former aboveground storage tanks (Ref. No. 9).

The site was in operation from February 1, 1946 to early 1979. The Diamond Head Oil Refining Company, Inc. operated an oil reprocessing facility at the site from 1946 until November 1, 1973. From 1973 until November 3, 1976, PSC Resources, Inc., a subsidiary of the Phillips Screw Company, Inc., continued to operate the reprocessing facility on the site under the name Diamond Head Oil Refining Company, Inc., Division of PSC Resources, Inc. In 1976 the facility was purchased by Ag-Met Oil Service, Inc. which continued the collection, refining, and recycling of liquid oily waste into fuel oil and lubrication oil. On November 18, 1976, Ag-Met Oil Service, Inc. changed its name to Newtown Refining Corporation and was issued a one-year NJDEP Temporary Operating Authorization (TOA) to operate a Special Waste Facility under the name Diamond Head Oil Refinery Division as a waste oil reprocessor on the Diamond Head site. Sometime in 1982, Newtown Refining Corporation became a wholly-owned subsidiary of Refinement International Company. The name of the facility remained Diamond Head Oil Refining Division and the expiration date on the TOA was April 30, 1979 or when engineering designs for the facility were submitted and approved or denied (Ref. Nos. 4, 6, 30, 32). It should be noted that all of the above named companies were owned by a Mr. Robert Mahler. In January 1985, Newtown Refining Corporation sold the site to Mimi Urban Development Corporation (Ref. No. 31). On August 23, 1985 Mimi Urban Development Corporation changed its name to Hudson Meadows Urban Renewal Development Corporation (HMURDC) and is the present owner of the site (Ref. No. 32).

During facility operations, two aboveground storage tanks (conflicting reports of volumes of 30,000 gallons and 100,000 gallons) and possibly underground pits were used to store oily waste. These

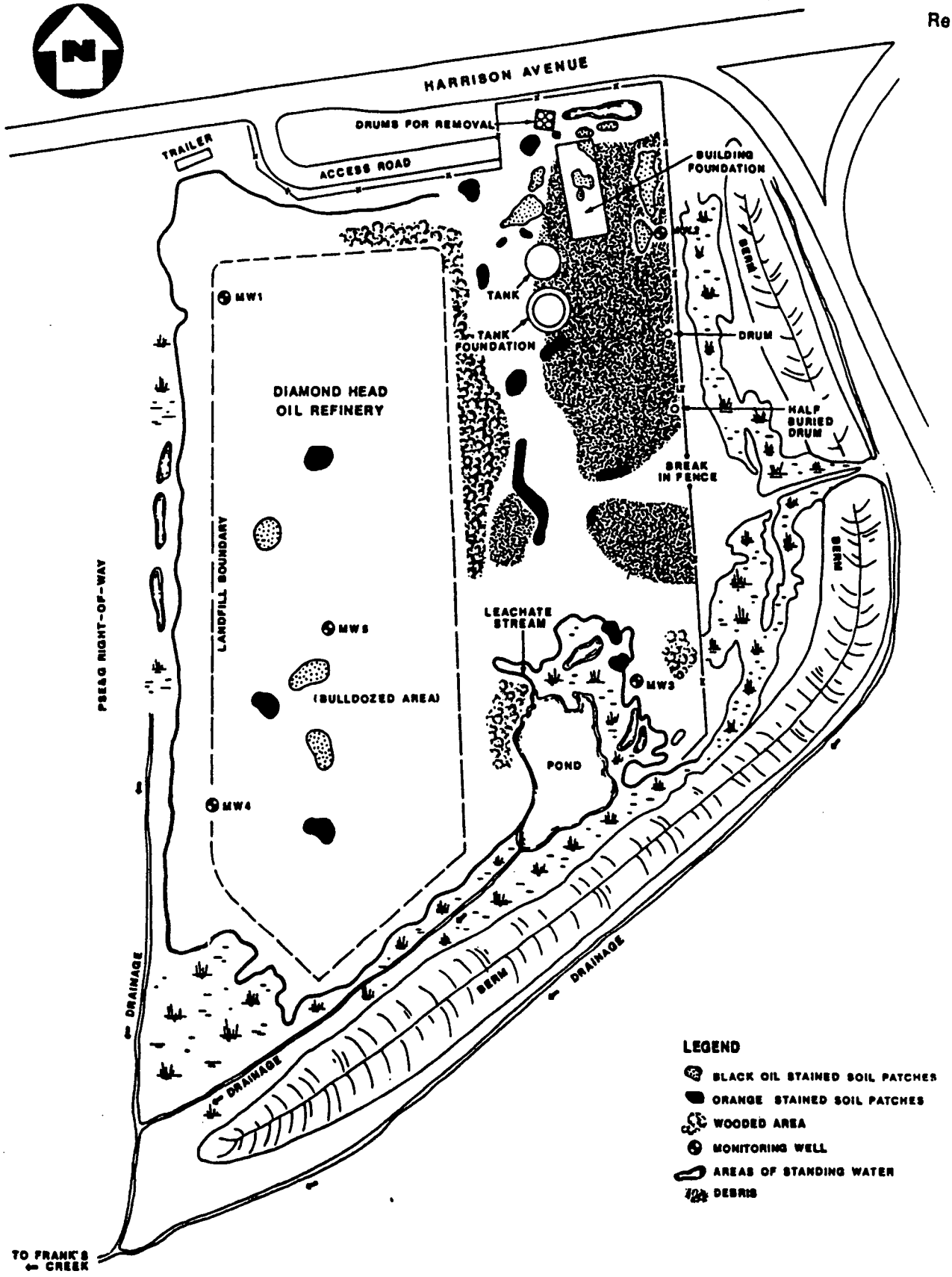


SITE LOCATION MAP

FIGURE 1

DIAMOND HEAD OIL REFINERY DIV., KEARNY, N.J.

SCALE : 1" = 2000'



(4)

SITE MAP

DIAMOND HEAD OIL REFINERY DIV., KEARNY, N.J.

NOT TO SCALE

FIGURE 2

wastes were intermittently discharged directly to adjacent properties, including the wetland area to the south of the site, creating an "oil lake." The New Jersey Department of Transportation (NJDOT) acquired the property to the south of the site on March 6, 1968. In 1977, NJDOT began construction of I-280 and was reported to have removed 9 million gallons of oil-contaminated water and 5 to 6 million cubic yards of oily sludge from the lake. This material was reportedly taken to Newtown's facility on Long Island to be recycled; however, there are no reports stating that this recycling process occurred. NJDOT filed suit against PSC Resources, Inc. on September 14, 1977 to recover the cost of the clean-up. It is also reported that during the construction of I-280, an "underground lake" of oil contaminated groundwater was found extending from the eastern limits of the NJDOT right-of-way to Frank's Creek on the west (Ref. Nos. 4, 25, 26). It is reported that, prior to abandoning the site, Diamond Head cleaned out the two aboveground tanks; however, there is no known documentation of this activity. From the close of operations in 1979 until 1982 the abandoned site was not completely fenced. During this time, it is reported that dumping of waste oils and other debris took place on site. Refinement International Co. hired Eastern Chemical Cleaning Co. to clean up the site in May 1982. In order to do so, the material in the tanks was analyzed and was found to contain 206 parts per million (ppm) of polychlorinated biphenyls (PCBs). Later analyses revealed levels of PCBs to be over 3,100 ppm. Approximately 7,500 gallons of material was pumped out of the tanks and disposed of off site by a Resource Conservation and Recovery Act (RCRA) permitted Treatment, Storage, and Disposal Facility (TSDF) by Resource Technology Service. Environmental Transport also removed approximately 27 tons of contaminated soil in May 1982. Analysis of a sample collected from this soil indicated the presence of lead at a concentration of 32 ppm. As of February 28, 1978, a reported $13,600 in fines had been levied against Robert Mahler, the president of Diamond Head (Ref. Nos. 5, 22, 25). It is unknown if these fines were ever paid or if any other enforcement actions have taken place concerning the site.

Soil and groundwater in the area of the site have been impacted by past site operations. During the HALLIBURTON NUS Environmental Corporation on-site reconnaissance, carried out under the U.S. EPA Field Investigation Team (FIT) Contract, extensive areas of orange and black stained soil was observed to be present at various locations across the site. HALLIBURTON NUS Environmental Corporation conducted a sampling site inspection, under the FIT contract, at the facility on July 1 and 2, 1991, during which four groundwater, three surface water, three sediment, seven surface soil, one subsurface soil, three liquid waste, and two solid waste samples were collected. Analyses of the soil samples indicated the presence of significantly elevated concentrations of numerous volatile and semivolatile organic compounds, pesticides, PCBs, and metals in the areas of the stained soil and the oil lake. Results of the groundwater samples collected from the monitoring wells located in the eastern portion of the site, indicated the presence of volatile and semivolatile organics, and PCBs similar to those found in the soil and the sediment samples collected from the site. Visual observation of

samples collected from monitoring well 3 indicated that a layer of contamination was present on top of the groundwater in the well. Analytical results of samples collected from this layer of contamination indicate the presence of various contaminants not normally associated with petroleum products. Since groundwater in the area of the site is reported to flow in a westerly direction, no upgradient well was available to be sampled; therefore, a release of contaminants from the site to groundwater cannot be definitively concluded. Soil samples collected from the wetland area in the southern portion of the site indicate actual contamination of this wetland area by contaminants attributable to the site. Since the contaminants are present in surface soils on site and access to the site is not completely controlled (i.e., the break in the fence to the east), a potential for direct contact with on-site contaminants does exist; however, there is little potential for fire or explosion to occur at the site (Ref. Nos. 12, 34-37).

The site is located in the Hackensack Meadowlands, which act as a habitat for transient Federal and state listed endangered or threatened species. The Meadowlands also consist of numerous wetland areas which exist along the coastal tidal waters in the area of the site. There are no known wells used for drinking purposes within 4 miles of the site, nor are there any known drinking water intakes and fisheries located in any of the surface waters within 15 miles downstream of the site. There is no residence, school, or day care facility within 200 feet of the site property (Ref. Nos. 8, 17, 20, 33).

HIGHER PRIORITY FOR FURTHER ACTION is recommended for the Diamond Head Oil Refinery Div. Site. Contamination of an on-site wetland area by hazardous substances attributable to the site has been observed. Although groundwater under the site has been impacted by contaminants attributable to the facility's past operations, there are no known wells used for drinking purposes within 4 miles of the site. A release of contaminants from the facility to surface water is suspected; however, there are no fisheries within 15 miles downstream of the site. Since the site is located in the Hackensack Meadowlands, a release to air of these contaminants poses a threat to the habitats of Federal endangered or state threatened species and wetlands located within the Meadowlands. The elevated levels of contaminants in on-site surface soils, along with unrestricted site access, also pose a potential for direct contact with these contaminants.

SITE ASSESSMENT REPORT: SITE INSPECTION

PART I: SITE INFORMATION

1. Site Name/Alias Diamond Head Oil Refinery Div./Edgewater Terminal

   Street 1401 Harrison Turnpike (Route 508)

   City Kearny State New Jersey Zip 07032

2. County Hudson County Code 017 Cong.Dist. 14

3. EPA ID No. NJD092226000

4. Block No. 285 Lot No. 3*

   * The original lot number for the Diamond Head Oil Refinery was lot number 3 of block number 285. This lot was purchased by HMURDC. However, lot numbers 14 and 15 have been leased by HMURDC from the Town of Kearny. Because these lots have also been impacted by previous site operations, all three lots will be evaluated as one site.

5. Latitude 40° 44' 56" N Longitude 74° 07' 57" W

   USGS Quad. Elizabeth, NJ-NY

6. Owner Hudson Meadows Urban Renewal Development Corporation Tel. No. (201) 383-6200

   Street 525 Riverside Avenue

   City Lyndhurst State New Jersey Zip 07071

7. Last Operator Refinement International Company Tel. No. Unknown

   Street 162 Main Street

   City Woonsocket State Rhode Island Zip 02895

8. Type of Ownership

   X Private _ Federal _ State

   _ County _ Municipal _ Unkr own _ Other

9. Owner/Operator Notification on File

   _ RCRA 3001 Date _____ _ CERCLA 103c Date _____

   _ None X Unknown

10. Permit Information

Permit	Permit No.	Date Issued	Expiration Date	Comments
Temporary Operating Authorization	6907B	7-14-78	4-30-79	NJDEP Temporary authorization to operate a Special Waste Facility as a waste oil and oil sludge reprocessor.

11. **Site Status**

_ Active X Inactive

12. **Years of Operation** February 1, 1946 **to** Early 1979

13. **Identify the types of waste sources (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.**

(a) Waste Sources

Waste Unit No.	Waste Source Type	Facility Name for Unit
1.	Landfill	Landfill Area
2.	Aboveground Tanks	Aboveground Tanks
3.	Surface Impoundment	Oil Lake
4.	Contaminated Soil	Contaminated Soil
5.	Underground Pits	Underground Pits

(b) Other Areas of Concern

Identify any miscellaneous spills, dumping, etc. on site; describe the materials and identify their locations on site.

From the close of operations in 1979 until 1982 the abandoned site was not completely fenced. During this time it is reported that illegal dumping of waste oils and other debris took place on site. The amount of waste dumped on site is unknown. On Wednesday, December 14, 1977 heavy rains caused an unknown amount of oil to move from the site on to Harrison Avenue. This caused an area of Harrison Avenue approximately 100 feet long to be covered with an oil and water mixture, causing hazardous driving conditions. By the following day the water level had receded leaving oil on the roadway which had been spread over the roadway by passing traffic. It is reported that the Crescent Construction Co., the Hudson County Road Department, and the Kearny Fire Department corrected the situation.

Ref. Nos. 1-6, 22, 23

14. **Information available from**

Contact Amy Brochu **Agency** U.S. EPA **Tel. No.** (908) 906-6802

Preparer Richard M. Settino **Agency** HALLIBURTON NUS Environmental Corporation

Date December 31, 1991

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following items.

Waste Unit 1 - Landfill Area

Source Type

X	Landfill	_	Contaminated Soil
_	Surface Impoundment	_	Pile
_	Drums	_	Land Treatment
_	Tanks/Containers	_	Other

Description:

Little information is known about the disposal practices relating to the landfill area. It is reported that the western part of the site was used as a landfill in the past. Operators of the landfill are unknown as are the exact substances deposited there. Soil borings taken in the area of the landfill indicate that fill consisting of brick fragments, glass, plastic, wood, cinders, and other miscellaneous materials typical of an area used for landfilling of domestic solid waste.

Hazardous Waste Quantity

The exact size of the landfill area, as well as the amount of material deposited there, is unknown. Based on a scaled site map made by Killam Associates (Ref. No. 9), the area of the landfill is estimated at 7 acres.

Hazardous Substances/Physical State

There are no known reports of hazardous substances being deposited in the landfill. However, a surface soil sample collected by the New Jersey Department of Environmental Protection (NJDEP), Division of Waste Management from the landfill area on May 1, 1985 indicated the presence of various semivolatile organic compounds including anthracene, chrysene, fluoranthrene, naphthalene, phenanthrene, and pyrene. This sample also indicated antimony and nickel at levels above those detected in a background sample collected during the same sampling event. Samples from soil borings collected by Killam in October 1989 indicated the presence of antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc above NJDEP guidelines. During the HALLIBURTON NUS Environmental Corporation sampling site inspection, a solid caramel colored, translucent material was observed to be located on the ground surface in the landfill area between monitoring wells 4 and 5. This substance was assumed to be a resin of some type. Analytical results from a sample of this material indicated that no contaminants were detected in the material.

Ref. Nos. 9, 12, 24, 34-36

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following items.

Waste Unit 2 - Aboveground Tanks

Source Type

_	Landfill	_	Contaminated Soil
_	Surface Impoundment	_	Pile
_	Drums	_	Land Treatment
X	Tanks/Containers	_	Other

Description:

During the facility operations there were two aboveground storage tanks that were used to store waste oil for reprocessing. It was reported that Diamond Head had cleaned out the two tanks before they moved but did not remove the tanks. There are a number of reports stating that during facility operations, these tanks were drained repeatedly and its contents were discharged to the wetlands and surrounding properties. It was also reported that after the facility ceased operations, site access was not controlled and unknown amounts of oil sludge were being deposited in the tanks by unknown parties. These abandoned tanks were also reported to be rusted out and leaking and the soil surrounding the tanks was reported to be stained. These abandoned tanks were cleaned out by Newtown Refining Corporation (the site owner at that time) and removed from the site in 1982.

Hazardous Waste Quantity

There are conflicting reports as to the actual volume of the tanks. A memorandum from the Hackensack Meadowlands Development Commission (HMDC) indicates one 30,000 gallon tank existed on site. A Hazardous Waste Investigation conducted by NJDEP indicated that two tanks were on site, each having a volume of 100,000 gallons. The exact amount of material stored in these tanks over the years that the facility was in operation, along with the amount of illegally dumped sludge, is unknown. It is reported that approximately 7,500 gallons of material was pumped out of the tanks in May 1982.

Hazardous Substances/Physical State

In order for the oil and sludge in the tanks to be transported off site, a sample was collected to determine if any hazardous constituents were present. Samples from the tanks collected in 1982 were analyzed by Princeton Aquascience and indicated that the material in tank 1 contained less than 50 ppm of PCBs. However, the material in tank 2 contained 206 ppm of PCBs. After shipping the material (from both tanks mixed) was sampled again and found to contain over 3,300 ppm PCBs. Soil samples collected by HALLIBURTON NUS Environmental Corporation from stained soil at the base of the tank foundations indicate the presence of various volatile and semivolatile organic compounds including phenanthrene and pyrene and the PCB Aroclor-1260.

Ref. Nos. 12, 25, 34-36

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following items.

Waste Unit 3 - Oil Lake

Source Type

_	Landfill	_	Contaminated Soil
X	Surface Impoundment	_	Pile
_	Drums	_	Land Treatment
_	Tanks/Containers	_	Other

Description:

It is reported that during its years of operation, material was intermittently discharged from the two aboveground storage tanks directly to surrounding on-site and off-site properties, including a wetland area to the south of the facility, causing this wetland area to become an "oil lake." This lake was located on property owned by NJDOT and is currently adjacent to I-280 West. The owners of Diamond Head claim that this lake was created by the leaching of oil and sludge from the adjacent MSLA landfill to the south; however, surrounding topography and geology suggest that this is unlikely to have occurred.

Hazardous Waste Quantity

In 1977, approximately 9 million gallons of liquid and 5 to 6 million cubic yards of sludge were reportedly removed from the lake. The exact quantity of material discharged to the lake during the time of operations, as well as the exact quantity of material that remains in the lake, are unknown.

Hazardous Substances/Physical State

A soil sample collected by NJDEP on May 1, 1985 from the perimeter of the lake indicated that a number of contaminants were present including 1,1-dichloroethane, toluene, bis (2-ethylhexyl) phthalate, benzo(k)fluoranthene, acenaphthalene, benzo(a)pyrene, fluoranthene, pyrene, phenanthrene, chromium, copper, zinc, and total phenolics. A surface water sample collected during the same sampling event from the lake itself indicated the presence of 1,1-dichloroethane, tetrachloroethylene, toluene, phenol, arsenic, copper, lead, and zinc. A surface water sample collected by Killam in October 1989 from a ponded area near the lake indicated the presence of antimony, arsenic, chromium, copper, nickel, lead, zinc, 1,1,1-trichloroethane, toluene, xylenes, phenol, naphthalene, phenanthrene, and Aroclor-1260. A soil sample collected by HALLIBURTON NUS Environmental Corporation from the bank of the lake indicated the presence of a number of volatile organic compounds including benzene, 1,1,1-trichloroethane, toluene, ethylbenzene, and xylenes.

Ref. Nos. 12, 24, 26, 34-36

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following items.

Waste Unit 4 - Contaminated Soil

Source Type

_	Landfill	X	Contaminated Soil
_	Surface Impoundment	_	Pile
_	Drums	_	Land Treatment
_	Tanks/Containers	_	Other

Description:

A number of reports indicate that stained soil was observed at various locations throughout the site. The HALLIBURTON NUS Environmental Corporation on-site reconnaissance revealed that black stained soil existed along the northeast portion and the eastern border of the site. Patches of orange stained soil were also observed at various locations across the site during the reconnaissance.

Hazardous Waste Quantity

The exact amount of contaminated soil on site is unknown. It was reported that 27 tons of contaminated soil were removed from the site in 1982 by Environmental Transport and taken to the facilities of Cecos International, Inc. The area of the site is 15 acres.

Hazardous Substances/Physical State

Soil samples collected by HALLIBURTON NUS Environmental Corporation at various locations around the site indicate the presence of various volatile organics including benzene, 2-hexanone, tetrachloroethene, toluene, ethylbenzene, and xylenes, various semivolatile organics including naphthalene, 2-methylnaphthalene, and pyrene, various pesticides including 4,4' DDT, endrin, and the PCB Aroclor-1260.

Ref. Nos. 5, 12, 27, 28, 34-36

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following items.

Waste Unit 5 - Underground Pits

Source Type

_	Landfill	_	Contaminated Soil
_	Surface Impoundment	_	Pile
_	Drums	_	Land Treatment
_	Tanks/Containers	X	Other (Unlined Pits)

Description:

During an NJDEP Hazardous Waste Facility Inspection on February 6, 1979, it was noted that two underground storage pits were observed. These pits were reported to contain "a dark liquid resembling contaminated oil," which was explained to be a thin film of oil on top of some water that may have seeped into the pits. These pits were also referred to as underground storage tanks in an NJDEP memorandum on November 1, 1982; however, the information about these underground tanks in this memorandum conflicts with other information contained in Ref. No. 25, which states that aboveground tanks were located on site. No other information is known about these pits.

Hazardous Waste Quantity

The size or volume of these pits, as well as the amount of material contained in the pits, is unknown.

Hazardous Substances/Physical State

Any substances, with the exception of the contaminated oil referred to above, that were contained in the pits are unknown. These pits were not observed during the HALLIBURTON NUS Environmental Corporation on-site reconnaissance or sampling site inspection.

Ref. Nos. 4, 12, 25, 29

PART III: SAMPLING RESULTS

EXISTING ANALYTICAL DATA

The New Jersey Department of Environmental Protection (NJDEP), Division of Waste Management collected six surface soil samples and two surface water samples from areas of visual contamination at the site on May 1, 1985. These samples were analyzed for volatile organics, acid compounds, pesticides, PCBs, metals, cyanides, and phenols. The analytical results for selected compounds are presented in Table 1. A full presentation of the NJDEP analytical results along with a sample location map, is included as Ref. No. 24.

TABLE 1

ANALYTICAL RESULTS FOR SELECTED CONTAMINANTS DETECTED IN SURFACE SOIL SAMPLES COLLECTED BY NJDEP AT THE DIAMOND HEAD OIL REFINERY DIV. SITE ON MAY 1, 1985

Sample Number/Contaminant Concentration

Hazardous Substance	SBACK	S1	S2	S3	S4	S5
Toluene	ND	36.3	94.9	40,520.4	ND	2,355.7
Benzene	ND	BMDL	45.8	16,960.7	ND	252.7
1,1-Dichloroethane	ND	10.1	20.6	942.1	ND	335.9
Ethylbenzene	ND	18.5	14.2	6,020.4	ND	BMDL
Phenanthrene	7,130	410	BMDL	1,487,000	13,114	36,200
Fluoranthrene	12,025	236	55,100	601,000	16,645	13,800
Pyrene	9,346	349	178,000	1,130,000	13,200	39,100

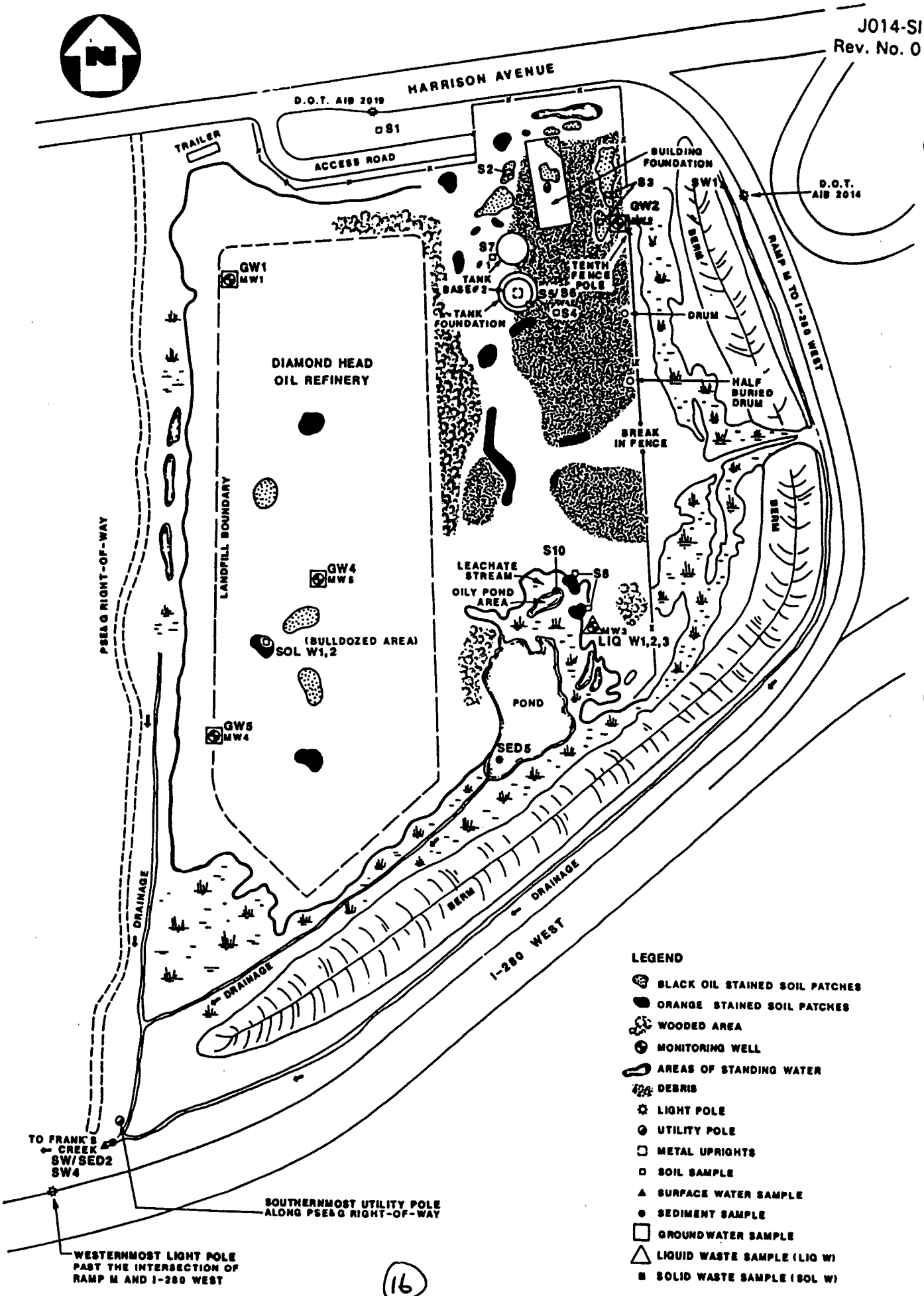
Results in micrograms per kilogram (ug/kg)
BMDL = Below Minimum Detection Limit
ND = Compound Not Detected

Hudson Meadows Urban Renewal Development Corporation (HMURDC) retained Killam Associates to conduct an environmental site characterization of the Diamond Head Site. During this investigation five soil borings and five monitoring wells were installed at various locations throughout the site between October 23 and 31, 1989. Samples were collected during the soil boring process and analyzed for petroleum hydrocarbons and U.S. EPA Priority Pollutants plus 40 library search compounds to characterize subsurface contamination. Analytical results from these samples do not indicate the presence of any contaminant significantly above the contaminant levels obtained from the NJDEP surface soil samples. Killam Associates also sampled four of the five monitoring wells in November 1989 and again in January 1990. These samples were also analyzed for the parameters listed above plus cyanide and phenols. During these sampling events monitoring well 3 was not sampled due to the presence of "free product (oil)" in the well. A complete copy of the Killam Associates report, including boring and monitoring well locations and analytical results of the samples collected, is included as Ref. No. 9.

SITE INSPECTION RESULTS

HALLIBURTON NUS Environmental Corporation, under the U.S. EPA FIT contract, conducted a sampling site inspection at the Diamond Head Oil Refinery on July 1 and 2, 1991 during which four groundwater, three surface water, three sediment, seven surface soil, one subsurface soil, three liquid waste, and two solid waste samples were collected. The groundwater sample collected from monitoring well 3 had a layer of free product on top of the water. This layer was sampled as a high concentration liquid waste sample (NJJB-LIQW 1, 2). After purging 9 gallons of material from the well (almost 3 well volumes) this product was unable to be cleared from the well. After allowing the well to stand for approximately 40 minutes after purging, it was determined that a third high concentration liquid waste sample (NJJB-LIQW 3) would be collected from the well. Upon standing undisturbed, sample NJJB-LIQW 3 exhibited two phases. Both of these phases were analyzed independently. All samples were sent to U. S. EPA Contract Laboratory Program (CLP) laboratories and analyzed for Target Compound List (TCL) organic and inorganic compounds at both low and high concentrations. The high concentration inorganic analysis also included cyanide analysis. Figure 3 presents a Sample Location Map and Table 2 presents a summary of the analytical data for these samples. The complete data package for the samples collected are presented as Ref. Nos. 34-36. These samples were collected in order to determine the presence of contaminants, if any, on site and assess the potential of these contaminants to migrate off site through groundwater, surface water, and/or air.

Ref. Nos. 12, 34-36



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SAMPLE LOCATION MAP

DIAMOND HEAD OIL REFINERY DIV., KEARNY, N.J.

NOT TO SCALE

FIGURE 3

TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8002-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: S-CUBED

VOLATILES	NJJB-SW1	NJJB-SW2(DUP)	NJJB-SW4(MS/MSD)	NJJB-SED2	NJJB-SED5	NJJB-S10	NJJB-S1	NJJB-S2	NJJB-S3
Sample ID No.	BKD01	BKD02	BKD04	BJY78	BJY96	BJY76	BJY67	BJY68	BJY69
Traffic Report No.	AQUEOUS	AQUEOUS	AQUEOUS	SEDIMENT	SEDIMENT	SEDIMENT	SOIL	SOIL	SOIL
Matrix	ug/L	ug/L	ug/L	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Units	1	1	1	1	1	1	1	1	1
Dilution Factor	--	--	--	24	51	53	10	9	17
Percent Moisture									
Chloromethane	3 J								
Bromomethane									
Vinyl Chloride									
Chloroethane		3 J	4 J						
Methylene Chloride									
Acetone	44 E	15 E			140 E			59 E	
Carbon Disulfide		3 J	2 J		7 J				
1,1-Dichloroethene						66 E			
1,1-Dichloroethane						410 E		12 E	
Trans-1,2-Dichloroethene (total)						260 E		24 E	
Chloroform									
1,2-Dichloroethane									
2-Butanone						3200 E			
1,1,1-Trichloroethane									
Carbon Tetrachloride									
Vinyl Acetate									
Bromodichloromethane									
1,2-Dichloropropane									
trans-1,3-Dichloropropene						2200 E			
Trichloroethene									
Dibromochloromethane									
1,1,2-Trichloroethane									
Benzene		1 J	1 J			890 E		10 E	
cis-1,3-Dichloropropene									
Bromoform						6100 E		210 E	
2-Hexanone						3600 E		110 E	
4-Methyl-2-Pentanone						25000 E		21 E	
Tetrachloroethene									
1,1,2,2-Tetrachloroethane						48000 E		300 E	
Toluene		6 E	4 J						
Chlorobenzene						24000 E		39 E	
Ethylbenzene									
Styrene						100000 E		590 E	
Xylenes (Total)									

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY DIV.
PROJECT#: 02-9102-02
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762
LAB NAME: IT ANALYTICAL

INORGANICS	NJJB-SW1	NJJB-SW2(DUP)	NJJB-SW4(MS/MSD)	NJJB-SED2	NJJB-SED5	NJJB-S10	NJJB-S1	NJJB-S2	NJJB-S3	NJJB-S4(MS/MSD)	NJJB-S5
Sample ID No.	MBHB56	MBHB57	MBHB59	MBHB64	MBHB92	MBHB75	MBHB66	MBHB67	MBHB68	MBHB69	MBHB70
Traffic Report No.	WATER	WATER	WATER	SEDIMENT	SEDIMENT	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Matrix	ug/L	ug/L	ug/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Units											
Dilution Factor											
Aluminum	R	R	R	1600	8200	1940	5720	6000	3980	10000	7170
Antimony	J	J	106 E	J	J	53.7 E	16.2 E	17.3 E	41.7 E	39.4 E	54.3 E
Arsenic	J	J	20	2.7	15.4	10.9	7.6	58.7	10.4	7.4	12.5
Barium	J	305 E	711 E	J	327	2440	114	114	609	464	4630
Beryllium					J		J	J		J	
Cadmium	J	J	16 E	J	5.7	31	9.3	2.6 E	4.3	4.9	21.7
Calcium	39800 E	111000 E	147000 E	2520	4740	27500	12500	35600	1750	66000	20600
Chromium	14.8 E	27 E	94.1 E	11.6 E	92 E	147 E	56.8 E	407 E	91.1 E	1390 E	562 E
Cobalt	J	J	J	J	J	J	J	17.7	J	58.5	51.2
Copper	44.9 E	59.9 E	293 E	35.1	339	480	137	119	162	107	1080
Iron	7330 E	22400 E	90600 E	7250	19300	7870	21300	18300	64400	32400	45200
Lead	24	59.7	324	38.1	905	76200	205	271	4720	5140	53300
Magnesium	14300 E	34100 E	38500 E	J	2470	7340	2310	6810	1410	23400	13100
Manganese	281 E	762 E	1560 E	79.7	318	351	263	381	74.5	1040	417
Mercury				R	R	R	R	R	R	R	R
Nickel	J	J	J	J	53.2	19.3	22.7	63.3	38.8	207	197
Potassium	6430 E	19600 E	21100 E	J	J	J	J	J	J	J	J
Selenium	J		J		J		J	J	J	J	J
Silver					J	J	J	J		4.2	86.6
Sodium	33000 E	125000 E	126000 E	J	J	4770 E	J	J	J	J	J
Thallium								J			J
Vanadium	J	J	J	J	32.1 E	J	25.4 E	143 E	22.4 E	515 E	291 E
Zinc	167 E	229 E	1210 E	88.2	770	18400	559	564	166	2010	5550
Cyanide		12	12			1	J	J	1.5	0.92	2.9

NOTES:
Blank space - compound analyzed for but not detected
E - estimated value
J - estimated value, compound present below CRDL but above IDL
R - analysis did not pass EPA QA/QC
NR - analysis not required

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J014-SI
Rev. No. 0.1

TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 02-9102-02
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762
LAB NAME: NYTEST

INORGANICS	NJJB-SOL-W1(MS/MSD)	NJJB-SOL-W2(DUP)	NJJB-RIN7	NJJB-LIQ-W1(MS/MSD)	NJJB-LIQ-W2(DUP)	NJJB-LIQ-W3	NJJB-RIN6
Sample ID No.	MBHB89	MBHB90	MBHB95	MBHB86	MBHB87	MBHH02	MBHB88
Traffic Report No.	SOLID	SOLID	WATER	LIQUID	LIQUID	LIQUID	WATER
Matrix	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Units							
Aluminum	33635	63595		R	R	R	91.1 E
Antimony	34.3			3 J	2.3 J		1.9 J
Arsenic	25.5	26	3.1 J	831.4	778	882	6.7 J
Barium	515	717		7.2 E	9.8	1 J	
Beryllium	61.1 E			6.9 J	10.2 E		
Cadmium	57.8 E			1528	1958	2357	168 E
Calcium	7462	5328		83.1 E	74.3 E	78.3 E	
Chromium	156	113			8.3 J		
Cobalt	15 J			29.2 J	30.2 J	63.4 E	
Copper	523 E	283 E		333	302	518	
Iron	19691	31227		390	380	621	6.5 J
Lead	511	616		187 E	94.8 E	212 E	
Magnesium	5570	6706		25.7	29.3	21.4	0.9 J
Manganese	296	299					
Mercury	1.4 E	1.58 E					
Nickel	111 E	108 E					
Selenium				6.2 J	5.3 J	12.2 E	
Silver	51.9 E			304	203	470	137 E
Sodium	10618	8222					
Thallium				47	46	80.7	
Vanadium	106 E	44 E		17.5 J	33	197	7.3 J
Zinc	853	740		R	R	R	
Cyanide	N/A	N/A	N/A	N/A	N/A	R	N/A
Cyanide (oil phase)							

NOTES:
Blank space - compound analyzed for but not detected
E - estimated value
J - estimated value, compound present below CRDL but above IDL
R - analysis did not pass EPA QA/QC
NR - analysis not required

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TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8002-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: S-CUBED

VOLATILES	NJJB-GW2	NJJB-GW4	NJJB-GW5	NJJB-RIN5	NJJB-TBLK3	NJJB-TBLK4
Sample ID No.	BJY81	BJY83	BJY84	BJY89	BKD10	BKD11
Traffic Report No.	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS
Matrix	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Units	1	1	1	1	1	1
Dilution Factor	--	--	--	--	--	--
Percent Moisture						
Chloromethane					9 J	23
Bromomethane						
Vinyl Chloride	12					
Chloroethane				11		
Methylene Chloride				1 BJ	2 BJ	2 BJ
Acetone	940 E	43 B				
Carbon Disulfide						
1,1-Dichloroethene	1 J					
1,1-Dichloroethane	21					
Trans-1,2-Dichloroethene (total)	18					
Chloroform						
1,2-Dichloroethane						
2-Butanone	170 E					
1,1,1-Trichloroethane	1 J					
Carbon Tetrachloride						
Vinyl Acetate						
Bromodichloromethane						
1,2-Dichloropropane						
trans-1,3-Dichloropropene						
Trichloroethene	11					
Dibromochloromethane						
1,1,2-Trichloroethane						
Benzene	30		20			
cis-1,3-Dichloropropene						
Bromoform						
2-Hexanone	25					
4-Methyl-2-Pentanone	98					
Tetrachloroethene	3 J					
1,1,2,2-Tetrachloroethane						
Toluene	160		1 J			
Chlorobenzene		10	160			
Ethylbenzene	23					
Styrene						
Xylenes (Total)	140		5 J			

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8002-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: S-CUBED

SEMI-VOLATILES	NJJB-GW2	NJJB-GW4	NJJB-GW5	NJJB-RIN5	NJJB-TBLK3	NJJB-TBLK4
Sample ID No.	BJY81	BJY83	BJY84	BJY89	BKD10	BKD11
Traffic Report No.	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS
Matrix	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Units	1	1	1	1	N/A	N/A
Dilution Factor/GPC Cleanup (Y)	--	--	--	--	N/A	N/A
Percent Moisture						
Phenol					NR	NR
bis(2-Chloroethyl)ether					NR	NR
2-Chlorophenol					NR	NR
1,3-Dichlorobenzene					NR	NR
1,4-Dichlorobenzene			6 J		NR	NR
Benzyl alcohol					NR	NR
1,2-Dichlorobenzene	7 J				NR	NR
2-Methylphenol	310				NR	NR
bis(2-Chloroisopropyl)ether					NR	NR
4-Methylphenol	900				NR	NR
N-Nitroso-di-n-dipropylamine					NR	NR
Hexachloroethane					NR	NR
Nitrobenzene					NR	NR
Isophorone					NR	NR
2-Nitrophenol					NR	NR
2,4-Dimethylphenol	390				NR	NR
Benzoic acid	130				NR	NR
bis(2-Chloroethoxy)methane					NR	NR
2,4-Dichlorophenol					NR	NR
1,2,4-Trichlorobenzene					NR	NR
Naphthalene	39		2 J		NR	NR
4-Chloroaniline					NR	NR
Hexachlorobutadiene					NR	NR
4-Chloro-3-Methylphenol					NR	NR
2-Methylnaphthalene	22				NR	NR
Hexachlorocyclopentadiene					NR	NR
2,4,6-Trichlorophenol					NR	NR
2,4,5-Trichlorophenol					NR	NR
2-Chloronaphthalene					NR	NR
2-Nitroaniline					NR	NR
Dimethylphthalate					NR	NR
Acenaphthylene					NR	NR
2,6-Dinitrotoluene					NR	NR
3-Nitroaniline					NR	NR
Acenaphthene	4 J		2 J		NR	NR
2,4-Dinitrophenol					NR	NR
4-Nitrophenol					NR	NR
Dibenzofuran					NR	NR
2,4-Dinitrotoluene					NR	NR
Diethylphthalate					NR	NR
4-Chlorophenyl-phenyl ether					NR	NR
Fluorene					NR	NR
4-Nitroaniline					NR	NR
4,6-Dinitro-2-methylphenol					NR	NR
N-nitrosodiphenylamine					NR	NR
4-Bromophenyl-phenyl ether					NR	NR
Hexachlorobenzene					NR	NR
Pentachlorophenol					NR	NR
Phenanthrene	3 J	3 J			NR	NR
Anthracene					NR	NR

TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8002-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: S-CUBED

SEMI-VOLATILES						
Sample ID No.	NJJB-GW2	NJJB-GW4	NJJB-GW5	NJJB-RIN5	NJJB-TBLK3	NJJB-TBLK4
Traffic Report No.	BJY81	BJY83	BJY84	BJY89	BKD10	BKD11
Matrix	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Dilution Factor/GPC Cleanup (Y)	1	1	1	1	N/A	N/A
Percent Moisture	--	--	--	--	N/A	N/A
Di-n-butylphthalate					NR	NR
Fluoranthene		3 J			NR	NR
Pyrene		3 J			NR	NR
Butylbenzylphthalate					NR	NR
3,3'-Dichlorobenzidine					NR	NR
Benzo(a)anthracene					NR	NR
Chrysene					NR	NR
bis(2-Ethylhexyl)phthalate		5 J			NR	NR
Di-n-octylphthalate					NR	NR
Benzo(b)fluoranthene					NR	NR
Benzo(k)fluoranthene					NR	NR
Benzo(a)pyrene					NR	NR
Indeno(1,2,3-cd)pyrene					NR	NR
Dibenz(a,h)anthracene					NR	NR
Benzo(g,h,i)perylene					NR	NR

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

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TABLE 2
SITE INJECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8001-41-I
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: AATS

VOLATILES	NJJB-SOL-W1(MS/MSD)	NJJB-SOL-W2(DUP)	NJJB-RIN7	NJJB-LIQ-W1(MS/MSD)	NJJB-LIQ-W2(DUP)	NJJB-LIQ-W3	NJJB-LIQ-W3	NJJB-RIN6
Sample ID No.	BJY93	BJY94	BJY99	BJY90	BJY91	BKD17	BKD17	BJY92
Traffic Report No.	SOLID	SOLID	WML	WIL	WIL	WIL	WML	WML
Matrix	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Units	NA	NA	NA	NA	NA	NA	NA	NA
Dilution Factor	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture								
Chloromethane								
Bromomethane								
Vinyl Chloride								
Chloroethane								1 J
Methylene Chloride	2 J	1 J						
Acetone		2 J						
Carbon Disulfide								
1,1-Dichloroethene								
1,1-Dichloroethane								
Trans-1,2-Dichloroethene (total)								
Chloroform								
1,2-Dichloroethane								
2-Butanone								
1,1,1-Trichloroethane								
Carbon Tetrachloride								
Vinyl Acetate								
Bromodichloromethane								
1,2-Dichloropropane								
cis-1,3-Dichloropropene								
Trichloroethene								
Dibromochloromethane								
1,1,2-Trichloroethane				6 J		6 J		
Benzene								
trans-1,3-Dichloropropene								
Bromoform								
4-Methyl-2-Pentanone								
2-Hexanone								
Tetrachloroethene								
1,1,2,2-Tetrachloroethane				105 E	97	105		
Toluene				92 E	90	90		
Chlorobenzene								
Ethylbenzene				542 E	514	208		
Styrene								
Xylenes (Total)								

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8001-41-I
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: AATS

SEMI-VOLATILES	NJJB-SOL-W1(MS/MSD)	NJJB-SOL-W2(DUP)	NJJB-RIN7	NJJB-LIQ-W1(MS/MSD)	NJJB-LIQ-W2(DUP)	NJJB-LIQ-W3	NJJB-LIQ-W3	NJJB-RIN6
Sample ID No.	BJY93	BJY94	BJY99	BJY90	BJY91	BKD17	BKD17	BJY92
Traffic Report No.	SOLID	SOLID	WML	WIL	WIL	WIL	WML	WML
Matrix	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Units	NA	NA	NA	NA	NA	NA	NA	NA
Dilution Factor/GPC Cleanup (Y)	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture								
Phenol								
bis(2-Chloroethyl)ether								
2-Chlorophenol								
1,3-Dichlorobenzene								
1,4-Dichlorobenzene								
Benzyl alcohol								
1,2-Dichlorobenzene				34 J	37 J	30 J		
2-Methylphenol								
bis(2-Chloroisopropyl)ether								
4-Methylphenol								
N-Nitroso-di-n-dipropylamine								
Hexachloroethane								
Nitrobenzene								
Isophorone								
2-Nitrophenol								
2,4-Dimethylphenol								
Benzoic acid								
bis(2-Chloroethoxy)methane								
2,4-Dichlorophenol								
1,2,4-Trichlorobenzene				229	232	226		
Naphthalene								
4-Chloroaniline								
Hexachlorobutadiene								
4-Chloro-3-Methylphenol				427	406	427		4 J
2-Methylnaphthalene								
Heptachlor epoxide								
2,4,6-Trichlorophenol								
2,4,5-Trichlorophenol								
2-Chloronaphthalene								
2-Nitroaniline								
Dimethylphthalate								
Acenaphthylene								
2,6-Dinitrotoluene	R	R	R	R	R	R	R	R
3-Nitroaniline				23 J	23 J			
Acenaphthene								
2,4-Dinitrophenol								
4-Nitrophenol								
Dibenzofuran								
2,4-Dinitrotoluene								
Diethylphthalate								
4-Chlorophenyl-phenyl ether								

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TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8001-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: AATS

SEMI-VOLATILES	NJJB-SOL-W1(MS/MSD)	NJJB-SOL-W2(DUP)	NJJB-RIN7	NJJB-LIQ-W1(MS/MSD)	NJJB-LIQ-W2(DUP)	NJJB-LIQ-W3	NJJB-LIQ-W3	NJJB-RIN6
Sample ID No.	BJY93	BJY94	BJY99	BJY90	BJY91	BKD17	BKD17	BJY92
Traffic Report No.	SOLID	SOLID	WML	WIL	WIL	WIL	WML	WML
Matrix	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Units	NA	NA	NA	NA	NA	NA	NA	NA
Dilution Factor/GPC Cleanup (Y)	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture								
Fluorene					32 J			
4-Nitroaniline				R	R	R	R	
4,6-Dinitro-2-methylphenol								
N-nitrosodiphenylamine								
4-Bromophenyl-phenyl ether								
alpha-BHC						132		
Hexachlorobenzene								
beta-BHC								
Pentachlorophenol								
gamma-BHC (Lindane)								
Phenanthrene				124	117	106		
Anthracene								
delta-BHC								
Heptachlor								
Aldrin								
Di-n-butylphthalate								
Fluoranthene				119	91 J	111		
Heptachlor Epoxide								
Monochlorobiphenyl								
Dichlorobiphenyl								
Trichlorobiphenyl								
Tetrachlorobiphenyl								
Pyrene				100	109	105		
gamma-Chlordane								
Endosulfan I	R	R	R	R	R	R	R	R
alpha-Chlordane								
Pentachlrobiphenyl								
4,4'-DDE								
Dieldrin								
Hexachlorobiphenyl								
Endrin								
Endosulfan II	R	R	R	R	R	R	R	R
Heptachlorobiphenyl								
Butylbenzylphthalate								
Endosulfan sulfate								
4,4'-DDT								
Endrin ketone	R	R	R	R	R	R	R	R
Benzo(a)anthracene								
Methoxychlor								
Chrysene						68 J		
Octachlorobiphenyl								

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SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8001-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: AATS

TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SEMI-VOLATILES									
Sample ID No.	NJJB-SOL-W1(MS/MSD)	NJJB-SOL-W2(DUP)	NJJB-RIN7	NJJB-LIQ-W1(MS/MSD)	NJJB-LIQ-W2(DUP)	NJJB-LIQ-W3	NJJB-LIQ-W3	NJJB-RIN6
Traffic Report No.	BJY93	BJY94	BJY99	BJY90	BJY91	BKD17	BKD17	BJY92
Matrix	SOLID	SOLID	WML	WIL	WIL	WIL	WML	WML
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Dilution Factor/GPC Cleanup (Y)	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine								
bis(2-Ethylhexyl)phthalate								
Nonachlorobiphenyl								
Decachlorobiphenyl								
Di-n-octylphthalate								
Benzo(b)fluoranthene								
Benzo(k)fluoranthene								
Benzo(a)pyrene								
Indeno(1,2,3-cd)pyrene								
Dibenz(a,h)anthracene								
Benzo(g,h,i)perylene								

DEL

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

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TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8002-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: S-CUBED

PESTICIDES	NJJB-GW2	NJJB-GW4	NJJB-GW5	NJJB-RIN5	NJJB-TBLK3	NJJB-TBLK4
Sample ID No.	BJY81	BJY83	BJY84	BJY89	BKD10	BKD11
Traffic Report No.	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS
Matrix	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Units	1	1	1	1	N/A	N/A
Dilution Factor/GPC Cleanup (Y)	--	--	--	--	N/A	N/A
Percent Moisture						
alpha-BHC		R			NR	NR
beta-BHC					NR	NR
delta-BHC					NR	NR
gamma-BHC (Lindane)		R			NR	NR
Heptachlor		R			NR	NR
Aldrin		R			NR	NR
Heptachlor epoxide		R			NR	NR
Endosulfan I		R			NR	NR
Dieldrin					NR	NR
4,4'-DDE					NR	NR
Endrin		R			NR	NR
Endosulfan II					NR	NR
4,4'-DDD					NR	NR
Endosulfan sulfate					NR	NR
4,4'-DDT					NR	NR
Methoxychlor					NR	NR
Endrin ketone					NR	NR
alpha-Chlordane					NR	NR
gamma-Chlordane					NR	NR
Toxaphene					NR	NR
Aroclor-1016					NR	NR
Aroclor-1221					NR	NR
Aroclor-1232					NR	NR
Aroclor-1242					NR	NR
Aroclor-1248					NR	NR
Aroclor-1254					NR	NR
Aroclor-1260					NR	NR

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8001-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: AATS

PESTICIDES								
Sample ID No.	NJJB-SOL-W1(MS/MSD)	NJJB-SOL-W2(DUP)	NJJB-RIN7	NJJB-LIQ-W1(MS/MSD)	NJJB-LIQ-W2(DUP)	NJJB-LIQ-W3	NJJB-LIQ-W3	NJJB-RIN6
Traffic Report No.	BJY93	BJY94	BJY99	BJY90	BJY91	BKD17	BKD17	BJY92
Matrix	SOLID	SOLID	WML	WIL	WIL	WIL	WML	WML
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Dilution Factor/GPC Cleanup (Y)	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene								
Aroclor-1016				16 E	16 E	16 E		
Aroclor-1221								
Aroclor-1232								
Aroclor-1242								
Aroclor-1248								
Aroclor-1254								
Aroclor-1260				21 E	20 E	21 E		

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

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TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8002-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: S-CUBED

VOLATILES	NJJB-S4(MS/MSD)	NJJB-S5	NJJB-S6(DUP)	NJJB-S7	NJJB-S8	NJJB-RIN1	NJJB-RIN2	NJJB-RIN3	NJJB-TBLK1	NJJB-GW1
Sample ID No.	BJY70	BJY71	BJY72	BJY73	BJY74	BJY85	BJY86	BJY87	BKD08	BJY80
Traffic Report No.	SOIL	SOIL	SOIL	SOIL	SOIL	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS
Matrix	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/L	ug/L	ug/L	ug/L	ug/L
Units	1	1	1	1	1	1	1	1	1	1
Dilution Factor	16	36	31	23	7	--	--	--	--	--
Percent Moisture										
Chloromethane						2 J	6 J	1 J	19	
Bromomethane								R		
Vinyl Chloride	10 J							R		
Chloroethane								R		
Methylene Chloride						1 BJ	2 BJ	2 BJ	2 BJ	
Acetone		1100 E					6 BJ	R		
Carbon Disulfide								R		
1,1-Dichloroethene								R		
1,1-Dichloroethane	22 J							R		
Trans-1,2-Dichloroethene (total)	53	8 J	14 J					R		
Chloroform								R		
1,2-Dichloroethane								R		
2-Butanone	71 E	81 E	100 E					R		
1,1,1-Trichloroethane	9 J							R		
Carbon Tetrachloride								R		
Vinyl Acetate								R		
Bromodichloromethane								R		
1,2-Dichloropropane								R		
trans-1,3-Dichloropropene								R		
Trichloroethene	46							R		
Dibromochloromethane								R		
1,1,2-Trichloroethane								R		11
Benzene	550							R		
cis-1,3-Dichloropropene								R		
Bromoform								R		
2-Hexanone		1800 E	1500 E					R		
4-Methyl-2-Pentanone	230							R		
Tetrachloroethene	99	170 E	270 E					R		
1,1,2,2-Tetrachloroethane								R		
Toluene	840			26 J	3 J			R		18
Chlorobenzene		71 E						R		
Ethylbenzene	830	17 E		46	3 J			R		
Styrene								R		
Xylenes (Total)	2700	120 E		320	31 E			R		

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8002-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: S-CUBED

SEMI-VOLATILES Sample ID No. Traffic Report No. Matrix Units Dilution Factor/GPC Cleanup (Y) Percent Moisture	NJJB-S4(MS/MSD) BJY70 SOIL ug/kg 1 16	NJJB-S5 BJY71 SOIL ug/kg 1 36	NJJB-S6(DUP) BJY72 SOIL ug/kg 1 31	NJJB-S7 BJY73 SOIL ug/kg 1 23	NJJB-S8 BJY74 SOIL ug/kg 1 7	NJJB-RIN1 BJY85 AQUEOUS ug/L 1 --	NJJB-RIN2 BJY86 AQUEOUS ug/L 1 --	NJJB-RIN3 BJY87 AQUEOUS ug/L 1 --	NJJB-TBLK1 BKD08 AQUEOUS ug/L N/A N/A	NJJB-GW1 BJY80 AQUEOUS ug/L 1 --
Phenol									NR	
bis(2-Chloroethyl)ether									NR	
2-Chlorophenol									NR	
1,3-Dichlorobenzene									NR	
1,4-Dichlorobenzene									NR	2 J
Benzyl alcohol									NR	
1,2-Dichlorobenzene									NR	
2-Methylphenol									NR	
bis(2-Chloroisopropyl)ether									NR	
4-Methylphenol									NR	
N-Nitroso-di-n-dipropylamine									NR	
Hexachloroethane									NR	
Nitrobenzene									NR	
Isophorone									NR	
2-Nitrophenol									NR	
2,4-Dimethylphenol									NR	
Benzoic acid									NR	
bis(2-Chloroethoxy)methane									NR	
2,4-Dichlorophenol									NR	
1,2,4-Trichlorobenzene									NR	
Naphthalene		660000 E	330000 J						NR	22
4-Chloroaniline									NR	
Hexachlorobutadiene									NR	
4-Chloro-3-Methylphenol									NR	
2-Methylnaphthalene		370000 E	160000 J						NR	5 J
Hexachlorocyclopentadiene									NR	
2,4,6-Trichlorophenol									NR	
2,4,5-Trichlorophenol									NR	
2-Chloronaphthalene									NR	
2-Nitroaniline									NR	
Dimethylphthalate									NR	
Acenaphthylene		180000 J	110000 J						NR	
2,6-Dinitrotoluene									NR	
3-Nitroaniline									NR	
Acenaphthene		68000 J							NR	10 J
2,4-Dinitrophenol									NR	
4-Nitrophenol									NR	
Dibenzofuran									NR	
2,4-Dinitrotoluene									NR	
Diethylphthalate									NR	
4-Chlorophenyl-phenyl ether									NR	
Fluorene		110000 J							NR	3 J
4-Nitroaniline									NR	
4,6-Dinitro-2-methylphenol									NR	
N-nitrosodiphenylamine									NR	
4-Bromophenyl-phenyl ether									NR	
Hexachlorobenzene									NR	
Pentachlorophenol									NR	
Phenanthrene	24000 J	400000 E	190000 J						NR	5 J
Anthracene	24000 J	120000 J	59000 J						NR	

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TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8002-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: S-CUBED

SEMI-VOLATILES	NJJB-S4(MS/MSD)	NJJB-S5	NJJB-S6(DUP)	NJJB-S7	NJJB-S8	NJJB-RIN1	NJJB-RIN2	NJJB-RIN3	NJJB-TBLK1	NJJB-GW1
Sample ID No.	BJY70	BJY71	BJY72	BJY73	BJY74	BJY85	BJY86	BJY87	BKD08	BJY80
Traffic Report No.	SOIL	SOIL	SOIL	SOIL	SOIL	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS
Matrix	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/L	ug/L	ug/L	ug/L	ug/L
Units	1	1	1	1	1	1	1	1	N/A	1
Dilution Factor/GPC Cleanup (Y)	16	36	31	23	7	--	--	--	N/A	--
Percent Moisture										
Di-n-butylphthalate									NR	
Fluoranthene		210000 J	140000 J						NR	
Pyrene	55000 J	410000 E	290000 J						NR	
Butylbenzylphthalate									NR	
3,3'-Dichlorobenzidine									NR	
Benzo(a)anthracene		97000 J							NR	
Chrysene		93000 J							NR	
bis(2-Ethylhexyl)phthalate		110000 J							NR	
Di-n-octylphthalate									NR	
Benzo(b)fluoranthene		58000 J							NR	
Benzo(k)fluoranthene		70000 J							NR	
Benzo(a)pyrene		140000 J	93000 J						NR	
Indeno(1,2,3-cd)pyrene		49000 J							NR	
Dibenz(a,h)anthracene									NR	
Benzo(g,h,i)perylene		78000 J								

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8002-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: S-CUBED

PESTICIDES	NJJB-S4(MS/MSD)	NJJB-S5	NJJB-S6(DUP)	NJJB-S7	NJJB-S8	NJJB-RIN1	NJJB-RIN2	NJJB-RIN3	NJJB-TBLK1	NJJB-GW1
Sample ID No.	BJY70	BJY71	BJY72	BJY73	BJY74	BJY85	BJY86	BJY87	BKD08	BJY80
Traffic Report No.	SOIL	SOIL	SOIL	SOIL	SOIL	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS	AQUEOUS
Matrix	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/L	ug/L	ug/L	ug/L	ug/L
Units	10	10	10	1	1	1	1	1	N/A	1
Dilution Factor/GPC Cleanup (Y)	16	36	31	23	7	--	--	--	N/A	--
Percent Moisture										
alpha-BHC					210 E				NR	
beta-BHC	1100 E								NR	
delta-BHC			220 E						NR	
gamma-BHC (Lindane)									NR	
Heptachlor									NR	
Aldrin									NR	
Heptachlor epoxide									NR	
Endosulfan I									NR	
Dieldrin									NR	
4,4'-DDE									NR	
Endrin	220 E	2000 E	1900 E	61 E					NR	
Endosulfan II									NR	
4,4'-DDD					260 EN				NR	
Endosulfan sulfate									NR	
4,4'-DDT	1300 E				30 E				NR	
Methoxychlor									NR	
Endrin ketone									NR	
alpha-Chlordane	630 J								NR	
gamma-Chlordane									NR	
Toxaphene									NR	
Aroclor-1016									NR	
Aroclor-1221									NR	
Aroclor-1232									NR	
Aroclor-1242									NR	
Aroclor-1248									NR	
Aroclor-1254									NR	
Aroclor-1260	28000 E	110000 E	110000 E							

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

TABLE
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8002-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: S-CUBED

SEMI-VOLATILES	NJJB-SW1	NJJB-SW2(DUP)	NJJB-SW4(MS/MSD)	NJJB-SED2	NJJB-SED5	NJJB-S10	NJJB-S1	NJJB-S2	NJJB-S3
Sample ID No.	BKD01	BKD02	BKD04	BJY78	BJY96	BJY76	BJY67	BJY68	BJY69
Traffic Report No.	AQUEOUS	AQUEOUS	AQUEOUS	SEDIMENT	SEDIMENT	SEDIMENT	SOIL	SOIL	SOIL
Matrix	ug/L	ug/L	ug/L	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Units	1	1	1	1	1	1	1	1	1
Dilution Factor/GPC Cleanup (Y)	--	--	--	24	51	53	10	9	17
Percent Moisture									
Phenol									
bis(2-Chloroethyl)ether									
2-Chlorophenol									
1,3-Dichlorobenzene									
1,4-Dichlorobenzene									
Benzyl alcohol									
1,2-Dichlorobenzene									
2-Methylphenol									
bis(2-Chloroisopropyl)ether									
4-Methylphenol									
N-Nitroso-di-n-dipropylamine									
Hexachloroethane									
Nitrobenzene									
Isophorone									
2-Nitrophenol									
33 2,4-Dimethylphenol									
Benzoic acid									
bis(2-Chloroethoxy)methane									
2,4-Dichlorophenol									
1,2,4-Trichlorobenzene						130000 J			
Naphthalene									
4-Chloroaniline									
Hexachlorobutadiene									
4-Chloro-3-Methylphenol						310000 J			
2-Methylnaphthalene									
Hexachlorocyclopentadiene									
2,4,6-Trichlorophenol									
2,4,5-Trichlorophenol									
2-Chloronaphthalene									
2-Nitroaniline									
Dimethylphthalate							140 J		
Acenaphthylene									
2,6-Dinitrotoluene									
3-Nitroaniline									
Acenaphthene									
2,4-Dinitrophenol									
4-Nitrophenol									
Dibenzofuran									
2,4-Dinitrotoluene									
Diethylphthalate									
4-Chlorophenyl-phenyl ether									
Fluorene									
4-Nitroaniline									
4,6-Dinitro-2-methylphenol									
N-nitrosodiphenylamine									
4-Bromophenyl-phenyl ether									
Hexachlorobenzene									
Pentachlorophenol							490 J		
Phenanthrene							140 J		
Anthracene									

TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8002-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: S-CUBED

SEMI-VOLATILES	NJJB-SW1	NJJB-SW2(DUP)	NJJB-SW4(MS/MSD)	NJJB-SED2	NJJB-SED5	NJJB-S10	NJJB-S1	NJJB-S2	NJJB-S3
Sample ID No.	BKD01	BKD02	BKD04	BJY78	BJY96	BJY76	BJY67	BJY68	BJY69
Traffic Report No.	AQUEOUS	AQUEOUS	AQUEOUS	SEDIMENT	SEDIMENT	SEDIMENT	SOIL	SOIL	SOIL
Matrix	ug/L	ug/L	ug/L	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Units	1	1	1	1	1	1	1	1	1
Dilution Factor/GPC Cleanup (Y)	--	--	--	24	51	53	10	9	17
Percent Moisture									
Di-n-butylphthalate							880 E		
Fluoranthene							790 E		
Pyrene									
Butylbenzylphthalate									
3,3'-Dichlorobenzidine							480 J		
Benzo(a)anthracene							540 J		
Chrysene							160 J		
bis(2-Ethylhexyl)phthalate		9 J		6 J					
Di-n-octylphthalate									
Benzo(b)fluoranthene							620 J		
Benzo(k)fluoranthene							660 J		
Benzo(a)pyrene							630 J		
Indeno(1,2,3-cd)pyrene							390 J		
Dibenz(a,h)anthracene							160 J		
Benzo(g,h,i)perylene							460 J		

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY
PROJECT#: 8002-41-1
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762 LAB: S-CUBED

PESTICIDES	NJJB-SW1	NJJB-SW2(DUP)	NJJB-SW4(MS/MSD)	NJJB-SED2	NJJB-SED5	NJJB-S10	NJJB-S1	NJJB-S2	NJJB-S3
Sample ID No.	BKD01	BKD02	BKD04	BJY78	BJY96	BJY76	BJY67	BJY68	BJY69
Traffic Report No.	AQUEOUS	AQUEOUS	AQUEOUS	SEDIMENT	SEDIMENT	SEDIMENT	SOIL	SOIL	SOIL
Matrix	ug/L	ug/L	ug/L	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Units	1	1	1	1	1	1	1	1	100
Dilution Factor/GPC Cleanup (Y)	--	--	--	24	51	53	10	9	17
Percent Moisture									
alpha-BHC					56 E				
beta-BHC					130 E				
delta-BHC									
gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor epoxide									
Endosulfan I									
Dieldrin					100 EN			140 EN	
4,4'-DDE									
Endrin									
Endosulfan II				28 EN	390 EN				
4,4'-DDD									
Endosulfan sulfate				R	260 E		25 E	R	
4,4'-DDT									
Methoxychlor									
Endrin ketone					190 E				
alpha-Chlordane									
gamma-Chlordane									
Toxaphene									
Aroclor-1016									
Aroclor-1221									
Aroclor-1232									
Aroclor-1242									
Aroclor-1248									
Aroclor-1254							700 E		
Aroclor-1260									

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

TABLE 2
SITE INSPECTION SAMPLE RESULTS
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
(cont'd)

SITE NAME: DIAMOND HEAD OIL REFINERY DIV.
PROJECT#: 02-9102-02
SAMPLING DATES: 7/1/91-7/2/91
EPA CASE NO.: 16762
LAB NAME: IT ANALYTICAL

INORGANICS Sample ID No. Traffic Report No. Matrix Units Dilution Factor	NJJB-S6(DUP) MBHB71 SOIL mg/kg	NJJB-S7 MBHB72 SOIL mg/kg	NJJB-S8 MBHB73 SOIL mg/kg	NJJB-RIN1 MBHB81 WATER ug/L	NJJB-RIN2 MBHB82 WATER ug/L	NJJB-RIN3 MBHB83 WATER ug/L	NJJB-GW1 MBHB76 WATER ug/L	NJJB-GW2 MBHB77 WATER ug/L	NJJB-GW4 MBHB79 WATER ug/L	NJJB-GW5 MBHB80 WATER ug/L	NJJB-RIN5 MBHB85 WATER ug/L
Aluminum	8190	22900	4430	R	R	R	R	R	R	R	R
Antimony	69.1 E	19.6 E	J	J	J	J	109 E	J	99.6 E	111 E	J
Arsenic	12	J	11.5				J	46	14	J	
Barium	4280	54.3	2000				J	J	970 E	583 E	
Beryllium			J								
Cadmium	23	2.4	4.9	J	J	J	5.5 E	J	7.6 E	6.4 E	J
Calcium	25600	33100	8790	J	J	J	135000 E	J	133000 E	78300 E	J
Chromium	776 E	986 E	103 E	J	J	R	29 E	4720 E	81.2 E	R	R
Cobalt	63.5	51.8	J	J	J	J	J	J	J	J	J
Copper	1020	31.1	161	J	J	J	J	39.1 E	170 E	J	J
Iron	63500	21600	11600	J	J	J	34100 E	714 E	35200 E	41200 E	J
Lead	52300	161	8110		J		22	274	319	25.1	
Magnesium	17500	20300	2310	J	J	J	99400 E	J	73400 E	92900 E	J
Manganese	515	200	191				624 E	J	182 E	191 E	
Mercury	R	R	R						2.2 E		
Nickel	266	190	25.6		J	J	J	123 E	61.6 E	J	J
Potassium	J	J	J	J	J	J	46100 E	15900 E	47000 E	96400 E	J
Selenium			J					J	J		
Silver	88.5		J		J	J			J	J	J
Sodium	J	J	J	J	J	J	190000 E	636000 E	238000 E	363000 E	J
Thallium											
Vanadium	411 E	639 E	23.6 E		J	J	J	1870 E	J	J	J
Zinc	4940	171	1040	J	J	J	43.7 E	646 E	588 E	141 E	J
Cyanide	2.7	4.2	J				7.5	15.5	30		

NOTES:
Blank space - compound analyzed for but not detected
E - estimated value
J - estimated value, compound present below CRDL but above IDL
R - analysis did not pass EPA QA/QC
NR - analysis not required

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PART IV: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. **Describe the likelihood of a release of contaminant(s) to the groundwater as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence.**

A release of contaminants is suspected from the facility to groundwater. Groundwater is reported to flow to the west and no upgradient wells were available for sampling; therefore, a release of contaminants to groundwater can not be definitively concluded at this time. Contaminants attributable to the facility's past operations were detected in both on-site soils and groundwater below the site. A number of volatile and semivolatile organics, including benzene, toluene, naphthalene, ethylbenzene, xylenes, phenanthrene, pyrene and Aroclor-1260 were detected in both soil and groundwater samples collected by HALLIBURTON NUS Environmental Corporation on July 1 and 2, 1991. Visual observation of a groundwater sample collected from monitoring well 3 indicated the presence of a contamination layer on top of the groundwater. Analytical results of a liquid waste sample of this layer indicated the presence of contaminants not normally associated with petroleum products. These contaminants were also detected in samples collected by NJDEP on May 1, 1985, and by Killam in October 1989.

Ref. Nos. 9, 12, 34-36

2. **Describe the aquifer of concern; include information such as depth, thickness, geologic composition, areas of karst terrain, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.**

The aquifer of concern is the Passaic Formation, which was formerly known as the Brunswick Formation. The formation is composed of thin-bedded shales, mudstones, and sandstones which range in thickness from 6,000 to 8,000 feet. Groundwater in this formation occurs along joints and fracture zones which decrease in volume with depth. Groundwater in the area exists under confined and unconfined conditions resulting in both artesian and water table aquifers, respectively. The confining layers usually consist of silt and clay beds. The permeability of shale is approximately 10^{-7} cm/sec. Overlying a majority of the Passaic Formation is a stratum of unconsolidated glacial sediments consisting of clay, silt, sand, gravel, and boulders. The permeability of these unconsolidated deposits is approximately 10^{-5} to 10^{-7} cm/sec. There is direct hydraulic connection between the glacial deposits and the bedrock since glacial deposits in the area of the site are reported to recharge the bedrock.

The site is located on marsh deposits consisting of organic silt and mud with inclusions of peat ranging in depth from 7.5 to 20 feet. Underlying these are the glacial sediments consisting mainly of sands and gravels, with lenses of silt and clay. The storage capacity of these is apparently high; however, the quality of groundwater in these sediments is very poor. Underlying these deposits is the red shale and sandstone of the Passaic Formation. The deepest on-site boring, completed at 20 feet below the ground surface, did not reach the bedrock. Groundwater was observed by HALLIBURTON NUS Environmental Corporation personnel to exist at approximately 12 inches below the ground surface at the site. Groundwater in the area of the site is reported to flow to the west.

Ref. Nos. 9, pp. 2-6; 10; 11; 12, p. 4B; 14

3. **Is a designated well head protection area within 4 miles of the site?**

New Jersey has not yet submitted a final well head protection plan for U.S. EPA approval. However, no known wells used for public or private drinking water supply are known to exist within 4 miles of the site.

Ref. Nos. 7, 8

4. **What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?**

The highest seasonal level of the saturated zone was observed at 12 inches below the ground surface. However, analytical results and visual observation indicate that hazardous substances from the site are in contact with groundwater.

Ref. Nos. 12,p. 4B; 34-36

5. **What is the permeability value of the least permeable continuous intervening stratum between the ground surface and the aquifer of concern?**

The permeability of the unconsolidated deposits underlying the site, consisting of sands and gravels with lenses of silt and clay, ranges from 10^{-5} to 10^{-7} cm/sec.

Ref. No. 14

6. **What is the distance to and depth of the nearest well that is currently used for drinking purposes?**

There are no known wells used for public or private drinking water supply located within 4 miles of the site.

Ref. No. 8

7. **If a release to groundwater is observed or suspected, determine the number of people that obtain drinking water from wells that are documented or suspected to be located within the contamination boundary of the release.**

Although a release of contaminants from the site to groundwater is suspected, there are no known wells used for public or private drinking water supply located within 4 miles of the site.

Ref. No. 8

8. **Identify the population served by wells located within 4 miles of the site that draw from the aquifer of concern.**

Distance	Population
0 - ¼ mi	0
>¼ - ½ mi	0
>½ - 1 mi	0
>1 - 2 mi	0
>2 - 3 mi	0
>3 - 4 mi	0

State whether groundwater is blended with surface water or with groundwater from other wells. Also provide an explanation on how each ring population was determined.

All water used for drinking purposes by communities within 4 miles of the site is obtained from sources located outside of a 4 mile radius of the site. Drinking water is supplied by the Hackensack Water Company, Jersey City Water Company, Elizabeth Water Company, Kearny Water Company, Passaic Valley Water Commission, and the East Orange Water Company, all of which use surface water sources that are not located within the migration pathway of the site.

Ref. No. 8

9. **Identify uses of groundwater within 4 miles of the site (i.e. private drinking source, municipal source, commercial, irrigation, unusable).**

Groundwater within 4 miles of the site is used for commercial and industrial purposes only.

Ref. No. 8

SURFACE WATER ROUTE

10. **Describe the likelihood of a release of contaminant(s) to surface water as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence.**

There is a suspected release of contaminants from the site to surface water. Surface water and sediment samples were collected from a drainage pathway that originates in the northeast corner of the site, runs along the southern border of the site, and eventually discharges to Frank's Creek off site. Surface water samples collected from the origin of the drainage pathway and from the location where the drainage pathway leaves the site indicate the presence of acetone, toluene, benzene, and bis(2-ethylhexyl)phthalate, which were also detected in on-site soils and groundwater. Soil and sediment samples collected from a wetland area on site indicate the presence of various volatile and semivolatile organic compounds and pesticides. A sediment sample collected from the drainage ditch immediately before it leaves the site property also indicated the presence of 4,4'-DDD. Drainage ditches on site lead from the wetland to Frank's Creek Culvert which leads to Frank's Creek. Oil slicks are reported to have been observed floating on the surface of Frank's Creek. Frank's Creek empties into the Passaic River which is approximately 2,300 feet from the site.

Ref. Nos. 12, 17, 18, 34-36

11. **Identify the nearest downslope surface water. If possible, include a description of possible surface drainage patterns from the site.**

The nearest downslope surface water is Frank's Creek. Drainage from the site is through the drainage ditches to a wetland area to the south which drains to the west into Frank's Creek Culvert which leads to Frank's Creek. Frank's Creek flows into the Passaic River which merges with the Hackensack River where they both empty into the Newark Bay, which in turn empties into the Arthur Kill.

Ref. Nos. 13, 15, 17, 18

12. **What is the distance to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.**

The distance to Frank's Creek through the wetland area via the on-site drainage ditches is approximately 700 feet.

Ref. No. 13

13. **Determine the type of floodplain that the site is located within.**

Approximately 30 percent of the site, the northern and eastern portion, is located within the 100-year flood zone. Approximately 20 percent of the site, the central portion, is located in the 500-year flood zone. Approximately 50 percent of the site, the southern and western portion, is located outside of the 500-year flood zone.

Ref. No. 19

14. **Identify drinking water intakes in surface waters within 15 miles downstream of the site. For each intake identify: the distance from the point of surface water entry, population served, and stream flow at the intake location.**

There are no known drinking water intakes located in any surface waters within 15 miles downstream of the site.

Ref. No. 8

15. **Identify fisheries that exist within 15 miles downstream of the point of surface water entry. For each fishery specify the following information:**

Fishery Name	Water Body Type	Flow (cfs)	Saline/Fresh/Brackish
Passaic River	Coastal Tidal Water	N/A	Fresh to Brackish
Newark Bay	Coastal Tidal Water	N/A	Brackish
Arthur Kill	Coastal Tidal Water	N/A	Brackish

Sediments from these surface waters are reported to contain contaminants such as PCBs, dioxin, and chlordane; therefore, it is prohibited to sell or consume fish caught in these waters. However, access to these waters is not known to be controlled and they are reported to be used as recreational fisheries.

Ref. No. 33

16. **Identify sensitive environments that exist within 15 miles of the point of surface water entry. For each sensitive environment specify the following:**

Environment	Water Body Type	Flow (cfs)	Wetland/Frontage(miles)
On-site Wetland	N/A	N/A	3,000 feet (perimeter)
Coastal Wetland	Coastal Tidal Water	N/A	11
Federal Endangered and State Threatened Species Habitat	Coastal Tidal Water	N/A	N/A

Ref. Nos. 17, 20

17. **If a release to surface water is observed or suspected, identify any intakes, fisheries, and sensitive environments from question Nos. 16-18 that are or may be located within the contamination boundary of the release.**

Intake: Not Applicable

Fishery: Not Applicable

Sensitive Environment: Wetlands on the site has been observed to contain contaminants attributable to the site. Elevated levels of various volatile and semivolatile organic compounds were detected in soil and sediment samples collected in this wetland area. The perimeter of the contaminated wetland is approximately 3,000 feet.

Ref. Nos. 12, 17, 34-36

SOIL EXPOSURE PATHWAY

18. **Determine the number of people that occupy residences or attend school or day care on or within 200 feet of the site property.**

There is no residence, school, or day care facility located within 200 feet of the site property.

Ref. Nos. 16, 21

19. **Determine the number of people that work on or within 200 feet of the site property.**

There are no people that work on or within 200 feet of the site property. The site is bordered by Harrison Avenue to the north, Ramp M to I-280 to the east, I-280 to the south, and a PSE&G right-of-way to the west.

Ref. Nos. 3, 16

20. **Identify terrestrial sensitive environments on or within 200 feet of the site property.**

There are no known terrestrial sensitive environments located within 200 feet of the site property.

Ref. No. 20

AIR ROUTE

21. **Describe the likelihood of release of contaminants to air as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release define the supporting analytical evidence.**

There is a suspected release of contaminants from the site to air. During the HALLIBURTON NUS Environmental Corporation site inspection, large areas of stained surface soils were observed and readings above background were obtained on the organic vapor analyzer (OVA) flame ionization detector and the HNu photoionization detector directly above this soil while it was being disturbed. Analytical data from the surface soil samples collected at various locations throughout the site indicate the presence of volatile organic compounds such as trichloroethene, benzene, 2-hexanone, tetrachloroethene, toluene, ethylbenzene, and total xylenes. The contaminated surface soil also presents a potential for a particulate release to

air. A number of pesticides and PCBs were detected in soil samples collected from the site including endrin, 4,4'-DDD, 4,4'-DDT, and Aroclor-1260.

Ref. Nos. 12, 34-36

22. **Determine populations that reside within 4 miles of the site.**

Distance	Population
0 - ¼ mi	0
>¼ - ½ mi	0
>½ - 1 mi	6,040
>1 - 2 mi	60,500
>2 - 3 mi	132,480
>3 - 4 mi	250,110

Ref. No. 21

23. **Identify sensitive environments and wetlands acreage within ½ mile of the site.**

0 - ¼ mile	¼ - ½ mile
Sensitive Environments/Wetland Acreage	Sensitive Environments/Wetland Acreage
Approximately 18 acres of on-site and coastal wetlands	Approximately 50 acres of coastal wetlands Potential habitat for Federal endangered or state threatened species

Ref. Nos. 17, 20

24. **If a release to air is observed or suspected, determine the number of people that reside or are suspected to reside within the area of air contamination from the release.**

There are no people that reside within the area of air contamination from a potential release to air from the facility.

Ref. Nos. 16, 21

25. **If a release to air is observed or suspected, identify any sensitive environments, listed in question No. 23, that are or may be located within the area of air contamination from the release.**

Approximately 14 acres of the wetlands identified above are within the contamination boundary of the air release. These wetlands are shown to be part of the actual site. The remainder of the wetlands and Federal endangered or state threatened species habitat identified in question No. 23 are not suspected to be within the area of air contamination from the suspected release of contaminants to air from the site.

Ref. Nos. 17, 20

REFERENCE 5

State of New Jersey

DEPARTMENT OF LAW AND PUBLIC SAFETY
DIVISION OF LAW
TRANSPORTATION—HIGHWAYS SECTION
1035 PARKWAY AVENUE
P.O. BOX 101
TRENTON 08625
TELEPHONE 609-292-5957

JOHN J. DEGNAN
ATTORNEY GENERAL

STEPHEN SKILLMAN
ASSISTANT ATTORNEY GENERAL
DIRECTOR

RICHARD L. RUDIN
DEPUTY ATTORNEY GENERAL
SECTION CHIEF

August 17, 1979

MEMORANDUM OF MEETING

On August 16, 1979, a meeting was held in the offices of the U.S. Environmental Protection Agency, Region II in Edison, New Jersey, concerning technical and expert testimony to be given in connection with State of New Jersey Department of Transportation v. PSC Resources, Inc., et als.. The following persons were in attendance:

John T. Bolen, Principal Environmental Engineer, HMDC
Thomas J. Germine, Deputy Attorney General
Michael V. Polito, Chief of Emergency Response and Inspection Branch, U.S.E.P.A. Region II
Ed Weissman, Project Manager, Roy F. Weston, Inc.

The major emphasis of the day's discussion centered on two objectives:

1. Using available information, including EPA analysis of Sample No. 37182, taken from an open valve discharging from the Diamond Head lagoon in June, 1976, as well as sample analyses performed by DOT, Haller Laboratories, and Carborundum Company on samples taken from the Oil Lake, and chemical analyses of Diamond Head's sludge and feed stock contained in Jack Swain's report, to develop a chemical and physical correspondence between the Lake contents and the Diamond Head effluent.

2. Using available monitoring well data and topographical charts of the MSLA landfill, to be supplemented by surface water observations and groundwater testing to be performed during our

inspection of the area on August 24, 1979, to demonstrate that any possible contribution attributable to leaching from the landfill into the Lake would not correspond qualitatively or quantatively to the contents of the Lake, as indicated by the aforementioned analyses.

The meeting commenced with Ed Weissman's observation that, while the State appeared to have a strong qualitative case, in terms of proving a pattern of discharges from Diamond Head into the Lake, it would now be necessary to develop an estimate of the total quantity of discharge attributable to Diamond Head before it would be possible to calculate the damage to State property caused by Diamond Head. Moreover, a quantative analyses would be needed to counter the anticipated defense that other sources were responsible for the pollution of the Lake.

John Bolan next provided some historical background on the Oil Lake removal and some insight into the relationship between the Lake and the surrounding landfill. Nine million gallons of liquid, consisting of oil and oil/water emulsion, was pumped out of the Lake in 1977 and was taken to the Long Island plant of Newtown Refining Corp., where the oil content was recovered. Bolan surmised that Newtown would have to have done some chemical analysis of the Lake liquids in order to process them and suggested that records of this analysis be subpoenaed.

Bolan stated that, in addition of the 9 million gallons of liquid, 5 to 6 million cubic yards of sludge were removed from the Lake by mudwaving and backfilling with compressed sand. Moreover, in the course of the Route 280 construction, an "underground Lake" of oil contaminated groundwater has been found extending from the eastern limits of the right-of-way to Frank's Creek on the west. Germine asked whether this area of oil contamination would indicate sources other than Diamond Head. Bolan replied that it would not, because the highly compressed layer of silty clays underlying the landfill (which forms a wedge to the south and east of the right-of-way) would effectively act as a dike to the south and east, while Harrison Avenue would act as a dike to the north. (Question: would the former landfill adjacent to Diamond Head on the west likewise have acted as a dike?) Therefore, the observed distribution of ground water contamination would be consistent with Diamond Head as the single source, with the natural groundwater movement to the east. Mike Polito noted that the smaller pond bordering Harrison Avenue to the east of the Lake showed no oil contamination, which would be expected if landfill leachate were the source.

Germine then questioned Bolan on the history of oil dumping in the landfill. Bolan said that prior to 1971, when HMDC issued a regulation banning liquid water from the landfill, liquid waste was being dumped in this site. The Solid Waste Disposal Act (Chapter 8) had permitted up to 30% liquid to be mixed with solid garbage. There remains a technical question as to absorbent and retentive capacities of landfills. Polito stated that the question of whether this liquid will eventually leach out of a landfill is central to the Kin-Buc litigation, and suggested that we could draw upon some of the technical data developed for that case.

Polito also noted that since the landfill appeared cliffed on all side and has no channelization (referring to 1976 topo map), with uniform dumping one would expect that if oil leaked out, it would have been evident in surface waters around the entire perimeter, not just in the Oil Lake. Bolan stated that HMDC had monitored the condition of surface waters around the landfill and also had regular inspections of recharge basins. (Bolan noted that these basins would have trapped any leachate from the landfill before it reached the Oil Lake). He indicated that he would locate these inspection reports. Weissman observed that, since the landfill was effectively diked on two sides, any oil dumping should still be evident in the groundwater, and that groundwater sampling might be worthwhile. It was concluded that after Weissman's inspection of Diamond Head on August 24th, Bolan would accompany us into the landfill to inspect the surface waters and possibly sample the groundwater. Weissman may bring a solid waste expert from Weston for this inspection.

Bolan suggested that landfill personnel could provide factual testimony as to the absence of oil in the ponds south of the landfill. Bolan also indicated that HMDC had topographical maps of the landfill going back to 1963, and that topo maps of the Lake and surrounding areas going back to 1963 could be obtained from Robinson Aerial Surveys.

Next, we discussed the correspondence between the EPA sample of Diamond Head effluent and the available samples of the Lake contents. Germine pointed out that Haller sample of the "Free Oil" layer of the Lake indicated 68% water and sediment, 32% oil, as compared to the EPA sample showing 41% oil and 59% water. Germine also noted that the DOT analysis of the oil layer of the Lake showed the high lead and zinc content characteristic of waste oil, and that the Carborundum analysis of the Lake's bottom sludge shows a heavy metal distribution very similar to the analysis of Diamond Head's caustic sludge reported by Jack Swain. Germine

suggested that these facts could be used to: (a) link the origin of Lake pollutants to Diamond Head, and (b) eliminate possible landfill sources, e.g. bottoms from tank cleaning.

Germine added, however, that this effort would be complicated by the possibility that defendant can prove that its own sludge was being dumped in the landfill. Polito noted that, even if this were so, the proportions of metals indicated in the Carborundum analysis could not be attributed to leaching from the landfill unless there were an underground stream. Moreover, if metals entered the Lake through the groundwater, one would not expect a large lead content, since lead is virtually insoluble. One would also expect to see zinc, which is highly soluble, in greater proportion than lead, which is not shown by the Carborundum and DOT samples. Polito suggested that a water chemist should look at this question.

After lunch, we met with B.F. Dudenbostel ("Dude"), Chief of the EPA Chemistry Section, who interpreted the analysis report on Sample Number 37172 (taken from an open valve emptying from the Diamond Head lagoon into the Oil Lake). The first chart shows gas chromatogram data, with the lower scale indicating mass spectrum number. Dude said the mass distribution indicated a heavy oil like lube oil. The next chart shows a mass spectral search for paraffins (alkanes), and indicates a high paraffin content characteristic of petroleum. The next chart analyses benzene derivatives (present in gasoline), and shows little present in this sample. The remaining charts show the typical paraffin spectra. Dude concluded from re-examining this report that the sample was a heavy residual oil, possibly used crankcase. (Also, the absence of carbonyl bands showed it was definitely not a vegetable oil).

Dude examined the Haller analysis of the Lake's oil layer and stated that it is "compatible" with the EPA analysis, although he could not say they were the same substance.

It was agreed that arrangements would be made for an inspection of the landfill on August 24th in order to pursue these investigations further.

RECEIVED
AUG 21 1979
HMDC

Thomas J. Germine

Thomas J. Germine
Deputy Attorney General

TJG:hd
cc: Michael V. Polito
John T. Bolan

REFERENCE 6

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM **PROJECT NOTE**

To:
Diamond Head Oil Refinery Div. site file

DATE:
6/15/00

FROM:
Harry Allen

SUBJECT:
Calculation of the Total Area of the Former Oil Lake at the Diamond Head Oil Site

REFERENCE:
Aerial Photograph of Diamond Head Oil Site; Pocket Ref

Using an aerial photgraph which indicates the site boundary, START separated the former oil lake area into two geometric figures and took the sum of the areas of these two parts of the site. The sides of the two figures (an oblique triangle and a trapezium) were mearsured and converted to feet based on the scale of the photograph. The total area was converted to acres. The scale of the aerial photograph used is approximately 1"=1000 feet. The calculations and formulae used are presented below:

For the area of a trapezium:	**For the area of an oblique triangle:**
b = 0.188" = 188 feet c = 0.375" = 375 feet d = 0.125" = 125 feet e = 0.125" = 125 feet f = 0.063" = 63 feet g = 0.313" = 313 feet h = 0.125" = 125 feet k = 0.156" = 156 feet	a = 0.563" = 563 feet b = 0.375" = 375 feet c = 0.625" = 625 feet

Given a, b, c: $s = (a+b+c)/2$
$s = 781.5$ feet

Formulae:

$\mathbf{Area_{Triangle}}$ = **Area of an oblique triangle** = $\sqrt{s\,(s-a)(s-b)(s-c)}$
$\mathbf{Area_{Triangle}}$ = 118,204 feet^2 = **2.7 acres**

$\mathbf{Area_{Trap}}$ = **Area of a trapezium** = $((h+k)g + eh + fk)/2$
$\mathbf{Area_{Trap}}$ = 56,523 feet^2 = **1.3 acres**

$\mathbf{Area_{Total}}$ = Area of Former Oil Lake = **2.7 + 1.3 = 4.0 acres**

POCKET REF

Compiled by

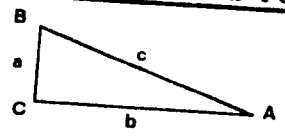
Thomas J. Glover

First Edition

Sequoia Publishing, Inc.
Morrison, Colorado, U.S.A.

2

RIGHT TRIANGLE TRIG FORMULAS



A, B, C = Angles a, b, c = Distances

$\sin A = \frac{a}{c}$, $\cos A = \frac{b}{c}$, $\tan A = \frac{a}{b}$

$\cot A = \frac{b}{a}$, $\sec A = \frac{c}{b}$, $\operatorname{cosec} A = \frac{c}{a}$

Given a and b, Find A, B, and c

$\tan A = \frac{a}{b} = \cot B$, $c = \sqrt{a^2+b^2} = a\sqrt{1+\frac{b^2}{a^2}}$

Given a and c, Find A, B, b

$\sin A = \frac{a}{c} = \cos B$, $b = \sqrt{(c+a)(c-a)} = c\sqrt{1-\frac{a^2}{c^2}}$

Given A and a, Find B, b, c

$B = 90^o - A$, $b = a \cot A$, $c = \frac{a}{\sin A}$

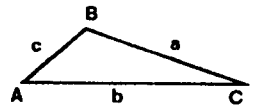
Given A and b, Find B, a, c

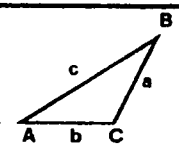
$B = 90^o - A$, $a = b \tan A$, $c = \frac{b}{\cos A}$

Given A and c, Find B, a, b

$B = 90^o - A$, $a = c \sin A$, $b = c \cos A$

OBLIQUE TRIANGLE FORMULAS





Given A, B and a, Find b, C, and c

$b = \frac{a \sin B}{\sin A}$, $C = 180^o - (A+B)$, $c = \frac{a \sin C}{\sin A}$

Given A, a and b, Find B, C, and c

$\sin B = \frac{b \sin A}{a}$, $C = 180^o - (A+B)$, $c = \frac{a \sin C}{\sin A}$

Given a, b and C, Find A, B, and c

$A+B = 180^o - C$, $c = \frac{a \sin C}{\sin A}$

$\tan \frac{1}{2}(A-B) = \frac{(a-b)\tan \frac{1}{2}(A+B)}{a+b}$

Given a, b and c, Find A, B, and C

$s = \frac{a+b+c}{2}$, $\sin \frac{1}{2} A = \sqrt{\frac{(s-b)(s-c)}{bc}}$

$\sin \frac{1}{2} B = \sqrt{\frac{(s-a)(s-c)}{ac}}$, $C = 180^o - (A+B)$

Given a, b and c, Find Area

$s = \frac{a+b+c}{2}$, $Area = \sqrt{s(s-a)(s-b)(s-c)}$

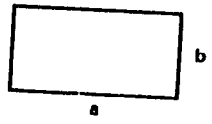
$Area = bc \sin \frac{A}{2}$, $Area = \frac{a^2 \sin B \sin C}{2 \sin A}$

3

PLANE FIGURE FORMULAS

Rectangle

If square, a = b



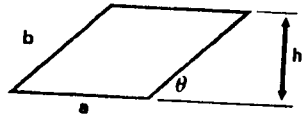
$Area = ab$

$Perimeter = 2(a + b)$, $Diagonal = \sqrt{a^2 + b^2}$

Parallelogram

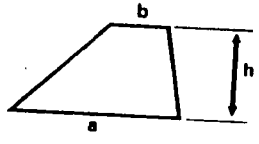
All sides are parallel

θ = degrees



$Area = ah = ab \sin\theta$, $Perimeter = 2(a + b)$

Trapezoid

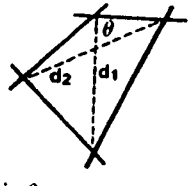


$$Area = \frac{(a + b)}{2} h$$

$Perimeter$ = Sum of lengths of sides

Quadrilateral

θ = degrees

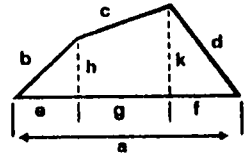


$$Area = \frac{d_1 \times d_2 \times \sin\theta}{2}$$

PLANE FIGURE FORMULAS

Trapezium

a to g = lengths

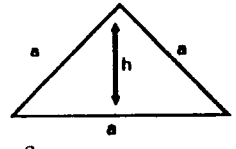


$Perimeter = a + b + c + d$

$$Area = \frac{(h + k)g + eh + fk}{2}$$

Equilateral Triangle

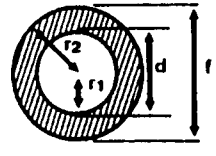
a = all sides equal



$Perimeter = 3a$, $h = \frac{a}{2}\sqrt{3} = 0.866\,a$

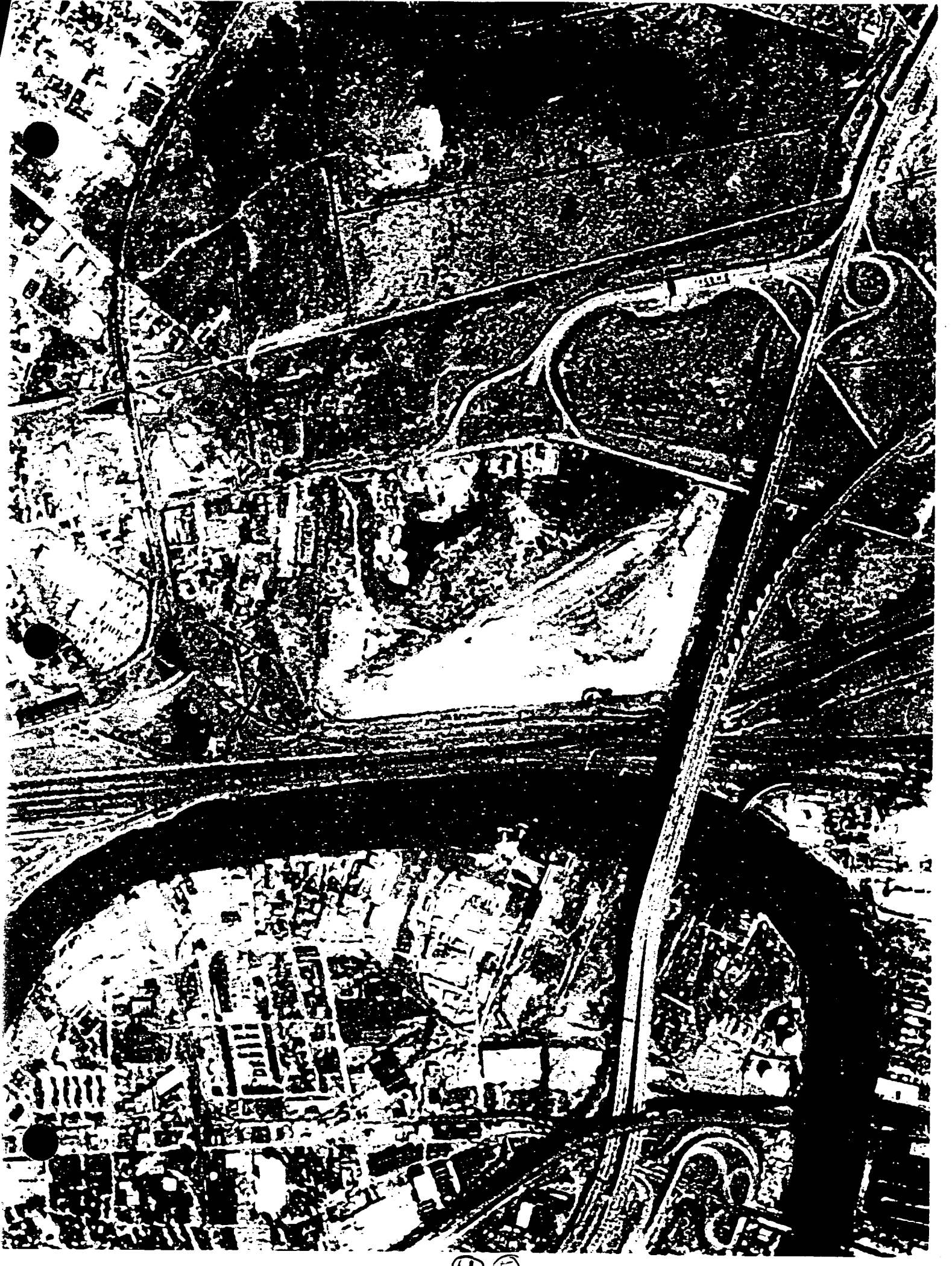
$Area = a^2 \frac{\sqrt{3}}{4} = 0.433\,a^2$

Annulus



$Area = 0.7854\,(d^2 - f^2)$

$Area = \pi\,(r_1 + r_2)(r_2 - r_1)$



4 5

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REFERENCE 7

RECORD OF COMMUNICATION

TO: Smita Sumbaly

FROM: *JANET TROTTER*
Region II ESAT/RSCC

DATE: February 10, 2000

SUBJECT: QUALITY ASSURED DATA

MESSAGE

PLEASE SIGN BELOW IN ACKNOWLEDGEMENT OF RECEIPT OF THE FOLLOWING AND RETURN ONE COPY OF THIS RECORD OF COMMUNICATION TO THE RSCC-REGION II.

(1) Diamond Head Oil + Refinery 27633 Chem Inorg 60 S/TW

REPLY BY:

SIGNATURE: DATE:

DATE RECEIVED BY RSCC: / /

cc: EPA TASK MONITOR
ESAT, MANAGER
file

RECEIVED
FEB 1 2000

RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER

RECEIVED
FEB 09, 2000

DATE: JAN. 20, 2000
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: Hanif Sheikh, Hazardous Waste Support Section

Attached is the following INORGANIC Data Package to be reviewed for Quality Assurance

SITE	DIAMOND HEAD OIL & REFINERY DIV.	CASE#	27633
CONTRACTOR	STARTW	#SAMPLES	MATRIX
PHASE	RI	60	SOIL
LAB	CHEM	7	WATER
TURN-AROUND-TIME	35 DAYS	FRACTION	TAL ONLY
CERCLIS ID #	NJD092226000	SITE SPILL #	KK

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
		John Bulich	1-12-00
John Bulich	1-20-00	OS	1/21/00
OS		[illegible]	2/8/00
[illegible]	2/8/00	J. Trutter	2/8/00
J. Trutter	2/8/00	Hanif Shaikh	2/8/00
Hanif Shaikh	2/9/00	DCR [illegible]	2/9/00

(over for instructions) revised 3/99

CASE: 27633	SITE: DIAMOND HEAD OIL REFINERY	SOIL: 60
SDG: MBPR50, MBPR56, MBPR66, MBTE74	LAB: CHEMTECH	WATER: 7
CONTRACTOR: STARTW	REVIEWER: C. STANCA	OTHER:

A.2.1. Validation flags -The following flags have been applied in red by the data validator and must be considered by the data user.

J -This flag indicates the result qualified as **estimated.**

Red-Line - A red-line drawn through a sample result indicates **unusable** value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data -The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers -The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0

A.2.2. The data assessment is given below and on the attached sheets.

This case consists of seven (7) aqueous and sixty (60) soil samples collected at the Diamond Head Oil Refinery site on 12/02 - 12/07/99 for TAL Metals analysis according to the USEPA CLP SOW No. ILM04.0. The following samples were identified as field blanks: MBTF02, MBTF03, and MBTF04. Samples MBTE75/MBTF76, MBTA24/MBTA42, MBPR66/MBPR41, and MBTE94/MBTE95 are the field duplicate pairs for this sampling event. Matrix spike, laboratory duplicate and serial dilution analyses were performed on samples MBTA18, MBTA30, MBTE92, MBTA37, and MBTE74.

SDG MBPR50

CSF

Page 282A was inserted. Sample tags are not present.

CRDL STANDARD

The CRDL standard recoveries fell outside the control limits of 80 - 120% for Pb (%R_6 =126.0),

A.2.2. (continuation)

Se ($\%R_8$ =125.0), and Hg (%R = 140.0). (Only out of control recoveries that affected samples in this SDG were mentioned.) All associated positive results within the affected range of True Value ± 2CRDL for ICP and True Value ± CRDL for AA should be considered estimated and flagged "J". The following action has been taken:

"J": Hg in MBTA22, MBPR52, -54.

ICP SERIAL DILUTION

The ICP serial dilution analysis yielded percent differences greater than 10 but less than 100 when the initial concentration was equal to or greater than 10 X IDL for K (%D =18.2) and Na (%D =19.3). All associated sample results greater or equal to CRDL or 10 X IDL, whichever is greater, should be considered estimated and flagged "J". The following action has been taken:

"J": Na in MBPR51, -55, MBTA22.

SDG MBPR56

CSF

Sample tags are not present.

CRDL STANDARD

The CRDL standard recoveries fell outside the control limits of 80 - 120% for Pb ($\%R_6$ =126.0; $\%R_7$ =136.0), Se ($\%R_8$ =125.0), and Hg (%R = 150.0). (Only out of control recoveries that affected samples in this SDG were mentioned.) All associated positive results within the affected range of True Value ± 2CRDL for ICP and True Value ± CRDL for AA should be considered estimated and flagged "J". The following action has been taken:

"J": Hg in MBPR58, -60, -65 MBTA33, -34.

ICP SERIAL DILUTION

The ICP serial dilution analysis yielded percent differences greater than 10 but less than 100 when the initial concentration was equal to or greater than 10 X IDL for Sb (%D = 11.3), K (%D =20.8) and Na (%D =15.0).

A.2.2. (continuation)

All associated sample results greater or equal to CRDL or 10 X IDL, whichever is greater, should be considered estimated and flagged "J". The following action has been taken:

"J": Sb in MBPR57.
K in MBPR57, -58, -63.
Na in MBPR56, -57 ---> 59, 62 ---> 65, MBTA30, -34, -35.

SDG MBPR66

CSF

Sample tags are not present.

CRDL STANDARD

The CRDL standard recoveries fell outside the control limits of 80 - 120% for Pb ($\%R_7$ =136.0), Se ($\%R_8$ =125.0), and Hg (%R = 135.0). (Only out of control recoveries that affected samples in this SDG were mentioned.) All associated positive results within the affected range of True Value $\pm$ 2CRDL for ICP and True Value $\pm$ CRDL for AA should be considered estimated and flagged "J". The following action has been taken:

"J": Se in MBTE94.

ICP SERIAL DILUTION

Soil

The ICP serial dilution analysis yielded percent differences greater than 10 but less than 100 when the initial concentration was equal to or greater than 10 X IDL for Co (%D =15.6) and Na (%D =15.8). All associated sample results greater or equal to CRDL or 10 X IDL, whichever is greater, should be considered estimated and flagged "J". The following action has been taken:

"J": Na in MBPR66, MBTA41.

A.2.2. (continuation)

Water

The ICP serial dilution analysis yielded percent differences greater than 10 but less than 100 when the initial concentration was equal to or greater than 10 X IDL for Al (%D =23.5). All associated sample results greater or equal to CRDL or 10 X IDL, whichever is greater, should be considered estimated and flagged "J". The following action has been taken:

"J": Al in MBTE92 ---> 95.

SDG MBTE74

CSF

Pages 80A through 80Z, 80AA, 80AB and 80AC, 252A were inserted. Sample tags are not present.

CRDL STANDARD

The CRDL standard recovery fell outside the control limits of 80 - 120% for Se (%R_3 =79.2). (Only out of control recoveries that affected samples in this SDG were mentioned.) All associated results within the affected range of True Value $\pm$ 2CRDL should be considered estimated and flagged "J". The following action has been taken:

"J": Se in MBTE76 ---> 83.

ICP SERIAL DILUTION

The ICP serial dilution analysis yielded a percent difference greater than 10 but less than 100 when the initial concentration was equal to or greater than 10 X IDL for Na (%D =12.0). All associated sample results greater or equal to CRDL or 10 X IDL, whichever is greater, should be considered estimated and flagged "J". No action was taken since all associated results were less than the CRDL.

PERCENT SOLIDS

The percent solids was less than 50 but greater than 10 for samples MBTE74, MBTE77, MBTE78, MBTE82, MBTE89, MBTE90. All sample results not previously qualified have been considered estimated and flagged "J".

A.2.2. (continuation)

"J": All analytes in MBTE74, -89, -90.
All analytes (except Se) in MBTE77, -78, -82.

A.2.3. Contract-Problems/Non-Compliance

SDG MBPR66:

Sample MBTE92 was marked as soil sample, instead of water sample, on COC/Traffic Report. However, the Trip Report correctly identified the sample as groundwater sample.

SDG MBTE74:

1. Form Is are not arranged in sequential order - sample MBTE91 is preceding sample MBTE90. Sample MBTE91 is not listed on the resubmitted Cover Page.

MMB Reviewer: HS Date: 2/9/00
Signature

Contractor Reviewer: Constantin Stanescu Date: 2/8/00
Signature

Verified by: _____ Date: _____
Signature

CONTRACT NON-COMPLIANCE
(SOC REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO. 27633

The hardcopied (laboratory name) _____
inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:
SDG Sample No.: _____

Conc. & Matrix: _____

Contract No. (_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Region, DSCL-IV, and SOC. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Areas of non-compliance with the above contract are described below.

Comments: _____

CS
Reviewer's Initial

2/14/00
Date

DPO MAILING LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Deb Szaro
(617) 861-4312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysis, York,
ESI, Skinner, TMA

2. USEPA Region II ESD
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Lisa Garton Vidulich
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Century, Chemtech, US Test, Nasco
ETC, Gedson, EMS, Gelson, ICM

3. USEPA Region III (CRL)
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ITAS, Weston, MMES, EA Engineering,
Subject Tech., KEYPA

4. USEPA Region IV (ESD)
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Tom Besser, Jr.
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CompuChem, EPS, ESE, PBSAI,
Triangle Labs

5. USEPA Region V (ESD)
536 South Clark Street
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NLE, TAI/ENG

6. USEPA Region VI (ESD)
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Research, Inc., SPL Inc., SWRI,
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7. USEPA Region VII Laboratory
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Debra Morey
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Enterprises, Eagle Picher

8. USEPA Region VIII Laboratory
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Denver Federal Center
Lakewood, CO 80225
Eve Hoffman
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CO, ND, SD, UT, WY, MT
ACCU, CMRI, RMAL, Data Chem, Chard

9. USEPA Region IX (ESD)
QA Management Section
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AZ, CA, HI, NV, American Samoa,
Guam Trust Territories of Pacific
Islands, Wake Island
ALL CAL, Weston, S-Cubed, IT_CA,
Vegas

10. USEPA Region X Laboratory
P.O. Box 549
Manchester, WA 98353
Gerald Muth
(206) 442-0370
AK, ID, OR, WA
Lauck Testing Labs, Century Testing
Labs (For VOA Only), Weyerhauser Co.,
Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-230)
USEPA
401 "M" Street S.W.
Washington, DC 20460
FTS 382-5746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
Box 93478
Las Vegas, NV 89119

13. Sample Management Office

CLP DATA ASSESSMENT SUMMARY FORM

TYPE OF REVIEW: INORGANIC **DATE:** 02/14/00 **CASE #:** 27633

SITE: DIAMOND HEAD OIL REFINERY **LAB NAME:** CHEMTECH

REVIEWER'S INITIALS: CS **NUMBER OF SAMPLES:** 7 WATER 60 SOIL

ANALYTES REJECTED DUE TO EXCEEDING REVIEW CRITERIA:*

	Holding Time	CRDL	Prep Blank	Field Blank	Inter-ference	Spike Recov.	Det. Limit	LCS	Serial Dil	MSA	Total Analytes	Rejections
ICP											1474	0
Flame AA												
Furnace AA												
Mercury											67	0
Cyanide												
Total											1541	0

ANALYTES FLAGGED AS ESTIMATED (J) DUE TO EXCEEDING CRITERIA FOR:*

	Holding Time	CRDL	Prep Blan	% Solids	Preser vation	Spike Recov.	Dup Lab	Dup Field	Det. Limit	LCS	Serial Dilution	MSA	Total Analytes	Estimation
ICP		11		129							23		1474	163
Flame AA														
Furnace AA														
Mercury		8		6									67	14
Cyanide														
Total		19		135							23		1541	177

Note: Asterisk (*) indicates additional exceedances of review criteria.

Region II

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO.: 27633

SITE: DIAMOND HEAD OIL REFINERY

LABORATORY: CHEMTECH

NO. OF SAMPLES/MATRIX: 7 WATER, 60 SOIL

SDG#: MBPR50,-56, -66, MBTE74

REVIEWER (IF NOT ESD):

SOW#: ILM04.0

REVIEWER'S NAME: C. STANCA

DPO: ACTION FYI

COMPLETION DATE: 02/14/00

DATA ASSESSMENT SUMMARY

	ICP	AA	MERCURY	CYANIDE
Holding Times	O		O	
Calibration	O		O	
Blanks	O		O	
ICS	O		N/A	N/A
LCS	O		N/A	N/A
Duplicate Analysis	O		O	
Matrix Spike	O		O	
MSA	N/A		N/A	N/A
Serial Dilution	O		N/A	N/A
Sample Verification	O		O	
Other QC	O		O	
Overall Assessment	O		O	

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:

OF CONCERN:

E PERFORMANCE:

CADRE VALIDATION

Holding Time Report

SDG NO: **MBPR50** LABORATORY: **CHEMTECH CONS**

CASE NO: **27633** AGENCY INPUT FILE: **MBPR50.ASF**

HOLDING TIME CRITERIA

Inorganic

	-- Holding Time --		------- pH -------	
	Primary	Expanded	Primary	Expanded
Metals	180	16704	2.0	2.6
Mercury	28	0	2.0	50.0
Cyanide	14	0	12.0	1.0

DC-280: The following inorganic soil samples were reviewed for holding time violations using criteria developed for water samples.

MBPR50, MBPR51, MBPR52, MBPR53, MBPR54, MBPR55
MBTA18, MBTA18D, MBTA18S, MBTA19, MBTA20, MBTA21
MBTA22, MBTA23, MBTA24, MBTA25, MBTA26, MBTA42
MBTA43, MBTA44, MBTA45

Calibration Report

SDG NO: MBPR50
CASE NO: 27633

LABORATORY: CHEMTECH CONS
AGENCY INPUT FILE: MBPR50.ASF

CALIBRATION CRITERIA

Inorganic

Percent Recovery Limits

	--- Primary ---		-- Expanded ---	
	Low	High	Low	High
Cyanide	85.00	115.00	70.00	130.00
AA	90.00	110.00	75.00	125.00
ICP	90.00	110.00	75.00	125.00
Mercury	80.00	120.00	65.00	135.00

No problems found for this qualification.

LCS Report

SDG NO: MBPR50
CASE NO: 27633

LABORATORY: CHEMTECH CONS
AGENCY INPUT FILE: MBPR50.ASF

No problems found for this qualification.

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Sample Result Verification Report

SDG NO: **MBPR50** LABORATORY: **CHEMTECH CONS**

CASE NO: **27633** AGENCY INPUT FILE: **MBPR50.ASF**

No problems found for this qualification.

Field QC Report

SDG NO: MBPR50
CASE NO: 27633

LABORATORY: CHEMTECH CONS
AGENCY INPUT FILE: MBPR50.ASF

No problems found for this qualification.

Percent Moisture Report

SDG NO: MBPR66 LABORATORY: CHEMTECH CONS

CASE NO: 27633 AGENCY INPUT FILE: MBPR66.ASF

PERCENT MOISTURE LIMITS

	Primary	Expanded
INORG	50%	90%

No problems found for this qualification.

Holding Time Report

SDG NO: MBPR66 LABORATORY: CHEMTECH CONS

CASE NO: 27633 AGENCY INPUT FILE: MBPR66.ASF

HOLDING TIME CRITERIA

Inorganic

	-- Holding Time --		------- pH -------	
	Primary	Expanded	Primary	Expanded
Metals	180	16704	2.0	2.6
Mercury	28	0	2.0	50.0
Cyanide	14	0	12.0	1.0

DC-280: The following inorganic soil samples were reviewed for holding time violations using criteria developed for water samples.

MBPR66, MBTA37, MBTA37D, MBTA37S, MBTA41

Calibration Report

SDG NO: MBPR66 LABORATORY: CHEMTECH CONS

CASE NO: 27633 AGENCY INPUT FILE: MBPR66.ASF

CALIBRATION CRITERIA

Inorganic

Percent Recovery Limits

	--- Primary ---		-- Expanded ---	
	Low	High	Low	High
Cyanide	85.00	115.00	70.00	130.00
AA	90.00	110.00	75.00	125.00
ICP	90.00	110.00	75.00	125.00
Mercury	80.00	120.00	65.00	135.00

No problems found for this qualification.

LCS Report

SDG NO: MBPR66

CASE NO: 27633

LABORATORY: CHEMTECH CONS

AGENCY INPUT FILE: MBPR66.ASF

No problems found for this qualification.

Sample Result Verification Report

SDG NO: MBPR66 LABORATORY: CHEMTECH CONS

CASE NO: 27633 AGENCY INPUT FILE: MBPR66.ASF

No problems found for this qualification.

Percent Moisture Report

SDG NO: MBPR56
CASE NO: 27633

LABORATORY: CHEMTECH CONS
AGENCY INPUT FILE: MBPR56.ASF

PERCENT MOISTURE LIMITS

	Primary	Expanded
INORG	50%	90%

No problems found for this qualification.

Holding Time Report

SDG NO: **MBPR56** LABORATORY: **CHENTECH CONS**

CASE NO: **27633** AGENCY INPUT FILE: **MBPR56.ASF**

HOLDING TIME CRITERIA

Inorganic

	-- Holding Time --		------- pH -------	
	Primary	Expanded	Primary	Expanded
Metals	180	16704	2.0	2.6
Mercury	28	0	2.0	50.0
Cyanide	14	0	12.0	1.0

DC-280: The following inorganic soil samples were reviewed for holding time violations using criteria developed for water samples.

MBPR56, MBPR57, MBPR58, MBPR59, MBPR60, MBPR61
MBPR62, MBPR63, MBPR64, MBPR65, MBTA28, MBTA29
MBTA30, MBTA30D, MBTA30S, MBTA31, MBTA32, MBTA33
MBTA34, MBTA35, MBTA36

SDG NO: MBPR56
CASE NO: 27633

LABORATORY: CHEMTECH CONS
AGENCY INPUT FILE: MBPR56.ASF

CALIBRATION CRITERIA

Inorganic

Percent Recovery Limits

	--- Primary ---		-- Expanded ---	
	Low	High	Low	High
Cyanide	85.00	115.00	70.00	130.00
AA	90.00	110.00	75.00	125.00
ICP	90.00	110.00	75.00	125.00
Mercury	80.00	120.00	65.00	135.00

No problems found for this qualification.

LCS Report

SDG NO: MBPR56

CASE NO: 27633

LABORATORY: CHEMTECH CONS

AGENCY INPUT FILE: MBPR56.ASF

No problems found for this qualification.

Sample Result Verification Report

SDG NO: **MBPR56**

CASE NO: **27633**

LABORATORY: **CHEMTECH CONS**

AGENCY INPUT FILE: **MBPR56.ASF**

No problems found for this qualification.

Field QC Report

SDG NO: MBPR56
CASE NO: 27633

LABORATORY: CHEMTECH CONS
AGENCY INPUT FILE: MBPR56.ASF

No problems found for this qualification.

Percent Moisture Report

SDG NO: **MBTE74**
CASE NO: **27633**

LABORATORY: **CHEMTECH CONS**
AGENCY INPUT FILE: **MBTE74.ASF**

PERCENT MOISTURE LIMITS

	Primary	Expanded
INORG	50%	90%

DC-364: Percent moisture content of the following inorganic soil samples exceeds primary criteria.
Hits and non-detects are qualified "J".

MBTE74, MBTE74D, MBTE74S, MBTE77, MBTE78, MBTE82
MBTE89, MBTE90

Holding Time Report

SDG NO: MBTE74
CASE NO: 27633

LABORATORY: CHEMTECH CONS
AGENCY INPUT FILE: MBTE74.ASF

HOLDING TIME CRITERIA

Inorganic

	-- Holding Time --		------- pH -------	
	Primary	Expanded	Primary	Expanded
Metals	180	16704	2.0	2.6
Mercury	28	0	2.0	50.0
Cyanide	14	0	12.0	1.0

DC-280: The following inorganic soil samples were reviewed for holding time violations using criteria developed for water samples.

MBTA27, MBTE74, MBTE74D, MBTE74S, MBTE75, MBTE76
MBTE77, MBTE78, MBTE79, MBTE80, MBTE81, MBTE82
MBTE83, MBTE84, MBTE85, MBTE86, MBTE87, MBTE88
MBTE89, MBTE90, MBTE91

SDG NO: MBTE74
CASE NO: 27633

LABORATORY: CHEMTECH CONS
AGENCY INPUT FILE: MBTE74.ASF

CALIBRATION CRITERIA

Inorganic

Percent Recovery Limits

	--- Primary ---		-- Expanded ---	
	Low	High	Low	High
Cyanide	85.00	115.00	70.00	130.00
AA	90.00	110.00	75.00	125.00
ICP	90.00	110.00	75.00	125.00
Mercury	80.00	120.00	65.00	135.00

No problems found for this qualification.

LCS Report

SDG NO: MBTE74

CASE NO: 27633

LABORATORY: CHEMTECH CONS

AGENCY INPUT FILE: MBTE74.ASF

No problems found for this qualification.

Sample Result Verification Report

SDG NO: **MBTE74** LABORATORY: **CHEMTECH CONS**

CASE NO: **27633** AGENCY INPUT FILE: **MBTE74.ASF**

No problems found for this qualification.

Field QC Report

SDG NO: MBTE74 LABORATORY: CHEMTECH CONS

CASE NO: 27633 AGENCY INPUT FILE: MBTE74.ASF

No problems found for this qualification.

FIELD DUPLICATES

Lab Code: CHEM Case: 27633\S SDG: MBPR50

Reviewer: C. STANCA Matrix: SOIL

Concentration Units: UG/L

Analyte	Control Limit	Sample MBTA24	C	Sample MBTA42	C	RPD/DIFF.	Q
ALUMINUM		26122.00		26781.30		2.49	
ANTIMONY		29.97	B	19.84	B		
ARSENIC		66.97		56.84		16.36	
BARIUM		1098.90		1243.69		12.36	
BERYLLIUM		1.33	B	1.22	B		
CADMIUM		3.70	B	1.53	B		
CALCIUM		47360.00		41965.00		12.08	
CHROMIUM		436.60		356.32		20.25	
COBALT		32.56	B	26.32	B		
COPPER		921.30		965.20		4.65	
IRON		124690.00		121698.50		2.43	
LEAD		2386.50		1899.87		22.71	
MAGNESIUM	10000.00	11840.00		9041.55		2799.00	
MANGANESE		1169.20		1056.76		10.10	
MERCURY		2.52		2.75		8.77	
NICKEL		381.10		317.03		18.36	
POTASSIUM		2453.10	B	2590.39	B		
SELENIUM	10.00	4.81	U	5.72		0.91	
SILVER	20.00	11.47		10.68		0.79	
SODIUM		1221.00	B	980.46	B		
THALLIUM		6.66	U	6.87	U		
VANADIUM	100.00	183.15		195.33		12.18	
ZINC		2438.30		2159.29		12.14	
CYANIDE		0.00		0.00			

COMMENTS:

FIELD DUPLICATES

Lab Code: CHEM Case: 27633\S SDG: MBPR66

Reviewer: C. STANCA Matrix: SOIL

Concentration Units: UG/L

Analyte	Control Limit	Sample MBPR66	C	Sample MBTA41	C	RPD/DIFF.	Q
ALUMINUM		21520.80		17533.60		20.42	
ANTIMONY		19.22	B	19.10	B		
ARSENIC		69.17		74.21		7.03	
BARIUM		12126.80		8072.40		40.14	
BERYLLIUM		1.58	B	1.26	B		
CADMIUM	10.00	19.64		10.85		8.79	
CALCIUM		87108.00		82894.00		4.96	
CHROMIUM		802.76		1089.34		30.29	
COBALT		28.18	B	35.15	B		
COPPER		649.04		637.98		1.72	
IRON		62342.00		92442.00		38.89	
LEAD		74725.00		48174.00		43.21	
MAGNESIUM	10000.00	11699.80		11023.60		676.20	
MANGANESE		935.13		1184.82		23.56	
MERCURY		1.67		2.26		29.66	
NICKEL	80.00	101.20		143.22		42.02	
POTASSIUM		2805.39	B	2586.64	B		
SELENIUM		5.12	U	4.77	U		
SILVER		5.55	B	4.77	B		
SODIUM	10000.00	12084.10		11284.00		800.10	
THALLIUM		6.83	U	6.94	U		
VANADIUM		360.39		894.04		85.08	
ZINC		6405.00		4340.00		38.44	
CYANIDE		0.00		0.00			

COMMENTS:

FIELD DUPLICATES

Lab Code: CHEM Case: 27633\S SDG: MBTE74

Reviewer: C. STANCA Matrix: SOIL

Concentration Units: UG/L

Analyte	Control Limit	Sample MBTE75	C	Sample MBTE76	C	RPD\DIFF.	Q
ALUMINUM		6620.70		6226.40		6.14	
ANTIMONY		4.95	U	5.16	U		
ARSENIC		7.61	B	9.29	B		
BARIUM		79.91	B	121.43	B		
BERYLLIUM		0.95	U	1.00	U		
CADMIUM		0.95	U	1.00	U		
CALCIUM	10000.00	3687.05	B	5813.60		2126.50	
CHROMIUM	20.00	43.76		78.43		34.67	
COBALT		8.75	B	9.98	B		
COPPER	50.00	62.78		96.66		33.88	
IRON		21003.60		20880.80		0.59	
LEAD		187.59		339.53		57.65	
MAGNESIUM		3793.59	B	3185.44	B		
MANGANESE		246.94		313.38		23.71	
MERCURY		0.20	U	0.19	U		
NICKEL		31.96	B	35.78	B		
POTASSIUM		1175.75	B	808.40	B		
SELENIUM	10.00	4.95	U	5.16	U		
SILVER		1.48	B	1.72	B		
SODIUM		1168.14	B	1431.04	B		
THALLIUM		6.85	U	6.88	U		
VANADIUM		31.20	B	34.40	B		
ZINC		293.75		350.88		17.73	
CYANIDE		0.00		0.00			

COMMENTS:

FIELD DUPLICATES

Lab Code: CHEM Case: 27633\W SDG: MBPR66

Reviewer: C. STANCA Matrix: WATER

Concentration Units: UG/L

Analyte	Control Limit	Sample MBTE94	C	Sample MBTE95	C	RPD/DIFF.	Q
ALUMINUM		11700.00		11900.00		1.69	
ANTIMONY		5.00	U	5.00	U		
ARSENIC	10.00	6.80	B	11.20		4.40	
BARIUM		184.00	B	172.00	B		
BERYLLIUM		1.90	B	2.00	B		
CADMIUM		1.00	U	1.00	U		
CALCIUM		30700.00		28300.00		8.14	
CHROMIUM		103.00		105.00		1.92	
COBALT		13.40	B	12.80	B		
COPPER	25.00	31.60		32.10		0.50	
IRON		7110.00		7180.00		0.98	
LEAD		51.50		54.70		6.03	
MAGNESIU		151000.00		138000.00		9.00	
MANGANE		177.00		169.00		4.62	
MERCURY		0.20	U	0.20	U		
NICKEL		19.20	B	19.30	B		
POTASSIU		115000.00		108000.00		6.28	
SELENIUM	5.00	5.30		5.00	U	0.30	
SILVER		1.10	B	1.40	B		
SODIUM		1820000.00		1690000.00		7.41	
THALLIUM	10.00	10.00		11.70		1.70	
VANADIUM	50.00	213.00		196.00		17.00	
ZINC	20.00	61.20		68.30		7.10	
CYANIDE		0.00		0.00			

COMMENTS:

Analytical Results (Qualified Data)

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Case #: 27633
Site :
Lab. :
Reviewer :
Date :

SDG : MBPR56
DIAMOND HEAD OIL REFINERY
CHEM

Number of Soil Samples : 19
Number of Water Samples : 1

Sample Number :	MBPR56		MBPR57		MBPR58		MBPR59		MBPR60	
Sampling Location :	6363-SS10		6363-SS11		6363-SS12		6363-SS13		6363-SS14	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/06/1999		12/06/1999		12/06/1999		12/07/1999		12/07/1999	
Time Sampled :	15:50		16:15		16:35		08:35		09:10	
%Solids :	81.4		72.2		82.3		76.4		82.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	16900		17600		10400		7090		3600	
[illegible]	[illegible]	B	[illegible]	J	[illegible]	B	[illegible]	B	[illegible]	B
ARSENIC	5.1		14.7		5.3		13.3		5.1	
BARIUM	55.8		162		563		182		230	
BERYLLIUM	0.24	U	0.28	U	0.23	U	0.30	B	0.25	B
CADMIUM	0.24	U	0.28	U	1.5		1.4		0.21	
CALCIUM	49900		46700		34300		16100		31600	
CHROMIUM	2150		3000		2300		2330		259	
COBALT	89.9		70.8		44.9		16.4		3.9	B
COPPER	27.6		109		60.3		144		18.1	
IRON	40500		39400		25900		16400		7300	
LEAD	109		515		3780		864		740	
MAGNESIUM	39700		32300		19700		7370		3380	
MANGANESE	332		422		278		188		196	
MERCURY	0.12	U	0.28		0.17	J	1.7		0.18	J
NICKEL	341		262		165		71.6		15.4	
POTASSIUM	640	B	1980	J	1200	J	1140	B	450	B
SELENIUM	1.2	U	1.4	U	1.2	U	1.3	U	1.2	U
SILVER	4.4		2.5	B	1.4	B	1.8	B	0.48	B
SODIUM	2970	J	5860	J	2820	J	3920	J	669	B
THALLIUM	1.8	B	1.9	U	1.6	U	1.8	U	1.7	U
VANADIUM	6770		687		486		130		38.5	
ZINC	260		372		271		347		129	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

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Case #: 27633 SDG : MBPR56

Site : DIAMOND HEAD OIL REFINERY

Lab. : CHEM

Reviewer :

Date :

Sample Number :	MBPR61		MBPR62		MBPR63		MBPR64		MBPR65	
Sampling Location :	6363-SS15		6363-SS16		6363-SS17		6363-SS18		6363-SS19	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/07/1999		12/07/1999		12/07/1999		12/07/1999		12/07/1999	
Time Sampled :	09:40		10:05		10:30		10:45		11:10	
%Solids :	84.1		83.0		90.3		87.4		85.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	5320		9730		7400		4930		7010	
[illegible]	[illegible]	B	[illegible]	B	[illegible]	B	[illegible]	B	[illegible]	B
ARSENIC	5.6		5.4		3.7		4.3		11.6	
BARIUM	245		977		116		2930		1070	
BERYLLIUM	0.33	B	0.23	U	0.41	B	0.22	U	0.42	B
CADMIUM	0.24	U	0.23	U	0.22	U	16.3		[illegible]	
CALCIUM	38300		25700		21200		28500		32800	
CHROMIUM	18.0		1070		267		644		[illegible]	
COBALT	4.4	B	39.7		12.5		20.0		18.4	
COPPER	45.6		49.7		45.1		569		108	
IRON	10700		26700		15100		15300		28100	
LEAD	484		112		96.2		23500		4420	
MAGNESIUM	9040		17400		14700		9970		6370	
MANGANESE	229		324		292		216		[illegible]	
MERCURY	0.37		0.38		0.11	U	0.58		0.17	J
NICKEL	13.2		149		37.1		74.2		69.4	
POTASSIUM	737	B	1000	B	1700	J	779	B	984	B
SELENIUM	1.2	U	1.2	U	1.1	U	1.1	U	1.5	
SILVER	0.70	B	1.0	B	0.80	B	1.4	B	0.87	B
SODIUM	713	B	2370	J	2530	J	4050	J	1580	J
THALLIUM	1.7	U	1.6	U	1.6	U	1.5	U	3.4	
VANADIUM	16.3		351		84.0		144		76.7	
ZINC	692		136		96.9		779		528	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

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Case #: 27633 SDG : MBPR56

Site : DIAMOND HEAD OIL REFINERY

Lab. : CHEM

Reviewer :

Date :

Sample Number :	MBTA28		MBTA29		MBTA30		MBTA30DDo Not Use		MBTA30S-Do Not Use	
Sampling Location :	6363-S11		6363-S12		6363-S13		6363-S13		6363-S13	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/06/1999		12/06/1999		12/07/1999		12/07/1999		12/07/1999	
Time Sampled :	14:05		16:30		08:30		08:30		08:30	
%Solids :	86.4		89.7		87.2		87.2		87.2	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	8220		6250		14000		14000			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	
ARSENIC	4.0		5.5		8.2		8.6		18.9	
BARIUM	106		241		127		120		[illegible]	
BERYLLIUM	0.32	B	0.21	U	0.23	U	0.23	U	12.1	
[illegible]	0.23	U	0.21	U	0.23	U	0.23	U	[illegible]	
CALCIUM	14900		17100		72200		72400			
CHROMIUM	337		608		2280		2270		2270	
COBALT	17.3		22.3		83.5		82.8		194	
COPPER	49.5		59.6		62.5		62.3		123	
IRON	19600		23100		47300		47600			
LEAD	140		1180		248		249		248	
MAGNESIUM	6830		8680		36200		36200			
MANGANESE	227		308		681		680		707	
MERCURY	0.40		0.33		0.11	U	0.11	U	0.61	
NICKEL	65.8		79.2		298		298		406	
POTASSIUM	836	B	759	B	850	B	853			
SELENIUM	1.1	U	1.1	U	1.1	U	1.1	U	1.9	
SILVER	0.74	B	1.2	B	1.6	B	1.5		13.9	
SODIUM	560	B	512	B	2170	U	2180		[illegible]	
THALLIUM	1.6	U	1.5	U	1.6	U	1.6	U	12.9	
VANADIUM	92.8		214		702		704		806	
ZINC	125		232		668		669		775	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Case #: 27633
SDG : MBPR56
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBTA31		MBTA32		MBTA33		MBTA34		MBTA35	
Sampling Location :	6363-S14		6363-S15		6363-S16		6363-S17		6363-S18	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/07/1999		12/07/1999		12/07/1999		12/07/1999		12/07/1999	
Time Sampled :	09:00		09:30		09:50		10:20		10:40	
%Solids :	86.4		88.2		87.1		84.4		80.3	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	6070		1680		7460		7340		7090	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ARSENIC	11.2		2.5		5.6		4.2		11.6	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BERYLLIUM	0.37	B	0.22	U	0.43	B	0.28	B	0.43	B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CALCIUM	25400		3210		10200		44800		32000	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
COBALT	6.6	B	2.1	B	8.0	B	17.4		8.2	B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
IRON	15000		4620		15100		17400		14400	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAGNESIUM	3640		882	B	3800		8970		4110	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MERCURY	0.87		0.11	U	0.17	J	0.18	J	0.66	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
POTASSIUM	719	B	271	B	1080	B	1090	B	658	B
SELENIUM	12	U	1.1	U	1.1	U	1.1	U	12	U
SILVER	1.4	B	0.41	B	0.56	B	0.78	B	0.98	B
SODIUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
THALLIUM	1.6	U	1.6	U	1.6	U	1.6	U	1.7	U
VANADIUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ZINC	460		54.9		288		379		451	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

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Case #: 27633 SDG : MBPR56

Site : DIAMOND HEAD OIL REFINERY

Lab. : CHEM

Reviewer :

Date :

Sample Number :	MBTA36		IDL(ug/L)							
Sampling Location :	6363-S19									
Matrix :	Soil		Soil							
Units :	mg/Kg		mg/Kg							
Date Sampled :	12/07/1999									
Time Sampled :	11:00									
%Solids :	78.5									
Dilution Factor :	1.0		1.0							
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	6860									
ANTIMONY	[illegible]	B								
ARSENIC	19.1									
BARIUM	[illegible]									
BERYLLIUM	0.52	B								
CADMIUM	[illegible]									
CALCIUM	7970									
CHROMIUM	[illegible]									
COBALT	8.1	B								
COPPER	[illegible]									
IRON	18000									
LEAD	[illegible]									
MAGNESIUM	3150									
MANGANESE	[illegible]									
MERCURY	2.2									
NICKEL	[illegible]									
POTASSIUM	723	B								
SELENIUM	12	U								
SILVER	2.9									
SODIUM	[illegible]	B								
THALLIUM	1.8	B								
VANADIUM	[illegible]									
ZINC	636									
CYANIDE	N/A		N/A							

Analytical Results (Qualified Data)

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Case #: 27633
SDG : MBPR56
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBTF04Field Blank		IDL							
Sampling Location :	6363-RB03									
Matrix :	Water		Water							
Units :	ug/L		ug/L							
Date Sampled :	12/07/1999									
Time Sampled :	08:30									
%Solids :	0.0									
Dilution Factor :	1.0		1.0							
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	37.1	B	14.0							
ANTIMONY	60	U	60							
ARSENIC	6.0	U	6.0							
BARIUM	10	U	10							
BERYLLIUM	1.0	U	1.0							
CADMIUM	10	U	10							
CALCIUM	163	B	16.0							
CHROMIUM	10	U	10							
COBALT	1.0	U	1.0							
COPPER	14.0	B	10							
IRON	16.0	U	16.0							
LEAD	20	U	20							
MAGNESIUM	23.0	U	23.0							
MANGANESE	10	U	10							
MERCURY	0.20	U	0.20							
NICKEL	20	U	20							
POTASSIUM	39.0	U	39.0							
SELENIUM	5.0	U	5.0							
SILVER	1.0	U	1.0							
SODIUM	309	B	23.0							
THALLIUM	7.0	U	7.0							
VANADIUM	20	U	20							
ZINC	14.2	B	2.0							
CYANIDE	N/A		N/A							

Analytical Results (Qualified Data)

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Case #: 27633 SDG : MBPR50

Site : DIAMOND HEAD OIL REFINERY

Lab. : CHEM

Reviewer : [illegible]

Date :

Number of Soil Samples : 19

Number of Water Samples : 1

Sample Number :	MBPR50		MBPR51		MBPR52		MBPR53		MBPR54	
Sampling Location :	6363-SS04		6363-SS05		6363-SS06		6363-SS07		6363-SS08	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/06/1999		12/06/1999		12/06/1999		12/06/1999		12/06/1999	
Time Sampled :	11:05		11:35		12:05		14:00		14:30	
%Solids :	78.1		84.9		69.3		80.0		69.9	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	8990		3080		14200		8910		2760	
[illegible]	[illegible]	B	[illegible]	B	[illegible]	B	[illegible]	B	[illegible]	[illegible]
ARSENIC	2.8		9.5		8.4		7.9		11.1	
[illegible]	[illegible]		147		69.5		2660		[illegible]	
BERYLLIUM	0.25	U	0.23	U	0.28	U	0.25	U	0.32	B
[illegible]	0.25	[illegible]	0.23	[illegible]	[illegible]		2.2		[illegible]	[illegible]
CALCIUM	38700		70100		76200		29800		30100	
[illegible]	1480		880		2380		[illegible]		[illegible]	
COBALT	47.2		5.7	B	93.1		16.8		6.3	B
COPPER	33.4		124		1500		102		83.5	
IRON	32900		29200		59900		16700		36000	
[illegible]	334		167		267		462		267	
MAGNESIUM	15400		5570		44000		6280		1940	
[illegible]	384		261		430		251		230	
MERCURY	0.13	U	0.61		0.28	J	0.91		0.20	J
NICKEL	470		174		361		61.3		22.1	
POTASSIUM	479	B	723	B	297	B	834	B	402	B
SELENIUM	1.3	U	1.2	U	1.4	U	7.4		2.4	
SILVER	0.95	B	0.77	B	2.3	B	1.3	B	1.6	B
SODIUM	497	B	1270	J	1150	B	550	B	351	B
THALLIUM	1.8	U	1.6	U	2.0	U	1.8	U	2.0	U
VANADIUM	915		60.2		938		94.1		18.2	
ZINC	202		173		382		1720		449	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Case #: 27633 SDG : MBPR50
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBPR55		MBTA18		MBTA18D-Do Not Use		MBTA18S-Do Not Use		MBTA19	
Sampling Location :	6363-SS09		6363-S01		6363-S01		6363-S01		6363-S02	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/06/1999		12/06/1999		12/06/1999		12/06/1999		12/06/1999	
Time Sampled :	15:30		09:30		09:30		09:30		09:55	
%Solids :	77.8		83.7		83.7		83.7		81.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	19700		9650		10100				5670	
[illegible]	20.3		[illegible]	B	[illegible]		[illegible]		[illegible]	B
ARSENIC	2.6		8.4		9.0		19.0		17.4	
[illegible]	30.6	B	42.1		45.7		87.9		[illegible]	
BERYLLIUM	0.25	U	0.24	U	0.24	U	12.7		0.34	B
[illegible]	0.25	U	[illegible]	B	0.72		[illegible]		[illegible]	B
CALCIUM	70300		29700		27900				5320	
[illegible]	3610		501		522		541		209	
COBALT	127		24.1		26.3		140		5.1	B
COPPER	29.0		276		251		331		288	
IRON	54200		28300		30300				19400	
LEAD	164		815		780		808		380	
MAGNESIUM	55400		6780		7080				2790	
MANGANESE	419		295		306		407		169	
MERCURY	0.12	U	1.4		1.4		2.0		2.7	
NICKEL	450		101		106		216		48.0	
POTASSIUM	266	B	655	B	656				558	B
SELENIUM	1.3	U	2.3		2.4		4.9		1.2	U
SILVER	2.1	B	1.5	B	1.8		14.2		1.7	B
SODIUM	3230	J	459	B	463				225	B
THALLIUM	1.8	U	1.7	U	1.7	U	13.7		1.7	U
VANADIUM	1170		166		176		281		11.9	
ZINC	208		767		740		875		462	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Case #: 27633 SDG : MBPR50
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBTA20		MBTA21		MBTA22		MBTA23		MBTA24	
Sampling Location :	6363-S03		6363-S04		6363-S05		6363-S06		6363-S07	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/06/1999		12/06/1999		12/06/1999		12/06/1999		12/06/1999	
Time Sampled :	10:30		10:55		11:30		12:00		13:40	
%Solids :	85.2		79.0		79.9		80.8		74.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	5620		12800		13000		10600		7060	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ARSENIC	11.9		8.8		3.5		4.9		18.1	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BERYLLIUM	0.45	B	0.25	U	0.25	U	0.25	U	0.36	B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CALCIUM	6900		36500		88200		35800		12800	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
COBALT	7.4	B	36.6		70.6		49.4		8.8	B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
IRON	17100		26000		36300		35400		33700	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAGNESIUM	3020		13600		32700		19100		3200	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MERCURY	1.1		1.2		0.17	J	0.57		1.7	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
POTASSIUM	519	B	716	B	526	B	777	B	663	B
SELENIUM	1.2	U	1.3	U	1.3	U	1.2	U	1.3	U
SILVER	0.93	B	1.5	B	1.2	B	1.8	B	3.1	
SODIUM	292	B	597	B	1930	B	1060	B	330	B
THALLIUM	1.6	U	1.8	U	1.8	U	1.7	U	1.8	U
VANADIUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ZINC	423		286		283		381		659	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Case #: 27633
SDG : MBPR50
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBTA25		MBTA26		MBTA42		MBTA43		MBTA44	
Sampling Location :	6363-S08		6363-S09		6363-S25		6363-SS01		6363-SS02	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/06/1999		12/06/1999		12/06/1999		12/06/1999		12/06/1999	
Time Sampled :	14:20		15:15		13:45		09:40		10:00	
%Solids :	80.5		83.8		76.3		62.3		75.9	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	5780		11300		7020		5750		4920	
[illegible]	[illegible]	B	[illegible]	B	[illegible]	B	[illegible]	B	[illegible]	B
ARSENIC	14.4		3.3		14.9		10.4		16.2	
BARIUM	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
BERYLLIUM	0.35	B	0.23	U	0.32	B	0.31	U	0.33	B
[illegible]	[illegible]		[illegible]	U	[illegible]	B	[illegible]	U	[illegible]	B
CALCIUM	10300		70300		11000		6400		5900	
[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
COBALT	7.9	B	59.9		6.9	B	20.6		5.0	B
COPPER	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
IRON	25300		33600		31900		36100		20000	
LEAD	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
MAGNESIUM	2950		28800		2370		4750		2410	
MANGANESE	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
MERCURY	2.0		0.11	U	1.8		0.46		2.2	
NICKEL	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
POTASSIUM	872	B	445	B	679	B	308	B	558	B
SELENIUM	3.5		1.2	U	1.5		1.9	U	2.5	
SILVER	3.5	B	1.3	B	2.8		0.62	B	1.9	B
SODIUM	305		[illegible]	B	257	B	31	B	246	B
THALLIUM	1.7	U	1.6	U	1.8	U	2.2	U	1.8	U
VANADIUM	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
ZINC	872		167		566		228		379	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Case #: 27633 SDG : MBPR50
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBTA45		IDL(ug/L)							
Sampling Location :	6363-SS03									
Matrix :	Soil		Soil							
Units :	mg/Kg		mg/Kg							
Date Sampled :	12/06/1999									
Time Sampled :	10:40									
%Solids :	83.2									
Dilution Factor :	1.0		1.0							
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	7950									
ANTIMONY	42	U								
ARSENIC	4.4									
BARIUM	53									
BERYLLIUM	0.45	B								
CADMIUM	0.24	U								
CALCIUM	2480									
CHROMIUM	34.0									
COBALT	7.2	B								
COPPER	41									
IRON	15300									
LEAD	130									
MAGNESIUM	2900									
MANGANESE	23									
MERCURY	0.56									
NICKEL	16.4									
POTASSIUM	788	B								
SELENIUM	12	U								
SILVER	0.31	B								
SODIUM	219	B								
THALLIUM	1.6	U								
VANADIUM	22.0									
ZINC	230									
CYANIDE	N/A		N/A		N/A					

Analytical Results (Qualified Data)

Case #: 27633 SDG : MBPR50
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBTF03-Field Blank		IDL							
Sampling Location :	6363-RB02									
Matrix :	Water		Water							
Units :	ug/L		ug/L							
Date Sampled :	12/06/1999									
Time Sampled :	09:00									
%Solids :	0.0									
Dilution Factor :	1.0		1.0							
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	25.0	B	14.0							
ANTIMONY	30	U	30							
ARSENIC	6.0	U	6.0							
BARIUM	10	U	10							
BERYLLIUM	1.0	U	1.0							
CADMIUM	10	U	10							
CALCIUM	16.0	U	16.0							
CHROMIUM	10	U	10							
COBALT	1.0	U	1.0							
COPPER	10	U	10							
IRON	16.0	U	16.0							
LEAD	20	U	20							
MAGNESIUM	23.0	U	23.0							
MANGANESE	10	U	10							
MERCURY	0.20	U	0.20							
NICKEL	20	U	20							
POTASSIUM	39.0	U	39.0							
SELENIUM	5.0	U	5.0							
SILVER	1.0	U	1.0							
SODIUM	23.0	U	23.0							
THALLIUM	7.0	U	7.0							
VANADIUM	20	U	20							
ZINC	2.0	U	2.0							
CYANIDE	N/A		N/A							

Analytical Results (Qualified Data)

Case #: 27633
Site :
Lab. :
Reviewer :
Date :

SDG : MBPR66
DIAMOND HEAD OIL REFINERY
CHEM

Number of Soil Samples : 3
Number of Water Samples : 4

Sample Number :	MBPR66		MBTA37		MBTA37D-Do Not use		MBTA37S-Do Not Use		MBTA41	
Sampling Location :	6363-SS20		6363-S20		6363-S20		6363-S20		6363-S24	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/07/1999		12/07/1999		12/07/1999		12/07/1999		12/07/1999	
Time Sampled :	11:40		11:25		11:25		11:25		11:30	
%Solids :	85.4		88.2		88.2		88.2		86.8	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	5040		2660		2850				4040	
ANTIMONY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ARSENIC	16.2		6.7		6.3		17.6		17.1	
BARIUM	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
BERYLLIUM	0.37	B	0.35	B	0.33		13.8		0.29	B
CADMIUM	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
CALCIUM	20400		3090		2950				19100	
CHROMIUM	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
COBALT	6.6	B	3.6	B	3.5		123		8.1	B
COPPER	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
IRON	14600		7340		7540				21300	
LEAD	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
MAGNESIUM	2740		1420		1390				2540	
MANGANESE	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
MERCURY	0.98		0.64		0.64		1.1		1.3	
NICKEL	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
POTASSIUM	657	B	398	B	408				596	B
SELENIUM	1.2	U	1.1	U	1.1	U	27.4		1.1	U
SILVER	1.3	B	1.1	B	1.0		13.7		1.1	B
SODIUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
THALLIUM	1.6	U	1.6	U	1.6	U	13.3		1.6	U
VANADIUM	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
ZINC	1500		289		277		408		1000	
CYANIDE, TOTAL	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Case #: 27633 SDG : MBPR66
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBTE92		MBTE92D-Do Not Use		MBTE92S-Do Not Use		MBTE93		MBTE94	
Sampling Location :	6363-GW01		6363-GW01		6363-GW01		6363-GW02		6363-GW03	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	12/07/1999		12/07/1999		12/07/1999		12/07/1999		12/07/1999	
Time Sampled :	13:40		13:40		13:40		16:15		15:00	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	643	J	645		2660		1270	J	11700	J
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
ARSENIC	12.5		13.1		58.1		26.3		6.8	B
[illegible]	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
BERYLLIUM	1.0	U	1.0	U	53.5		1.4	B	1.9	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
CALCIUM	169000		170000				31200		30700	
[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
COBALT	1.3	B	1.4		462		1.0	U	13.4	B
[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
IRON	1420		1410		2380		11700		7110	
[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
MAGNESIUM	40500		40600				37400		151000	
[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
MERCURY	0.20	U	0.20	U	0.92		0.20	U	0.20	U
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
POTASSIUM	25200		25400				46600		115000	
SELENIUM	5.0	U	5.0	U	12.2		5.0	U	5.3	J
SILVER	1.4	B	1.3		54.0		2.0	B	1.1	B
SODIUM	376000		373000				349000		1820000	
THALLIUM	7.0	U	7.0	U	57.2		7.0	U	10.0	
VANADIUM	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
ZINC	49.8		49.2		544		113		61.2	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Case #: 27633 SDG : MBPR66
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBTE95		IDL							
Sampling Location :	6363-GW04									
Matrix :	Water		Water							
Units :	ug/L		ug/L							
Date Sampled :	12/07/1999									
Time Sampled :	15:30									
%Solids :	0.0									
Dilution Factor :	1.0		1.0							
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	11900	J	14.0							
ANTIMONY	60	UJ	60.0							
ARSENIC	11.2		6.0							
BARIUM	97	B	20							
BERYLLIUM	2.0	B	1.0							
CADMIUM	10	U	10							
CALCIUM	28300		16.0							
CHROMIUM	105		10							
COBALT	12.8	B	1.0							
COPPER	32		10							
IRON	7180		16.0							
LEAD	6.9		20							
MAGNESIUM	138000		23.0							
MANGANESE	19		10							
MERCURY	0.20	U	0.20							
NICKEL	19.3	B	20							
POTASSIUM	108000		39.0							
SELENIUM	5.0	U	5.0							
SILVER	1.4	B	1.0							
SODIUM	1690000		23.0							
THALLIUM	11.7		7.0							
VANADIUM	163		2.0							
ZINC	68.3		2.0							
CYANIDE	N/A		N/A							

Analytical Results (Qualified Data)

Case #: 27633 SDG : MBTE74

Site : DIAMOND HEAD OIL REFINERY

Lab. : CHEM

Reviewer :

Date :

Number of Soil Samples : 19

Number of Water Samples : 1

Sample Number :	MBTA27		MBTE74		MBTE74D-Do Not Use		MBTE74S-Do Not Use		MBTE75	
Sampling Location :	6363-S10		6363-SD01		6363-SD01		6363-SD01		6363-SD02	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/06/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	15:45		10:25		10:25		10:25		10:40	
%Solids :	85.8		42.3		42.4		42.3		76.1	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	6350		4700	J	4970	J			1740	
ANTIMONY	2.0	B	2.4	UJ	2.4	UJ	26.0	J	1.5	U
ARSENIC	5.9		6.2	J	4.9	J	27.0	J	2.0	B
BARIUM	225		163	J	162	J	1190	J	21.0	B
BERYLLIUM	0.28	B	0.47	UJ	0.47	UJ	27.2	J	0.25	U
CADMIUM	0.23	B	0.47	UJ	0.47	UJ	26.1	J	0.25	U
CALCIUM	11700		7970	J	7720	J			969	B
CHROMIUM	219		38.8	J	37.5	J	137	J	11.5	
COBALT	13.2		7.4	BJ	7.0	J	257	J	2.3	B
COPPER	118		289.4	J	85.2	J	216	J	16.5	
IRON	19300		16000	J	16500	J			5520	
LEAD	532		116	J	119	J	124	J	9.3	
MAGNESIUM	6620		2450	J	2530	J			997	B
MANGANESE	243		1010	J	974	J	1240	J	64.9	
MERCURY	0.43		0.24	UJ	0.24	UJ	1.2	J	0.13	U
NICKEL	48.2		19.4	J	19.4	J	270	J	8.4	B
POTASSIUM	670	B	819	BJ	828	J			309	B
SELENIUM	1.1	U	2.4	UJ	2.4	UJ	4.6	J	1.3	U
SILVER	0.69	B	0.74	BJ	0.47	UJ	26.9	J	0.39	B
SODIUM	484	B	1140	BJ	1110	J			307	B
THALLIUM	1.6	U	3.3	UJ	3.3	UJ	27.7	J	1.8	U
VANADIUM	195		17.2	BJ	17.8	J	269	J	8.2	B
ZINC	391		235	J	231	J	485	J	77.2	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Case #: 27633 SDG : MBTE74
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer : [illegible]
Date :

Sample Number :	MBTE76		MBTE77		MBTE78		MBTE79		MBTE80	
Sampling Location :	6363-SD03		6363-SD04		6363-SD05		6363-SD06		6363-SD07	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	10:45		11:30		11:33		11:40		11:45	
%Solids :	68.8		44.0		30.4		54.6		66.7	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	1810		5240	J	5900	J	3490		3690	
ANTIMONY	1.5	U	16.4	BJ	7.1	BJ	[illegible]	B	[illegible]	B
ARSENIC	2.7	B	7.2	J	11.9	J	4.6		6.0	
BARIUM	35.3	B	370	J	890	J	129		209	
BERYLLIUM	0.29	U	0.48	BJ	0.65	UJ	0.36	U	0.30	U
CADMIUM	0.29	U	26.1	J	16.3	J	0.46	B	10	B
CALCIUM	1690		44300	J	6600	J	2290		2380	
CHROMIUM	22.8		658	J	87.8	J	321		153.8	
COBALT	2.9	B	10.9	BJ	7.6	BJ	3.1	B	5.1	B
COPPER	28.1		370	J	415	J	66.2		216	
IRON	6070		10400	J	20400	J	8610		10700	
LEAD	98.7		84300	J	14900	J	959		478	
MAGNESIUM	926	B	12400	J	3710	J	898	B	1510	
MANGANESE	91.1		310	J	179	J	52.0		112	
MERCURY	0.14	U	1.0	J	1.0	J	0.30		1.7	
NICKEL	10.4	B	31.6	J	136	J	13.7	B	30.0	
POTASSIUM	235	B	1580	BJ	1140	BJ	604	B	426	B
SELENIUM	1.5	U	2.3	UJ	3.3	UJ	1.8	U	1.5	U
SILVER	0.50	B	2.0	BJ	2.4	BJ	0.76	B	1.4	B
SODIUM	416	B	1620	BJ	1130	BJ	420	B	225	B
THALLIUM	2.0	U	7.2	J	4.6	UJ	2.5	U	2.1	U
VANADIUM	10.0	B	16.1	BJ	25.2	BJ	29.7		17.0	
ZINC	102		17700	J	3680	J	251		396	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Case #: 27633 SDG : MBTE74
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBTE81		MBTE82		MBTE83		MBTE84		MBTE85	
Sampling Location :	6363-SD08		6363-SD09		6363-SD10		6363-SD11		6363-SD12	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	12:00		12:05		14:15		13:45		14:10	
%Solids :	63.9		42.9		75.9		67.2		74.9	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	8340		8630	J	2730		7360		2380	
ANTIMONY	5.0	B	5.8	BJ	[illegible]	U	3.7	B	[illegible]	B
ARSENIC	15.1		19.2	J	3.8		22.8		3.7	
BARIUM	485		451	J	990		385		218	
BERYLLIUM	0.55	B	0.57	BJ	0.25	U	0.45	B	0.26	U
CADMIUM	2.5		2.2	BJ	3.0		2.8		1.5	
CALCIUM	4570		5910	J	2740		4750		4440	
CHROMIUM	150		137	J	34.6		142		34.4	
COBALT	7.7	B	6.5	BJ	2.3	B	6.5	B	2.7	B
COPPER	439		482	J	82.2		285		53.0	
IRON	22000		15600	J	7060		20500		7220	
LEAD	1430		1300	J	5260		1130		4640	
MAGNESIUM	3150		3230	J	843	B	2290		1600	
MANGANESE	168		194	J	48.3		266		102	
MERCURY	3.9		3.6	J	0.51		3.4		0.13	U
NICKEL	70.2		43.4	J	8.8	B	62.3		10.1	B
POTASSIUM	809	B	875	BJ	397	B	715	B	445	B
SELENIUM	1.6	U	2.3	UJ	1.3	U	2.0		1.3	U
SILVER	3.8		4.0	BJ	0.44	B	3.3		0.60	B
SODIUM	281	B	416	BJ	187	B	268	B	293	B
THALLIUM	2.2	U	3.2	BJ	1.8	U	3.5		2.7	
VANADIUM	38.7		41.7	J	17.3		33.1		10.5	B
ZINC	791		460	J	732		882		1030	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Case #: 27633 SDG : MBTE74
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBTE86		MBTE87		MBTE88		MBTE89		MBTE90	
Sampling Location :	6363-SD13		6363-SD14		6363-SD15		6363-SD16		6363-SD17	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	14:00		13:40		13:55		10:40		10:30	
%Solids :	60.8		74.7		75.5		48.2		49.4	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	7380		5580		4860		7460	J	5770	J
ANTIMONY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ARSENIC	37.7		14.8		19.8		15.7	J	16.6	J
BARIUM	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
BERYLLIUM	0.51	B	0.35	B	0.34	B	0.57	BJ	0.43	BJ
CADMIUM	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
CALCIUM	5480		7790		5110		19200	J	21100	J
CHROMIUM	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
COBALT	6.7	B	6.3	B	5.1	B	9.0	BJ	6.4	BJ
COPPER	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
IRON	22900		21500		14200		19400	J	28800	J
LEAD	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
MAGNESIUM	2750		3030		2150		3020	J	2670	J
MANGANESE	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
MERCURY	3.5		2.2		3.4		2.9	J	3.3	J
NICKEL	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
POTASSIUM	725	B	586	B	581	B	890	BJ	692	BJ
SELENIUM	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
SILVER	3.2		1.7	B	2.4	B	3.6	BJ	3.3	BJ
SODIUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
THALLIUM	2.2	U	1.8	U	1.8	U	2.9	UJ	2.8	UJ
VANADIUM	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
ZINC	944		660		680		1240	J	1170	J
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

ase #: 27633
Site :
Lab. :
viewer :
Date :

SDG : MBTE74
DIAMOND HEAD OIL REFINERY
CHEM

Sample Number :	MBTE91		IDL(ug/L)							
Sampling Location :	6363-SD18									
Matrix :	Soil		Soil							
Units :	mg/Kg		mg/Kg							
Date Sampled :	12/02/1999									
Time Sampled :	10:30									
%Solids :	64.5									
Dilution Factor :	1.0		1.0							
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	6370									
ANTIMONY	2.0	B								
ARSENIC	11.5									
BARIUM	197									
BERYLLIUM	0.41	B								
BORON	2.0									
CALCIUM	8600									
CHROMIUM	6.12									
COBALT	6.0	B								
COPPER	157									
IRON	20400									
LEAD	552									
MAGNESIUM	3530									
MANGANESE	230									
MERCURY	2.1									
NICKEL	39.0									
POTASSIUM	943	B								
SELENIUM	1.5	U								
SILVER	1.9	B								
SODIUM	293	B								
THALLIUM	2.1	U								
VANADIUM	30.0									
ZINC	1120									
CYANIDE	N/A		N/A							

Analytical Results (Qualified Data)

Case #: 27633
SDG : MBTE74
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBTF02		IDL							
Sampling Location :	6363-RB01									
Matrix :	Water		Water							
Units :	ug/L		ug/L							
Date Sampled :	12/02/1999									
Time Sampled :	09:45									
%Solids :	0.0									
Dilution Factor :	1.0		1.0							
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	20.0	B	14.0							
ANTIMONY	6.0	U	6.0							
ARSENIC	6.0	U	6.0							
BARIUM	1.0	U	1.0							
BERYLLIUM	1.0	U	1.0							
CADMIUM	1.0	U	1.0							
CALCIUM	96.3	B	16.0							
CHROMIUM	1.0	U	1.0							
COBALT	1.0	U	1.0							
COPPER	1.0	U	1.0							
IRON	42.4	B	16.0							
LEAD	2.0	U	2.0							
MAGNESIUM	23.0	U	23.0							
MANGANESE	1.0	U	1.0							
MERCURY	0.20	U	0.20							
NICKEL	2.0	U	2.0							
POTASSIUM	39.0	U	39.0							
SELENIUM	5.0	U	5.0							
SILVER	1.1	B	1.0							
SODIUM	23.0	U	23.0							
THALLIUM	7.0	U	7.0							
VANADIUM	2.0	U	2.0							
ZINC	12.3	B	2.0							
CYANIDE	N/A		N/A							

DIAMOND HEAD

CATE II 27633
SDG # MBPR 50, 56, 6
MBTE 71

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: [signature] DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

REVIEWED BY: [signature] DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: [signature] DATE: 1/30/92
Robert Runyon, Chief
Monitoring Management Branch

2.1.5 Data Review Log: It is recommended that each data reviewer should maintain a log of the reviews completed to include: a. date of start of case review

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 Telephone Record Log - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 Forwarded Paperwork

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EMSL office in Las Vegas are given in Appendix A-4.

2.1.8 Filed Paperwork - Upon completion of review, the following are to be filed within MMB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

3.0 Data Completeness
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete, the RSSC would call the laboratory for missing document(s). If the laboratory does not respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 Rejection of Data - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 Acceptance Criteria - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

6.0 SMO Contract Compliance Screening (CCS) - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 Request for Reanalysis - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative. If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 Record of Communication - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 Rounding off numbers - The data reviewer will follow the standard practice.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

	YES	NO	N/A
A.1.1 Contract Compliance Screening Report (CCS) - Present?	[✓]	___	___
ACTION: If no, contact RSCC.			
A.1.2 Record of Communication (from RSCC) - Present?	[✓]	___	___
ACTION: If no, request from RSCC.			
A.1.3 Trip Report - Present and complete?	[✓]	___	___
ACTION: If no, contact RSCC for trip report.			
A.1.4 Sample Traffic Report - Present?	[✓]	___	___
Legible?	[✓]	___	___
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 Cover Page - Present?	[✓]	___	___
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]	___	___
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[✓]	___	___
Do sample numbers on cover page agree with sample numbers on: (a) Traffic Report Sheet?	[✓]	___	___
(b) Form I's?	[✓]	___	___
ACTION: If no for any of the above, contact RSCC for clarification.			

		Yes	No	N/A
A.1.6	Form I to IX			
A.1.6.1	Are all the Form I through Form IX labeled with:			
	Laboratory name?	[✓]	—	—
	Case/SAS number?	[✓]	—	—
	EPA sample No.?	[✓]	—	—
	SDG No.?	[✓]	—	—
	Contract No.?	[✓]	—	—
	Correct units?	[✓]	—	—
	Matrix?	[✓]	—	—

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:

(NOTE: Check all forms against raw data.)

(a) all analytes analyzed by ICP?	[✓]	—	—
(b) all analytes analyzed by GFAA?	[ ]	—	✓
(c) all analytes analyzed by AA Flame?	[ ]	—	✓
(d) Mercury?	[✓]	—	—
(e) Cyanide?	[ ]	—	✓

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

Title: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.7	Raw Data			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[✓]		
	Digestion Log for furnace AA Form XIII present?	[ ]		✓
	Distillation Log for mercury Form XIII present?	[✓]		
	Distillation Log for cyanides Form XIII present?	[ ]		✓
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[✓]		
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[✓]		
	Are preparation dates present on sample preparation logs/bench sheets?	[✓]		
A.1.7.2	Measurement read out record present? ICP	[✓]		
	Flame AA	[ ]		✓
	Furnace AA	[ ]		✓
	Mercury	[✓]		
	Cyanides	[ ]		✓
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[✓]		
	Legible?	[✓]		
	Properly Labeled?	[✓]		

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

		YES	NO	N/A
A.1.8	Holding Times - (aqueous and soil samples) (Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days) . . . . . exceeded?	___	[✓]	___
	Cyanide distillation (14 days) . . . . . exceeded?	___	[ ]	✓
	Other Metals analysis (6 months) . . . . exceeded?	___	[✓]	___

NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.

ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.

A.1.8.2	Is pH of aqueous samples for: Metals Analysis >2?	___	[✓]	___
	Cyanides Analysis <12?	___	[ ]	✓

Action: If yes, flag the associated metals and cyanides data as estimated.

A.1.9	Form I (Final Data)			
A.1.9.1	Are all Form I's present and complete?	[✓]	___	___

ACTION: If no, prepare telephone record log and contact laboratory for submittal.

A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[✓]	___	___
	Are soil sample results for each parameter corrected for percent solids?	[✓]	___	___
	Are all "less than IDL" values properly coded with "U"?	[✓]	___	___

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[✓]		
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[✓]		
	Was a brief physical description of samples given on Form I's?	[✓]		
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?		[✓]	
	ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative".			
A.1.10	Calibration			
A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[✓]		
	Is record of 5 point calibration present for Hg analysis?	[✓]		
	Is record of 4 point calibration present for:			
	Flame AA?	[ ]		✓
	Furnace AA?	[ ]		✓
	Cyanides?	[ ]		✓
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	[✓]		
	ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".			

		YES	NO	N/A
A.1.10.2	Is correlation coefficient less than 0.995 for:			
	Mercury Analysis?	___	[✓]	___
	Cyanide Analysis?	___	[___]	✓
	Atomic Absorption Analysis?	___	[___]	___

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3	In the instance where less than 4 standards are measured in absorbance (or peak area, peak height, etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?	[___]	___	✓

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 Form II A (Initial and Continuing Calibration Verification)-

A.1.11.1	Present and complete for every metal and cyanide?	[✓]	___	___
	Present and complete for AA and ICP when both are used for the same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2	Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
	Metals- 90-110%R?	[✓]	___	___
	Hg - 80-120%R?	[✓]	___	___
	Cyanides- 85-115%R?	[___]	___	✓

	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	[✓]		
Was ICV for cyanides distilled?	[ ]		✓
ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.12 Form II B (CRDL Standards for AA and ICP) -			
A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[✓]		
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[ ]		✓
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[✓]		

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:
AA Analysis - **True Value ± CRDL
ICP Analysis - **True Value ± 2CRDL
CN Analysis - **True Value ± 0.5 x True Value.

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	✓		
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.12.3	Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.			
	Are CRA and CRI standards within control limits: Metals 80 - 120%R?	✓		
	Is mid-range standard within control limits: Cyanide 80 - 120%R?			✓
	ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.			
	Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.			
A.1.13	Form III (Initial and Continuing Calibration Blanks)			
A.1.13.1	Present and complete?	✓		
	For both AA and ICP when both are used for the same analyte?			✓
	Was an initial calibration blank analyzed?	✓		
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?			✓

		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[✓]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[✓]	___	___
	each batch of digested samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[✓]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[___]	✓
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[___]	___	✓
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
.14.4	Is concentration of prep. blank below the negative CRDL?	___	[✓]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	Form IV (ICP Interference Check Sample)			
A.1.15.1	Present and complete?	[✓]	___	___
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[✓]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[✓]	___	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	✓

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)- (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[✓]	—	—
	each matrix type?	[✓]	—	—
	each conc. range (i.e. low, med., high)?	[✓]	—	—
	For both AA and ICP when both are used for the same analyte?	[ ]	—	✓
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	—	[✓]	—
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[✓]	—	—
	If no, is sample concentration greater than or equal to four times spike concentration?	[ ]	—	✓

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[ ]		✓
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			
A.1.16.4 Aqueous Are any spike recoveries: (a) less than 30%?		✓	
(b) between 30-74%?		✓	
(c) between 126-150%?		✓	
(d) greater than 150%?			
ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".			
A.1.16.5 Soil/Sediment Are any spike recoveries: (a) less than 10%?		✓	
(b) between 10-74%?		✓	
(c) between 126-200%?		✓	
(d) greater than 200%?		✓	

STANDARD OPERATING PROCEDURE

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Appendix A.1: Data Assessment - Contract Compliance (Total Review)

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		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	Form VI (Lab Duplicates)			
A.1.17.1	Present and complete for: each SDG?	[✓]	—	—
	each matrix type?	[✓]	—	—
	each concentration range (i.e. low, med., high)?	[✓]	—	—
	both AA and ICP when both are used for the same analyte?	[ ]	—	✓
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated. 2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	—	[✓]	—
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[✓]	—	—
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[ ]	—	✓
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	✓	___
Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	✓	___

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	✓	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	✓	___

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
A.1.18	Field Duplicates			
A.1.18.1	Were field duplicates analyzed?	✓		
	ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/L on wet weight basis and calculate RPDs or Difference for each analyte.			
	NOTE: 1. Do not calculate RPD when both values are less than IDL. 2. Flag all associated data only for field duplicate pair.			
A.1.18.2	Aqueous			
	Circle all values on self prepared Form VI for field duplicates that are: RPD > 50%, or Difference > CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?		✓	
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?		✓	
	ACTION: If yes, flag the associated data as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.18.3	Soil/Sediment			
	Circle all values on self prepared Form VI for field duplicates that are: RPD >100%, or Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	___	[✓]	___
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	___	[✓]	___
	ACTION: If yes, flag the associated data as estimated.			
A.1.19	Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)			
A.1.19.1	Was one LCS prepared and analyzed for: each SDG?	[✓]	___	___
	each batch samples digested/distilled?	[✓]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.19.2	**Aqueous LCS**			
	Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
	Is any LCS recovery: less than 50%?	___	[✓]	___
	between 50% and 79%?	___	[✓]	___
	between 121% and 150%?	___	[✓]	___
	greater than 150%?	___	[✓]	___

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

A.1.19.3 **Solid LCS**

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).
2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII?	___	[✓]	___

ACTION: If yes, qualify all associated positive data as estimated.

Is LCS "Found" value lower than the Control limits on Form VII?	___	[✓]	___

ACTION: If yes, qualify all associated data as estimated.

		YES	NO	N/A
A.1.20	Form IX (ICP Serial Dilution) -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for: each SDG?	✓	—	—
	each matrix type?	✓	—	—
	each concentration range (i.e. low, med.)?	✓	—	—
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	—	✓	—
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	✓	—	—
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	✓		—
	≥ 100%?	—	✓	—

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL ≤ CRDL)			
A.1.21	Furnace Atomic Absorbtion (AA) QC Analysis			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[ ]		✓
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[ ]		✓
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[ ]		✓
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?		[ ]	✓
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	Form VIII (Method of Standard Addition Results)			
A.1.22.1	Present?	[ ]		✓
	If no, is any Form I result coded with "S" or a "+"?		[ ]	✓
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?		[ ]	✓
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?		[ ]	✓
	Is coefficient of correlation for MSA less than 0.995?		[ ]	✓
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?		[ ]	✓
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page B-23?	[ ]		✓
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and prep. blank.

		YES	NO	N/A
A.1.23	Dissolved/Total or Inorganic/Total Analytes -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[✓]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[ ]	✓
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[ ]	✓
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[ ]	✓
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	Form I (Field Blank) -			
	Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[✓]	___	___

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	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[ ]		✓

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 Form X, XI, XII (Verification of Instrumental Parameters).

A.1.25.1 Is verification report present for:

	YES	NO	N/A
Instrument Detection Limits (quarterly)?	[✓]		
ICP Interelement Correction Factors (annually)?	[✓]		
ICP Linear Ranges (quarterly)?	[✓]		

ACTION: If no, contact TPO of the lab.

A.1.25.2 Form X (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)

A.1.25.2.1 Are IDLs present for:

	YES	NO	N/A
all the analytes?	[✓]		
all the instruments used?	[✓]		
For both AA and ICP when both are used for the same analyte?	[ ]		✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

	YES	NO	N/A
A.1.25.2.2 Is IDL greater than CRDL for any analyte?		[✓]	
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[ ]		✓

	YES	NO	N/A
Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			
A.1.25.3 Form XI (Linear Ranges)			
A.1.25.3.1 Was any sample result higher than high linear range of ICP.		✓	
Was any sample result higher than the highest calibration standard for non-ICP parameters?		✓	
If yes for any of the above, was the sample diluted to obtain the result on Form I?			✓
ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.26 Percent Solids of Sediments			
A.1.26.1 Are percent solids in sediment(s): < 50%?	✓		
< 10%?		✓	

ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

SOW No.: ILM04.0

EPA SAMPLE NO.	Lab Sample ID.
MBTA27	92060S
MBTE74	91901S
MBTE74D	91902S2
MBTE74S	91903DS
MBTE75	91904S
MBTE76	91905S
MBTE77	91906S
MBTE78	91907S
MBTE79	91908S
MBTE80	91909S
MBTE81	91910S
MBTE82	91911S
MBTE83	91912S
MBTE84	91913S
MBTE85	91914S
MBTE86	91915S
MBTE87	91916S
MBTE88	91917S
MBTE89	91918S
MBTE90	91919S

Were ICP interelement corrections applied?	Yes/No	YES
Were ICP background corrections applied?	Yes/No	YES
If yes-were raw data generated before application of background corrections?	Yes/No	NO

Comments:
The "E" qualifier on Form I and IX for the Sodium indicates a chemical or a physical interference effect, which was suspected during the Sodium analysis only.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: PARVEEN HASAN

Date: 1/10/00 Title: QA/QC OFFICER

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

SOW No.: ILM04.0

EPA SAMPLE NO.	Lab Sample ID.
MBTF02	91921S
~~MBTE90~~	~~91919S~~

CJ 2/8/00 M

Were ICP interelement corrections applied?	Yes/No	YES
Were ICP background corrections applied?	Yes/No	YES
If yes-were raw data generated before application of background corrections?	Yes/No	NO

Comments:
The "E" qualifier on Form I and IX for the Sodium indicates a chemical or a physical interference effect, which was suspected during the Sodium analysis only.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: PARVEEN HASAN

Date: 1/10/00 Title: QA/QC OFFICER

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBTA27

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 92060S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 85.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6350			P
7440-36-0	Antimony	2.0	B		P
7440-38-2	Arsenic	5.9			P
7440-39-3	Barium	225			P
7440-41-7	Beryllium	0.28	B		P
7440-43-9	Cadmium	0.23	B		P
7440-70-2	Calcium	11700			P
7440-47-3	Chromium	219			P
7440-48-4	Cobalt	13.2			P
7440-50-8	Copper	118			P
7439-89-6	Iron	19300			P
7439-92-1	Lead	532			P
7439-95-4	Magnesium	6620			P
7439-96-5	Manganese	243			P
7439-97-6	Mercury	0.43			CV
7440-02-0	Nickel	48.2			P
7440-09-7	Potassium	670	B		P
7782-49-2	Selenium	1.1	U		P
7440-22-4	Silver	0.69	B		P
7440-23-5	Sodium	484	B	E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	195			P
7440-66-6	Zinc	391			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE74

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91901S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 42.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4700			P
7440-36-0	Antimony	2.4	U		P
7440-38-2	Arsenic	6.2			P
7440-39-3	Barium	166			P
7440-41-7	Beryllium	0.47	U		P
7440-43-9	Cadmium	0.47	U		P
7440-70-2	Calcium	7970			P
7440-47-3	Chromium	36.6			P
7440-48-4	Cobalt	7.4	B		P
7440-50-8	Copper	89.4			P
7439-89-6	Iron	16000			P
7439-92-1	Lead	116			P
7439-95-4	Magnesium	2450			P
7439-96-5	Manganese	1010			P
7439-97-6	Mercury	0.24	U		CV
7440-02-0	Nickel	19.4			P
7440-09-7	Potassium	819	B		P
7782-49-2	Selenium	2.4	U		P
7440-22-4	Silver	0.74	B		P
7440-23-5	Sodium	1140	B	E	P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	17.2	B		P
7440-66-6	Zinc	235			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE75

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91904S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 76.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1740			P
7440-36-0	Antimony	1.3	U		P
7440-38-2	Arsenic	2.0	B		P
7440-39-3	Barium	21.0	B		P
7440-41-7	Beryllium	0.25	U		P
7440-43-9	Cadmium	0.25	U		P
7440-70-2	Calcium	969	B		P
7440-47-3	Chromium	11.5			P
7440-48-4	Cobalt	2.3	B		P
7440-50-8	Copper	16.5			P
7439-89-6	Iron	5520			P
7439-92-1	Lead	49.3			P
7439-95-4	Magnesium	997	B		P
7439-96-5	Manganese	64.9			P
7439-97-6	Mercury	0.13	U		CV
7440-02-0	Nickel	8.4	B		P
7440-09-7	Potassium	309	B		P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	0.39	B		P
7440-23-5	Sodium	307	B	E	P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	8.2	B		P
7440-66-6	Zinc	77.2			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE76

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91905S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 68.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1810			P
7440-36-0	Antimony	1.5	U		P
7440-38-2	Arsenic	2.7	B		P
7440-39-3	Barium	35.3	B		P
7440-41-7	Beryllium	0.29	U		P
7440-43-9	Cadmium	0.29	U		P
7440-70-2	Calcium	1690			P
7440-47-3	Chromium	22.8			P
7440-48-4	Cobalt	2.9	B		P
7440-50-8	Copper	28.1			P
7439-89-6	Iron	6070			P
7439-92-1	Lead	98.7			P
7439-95-4	Magnesium	926	B		P
7439-96-5	Manganese	91.1			P
7439-97-6	Mercury	0.14	U		CV
7440-02-0	Nickel	10.4	B		P
7440-09-7	Potassium	235	B		P
7782-49-2	Selenium	1.5	U		P
7440-22-4	Silver	0.50	B		P
7440-23-5	Sodium	416	B	E	P
7440-28-0	Thallium	2.0	U		P
7440-62-2	Vanadium	10.0	B		P
7440-66-6	Zinc	102			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBTE77

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91906S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 44

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5240			P
7440-36-0	Antimony	16.4	B		P
7440-38-2	Arsenic	7.2			P
7440-39-3	Barium	3370			P
7440-41-7	Beryllium	0.48	B		P
7440-43-9	Cadmium	26.1			P
7440-70-2	Calcium	44300			P
7440-47-3	Chromium	658			P
7440-48-4	Cobalt	10.9	B		P
7440-50-8	Copper	370			P
7439-89-6	Iron	10400			P
7439-92-1	Lead	84300			P
7439-95-4	Magnesium	12400			P
7439-96-5	Manganese	310			P
7439-97-6	Mercury	1.0			CV
7440-02-0	Nickel	31.6			P
7440-09-7	Potassium	1580	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	2.0	B		P
7440-23-5	Sodium	1620	B	E	P
7440-28-0	Thallium	7.2			P
7440-62-2	Vanadium	16.1	B		P
7440-66-6	Zinc	17700			P
	Cyanide				NR

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE78

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91907S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 30.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5900			P
7440-36-0	Antimony	7.1	B		P
7440-38-2	Arsenic	11.9			P
7440-39-3	Barium	890			P
7440-41-7	Beryllium	0.65	U		P
7440-43-9	Cadmium	6.3			P
7440-70-2	Calcium	6600			P
7440-47-3	Chromium	87.8			P
7440-48-4	Cobalt	7.6	B		P
7440-50-8	Copper	415			P
7439-89-6	Iron	20400			P
7439-92-1	Lead	14900			P
7439-95-4	Magnesium	3710			P
7439-96-5	Manganese	179			P
7439-97-6	Mercury	1.0			CV
7440-02-0	Nickel	136			P
7440-09-7	Potassium	1140	B		P
7782-49-2	Selenium	3.3	U		P
7440-22-4	Silver	2.4	B		P
7440-23-5	Sodium	1130	B	E	P
7440-28-0	Thallium	4.6	U		P
7440-62-2	Vanadium	25.2	B		P
7440-66-6	Zinc	3680			P
	Cyanide				NR

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE79

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91908S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 54.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3490			P
7440-36-0	Antimony	1.8	U		P
7440-38-2	Arsenic	4.6			P
7440-39-3	Barium	129			P
7440-41-7	Beryllium	0.36	U		P
7440-43-9	Cadmium	0.46	B		P
7440-70-2	Calcium	2290			P
7440-47-3	Chromium	32.1			P
7440-48-4	Cobalt	3.1	B		P
7440-50-8	Copper	66.2			P
7439-89-6	Iron	8610			P
7439-92-1	Lead	959			P
7439-95-4	Magnesium	898	B		P
7439-96-5	Manganese	52.0			P
7439-97-6	Mercury	0.30			CV
7440-02-0	Nickel	13.7	B		P
7440-09-7	Potassium	604	B		P
7782-49-2	Selenium	1.8	U		P
7440-22-4	Silver	0.76	B		P
7440-23-5	Sodium	420	B	E	P
7440-28-0	Thallium	2.5	U		P
7440-62-2	Vanadium	29.7			P
7440-66-6	Zinc	251			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE80

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91909S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 66.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3690			P
7440-36-0	Antimony	2.9	B		P
7440-38-2	Arsenic	6.0			P
7440-39-3	Barium	209			P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	1.4	B		P
7440-70-2	Calcium	2380			P
7440-47-3	Chromium	53.8			P
7440-48-4	Cobalt	5.1	B		P
7440-50-8	Copper	216			P
7439-89-6	Iron	10700			P
7439-92-1	Lead	478			P
7439-95-4	Magnesium	1510			P
7439-96-5	Manganese	112			P
7439-97-6	Mercury	1.7			CV
7440-02-0	Nickel	30.0			P
7440-09-7	Potassium	426	B		P
7782-49-2	Selenium	1.5	U		P
7440-22-4	Silver	1.4	B		P
7440-23-5	Sodium	225	B	E	P
7440-28-0	Thallium	2.1	U		P
7440-62-2	Vanadium	17.0			P
7440-66-6	Zinc	396			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE81

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91910S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 63.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8340			P
7440-36-0	Antimony	5.0	B		P
7440-38-2	Arsenic	15.1			P
7440-39-3	Barium	485			P
7440-41-7	Beryllium	0.55	B		P
7440-43-9	Cadmium	2.5			P
7440-70-2	Calcium	4570			P
7440-47-3	Chromium	150			P
7440-48-4	Cobalt	7.7	B		P
7440-50-8	Copper	439			P
7439-89-6	Iron	22000			P
7439-92-1	Lead	1430			P
7439-95-4	Magnesium	3150			P
7439-96-5	Manganese	168			P
7439-97-6	Mercury	3.9			CV
7440-02-0	Nickel	70.2			P
7440-09-7	Potassium	809	B		P
7782-49-2	Selenium	1.6	U		P
7440-22-4	Silver	3.8			P
7440-23-5	Sodium	281	B	E	P
7440-28-0	Thallium	2.2	U		P
7440-62-2	Vanadium	38.7			P
7440-66-6	Zinc	791			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE82

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91911S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 42

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8630			P
7440-36-0	Antimony	5.8	B		P
7440-38-2	Arsenic	19.2			P
7440-39-3	Barium	451			P
7440-41-7	Beryllium	0.57	B		P
7440-43-9	Cadmium	2.2	B		P
7440-70-2	Calcium	5910			P
7440-47-3	Chromium	137			P
7440-48-4	Cobalt	6.5	B		P
7440-50-8	Copper	482			P
7439-89-6	Iron	15600			P
7439-92-1	Lead	1300			P
7439-95-4	Magnesium	3230			P
7439-96-5	Manganese	194			P
7439-97-6	Mercury	3.6			CV
7440-02-0	Nickel	43.4			P
7440-09-7	Potassium	875	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	4.0	B		P
7440-23-5	Sodium	416	B	E	P
7440-28-0	Thallium	3.2	B		P
7440-62-2	Vanadium	41.7			P
7440-66-6	Zinc	460			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE83

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91912S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 75.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2730			P
7440-36-0	Antimony	1.3	U		P
7440-38-2	Arsenic	3.8			P
7440-39-3	Barium	990			P
7440-41-7	Beryllium	0.25	U		P
7440-43-9	Cadmium	3.0			P
7440-70-2	Calcium	2740			P
7440-47-3	Chromium	34.6			P
7440-48-4	Cobalt	2.3	B		P
7440-50-8	Copper	82.2			P
7439-89-6	Iron	7060			P
7439-92-1	Lead	5260			P
7439-95-4	Magnesium	843	B		P
7439-96-5	Manganese	48.3			P
7439-97-6	Mercury	0.51			CV
7440-02-0	Nickel	8.6	B		P
7440-09-7	Potassium	397	B		P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	0.44	B		P
7440-23-5	Sodium	187	B	E	P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	17.3			P
7440-66-6	Zinc	732			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE84

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91913S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 67.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7360			P
7440-36-0	Antimony	3.7	B		P
7440-38-2	Arsenic	22.8			P
7440-39-3	Barium	365			P
7440-41-7	Beryllium	0.45	B		P
7440-43-9	Cadmium	2.8			P
7440-70-2	Calcium	4750			P
7440-47-3	Chromium	142			P
7440-48-4	Cobalt	6.5	B		P
7440-50-8	Copper	285			P
7439-89-6	Iron	20500			P
7439-92-1	Lead	1130			P
7439-95-4	Magnesium	2290			P
7439-96-5	Manganese	266			P
7439-97-6	Mercury	3.4			CV
7440-02-0	Nickel	62.3			P
7440-09-7	Potassium	715	B		P
7782-49-2	Selenium	2.0			P
7440-22-4	Silver	3.3			P
7440-23-5	Sodium	268	B	E	P
7440-28-0	Thallium	3.5			P
7440-62-2	Vanadium	33.1			P
7440-66-6	Zinc	882			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE85

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91914S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 74.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2380			P
7440-36-0	Antimony	1.4	B		P
7440-38-2	Arsenic	3.7			P
7440-39-3	Barium	218			P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	1.5			P
7440-70-2	Calcium	4440			P
7440-47-3	Chromium	34.4			P
7440-48-4	Cobalt	2.7	B		P
7440-50-8	Copper	53.0			P
7439-89-6	Iron	7220			P
7439-92-1	Lead	4640			P
7439-95-4	Magnesium	1600			P
7439-96-5	Manganese	102			P
7439-97-6	Mercury	0.13	U		CV
7440-02-0	Nickel	10.1	B		P
7440-09-7	Potassium	445	B		P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	0.60	B		P
7440-23-5	Sodium	293	B	E	P
7440-28-0	Thallium	2.7			P
7440-62-2	Vanadium	10.5	B		P
7440-66-6	Zinc	1030			P
	Cyanide				NR

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE86

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91915S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 60.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7380			P
7440-36-0	Antimony	5.4	B		P
7440-38-2	Arsenic	37.7			P
7440-39-3	Barium	680			P
7440-41-7	Beryllium	0.51	B		P
7440-43-9	Cadmium	6.2			P
7440-70-2	Calcium	5480			P
7440-47-3	Chromium	217			P
7440-48-4	Cobalt	6.7	B		P
7440-50-8	Copper	356			P
7439-89-6	Iron	22900			P
7439-92-1	Lead	2840			P
7439-95-4	Magnesium	2750			P
7439-96-5	Manganese	183			P
7439-97-6	Mercury	3.5			CV
7440-02-0	Nickel	81.4			P
7440-09-7	Potassium	725	B		P
7782-49-2	Selenium	1.7			P
7440-22-4	Silver	3.2			P
7440-23-5	Sodium	257	B	E	P
7440-28-0	Thallium	2.2	U		P
7440-62-2	Vanadium	40.6			P
7440-66-6	Zinc	944			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE87

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91916S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 74.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5580			P
7440-36-0	Antimony	4.1	B		P
7440-38-2	Arsenic	14.8			P
7440-39-3	Barium	484			P
7440-41-7	Beryllium	0.35	B		P
7440-43-9	Cadmium	2.6			P
7440-70-2	Calcium	7790			P
7440-47-3	Chromium	127			P
7440-48-4	Cobalt	6.3	B		P
7440-50-8	Copper	183			P
7439-89-6	Iron	21500			P
7439-92-1	Lead	1430			P
7439-95-4	Magnesium	3030			P
7439-96-5	Manganese	248			P
7439-97-6	Mercury	2.2			CV
7440-02-0	Nickel	38.6			P
7440-09-7	Potassium	586	B		P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	1.7	B		P
7440-23-5	Sodium	237	B	E	P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	31.2			P
7440-66-6	Zinc	660			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE88

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91917S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 75.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4860			P
7440-36-0	Antimony	2.3	B		P
7440-38-2	Arsenic	19.8			P
7440-39-3	Barium	440			P
7440-41-7	Beryllium	0.34	B		P
7440-43-9	Cadmium	3.2			P
7440-70-2	Calcium	5110			P
7440-47-3	Chromium	127			P
7440-48-4	Cobalt	5.1	B		P
7440-50-8	Copper	212			P
7439-89-6	Iron	14200			P
7439-92-1	Lead	2340			P
7439-95-4	Magnesium	2150			P
7439-96-5	Manganese	245			P
7439-97-6	Mercury	3.4			CV
7440-02-0	Nickel	34.8			P
7440-09-7	Potassium	581	B		P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	2.4	B		P
7440-23-5	Sodium	191	B	E	P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	23.6			P
7440-66-6	Zinc	680			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE89

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91918S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 48.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7460			P
7440-36-0	Antimony	4.8	B		P
7440-38-2	Arsenic	15.7			P
7440-39-3	Barium	398			P
7440-41-7	Beryllium	0.57	B		P
7440-43-9	Cadmium	7.2			P
7440-70-2	Calcium	19200			P
7440-47-3	Chromium	99.2			P
7440-48-4	Cobalt	9.0	B		P
7440-50-8	Copper	447			P
7439-89-6	Iron	19400			P
7439-92-1	Lead	869			P
7439-95-4	Magnesium	3020			P
7439-96-5	Manganese	449			P
7439-97-6	Mercury	2.9			CV
7440-02-0	Nickel	117			P
7440-09-7	Potassium	890	B		P
7782-49-2	Selenium	2.1	U		P
7440-22-4	Silver	3.6	B		P
7440-23-5	Sodium	440	B	E	P
7440-28-0	Thallium	2.9	U		P
7440-62-2	Vanadium	34.2			P
7440-66-6	Zinc	1240			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBTE91

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91920S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 64.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6370			P
7440-36-0	Antimony	4.9	B		P
7440-38-2	Arsenic	11.5			P
7440-39-3	Barium	197			P
7440-41-7	Beryllium	0.41	B		P
7440-43-9	Cadmium	2.6			P
7440-70-2	Calcium	8600			P
7440-47-3	Chromium	61.2			P
7440-48-4	Cobalt	6.0	B		P
7440-50-8	Copper	187			P
7439-89-6	Iron	20400			P
7439-92-1	Lead	552			P
7439-95-4	Magnesium	3530			P
7439-96-5	Manganese	239			P
7439-97-6	Mercury	2.1			CV
7440-02-0	Nickel	39.0			P
7440-09-7	Potassium	943	B		P
7782-49-2	Selenium	1.5	U		P
7440-22-4	Silver	1.9	B		P
7440-23-5	Sodium	293	B	E	P
7440-28-0	Thallium	2.1	U		P
7440-62-2	Vanadium	30.0			P
7440-66-6	Zinc	1120			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTF02 [redacted]

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): WATER Lab Sample ID: 91921S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	20.0	B		P
7440-36-0	Antimony	5.0	U		P
7440-38-2	Arsenic	6.0	U		P
7440-39-3	Barium	1.0	U		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	96.3	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	1.0	U		P
7440-50-8	Copper	1.0	U		P
7439-89-6	Iron	42.4	B		P
7439-92-1	Lead	2.0	U		P
7439-95-4	Magnesium	23.0	U		P
7439-96-5	Manganese	1.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	2.0	U		P
7440-09-7	Potassium	39.0	U		P
7782-49-2	Selenium	5.0	U		P
7440-22-4	Silver	1.1	B		P
7440-23-5	Sodium	23.0	U		P
7440-28-0	Thallium	7.0	U		P
7440-62-2	Vanadium	2.0	U		P
7440-66-6	Zinc	12.3	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBTE90

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBTE74

Matrix (soil/water): SOIL Lab Sample ID: 91919S

Level (low/med): LOW Date Received: 12/03/99

% Solids: 49

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5770			P
7440-36-0	Antimony	10.8	B		P
7440-38-2	Arsenic	16.6			P
7440-39-3	Barium	429			P
7440-41-7	Beryllium	0.43	B		P
7440-43-9	Cadmium	4.8			P
7440-70-2	Calcium	21100			P
7440-47-3	Chromium	96.8			P
7440-48-4	Cobalt	6.4	B		P
7440-50-8	Copper	306			P
7439-89-6	Iron	28800			P
7439-92-1	Lead	766			P
7439-95-4	Magnesium	2670			P
7439-96-5	Manganese	272			P
7439-97-6	Mercury	3.3			CV
7440-02-0	Nickel	48.0			P
7440-09-7	Potassium	692	B		P
7782-49-2	Selenium	2.0	U		P
7440-22-4	Silver	3.3	B		P
7440-23-5	Sodium	413	B	E	P
7440-28-0	Thallium	2.8	U		P
7440-62-2	Vanadium	29.9			P
7440-66-6	Zinc	1170			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

SAMPLE DELIVERY GROUP (SDG)
TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Chemtech Contract No.: 68-D5-0166

Lab Code: Chem Case No.: 27633 SAS No.: _____

Full Sample Analysis Price in Contract: $ _____

SDG No./First Sample in SDG: MBTE74 Sample Receipt Date: 12/03/99 (MM/DD/YY)
(Lowest EPA Sample Number in first shipment of samples received under SDG.)

Last Sample in SDG: MBTA27 Sample Receipt Date: 12/07/99 (MM/DD/YY)
(Highest EPA Sample Number in last shipment of samples received under SDG.)

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	MBTA27	11	MBTE83
2	MBTE74	12	84
3	75	13	85
4	76	14	86
5	77	15	87
6	78	16	88
7	79	17	89
8	80	18	90
9	81	19	91
10	82	20	MBTF02

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Signature [signature] Date 12/07/99

RECEIVED
JAN 12, 2000

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR66

SOW No.: ILM04.0

EPA SAMPLE NO.	Lab Sample ID.
MBPR66	92187S
MBTA37	92184S
MBTA37D	92185S2
MBTA37S	92186DS
MBTA41	92188S
MBTE92	92189S
MBTE92D	92190S2
MBTE92S	92191DS
MBTE93	92194S
MBTE94	92192S
MBTE95	92193S

Were ICP interelement corrections applied? Yes/No YES
Were ICP background corrections applied? Yes/No YES
If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:
The "E" qualifier on Form I and IX for the Sodium indicates a chemical or a physical interference effect, which was suspected during the Sodium analysis only.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: PARVEEN HASAN

Date: 1/11/00 Title: QA/QC OFFICER

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBPR66

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR66

Matrix (soil/water): SOIL Lab Sample ID: 92187S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 85.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5040			P
7440-36-0	Antimony	4.5	B		P
7440-38-2	Arsenic	16.2			P
7440-39-3	Barium	2840			P
7440-41-7	Beryllium	0.37	B		P
7440-43-9	Cadmium	4.6			P
7440-70-2	Calcium	20400			P
7440-47-3	Chromium	188			P
7440-48-4	Cobalt	6.6	B		P
7440-50-8	Copper	152			P
7439-89-6	Iron	14600			P
7439-92-1	Lead	17500			P
7439-95-4	Magnesium	2740			P
7439-96-5	Manganese	219			P
7439-97-6	Mercury	0.98			CV
7440-02-0	Nickel	23.7			P
7440-09-7	Potassium	657	B		P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	2830		E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	84.4			P
7440-66-6	Zinc	1500			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA37

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR66

Matrix (soil/water): SOIL Lab Sample ID: 92184S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 88.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2660			P
7440-36-0	Antimony	1.1	U		P
7440-38-2	Arsenic	6.7			P
7440-39-3	Barium	303			P
7440-41-7	Beryllium	0.35	B		P
7440-43-9	Cadmium	2.0			P
7440-70-2	Calcium	3090			P
7440-47-3	Chromium	48.4			P
7440-48-4	Cobalt	3.6	B		P
7440-50-8	Copper	73.2			P
7439-89-6	Iron	7340			P
7439-92-1	Lead	3070			P
7439-95-4	Magnesium	1420			P
7439-96-5	Manganese	109			P
7439-97-6	Mercury	0.64			CV
7440-02-0	Nickel	15.0			P
7440-09-7	Potassium	398	B		P
7782-49-2	Selenium	1.1	U		P
7440-22-4	Silver	1.1	B		P
7440-23-5	Sodium	461	B	E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	11.0	B		P
7440-66-6	Zinc	289			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA41

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR66

Matrix (soil/water): SOIL Lab Sample ID: 92188S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 86.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4040			P
7440-36-0	Antimony	4.4	B		P
7440-38-2	Arsenic	17.1			P
7440-39-3	Barium	1860			P
7440-41-7	Beryllium	0.29	B		P
7440-43-9	Cadmium	2.5			P
7440-70-2	Calcium	19100			P
7440-47-3	Chromium	251			P
7440-48-4	Cobalt	8.1	B		P
7440-50-8	Copper	147			P
7439-89-6	Iron	21300			P
7439-92-1	Lead	11100			P
7439-95-4	Magnesium	2540			P
7439-96-5	Manganese	273			P
7439-97-6	Mercury	1.3			CV
7440-02-0	Nickel	33.0			P
7440-09-7	Potassium	596	B		P
7782-49-2	Selenium	1.1	U		P
7440-22-4	Silver	1.1	B		P
7440-23-5	Sodium	2600		E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	206			P
7440-66-6	Zinc	1000			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBTE92

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR66

Matrix (soil/water): WATER Lab Sample ID: 92189S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	643			P
7440-36-0	Antimony	5.0	U		P
7440-38-2	Arsenic	12.5			P
7440-39-3	Barium	418			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	169000			P
7440-47-3	Chromium	278			P
7440-48-4	Cobalt	1.3	B		P
7440-50-8	Copper	81.0			P
7439-89-6	Iron	1420			P
7439-92-1	Lead	200			P
7439-95-4	Magnesium	40500			P
7439-96-5	Manganese	570			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	27.4	B		P
7440-09-7	Potassium	25200			P
7782-49-2	Selenium	5.0	U		P
7440-22-4	Silver	1.4	B		P
7440-23-5	Sodium	376000			P
7440-28-0	Thallium	7.0	U		P
7440-62-2	Vanadium	172			P
7440-66-6	Zinc	49.8			P
	Cyanide				NR

Color Before: YELLOW Clarity Before: CLOUDY Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBTE93

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR66

Matrix (soil/water): WATER Lab Sample ID: 92194S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1270			P
7440-36-0	Antimony	5.0	U		P
7440-38-2	Arsenic	26.3			P
7440-39-3	Barium	102	B		P
7440-41-7	Beryllium	1.4	B		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	31200			P
7440-47-3	Chromium	327			P
7440-48-4	Cobalt	1.0	U		P
7440-50-8	Copper	86.1			P
7439-89-6	Iron	11700			P
7439-92-1	Lead	128			P
7439-95-4	Magnesium	37400			P
7439-96-5	Manganese	513			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	19.1	B		P
7440-09-7	Potassium	46600			P
7782-49-2	Selenium	5.0	U		P
7440-22-4	Silver	2.0	B		P
7440-23-5	Sodium	349000			P
7440-28-0	Thallium	7.0	U		P
7440-62-2	Vanadium	61.9			P
7440-66-6	Zinc	113			P
	Cyanide				NR

Color Before: BROWN Clarity Before: CLOUDY Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE94

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR66

Matrix (soil/water): WATER Lab Sample ID: 92192S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11700			P
7440-36-0	Antimony	5.0	U		P
7440-38-2	Arsenic	6.8	B		P
7440-39-3	Barium	184	B		P
7440-41-7	Beryllium	1.9	B		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	30700			P
7440-47-3	Chromium	103			P
7440-48-4	Cobalt	13.4	B		P
7440-50-8	Copper	31.6			P
7439-89-6	Iron	7110			P
7439-92-1	Lead	51.5			P
7439-95-4	Magnesium	151000			P
7439-96-5	Manganese	177			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	19.2	B		P
7440-09-7	Potassium	115000			P
7782-49-2	Selenium	5.3			P
7440-22-4	Silver	1.1	B		P
7440-23-5	Sodium	1820000			P
7440-28-0	Thallium	10.0			P
7440-62-2	Vanadium	213			P
7440-66-6	Zinc	61.2			P
	Cyanide				NR

Color Before: BROWN Clarity Before: CLOUDY Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTE95

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR66

Matrix (soil/water): WATER Lab Sample ID: 92193S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11900			P
7440-36-0	Antimony	5.0	U		P
7440-38-2	Arsenic	11.2			P
7440-39-3	Barium	172	B		P
7440-41-7	Beryllium	2.0	B		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	28300			P
7440-47-3	Chromium	105			P
7440-48-4	Cobalt	12.8	B		P
7440-50-8	Copper	32.1			P
7439-89-6	Iron	7180			P
7439-92-1	Lead	54.7			P
7439-95-4	Magnesium	138000			P
7439-96-5	Manganese	169			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	19.3	B		P
7440-09-7	Potassium	108000			P
7782-49-2	Selenium	5.0	U		P
7440-22-4	Silver	1.4	B		P
7440-23-5	Sodium	1690000			P
7440-28-0	Thallium	11.7			P
7440-62-2	Vanadium	196			P
7440-66-6	Zinc	68.3			P
	Cyanide				NR

Color Before: BROWN Clarity Before: CLOUDY Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

SAMPLE DELIVERY GROUP (SDG)
TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Chemtech Contract No.: 68-D5-0166

Lab Code: Chem Case No.: 27633 SAS No.: _____

Full Sample Analysis Price in Contract: $ _____

SDG No./First Sample in SDG: MBPR 66 Sample Receipt Date: 12/8/99 (MM/DD/YY)
(Lowest EPA Sample Number in first shipment of samples received under SDG.)

Last Sample in SDG: MBTE 95 Sample Receipt Date: 12/8/99 (MM/DD/YY)
(Highest EPA Sample Number in last shipment of samples received under SDG.)

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	MBPR 66	11	
2	MBTA 37	12	
3	MBTA 41	13	
4	MBTE 92	14	
5	93	15	
6	94	16	
7	95	17	
8		18	
9		19	
10		20	

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Signature: [signature] Date: 12/8/99

CHEMTECH 110 Route 4 • Englewood, New Jersey 07631 Phone: (201) 567-6868 Fax: (201) 567-1333

RECORD OF COMMUNICATION
VERBAL/ TELEPHONE COMMUNICATION LOG

Date _____ Client _____

Chemtech Project No. _____ Chain of Custody No. _____

Chemtech Contact _____ Client Contact _____

Project Reference _____

Call Initiated By: X Chemtech ____ Client

In reference to the following: (1) Matrix of sample

(2) QC for water & soil.

Questions/ Issues (1) Sample MBTE92, on COC matrix marked as soil but physicall sample is a water sample & lab has received extra volume for same sample but QC section is not marked on COC.

Resolution _____

Signature _____ Date _____

Since 1967

117

000303

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

SOW No.: ILM04.0

EPA SAMPLE NO.	Lab Sample ID.
MBPR50	92045S
MBPR51	92047S
MBPR52	92049S
MBPR53	92051S
MBPR54	92053S
MBPR55	92055S
MBTA18	92036S
MBTA18D	92037S2
MBTA18S	92038DS
MBTA19	92040S
MBTA20	92042S
MBTA21	92044S
MBTA22	92046S
MBTA23	92048S
MBTA24	92059S
MBTA25	92052S
MBTA26	92054S
MBTA42	92050S
MBTA43	92039S
MBTA44	92041S

Were ICP interelement corrections applied?	Yes/No	YES
Were ICP background corrections applied?	Yes/No	YES
If yes-were raw data generated before application of background corrections?	Yes/No	NO

Comments:
"E" qualifiers on Form I and IX for Potassium and Sodium indicate chemical or physical interferenence effects, which was suspected during the those elements analyses only.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: PARVEEN HASAN

Date: 1/10/00 Title: QA/QC OFFICER

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

SOW No.: ILM04.0

EPA SAMPLE NO.	Lab Sample ID.
MBTA45	92043S
MBTF03	92056S

Were ICP interelement corrections applied?	Yes/No	YES
Were ICP background corrections applied?	Yes/No	YES
If yes-were raw data generated before application of background corrections?	Yes/No	NO

Comments:
"E" qualifiers on Form I and IX for Potassium and Sodium indicate chemical or physical interferenence effects, which was suspected during the those elements analyses only.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: PARVEEN HASAN

Date: 1/10/00 Title: QA/QC OFFICER

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBPR50

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92045S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 78.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8990			P
7440-36-0	Antimony	10.1	B		P
7440-38-2	Arsenic	2.8			P
7440-39-3	Barium	86.8			P
7440-41-7	Beryllium	0.25	U		P
7440-43-9	Cadmium	0.25	U		P
7440-70-2	Calcium	38700			P
7440-47-3	Chromium	1480			P
7440-48-4	Cobalt	47.2			P
7440-50-8	Copper	33.4			P
7439-89-6	Iron	32900			P
7439-92-1	Lead	334			P
7439-95-4	Magnesium	15400			P
7439-96-5	Manganese	384			P
7439-97-6	Mercury	0.13	U		CV
7440-02-0	Nickel	170			P
7440-09-7	Potassium	479	B	E	P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	0.95	B		P
7440-23-5	Sodium	497	B	E	P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	915			P
7440-66-6	Zinc	202			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBPR51

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92047S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 84.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3080			P
7440-36-0	Antimony	6.8	B		P
7440-38-2	Arsenic	9.5			P
7440-39-3	Barium	147			P
7440-41-7	Beryllium	0.23	U		P
7440-43-9	Cadmium	0.23	U		P
7440-70-2	Calcium	70100			P
7440-47-3	Chromium	880			P
7440-48-4	Cobalt	5.7	B		P
7440-50-8	Copper	124			P
7439-89-6	Iron	29200			P
7439-92-1	Lead	167			P
7439-95-4	Magnesium	5570			P
7439-96-5	Manganese	261			P
7439-97-6	Mercury	0.61			CV
7440-02-0	Nickel	17.4			P
7440-09-7	Potassium	723	B	E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	0.77	B		P
7440-23-5	Sodium	1270		E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	60.2			P
7440-66-6	Zinc	173			P
	Cyanide				NR

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBPR52

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92049S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 69.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14200			P
7440-36-0	Antimony	16.2	B		P
7440-38-2	Arsenic	8.4			P
7440-39-3	Barium	69.5			P
7440-41-7	Beryllium	0.28	U		P
7440-43-9	Cadmium	4.9			P
7440-70-2	Calcium	76200			P
7440-47-3	Chromium	2380			P
7440-48-4	Cobalt	93.1			P
7440-50-8	Copper	1500			P
7439-89-6	Iron	59900			P
7439-92-1	Lead	267			P
7439-95-4	Magnesium	44000			P
7439-96-5	Manganese	430			P
7439-97-6	Mercury	0.28			CV
7440-02-0	Nickel	361			P
7440-09-7	Potassium	297	B	E	P
7782-49-2	Selenium	1.4	U		P
7440-22-4	Silver	2.3	B		P
7440-23-5	Sodium	1150	B	E	P
7440-28-0	Thallium	2.0	U		P
7440-62-2	Vanadium	938			P
7440-66-6	Zinc	382			P
	Cyanide				NR

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBPR53

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92051S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 80.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8910			P
7440-36-0	Antimony	3.4	B		P
7440-38-2	Arsenic	7.9			P
7440-39-3	Barium	2660			P
7440-41-7	Beryllium	0.25	U		P
7440-43-9	Cadmium	2.2			P
7440-70-2	Calcium	29800			P
7440-47-3	Chromium	461			P
7440-48-4	Cobalt	16.8			P
7440-50-8	Copper	102			P
7439-89-6	Iron	16700			P
7439-92-1	Lead	462			P
7439-95-4	Magnesium	6280			P
7439-96-5	Manganese	251			P
7439-97-6	Mercury	0.91			CV
7440-02-0	Nickel	61.3			P
7440-09-7	Potassium	834	B	E	P
7782-49-2	Selenium	7.4			P
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	550	B	E	P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	94.1			P
7440-66-6	Zinc	1720			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBPR54

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92053S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 69.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2760			P
7440-36-0	Antimony	1.4	U		P
7440-38-2	Arsenic	11.1			P
7440-39-3	Barium	717			P
7440-41-7	Beryllium	0.32	B		P
7440-43-9	Cadmium	0.28	U		P
7440-70-2	Calcium	30100			P
7440-47-3	Chromium	28.7			P
7440-48-4	Cobalt	6.3	B		P
7440-50-8	Copper	83.5			P
7439-89-6	Iron	36000			P
7439-92-1	Lead	267			P
7439-95-4	Magnesium	1940			P
7439-96-5	Manganese	230			P
7439-97-6	Mercury	0.20			CV
7440-02-0	Nickel	22.1			P
7440-09-7	Potassium	402	B	E	P
7782-49-2	Selenium	2.4			P
7440-22-4	Silver	1.6	B		P
7440-23-5	Sodium	351	B	E	P
7440-28-0	Thallium	2.0	U		P
7440-62-2	Vanadium	18.2			P
7440-66-6	Zinc	449			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBPR55

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92055S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 77.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	19700			P
7440-36-0	Antimony	20.3			P
7440-38-2	Arsenic	2.6			P
7440-39-3	Barium	30.6	B		P
7440-41-7	Beryllium	0.25	U		P
7440-43-9	Cadmium	0.25	U		P
7440-70-2	Calcium	70300			P
7440-47-3	Chromium	3610			P
7440-48-4	Cobalt	127			P
7440-50-8	Copper	29.0			P
7439-89-6	Iron	54200			P
7439-92-1	Lead	16.4			P
7439-95-4	Magnesium	55400			P
7439-96-5	Manganese	419			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	450			P
7440-09-7	Potassium	266	B	E	P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	2.1	B		P
7440-23-5	Sodium	3230		E	P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	1170			P
7440-66-6	Zinc	208			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA18

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92036S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 83.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9650			P
7440-36-0	Antimony	4.9	B		P
7440-38-2	Arsenic	8.4			P
7440-39-3	Barium	424			P
7440-41-7	Beryllium	0.24	U		P
7440-43-9	Cadmium	1.1	B		P
7440-70-2	Calcium	29700			P
7440-47-3	Chromium	501			P
7440-48-4	Cobalt	24.1			P
7440-50-8	Copper	276			P
7439-89-6	Iron	28300			P
7439-92-1	Lead	815			P
7439-95-4	Magnesium	6780			P
7439-96-5	Manganese	295			P
7439-97-6	Mercury	1.4			CV
7440-02-0	Nickel	101			P
7440-09-7	Potassium	655	B	E	P
7782-49-2	Selenium	2.3			P
7440-22-4	Silver	1.5	B		P
7440-23-5	Sodium	459	B	E	P
7440-28-0	Thallium	1.7	U		P
7440-62-2	Vanadium	166			P
7440-66-6	Zinc	767			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBTA19

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92040S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 81.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5670			P
7440-36-0	Antimony	4.0	B		P
7440-38-2	Arsenic	17.4			P
7440-39-3	Barium	210			P
7440-41-7	Beryllium	0.34	B		P
7440-43-9	Cadmium	0.79	B		P
7440-70-2	Calcium	5320			P
7440-47-3	Chromium	209			P
7440-48-4	Cobalt	5.1	B		P
7440-50-8	Copper	288			P
7439-89-6	Iron	19400			P
7439-92-1	Lead	380			P
7439-95-4	Magnesium	2790			P
7439-96-5	Manganese	169			P
7439-97-6	Mercury	2.7			CV
7440-02-0	Nickel	48.0			P
7440-09-7	Potassium	558	B	E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	1.7	B		P
7440-23-5	Sodium	225	B	E	P
7440-28-0	Thallium	1.7	U		P
7440-62-2	Vanadium	41.9			P
7440-66-6	Zinc	462			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA20

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92042S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 85.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5620			P
7440-36-0	Antimony	3.0	B		P
7440-38-2	Arsenic	11.9			P
7440-39-3	Barium	152			P
7440-41-7	Beryllium	0.45	B		P
7440-43-9	Cadmium	0.47	B		P
7440-70-2	Calcium	6900			P
7440-47-3	Chromium	175			P
7440-48-4	Cobalt	7.4	B		P
7440-50-8	Copper	294			P
7439-89-6	Iron	17100			P
7439-92-1	Lead	272			P
7439-95-4	Magnesium	3020			P
7439-96-5	Manganese	238			P
7439-97-6	Mercury	1.1			CV
7440-02-0	Nickel	36.8			P
7440-09-7	Potassium	519	B	E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	0.93	B		P
7440-23-5	Sodium	292	B	E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	40.7			P
7440-66-6	Zinc	423			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBTA21

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92044S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 79.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12800			P
7440-36-0	Antimony	8.5	B		P
7440-38-2	Arsenic	8.8			P
7440-39-3	Barium	113			P
7440-41-7	Beryllium	0.25	U		P
7440-43-9	Cadmium	0.42	B		P
7440-70-2	Calcium	36500			P
7440-47-3	Chromium	1180			P
7440-48-4	Cobalt	36.6			P
7440-50-8	Copper	127			P
7439-89-6	Iron	26000			P
7439-92-1	Lead	261			P
7439-95-4	Magnesium	13600			P
7439-96-5	Manganese	265			P
7439-97-6	Mercury	1.2			CV
7440-02-0	Nickel	147			P
7440-09-7	Potassium	716	B	E	P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	1.5	B		P
7440-23-5	Sodium	597	B	E	P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	415			P
7440-66-6	Zinc	286			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA22

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92046S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 79.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13000			P
7440-36-0	Antimony	8.4	B		P
7440-38-2	Arsenic	3.5			P
7440-39-3	Barium	68.4			P
7440-41-7	Beryllium	0.25	U		P
7440-43-9	Cadmium	0.25	U		P
7440-70-2	Calcium	88200			P
7440-47-3	Chromium	1270			P
7440-48-4	Cobalt	70.6			P
7440-50-8	Copper	49.6			P
7439-89-6	Iron	36300			P
7439-92-1	Lead	171			P
7439-95-4	Magnesium	32700			P
7439-96-5	Manganese	337			P
7439-97-6	Mercury	0.17			CV
7440-02-0	Nickel	248			P
7440-09-7	Potassium	526	B	E	P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	1.2	B		P
7440-23-5	Sodium	1930		E	P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	640			P
7440-66-6	Zinc	283			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA23

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92048S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 80.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10600			P
7440-36-0	Antimony	11.0	B		P
7440-38-2	Arsenic	4.9			P
7440-39-3	Barium	515			P
7440-41-7	Beryllium	0.25	U		P
7440-43-9	Cadmium	3.7			P
7440-70-2	Calcium	35800			P
7440-47-3	Chromium	1480			P
7440-48-4	Cobalt	49.4			P
7440-50-8	Copper	326			P
7439-89-6	Iron	35400			P
7439-92-1	Lead	1450			P
7439-95-4	Magnesium	19100			P
7439-96-5	Manganese	342			P
7439-97-6	Mercury	0.57			CV
7440-02-0	Nickel	187			P
7440-09-7	Potassium	777	B	E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	1.8	B		P
7440-23-5	Sodium	1060	B	E	P
7440-28-0	Thallium	1.7	U		P
7440-62-2	Vanadium	392			P
7440-66-6	Zinc	381			P
	Cyanide				NR

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA24

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92059S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 74.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7060			P
7440-36-0	Antimony	8.1	B		P
7440-38-2	Arsenic	18.1			P
7440-39-3	Barium	297			P
7440-41-7	Beryllium	0.36	B		P
7440-43-9	Cadmium	1.0	B		P
7440-70-2	Calcium	12800			P
7440-47-3	Chromium	118			P
7440-48-4	Cobalt	8.8	B		P
7440-50-8	Copper	249			P
7439-89-6	Iron	33700			P
7439-92-1	Lead	645			P
7439-95-4	Magnesium	3200			P
7439-96-5	Manganese	316			P
7439-97-6	Mercury	1.7			CV
7440-02-0	Nickel	103			P
7440-09-7	Potassium	663	B	E	P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	3.1			P
7440-23-5	Sodium	330	B	E	P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	49.5			P
7440-66-6	Zinc	659			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA25

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92052S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 80.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5780			P
7440-36-0	Antimony	6.9	B		P
7440-38-2	Arsenic	14.4			P
7440-39-3	Barium	795			P
7440-41-7	Beryllium	0.35	B		P
7440-43-9	Cadmium	11.4			P
7440-70-2	Calcium	10300			P
7440-47-3	Chromium	115			P
7440-48-4	Cobalt	7.9	B		P
7440-50-8	Copper	534			P
7439-89-6	Iron	25300			P
7439-92-1	Lead	955			P
7439-95-4	Magnesium	2950			P
7439-96-5	Manganese	318			P
7439-97-6	Mercury	2.0			CV
7440-02-0	Nickel	81.2			P
7440-09-7	Potassium	872	B	E	P
7782-49-2	Selenium	3.5			P
7440-22-4	Silver	3.5			P
7440-23-5	Sodium	305	B	E	P
7440-28-0	Thallium	1.7	U		P
7440-62-2	Vanadium	27.7			P
7440-66-6	Zinc	872			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA26

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92054S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 83.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11300			P
7440-36-0	Antimony	10.0	B		P
7440-38-2	Arsenic	3.3			P
7440-39-3	Barium	65.9			P
7440-41-7	Beryllium	0.23	U		P
7440-43-9	Cadmium	0.23	U		P
7440-70-2	Calcium	70300			P
7440-47-3	Chromium	1850			P
7440-48-4	Cobalt	59.9			P
7440-50-8	Copper	34.4			P
7439-89-6	Iron	33600			P
7439-92-1	Lead	258			P
7439-95-4	Magnesium	28800			P
7439-96-5	Manganese	322			P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	244			P
7440-09-7	Potassium	445	B	E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	978	B	E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	486			P
7440-66-6	Zinc	167			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA42

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92050S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 76.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7020			P
7440-36-0	Antimony	5.2	B		P
7440-38-2	Arsenic	14.9			P
7440-39-3	Barium	326			P
7440-41-7	Beryllium	0.32	B		P
7440-43-9	Cadmium	0.40	B		P
7440-70-2	Calcium	11000			P
7440-47-3	Chromium	93.4			P
7440-48-4	Cobalt	6.9	B		P
7440-50-8	Copper	253			P
7439-89-6	Iron	31900			P
7439-92-1	Lead	498			P
7439-95-4	Magnesium	2370			P
7439-96-5	Manganese	277			P
7439-97-6	Mercury	1.8			CV
7440-02-0	Nickel	83.1			P
7440-09-7	Potassium	679	B	E	P
7782-49-2	Selenium	1.5			P
7440-22-4	Silver	2.8			P
7440-23-5	Sodium	257	B	E	P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	51.2			P
7440-66-6	Zinc	566			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA43

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92039S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 62.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5750			P
7440-36-0	Antimony	10.3	B		P
7440-38-2	Arsenic	10.4			P
7440-39-3	Barium	123			P
7440-41-7	Beryllium	0.31	U		P
7440-43-9	Cadmium	0.31	U		P
7440-70-2	Calcium	6400			P
7440-47-3	Chromium	1570			P
7440-48-4	Cobalt	20.6			P
7440-50-8	Copper	279			P
7439-89-6	Iron	36100			P
7439-92-1	Lead	187			P
7439-95-4	Magnesium	4750			P
7439-96-5	Manganese	156			P
7439-97-6	Mercury	0.46			CV
7440-02-0	Nickel	83.2			P
7440-09-7	Potassium	308	B	E	P
7782-49-2	Selenium	1.6	U		P
7440-22-4	Silver	0.62	B		P
7440-23-5	Sodium	431	B	E	P
7440-28-0	Thallium	2.2	U		P
7440-62-2	Vanadium	123			P
7440-66-6	Zinc	228			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBTA44

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92041S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 75.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4920			P
7440-36-0	Antimony	4.5	B		P
7440-38-2	Arsenic	16.2			P
7440-39-3	Barium	217			P
7440-41-7	Beryllium	0.33	B		P
7440-43-9	Cadmium	0.56	B		P
7440-70-2	Calcium	5900			P
7440-47-3	Chromium	164			P
7440-48-4	Cobalt	5.0	B		P
7440-50-8	Copper	243			P
7439-89-6	Iron	20000			P
7439-92-1	Lead	367			P
7439-95-4	Magnesium	2410			P
7439-96-5	Manganese	164			P
7439-97-6	Mercury	2.2			CV
7440-02-0	Nickel	47.1			P
7440-09-7	Potassium	558	B	E	P
7782-49-2	Selenium	2.5			P
7440-22-4	Silver	1.9	B		P
7440-23-5	Sodium	246	B	E	P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	33.1			P
7440-66-6	Zinc	379			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA45

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): SOIL Lab Sample ID: 92043S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 83.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7950			P
7440-36-0	Antimony	1.2	U		P
7440-38-2	Arsenic	4.4			P
7440-39-3	Barium	531			P
7440-41-7	Beryllium	0.45	B		P
7440-43-9	Cadmium	0.24	U		P
7440-70-2	Calcium	2480			P
7440-47-3	Chromium	34.9			P
7440-48-4	Cobalt	7.2	B		P
7440-50-8	Copper	44.8			P
7439-89-6	Iron	15300			P
7439-92-1	Lead	1130			P
7439-95-4	Magnesium	2900			P
7439-96-5	Manganese	263			P
7439-97-6	Mercury	0.56			CV
7440-02-0	Nickel	16.4			P
7440-09-7	Potassium	788	B	E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	0.31	B		P
7440-23-5	Sodium	219	B	E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	22.0			P
7440-66-6	Zinc	230			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTF03 [redacted]

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR50

Matrix (soil/water): WATER Lab Sample ID: 92056S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	25.0	B		P
7440-36-0	Antimony	5.0	U		P
7440-38-2	Arsenic	6.0	U		P
7440-39-3	Barium	1.0	U		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	16.0	U		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	1.0	U		P
7440-50-8	Copper	1.0	U		P
7439-89-6	Iron	16.0	U		P
7439-92-1	Lead	2.0	U		P
7439-95-4	Magnesium	23.0	U		P
7439-96-5	Manganese	1.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	2.0	U		P
7440-09-7	Potassium	39.0	U		P
7782-49-2	Selenium	5.0	U		P
7440-22-4	Silver	1.0	U		P
7440-23-5	Sodium	23.0	U		P
7440-28-0	Thallium	7.0	U		P
7440-62-2	Vanadium	2.0	U		P
7440-66-6	Zinc	2.0	U		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SAMPLE DELIVERY GROUP (SDG)
TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Chemtech Contract No.: 68-D5-0166

Lab Code: Chem Case No.: 27633 SAS No.: _____

Full Sample Analysis Price in Contract: $ _____

SDG No./First Sample in SDG: MBPR50 Sample Receipt Date: 12/07/99 (MM/DD/YY)
(Lowest EPA Sample Number in first shipment of samples received under SDG.)

Last Sample in SDG: MBTF03 Sample Receipt Date: 12/07/99 (MM/DD/YY)
(Highest EPA Sample Number in last shipment of samples received under SDG.)

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	MBPR 50	11	MBTA 22
2	51	12	23
3	52	13	24
4	53	14	25
5	54	15	26
6	55	16	42
7	MBTA 18	17	43
8	19	18	44
9	20	19	45
10	21	20	MBTF 03

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Signature: Dubey

Date: 12/07/99

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

SOW No.: ILM04.0

EPA SAMPLE NO.	Lab Sample ID.
MBPR56	92063S
MBPR57	92065S
MBPR58	92067S
MBPR59	92164S
MBPR60	92168S
MBPR61	92170S
MBPR62	92172S
MBPR63	92174S
MBPR64	92176S
MBPR65	92178S
MBTA28	92064S
MBTA29	92066S
MBTA30	92163S
MBTA30D	92166S2
MBTA30S	92167DS
MBTA31	92165S
MBTA32	92169S
MBTA33	92171S
MBTA34	92173S
MBTA35	92175S

Were ICP interelement corrections applied?	Yes/No	YES
Were ICP background corrections applied?	Yes/No	YES
If yes-were raw data generated before application of background corrections?	Yes/No	NO

Comments:
"E" qualifiers on Form I and IX for Potassium and Sodium indicate chemical or physical interference effects, which were suspected during those elements analyses only.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: PARVEEN HASAN

Date: 1/11/00 Title: QA/QC OFFICER

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

SOW No.: ILM04.0

EPA SAMPLE NO.	Lab Sample ID.
MBTA36	92177S
MBTF04	92179S

Were ICP interelement corrections applied? Yes/No YES
Were ICP background corrections applied? Yes/No YES
If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:
"E" qualifiers on Form I and IX for Potassium and Sodium indicate chemical or physical interference effects, which were suspected during those elements analyses only.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: PARVEEN HASAN

Date: 1/11/00 Title: QA/QC OFFICER

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBPR56

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92063S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 81.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16900			P
7440-36-0	Antimony	14.1	B		P
7440-38-2	Arsenic	5.1			P
7440-39-3	Barium	55.8			P
7440-41-7	Beryllium	0.24	U		P
7440-43-9	Cadmium	0.24	U		P
7440-70-2	Calcium	49900			P
7440-47-3	Chromium	2150			P
7440-48-4	Cobalt	89.9			P
7440-50-8	Copper	27.6			P
7439-89-6	Iron	40500			P
7439-92-1	Lead	109			P
7439-95-4	Magnesium	39700			P
7439-96-5	Manganese	332			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	341			P
7440-09-7	Potassium	640	B	E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	4.4			P
7440-23-5	Sodium	2970		E	P
7440-28-0	Thallium	1.8	B		P
7440-62-2	Vanadium	6770			P
7440-66-6	Zinc	260			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBPR57

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92065S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 72.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	17600			P
7440-36-0	Antimony	17.6			P
7440-38-2	Arsenic	14.7			P
7440-39-3	Barium	152			P
7440-41-7	Beryllium	0.28	U		P
7440-43-9	Cadmium	0.28	U		P
7440-70-2	Calcium	46700			P
7440-47-3	Chromium	3000			P
7440-48-4	Cobalt	70.8			P
7440-50-8	Copper	109			P
7439-89-6	Iron	39400			P
7439-92-1	Lead	515			P
7439-95-4	Magnesium	32300			P
7439-96-5	Manganese	422			P
7439-97-6	Mercury	0.28			CV
7440-02-0	Nickel	262			P
7440-09-7	Potassium	1980		E	P
7782-49-2	Selenium	1.4	U		P
7440-22-4	Silver	2.5	B		P
7440-23-5	Sodium	5860		E	P
7440-28-0	Thallium	1.9	U		P
7440-62-2	Vanadium	687			P
7440-66-6	Zinc	372			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBPR58

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92067S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 82.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10400			P
7440-36-0	Antimony	13.4	B		P
7440-38-2	Arsenic	5.3			P
7440-39-3	Barium	563			P
7440-41-7	Beryllium	0.23	U		P
7440-43-9	Cadmium	1.5			P
7440-70-2	Calcium	34300			P
7440-47-3	Chromium	2300			P
7440-48-4	Cobalt	44.9			P
7440-50-8	Copper	60.3			P
7439-89-6	Iron	25900			P
7439-92-1	Lead	3780			P
7439-95-4	Magnesium	19700			P
7439-96-5	Manganese	278			P
7439-97-6	Mercury	0.17			CV
7440-02-0	Nickel	165			P
7440-09-7	Potassium	1200		E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	1.4	B		P
7440-23-5	Sodium	2820		E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	486			P
7440-66-6	Zinc	271			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBPR59

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92164S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 76.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7090			P
7440-36-0	Antimony	13.5	B		P
7440-38-2	Arsenic	13.3			P
7440-39-3	Barium	182			P
7440-41-7	Beryllium	0.30	B		P
7440-43-9	Cadmium	1.4			P
7440-70-2	Calcium	16100			P
7440-47-3	Chromium	2330			P
7440-48-4	Cobalt	16.4			P
7440-50-8	Copper	144			P
7439-89-6	Iron	16400			P
7439-92-1	Lead	864			P
7439-95-4	Magnesium	7370			P
7439-96-5	Manganese	188			P
7439-97-6	Mercury	1.7			CV
7440-02-0	Nickel	71.6			P
7440-09-7	Potassium	1140	B	E	P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	1.8	B		P
7440-23-5	Sodium	3920		E	P
7440-28-0	Thallium	1.8	U		P
7440-62-2	Vanadium	130			P
7440-66-6	Zinc	347			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBPR60

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92168S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 82.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3600			P
7440-36-0	Antimony	1.6	B		P
7440-38-2	Arsenic	5.1			P
7440-39-3	Barium	230			P
7440-41-7	Beryllium	0.25	B		P
7440-43-9	Cadmium	0.24	U		P
7440-70-2	Calcium	31600			P
7440-47-3	Chromium	259			P
7440-48-4	Cobalt	3.9	B		P
7440-50-8	Copper	18.1			P
7439-89-6	Iron	7300			P
7439-92-1	Lead	740			P
7439-95-4	Magnesium	3380			P
7439-96-5	Manganese	196			P
7439-97-6	Mercury	0.18			CV
7440-02-0	Nickel	15.4			P
7440-09-7	Potassium	450	B	E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	0.48	B		P
7440-23-5	Sodium	669	B	E	P
7440-28-0	Thallium	1.7	U		P
7440-62-2	Vanadium	38.5			P
7440-66-6	Zinc	129			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBPR61

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92170S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 84.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5320			P
7440-36-0	Antimony	1.6	B		P
7440-38-2	Arsenic	5.6			P
7440-39-3	Barium	245			P
7440-41-7	Beryllium	0.33	B		P
7440-43-9	Cadmium	0.24	U		P
7440-70-2	Calcium	38300			P
7440-47-3	Chromium	18.0			P
7440-48-4	Cobalt	4.4	B		P
7440-50-8	Copper	45.6			P
7439-89-6	Iron	10700			P
7439-92-1	Lead	484			P
7439-95-4	Magnesium	9040			P
7439-96-5	Manganese	229			P
7439-97-6	Mercury	0.37			CV
7440-02-0	Nickel	13.2			P
7440-09-7	Potassium	737	B	E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	0.70	B		P
7440-23-5	Sodium	713	B	E	P
7440-28-0	Thallium	1.7	U		P
7440-62-2	Vanadium	16.3			P
7440-66-6	Zinc	692			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBPR62

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92172S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 83.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9730			P
7440-36-0	Antimony	6.2	B		P
7440-38-2	Arsenic	5.4			P
7440-39-3	Barium	97.7			P
7440-41-7	Beryllium	0.23	U		P
7440-43-9	Cadmium	0.23	U		P
7440-70-2	Calcium	25700			P
7440-47-3	Chromium	1070			P
7440-48-4	Cobalt	39.7			P
7440-50-8	Copper	49.7			P
7439-89-6	Iron	26700			P
7439-92-1	Lead	112			P
7439-95-4	Magnesium	17400			P
7439-96-5	Manganese	324			P
7439-97-6	Mercury	0.38			CV
7440-02-0	Nickel	149			P
7440-09-7	Potassium	1000	B	E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	1.0	B		P
7440-23-5	Sodium	2370		E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	351			P
7440-66-6	Zinc	136			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBPR63

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92174S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 90.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7400			P
7440-36-0	Antimony	1.8	B		P
7440-38-2	Arsenic	3.7			P
7440-39-3	Barium	116			P
7440-41-7	Beryllium	0.41	B		P
7440-43-9	Cadmium	0.22	U		P
7440-70-2	Calcium	21200			P
7440-47-3	Chromium	267			P
7440-48-4	Cobalt	12.5			P
7440-50-8	Copper	45.1			P
7439-89-6	Iron	15100			P
7439-92-1	Lead	96.2			P
7439-95-4	Magnesium	14700			P
7439-96-5	Manganese	292			P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	37.1			P
7440-09-7	Potassium	1700		E	P
7782-49-2	Selenium	1.1	U		P
7440-22-4	Silver	0.80	B		P
7440-23-5	Sodium	2530		E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	84.0			P
7440-66-6	Zinc	96.9			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBPR64

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92176S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 87.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4930			P
7440-36-0	Antimony	10.6	B		P
7440-38-2	Arsenic	4.3			P
7440-39-3	Barium	2930			P
7440-41-7	Beryllium	0.22	U		P
7440-43-9	Cadmium	16.3			P
7440-70-2	Calcium	28500			P
7440-47-3	Chromium	644			P
7440-48-4	Cobalt	20.0			P
7440-50-8	Copper	569			P
7439-89-6	Iron	15300			P
7439-92-1	Lead	23500			P
7439-95-4	Magnesium	9970			P
7439-96-5	Manganese	216			P
7439-97-6	Mercury	0.58			CV
7440-02-0	Nickel	74.2			P
7440-09-7	Potassium	779	B	E	P
7782-49-2	Selenium	1.1	U		P
7440-22-4	Silver	1.4	B		P
7440-23-5	Sodium	4050		E	P
7440-28-0	Thallium	1.5	U		P
7440-62-2	Vanadium	144			P
7440-66-6	Zinc	779			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBPR65

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92178S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 85.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7010			P
7440-36-0	Antimony	3.8	B		P
7440-38-2	Arsenic	11.6			P
7440-39-3	Barium	1070			P
7440-41-7	Beryllium	0.42	B		P
7440-43-9	Cadmium	4.0			P
7440-70-2	Calcium	32800			P
7440-47-3	Chromium	343			P
7440-48-4	Cobalt	18.4			P
7440-50-8	Copper	108			P
7439-89-6	Iron	28100			P
7439-92-1	Lead	4420			P
7439-95-4	Magnesium	6370			P
7439-96-5	Manganese	311			P
7439-97-6	Mercury	0.17			CV
7440-02-0	Nickel	69.4			P
7440-09-7	Potassium	984	B	E	P
7782-49-2	Selenium	1.5			P
7440-22-4	Silver	0.87	B		P
7440-23-5	Sodium	1580		E	P
7440-28-0	Thallium	3.4			P
7440-62-2	Vanadium	76.7			P
7440-66-6	Zinc	528			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA28

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92064S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 86.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8220			P
7440-36-0	Antimony	2.5	B		P
7440-38-2	Arsenic	4.0			P
7440-39-3	Barium	106			P
7440-41-7	Beryllium	0.32	B		P
7440-43-9	Cadmium	0.23	U		P
7440-70-2	Calcium	14900			P
7440-47-3	Chromium	337			P
7440-48-4	Cobalt	17.3			P
7440-50-8	Copper	49.5			P
7439-89-6	Iron	19600			P
7439-92-1	Lead	140			P
7439-95-4	Magnesium	6830			P
7439-96-5	Manganese	224			P
7439-97-6	Mercury	0.40			CV
7440-02-0	Nickel	65.8			P
7440-09-7	Potassium	836	B	E	P
7782-49-2	Selenium	1.1	U		P
7440-22-4	Silver	0.74	B		P
7440-23-5	Sodium	560	B	E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	92.8			P
7440-66-6	Zinc	125			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBTA29

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92066S

Level (low/med): LOW Date Received: 12/07/99

% Solids: 89.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6250			P
7440-36-0	Antimony	4.0	B		P
7440-38-2	Arsenic	5.5			P
7440-39-3	Barium	241			P
7440-41-7	Beryllium	0.21	U		P
7440-43-9	Cadmium	0.21	U		P
7440-70-2	Calcium	17100			P
7440-47-3	Chromium	608			P
7440-48-4	Cobalt	22.3			P
7440-50-8	Copper	59.6			P
7439-89-6	Iron	23100			P
7439-92-1	Lead	1180			P
7439-95-4	Magnesium	8680			P
7439-96-5	Manganese	308			P
7439-97-6	Mercury	0.33			CV
7440-02-0	Nickel	79.2			P
7440-09-7	Potassium	759	B	E	P
7782-49-2	Selenium	1.1	U		P
7440-22-4	Silver	1.2	B		P
7440-23-5	Sodium	512	B	E	P
7440-28-0	Thallium	1.5	U		P
7440-62-2	Vanadium	214			P
7440-66-6	Zinc	232			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBTA30

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92163S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 87.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14000			P
7440-36-0	Antimony	13.4	B		P
7440-38-2	Arsenic	8.2			P
7440-39-3	Barium	127			P
7440-41-7	Beryllium	0.23	U		P
7440-43-9	Cadmium	0.23	U		P
7440-70-2	Calcium	72200			P
7440-47-3	Chromium	2280			P
7440-48-4	Cobalt	83.5			P
7440-50-8	Copper	62.5			P
7439-89-6	Iron	47300			P
7439-92-1	Lead	248			P
7439-95-4	Magnesium	36200			P
7439-96-5	Manganese	691			P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	298			P
7440-09-7	Potassium	850	B	E	P
7782-49-2	Selenium	1.1	U		P
7440-22-4	Silver	1.6	B		P
7440-23-5	Sodium	2170		E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	702			P
7440-66-6	Zinc	668			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA31

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92165S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 86.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6070			P
7440-36-0	Antimony	2.1	B		P
7440-38-2	Arsenic	11.2			P
7440-39-3	Barium	307			P
7440-41-7	Beryllium	0.37	B		P
7440-43-9	Cadmium	1.4			P
7440-70-2	Calcium	25400			P
7440-47-3	Chromium	115			P
7440-48-4	Cobalt	6.6	B		P
7440-50-8	Copper	146			P
7439-89-6	Iron	15000			P
7439-92-1	Lead	1330			P
7439-95-4	Magnesium	3640			P
7439-96-5	Manganese	195			P
7439-97-6	Mercury	0.87			CV
7440-02-0	Nickel	32.5			P
7440-09-7	Potassium	719	B	E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	1.4	B		P
7440-23-5	Sodium	481	B	E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	35.9			P
7440-66-6	Zinc	460			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBTA32

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92169S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 88.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1680			P
7440-36-0	Antimony	1.1	U		P
7440-38-2	Arsenic	2.5			P
7440-39-3	Barium	29.0	B		P
7440-41-7	Beryllium	0.22	U		P
7440-43-9	Cadmium	0.22	U		P
7440-70-2	Calcium	3210			P
7440-47-3	Chromium	11.9			P
7440-48-4	Cobalt	2.1	B		P
7440-50-8	Copper	17.3			P
7439-89-6	Iron	4620			P
7439-92-1	Lead	72.7			P
7439-95-4	Magnesium	882	B		P
7439-96-5	Manganese	51.0			P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	6.5	B		P
7440-09-7	Potassium	271	B	E	P
7782-49-2	Selenium	1.1	U		P
7440-22-4	Silver	0.41	B		P
7440-23-5	Sodium	110	B	E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	5.7	B		P
7440-66-6	Zinc	54.9			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA33

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92171S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 87.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7460			P
7440-36-0	Antimony	1.4	B		P
7440-38-2	Arsenic	5.6			P
7440-39-3	Barium	140			P
7440-41-7	Beryllium	0.43	B		P
7440-43-9	Cadmium	0.23	U		P
7440-70-2	Calcium	10200			P
7440-47-3	Chromium	90.3			P
7440-48-4	Cobalt	8.0	B		P
7440-50-8	Copper	48.5			P
7439-89-6	Iron	15100			P
7439-92-1	Lead	682			P
7439-95-4	Magnesium	3800			P
7439-96-5	Manganese	302			P
7439-97-6	Mercury	0.17			CV
7440-02-0	Nickel	27.9			P
7440-09-7	Potassium	1080	B	E	P
7782-49-2	Selenium	1.1	U		P
7440-22-4	Silver	0.56	B		P
7440-23-5	Sodium	328	B	E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	31.0			P
7440-66-6	Zinc	288			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA34

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92173S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 84.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7340			P
7440-36-0	Antimony	3.0	B		P
7440-38-2	Arsenic	4.2			P
7440-39-3	Barium	137			P
7440-41-7	Beryllium	0.28	B		P
7440-43-9	Cadmium	0.26	B		P
7440-70-2	Calcium	44800			P
7440-47-3	Chromium	380			P
7440-48-4	Cobalt	17.4			P
7440-50-8	Copper	249			P
7439-89-6	Iron	17400			P
7439-92-1	Lead	916			P
7439-95-4	Magnesium	8970			P
7439-96-5	Manganese	283			P
7439-97-6	Mercury	0.18			CV
7440-02-0	Nickel	71.5			P
7440-09-7	Potassium	1090	B	E	P
7782-49-2	Selenium	1.1	U		P
7440-22-4	Silver	0.78	B		P
7440-23-5	Sodium	1810		E	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	135			P
7440-66-6	Zinc	379			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA35

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92175S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 80.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7090			P
7440-36-0	Antimony	2.7	B		P
7440-38-2	Arsenic	11.6			P
7440-39-3	Barium	886			P
7440-41-7	Beryllium	0.43	B		P
7440-43-9	Cadmium	2.2			P
7440-70-2	Calcium	32000			P
7440-47-3	Chromium	152			P
7440-48-4	Cobalt	8.2	B		P
7440-50-8	Copper	133			P
7439-89-6	Iron	14400			P
7439-92-1	Lead	5690			P
7439-95-4	Magnesium	4110			P
7439-96-5	Manganese	226			P
7439-97-6	Mercury	0.66			CV
7440-02-0	Nickel	28.1			P
7440-09-7	Potassium	658	B	E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	0.98	B		P
7440-23-5	Sodium	1710		E	P
7440-28-0	Thallium	1.7	U		P
7440-62-2	Vanadium	41.2			P
7440-66-6	Zinc	451			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTA36

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): SOIL Lab Sample ID: 92177S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 78.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6860			P
7440-36-0	Antimony	2.5	B		P
7440-38-2	Arsenic	19.1			P
7440-39-3	Barium	404			P
7440-41-7	Beryllium	0.52	B		P
7440-43-9	Cadmium	2.9			P
7440-70-2	Calcium	7970			P
7440-47-3	Chromium	190			P
7440-48-4	Cobalt	8.1	B		P
7440-50-8	Copper	227			P
7439-89-6	Iron	18000			P
7439-92-1	Lead	1560			P
7439-95-4	Magnesium	3150			P
7439-96-5	Manganese	158			P
7439-97-6	Mercury	2.2			CV
7440-02-0	Nickel	51.4			P
7440-09-7	Potassium	723	B	E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	2.9			P
7440-23-5	Sodium	306	B	E	P
7440-28-0	Thallium	1.8	B		P
7440-62-2	Vanadium	41.7			P
7440-66-6	Zinc	636			P
	Cyanide				NR

Color Before: GREY Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTF04 [redacted]

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-D5-0166

Lab Code: CHEM Case No.: 27633 SAS No.: SDG No.: MBPR56

Matrix (soil/water): WATER Lab Sample ID: 92179S

Level (low/med): LOW Date Received: 12/08/99

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	37.1	B		P
7440-36-0	Antimony	5.0	U		P
7440-38-2	Arsenic	6.0	U		P
7440-39-3	Barium	1.0	U		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	163	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	1.0	U		P
7440-50-8	Copper	4.0	B		P
7439-89-6	Iron	16.0	U		P
7439-92-1	Lead	2.0	U		P
7439-95-4	Magnesium	23.0	U		P
7439-96-5	Manganese	1.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	2.0	U		P
7440-09-7	Potassium	39.0	U		P
7782-49-2	Selenium	5.0	U		P
7440-22-4	Silver	1.0	U		P
7440-23-5	Sodium	309	B		P
7440-28-0	Thallium	7.0	U		P
7440-62-2	Vanadium	2.0	U		P
7440-66-6	Zinc	14.2	B		P
	Cyanide				NR

Color Before: COLERLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SAMPLE DELIVERY GROUP (SDG)
TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Chemtech Contract No.: 68-D5-0166

Lab Code: Chem Case No.: 27633 SAS No.: _____

Full Sample Analysis Price in Contract: $ _____

SDG No./First Sample in SDG: MBPR56 Sample Receipt Date: 12/7/99 (MM/DD/YY)
(Lowest EPA Sample Number in first shipment of samples received under SDG.)

Last Sample in SDG: MBTF04 Sample Receipt Date: 12/8/99 (MM/DD/YY)
(Highest EPA Sample Number in last shipment of samples received under SDG.)

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	MBPR 56	11	MBTA 28
2	57	12	29
3	58	13	30
4	59	14	31
5	60	15	32
6	61	16	33
7	62	17	34
8	63	18	35
9	64	19	36
10	65	20	MBTF 04

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Signature: [signature] Date: 12/8/99

000321

CHEMTECH 110 Route 4 • Englewood, New Jersey 07631 Phone: (201) 567-6868 Fax: (201) 567-1333

RECORD OF COMMUNICATION
VERBAL/ TELEPHONE COMMUNICATION LOG

Date 12/8/99 Client

Chemtech Project No. Chain of Custody No.

Chemtech Contact Client Contact

Project Reference CASE # 27633, SDG# MBPR56

Call Initiated By: ✓ Chemtech ___ Client

In reference to the following: MBPR60

Questions/ Issues As per Traffic Report the conc. of MBPR60 marked as 'M' but physicall its show 'Low'

Resolution Consider as 'Low'

Signature [signature] Date 12/8/99

Since 1967

164

000322

6/11/00

REFERENCE 8

Functional Guidelines for Evaluating Organic Analysis

CASE No.: 27633 SDG No.: BWW62
LABORATORY: EANDE SITE: DIAMOND HEAD OIL REFINERY

DATA ASSESSMENT

The current SOP HW-6 (Revision 11) June 1996, USEPA Region II Data Validation SOP for Statement of Work OLMO 4.2. for evaluating organic data have been applied.

All data are valid and acceptable except those analytes rejected "R"(unusable). Due to the detection of QC problems, some analytes may have the "J" (estimated), "N"(presumptive evidence for the presence of the material, "U" (non-detect) or "JN" (presumptive evidence for the presence of the material at an estimated value) flag. All action is detailed on the attached sheets.

The "R" flag means that the associated value is unusable. In other words, significant data bias is evident and the reported analyte concentration is unreliable.

Reviewer's Signature: Andy Panayiotou Date: March 7, 2000

Verified By: Date: 3/10/2000

SDG#BWW62

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.
VOA:
All samples met both Technical and Contractual Holding Time for the VOA fraction.
BNA:
All samples met both Technical and Contractual Holding Time for the BNA fraction.
PEST:
Sample BWW76RE failed both Technical and Contractual Holding Time criteria. Qualify hits "J" and non-detects "UJ".

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.
See Attached CADRE Surrogate Report for list of samples/analytes that were qualified for surrogate recovery exceedance.

3. MATRIX SPIKE/SPIKE DUPLICATE, MS/MSD:

The MS/MSD data are generated to determine the long term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data.
No qualification based on MS/MSD data.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip

Holding Time Report

SDG NO: BWW62 LABORATORY: E & E INC.
CASE NO: 27633 AGENCY INPUT FILE: BWW62.ASF

HOLDING TIME CRITERIA

Volatile

Preserved	Primary	Expanded
Water	14	28
Soil	14	28

	---- Aromatic ----		-- Non-aromatic --	
Unpreserved	Primary	Expanded	Primary	Expanded
Water	7	28	14	28
Soil	10	28	10	28

Semivolatile

	--- Extraction ---		---- Analysis ----	
	Primary	Expanded	Primary	Expanded
Water	7	28	40	60
Soil	7	28	40	60

Pesticide

	--- Extraction ---		---- Analysis ----	
	Primary	Expanded	Primary	Expanded
Water	7	28	40	60
Soil	7	28	40	60

DC-105: The following semivolatile samples are outside expanded analysis holding time criteria. Hits are qualified "J" and non-detects are qualified "R".

BWW14 wrong date entered. Sample HT OK.

DC-161: The following pesticide water samples are outside primary extraction holding time criteria.
Hits are qualified "J" and non-detects are qualified "UJ".

BWW76RE

SDG NO: BWW62 LABORATORY: E & E INC.
CASE NO: 27633 AGENCY INPUT FILE: BWW62.ASF

SMC/SURROGATE CRITERIA

Volatile

Percent Recovery Limits

	--- Water ---		---- Soil ---	
	Lower	Upper	Lower	Upper
Toluene-d8	88.0	110.0	84.0	138.0
Bromofluorobenzene	86.0	115.0	59.0	113.0
1,2-Dichloroethane-d4	76.0	114.0	70.0	121.0

Semivolatile

Percent Recovery Limits

	--- Water ---		---- Soil ---	
	Lower	Upper	Lower	Upper
Nitrobenzene-d5	35.0	114.0	23.0	120.0
2-Fluorobiphenyl	43.0	116.0	30.0	115.0
Terphenyl-d14	33.0	141.0	18.0	137.0
Phenol-d5	10.0	110.0	24.0	113.0
2-Fluorophenol	21.0	110.0	25.0	121.0
2,4,6-Tribromophenol	10.0	123.0	19.0	122.0
2-Chlorophenol-d4	33.0	110.0	20.0	130.0
1,2-Dichlorobenzene-d4	16.0	110.0	20.0	130.0

Pesticide

Percent Recovery Limits

	--- Water ---		---- Soil ---	
	Lower	Upper	Lower	Upper
Tetrachloro-m-xylene	30.0	150.0	30.0	150.0
Decachlorobiphenyl	30.0	150.0	30.0	150.0

DC-174: The following pesticide samples have surrogate percent recoveries

which exceed the upper limit of the criteria window.
If %R for both surrogates on both column are > contract limit, hits are flagged "J".

BWW63, BWW63DL, BWW64, BWW65, BWW65DL, BWW66DL
BWW67, BWW67DL, BWW68DL, BWW69, BWW69DL, BWX88DL
BWY11, BWY11DL, BWY14, BWY14DL, BWY15

no Qual needed.

DC-177: The following pesticide samples have surrogate percent recoveries outside the lower limit of the criteria window, but > 10%. Hits & nondetects are qualified "J" only for the same surr. on both coulmns with no interference. Use professional judgement when interf. is detected. Remove "J" when 1 surr. on 1 column is out.

BWX88, BWX88DL

DC-178: The following pesticide samples are not fully qualified for surrogate RT because of missing RT information. Visual inspection of the data is required. Samples with surrogates falling outside the RT window should be qualified based on professional judgement.

BWW62DL, BWW64DL, BWW70DL Surrogates diluted out

DC-180: The following pesticide samples are not qualified for surrogate percent recovery because of missing percent recovery information. Visual inspection of the data is required to verify all surrogate compounds are present.

BWW62DL, BWW70DL Surrogates diluted out

Matrix Spike Report

SDG NO: **BWW62** LABORATORY: **E & E INC.**

CASE NO: **27633** AGENCY INPUT FILE: **BWW62.ASF**

MATRIX SPIKE CRITERIA

Volatile

Percent Recovery Limits & RPD

	Water			Soil		
	Lower	Upper	RPD	Lower	Upper	RPD
1,1-Dichloroethene	61.0	145.0	14.0	59.0	172.0	22.0
Benzene	76.0	127.0	11.0	66.0	142.0	21.0
Trichloroethene	71.0	120.0	14.0	62.0	137.0	24.0
Toluene	76.0	125.0	13.0	59.0	139.0	21.0
Chlorobenzene	75.0	130.0	13.0	60.0	133.0	21.0

Semivolatile

Percent Recovery Limits & RPD

	Water			Soil		
	Lower	Upper	RPD	Lower	Upper	RPD
Phenol	12.0	110.0	42.0	26.0	90.0	35.0
2-Chlorophenol	27.0	123.0	40.0	25.0	102.0	50.0
N-Nitroso-di-n-propylamine	41.0	116.0	38.0	41.0	126.0	38.0
4-Chloro-3-methylphenol	23.0	97.0	42.0	26.0	103.0	33.0
Acenaphthene	46.0	118.0	31.0	31.0	137.0	19.0
4-Nitrophenol	10.0	80.0	50.0	11.0	114.0	50.0
2,4-Dinitrotoluene	24.0	96.0	38.0	28.0	89.0	47.0
Pentachlorophenol	9.0	103.0	50.0	17.0	109.0	47.0
Pyrene	26.0	127.0	31.0	35.0	142.0	36.0

Pesticide

Percent Recovery Limits & RPD

	Water			Soil		
	Lower	Upper	RPD	Lower	Upper	RPD
gamma-BHC (Lindane)	56.0	123.0	15.0	46.0	127.0	50.0

Heptachlor	40.0	131.0	20.0	35.0	130.0	31.0
Aldrin	40.0	120.0	22.0	34.0	132.0	43.0
Dieldrin	52.0	126.0	18.0	31.0	134.0	38.0
Endrin	56.0	121.0	21.0	42.0	139.0	45.0
4,4'-DDT	38.0	127.0	27.0	23.0	134.0	50.0

DC-38: The relative percent difference (RPD) between the following volatile matrix spike and matrix spike duplicate recoveries is outside criteria.
Hits and non-detects are not flagged.

BWY07MS
1,1-Dichloroethene , Benzene, Trichloroethene, Toluene
Chlorobenzene

BWY07MSD
1,1-Dichloroethene , Benzene, Trichloroethene, Toluene
Chlorobenzene

DC-39: The following volatile matrix spike/matrix spike duplicate samples have percent recovery outside criteria.
Hits and non-detects in the unspiked sample are qualified based on professional judgement.

BWY07MSD
Trichloroethene, Chlorobenzene

DC-48: The relative percent difference (RPD) between the following semivolatile matrix spike and matrix spike duplicate recoveries is outside criteria.
Hits and non-detects are not flagged.

BWY07MS
Acenaphthene

BWY07MSD
Acenaphthene

DC-69: Semivolatile matrix spike and/or matrix spike duplicate data is missing for this SDG.
Visual inspection of the data is recommended.

BWW62, BWW62RE, BWW64, BWW64RE, BWW65, BWW66
BWW68, BWW68RE, BWY10, BWY10RE, BWY11, BWY12

BWY13, BWY15

blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for common contaminants), the analytes are qualified as non-detects, "U". The following analytes in the sample shown were qualified with "U" for these reasons:

A) Method blank contamination:
See attached CADRE Laboratory Blanks Report for list of samples/analytes that were qualified "U".

B) Field or rinse blank contamination:
See attached CADRE Field QC Blanks Report for a list of samples/analytes that were qualified "U".

C) Trip blank contamination for VOA aqueous samples:
Not Applicable.

D) Storage Blank associated with VOA samples only
No qualification was performed based on the Storage Blank.

E) Tics "R" rejected
VOA:

The following Tic's are qualified "R". They have been identified as Laboratory Artifacts.

Unknown Siloxane- BWW63, W65,

BNA:

The following Tic's are qualified "R". Their concentration is 5X less the associated blank concentration.

Unknown- BWY08, Y09.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene and for semi-volatiles Decafluorotriphenylphosphine (DFTPP).

If the mass calibration is in error, all associated data will be classified as unusable "R".

Laboratory Blanks Report

SDG NO: **BWW62** LABORATORY: **E & E INC.**

CASE NO: **27633** AGENCY INPUT FILE: **BWW62.ASF**

LABORATORY BLANKS CRITERIA

Volatile

Method Blank Contamination Threshold Multipliers

	First	Expanded
Common contaminant compounds	10.00	10.00
Other compounds	5.00	5.00

Semivolatile

Method Blank Contamination Threshold Multipliers

	First	Expanded
Common contaminant compounds	10.00	10.00
Other compounds	5.00	5.00

Pesticide

Method Blank Contamination Threshold Multipliers

	First	Expanded
All compounds	5.00	5.00

DC-26: No method blanks were found for the following volatile samples due to lack of an instrument performance check. Visual inspection of data is required to verify the presence of the instrument performance check.

BWW62, BWW63, BWW64, BWW65, BWW66, BWW67
BWW68, BWW69, BWW70, BWX88, BWY07, BWY07MS
BWY07MSD, BWY08, BWY09, BWY10, BWY11, BWY12
BWY13, BWY14, BWY15

NO Qualification needed based on Method Blanks.

DC-124: The following semivolatile samples have no associated method blank. Visual inspection of the data is required to verify if

all required method blanks were analyzed.

BWW63RE, BWW69, ~~BWW70~~, BWW70DL, BWY14 No qualification needed based on method blank contamination.

DC-234: The following pesticide samples have analyte concentrations reported above the CRQL and less than or equal to five times (5X) the associated method blank concentration.
Hits are qualified "U" and non-detects are not flagged.

BWW76
Methoxychlor ✓

Field QC Report

SDG NO: **BWW62** LABORATORY: **E & E INC.**

CASE NO: **27633** AGENCY INPUT FILE: **BWW62.ASF**

DC-134: The following volatile samples are affected by contamination in their corresponding field blank for the indicated analytes. Hits are qualified "U" and non-detects are not flagged.

BWW62 U
Acetone ✓

BWW64 U
Acetone , Toluene → Raise CRQL -U-

BWX88 U
Acetone ✓

BWY10 U ✓
Acetone , Trichloroethene → Raise CRQL U

BWY11 ✓
cis-1,2-Dichloroethene Raise CRQL U

BWY12 U ✓
Acetone , Toluene → Raise CRQL U

DC-404: The analytes indicated for the following volatile samples are associated with multiple invalid blank results. Hits and non-detects are not flagged.

1,2-Dibromo-3-chloropropane
BWW62, BWW63, BWW64, BWW65, BWW66, BWW67
BWW68, BWW69, BWW70, BWW76, BWW76DL, BWX88
BWY07, BWY07MS, BWY07MSD, BWY08, BWY09, BWY10
BWY11, BWY12, BWY13, BWY14, BWY15

Instrument Performance Check Report

SDG NO: **BWW62** LABORATORY: **E & E INC.**

CASE NO: **27633** AGENCY INPUT FILE: **BWW62.ASF**

The complete primary criteria for BFB are as follows:

Bromofluorobenzene (BFB)

m/z	ION ABUNDANCE CRITERIA (Volatile)
50	8.0 - 40.0% of m/z 95
75	30.0 - 66.0% of m/z 95
95	base peak, 100.0% relative abundance
96	5.0 - 9.0% of m/z 95
173	less than 2.0% of m/z 174
174	50.0 - 120.0% of m/z 95
175	4.0 - 9.0% of m/z 174
176	93.0 - 101.0% of m/z 174
177	5.0 - 9.0% of m/z 176

The complete primary criteria for DFTPP are as follows:

Decafluorotriphenylphosphine (DFTPP)

m/z	ION ABUNDANCE CRITERIA (Semivolatile)
51	30.0 - 80.0% of m/z 198
68	less than 2.0% of m/z 69
69	present
70	less than 2.0% of m/z 69
127	25.0 - 75.0% of m/z 198
197	less than 1.0% of m/z 198
198	base peak, 100.0% relative abundance
199	5.0 - 9.0% of m/z 198
275	10.0 - 30.0% of m/z 198
365	greater than 0.75% of m/z 198
441	present, but less than m/z 443
442	40.0 - 110.0% of m/z 198
443	15.0 - 24.0% of m/z 442

DC-12: The following volatile samples are not associated with any instrument performance check. Visual inspection of the data is required to verify the presence of the instrument performance check should be flagged "R".

BWW62, BWW63, BWW64, BWW65, BWW66, BWW67
BWW68, BWW69, BWW70, BWX88, BWY07, BWY07MS
BWY07MSD, BWY08, BWY09, BWY10, BWY11, BWY12
BWY13, BWY14, BWY15, VBLKS1, VBLKS2, VBLKS3

No Problems.

No Problems.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05 in both initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R".

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 30% and %D must be < 25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detects data may be qualified "R".

For the PEST/PCB fraction, if %RSD exceeds 20% for all analytes except for the two surrogates (which must not exceed 30% RSD), qualify all associated positive results "J" and non-detects "UJ".

The following analytes in the sample shown were qualified for %RSD and %D:

See attached CADRE Calibration Report for list of samples/analytes qualified for %RSD and/or %D criteria.

Calibration Report

SDG NO: BWW62 | LABORATORY: E & E INC.
CASE NO: 27633 | AGENCY INPUT FILE: BWW62.ASF

CALIBRATION CRITERIA

Volatile

	Primary	Expanded
Minimum RRF	0.05	0.05
Maximum %RSD (initial calibration)	30	90
Maximum %D (continuing calibration)	25	90
Calibration time period	12	

Semivolatile

	Primary	Expanded
Minimum RRF	0.05	0.05
Maximum %RSD (initial calibration)	30	90
Maximum %D (continuing calibration)	25	90
Calibration time period	12	

Pesticide

Maximum %RSD (initial calibration)	- TCL analytes	20
	- surrogates	30
Maximum RPD (continuing calibration)		25
INDA/INDB percent resolution		90
Continuing calibration sequence time		12

DC-14: The following volatile samples were not associated with any calibration because no associated instrument performance check could be found. Visual inspection of teh data is required to verify if the instrument performance check is present. Samples with no instrument performance check should be flagged "R".

BWW62, BWW63, BWW64, BWW65, BWW66, BWW67
BWW68, BWW69, BWW70, BWX88, BWY07, BWY07MS
BWY07MSD, BWY08, BWY09, BWY10, BWY11, BWY12
BWY13, BWY14, BWY15, VBLKS1, VBLKS2, VBLKS3

The following volatile samples are associated with a Continuing Calibration percent difference (%D) outside primary criteria. Hits are qualified "J" and non-detects are qualified "UJ".

1,2-Dibromo-3-chloropropane: VBLKS1, BWY07, Y07MS, Y07MSD, BWY08, Y09, Y10, Y11, Y12, Y13, Y14, Y15, W62, W63, W64.

Dichlorodifluoromethane: VBLKS3, BWX88

DC-18: The following volatile samples are associated with a continuing calibration whose corresponding initial calibration has relative response factors (RRFs) outside primary criteria.
Hits are flagged "J" and non-detects are qualified "R".

BWW76
1,2-Dibromo-3-chloropropane ✓

BWW76DL
1,2-Dibromo-3-chloropropane ✓

VBLKW1
1,2-Dibromo-3-chloropropane ✓

VBLKW2
1,2-Dibromo-3-chloropropane ✓

VHBLK01
1,2-Dibromo-3-chloropropane ✓

DC-22: The following volatile samples are associated with a continuing calibration whose corresponding initial calibration has percent relative standard deviation (%RSD) outside primary criteria. Hits are qualified "J" and non-detects are not flagged.

BWW76
trans-1,3-Dichloropropene ✓ ND

BWW76DL
trans-1,3-Dichloropropene ✓ ND

VBLKW1
trans-1,3-Dichloropropene ✓ ND

VBLKW2
trans-1,3-Dichloropropene ✓ ND

VHBLK01
trans-1,3-Dichloropropene ✓ ND

DC-23: The following volatile samples are associated with a continuing calibration percent difference (%D) outside primary criteria. Hits are qualified "J" and non-detects are qualified "UJ".

BWW76
Acetone ✓

BWW76DL
Bromomethane ✓

VBLKW1
Acetone ✓

VBLKW2
Bromomethane ✓

VHBLK01
Acetone ✓

DC-24: The following volatile samples are associated with a continuing calibration relative response factor (RRF50) outside primary criteria.
Hits are flagged "J" and non-detects are qualified "R".

BWW76
1,2-Dibromo-3-chloropropane ✓

BWW76DL
1,2-Dibromo-3-chloropropane ✓

VBLKW1
1,2-Dibromo-3-chloropropane ✓

VBLKW2
1,2-Dibromo-3-chloropropane ✓

VHBLK01
1,2-Dibromo-3-chloropropane ✓

DC-100: The following semivolatile samples are associated with a continuing calibration percent difference (%D) outside primary criteria.
Hits are qualified "J" and non-detects are qualified "UJ".

BWW62
✓ 4-Nitrophenol, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate

BWW62RE
✓ 2,2'-oxybis(1-Chloropropane), Hexachlorobutadiene, 4-Nitrophenol, Hexachlorobenzene

BWW63
✓ Caprolactam , 2,4-Dinitrophenol, Pyrene

✓ BWW63RE

✓ 2,2'-oxybis(1-Chloropropane), Hexachlorobutadiene, 4-Nitrophenol, Hexachlorobenzene

BWW64

✓ 4-Nitrophenol, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate

BWW64RE

✓ 2,2'-oxybis(1-Chloropropane), Hexachlorobutadiene, 4-Nitrophenol, Hexachlorobenzene

BWW65

✓ 4-Nitrophenol, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate

BWW66

✓ 4-Nitrophenol, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate

BWW68

✓ Caprolactam , 2,4-Dinitrophenol, Pyrene

BWW68RE

✓ 2,2'-oxybis(1-Chloropropane), Hexachlorobutadiene, 4-Nitrophenol, Hexachlorobenzene

BWW70

✓ Caprolactam , 2,4-Dinitrophenol, Pyrene

BWW76

~~bis(2-Chloroethyl)ether~~, ~~2,2'-oxybis(1-Chloropropane)~~, ~~N-Nitroso-di-n-propylamine~~, Hexachlorobutadiene

✓ ~~Caprolactam~~ , 2,4-Dinitrophenol, ~~4-Nitrophenol~~, ~~4-Chlorophenyl-phenylether~~

Indeno(1,2,3-cd)pyrene, ~~Dibenz(a,h)anthracene~~, ~~Benzo(g,h,i)perylene~~

BWX88

Benzo(g,h,i)perylene ✓

BWY10, BWY08(ML), BWY08MS, BWY08MSD.

✓ 4-Nitrophenol, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate

BWY10RE

✓ 2,2'-oxybis(1-Chloropropane), Hexachlorobutadiene, 4-Nitrophenol, Hexachlorobenzene

BWY11

✓ 4-Nitrophenol, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate

BWY12

✓ 4-Nitrophenol, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate

BWY13

✓ 4-Nitrophenol, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate

✓ BWY14

Benzaldehyde, N-Nitroso-di-n-propylamine, Hexachloroethane, Nitrobenzene
Hexachlorobutadiene, 2-Nitroaniline, 4-Nitrophenol

BWY15

4-Nitrophenol, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate

SBLKM1

4-Nitrophenol, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate

SBLKS1

Benzaldehyde, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate

SBLKW1

~~bis(2-Chloroethyl)ether~~, ~~2,2'-oxybis(1-Chloropropane)~~, ~~N-Nitroso-di-n-propylamine~~, Hexachlorobutadiene
~~Caprolactam~~ , 2,4-Dinitrophenol, ~~4-Nitrophenol~~, ~~4-Chlorophenyl-phenylether~~
~~Indeno(1,2,3-cd)pyrene~~, ~~Dibenz(a,h)anthracene~~, ~~Benzo(g,h,i)perylene~~

DC-188: The following pesticide samples are associated with an incorrect initial calibration sequence.
Visual inspection is recommended.

BWW65, BWY11, BWY12

DC-195: The RPD between the nominal and the calculated amount of an analyte in the midpoint INDA/INDB exceeded criteria.
Hits are qualified "J" and non-detects are qualified "UJ".

BWW65

4,4'-DDT

BWY11

4,4'-DDT

BWY12

4,4'-DDT

DC-196: The RT of a pesticide surrogate in the midpoint INDA/INDB fell outside the RT window established during the initial calibration.
Inspect samples following the last in-control std: non-detects are valid, if no interference & surr. are visible in expanded window; qualify hits & nondetects "R" if interference is present.

BWW62, BWW62DL, BWW63, BWW63DL, BWW64, BWW64DL
BWW65, BWW65DL, BWW66, BWW66DL, BWW67, BWW67DL
BWW68, BWW68DL, BWW69, BWW69DL, BWW70, BWW70DL

BWW76, BWW76RE, BWX88, BWX88DL, BWY07, BWY08
BWY08MS, BWY08MSD, BWY09, BWY10, BWY11, BWY11DL
BWY12, BWY12DL, BWY13, BWY13DL, BWY14, BWY14DL
BWY15, BWY15DL, PBLKS1, PBLKS2, PBLKW2, PBLKW3

DC-197: The following pesticide samples are not qualified for continuing calibration because of missing continuing calibration information.
Visual inspection of the data is required.

BWW62, BWW62DL, BWW63, BWW63DL, BWW64, BWW64DL
BWW65, BWW65DL, BWW66, BWW66DL, BWW67, BWW67DL
BWW68, BWW68DL, BWW69, BWW69DL, BWW70, BWW70DL
BWW76, BWW76RE, BWX88, BWX88DL, BWY07, BWY08
BWY08MS, BWY08MSD, BWY09, BWY10, BWY11, BWY11DL
BWY12, BWY12DL, BWY13, BWY13DL, BWY14, BWY14DL
BWY15, BWY15DL, PBLKS1, PBLKS2, PBLKW2, PBLKW3

DC-342: The following semivolatile samples are associated with a continuing calibration percent difference (%D) outside expanded criteria.
Hits are qualified "J" and non-detects are flagged "R".

2,2'-oxybis(1-Chloropropane)
BWY14

8. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than ±30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgement to determine either partial or total rejection of the data for that sample fraction.
See attached CADRE Internal Standard Report for list of samples/analytes that were qualified for exceeding internal standard criteria.

9. COMPOUND IDENTIFICATION:

A) Volatile and Semi-Volatile Fractions:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications.

B) Pesticide Fraction:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract.

See attached CADRE Quantitation Limit Report for list of samples/analytes that were qualified for %Difference between columns.
See attached CADRE System Performance Report for list of samples

Internal Standards Report

SDG NO: **BWW62** LABORATORY: **E & E INC.**

CASE NO: **27633** AGENCY INPUT FILE: **BWW62.ASF**

INTERNAL STANDARD CRITERIA

Volatile

Retention Time & Area Count Limits

	-- Primary --		- Expanded --	
	Lower	Upper	Lower	Upper
Retention time	- 0.5	+ 0.5	- 0.5	+ 0.5
Area count	/ 2	* 2	/ 4	* 4

Semivolatile

Retention Time & Area Count Limits

	-- Primary --		- Expanded --	
	Lower	Upper	Lower	Upper
Retention time	- 0.5	+ 0.5	- 0.5	+ 0.5
Area count	/ 2	* 2	/ 4	* 4

DC-40: The following volatile samples have no associated internal standard. Visual inspection of the data is required to verify the presence of internal standards.

NO Problems for VOA.

BWW62, BWW63, BWW64, BWW65, BWW66, BWW67
BWW68, BWW69, BWW70, BWX88, BWY07, BWY07MS
BWY07MSD, BWY08, BWY09, BWY10, BWY11, BWY12
BWY13, BWY14, BWY15, VBLKS1, VBLKS2, VBLKS3

DC-76: The following semivolatile samples have internal standard area counts that are outside the upper limit of primary criteria. Hits are qualified "J" and non-detects are not flagged.

BWW62

Pyrene, Butylbenzylphthalate, 3,3'-Dichlorobenzidine, Benzo(a)anthracene
Chrysene, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate, Benzo(b)fluoranthene
Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene
Benzo(g,h,i)perylene

BWW62RE

Pyrene, Butylbenzylphthalate, 3,3'-Dichlorobenzidine, Benzo(a)anthracene
Chrysene, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate, Benzo(b)fluoranthene
Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene
Benzo(g,h,i)perylene

BWW63

Pyrene, Butylbenzylphthalate, 3,3'-Dichlorobenzidine, Benzo(a)anthracene
Chrysene, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate, Benzo(b)fluoranthene
Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene
Benzo(g,h,i)perylene

BWW63RE

Di-n-octylphthalate, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene
Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(g,h,i)perylene

BWW64

Pyrene, Butylbenzylphthalate, 3,3'-Dichlorobenzidine, Benzo(a)anthracene
Chrysene, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate, Benzo(b)fluoranthene
Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene
Benzo(g,h,i)perylene

BWW64RE

Pyrene, Butylbenzylphthalate, 3,3'-Dichlorobenzidine, Benzo(a)anthracene
Chrysene, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate, Benzo(b)fluoranthene
Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene
Benzo(g,h,i)perylene

BWW68

Di-n-octylphthalate, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene
Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(g,h,i)perylene

BWW70

Pyrene, Butylbenzylphthalate, 3,3'-Dichlorobenzidine, Benzo(a)anthracene
Chrysene, bis(2-Ethylhexyl)phthalate

BWY10

Pyrene, Butylbenzylphthalate, 3,3'-Dichlorobenzidine, Benzo(a)anthracene
Chrysene, bis(2-Ethylhexyl)phthalate

BWY10RE

Pyrene, Butylbenzylphthalate, 3,3'-Dichlorobenzidine, Benzo(a)anthracene
Chrysene, bis(2-Ethylhexyl)phthalate, Di-n-octylphthalate, Benzo(b)fluoranthene
Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene
Benzo(g,h,i)perylene

DC-77: The following semivolatile samples have internal standard area

counts that are outside the lower limit of primary criteria.
Hits are qualified "J" and non-detects are qualified "UJ".

BWW68RE

Benzaldehyde, Phenol, bis(2-Chloroethyl)ether, 2-Chlorophenol
2-Methylphenol, 2,2'-oxybis(1-Chloropropane), Acetophenone , 4-Methylphenol
N-Nitroso-di-n-propylamine, Hexachloroethane, Hexachlorocyclopentadiene, 2,4,6-Trichlorophenol
2,4,5-Trichlorophenol, 1,1'-Biphenyl , 2-Chloronaphthalene, 2-Nitroaniline
Dimethylphthalate, Acenaphthylene, 2,6-Dinitrotoluene, 3-Nitroaniline
Acenaphthene, 2,4-Dinitrophenol, 4-Nitrophenol, Dibenzofuran
2,4-Dinitrotoluene, Diethylphthalate, 4-Chlorophenyl-phenylether, Fluorene
4-Nitroaniline, 4,6-Dinitro-2-methylphenol, N-Nitrosodiphenylamine, 4-Bromophenyl-phenylether
Hexachlorobenzene, Atrazine , Pentachlorophenol, Phenanthrene
Anthracene, Carbazole, Di-n-butylphthalate, Fluoranthene
Pyrene, Butylbenzylphthalate, 3,3'-Dichlorobenzidine, Benzo(a)anthracene
Chrysene, bis(2-Ethylhexyl)phthalate

Quantitation Limit Report

SDG NO: BWW62 LABORATORY: E & E INC.
CASE NO: 27633 AGENCY INPUT FILE: BWW62.ASF

CONTRACT REQUIRED SAMPLE QUANTITY

	Water	Low Soil	Med Soil
VOA	5.0 (ML)	5.0 (G)	4.0 (G)
BNA	1000.0 (ML)	30.0 (G)	1.0 (G)
PES	1000.0 (ML)	30.0 (G)	

DC-45: The following volatile samples have analyte concentrations below the quantitation limit (CRQL). All results below the CRQL are qualified "J".

BWW62
1,4-Dichlorobenzene , 1,2,4-Trichlorobenzene

BWW64
1,1-Dichloroethane , Toluene, Tetrachloroethene, 1,2,4-Trichlorobenzene

BWW76
cis-1,2-Dichloroethene , Trichloroethene, Toluene, Xylenes (total)

BWX88
1,2,4-Trichlorobenzene

BWY10
1,1-Dichloroethane , Benzene, Trichloroethene, Ethylbenzene
Xylenes (total), 1,4-Dichlorobenzene , 1,2-Dichlorobenzene , 1,2,4-Trichlorobenzene

BWY11
cis-1,2-Dichloroethene , Tetrachloroethene

BWY12
Toluene

DC-110: The following semivolatile samples have analyte concentrations below the quantitation limit (CRQL). All results below the CRQL are qualified "J".

BWW62
4-Methylphenol, Acenaphthylene, Anthracene, Pyrene
Chrysene, Benzo(b)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene
Benzo(g,h,i)perylene

BWW62RE

Acenaphthylene, Anthracene, Fluoranthene, Pyrene
Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene

BWW63
Naphthalene, 2-Methylnaphthalene, Acenaphthene, Phenanthrene
Carbazole, bis(2-Ethylhexyl)phthalate, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene
Benzo(g,h,i)perylene

BWW63RE
Acetophenone , Naphthalene, 2-Methylnaphthalene, Acenaphthene
Phenanthrene, Anthracene, Pyrene, Benzo(b)fluoranthene
Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(g,h,i)perylene

BWW64
Naphthalene, 2-Methylnaphthalene, Anthracene, Fluoranthene
Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(a)pyrene
Benzo(g,h,i)perylene

BWW64RE
Naphthalene, 2-Methylnaphthalene, Fluoranthene, Pyrene
Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene

BWW65
Naphthalene, Acenaphthylene, Phenanthrene, Anthracene
Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene
Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene
Dibenz(a,h)anthracene, Benzo(g,h,i)perylene

BWW66
Acenaphthylene, Phenanthrene, Fluoranthene, Pyrene
Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene
Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Benzo(g,h,i)perylene

BWW67
Acetophenone , Naphthalene, 2-Methylnaphthalene, Acenaphthene
Phenanthrene, Anthracene, bis(2-Ethylhexyl)phthalate, Indeno(1,2,3-cd)pyrene
Dibenz(a,h)anthracene, Benzo(g,h,i)perylene

BWW68
Naphthalene, Acenaphthene, Fluorene, Carbazole
bis(2-Ethylhexyl)phthalate, Dibenz(a,h)anthracene

BWW68RE
Naphthalene, Fluorene, Carbazole, bis(2-Ethylhexyl)phthalate

BWW69
Acetophenone , Naphthalene, 2-Methylnaphthalene, Acenaphthene

Dibenzofuran, Fluorene, Carbazole, bis(2-Ethylhexyl)phthalate
Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(g,h,i)perylene

BWW70
Benzaldehyde, Acetophenone , 4-Methylphenol, Naphthalene
2-Methylnaphthalene, 1,1'-Biphenyl , Acenaphthene, Dibenzofuran
Carbazole, Di-n-butylphthalate, Butylbenzylphthalate, Dibenz(a,h)anthracene
Benzo(g,h,i)perylene

BWW70DL
Naphthalene, 2-Methylnaphthalene, Acenaphthylene, Phenanthrene
Anthracene, Benzo(a)anthracene, bis(2-Ethylhexyl)phthalate, Benzo(b)fluoranthene
Benzo(k)fluoranthene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(g,h,i)perylene

BWX88
Naphthalene, Acenaphthylene, Acenaphthene, Dibenzofuran
Fluorene, Anthracene, Carbazole, bis(2-Ethylhexyl)phthalate
Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(g,h,i)perylene

BWY07
Acetophenone , Acenaphthylene, Phenanthrene, Anthracene
Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene
Benzo(g,h,i)perylene

BWY07MS
Anthracene, Carbazole, Benzo(k)fluoranthene, Indeno(1,2,3-cd)pyrene
Dibenz(a,h)anthracene, Benzo(g,h,i)perylene

BWY07MSD
Caprolactam , Acenaphthylene, Fluorene, Anthracene
Carbazole, Butylbenzylphthalate, bis(2-Ethylhexyl)phthalate, Indeno(1,2,3-cd)pyrene
Dibenz(a,h)anthracene, Benzo(g,h,i)perylene

BWY08
Acetophenone , Acenaphthylene, Acenaphthene, Dibenzofuran
Fluorene, Carbazole, bis(2-Ethylhexyl)phthalate, Dibenz(a,h)anthracene
Benzo(g,h,i)perylene

BWY09
Acetophenone , Acenaphthylene, Acenaphthene, Dibenzofuran
Fluorene, Anthracene, Carbazole, bis(2-Ethylhexyl)phthalate
Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(g,h,i)perylene

BWY10
Acetophenone , Pyrene, Benzo(g,h,i)perylene

BWY10RE

Acetophenone , Benzo(b)fluoranthene, Benzo(a)pyrene

BWY11

bis(2-Ethylhexyl)phthalate, Benzo(g,h,i)perylene

BWY12

bis(2-Ethylhexyl)phthalate, Benzo(g,h,i)perylene

BWY13

Acenaphthylene, Fluoranthene, Pyrene, Benzo(a)anthracene
Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene
Indeno(1,2,3-cd)pyrene, Benzo(g,h,i)perylene

BWY14

Acetophenone , Naphthalene, 2-Methylnaphthalene, Acenaphthene
Fluorene, Carbazole, bis(2-Ethylhexyl)phthalate, Benzo(b)fluoranthene
Dibenz(a,h)anthracene, Benzo(g,h,i)perylene

BWY15

Acenaphthylene, Fluoranthene, Pyrene, Benzo(a)anthracene
Chrysene, bis(2-Ethylhexyl)phthalate, Benzo(b)fluoranthene, Benzo(k)fluoranthene
Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Benzo(g,h,i)perylene

SBLKS2

Butylbenzylphthalate

DC-158: The following pesticide samples have analyte concentrations below the quantitation limit (CRQL). All results below the CRQL are qualified "J".

BWW63DL

Aroclor-1242

BWW65DL

Aroclor-1242

BWW66DL

Aroclor-1242

BWW68DL

Aroclor-1260

BWW69DL

Aroclor-1242, Aroclor-1260

BWW70DL

Aroclor-1260

BWY13DL
Aroclor-1242

BWY14DL
Aroclor-1242

BWY15DL
alpha-BHC, beta-BHC, Aroclor-1242

DC-422: The following pesticide samples have analytes for which the percent difference between column results exceeds primary criteria. Hits > CRQL are flagged "J". Or: if %D is > 50% and value is < CRQL, sample result is elevated to the CRQL and qualified "U".

BWW63
beta-BHC J ✓

BWW63DL
Heptachlor epoxide J ✓

BWW64
Aroclor-1260 J ✓

BWW65
Aroclor-1260 J

BWW66
Aroclor-1242 J

BWW66DL
Aroclor-1260 J

BWW67 J
beta-BHC, Aroclor-1260 → J

BWW67DL
Aroclor-1260 J

BWW68 J J J J
alpha-BHC, beta-BHC, Aldrin, 4,4'-DDT

BWW68DL J J
Heptachlor epoxide, 4,4'-DDT

BWW69
Aroclor-1260 J

BWW69DL J
Heptachlor epoxide

BWW70DL
Aroclor-1260 J

BWX88
Endrin J

BWY07
Aldrin J

BWY08 J
4,4'-DDD, Aroclor-1260 → J

BWY08MS J J J
Aldrin, 4,4'-DDD, 4,4'-DDT

BWY08MSD J J
Aldrin, 4,4'-DDT

BWY12 ~~J~~ J
Aroclor-1242, Aroclor-1260

BWY15DL J J
Aroclor-1242, Aroclor-1260

DC-423: The following pesticide samples have analytes for which the percent difference between column results exceeds expanded criteria. Hits > CRQL are flagged "NJ"; or "R" when %D >100; or "NJ" when %D is between 100-200 (interference detected). Hits < CRQL are elevated to the CRQL and qualified "U".

BWW63
Aroclor-1260 JN ✓

BWW63DL
Aroclor-1260 JN ✓

BWW65DL
Aroclor-1260 JN

BWW69DL
Aroclor-1260 JN

BWX88 R JN R JN
Aldrin, Heptachlor epoxide, 4,4'-DDE, 4,4'-DDD

BWX88DL R R
4,4'-DDD, 4,4'-DDT

BWY07
Heptachlor epoxide JN

BWY08 U JN JN JN
Aldrin, Heptachlor epoxide, 4,4'-DDE, 4,4'-DDT

BWY08MS JN R
Heptachlor epoxide, 4,4'-DDE

BWY08MSD JN R
Heptachlor epoxide, 4,4'-DDE

System Performance Report

SDG NO: **BWW62** LABORATORY: **E & E INC.**

CASE NO: **27633** AGENCY INPUT FILE: **BWW62.ASF**

SYSTEM PERFORMANCE CRITERIA

Resolution & Breakdown Limits

RESC percent resolution	60.00
PEM percent resolution	90.00
4,4'-DDT percent breakdown	20.00
Endrin percent breakdown	20.00
Combined percent breakdown	30.00

DC-210: The following pesticide samples had no associated initial PEM. Visual inspection of the data is required to verify the presence of the PEM stardard.

BWW65, BWY11, BWY12 ok

that were qualified due to Failing calibration verification standard criteria.
Hits qualified "U"
beta-BHC- W62
Heptachlor- W63, W68
Aldrin- W65DL, W68DL, W69DL, Y08, Y11DL, Y14DL
Heptachlor epoxide- Y13DL
4,4'-DDE- W63DL, W68DL, W69DL
Endrin- W62, W63, W66, W69, W70, Y11DL, Y13, Y14, Y15DL
Endosulfan II- Y14
4,4'-DDD- W67DL, W70, Y14DL
Endosulfan sulfate- W62, W63DL, W70, Y15DL
Methoxychlor- W64, W65, W65DL
Endrin ketone- W68, Y15DL, Y08MSD
Endrin aldehyde- W67DL, Y13, Y15DL, Y08MS
alpha-Chlordane- W68DL, Y15DL, Y08MSD
gamma-Chlordane- W64DL, W69DL, Y08, Y12DL, Y14DL

Hits qualified "R"
Heptachlor- Y11
Aldrin- W62, W67, W70, X88, Y11, Y12
Dieldrin- Y12
4,4'-DDE- W63, W65, W67, X88, Y11, Y08MS, Y08MSD
4,4'-DDD- X88DL
4,4'-DDT- W66, W67, W69, X88DL, Y11, Y13, Y14, Y15
Endrin ketone- W64, W69
Endrin aldehyde- W66, W67, Y14, Y15
alpha-Chlordane- W65, W66, W67, W68, Y15
gamma-Chlordane- W62, W64, W70, Y11, Y11DL

Hits qualified "J"
alpha-BHC- W68, W69DL, Y12
beta-BHC- W63, W67, W68, Y11, Y11DL
delta-BHC- W62DL, W68, Y12DL, Y14, Y15DL
Heptachlor- Y12
Aldrin- W63, W68, W69, Y07, Y13DL, Y14, Y15DL, Y08MS, Y08MSD
Heptachlor epoxide- W62, W62DL, W63DL, W64DL, W66DL, W68DL, W69DL, W70, W70DL, Y11, Y11DL, Y12DL, Y13, Y14, Y14DL, Y15, Y15DL
Dieldrin- Y14, Y14DL
4,4'-DDE- W62, W64DL, Y12, Y15DL
Endrin- X88
4,4'-DDD- W65, W66, Y08, Y11DL, Y13DL, Y15DL, Y08MS
4,4'-DDT- W68, W68DL, Y08MS, Y08MSD
Methoxychlor- W64DL*, W68DL*, W70*, Y11, Y13*, Y14DL*
Endrin Aldehyde- W63, W63DL, W68, Y12
gamma-Chlordane- W63, W63DL, W68, Y12
PCB1242- W66, Y15DL
PCB1260- W64, W65, W66DL, W67, W67DL, W69, W70DL, Y08, Y12, Y15DL

Hits qualified "JN"
beta-BHC- W64, Y12
Aldrin- W63DL, W65, W66, Y15
Heptachlor epoxide- X88, Y07, Y08, Y12, Y08MS, Y08MSD
Dieldrin- W64, Y11
4,4'-DDE- W64, W66, W68, W69, Y08, Y15
Endrin- Y12
4,4'-DDD- W67, X88
4,4'-DDT- W63, Y08
Methoxychlor- W69
Endrin ketone- Y15
Endrin Aldehyde- W65, W69
gamma-Chlordane- Y14
PCB1242- W65
PCB1260- W63, W63DL, W65DL, W69DL

10. CONTRACT PROBLEMS NON-COMPLIANCE:

VOA:

The Storage Blank was analyzed before all samples were analyzed. As per OLM04.2, Exhibit D Volatiles, sec. 12.1.1.2, p. D-48 VOA, a storage blank "is stored **WITH** the samples in the SDG under **THE SAME CONDITIONS**. **After ALL samples in the SDG have been ANALYZED, the storage blank is analyzed".** A copy of form V's is provided which indicates the date of analysis for each sample. Samples were not qualified for holding Blank criteria.

BNA:

Sample BWW70 has an Internal Standard outside QC limits, but sample was not reanalysed as per Exh. D SVOA Secs. 11.3.6 and 11.4.3. Instead, a 4x dilution, analyzed prior to BWW70, was submitted.

Sample BWY08DL is not required. Sample BWY08 was originally analyzed straight. All surrogates and all Internal Standards were within the required QC limits. None of the target analytes exceeded the linear calibration range. Therefore, this was a valid analysis and no further action was required. The Lab reextracted and reanalysed this sample plus an MS/MSD as a Medium level. No explanation is given in the SDG narrative as to why this action was taken. The dilution was analyzed prior to the straight run. Also, BWY09 is a duplicate of BWY08 and BWY09 was successfully analyzed as a low level.

BWY08 and BWY09 are Duplicates. Even though the results are fairly similar, the % Moisture varies significantly. The %M for BWY08 is 27%, and the %M for BWY09 is 39%.

PEST:

As per the Traffic Reports the Lab had to perform an MS/MSD on

Percent Moisture Report

SDG NO: **BWW62**
CASE NO: **27633**

LABORATORY: **E & E INC.**
AGENCY INPUT FILE: **BWW62.ASF**

PERCENT MOISTURE LIMITS

	Primary	Expanded
VOA	50%	90%
BNA	50%	90%
PES	50%	90%

DC-126: Percent moisture content of the following volatile soil samples exceeds primary criteria. Hits are qualified "J" and non-detects are qualified "UJ".

BWW69, BWY07, BWY07MS, BWY07MSD, BWY10, BWY11
BWY15

DC-128: Percent moisture content of the following semivolatile soil samples exceeds primary criteria. Hits are qualified "J" and non-detects are qualified "UJ".

BWW67, BWY07, BWY07MS, BWY07MSD, BWY10, BWY10RE
BWY11, BWY15, BWW69

DC-184: Percent moisture content of the following pesticide soil samples exceeds primary criteria.
Hits are qualified "J" and non-detects are qualified "UJ".

BWW69, BWW69DL, BWY07, BWY10, BWY11, BWY11DL
BWY15, BWY15DL, ~~BWY07MS, BWY07MSD~~

sample BWY07. For the Pest/PCB fraction sample BWY08 was chosen. No explanation was given as to the selection of this sample. The VOA and BNA fractions correctly used sample BWY07.

Method Blank PBLKW2 contains a positive hit for Methoxychlor above the CRQL. The Blank was reextracted and the problem was noted in the SDG Narrative.

11. FIELD DOCUMENTATION:

12. OTHER PROBLEMS

VOA:

Most of the form IV's for the Method Blank summary were reported in duplicates. The Validator crossed off the unnecessary forms.

The Continuing Calibrations analyzed on 12/07/99 and on 12/12/99 on Inst. 7001D, and on 12/09/99 and 12/10/99 on Inst. CLYDE II are associated with the wrong raw data. The Validator reassembled the sequence of the Chromatograms in the proper order and renumbered the pages.

The values reported on the water Surrogate form are incorrect. Calculation of the surrogates for samples VBLKW1, VHBLK1, BWW76 is correct on the quant report. The values transferred to form II, though, are incorrect. The calculated values for sample BWW76DL are incorrect on the quant report. The Validator recalculated the results and reported the right values on the Surrogate form. All Surrogates are within QC limits.

BNA:

Sample BWW67 results were calculated based on the wrong % Moisture. Based on the Moisture calculation, the Lab should have reported 25 and not 57 for % Moisture. The VOA fraction reported correctly 25. Also, for the same sample, the wrong pH value was entered. The correct pH value is 7.80 and not 7.60. The Validator recalculated the results.

The Lab reported 58 for % Moisture for sample BWY15. The correct value is 59%. The Validator recalculated the results.

Sample BWW63RE was incorrectly reported on the Method Blank form 4B under method blank SBLKM1. The Validator corrected the form, and reported the sample under the correct method blank SBLKS1. The sample was not reextracted as a medium level. It was just reinjected to verify Internal Standard problem.

Sample BWW66 was reported twice. The Validator removed the second copy, pages 813-830, and placed it at the end of the SDG.

Sample BWW70 was reported twice under two different method blanks. The correct method blank associated with this sample is SBLKS1. The Validator deleted BWW70 from form 4B under SBLKM1, and corrected the date of extraction on the Form I.

Pest/PCB:
The raw data chromatograms for sample BWW64, (pp. 1905-1908) were inserted behind sample BWW63. The Validator inserted the chromatograms in the proper place and renumbered the pages.

13. **This package contains reextractions, reanalyses or dilutions. Upon reviewing the QA results, the following Form 1(s) are identified not to be used.**

VOA:

BWW76DL

BNA:

BWW62RE, W63RE, W64RE, W68RE, BWY10RE, W70DL, Y08DL.

PEST:

BWW76RE, W62DL, W63DL, W64DL, W65DL, W66DL, W67DL, W68DL, W69DL, W70DL, X88DL, Y11DL, Y12DL, Y13DL, Y14DL, Y15DL.

DPO: []ACTION [X]FYI REGION__2_

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO._27633__ LABORATORY____EANDE_____

SDG NO. BWW62 _ DATA USER___EPA/Region II_____

SOW_OLM04.2 _____ REVIEW COMPLETION DATE_March 6, 2000_

NO. OF SAMPLES___1___WATER ___19____SOIL _____OTHER

REVIEWER: [] ESD [x] ESAT [] OTHER, CONTRACTOR_____

QC ITEM	VOA	BNA	PEST		
HOLDING TIMES	O	M	M		
GC-MS PERFORMANCE	O	O	O		
INITIAL CALIBRATIONS	X	O	X		
CONTINUING CALIBRATIONS	X	O	O		
FIELD BLANKS(F = N/A)	O	O	O		
LABORATORY BLANKS	O	O	O		
SURROGATES	O	Z	M		
MATRIX SPIKE/DUPLICATES	O	O	O		
% MOISTURE	M	M	M		
INTERNAL STANDARDS	O	O	F		
COMPOUND IDENTIFICATION	Z	O	M		
COMPOUND QUANTITATION	O	O	O		
SYSTEM PERFORMANCE	O	O	O		
OVERALL ASSESSMENT	M	M	M		

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

DPO ACTION ITEMS:
AREAS OF CONCERN:

DATA REJECTION SUMMARY

Type of Review: Organic Date : March 6, 2000 Case : 27633, SDG# BWW62
Site Name: Diamond Head Oil Refinery Lab Name: EANDE Reviewer"s Initial : AP
Number of Samples: 1 Waters, 19 Soils, + QC +Dilutions/Reanalyses

Analytes Rejected Due To Exceeding Review Criteria For: Number of Compounds /Number of Fractions (Samples)

	Surrogates	Holding Times	Calibration	Contamination	ID	Internal Standard	Other*	Total # Samples	Total # REJECTED/ Total Analytes in samples Percent		
VOA(48)	0	0	5	0	0	0	0	29	5	1392	0
AE(14)	0	0	0	0	0	0	0	35	0	490	0
BN(51)	0	0	1	0	0	0	0	35	1	1785	0
PEST(21)	0	0	0	0	40	0	0	42	40	882	5
PCB(7)	0	0	0	0	0	0	0	42	0	294	0

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Analytes Estimated Due To Exceeding Review Criteria For: Number of Compounds /Number of Fractions (Samples)

	Surrogates	Holding Times	Calibration	Contamination	ID	Internal Standard	Other*	Total # Samples	Total # ESTIMATED/ Total Analytes in samples Percent		
VOA(48)	0	0	22	0	0	0	450	29	472	1392	34
AE(14)	0	0	19	0	0	10	112	35	141	490	29
BN(51)	0	0	54	0	0	87	408	35	549	1785	31
PEST(21)	19	21	2	0	107	0	78	42	227	882	26
PCB(7)	7	7	0	0	17	0	53	42	84	294	29

*** % MOISTURE**

Contract Laboratory Analytical Services Support (CLASS) Record of Communication

Name: Carol Robertson

Date/Time of Contact: 02/16/2000 1:40 PM

Contact/Org./Phone # Caryn Wojtowicz/ Ecology & Environment, Inc./ (716) 685-8080

Type of Inquiry: Other

Contact Recv'd Via: ☑ Phone ☐ Fax ☐ Vmail ☐ Memo ☐ Other

Initiated By: ☐ EPA ☑ CLASS ☐ Engr. Contr. ☐ Lab ☐ Region ☐ SCC ☐ Other

Lab: EANDE **Contract #:** **Case #:** 27633 **SDG:** BWW62 **Region:** 2

SOW: OLM041 **Affected Samples:** SDG BZA73/SDG BZA35/SDG BWW62 **Invoice #:**

Discussion/Issue:

02/16/2000 Region II contacted CLASS concerning several discrepancies between hardcopy and diskette data submitted by Ecology and Environment Laboratory. CLASS contacted the laboratory and discussed the following issues:

Case 27633/SDG BWW62

1. Samples BWY08DL, BWY08MS, and BWY08MSD were not included on the diskette but were included in the hardcopy data package.

2. For the Volatile fraction, no TIC data were reported on the diskette for samples BWW66, BWW67, BWW68, BWW69, BWW70, BWW76, BWW76DL, BWW88, BWY07, BWY08, BWY09, BWY11, BWY13, BWY14, BWY15, VBLKS1, VBLKS2, VBLKS3, VBLKW1, VBLKW2, and VHBLK01. TIC data were present in the hardcopy data.

3. For the BNA fraction, no TIC data were reported on the diskette for samples BWW66, BWY08DL, and SBLKM1. TIC data were present in the hardcopy data.

4. The Instrument ID "IRIS" was on the hardcopy but not included on the diskette, therefore the data associated with the Instrument "IRIS" was incorrectly associated with another Instrument on the diskette.

Case 27634/SDG BZA73

1. The hardcopy contained samples BZA73 and BZA73DL however the diskette only included sample BZA73.

2. The internal standard areas reported on the diskette for sample BZA73 were different from those reported on the hardcopy.

3. Different CRQLs were reported for sample BZA73 on the diskette than on the hardcopy data for the sample.

Case 27634/SDG BZA35

The CRQLs on the diskette were different from those on the hardcopy for samples BZA27, BZA28, BZARE, BZA29, and BZA30.

CLPAS Notification: No **Completed Date/Time:** 02/17/2000 3:19 PM

Related ROCs: **Date/Time:** **W.A.#:** CCS

Distribution: ◉ Lab ◉ Region ◉ CLASS ○ AOC ○ Work Assign. Man.

Resolution:

02/[illegible]/2000 The laboratory explained that for SDG BWW62 BNA fraction, they analyzed the original sample BWY08 as a low level soil. The laboratory reanalyzed the sample at the medium level and named the reanalysis BWY08DL. The associated MS and MSD (BWY08MS and BWY08MSD, respectively) analyses were performed at the medium level however, the laboratory was unable to match the MS and MSD samples to the diluted sample. Therefore, the laboratory did not submit samples BWY08DL, BWY08MS, and BWYMSD on the diskette for SDG BWW62.

The laboratory informed CCS that they would send a memo addressing all of the above issues and any corrective actions that the laboratory will take to assure that these issues do not occur again. The laboratory will address the memo to the attention of CCS and carbon copy Terry Smith (Organic Program Manager at EPA), Jennifer Feranda (Region II CLPPO and RSCC), and Nazy Abousaeedi (CLASS CCS WAM).

CLPAS Notification: No **Completed Date/Time:** 02/17/2000 3:19 PM

Related ROCs: **Date/Time:** **W.A.#:** CCS

Distribution: ◉ Lab ◉ Region ◉ CLASS ○ AOC ○ Work Assign. Man.

Analytical Results (Qualified Data)

Case #: 27633
SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Number of Soil Samples : 19
Number of Water Samples : 1

Sample Number :	BWW62		BWW63		BWW64		BWW65		BWW66	
Sampling Location :	6363-SD10		6363-SD11		6363-SD12		6363-SD13		6363-SD14	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	14:15		13:45		14:10		14:00		13:40	
%Moisture :	22		33		26		35		28	
pH :										
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	13	U	15	U	13	U	13	U	13	U
Chloromethane	13	U	15	U	13	U	13	U	13	U
Vinyl Chloride	13	U	15	U	13	U	13	U	13	U
Bromomethane	13	U	15	U	13	U	13	U	13	U
Chloroethane	13	U	15	U	13	U	13	U	13	U
Trichlorofluoromethane	13	U	15	U	13	U	13	U	13	U
1,1-Dichloroethene	13	U	15	U	13	U	13	U	13	U
1,1,2-Trichloro-1,2,2-trifluoroethane	13	U	15	U	13	U	13	U	13	U
Acetone	77	U	15	U	36	U	13	U	13	U
Carbon Disulfide	13	U	15	U	13	U	13	U	13	U
Methyl Acetate	13	U	15	U	13	U	13	U	13	U
Methylene Chloride	13	U	15	U	13	U	13	U	13	U
trans-1,2-Dichloroethene	13	U	15	U	13	U	13	U	13	U
tert-Butyl Methyl Ether	13	U	15	U	13	U	13	U	13	U
1,1-Dichloroethane	13	U	15	U	2	J	13	U	13	U
cis-1,2-Dichloroethene	13	U	15	U	13	U	13	U	13	U
2-Butanone	13	U	15	U	13	U	13	U	13	U
Chloroform	13	U	15	U	13	U	13	U	13	U
1,1,1-Trichloroethane	13	U	15	U	13	U	13	U	13	U
Cyclohexane	13	U	15	U	13	U	13	U	13	U
Carbon Tetrachloride	13	U	15	U	13	U	13	U	13	U
Benzene	13	U	15	U	13	U	13	U	13	U
1,2-Dichloroethane	13	U	15	U	13	U	13	U	13	U
Trichloroethene	13	U	15	U	13	U	13	U	13	U
Methylcyclohexane	13	U	15	U	13	U	13	U	13	U
1,2-Dichloropropane	13	U	15	U	13	U	13	U	13	U
Bromodichloromethane	13	U	15	U	13	U	13	U	13	U
cis-1,3-Dichloropropene	13	U	15	U	13	U	13	U	13	U
4-Methyl-2-pentanone	13	U	15	U	13	U	13	U	13	U
Toluene	42		15	U	13	U	13	U	13	U
trans-1,3-Dichloropropene	13	U	15	U	13	U	13	U	13	U
1,1,2-Trichloroethane	13	U	15	U	13	U	13	U	13	U
Tetrachloroethene	13	U	15	U	2	J	13	U	13	U
2-Hexanone	13	U	15	U	13	U	13	U	13	U
Dibromochloromethane	13	U	15	U	13	U	13	U	13	U
1,2-Dibromoethane	13	U	15	U	13	U	13	U	13	U
Chlorobenzene	13	U	15	U	13	U	13	U	13	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWW62		BWW63		BWW64		BWW65		BWW66	
Sampling Location :	6363-SD10		6363-SD11		6363-SD12		6363-SD13		6363-SD14	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	14:15		13:45		14:10		14:00		13:40	
%Moisture :	22		33		26		35		28	
pH :										
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Ethylbenzene	13	U	15	U	13	U	13	U	13	U
Xylenes (total)	13	U	15	U	13	U	13	U	13	U
Styrene	13	U	15	U	13	U	13	U	13	U
Bromoform	13	U	15	U	13	U	13	U	13	U
Isopropylbenzene	13	U	15	U	13	U	13	U	13	U
1,1,2,2-Tetrachloroethane	13	U	15	U	13	U	13	U	13	U
1,3-Dichlorobenzene	13	U	15	U	13	U	13	U	13	U
1,4-Dichlorobenzene	1	J	15	U	13	U	13	U	13	U
1,2-Dichlorobenzene	13	U	15	U	13	U	13	U	13	U
1,2-Dibromo-3-chloropropane	13	UJ	15	UJ	13	UJ	13	U	13	U
1,2,4-Trichlorobenzene	2	J	15	U	8	J	13	U	13	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date : ٦\١٢\١

Sample Number :	BWW67		BWW68		BWW69		BWW70		BWX88	
Sampling Location :	6363-SD15		6363-SD16		6363-SD17		6363-SD18		6363-SS07	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/06/1999	
Time Sampled :	13:55		10:40		10:30		10:30		14:00	
%Moisture :	25		33		57		34		17	
pH :										
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	13	U	13	U	22	UJ	14	U	12	UJ
Chloromethane	13	U	13	U	22	UJ	14	U	12	U
Vinyl Chloride	13	U	13	U	22	UJ	14	U	12	U
Bromomethane	13	U	13	U	22	UJ	14	U	12	U
Chloroethane	13	U	13	U	22	UJ	14	U	12	U
Trichlorofluoromethane	13	U	13	U	22	UJ	14	U	12	U
1,1-Dichloroethene	13	U	13	U	22	UJ	14	U	12	U
1,1,2-Trichloro-1,2,2-trifluoroethane	13	U	13	U	22	UJ	14	U	12	U
Acetone	13	U	13	U	22	UJ	14	U	79	U
Carbon Disulfide	13	U	13	U	22	UJ	14	U	12	U
Methyl Acetate	13	U	13	U	22	UJ	14	U	12	U
Methylene Chloride	13	U	13	U	22	UJ	14	U	12	U
trans-1,2-Dichloroethene	13	U	13	U	22	UJ	14	U	12	U
tert-Butyl Methyl Ether	13	U	13	U	22	UJ	14	U	12	U
1,1-Dichloroethane	13	U	13	U	22	UJ	14	U	12	U
cis-1,2-Dichloroethene	13	U	13	U	22	UJ	14	U	12	U
2-Butanone	13	U	13	U	22	UJ	14	U	12	U
Chloroform	13	U	13	U	22	UJ	14	U	12	U
1,1,1-Trichloroethane	13	U	13	U	22	UJ	14	U	12	U
Cyclohexane	13	U	13	U	22	UJ	14	U	12	U
Carbon Tetrachloride	13	U	13	U	22	UJ	14	U	12	U
Benzene	13	U	13	U	22	UJ	14	U	12	U
1,2-Dichloroethane	13	U	13	U	22	UJ	14	U	12	U
Trichloroethene	13	U	13	U	22	UJ	14	U	12	U
Methylcyclohexane	13	U	13	U	22	UJ	14	U	12	U
1,2-Dichloropropane	13	U	13	U	22	UJ	14	U	12	U
Bromodichloromethane	13	U	13	U	22	UJ	14	U	12	U
cis-1,3-Dichloropropene	13	U	13	U	22	UJ	14	U	12	U
4-Methyl-2-pentanone	13	U	13	U	22	UJ	14	U	12	U
Toluene	13	U	13	U	22	UJ	14	U	12	U
trans-1,3-Dichloropropene	13	U	13	U	22	UJ	14	U	12	U
1,1,2-Trichloroethane	13	U	13	U	22	UJ	14	U	12	U
Tetrachloroethene	13	U	13	U	22	UJ	14	U	12	U
2-Hexanone	13	U	13	U	22	UJ	14	U	12	U
Dibromochloromethane	13	U	13	U	22	UJ	14	U	12	U
1,2-Dibromoethane	13	U	13	U	22	UJ	14	U	12	U
Chlorobenzene	13	U	13	U	22	UJ	14	U	12	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWW67		BWW68		BWW69		BWW70		BWX88	
Sampling Location :	6363-SD15		6363-SD16		6363-SD17		6363-SD18		6363-SS07	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/06/1999	
Time Sampled :	13:55		10:40		10:30		10:30		14:00	
%Moisture :	25		33		57		34		17	
pH :										
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Ethylbenzene	13	U	13	U	22	UJ	14	U	12	U
Xylenes (total)	13	U	13	U	22	UJ	14	U	12	U
Styrene	13	U	13	U	22	UJ	14	U	12	U
Bromoform	13	U	13	U	22	UJ	14	U	12	U
Isopropylbenzene	13	U	13	U	22	UJ	14	U	12	U
1,1,2,2-Tetrachloroethane	13	U	13	U	22	UJ	14	U	12	U
1,3-Dichlorobenzene	13	U	13	U	22	UJ	14	U	12	U
1,4-Dichlorobenzene	13	U	13	U	22	UJ	14	U	12	U
1,2-Dichlorobenzene	13	U	13	U	22	UJ	14	U	12	U
1,2-Dibromo-3-chloropropane	13	U	13	U	22	UJ	14	U	12	U
1,2,4-Trichlorobenzene	13	U	13	U	22	UJ	14	U	1	J

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY07		BWY07MS		BWY07MSD		BWY08		BWY09	
Sampling Location :	6363-SD01		6363-SD01		6363-SD01		6363-SD02		6363-SD03	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	10:25		10:25		10:25		10:40		10:45	
%Moisture :	65		65		65		27		39	
pH :										
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	27	UJ	27	UJ	28	UJ	12	U	16	U
Chloromethane	27	UJ	27	UJ	28	UJ	12	U	16	U
Vinyl Chloride	27	UJ	27	UJ	28	UJ	12	U	16	U
Bromomethane	27	UJ	27	UJ	28	UJ	12	U	16	U
Chloroethane	27	UJ	27	UJ	28	UJ	12	U	16	U
Trichlorofluoromethane	27	UJ	27	UJ	28	UJ	12	U	16	U
1,1-Dichloroethene	27	UJ	140	J	99	J	12	U	16	U
1,1,2-Trichloro-1,2,2-trifluoroethane	27	UJ	27	UJ	28	UJ	12	U	16	U
Acetone	27	UJ	27	UJ	28	UJ	12	U	16	U
Carbon Disulfide	27	UJ	27	UJ	28	UJ	12	U	16	U
Methyl Acetate	27	UJ	27	UJ	28	UJ	12	U	16	U
Methylene Chloride	27	UJ	27	UJ	28	UJ	12	U	16	U
trans-1,2-Dichloroethene	27	UJ	27	UJ	28	UJ	12	U	16	U
tert-Butyl Methyl Ether	27	UJ	27	UJ	28	UJ	12	U	16	U
1,1-Dichloroethane	27	UJ	27	UJ	28	UJ	12	U	16	U
cis-1,2-Dichloroethene	27	UJ	27	UJ	28	UJ	12	U	16	U
2-Butanone	27	UJ	27	UJ	28	UJ	12	U	16	U
Chloroform	27	UJ	27	UJ	28	UJ	12	U	16	U
1,1,1-Trichloroethane	27	UJ	27	UJ	28	UJ	12	U	16	U
Cyclohexane	27	UJ	27	UJ	28	UJ	12	U	16	U
Carbon Tetrachloride	27	UJ	27	UJ	28	UJ	12	U	16	U
Benzene	27	UJ	120	J	92	J	12	U	16	U
1,2-Dichloroethane	27	UJ	27	UJ	28	UJ	12	U	16	U
Trichloroethene	27	UJ	100	J	77	J	12	U	16	U
Methylcyclohexane	27	UJ	27	UJ	28	UJ	12	U	16	U
1,2-Dichloropropane	27	UJ	27	UJ	28	UJ	12	U	16	U
Bromodichloromethane	27	UJ	27	UJ	28	UJ	12	U	16	U
cis-1,3-Dichloropropene	27	UJ	27	UJ	28	UJ	12	U	16	U
4-Methyl-2-pentanone	27	UJ	27	UJ	28	UJ	12	U	16	U
Toluene	27	UJ	140	J	89	J	12	U	16	U
trans-1,3-Dichloropropene	27	UJ	27	UJ	28	UJ	12	U	16	U
1,1,2-Trichloroethane	27	UJ	27	UJ	28	UJ	12	U	16	U
Tetrachloroethene	27	UJ	27	UJ	28	UJ	12	U	16	U
2-Hexanone	27	UJ	27	UJ	28	UJ	12	U	16	U
Dibromochloromethane	27	UJ	27	UJ	28	UJ	12	U	16	U
1,2-Dibromoethane	27	UJ	27	UJ	28	UJ	12	U	16	U
Chlorobenzene	27	UJ	110	J	70	J	12	U	16	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY07		BWY07MS		BWY07MSD		BWY08		BWY09	
Sampling Location :	6363-SD01		6363-SD01		6363-SD01		6363-SD02		6363-SD03	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	10:25		10:25		10:25		10:40		10:45	
%Moisture :	65		65		65		27		39	
pH :										
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Ethylbenzene	27	UJ	27	UJ	28	UJ	12	U	16	U
Xylenes (total)	27	UJ	27	UJ	28	UJ	12	U	16	U
Styrene	27	UJ	27	UJ	28	UJ	12	U	16	U
Bromoform	27	UJ	27	UJ	28	UJ	12	U	16	U
Isopropylbenzene	27	UJ	27	UJ	28	UJ	12	U	16	U
1,1,2,2-Tetrachloroethane	27	UJ	27	UJ	28	UJ	12	U	16	U
1,3-Dichlorobenzene	27	UJ	27	UJ	28	UJ	12	U	16	U
1,4-Dichlorobenzene	27	UJ	27	UJ	28	UJ	12	U	16	U
1,2-Dichlorobenzene	27	UJ	27	UJ	28	UJ	12	U	16	U
1,2-Dibromo-3-chloropropane	27	UJ	27	UJ	28	UJ	12	UJ	16	UJ
1,2,4-Trichlorobenzene	27	UJ	27	UJ	28	UJ	12	U	16	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY10		BWY11		BWY12		BWY13		BWY14	
Sampling Location :	6363-SD04		6363-SD05		6363-SD06		6363-SD07		6363-SD08	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	11:30		11:33		11:40		11:45		12:00	
%Moisture :	57		55		28		36		42	
pH :										
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	23	UJ	22	UJ	13	U	13	U	16	U
Chloromethane	23	UJ	22	UJ	13	U	13	U	16	U
Vinyl Chloride	23	UJ	22	UJ	13	U	13	U	16	U
Bromomethane	23	UJ	22	UJ	13	U	13	U	16	U
Chloroethane	23	UJ	22	UJ	13	U	13	U	16	U
Trichlorofluoromethane	23	UJ	22	UJ	13	U	13	U	16	U
1,1-Dichloroethene	23	UJ	22	UJ	13	U	13	U	16	U
1,1,2-Trichloro-1,2,2-trifluoroethane	23	UJ	22	UJ	13	U	13	U	16	U
Acetone	61	UJ	22	UJ	16	U	13	U	16	U
Carbon Disulfide	23	UJ	22	UJ	13	U	13	U	16	U
Methyl Acetate	23	UJ	22	UJ	13	U	13	U	16	U
Methylene Chloride	23	UJ	22	UJ	13	U	13	U	16	U
trans-1,2-Dichloroethene	23	UJ	22	UJ	13	U	13	U	16	U
tert-Butyl Methyl Ether	23	UJ	22	UJ	13	U	13	U	16	U
1,1-Dichloroethane	10	J	22	UJ	13	U	13	U	16	U
cis-1,2-Dichloroethene	300	J	22	UJ	13	U	13	U	16	U
2-Butanone	23	UJ	22	UJ	13	U	13	U	16	U
Chloroform	23	UJ	22	UJ	13	U	13	U	16	U
1,1,1-Trichloroethane	23	J	22	UJ	13	U	13	U	16	U
Cyclohexane	23	UJ	22	UJ	13	U	13	U	16	U
Carbon Tetrachloride	23	UJ	22	UJ	13	U	13	U	16	U
Benzene	3	J	22	UJ	13	U	13	U	16	U
1,2-Dichloroethane	23	UJ	22	UJ	13	U	13	U	16	U
Trichloroethene	23	UJ	22	UJ	13	U	13	U	16	U
Methylcyclohexane	23	UJ	22	UJ	13	U	13	U	16	U
1,2-Dichloropropane	23	UJ	22	UJ	13	U	13	U	16	U
Bromodichloromethane	23	UJ	22	UJ	13	U	13	U	16	U
cis-1,3-Dichloropropene	23	UJ	22	UJ	13	U	13	U	16	U
4-Methyl-2-pentanone	23	UJ	22	UJ	13	U	13	U	16	U
Toluene	61	J	22	UJ	13	U	13	U	16	U
trans-1,3-Dichloropropene	23	UJ	22	UJ	13	U	13	U	16	U
1,1,2-Trichloroethane	23	UJ	22	UJ	13	U	13	U	16	U
Tetrachloroethene	50	J	3	J	13	U	13	U	16	U
2-Hexanone	23	UJ	22	UJ	13	U	13	U	16	U
Dibromochloromethane	23	UJ	22	UJ	13	U	13	U	16	U
1,2-Dibromoethane	23	UJ	22	UJ	13	U	13	U	16	U
Chlorobenzene	23	UJ	22	UJ	13	U	13	U	16	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY10		BWY11		BWY12		BWY13		BWY14	
Sampling Location :	6363-SD04		6363-SD05		6363-SD06		6363-SD07		6363-SD08	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	11:30		11:33		11:40		11:45		12:00	
%Moisture :	57		55		28		36		42	
pH :										
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Ethylbenzene	3	J	22	UJ	13	U	13	U	16	U
Xylenes (total)	17	J	22	UJ	13	U	13	U	16	U
Styrene	23	UJ	22	UJ	13	U	13	U	16	U
Bromoform	23	UJ	22	UJ	13	U	13	U	16	U
Isopropylbenzene	23	UJ	22	UJ	13	U	13	U	16	U
1,1,2,2-Tetrachloroethane	23	UJ	22	UJ	13	U	13	U	16	U
1,3-Dichlorobenzene	23	UJ	22	UJ	13	U	13	U	16	U
1,4-Dichlorobenzene	4	J	22	UJ	13	U	13	U	16	U
1,2-Dichlorobenzene	3	J	22	UJ	13	U	13	U	16	U
1,2-Dibromo-3-chloropropane	23	UJ	22	UJ	13	UJ	13	UJ	16	UJ
1,2,4-Trichlorobenzene	3	J	22	UJ	13	U	13	U	16	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY15		VBLKS1		VBLKS2		VBLKS3			
Sampling Location :	6363-SD09									
Matrix :	Soil		Soil		Soil		Soil			
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg			
Date Sampled :	12/02/1999									
Time Sampled :	12:05									
%Moisture :	59									
pH :										
Dilution Factor :	1.0		1.0		1.0		1.0			
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	23	UJ	10	U	10	U	10	UJ		
Chloromethane	23	UJ	10	U	10	U	10	U		
Vinyl Chloride	23	UJ	10	U	10	U	10	U		
Bromomethane	23	UJ	10	U	10	U	10	U		
Chloroethane	23	UJ	10	U	10	U	10	U		
Trichlorofluoromethane	23	UJ	10	U	10	U	10	U		
1,1-Dichloroethene	23	UJ	10	U	10	U	10	U		
1,1,2-Trichloro-1,2,2-trifluoroethane	23	UJ	10	U	10	U	10	U		
Acetone	23	UJ	10	U	10	U	10	U		
Carbon Disulfide	23	UJ	10	U	10	U	10	U		
Methyl Acetate	23	UJ	10	U	10	U	10	U		
Methylene Chloride	23	UJ	10	U	10	U	10	U		
trans-1,2-Dichloroethene	23	UJ	10	U	10	U	10	U		
tert-Butyl Methyl Ether	23	UJ	10	U	10	U	10	U		
1,1-Dichloroethane	23	UJ	10	U	10	U	10	U		
cis-1,2-Dichloroethene	23	UJ	10	U	10	U	10	U		
2-Butanone	23	UJ	10	U	10	U	10	U		
Chloroform	23	UJ	10	U	10	U	10	U		
1,1,1-Trichloroethane	23	UJ	10	U	10	U	10	U		
Cyclohexane	23	UJ	10	U	10	U	10	U		
Carbon Tetrachloride	23	UJ	10	U	10	U	10	U		
Benzene	23	UJ	10	U	10	U	10	U		
1,2-Dichloroethane	23	UJ	10	U	10	U	10	U		
Trichloroethene	23	UJ	10	U	10	U	10	U		
Methylcyclohexane	23	UJ	10	U	10	U	10	U		
1,2-Dichloropropane	23	UJ	10	U	10	U	10	U		
Bromodichloromethane	23	UJ	10	U	10	U	10	U		
cis-1,3-Dichloropropene	23	UJ	10	U	10	U	10	U		
4-Methyl-2-pentanone	23	UJ	10	U	10	U	10	U		
Toluene	23	UJ	10	U	10	U	10	U		
trans-1,3-Dichloropropene	23	UJ	10	U	10	U	10	U		
1,1,2-Trichloroethane	23	UJ	10	U	10	U	10	U		
Tetrachloroethene	23	UJ	10	U	10	U	10	U		
2-Hexanone	23	UJ	10	U	10	U	10	U		
Dibromochloromethane	23	UJ	10	U	10	U	10	U		
1,2-Dibromoethane	23	UJ	10	U	10	U	10	U		
Chlorobenzene	23	UJ	10	U	10	U	10	U		

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY15		VBLKS1		VBLKS2		VBLKS3			
Sampling Location :	6363-SD09									
Matrix :	Soil		Soil		Soil		Soil			
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg			
Date Sampled :	12/02/1999									
Time Sampled :	12:05									
%Moisture :	59									
pH :										
Dilution Factor :	1.0		1.0		1.0		1.0			
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Ethylbenzene	23	UJ	10	U	10	U	10	U		
Xylenes (total)	23	UJ	10	U	10	U	10	U		
Styrene	23	UJ	10	U	10	U	10	U		
Bromoform	23	UJ	10	U	10	U	10	U		
Isopropylbenzene	23	UJ	10	U	10	U	10	U		
1,1,2,2-Tetrachloroethane	23	UJ	10	U	10	U	10	U		
1,3-Dichlorobenzene	23	UJ	10	U	10	U	10	U		
1,4-Dichlorobenzene	23	UJ	10	U	10	U	10	U		
1,2-Dichlorobenzene	23	UJ	10	U	10	U	10	U		
1,2-Dibromo-3-chloropropane	23	UJ	10	UJ	10	U	10	U		
1,2,4-Trichlorobenzene	23	UJ	10	U	10	U	10	U		

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWW76		BWW76DL		VHBLK01		VBLKW1		VBLKW2	
Sampling Location :	6363-RB01		DO NOT USE							
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	12/02/1999		12/02/1999							
Time Sampled :	09:45		09:45							
%Moisture :	N/A		N/A							
pH :										
Dilution Factor :	1.0		2.0		1.0		1.0		1.0	
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	10	U	20	U	10	U	10	U	10	U
Chloromethane	10	U	20	U	10	U	10	U	10	U
Vinyl Chloride	10	U	20	U	10	U	10	U	10	U
Bromomethane	10	U	20	UJ	10	U	10	U	10	UJ
Chloroethane	10	U	20	U	10	U	10	U	10	U
Trichlorofluoromethane	10	U	20	U	10	U	10	U	10	U
1,1-Dichloroethene	10	U	20	U	10	U	10	U	10	U
1,1,2-Trichloro-1,2,2-trifluoroethane	10	U	20	U	10	U	10	U	10	U
Acetone	290	D	290		10	UJ	10	UJ	10	U
Carbon Disulfide	10	U	20	U	10	U	10	U	10	U
Methyl Acetate	10	U	20	U	10	U	10	U	10	U
Methylene Chloride	10	U	20	U	10	U	10	U	10	U
trans-1,2-Dichloroethene	10	U	20	U	10	U	10	U	10	U
tert-Butyl Methyl Ether	10	U	20	U	10	U	10	U	10	U
1,1-Dichloroethane	10	U	20	U	10	U	10	U	10	U
cis-1,2-Dichloroethene	8	J	20	U	10	U	10	U	10	U
2-Butanone	10	U	20	U	10	U	10	U	10	U
Chloroform	10	U	20	U	10	U	10	U	10	U
1,1,1-Trichloroethane	10	U	20	U	10	U	10	U	10	U
Cyclohexane	10	U	20	U	10	U	10	U	10	U
Carbon Tetrachloride	10	U	20	U	10	U	10	U	10	U
Benzene	10	U	20	U	10	U	10	U	10	U
1,2-Dichloroethane	10	U	20	U	10	U	10	U	10	U
Trichloroethene	5	J	20	U	10	U	10	U	10	U
Methylcyclohexane	10	U	20	U	10	U	10	U	10	U
1,2-Dichloropropane	10	U	20	U	10	U	10	U	10	U
Bromodichloromethane	10	U	20	U	10	U	10	U	10	U
cis-1,3-Dichloropropene	10	U	20	U	10	U	10	U	10	U
4-Methyl-2-pentanone	10	U	20	U	10	U	10	U	10	U
Toluene	2	J	20	U	10	U	10	U	10	U
trans-1,3-Dichloropropene	10	U	20	U	10	U	10	U	10	U
1,1,2-Trichloroethane	10	U	20	U	10	U	10	U	10	U
Tetrachloroethene	10	U	20	U	10	U	10	U	10	U
2-Hexanone	10	U	20	U	10	U	10	U	10	U
Dibromochloromethane	10	U	20	U	10	U	10	U	10	U
1,2-Dibromoethane	10	U	20	U	10	U	10	U	10	U
Chlorobenzene	10	U	20	U	10	U	10	U	10	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWW76		BWW76DL		VHBLK01		VBLKW1		VBLKW2	
Sampling Location :	6363-RB01		DO NOT USE							
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	12/02/1999		12/02/1999							
Time Sampled :	09:45		09:45							
%Moisture :	N/A		N/A							
pH :										
Dilution Factor :	1.0		2.0		1.0		1.0		1.0	
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Ethylbenzene	10	U	20	U	10	U	10	U	10	U
Xylenes (total)	1	J	20	U	10	U	10	U	10	U
Styrene	10	U	20	U	10	U	10	U	10	U
Bromoform	10	U	20	U	10	U	10	U	10	U
Isopropylbenzene	10	U	20	U	10	U	10	U	10	U
1,1,2,2-Tetrachloroethane	10	U	20	U	10	U	10	U	10	U
1,3-Dichlorobenzene	10	U	20	U	10	U	10	U	10	U
1,4-Dichlorobenzene	10	U	20	U	10	U	10	U	10	U
1,2-Dichlorobenzene	10	U	20	U	10	U	10	U	10	U
1,2-Dibromo-3-chloropropane	10	R	20	R	10	R	10	R	10	R
1,2,4-Trichlorobenzene	10	U	20	U	10	U	10	U	10	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Number of Soil Samples : 19
Number of Water Samples : 1

Sample Number :	BWW62		BWW62RE		BWW63		BWW63RE		BWW64	
Sampling Location :	6363-SD10		DO NOT USE		6363-SD11		DO NOT USE		6363-SD12	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	14:15		14:15		13:45		13:45		14:10	
%Moisture :	22		22		33		33		26	
pH :	6.9		6.9		7.2		7.2		7.3	
Dilution Factor :	1.0		1.0		3.0		3.0		1.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	9800	U	9800	U	1400	U	1400	U	7900	U
Phenol	9800	U	9800	U	1400	U	1400	U	7900	U
bis-(2-Chloroethyl) ether	9800	U	9800	U	1400	U	1400	U	7900	U
2-Chlorophenol	9800	U	9800	U	1400	U	1400	U	7900	U
2-Methylphenol	9800	U	9800	U	1400	U	1400	U	7900	U
2,2'-oxybis(1-Chloropropane)	9800	U	9800	UJ	1400	U	1400	UJ	7900	U
Acetophenone	9800	U	9800	U	1400	U	180	J	7900	U
4-Methylphenol	2000	J	9800	U	1400	U	1400	U	7900	U
N-Nitroso-di-n-propylamine	9800	U	9800	U	1400	U	1400	U	7900	U
Hexachloroethane	9800	U	9800	U	1400	U	1400	U	7900	U
Nitrobenzene	9800	U	9800	U	1400	U	1400	U	7900	U
Isophorone	9800	U	9800	U	1400	U	1400	U	7900	U
2-Nitrophenol	9800	U	9800	U	1400	U	1400	U	7900	U
2,4-Dimethylphenol	9800	U	9800	U	1400	U	1400	U	7900	U

bis(2-Chloroethoxy)methane	9800	U	9800	U	1400	U	1400	U	7900	U
2,4-Dichlorophenol	9800	U	9800	U	1400	U	1400	U	7900	U
Naphthalene	9800	U	9800	U	270	J	240	J	1100	J
4-Chloroaniline	9800	U	9800	U	1400	U	1400	U	7900	U
Hexachlorobutadiene	9800	U	9800	UJ	1400	U	1400	UJ	7900	U
Caprolactam	9800	U	9800	U	1400	UJ	1400	U	7900	U
4-Chloro-3-methylphenol	9800	U	9800	U	1400	U	1400	U	7900	U
2-Methylnaphthalene	9800	U	9800	U	220	J	200	J	2100	J
Hexachlorocyclopentadiene	9800	U	9800	U	1400	U	1400	U	7900	U
2,4,6-Trichlorophenol	9800	U	9800	U	1400	U	1400	U	7900	U
2,4,5-Trichlorophenol	25000	U	25000	U	3600	U	3600	U	20000	U
1,1'-Biphenyl	9800	U	9800	U	1400	U	1400	U	7900	U
2-Chloronaphthalene	9800	U	9800	U	1400	U	1400	U	7900	U
2-Nitroaniline	25000	U	25000	U	3600	U	3600	U	20000	U
Dimethylphthalate	9800	U	9800	U	1400	U	1400	U	7900	U
2,6-Dinitrotoluene	9800	U	9800	U	1400	U	1400	U	7900	U
Acenaphthylene	1300	J	1000	J	3400		3300		7900	U
3-Nitroaniline	25000	U	25000	U	3600	U	3600	U	20000	U
Acenaphthene	9800	U	9800	U	280	J	200	J	7900	U
2,4-Dinitrophenol	25000	U	25000	U	3600	UJ	3600	U	20000	U
4-Nitrophenol	25000	UJ	25000	UJ	3600	U	3600	UJ	20000	UJ
Dibenzofuran	9800	U	9800	U	1400	U	1400	U	7900	U
2,4-Dinitrotoluene	9800	U	9800	U	1400	U	1400	U	7900	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWW62		BWW62RE		BWW63		BWW63RE		BWW64	
Sampling Location :	6363-SD10		DO NOT USE		6363-SD11		DO NOT USE		6363-SD12	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	14:15		14:15		13:45		13:45		14:10	
%Moisture :	22		22		33		33		26	
pH :	6.9		6.9		7.2		7.2		7.3	
Dilution Factor :	1.0		1.0		3.0		3.0		1.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Diethylphthalate	9800	U	9800	U	1400	U	1400	U	7900	U
Fluorene	9800	U	9800	U	1400	U	1400	U	7900	U
4-Chlorophenyl-phenyl ether	9800	U	9800	U	1400	U	1400	U	7900	U
4-Nitroaniline	25000	U	25000	U	3600	U	3600	U	20000	U
4,6-Dinitro-2-methylphenol	25000	U	25000	U	3600	U	3600	U	20000	U
N-Nitrosodiphenylamine	9800	U	9800	U	1400	U	1400	U	7900	U
4-Bromophenyl-phenylether	9800	U	9800	U	1400	U	1400	U	7900	U
Hexachlorobenzene	9800	U	9800	UJ	1400	U	1400	UJ	7900	U
Atrazine	9800	U	9800	U	1400	U	1400	U	7900	U
Pentachlorophenol	25000	U	25000	U	3600	U	3600	U	20000	U
Phenanthrene	9800	U	9800	U	1300	J	1200	J	7900	U
Anthracene	1600	J	1800	J	2200		1300	J	910	J
Carbazole	9800	U	9800	U	150	J	1400	U	7900	U
Di-n-butylphthalate	9800	U	9800	U	1400	U	1400	U	7900	U
Fluoranthene	9800	U	1200	J	2600		1700		3100	J
Pyrene	4300	J	1500	J	1400	J	1100	J	7900	J
Butylbenzylphthalate	9800	UJ	9800	U	1400	U	1400	U	7900	UJ
3,3'-Dichlorobenzidine	9800	U	9800	U	1400	U	1400	U	7900	U
Benzo(a)anthracene	9800	U	9800	U	2000	J	1500		1900	J
Chrysene	2200	J	1700	J	2600	J	1900		2300	J
bis(2-Ethylhexyl)phthalate	17000	J	12000	J	320	J	1400	U	14000	J
Di-n-octylphthalate	9800	UJ	9800	U	1400	U	1400	U	7900	UJ
Benzo(b)fluoranthene	7000	J	2000	J	1800	J	1300	J	4200	J
Benzo(k)fluoranthene	9800	U	2200	J	2200	J	1500	J	7900	U
Benzo(a)pyrene	2600	J	2000	J	2400	J	1900	J	2100	J
Indeno(1,2,3-cd)pyrene	1400	J	9800	U	980	J	820	J	7900	U
Dibenzo(a,h)anthracene	9800	U	9800	U	470	J	350	J	7900	U
Benzo(g,h,i)perylene	1700	J	9800	U	800	J	500	J	1200	J

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWW64RE		BWW65		BWW66		BWW67		BWW68	
Sampling Location :	DO NOT USE		6363-SD13		6363-SD14		6363-SD15		6363-SD16	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	14:10		14:00		13:40		13:55		10:40	
%Moisture :	26		35		28		25		33	
pH :	7.3		7.3		7.6		7.8		7.5	
Dilution Factor :	1.0		1.0		1.0		4.0		1.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	7900	U	12000	U	13000	U	1800	U	11000	U
Phenol	7900	U	12000	U	13000	U	1800	U	11000	U
bis-(2-Chloroethyl) ether	7900	U	12000	U	13000	U	1800	U	11000	U
2-Chlorophenol	7900	U	12000	U	13000	U	1800	U	11000	U
2-Methylphenol	7900	U	12000	U	13000	U	1800	U	11000	U
2,2'-oxybis(1-Chloropropane)	7900	UJ	12000	U	13000	U	1800	U	11000	U
Acetophenone	7900	U	12000	U	13000	U	180	J	11000	U
4-Methylphenol	7900	U	12000	U	13000	U	1800	U	11000	U
N-Nitroso-di-n-propylamine	7900	U	12000	U	13000	U	1800	U	11000	U
Hexachloroethane	7900	U	12000	U	13000	U	1800	U	11000	U
Nitrobenzene	7900	U	12000	U	13000	U	1800	U	11000	U
Isophorone	7900	U	12000	U	13000	U	1800	U	11000	U
2-Nitrophenol	7900	U	12000	U	13000	U	1800	U	11000	U
2,4-Dimethylphenol	7900	U	12000	U	13000	U	1800	U	11000	U
bis(2-Chloroethoxy)methane	7900	U	12000	U	13000	U	1800	U	11000	U
2,4-Dichlorophenol	7900	U	12000	U	13000	U	1800	U	11000	U
Naphthalene	840	J	1300	J	13000	U	320	J	1200	J
4-Chloroaniline	7900	U	12000	U	13000	U	1800	U	11000	U
Hexachlorobutadiene	7900	UJ	12000	U	13000	U	1800	U	11000	U
Caprolactam	7900	U	12000	U	13000	U	1800	U	11000	UJ
4-Chloro-3-methylphenol	7900	U	12000	U	13000	U	1800	U	11000	U
2-Methylnaphthalene	1800	J	12000	U	13000	U	270	J	11000	U
Hexachlorocyclopentadiene	7900	U	12000	U	13000	U	1800	U	11000	U
2,4,6-Trichlorophenol	7900	U	12000	U	13000	U	1800	U	11000	U
2,4,5-Trichlorophenol	20000	U	29000	U	31000	U	4400	U	27000	U
1,1'-Biphenyl	7900	U	12000	U	13000	U	1800	U	11000	U
2-Chloronaphthalene	7900	U	12000	U	13000	U	1800	U	11000	U
2-Nitroaniline	20000	U	29000	U	31000	U	4400	U	27000	U
Dimethylphthalate	7900	U	12000	U	13000	U	1800	U	11000	U
2,6-Dinitrotoluene	7900	U	12000	U	13000	U	1800	U	11000	U
Acenaphthylene	7900	U	3800	J	1400	J	2900		17000	
3-Nitroaniline	20000	U	29000	U	31000	U	4400	U	27000	U
Acenaphthene	7900	U	12000	U	13000	U	240	J	1700	J
2,4-Dinitrophenol	20000	U	29000	U	31000	U	4400	U	27000	UJ
4-Nitrophenol	20000	UJ	29000	UJ	31000	UJ	4400	U	27000	U
Dibenzofuran	7900	U	12000	U	13000	U	1800	U	11000	U
2,4-Dinitrotoluene	7900	U	12000	U	13000	U	1800	U	11000	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWW64RE		BWW65		BWW66		BWW67		BWW68	
Sampling Location :	DO NOT USE		6363-SD13		6363-SD14		6363-SD15		6363-SD16	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	14:10		14:00		13:40		13:55		10:40	
%Moisture :	26		35		28		25		33	
pH :	7.3		7.3		7.6		7.8		7.5	
Dilution Factor :	1.0		1.0		1.0		4.0		1.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Diethylphthalate	7900	U	12000	U	13000	U	1800	U	11000	U
Fluorene	7900	U	12000	U	13000	U	1800	U	2000	J
4-Chlorophenyl-phenyl ether	7900	U	12000	U	13000	U	1800	U	11000	U
4-Nitroaniline	20000	U	29000	U	31000	U	4400	U	27000	U
4,6-Dinitro-2-methylphenol	20000	U	29000	U	31000	U	4400	U	27000	U
N-Nitrosodiphenylamine	7900	U	12000	U	13000	U	1800	U	11000	U
4-Bromophenyl-phenylether	7900	U	12000	U	13000	U	1800	U	11000	U
Hexachlorobenzene	7900	UJ	12000	U	13000	U	1800	U	11000	U
Atrazine	7900	U	12000	U	13000	U	1800	U	11000	U
Pentachlorophenol	20000	U	29000	U	31000	U	4400	U	27000	U
Phenanthrene	7900	U	1900	J	1700	J	1600	J	22000	
Anthracene	7900	U	1800	J	13000	U	1400	J	17000	
Carbazole	7900	U	12000	U	13000	U	1800	U	1700	J
Di-n-butylphthalate	7900	U	12000	U	13000	U	1800	U	11000	U
Fluoranthene	5000	J	2800	J	2800	J	2900		59000	
Pyrene	5300	J	3800	J	2800	J	2700		28000	J
Butylbenzylphthalate	7900	U	12000	UJ	13000	UJ	1800	U	11000	U
3,3'-Dichlorobenzidine	7900	U	12000	U	13000	U	1800	U	11000	U
Benzo(a)anthracene	7900	U	3000	J	2100	J	2400		36000	
Chrysene	7900	U	3400	J	2500	J	2900		35000	
bis(2-Ethylhexyl)phthalate	11000	J	12000	UJ	13000	UJ	260	J	6400	J
Di-n-octylphthalate	7900	U	12000	UJ	13000	UJ	1800	U	11000	U
Benzo(b)fluoranthene	1600	J	1900	J	1600	J	2400		21000	J
Benzo(k)fluoranthene	1100	J	2000	J	1700	J	2200		26000	J
Benzo(a)pyrene	1700	J	2900	J	1900	J	2500		31000	J
Indeno(1,2,3-cd)pyrene	7900	U	4200	J	2500	J	990	J	18000	J
Dibenzo(a,h)anthracene	7900	U	1500	J	13000	U	430	J	7600	J
Benzo(g,h,i)perylene	7900	U	5300	J	3100	J	830	J	14000	J

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWW68RE		BWW69		BWW70		BWW70DL		BWX88	
Sampling Location :	DO NOT USE		6363-SD17		6363-SD18		DO NOT USE		6363-SS07	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/06/1999	
Time Sampled :	10:40		10:30		10:30		10:30		14:00	
%Moisture :	33		57		34		34		17	
pH :	7.5		7.6		8.0		8.0		8.4	
Dilution Factor :	1.0		4.0		1.0		4.0		10.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	11000	UJ	3100	UJ	160	J	2000	U	3900	U
Phenol	11000	UJ	3100	UJ	500	U	2000	U	3900	U
bis-(2-Chloroethyl) ether	11000	UJ	3100	UJ	500	U	2000	U	3900	U
2-Chlorophenol	11000	UJ	3100	UJ	500	U	2000	U	3900	U
2-Methylphenol	11000	UJ	3100	UJ	500	U	2000	U	3900	U
2,2'-oxybis(1-Chloropropane)	11000	UJ	3100	UJ	500	U	2000	U	3900	U
Acetophenone	11000	UJ	320	J	130	J	2000	U	3900	U
4-Methylphenol	11000	UJ	3100	UJ	70	J	2000	U	3900	U
N-Nitroso-di-n-propylamine	11000	UJ	3100	UJ	500	U	2000	U	3900	U
Hexachloroethane	11000	UJ	3100	UJ	500	U	2000	U	3900	U
Nitrobenzene	11000	U	3100	UJ	500	U	2000	U	3900	U
Isophorone	11000	U	3100	UJ	500	U	2000	U	3900	U
2-Nitrophenol	11000	U	3100	UJ	500	U	2000	U	3900	U
2,4-Dimethylphenol	11000	U	3100	UJ	500	U	2000	U	3900	U
bis(2-Chloroethoxy)methane	11000	U	3100	UJ	500	U	2000	U	3900	U
2,4-Dichlorophenol	11000	U	3100	UJ	500	U	2000	U	3900	U
Naphthalene	1200	J	540	J	340	J	370	J	490	J
4-Chloroaniline	11000	U	3100	UJ	500	U	2000	U	3900	U
Hexachlorobutadiene	11000	UJ	3100	UJ	500	U	2000	U	3900	U
Caprolactam	11000	U	3100	UJ	500	UJ	2000	U	3900	U
4-Chloro-3-methylphenol	11000	U	3100	UJ	500	U	2000	U	3900	U
2-Methylnaphthalene	11000	U	450	J	220	J	240	J	3900	U
Hexachlorocyclopentadiene	11000	UJ	3100	UJ	500	U	2000	U	3900	U
2,4,6-Trichlorophenol	11000	UJ	3100	UJ	500	U	2000	U	3900	U
2,4,5-Trichlorophenol	27000	UJ	7700	UJ	1200	U	5000	U	9900	U
1,1'-Biphenyl	11000	UJ	3100	UJ	96	J	2000	U	3900	U
2-Chloronaphthalene	11000	UJ	3100	UJ	500	U	2000	U	3900	U
2-Nitroaniline	27000	UJ	7700	UJ	1200	U	5000	U	9900	U
Dimethylphthalate	11000	UJ	3100	UJ	500	U	2000	U	3900	U
2,6-Dinitrotoluene	11000	UJ	3100	UJ	500	U	2000	U	3900	U
Acenaphthylene	14000	J	3900	J	2200		1900	J	620	J
3-Nitroaniline	27000	UJ	7700	UJ	1200	U	5000	U	9900	U
Acenaphthene	11000	UJ	1100	J	200	J	2000	U	1000	J
2,4-Dinitrophenol	27000	UJ	7700	UJ	1200	UJ	5000	U	9900	U
4-Nitrophenol	27000	UJ	7700	UJ	1200	U	5000	U	9900	U
Dibenzofuran	11000	UJ	430	J	100	J	2000	U	790	J
2,4-Dinitrotoluene	11000	UJ	3100	UJ	500	U	2000	U	3900	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWW68RE		BWW69		BWW70		BWW70DL		BWX88	
Sampling Location :	DO NOT USE		6363-SD17		6363-SD18		DO NOT USE		6363-SS07	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/06/1999	
Time Sampled :	10:40		10:30		10:30		10:30		14:00	
%Moisture :	33		57		34		34		17	
pH :	7.5		7.6		8.0		8.0		8.4	
Dilution Factor :	1.0		4.0		1.0		4.0		10.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Diethylphthalate	11000	UJ	3100	UJ	500	U	2000	U	3900	U
Fluorene	1700	J	1000	J	500	U	2000	U	1600	J
4-Chlorophenyl-phenyl ether	11000	UJ	3100	UJ	500	U	2000	U	3900	U
4-Nitroaniline	27000	UJ	7700	UJ	1200	U	5000	U	9900	U
4,6-Dinitro-2-methylphenol	27000	UJ	7700	UJ	1200	U	5000	U	9900	U
N-Nitrosodiphenylamine	11000	UJ	3100	UJ	500	U	2000	U	3900	U
4-Bromophenyl-phenylether	11000	UJ	3100	UJ	500	U	2000	U	3900	U
Hexachlorobenzene	11000	UJ	3100	UJ	500	U	2000	U	3900	U
Atrazine	11000	UJ	3100	UJ	500	U	2000	U	3900	U
Pentachlorophenol	27000	UJ	7700	UJ	1200	U	5000	U	9900	U
Phenanthrene	19000	J	8400	J	1300		1300	J	10000	
Anthracene	12000	J	3300	J	1600		920	J	3100	J
Carbazole	1100	J	730	J	220	J	2000	U	820	J
Di-n-butylphthalate	11000	UJ	3100	UJ	150	J	2000	U	3900	U
Fluoranthene	43000	J	8400	J	3000		2200		12000	
Pyrene	39000	J	8300	J	1400	J	2100		12000	
Butylbenzylphthalate	11000	UJ	3100	UJ	100	J	2000	U	3900	U
3,3'-Dichlorobenzidine	11000	UJ	3100	UJ	500	U	2000	U	3900	U
Benzo(a)anthracene	32000	J	6400	J	1800	J	1900	J	8500	
Chrysene	30000	J	7100	J	2200	J	2400		6700	
bis(2-Ethylhexyl)phthalate	7800	J	1900	J	1000	J	720	J	3200	J
Di-n-octylphthalate	11000	U	3100	UJ	500	U	2000	U	3900	U
Benzo(b)fluoranthene	15000		4800	J	1900		1800	J	5600	
Benzo(k)fluoranthene	19000		4400	J	2000		1700	J	5500	
Benzo(a)pyrene	26000		5900	J	2100		2200		5700	
Indeno(1,2,3-cd)pyrene	25000		2400	J	740		910	J	1900	J
Dibenzo(a,h)anthracene	11000		1100	J	290	J	410	J	850	J
Benzo(g,h,i)perylene	24000		1700	J	450	J	560	J	1600	J

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY07		BWY07MS		BWY07MSD		BWY08		BWY09	
Sampling Location :	6363-SD01		6363-SD01		6363-SD01		6363-SD02		6363-SD03	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	10:25		10:25		10:25		10:40		10:45	
%Moisture :	65		65		65		27		39	
pH :	7.6		7.6		7.6		7.8		7.6	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	930	UJ	930	UJ	930	UJ	450	U	540	U
Phenol	930	UJ	4300	J	5900	J	450	U	540	U
bis-(2-Chloroethyl) ether	930	UJ	930	UJ	930	UJ	450	U	540	U
2-Chlorophenol	930	UJ	4300	J	6000	J	450	U	540	U
2-Methylphenol	930	UJ	930	UJ	930	UJ	450	U	540	U
2,2'-oxybis(1-Chloropropane)	930	UJ	930	UJ	930	UJ	450	U	540	U
Acetophenone	130	J	930	UJ	930	UJ	78	J	110	J
4-Methylphenol	930	UJ	930	UJ	930	UJ	450	U	540	U
N-Nitroso-di-n-propylamine	930	UJ	2600	J	4000	J	450	U	540	U
Hexachloroethane	930	UJ	930	UJ	930	UJ	450	U	540	U
Nitrobenzene	930	UJ	930	UJ	930	UJ	450	U	540	U
Isophorone	930	UJ	930	UJ	930	UJ	450	U	540	U
2-Nitrophenol	930	UJ	930	UJ	930	UJ	450	U	540	U
2,4-Dimethylphenol	930	UJ	930	UJ	930	UJ	450	U	540	U
bis(2-Chloroethoxy)methane	930	UJ	930	UJ	930	UJ	450	U	540	U
2,4-Dichlorophenol	930	UJ	930	UJ	930	UJ	450	U	540	U
Naphthalene	930	UJ	930	UJ	930	UJ	450	U	540	U
4-Chloroaniline	930	UJ	930	UJ	930	UJ	450	U	540	U
Hexachlorobutadiene	930	UJ	930	UJ	930	UJ	450	U	540	U
Caprolactam	930	UJ	930	UJ	100	J	450	U	540	U
4-Chloro-3-methylphenol	930	UJ	4300	J	6000	J	450	U	540	U
2-Methylnaphthalene	930	UJ	930	UJ	930	UJ	450	U	540	U
Hexachlorocyclopentadiene	930	UJ	930	UJ	930	UJ	450	U	540	U
2,4,6-Trichlorophenol	930	UJ	930	UJ	930	UJ	450	U	540	U
2,4,5-Trichlorophenol	2300	UJ	2300	UJ	2300	UJ	1100	U	1400	U
1,1'-Biphenyl	930	UJ	930	UJ	930	UJ	450	U	540	U
2-Chloronaphthalene	930	UJ	930	UJ	930	UJ	450	U	540	U
2-Nitroaniline	2300	UJ	2300	UJ	2300	UJ	1100	U	1400	U
Dimethylphthalate	930	UJ	930	UJ	930	UJ	450	U	540	U
2,6-Dinitrotoluene	930	UJ	930	UJ	930	UJ	450	U	540	U
Acenaphthylene	160	J	930	UJ	100	J	66	J	78	J
3-Nitroaniline	2300	UJ	2300	UJ	2300	UJ	1100	U	1400	U
Acenaphthene	930	UJ	2900	J	4000	J	200	J	140	J
2,4-Dinitrophenol	2300	UJ	2300	UJ	2300	UJ	1100	U	1400	U
4-Nitrophenol	2300	UJ	4300	J	6300	J	1100	U	1400	U
Dibenzofuran	930	UJ	930	UJ	930	UJ	90	J	73	J
2,4-Dinitrotoluene	930	UJ	2600	J	3400	J	450	U	540	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY07		BWY07MS		BWY07MSD		BWY08		BWY09	
Sampling Location :	6363-SD01		6363-SD01		6363-SD01		6363-SD02		6363-SD03	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	10:25		10:25		10:25		10:40		10:45	
%Moisture :	65		65		65		27		39	
pH :	7.6		7.6		7.6		7.8		7.6	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Diethylphthalate	930	UJ	930	UJ	930	UJ	450	U	540	U
Fluorene	930	UJ	930	UJ	150	J	160	J	130	J
4-Chlorophenyl-phenyl ether	930	UJ	930	UJ	930	UJ	450	U	540	U
4-Nitroaniline	2300	UJ	2300	UJ	2300	UJ	1100	U	1400	U
4,6-Dinitro-2-methylphenol	2300	UJ	2300	UJ	2300	UJ	1100	U	1400	U
N-Nitrosodiphenylamine	930	UJ	930	UJ	930	UJ	450	U	540	U
4-Bromophenyl-phenylether	930	UJ	930	UJ	930	UJ	450	U	540	U
Hexachlorobenzene	930	UJ	930	UJ	930	UJ	450	U	540	U
Atrazine	930	UJ	930	UJ	930	UJ	450	U	540	U
Pentachlorophenol	2300	UJ	3200	J	4800	J	1100	U	1400	U
Phenanthrene	780	J	1000	J	1600	J	2200		1500	
Anthracene	270	J	380	J	450	J	570		420	J
Carbazole	930	UJ	120	J	160	J	340	J	210	J
Di-n-butylphthalate	930	UJ	930	UJ	930	UJ	450	U	540	U
Fluoranthene	1600	J	1900	J	2600	J	2800		2200	
Pyrene	1400	J	4400	J	5300	J	2000		1600	
Butylbenzylphthalate	150	J	930	UJ	170	J	450	U	540	U
3,3'-Dichlorobenzidine	930	UJ	930	UJ	930	UJ	450	U	540	U
Benzo(a)anthracene	1100	J	1100	J	1600	J	1500		1200	
Chrysene	1200	J	1300	J	1700	J	1600		1300	
bis(2-Ethylhexyl)phthalate	120	J	930	UJ	180	J	55	J	150	J
Di-n-octylphthalate	930	UJ	930	UJ	930	UJ	450	U	540	U
Benzo(b)fluoranthene	1200	J	960	J	1400	J	1300		1100	
Benzo(k)fluoranthene	970	J	900	J	1100	J	1100		920	
Benzo(a)pyrene	1300	J	1200	J	1600	J	1400		1200	
Indeno(1,2,3-cd)pyrene	630	J	920	J	870	J	550		520	J
Dibenzo(a,h)anthracene	210	J	370	J	360	J	220	J	220	J
Benzo(g,h,i)perylene	360	J	720	J	590	J	320	J	330	J

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY10		BWY10RE		BWY11		BWY12		BWY13	
Sampling Location :	6363-SD04		DO NOT USE		6363-SD05		6363-SD06		6363-SD07	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	11:30		11:30		11:33		11:40		11:45	
%Moisture :	57		57		55		28		36	
pH :	7.8		7.8		7.7		7.5		6.8	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Phenol	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
bis-(2-Chloroethyl) ether	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
2-Chlorophenol	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
2-Methylphenol	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
2,2'-oxybis(1-Chloropropane)	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Acetophenone	3400	J	2900	J	17000	UJ	11000	U	11000	U
4-Methylphenol	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
N-Nitroso-di-n-propylamine	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Hexachloroethane	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Nitrobenzene	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Isophorone	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
2-Nitrophenol	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
2,4-Dimethylphenol	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
bis(2-Chloroethoxy)methane	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
2,4-Dichlorophenol	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Naphthalene	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
4-Chloroaniline	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Hexachlorobutadiene	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Caprolactam	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
4-Chloro-3-methylphenol	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
2-Methylnaphthalene	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Hexachlorocyclopentadiene	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
2,4,6-Trichlorophenol	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
2,4,5-Trichlorophenol	48000	UJ	48000	UJ	43000	UJ	27000	U	28000	U
1,1'-Biphenyl	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
2-Chloronaphthalene	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
2-Nitroaniline	48000	UJ	48000	UJ	43000	UJ	27000	U	28000	U
Dimethylphthalate	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
2,6-Dinitrotoluene	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Acenaphthylene	19000	UJ	19000	UJ	17000	UJ	11000	U	1400	J
3-Nitroaniline	48000	UJ	48000	UJ	43000	UJ	27000	U	28000	U
Acenaphthene	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
2,4-Dinitrophenol	48000	UJ	48000	UJ	43000	UJ	27000	U	28000	U
4-Nitrophenol	48000	UJ	48000	UJ	43000	UJ	27000	UJ	28000	UJ
Dibenzofuran	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
2,4-Dinitrotoluene	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY10		BWY10RE		BWY11		BWY12		BWY13	
Sampling Location :	6363-SD04		DO NOT USE		6363-SD05		6363-SD06		6363-SD07	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	11:30		11:30		11:33		11:40		11:45	
%Moisture :	57		57		55		28		36	
pH :	7.8		7.8		7.7		7.5		6.8	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Diethylphthalate	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Fluorene	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
4-Chlorophenyl-phenyl ether	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
4-Nitroaniline	48000	UJ	48000	UJ	43000	UJ	27000	U	28000	U
4,6-Dinitro-2-methylphenol	48000	UJ	48000	UJ	43000	UJ	27000	U	28000	U
N-Nitrosodiphenylamine	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
4-Bromophenyl-phenylether	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Hexachlorobenzene	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Atrazine	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Pentachlorophenol	48000	UJ	48000	UJ	43000	UJ	27000	U	28000	U
Phenanthrene	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Anthracene	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Carbazole	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Di-n-butylphthalate	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Fluoranthene	19000	UJ	19000	UJ	17000	UJ	11000	U	1700	J
Pyrene	3200	J	19000	UJ	17000	UJ	11000	U	2200	J
Butylbenzylphthalate	19000	UJ	19000	UJ	17000	UJ	11000	UJ	11000	UJ
3,3'-Dichlorobenzidine	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Benzo(a)anthracene	19000	UJ	19000	UJ	17000	UJ	11000	U	1600	J
Chrysene	19000	UJ	19000	UJ	17000	UJ	11000	U	1800	J
bis(2-Ethylhexyl)phthalate	28000	J	19000	J	4500	J	4900	J	11000	UJ
Di-n-octylphthalate	19000	UJ	19000	UJ	17000	UJ	11000	UJ	11000	UJ
Benzo(b)fluoranthene	19000	UJ	2900	J	17000	UJ	11000	U	1200	J
Benzo(k)fluoranthene	19000	UJ	19000	UJ	17000	UJ	11000	U	1200	J
Benzo(a)pyrene	19000	UJ	2500	J	17000	UJ	11000	U	1500	J
Indeno(1,2,3-cd)pyrene	19000	UJ	19000	UJ	17000	UJ	11000	U	1800	J
Dibenzo(a,h)anthracene	19000	UJ	19000	UJ	17000	UJ	11000	U	11000	U
Benzo(g,h,i)perylene	5000	J	19000	UJ	2800	J	1600	J	2100	J

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY14		BWY15		SBLKM1		SBLKS1		SBLKS2	
Sampling Location :	6363-SD08		6363-SD09							
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999							
Time Sampled :	12:00		12:05							
%Moisture :	42		58							
pH :	6.7		6.4							
Dilution Factor :	3.0		1.0		1.0		1.0		1.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	1700	UJ	24000	UJ	9900	U	330	UJ	330	U
Phenol	1700	U	24000	UJ	9900	U	330	U	330	U
bis-(2-Chloroethyl) ether	1700	U	24000	UJ	9900	U	330	U	330	U
2-Chlorophenol	1700	U	24000	UJ	9900	U	330	U	330	U
2-Methylphenol	1700	U	24000	UJ	9900	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)	1700	R	24000	UJ	9900	U	330	U	330	U
Acetophenone	320	J	24000	UJ	9900	U	330	U	330	U
4-Methylphenol	1700	U	24000	UJ	9900	U	330	U	330	U
N-Nitroso-di-n-propylamine	1700	UJ	24000	UJ	9900	U	330	U	330	U
Hexachloroethane	1700	UJ	24000	UJ	9900	U	330	U	330	U
Nitrobenzene	1700	UJ	24000	UJ	9900	U	330	U	330	U
Isophorone	1700	U	24000	UJ	9900	U	330	U	330	U
2-Nitrophenol	1700	U	24000	UJ	9900	U	330	U	330	U
2,4-Dimethylphenol	1700	U	24000	UJ	9900	U	330	U	330	U
bis(2-Chloroethoxy)methane	1700	U	24000	UJ	9900	U	330	U	330	U
2,4-Dichlorophenol	1700	U	24000	UJ	9900	U	330	U	330	U
Naphthalene	650	J	24000	UJ	9900	U	330	U	330	U
4-Chloroaniline	1700	U	24000	UJ	9900	U	330	U	330	U
Hexachlorobutadiene	1700	UJ	24000	UJ	9900	U	330	U	330	U
Caprolactam	1700	U	24000	UJ	9900	U	330	U	330	U
4-Chloro-3-methylphenol	1700	U	24000	UJ	9900	U	330	U	330	U
2-Methylnaphthalene	400	J	24000	UJ	9900	U	330	U	330	U
Hexachlorocyclopentadiene	1700	U	24000	UJ	9900	U	330	U	330	U
2,4,6-Trichlorophenol	1700	U	24000	UJ	9900	U	330	U	330	U
2,4,5-Trichlorophenol	4300	U	59000	UJ	25000	U	830	U	830	U
1,1'-Biphenyl	1700	U	24000	UJ	9900	U	330	U	330	U
2-Chloronaphthalene	1700	U	24000	UJ	9900	U	330	U	330	U
2-Nitroaniline	4300	UJ	59000	UJ	25000	U	830	U	830	U
Dimethylphthalate	1700	U	24000	UJ	9900	U	330	U	330	U
2,6-Dinitrotoluene	1700	U	24000	UJ	9900	U	330	U	330	U
Acenaphthylene	3200		3100	J	9900	U	330	U	330	U
3-Nitroaniline	4300	U	59000	UJ	25000	U	830	U	830	U
Acenaphthene	310	J	24000	UJ	9900	U	330	U	330	U
2,4-Dinitrophenol	4300	U	59000	UJ	25000	U	830	U	830	U
4-Nitrophenol	4300	UJ	59000	UJ	25000	UJ	830	U	830	U
Dibenzofuran	1700	U	24000	UJ	9900	U	330	U	330	U
2,4-Dinitrotoluene	1700	U	24000	UJ	9900	U	330	U	330	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY14		BWY15		SBLKM1		SBLKS1		SBLKS2	
Sampling Location :	6363-SD08		6363-SD09							
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999							
Time Sampled :	12:00		12:05							
%Moisture :	42		58							
pH :	6.7		6.4							
Dilution Factor :	3.0		1.0		1.0		1.0		1.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Diethylphthalate	1700	U	24000	UJ	9900	U	330	U	330	U
Fluorene	210	J	24000	UJ	9900	U	330	U	330	U
4-Chlorophenyl-phenyl ether	1700	U	24000	UJ	9900	U	330	U	330	U
4-Nitroaniline	4300	U	59000	UJ	25000	U	830	U	830	U
4,6-Dinitro-2-methylphenol	4300	U	59000	UJ	25000	U	830	U	830	U
N-Nitrosodiphenylamine	1700	U	24000	UJ	9900	U	330	U	330	U
4-Bromophenyl-phenylether	1700	U	24000	UJ	9900	U	330	U	330	U
Hexachlorobenzene	1700	U	24000	UJ	9900	U	330	U	330	U
Atrazine	1700	U	24000	UJ	9900	U	330	U	330	U
Pentachlorophenol	4300	U	59000	UJ	25000	U	830	U	830	U
Phenanthrene	1800		24000	UJ	9900	U	330	U	330	U
Anthracene	1700		24000	UJ	9900	U	330	U	330	U
Carbazole	230	J	24000	UJ	9900	U	330	U	330	U
Di-n-butylphthalate	1700	U	24000	UJ	9900	U	330	U	330	U
Fluoranthene	1800		3000	J	9900	U	330	U	330	U
Pyrene	2200		3900	J	9900	U	330	U	330	U
Butylbenzylphthalate	1700	U	24000	UJ	9900	UJ	330	U	76	J
3,3'-Dichlorobenzidine	1700	U	24000	UJ	9900	U	330	U	330	U
Benzo(a)anthracene	2100		3200	J	9900	U	330	U	330	U
Chrysene	2400		4100	J	9900	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	980	J	2600	J	9900	UJ	330	UJ	330	U
Di-n-octylphthalate	1700	U	24000	UJ	9900	UJ	330	UJ	330	U
Benzo(b)fluoranthene	1600	J	2800	J	9900	U	330	U	330	U
Benzo(k)fluoranthene	1800		2400	J	9900	U	330	U	330	U
Benzo(a)pyrene	2600		3300	J	9900	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	1700		4600	J	9900	U	330	U	330	U
Dibenzo(a,h)anthracene	690	J	24000	UJ	9900	U	330	U	330	U
Benzo(g,h,i)perylene	1200	J	6200	J	9900	U	330	U	330	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWW76		SBLKW1		BWY08DL		BWY08MS		BWY08MSD	
Sampling Location :	6363-RB01				DO NOT USE		6363-SD02		6363-SD02	
Matrix :	Water		Water		Soil		Soil		Soil	
Units :	ug/L		ug/L		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999				12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	09:45				10:40		10:40		10:40	
%Moisture :	N/A				27		27		27	
pH :					7.8		7.8		7.8	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	10	U	10	U	11000	U	11000	U	11000	U
Phenol	10	U	10	U	11000	U	67000		73000	
bis-(2-Chloroethyl) ether	10	U	10	U	11000	U	11000	U	11000	U
2-Chlorophenol	10	U	10	U	11000	U	68000		76000	
2-Methylphenol	10	U	10	U	11000	U	11000	U	11000	U
2,2'-oxybis(1-Chloropropane)	10	U	10	U	11000	U	11000	U	11000	U
Acetophenone	10	U	10	U	11000	U	11000	U	11000	U
4-Methylphenol	10	U	10	U	11000	U	11000	U	11000	U
N-Nitroso-di-n-propylamine	10	U	10	U	11000	U	42000		47000	
Hexachloroethane	10	U	10	U	11000	U	11000	U	11000	U
Nitrobenzene	10	U	10	U	11000	U	11000	U	11000	U
Isophorone	10	U	10	U	11000	U	11000	U	11000	U
2-Nitrophenol	10	U	10	U	11000	U	11000	U	11000	U
2,4-Dimethylphenol	10	U	10	U	11000	U	11000	U	11000	U
bis(2-Chloroethoxy)methane	10	U	10	U	11000	U	11000	U	11000	U
2,4-Dichlorophenol	10	U	10	U	11000	U	11000	U	11000	U
Naphthalene	10	U	10	U	11000	U	11000	U	11000	U
4-Chloroaniline	10	U	10	U	11000	U	11000	U	11000	U
Hexachlorobutadiene	10	UJ	10	UJ	11000	U	11000	U	11000	U
Caprolactam	10	U	10	U	11000	U	11000	U	11000	U
4-Chloro-3-methylphenol	10	U	10	U	11000	U	75000		79000	
2-Methylnaphthalene	10	U	10	U	11000	U	11000	U	11000	U
Hexachlorocyclopentadiene	10	U	10	U	11000	U	11000	U	11000	U
2,4,6-Trichlorophenol	10	U	10	U	11000	U	11000	U	11000	U
2,4,5-Trichlorophenol	25	U	25	U	28000	U	28000	U	28000	U
1,1'-Biphenyl	10	U	10	U	11000	U	11000	U	11000	U
2-Chloronaphthalene	10	U	10	U	11000	U	11000	U	11000	U
2-Nitroaniline	25	U	25	U	28000	U	28000	U	28000	U
Dimethylphthalate	10	U	10	U	11000	U	11000	U	11000	U
2,6-Dinitrotoluene	10	U	10	U	11000	U	11000	U	11000	U
Acenaphthylene	10	U	10	U	11000	U	11000	U	11000	U
3-Nitroaniline	25	U	25	U	28000	U	28000	U	28000	U
Acenaphthene	10	U	10	U	11000	U	45000		47000	
2,4-Dinitrophenol	25	UJ	25	UJ	28000	UJ	28000	U	28000	U
4-Nitrophenol	25	U	25	U	28000	U	85000	J	89000	J
Dibenzofuran	10	U	10	U	11000	U	11000	U	11000	U
2,4-Dinitrotoluene	10	U	10	U	11000	U	11000	U	11000	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWW76		SBLKW1		BWY08DL		BWY08MS		BWY08MSD	
Sampling Location :	6363-RB01				DO NOT USE		6363-SD02		6363-SD02	
Matrix :	Water		Water		Soil		Soil		Soil	
Units :	ug/L		ug/L		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999				12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	09:45				10:40		10:40		10:40	
%Moisture :	N/A				27		27		27	
pH :					7.8		7.8		7.8	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Diethylphthalate	10	U	10	U	11000	U	11000	U	11000	U
Fluorene	10	U	10	U	11000	U	11000	U	11000	U
4-Chlorophenyl-phenyl ether	10	U	10	U	11000	U	11000	U	11000	U
4-Nitroaniline	25	U	25	U	28000	U	28000	U	28000	U
4,6-Dinitro-2-methylphenol	25	U	25	U	28000	U	28000	U	28000	U
N-Nitrosodiphenylamine	10	U	10	U	11000	U	11000	U	11000	U
4-Bromophenyl-phenylether	10	U	10	U	11000	U	11000	U	11000	U
Hexachlorobenzene	10	U	10	U	11000	U	11000	U	11000	U
Atrazine	10	U	10	U	11000	U	11000	U	11000	U
Pentachlorophenol	25	U	25	U	28000	U	78000		84000	
Phenanthrene	10	U	10	U	2100	J	1600	J	11000	U
Anthracene	10	U	10	U	11000	U	11000	U	11000	U
Carbazole	10	U	10	U	11000	U	11000	U	11000	U
Di-n-butylphthalate	10	U	10	U	11000	U	11000	U	11000	U
Fluoranthene	10	U	10	U	2400	J	2400	J	11000	U
Pyrene	10	U	10	U	2000	J	45000		46000	
Butylbenzylphthalate	10	U	10	U	11000	UJ	11000	UJ	11000	UJ
3,3'-Dichlorobenzidine	10	U	10	U	11000	U	11000	U	11000	U
Benzo(a)anthracene	10	U	10	U	1100	J	1200	J	11000	U
Chrysene	10	U	10	U	1200	J	1300	J	11000	U
bis(2-Ethylhexyl)phthalate	10	U	10	U	11000	UJ	11000	UJ	11000	UJ
Di-n-octylphthalate	10	U	10	U	11000	UJ	11000	UJ	11000	UJ
Benzo(b)fluoranthene	10	U	10	U	11000	U	11000	U	11000	U
Benzo(k)fluoranthene	10	U	10	U	11000	U	11000	U	11000	U
Benzo(a)pyrene	10	U	10	U	11000	U	11000	U	11000	U
Indeno(1,2,3-cd)pyrene	10	U	10	U	11000	U	11000	U	11000	U
Dibenzo(a,h)anthracene	10	U	10	U	11000	U	11000	U	11000	U
Benzo(g,h,i)perylene	10	U	10	U	11000	U	1300	J	11000	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Number of Soil Samples : 19
Number of Water Samples : 1

Sample Number :	BWW62	BWW62DL	BWW63	BWW63DL	BWW64
Sampling Location :	6363-SD10	DO NOT USE	6363-SD11	DO NOT USE	6363-SD12
Matrix :	Soil	Soil	Soil	Soil	Soil
Units :	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Date Sampled :	12/02/1999	12/02/1999	12/02/1999	12/02/1999	12/02/1999
Time Sampled :	14:15	14:15	13:45	13:45	14:10
%Moisture :	22	22	33	33	26

DO NOT USE DO NOT USE

pH :	6.9		6.9		7.2		7.2		7.2	
Dilution Factor :	10.0		100.0		1.0		10.0		1.0	
Pesticide/PCB Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	21	U	210	U	2.5	U	25	U	2.3	U
beta-BHC	21	U	210	U	5.5	J	25	U	17	JN
delta-BHC	21	U	93	J	2.5	U	25	U	2.3	U
gamma-BHC (Lindane)	21	U	210	U	2.5	U	25	U	2.3	U
Heptachlor	21	U	210	U	2.5	U	25	U	2.3	U
Aldrin	43	R	210	U	38	J	26	JN	2.3	U
Heptachlor epoxide	190	J	290	J	65		80	J	74	
Endosulfan I	21	U	210	U	2.5	U	25	U	2.3	U
Dieldrin	41	U	410	U	4.9	U	49	U	26	JN
4,4'-DDE	99	J	410	U	26	R	49	U	39	JN
Endrin	41	U	410	U	4.9	U	49	U	4.4	U
Endosulfan II	41	U	410	U	4.9	U	49	U	4.4	U
4,4'-DDD	41	U	410	U	36		29	J	4.4	U
Endosulfan sulfate	41	U	410	U	4.9	U	49	U	4.4	U
4,4'-DDT	41	U	410	U	30	JN	49	U	4.4	U
Methoxychlor	210	UJ	2100	U	25	U	250	U	54	U
Endrin ketone	41	U	410	U	4.9	U	49	U	15	R
Endrin aldehyde	41	U	410	U	21	J	26	J	4.4	U
alpha-Chlordane	21	U	210	U	2.5	U	25	U	2.3	U
gamma-Chlordane	39	R	210	U	13	J	15	J	14	R
Toxaphene	2100	U	21000	U	250	U	2500	U	230	U
Aroclor-1016	410	U	4100	U	49	U	490	U	44	U
Aroclor-1221	840	U	8400	U	100	U	1000	U	89	U
Aroclor-1232	410	U	4100	U	49	U	490	U	44	U
Aroclor-1242	13000	D	13000		220		280	J	4400	D
Aroclor-1248	410	U	4100	U	49	U	490	U	44	U
Aroclor-1254	410	U	4100	U	49	U	490	U	44	U
Aroclor-1260	3000		4700		580	JN	660	JN	2000	D

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWW64DL		BWW65		BWW65DL		BWW66		BWW66DL	
Sampling Location :	DO NOT USE		6363-SD13		DO NOT USE		6363-SD14		DO NOT USE	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	14:10		14:00		14:00		13:40		13:40	
%Moisture :	26		35		35		28		28	
pH :	7.2		7.3		7.3		7.6		7.6	
Dilution Factor :	10.0		1.0		10.0		1.0		10.0	
Pesticide/PCB Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	23	U	2.2	J	26	U	2.3	U	23	U
beta-BHC	23	U	4.5		26	U	7.2		23	U
delta-BHC	71		2.6	U	26	U	2.3	U	23	U
gamma-BHC (Lindane)	23	U	2.6	U	26	U	2.3	U	23	U
Heptachlor	23	U	2.6	U	26	U	2.3	U	23	U
Aldrin	23	U	12	JN	26	U	5.1	JN	23	J
Heptachlor epoxide	81	J	36		45		16		22	J
Endosulfan I	23	U	2.6	U	26	U	2.3	U	23	U
Dieldrin	44	U	5.0	U	50	U	4.6	U	46	U
4,4'-DDE	49	J	12	R	50	U	9.6	JN	46	U
Endrin	44	U	5.0	U	50	U	4.6	U	46	U
Endosulfan II	44	U	5.0	U	50	U	4.6	U	46	U
4,4'-DDD	44	U	31	J	31	J	12	J	46	U
Endosulfan sulfate	34	J	5.0	U	50	U	4.6	U	46	U
4,4'-DDT	44	U	19	R	50	U	12	R	46	U
Methoxychlor	230	UJ	50	U	260	U	75		230	U
Endrin ketone	44	U	5.0	U	50	U	4.6	U	46	U
Endrin aldehyde	44	U	17	JN	50	U	6.6	R	46	U
alpha-Chlordane	23	U	5.5	R	26	U	4.4	R	23	U
gamma-Chlordane	23	U	5.7		26	U	7.4		23	U
Toxaphene	2300	U	260	U	2600	U	230	U	2300	U
Aroclor-1016	440	U	50	U	500	U	46	U	460	U
Aroclor-1221	890	U	100	U	1000	U	92	U	920	U
Aroclor-1232	440	U	50	U	500	U	46	U	460	U
Aroclor-1242	4400		320	JN	130	J	53	J	80	J
Aroclor-1248	440	U	50	U	500	U	46	U	460	U
Aroclor-1254	440	U	50	U	500	U	46	U	460	U
Aroclor-1260	2000		610	J	600	JN	360		470	J

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWW67		BWW67DL		BWW68		BWW68DL		BWW69	
Sampling Location :	6363-SD15		DO NOT USE		6363-SD16		DO NOT USE		6363-SD17	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	13:55		13:55		10:40		10:40		10:30	
%Moisture :	25		25		33		33		57	
pH :	7.8		7.8		7.5		7.5		7.6	
Dilution Factor :	1.0		10.0		1.0		10.0		1.0	
Pesticide/PCB Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	2.2	U	22	U	14	J	15	J	54	J
beta-BHC	4.2	J	22	U	6.4	J	25	U	63	J
delta-BHC	2.2	U	22	U	1.4	J	25	U	6.5	J
gamma-BHC (Lindane)	2.2	U	22	U	2.5	U	25	U	3.2	J
Heptachlor	2.2	U	22	U	2.5	U	25	U	3.9	UJ
Aldrin	10	R	22	U	16	J	25	U	29	J
Heptachlor epoxide	33		53		20		28	J	31	J
Endosulfan I	2.2	U	22	U	2.5	U	25	U	3.9	UJ
Dieldrin	4.3	U	43	U	4.8	U	48	U	7.5	UJ
4,4'-DDE	13	R	43	U	15	JN	48	U	38	JN
Endrin	4.3	U	43	U	4.8	U	48	U	7.5	UJ
Endosulfan II	4.3	U	43	U	4.8	U	48	U	7.5	UJ
4,4'-DDD	21	JN	43	U	53		52		45	J
Endosulfan sulfate	4.3	U	43	U	4.8	U	48	U	7.5	UJ
4,4'-DDT	17	R	43	U	86	J	90	J	16	R
Methoxychlor	22	U	220	U	25	U	250	UJ	140	JN
Endrin ketone	4.3	U	38	J	4.8	U	48	U	8.0	R
Endrin aldehyde	14	R	43	U	6.4	J	48	U	14	JN
alpha-Chlordane	4.6	R	22	U	4.7	R	25	U	3.9	UJ
gamma-Chlordane	6.3		8.7	J	8.1	J	25	U	17	J
Toxaphene	220	U	2200	U	250	U	2500	U	390	UJ
Aroclor-1016	43	U	430	U	48	U	480	U	75	UJ
Aroclor-1221	87	U	870	U	97	U	970	U	150	UJ
Aroclor-1232	43	U	430	U	48	U	480	U	75	UJ
Aroclor-1242	100		430	U	48	U	480	U	280	J
Aroclor-1248	43	U	430	U	48	U	480	U	75	UJ
Aroclor-1254	43	U	430	U	48	U	480	U	75	UJ
Aroclor-1260	550	J	720	J	280		400	J	480	J

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Surface Soil

Sample Number :	BWW69DL		BWW70		BWW70DL		BWX88		BWX88DL	
Sampling Location :	DO NOT USE		6363-SD18		DO NOT USE		6363-SS07		DO NOT USE	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/06/1999		12/06/1999	
Time Sampled :	10:30		10:30		10:30		14:00		14:00	
%Moisture :	57		34		34		17		17	
pH :	7.6		8.0		8.0		8.4		8.4	
Dilution Factor :	10.0		10.0		100.0		1.0		10.0	
Pesticide/PCB Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	47	J	26	U	260	U	8.9	J	20	U
beta-BHC	70	J	26	U	260	U	16	J	20	U
delta-BHC	39	UJ	26	U	260	U	2.0	UJ	20	U
gamma-BHC (Lindane)	39	UJ	26	U	260	U	2.0	UJ	20	U
Heptachlor	39	UJ	26	U	260	U	2.0	UJ	20	U
Aldrin	39	UJ	60	R	260	U	7.4	R	20	U
Heptachlor epoxide	49	J	190	J	270	J	15	JN	20	U
Endosulfan I	39	UJ	26	U	260	U	2.0	UJ	20	U
Dieldrin	75	UJ	50	U	500	U	3.9	UJ	39	U
4,4'-DDE	75	UJ	120		150	J	7.6	R	39	U
Endrin	75	UJ	50	U	500	U	6.5	J	39	U
Endosulfan II	75	UJ	50	U	500	U	3.9	UJ	39	U
4,4'-DDD	43	J	50	U	500	U	120	JN	250	R
Endosulfan sulfate	75	UJ	50	U	500	U	3.9	UJ	39	U
4,4'-DDT	75	UJ	50	U	500	U	170	J	180	R
Methoxychlor	390	UJ	260	UJ	2600	U	20	UJ	200	U
Endrin ketone	75	UJ	50	U	500	U	3.9	UJ	39	U
Endrin aldehyde	75	UJ	50	U	500	U	3.9	UJ	39	U
alpha-Chlordane	39	UJ	26	U	260	U	2.0	UJ	20	U
gamma-Chlordane	39	UJ	36	R	260	U	2.0	UJ	20	U
Toxaphene	3900	UJ	2600	U	26000	U	200	UJ	2000	U
Aroclor-1016	750	UJ	500	U	5000	U	39	UJ	390	U
Aroclor-1221	1500	UJ	1000	U	10000	U	79	UJ	790	U
Aroclor-1232	750	UJ	500	U	5000	U	39	UJ	390	U
Aroclor-1242	360	J	11000	D	11000		39	UJ	390	U
Aroclor-1248	750	UJ	500	U	5000	U	39	UJ	390	U
Aroclor-1254	750	UJ	500	U	5000	U	39	UJ	390	U
Aroclor-1260	610	JN	3000		4000	J	39	UJ	390	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY07		BWY08		BWY08MS		BWY08MSD		BWY09	
Sampling Location :	6363-SD01		6363-SD02		6363-SD02		6363-SD02		6363-SD03	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	10:25		10:40		10:40		10:40		10:45	
%Moisture :	65		27		27		27		39	
pH :	7.0		7.8		7.8		7.8		7.6	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Pesticide/PCB Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	4.9	UJ	2.3	U	2.3	U	2.3	U	2.8	U
beta-BHC	4.9	UJ	2.3	U	2.3	U	2.3	U	2.8	U
delta-BHC	4.9	UJ	2.3	U	2.3	U	2.3	U	2.8	U
gamma-BHC (Lindane)	4.9	UJ	2.3	U	19		18		2.8	U
Heptachlor	4.9	UJ	2.3	U	18		17		2.8	U
Aldrin	14	J	2.3	U	29	J	28	J	2.8	U
Heptachlor epoxide	6.3	JN	12	JN	17	JN	15	JN	2.8	U
Endosulfan I	4.9	UJ	2.3	U	2.3	U	2.3	U	2.8	U
Dieldrin	9.4	UJ	4.5	U	42		41		5.4	U
4,4'-DDE	9.4	UJ	4.6	JN	6.2	R	6.8	R	5.4	U
Endrin	9.4	UJ	4.5	U	48		46		5.4	U
Endosulfan II	9.4	UJ	4.5	U	4.5	U	4.5	U	5.4	U
4,4'-DDD	9.4	UJ	5.0	J	6.6	J	7.9		5.4	U
Endosulfan sulfate	9.4	UJ	4.5	U	4.5	U	4.5	U	5.4	U
4,4'-DDT	9.4	UJ	11	JN	42	J	40	J	5.4	U
Methoxychlor	49	UJ	23	U	23	U	23	U	28	U
Endrin ketone	9.4	UJ	4.5	U	4.5	U	4.5	U	5.4	U
Endrin aldehyde	9.4	UJ	4.5	U	4.5	U	4.5	U	5.4	U
alpha-Chlordane	4.9	UJ	2.3	U	2.3	U	2.3	U	2.8	U
gamma-Chlordane	4.9	UJ	2.3	U	2.1	J	1.6	J	2.8	U
Toxaphene	490	UJ	230	U	230	U	230	U	280	U
Aroclor-1016	94	UJ	45	U	45	U	45	U	54	U
Aroclor-1221	190	UJ	91	U	92	U	91	U	110	U
Aroclor-1232	94	UJ	45	U	45	U	45	U	54	U
Aroclor-1242	94	UJ	45	U	45	U	45	U	54	U
Aroclor-1248	94	UJ	45	U	45	U	45	U	54	U
Aroclor-1254	94	UJ	45	U	45	U	45	U	54	U
Aroclor-1260	94	UJ	180	J	150		150		54	U

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY10		BWY11		BWY11DL		BWY12		BWY12DL	
Sampling Location :	6363-SD04		6363-SD05		DO NOT USE		6363-SD06		DO NOT USE	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	11:30		11:33		11:33		11:40		11:40	
%Moisture :	57		55		55		28		28	
pH :	7.8		7.7		7.7		7.5		7.5	
Dilution Factor :	1.0		1.0		10.0		1.0		10.0	
Pesticide/PCB Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	3.9	UJ	33	J	25	J	9.4	J	23	U
beta-BHC	3.9	UJ	140	J	170	J	12	JN	23	U
delta-BHC	3.9	UJ	3.8	UJ	38	UJ	2.3	U	66	J
gamma-BHC (Lindane)	3.9	UJ	3.8	UJ	38	UJ	2.3	U	23	U
Heptachlor	3.9	UJ	120	R	38	UJ	44	J	23	U
Aldrin	3.9	UJ	20	R	38	UJ	7.2	R	23	U
Heptachlor epoxide	3.9	UJ	120	J	130	J	14	JN	15	J
Endosulfan I	3.9	UJ	3.8	UJ	38	UJ	2.3	U	23	U
Dieldrin	7.6	UJ	59	JN	73	UJ	7.1	R	44	U
4,4'-DDE	7.6	UJ	53	R	73	UJ	30	J	44	U
Endrin	7.6	UJ	7.3	UJ	73	UJ	50	JN	44	U
Endosulfan II	7.6	UJ	7.3	UJ	73	UJ	4.4	U	44	U
4,4'-DDD	7.6	UJ	130	J	75	J	4.4	U	44	U
Endosulfan sulfate	7.6	UJ	7.3	UJ	73	UJ	4.4	U	24	J
4,4'-DDT	7.6	UJ	76	R	73	UJ	4.4	UJ	44	U
Methoxychlor	39	UJ	210	J	380	UJ	99		230	U
Endrin ketone	7.6	UJ	7.3	UJ	73	UJ	4.4	U	44	U
Endrin aldehyde	7.6	UJ	7.3	UJ	73	UJ	170	J	44	U
alpha-Chlordane	3.9	UJ	3.8	UJ	38	UJ	2.3	U	23	U
gamma-Chlordane	3.9	UJ	54	R	51	R	26	J	23	U
Toxaphene	390	UJ	380	UJ	3800	UJ	230	U	2300	U
Aroclor-1016	76	UJ	73	UJ	730	UJ	44	U	440	U
Aroclor-1221	150	UJ	150	UJ	1500	UJ	90	U	900	U
Aroclor-1232	76	UJ	73	UJ	730	UJ	44	U	440	U
Aroclor-1242	76	UJ	6800	JD	6800	J	970		710	
Aroclor-1248	76	UJ	73	UJ	730	UJ	44	U	440	U
Aroclor-1254	76	UJ	73	UJ	730	UJ	44	U	440	U
Aroclor-1260	76	UJ	3300	JD	3300	J	2100	D	2100	

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY13		BWY13DL		BWY14		BWY14DL		BWY15	
Sampling Location :	6363-SD07		DO NOT USE		6363-SD08		DO NOT USE		6363-SD09	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	11:45		11:45		12:00		12:00		12:05	
%Moisture :	36		36		42		42		59	
pH :	6.8		6.8		6.7		6.7		6.4	
Dilution Factor :	1.0		10.0		1.0		10.0		1.0	
Pesticide/PCB Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	12		26	U	12		9.8	J	19	J
beta-BHC	15		14	J	15		17	J	31	J
delta-BHC	1.7	J	26	U	1.6	J	29	U	4.1	UJ
gamma-BHC (Lindane)	2.6	U	26	U	2.9	U	29	U	4.1	UJ
Heptachlor	8.3		26	U	2.9	U	29	U	4.1	UJ
Aldrin	14		18	J	23	J	29	U	27	JN
Heptachlor epoxide	15	J	26	U	22	J	29	J	28	J
Endosulfan I	2.6	U	26	U	2.9	U	29	U	4.1	UJ
Dieldrin	5.1	U	51	U	22	J	21	J	8.0	UJ
4,4'-DDE	26		28	J	5.6	U	56	U	33	JN
Endrin	5.1	U	51	U	5.6	U	56	U	8.0	UJ
Endosulfan II	5.1	U	51	U	5.6	U	56	U	8.0	UJ
4,4'-DDD	82		49	J	52		56	U	81	J
Endosulfan sulfate	5.1	U	51	U	5.6	U	56	U	8.0	UJ
4,4'-DDT	9.5	R	51	U	9.9	R	56	U	8.7	R
Methoxychlor	38	UJ	260	U	35	U	290	UJ	45	UJ
Endrin ketone	5.1	U	51	U	5.6	U	56	U	13	JN
Endrin aldehyde	5.1	U	51	U	7.6	R	56	U	13	R
alpha-Chlordane	2.6	U	26	U	2.9	U	29	U	8.7	R
gamma-Chlordane	17		19	J	26	JN	29	U	22	J
Toxaphene	260	U	2600	U	290	U	2900	U	410	UJ
Aroclor-1016	51	U	510	U	56	U	560	U	80	UJ
Aroclor-1221	100	U	1000	U	110	U	1100	U	160	UJ
Aroclor-1232	51	U	510	U	56	U	560	U	80	UJ
Aroclor-1242	260		330	J	410		550	J	320	J
Aroclor-1248	51	U	510	U	56	U	560	U	80	UJ
Aroclor-1254	51	U	510	U	56	U	560	U	80	UJ
Aroclor-1260	410		550		560		680		730	J

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWY15DL		PBLKS1		PBLKS2					
Sampling Location :	DO NOT USE									
Matrix :	Soil		Soil		Soil					
Units :	ug/Kg		ug/Kg		ug/Kg					
Date Sampled :	12/02/1999									
Time Sampled :	12:05									
%Moisture :	59									
pH :	6.4									
Dilution Factor :	10.0		1.0		1.0					
Pesticide/PCB Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	15	J	1.7	U	1.7	U				
beta-BHC	34	J	1.7	U	1.7	U				
delta-BHC	3.7	J	1.7	U	1.7	U				
gamma-BHC (Lindane)	41	UJ	1.7	U	1.7	U				
Heptachlor	41	UJ	1.7	U	1.7	U				
Aldrin	43	J	1.7	U	1.7	U				
Heptachlor epoxide	43	J	1.7	U	1.7	U				
Endosulfan I	41	UJ	1.7	U	1.7	U				
Dieldrin	80	UJ	3.3	U	3.3	U				
4,4'-DDE	49	J	3.3	U	3.3	U				
Endrin	80	UJ	3.3	U	3.3	U				
Endosulfan II	80	UJ	3.3	U	3.3	U				
4,4'-DDD	79	J	3.3	U	3.3	U				
Endosulfan sulfate	80	UJ	3.3	U	3.3	U				
4,4'-DDT	80	UJ	3.3	U	3.3	U				
Methoxychlor	410	UJ	9.6	J	17	U				
Endrin ketone	80	UJ	3.3	U	3.3	U				
Endrin aldehyde	80	UJ	3.3	U	3.3	U				
alpha-Chlordane	41	UJ	1.7	U	1.7	U				
gamma-Chlordane	29	J	1.7	U	1.7	U				
Toxaphene	4100	UJ	170	U	170	U				
Aroclor-1016	800	UJ	33	U	33	U				
Aroclor-1221	1600	UJ	67	U	67	U				
Aroclor-1232	800	UJ	33	U	33	U				
Aroclor-1242	430	J	33	U	33	U				
Aroclor-1248	800	UJ	33	U	33	U				
Aroclor-1254	800	UJ	33	U	33	U				
Aroclor-1260	940	J	33	U	33	U				

Analytical Results (Qualified Data)

Case #: 27633 SDG : BWW62
Site : DIAMOND HEAD OIL REFINERY
Lab. : EANDE
Reviewer :
Date :

Sample Number :	BWW76		BWW76RE		PBLKW2		PBLKW3			
Sampling Location :	6363-RB01		DO NOT USE							
Matrix :	Water		Water		Water		Water			
Units :	ug/L		ug/L		ug/L		ug/L			
Date Sampled :	12/02/1999		12/02/1999							
Time Sampled :	09:45		09:45							
%Moisture :	N/A		N/A							
pH :	7.0		7.0							
Dilution Factor :	1.0		1.0		1.0		1.0			
Pesticide/PCB Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	0.050	U	0.050	UJ	0.050	U	0.050	U		
beta-BHC	0.050	U	0.050	UJ	0.050	U	0.050	U		
delta-BHC	0.050	U	0.050	UJ	0.050	U	0.050	U		
gamma-BHC (Lindane)	0.050	U	0.050	UJ	0.050	U	0.050	U		
Heptachlor	0.050	U	0.050	UJ	0.050	U	0.050	U		
Aldrin	0.050	U	0.050	UJ	0.050	U	0.050	U		
Heptachlor epoxide	0.050	U	0.050	UJ	0.050	U	0.050	U		
Endosulfan I	0.050	U	0.050	UJ	0.050	U	0.050	U		
Dieldrin	0.10	U	0.10	UJ	0.10	U	0.10	U		
4,4'-DDE	0.10	U	0.10	UJ	0.10	U	0.10	U		
Endrin	0.10	U	0.10	UJ	0.10	U	0.10	U		
Endosulfan II	0.10	U	0.10	UJ	0.10	U	0.10	U		
4,4'-DDD	0.10	U	0.10	UJ	0.10	U	0.10	U		
Endosulfan sulfate	0.10	U	0.10	UJ	0.10	U	0.10	U		
4,4'-DDT	0.10	U	0.10	UJ	0.10	U	0.10	U		
Methoxychlor	1.8	U	0.50	UJ	1.6		0.50	U		
Endrin ketone	0.10	U	0.10	UJ	0.10	U	0.10	U		
Endrin aldehyde	0.10	U	0.10	UJ	0.10	U	0.10	U		
alpha-Chlordane	0.050	U	0.050	UJ	0.050	U	0.050	U		
gamma-Chlordane	0.050	U	0.050	UJ	0.050	U	0.050	U		
Toxaphene	5.0	U	5.0	UJ	5.0	U	5.0	U		
Aroclor-1016	1.0	U	1.0	UJ	1.0	U	1.0	U		
Aroclor-1221	2.0	U	2.0	UJ	2.0	U	2.0	U		
Aroclor-1232	1.0	U	1.0	UJ	1.0	U	1.0	U		
Aroclor-1242	1.0	U	1.0	UJ	1.0	U	1.0	U		
Aroclor-1248	1.0	U	1.0	UJ	1.0	U	1.0	U		
Aroclor-1254	1.0	U	1.0	UJ	1.0	U	1.0	U		
Aroclor-1260	1.0	U	1.0	UJ	1.0	U	1.0	U		

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 27633 LABORATORY: EANDE

SITE NAME: Diamond Head Oil Refinery SDG Number(s): BWW62

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples? [✓] ___ ___

ACTION: If no, contact RSCC, or contact the WAM to obtain replacement of missing or illegible copies from the lab.

1.2 Is the Sampling Trip Report present for all samples and all fractions? [✓] ___ ___

ACTION: If no, contact either RSCC or ask the WAM to obtain this information from the prime contractor.

2.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package? [✓] ___

NOTE: The lab is required to submit data for only two analyses, for each fraction. (i.e., the original sample and one dilution, or the most concentrated dilution analyzed and one further dilution.)

ACTION: Contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the lab. If lab cannot provide them, note the effect on the review of the package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2 Was CLASS CCS checklist included with package? [✓] ___ ___

2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Report and Sample Tags? ___ [✓] ___

	YES	NO	N/
ACTION: If yes, contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the laboratory.			
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	✓		
3.2 Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.6.1)?	✓		
3.3 Does the narrative contain the following information:			
VOA: description of trap and columns used during sample analyses?	✓		
BNA: description of columns used during sample analyses?	✓		
Pest: description of columns used during sample analyses?	✓		
NOTE: As per section 6.23.3.1 SOW/p. D-11/Pest, Packed columns are not permitted.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	✓		
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler was exceeded, > 10° C, the lab must list by fraction and sample number, all affected samples.		✓	
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis (SOW Exhibit B, section 2.6.1.2)?			✓
3.7 Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?	✓		
ACTION: If "No", to any question in this section, contact the WAM to obtain all necessary resubmittals. If information is not available, document in the Data Assessment under Contract Problems/Non-Compliance section.			

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	YES	NO	N/A
4.0 Data Validation Checklist			
4.1 Check the package for the following discrepancies:			
a. Is the package paginated in ascending order starting from the SDG narrative?	✓		
b. Are all forms and copies legible?	✓		
c. Is each fraction assembled in the order set forth in the SOW?	✓		
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?		✓	

The following checklist is divided into three parts. Part A is for any VOA analyses, Part B is for BNAs and Part C is Pesticide/PCBs.

Does this package contain:

VOA Data?	✓	
BNA Data?	✓	
Pesticide/PCB data?	✓	

ACTION: Complete corresponding parts of checklist.

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YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ ✓ ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R). yes

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (> 10° C), then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: The smallest soil size permitted is 0.5g. If any soil sample is smaller than 0.5g, document in the Data Assessment under Contract Problems/Non-Compliance.

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ ✓ ___

Technical Holding Times: If unpreserved, aqueous samples, maintained at 4° C for aromatic hydrocarbons analysis must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4° C, then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or not samples were preserved. The holding time for soils is 10 days from date of collection.

YES NO N/A

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Sample Matrix	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the Data Assessment that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non detect data are unusable "R".

NOTE: Contractual Holding Times: Analysis of water and soil/sediment samples must be completed within 10 days of Validated Time of Sample Receipt (VTSR). This requirement does not apply to Performance Evaluation (PE) samples.

ACTION: If contractual holding times are exceeded, document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not technical and contractual holding times were met.

	YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)			
3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water?	✓		
b. Low Soil?	✓		
c. Med Soil?			✓
3.2 Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
a. Low Water?	✓		
b. Low Soil?	✓		
c. Med Soil?			✓

ACTION: Contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the laboratory. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.3 Were outliers marked correctly with an asterisk?			✓

ACTION: Circle all outliers with red pencil.

3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?		✓	
If yes, were samples re-analyzed?			✓
Were method blanks re-analyzed?			✓

ACTION: If recoveries are ≥ 10%, but 1 or more compounds fail to meet SOW specifications:

1. All positive results are qualified as estimated "J".

2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.

YES NO N/A

3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any system monitoring compound recovery is < 10%:

1. Flag all positive results as estimated "J".

2. Flag all non-detects as unusable "R".

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any SMC fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

NOTE: The laboratory must submit the following data:

1. If SMC recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If an SMC recovery and/or internal standard response fails to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

(Refer to section 11.4.3.2, page D-46/VOA of the SOW for more information.)

3.5 Are there any transcription/calculation errors between raw data and Form II? ✓ ___

ACTION: If large errors exist, contact the WAM to obtain an explanation or resubmittal of corrected deliverables from the laboratory. Make any necessary corrections and note the effect in the Data Assessment.

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	YES	NO	N/A

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present? [✓] ___ ___

4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:

a. Low Water? [ ] ___ [✓]

b. Low Soil? [✓] ___ ___

c. Med Soil? [ ] ___ [✓]

ACTION: If any matrix spike data are missing, take the action specified in section 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
N/A out of 10	2 out of 10

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
N/A out of 5	5 out of 5

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the MS/MSD results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

ACTION: Circle all outliers with red pencil.

5.0 Blanks (Form IV)

5.1 Is the Method Blank Summary (Form IV) present? [✓] ___ ___

5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been analyzed for each SDG or every 20 samples of similar matrix (low water, low soil or medium soil), whichever is more frequent? [✓] ___ ___

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		YES	NO	N/A
5.3	Has a VOA method blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	[✓]		
5.4	Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound that exceeded the initial calibration range?	[✓]		
5.5	Was a VOA storage blank analyzed at the end of all samples for each SDG in a case? but not at the end	[✓]		

ACTION: If any method/instrument blank data are missing, contact the WAM to obtain any missing deliverables from the laboratory. If method blank data are not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

If any instrument blank analyzed after a sample with high concentration is missing, contact the WAM to obtain any missing deliverables from the laboratory. If the instrument blank was not analyzed or not available, inspect the chromatogram of the sample analyzed immediately after this analysis for possible carryover. Use professional judgement to determine if any contamination occurred and qualify analyte(s) accordingly.

If storage blank data is missing, contact the WAM to obtain any missing deliverables from the laboratory. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, section 3.3.7.3 of the SOW for further information.

	Was the correct identification scheme used for all VOA blanks?	[✓]		

ACTION: Contact the WAM to obtain missing deliverables from the lab, or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-compliance if corrections were made by the validator.

	YES	NO	N/A
5.7 Chromatography: review the blank raw data-chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	✓		

ACTION: Use professional judgement to determine the effect on the data.

5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte?	✓		

Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/instrument/reagent/storage blanks have positive results (TCL and/or TIC) for VOAs?		✓	

NOTE: When applied as directed in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for %moisture when necessary.

NOTE: A contaminated instrument blank is not allowable under this SOW. See page D-43/VOA, section 12.1.2.4 for additional information. Document in the Data Assessment under Contract Problems/Non-Compliance if contaminated instrument blank was submitted.

6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)?	✓		

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YES NO N/A

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field Blanks & Trip Blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but ≤ 10x blank value.	Sample conc. is < CRQL and ≤ 10x blank value.	Sample conc. is > CRQL and > 10x blank value.
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5x blank value.	Sample conc. is < CRQL and ≤ 5x blank value.	Sample conc. is > CRQL and > 5x blank value.

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R".

YP

	YES	NO	N/A
6.3 Are there field/rinse/equipment blanks associated with every sample?	✓		

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For samples with high concentrations of suspected blank contaminants, use professional judgement to qualify these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)?	✓		
7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	✓		
7.3 Has an instrument performance check been analyzed for every analytical sequence on each instrument?	✓		

ACTION: List date, time, instrument ID, and sample numbers for which associated GC/MS tuning data are unavailable.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: Notify the WAM to obtain missing data, if possible. If the lab cannot provide the missing data, reject, "R", all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 as specified in Exhibit D, page D-56/VOA?	✓		

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the

YES NO N/A

ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used? [✓] ___ ___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values, but if errors are found check more.) ___ [✓] ___

7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column? [✓] ___ ___

ACTION: If large errors exist, take action as specified in section 3.5 above.

7.8 Are the spectra of the mass calibration compound acceptable? [✓] ___ ___

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 <u>Target Compound List (TCL) Analytes (FORM I VOA)</u>

8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate? [✓] ___ ___

b. Matrix spikes and matrix spike duplicates? [✓] ___ ___

c. Blanks? [✓] ___ ___

8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the

	YES	NO	N/A
following:			
a. Samples and/or fractions as appropriate?	[✓]		
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[✓]		
c. Blanks?	[✓]		
ACTION: If any data are missing, take action specified in 3.2 above.			
8.3 Are the response factors shown in the quant. report?	[ ]	[✓]	
8.4 Is chromatographic performance acceptable with respect to:			
a. Baseline stability?	[✓]		
b. Resolution?	[✓]		
c. Peak shape?	[✓]		
d. Full-scale graph (attenuation)?	[✓]		
e. Other: _____?	[ ]		
ACTION: Use professional judgement to determine the acceptability of the data.			
8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[✓]		
ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If the lab does not generate its own standard spectra, document in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.			
8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]		
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]		

	YES	NO	N/A
8.8 Do sample and standard relative ion intensities agree within ±20%?	[✓]		

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.6, 8.7, and 8.8.

ACTION: When sample carry-over is suspected, use professional judgement determine if instrument cross-contamination has affected positive compound identifications.

9.0 Tentatively Identified Compounds (TIC)

	YES	NO	N/A
9.1 Are all Tentatively Identified Compound Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[✓]		
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[✓]		
b. Blanks?	[✓]		
c. Alkanes listed for each sample?	[✓]		

ACTION: If any TIC data are missing, take action specified in 3.2 above.

ACTION: Add "JN" qualifier to all chemically named TICs, if missing.

	YES	NO	N/A
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2- dimethylbenzene is xylene, a VOA TCL analyte, and should not be reported as a TIC.)		[✓]	

ACTION: Flag with "R" any TCL compound listed as a TIC.

9.4 Are all ions present in the reference mass

	YES	NO	N/A
spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	✓		
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	✓		

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined an incorrect identification was made, change the identification to "unknown," or to some less specific identification as appropriate. (Example: "C3 substituted benzene.")

Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable "R". (E.g., Common Lab Contaminants: CO_2 (M/E 44), siloxanes (M/E 73) hexane, aldol condensation products, solvent preservatives, and related by-products - see the National Functional Guidelines for further guidance.)

	YES	NO	N/A
9.6 Are TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?		✓	

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N/A
10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRF were used to calculate Form I results.)		✓	
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	✓		

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample). Replace concentrations that exceeded the calibration

YES NO N/

range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is not to be used, including any in the data summary package.

11.0 Standards Data (GC/MS)

11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration? [✓] ___ ___

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete at concentrations of 10, 20, 50, 100, 200ng for separate calibrations of low water/med soils (unheated purge) and low soils (heated purge)? [✓] ___ ___

ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.

12.2 Were all low level soil standards, blanks and samples analyzed by heated purge? [✓] ___ ___

ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" (estimated) and non-detects "R".

12.3 Are the % relative standard deviation (%RSD) values for VOAs ≤ 30% over the concentration range of the calibration? [ ] [✓] ___

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %RSD, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

ACTION: If %RSD is > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. When %RSD is > 90%, flag all non-detects for that

YES NO N/A

analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria.

12.4 Are any average RRFs < 0.05? ✓ [ ] ___

ACTION: Circle all outliers with red pencil. ✓

ACTION: If the average RRF is < 0.05, then qualify associated non-detects with an "R" and flag associated positive data as estimated "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %RSD or RRF criteria, provided the %RSD is ≤ 40% and RRF is ≥ 0.010. (See Table 5, page D-39/VOA and analytes marked with a "." on Form VI for required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.) ___ [✓] ___ Originally yes, but lab resubmitted documents → o

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the WAM to obtain an explanation/resubmittal from the lab, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for separate calibration of low water/med soil and low soil samples? [✓] ___ ___

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? (95) [✓] ___ ___

YES NO N

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the WAM to request an explanation/resubmittal from the lab. If continuing calibration data are not available, flag all associated sample data as unusable "R".

ACTION: List below all sample(s) that were not analyzed within twelve hours of the previous continuing calibration.

_____

_____

_____

13.3 Do any volatile compounds have a percent difference (%D) between the initial and continuing RRF which exceeds the ±25% criteria? ✓ [ ]

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %D, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When %D is > 90%, qualify all non-detects for that analyte unusable (R) and positive results estimated (J).

13.4 Are any continuing calibration RRFs < 0.05? ✓ [ ]

ACTION: Circle all outliers with red pencil. ✓

ACTION: If the RRF is < 0.05, qualify the associated non-detects as unusable "R" and the associated positive values "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 pg. D-59/VOA or analytes marked with a "*" on Form VI for required analytes.) Technical criteria, however, are the same for all analytes.

YES NO N/A

are the same for all analytes.

ACTION: If more than two analytes failed %D and RRF, criteria document in the Data Assessment under contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

13.5 Are there any transcription/calculation errors in the reporting of RRF or %D between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.)

Originally Yes but lab resubmi correct ones.

___ [✓] ___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the WAM to obtain an explanation/resubmittal from the lab. document in the Data Assessment under Contract Problems/Non-Compliance.

14.0 Internal Standard (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration?

[✓] ___ ___

If no, was the sample re-analyzed?

[ ] ___ [✓]

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

Sample #	Internal Std.	Area	Lower/Upper Limit
			/
			/
			/
			/

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: If any sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

ACTION: 1. If the internal standard area count is

YES NO N/A

outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > 100%.

3. If the IS area in the sample is below the "lower limit," < 50%, qualify all analytes associated with that IS estimated, "J". If the area counts are extremely low, < 25% of the area in the 12 hour standard, or if performance exhibits a major abrupt drop- off, flag all associated non-detects as unusable, "R", and positive hits estimated, "J".

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 7 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for VOA analysis? [✓] ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

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YES NO N/A

PART B: BNA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody records or laboratory SDG Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [✓] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [✓] ___

Technical Holding Time: Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/sediment samples must be extracted within 7 days of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed

YES NO N/A

ACTION: If technical holding times were exceeded, flag all positive results as estimated (J) and sample quantitation limits as estimated (UJ), and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on sample results. At a minimum, all results should be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times were exceeded by more than 28 days, all non-detect data must be qualified "R", unusable.

NOTE: Contractual Holding Times: Extraction of water samples must be started within 5 days VTSR. Soil/sediment samples must be extracted within 10 days of VTSR. This requirement does not apply to Performance Evaluation (PE) samples. Water and soil/sediment extracts must be analyzed within 40 days following extraction.

ACTION: If contractual holding times are exceeded, document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not technical and contractual holding times were met.

3.0 Surrogate Recovery (Form II)

3.1 Are BNA Surrogate Recovery Summaries (Form II) present for each of the following matrices:

a. Low Water? [✓] ___ ___

b. Low Soil? [✓] ___ ___

c. Med Soil? [✓] ___ ___

3.2 Are all the BNA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:

a. Low Water? [✓] ___ ___

b. Low Soil? [✓] ___ ___

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	YES	NO	N/A
c. Med Soil?	[✓]		

ACTION: Contact the WAM to request an explanation or resubmittal of any missing deliverables from the laboratory. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.3 Were outliers marked correctly with an asterisk?	[✓]		

ACTION: Circle all outliers with red pencil.

3.4 Were two or more base-neutral OR acid surrogate recoveries out of specification for any sample or method blank?		[✓]	
If yes, were samples reanalyzed?	[ ]		✓
Were method blanks reanalyzed?	[ ]		✓

ACTION: If all BNA surrogate recoveries are ≥ 10%, but two within the base-neutral or acid fraction do not meet SOW specifications, for the affected fraction only (i.e. acid or base-neutral compounds):

1. Flag all positive results as estimated (J).

2. Flag all non-detects as estimated detection limits ("UJ") when recoveries are less than the lower acceptance limit.

3. Do not qualify non-detects if recoveries are greater than the upper acceptance limit.

If any base-neutral or acid surrogate has a recovery of < 10%:

1. Qualify positive results for that fraction as estimated (J).

2. Qualify non-detects for that fraction as unusable (R).

Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and reanalyses. Check the internal standard areas.

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YES NO N/A

NOTE: Contractual requirements state that if any surrogate fails acceptance criteria, the sample must be re-analyzed. If sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: The laboratory must submit the following data:

1. If surrogate recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If surrogate recoveries and/or internal standard responses fail to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

3.5 Are there any transcription/calculation errors between raw data and Form II? ___ [✓] ___

ACTION: If large errors exist, contact the WAM to request an explanation or resubmittal of corrected deliverables from the laboratory. Make necessary corrections and note errors in the Data Assessment.

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present? [✓] ___ ___

4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:

a. Low Water? [ ] ___ [✓]

b. Low Soil? [✓] ___ ___

c. Med Soil? [✓] ___ ___

ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.

4.3 How many BNA spike recoveries are outside QC limits?

Water

N/A out of 22

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Soils

0 out of ~~22~~ 18 for Low level Soil

0 out of 18 for Med level Soil

YES NO N/A

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water
N/A out of 11

Soils
0 out of 9 for med lev. Soil
1 out of ~~11~~ 9 for low lev. Soil

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the matrix spike and matrix spike duplicate results in conjunction with other QC criteria and determine the need for some qualification of the data.

ACTION: Circle all outliers with red pencil.

5.0 Blanks (Form IV)

5.1 Is the Method Blank Summary (Form IV) present? ✓ ___ ___

5.2 Frequency of Analysis: Has a reagent/method blank analysis been reported per 20 samples of similar matrix, or concentration level, and for each extraction batch? ✓ ___ ___

5.3 Has a BNA method blank been analyzed for each GC/MS system used? (See SOW pg. D-54/SVOA, Section 12.1.2.) ✓ ___ ___

ACTION: If any method blank data are missing, contact the WAM to obtain an explanation/resubmittal from the lab. If resubmittals are unavailable, use professional judgement to determine if the associated sample data should be qualified.

5.4 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, sec. 3.3.7.3 of the SOW for further information.

Was the correct identification scheme used for all BNA blanks? ✓ ___ ___

ACTION: Contact the WAM to obtain resubmittals from the lab or make the required corrections on the forms. Document all corrections made by the validator in the Data Assessment under Contract Problems/Non-Compliance.

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YES NO N/

5.5 Chromatography: review the blank raw data - chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) acceptable for each instrument? [✓] ___ ___

ACTION: Use professional judgement to determine the effect on the data.

5.6 Are all detected hits for target compounds less than the CRQL for that analyte in all method blanks? [✓] ___ ___

Exception: Phthalate esters must be less than five times (5x) the CRQL.

6.0 Contamination

NOTE: "Water blanks", "drill blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/reagent blanks have positive results (TCL and/or TIC)? ✓ [ ] ___

NOTE: Water: When applied as directed in the table below (page 29), the contaminant concentration in method/instrument/reagent blanks is multiplied by the sample dilution factor, where necessary.

Soil: If the lab has not already done so, the contaminant concentration in soil blanks is multiplied by 33 times the sample dilution factor and corrected for %moisture (fraction of solid) where necessary. 30 grams of sodium sulfate (1 gram for medium level soils) are used to prepare the soil reagent/method blank as instructed on page D-54/SVOA, section 12.1.3. Contact the WAM to obtain resubmittals if the soil blanks are not reported in soil units (µg/kg).

6.2 Do any field/rinse blanks have positive BNA results (TCL and/or TIC)? ___ [✓] ___

ACTION: Prepare a list of samples associated with each contaminated blank. (Attach a separate sheet.)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case) must be

YES NO N/A

used to qualify sample data. Do not convert field blank results to account for the difference in soil CRQLs. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, spectral, instrument performance or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If gross contamination exists, all data in the associated samples should be qualified as unusable "R".

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Common Phthalate-Esters	Sample conc. is > CRQL, but ≤ 10x blank value.	Sample conc. is < CRQL and ≤ 10x blank value.	Sample conc. is > CRQL and > 10x blank value.
Other Contaminants	Sample conc. is > CRQL, but ≤ 5x blank value.	Sample conc. is < CRQL and ≤ 5x blank value.	Sample conc. is > CRQL and > 5x blank value.

NOTE: Analytes qualified "U" for blank contamination are still treated as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? ✓ ___ ___

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For analytes with high concentration, use professional judgement on qualification of these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

	YES	NO	N/A

missing one. Requested another copy.

7.0 GC/MS Instrument Performance Check

7.1	Are the GC/MS Instrument Performance Check Forms (Form V) present for Decafluorotriphenylphosphine (DFTPP)?	✓		
7.2	Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the DFTPP provided for each twelve hour shift?	✓		
7.3	Has an instrument performance check solution been analyzed for every twelve hours of sample analysis per instrument?	✓		

ACTION: List date, time, instrument ID, and sample number for which no associated GC/MS tuning data are valid.

SAMPLE NUMBERS	DATE	TIME	INSTRUMENT ID

ACTION: If the WAM cannot obtain missing data from the lab, reject "R" all data generated outside an acceptable twelve hour calibration interval.

7.4	Have the ion abundances been normalized to m/z 198 (see SOW, page D-61/SVOA)?	✓		

NOTE: All ion abundance ratios must be normalized to m/z 198, the nominal base peak, even though the ion abundance of m/z 442 may up to 110% that of m/z 198.

ACTION: If mass assignment is in error, flag all associated sample data as unusable "R".

7.5	Have the ion abundance criteria been met for each instrument used?	✓		

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

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	YES	NO	N/A
ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.			
7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)		✓	
7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column?	✓		
ACTION: If large errors exist, take action as specified in section 3.5 above.			
7.8 Are the spectra of the mass calibration compound acceptable?	✓		
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			
8.0 Target Compound List (TCL) Analytes (FORM I SV)			
8.1 Are the Organic Analysis Data Sheets (Form I SV) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	✓		
b. Matrix spikes and matrix spike duplicates?	✓		
c. Blanks?	✓		
8.2 Has GPC cleanup been performed on all soil/sediment sample extracts?	✓		
ACTION: If data suggests that GPC was not performed, use professional judgement. Make note in Contract Problems/Non-Compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.			
8.3 Are the BNA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	✓		

	YES	NO	N/A
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[✓]		
c. Blanks?	[✓]		

ACTION: If any data are missing, take action specified in 3.2 above.

8.4 Are the response factors shown in the quant. report?	[ ]	✓	
8.5 Is chromatographic performance acceptable with respect to:			
Baseline stability?	[✓]		
Resolution?	[✓]		
Peak shape?	[✓]		
Full-scale graph (attenuation)?	[✓]		
Other:_____?	[ ]		

ACTION: Use professional judgement to determine the acceptability of the data.

8.6 Are lab-generated standard mass spectra of identified BNA compounds present for each sample?	[✓]		

ACTION: If any mass spectra are missing, take action specified in 3.2 above. Note under Contract Non-compliance if lab does not generate their own standard spectra. If spectra are missing, reject all positive data.

8.7 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]		
8.8 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]		
8.9 Do sample and standard relative ion intensities agree within ±20%?	[✓]		

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all

	YES	NO	N/A

such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.7, 8.8, and 8.9.

ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.

9.0 Tentatively Identified Compounds (TIC)

9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	✓		
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	✓		
b. Blanks?	✓		
c. Alkanes listed for each sample?	✓		

ACTION: If any TIC data are missing, take action specified in 3.2 above.

ACTION: Add "N" qualifier to all chemically named TICs, if missing.

9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2-dimethylbenzene is xylene - a VOA TCL - and should not be reported as a TIC.)		✓	

ACTION: Flag with "R" any TCL compound listed as a TIC.

9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	✓		
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	✓		

YES NO N/

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined that an incorrect identification was made, change the identification to "unknown," or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable, "R".

9.6 Are any TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported? ___ ✓ ___

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result.) ✓ ✓ ___ due to wrong information

10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? ✓ ___ ___

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is that should not be used, including any in the summary package.

11.0 Standards Data (GC/MS)

11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for initial and continuing calibration? ✓ ___ ___

YES NO N/A

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the BNA fraction? [✓] ___ ___

ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.

12.2 Are the % relative standard deviation (%RSD) values for BNAs ≤ 30% over the concentration range of the calibration? [✓] ___ ___

ACTION: Circle all outliers with red pencil.

NOTE: Although 21 BNA compounds have a contractual minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

NOTE: Eight BNA compounds do not require a 20ng standard. Refer to SOW section 7.2.4.5.1, page D-15/SVOA for a list of required compounds and contractual criteria.

ACTION: If the %RSD is > 30.0%, qualify positive results for that analyte "J" and non-detects using professional judgement. When %RSD is > 90%, flag all non-detect results for that analyte "R" (unusable) and all positive results "J" (estimated).

NOTE: Analytes previously qualified "U" due to blank contamination are still considered as "hits" when qualifying for calibration criteria.

12.3 Are any average RRFs < 0.05? ___ [✓] ___

ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05 then:

1. "R" all non-detects.

2. "J" all positive results.

12.4 Are there any transcription/calculation errors in the reporting of RRFs and/or %RSDs? (Check at least two values; if errors are found check more.) ___ [✓] ___

YES NO N/

ACTION: Circle errors with red pencil.

ACTION: If errors are large, take action as specified in section 3.5 above.

NOTE: Contract Requirement: The SOW allows up to four of the required analytes to fail contractual %RSD or RRF criteria provided the %RSD is ≤ 40% or RRF is ≥ 0.010. (See Table 5, page D-66/SVOA and analytes marked with a "." on Form VI for a list of required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than four analytes fail %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the BNA fraction? [✓] [ ] [ ]

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? [✓] [ ] [ ]

ACTION: List below all sample analyses that were not analyzed within twelve hours of a continuing calibration standard for each instrument used:

_____

_____

_____

ACTION: If any forms are missing, or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the WAM to obtain an explanation/resubmittal from the lab. If continuing calibration data are unavailable, flag all associated sample data as unusable "R".

13.3 Does any BNA compound have a percent difference (%D) between the initial and continuing calibration RRFs which exceeds the ±25.0% criteria? [✓] [ ] [ ]

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YES NO N/A

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated "J". When %D is > 90%, reject all non-detects for that analyte, "R", and qualify positive results "J" (estimated).

13.4 Are any continuing RRFs < 0.05? ___ [✓] ___

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify as unusable (R) associated non-detects and "J" associated positive values.

NOTE: Contract Requirement: The SOW allows up to four of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 page D-66/SVOA or analytes marked with a "." on Form VI for a list of the required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than four analytes failed %D and RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and on the Organic Regional Data Summary Form.

13.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %difference (%D) between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, take action as specified in section 3.5 above.

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration? [ ] [✓] ___

If no, was sample re-analyzed? except one [✓] ___ ___

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YES NO N/A

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

ACTION: If sample was not reanalyzed, document in Data Assessment in Contract Problems/Non-Compliance.

Sample #	Internal Std.	Area	Lower/Upper Limit
			/
			/
			/
			/

(Attach additional sheets if necessary.)
(or attach copies of Form VIIIs)

ACTION: 1. If the internal standard area count is outside the "upper" or "lower" limit, flag with "J" all positive results and non-detects quantitated with this internal standard.

2. Do not qualify non-detects associated with IS area > 100%.

3. If the IS area in the sample is < 50%, qualify all analytes associated with that IS estimated (J). If area counts are extremely low (< 25% of the area in the 12 hour standard), or if performance exhibits a major abrupt drop-off, flag all associated non-detects as unusable (R) and positive hits estimated (J).

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? ✓

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

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	YES	NO	N/A

NOTE: See Notes in section 3.4, page 24 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for BNA analysis? ✓

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

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YES NO N/A

PART C: PESTICIDE/PCB ANALYSIS

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records or SDG Narrative indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data? ✓ [ ] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be qualified as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced, or if the ice was melted upon arrival at the laboratory, and the temperature of the cooler was elevated > 10° C, flag all positive results "J" and all non-detects "UJ".

ACTION: Check aqueous extraction log for sample pH, if adjustment was needed, it should have been noted in the SDG Narrative. If more information is needed, notify the WAM to contact the lab.

2.0 Holding Times

2.1 Have any PEST/PCB technical holding times, determined from date of collection to date of extraction, been exceeded? ✓ [ ] ___

NOTE: Technical Holding Times: Water and soil samples for PEST/PCB analysis must be extracted within 7 days of the date of collection. Extracts must be analyzed within 40 days of the date extraction.

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits "UJ" and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the

YES NO N/

reliability of the data and the effects of additional storage on the sample results. At a minimum, all the data should at least be qualified "J", but the reviewer may determine that non-detects are unusable "R".

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed

NOTE: Contractual Holding Times: Extraction of water samples must be completed within 5 days VTSR. Soil/sediment samples must be extracted within 10 days of VTSR. This requirement does not apply to Performance Evaluation (PE) samples. Extracts of water and soil/sediment samples must be analyzed within 40 days following start of extraction.

ACTION: If contractual holding times are exceeded, document in the Data Assessment and Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not technical and contractual holding times were met.

3.0 Surrogate Recovery (Form II)

3.1 Are the PEST/PCB Surrogate Recovery Summaries (Form II) present for each of the following matrices:

a. Low Water? [✓] ___ ___

b. Soil? [✓] ___ ___

3.2 Are all the PEST/PCB samples listed on the appropriate Surrogate Recovery Summary for each of the following matrices:

	YES	NO	N/A
a. Low Water?	✓		
b. Soil?	✓		

ACTION: Contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the laboratory. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.3 Were outliers marked correctly with an asterisk?	✓		

ACTION: Circle all outliers with red pencil.

3.4 Were surrogate recoveries of TCX or DCB outside of the contract specification for any sample, method blank or sulfur clean-up blank (30-150%)?	✓		

ACTION: In the absence of matrix interference, qualification of the data is not required in the following three situations:

1. When surrogates on both columns are diluted out. SW62DL

2. When one surrogate on one column was outside (either above or below) the contract limits but above 10%. W60

3. When the same surrogate on both columns is above the contract limit. W63, W63DL

If the same surrogate on both columns is below the contract limit but above 10%, check chromatograms for interference. The reviewer may use professional judgement, and qualify only those analytes which elute in the region of the GC chromatogram where interference was observed. X88

If the same surrogate on both columns is below the contract limit but above 10% (with no interference), qualify non-detects and positive hits "J" (estimated).

If recoveries for both surrogates on both columns are below the contract limit but above 10%, flag positive results and non-detects for that sample "J".

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YES NO

If recoveries are above the contract limit for both surrogates on both columns, then qualify positive values "J".

If both surrogates on one column are below the contract limit but above 10%, then use the data from the other column, providing both surrogates on that column are within contract limits. The validator must check from which column the concentration is reported for each analyte. If the value is reported from the failed column, then cross it out and use the value from the other column. Document this change in the Data Assessment.

If recovery is below 10% for either surrogate on any column, qualify positive results "J" and flag non-detects "R".

3.5 Were surrogate retention times (RT) within the windows established during the initial 3-point analysis of Individual Standard Mixture A (see Form VI Pest-1)? [✓] ___ ___

ACTION: If the RT limits are not met, positive results and non-detects for that sample may be qualified unusable, "R", based on professional judgement.

3.6 Are there any transcription/calculation errors between raw data and Form II? ___ [✓] ___

ACTION: If large errors exist, contact the WAM to obtain an explanation or resubmittal of corrected deliverables from the laboratory. Make any necessary corrections and document the effect in the Data Assessment.

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present? [✓] ___ ___

4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices (one MS/MSD must be performed for every 20 samples of similar matrix or concentration level):

a. Low Water? [ ] ___ [✓]

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	YES	NO	N/A
b. Soil?	✓		

ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.

ACTION: Circle all outliers with red pencil.

4.3 How many PEST/PCB spike recoveries are outside QC limits?

Water	Soil
N/A out of 12	0 out of 12

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soil
N/A out of 6	0 out of 6

ACTION: No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the matrix spike and matrix spike duplicate results in conjunction with other QC criteria and determine the need for some qualification of the data.

5.0 Blanks (Form IV)

	YES	NO	N/A
5.1 Is the Method Blank Summary (Form IV) present?	✓		
5.2 Frequency of Analysis: Has a reagent/method blank been analyzed for each SDG, every 20 samples of similar matrix and concentration level or each extraction batch, whichever is more frequent?	✓		

ACTION: If any blank data are missing, take action as specified above in section 3.2. If blank data is not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank data for missing method blank data.

5.3 A separate Form IV should be present if part of an extraction batch required sulfur removal. In such cases some samples will be listed on two blank summary forms - once under the method

	YES	NO	N/A
blank, and once under the sulfur clean-up blank (PCBLK). Was this additional blank raw data and Form IV submitted when required?	[ ]		✓
ACTION: If sulfur clean-up blank data and Form IV are missing, take action as specified in 3.2 above.			
5.4 Has a PEST/PCB instrument blank been analyzed at the beginning of every 12 hr. period following the initial calibration sequence (minimum contract requirement)?	[✓]		
ACTION: If any blank data are missing, take action as specified in section 3.2 above.			
5.5 Was the correct identification scheme used for all Pest/PCB blanks? (See page 3-33, sec. 3.3.7.3 of the SOW for further information.)	[✓]		
ACTION: Contact the WAM to obtain resubmittals or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-Compliance all corrections made by the validator.			
5.6 Chromatography: review the blank raw data - chromatograms, quant. reports and data system printouts. Is the chromatographic performance (baseline stability) for each instrument acceptable?	[✓]		
ACTION: Use professional judgement to determine the effect on the data.			

6.0 Contamination

NOTE: "Water blanks", "distilled water blanks" and "drilling water blanks" are validated like any other sample and are not used to qualify the data. Do not confuse them with the other QC blanks discussed below.

	YES	NO	N/A
6.1 Do any method/reagent, instrument, or cleanup blanks show positive hits for pest/PCBs?	✓	[ ]	
6.2 If any method blanks and/or sulfur clean-up blanks contain "hits" for target compounds, are these hits greater than the CRQL for that			

	YES	NO	N/A
analyte?	✓	[ ]	
6.3 In any instrument blanks, is the concentration of any target hit > 0.5 times CRQL for that analyte (see SOW, section 12.1.4.4.2, page D-77/PEST)?		[✓]	

NOTE: Most labs will report 0.5 times CRQLs on the instrument blank Form I instead of the actual method CRQLs. If the lab reported the actual CRQLs, then check if any detected hits are above 0.5 times the CRQLs reported on the Form I.

ACTION: If yes to any of the above questions: note in the Data Assessment under Contract Problems/Non-Compliance if any method or clean-up blanks contain hits > the CRQL, or of instrument blank contained hits > 0.5 times CRQL for that analyte.

6.4 Do any field/rinse blanks have positive pest/PCB results?		[✓]	

ACTION: Prepare a list of the samples associated with each contaminated blank. (Attach a separate sheet)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case or one per day) may be used to qualify data. Do not convert <u>field blank</u> results to account for the difference in soil CRQLs. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, and/or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

NOTE: When applied as directed in the table below, the contaminant concentration in method/instrument/reagent/cleanup blanks is multiplied by the sample dilution factor, where necessary.

If the laboratory has not already done so, the contaminant concentration in <u>soil</u> blanks is multiplied by 33 times the sample dilution factor and corrected for %moisture (fraction of solid) where necessary. 30 grams of sodium sulfate are used to prepare each soil reagent/method blank as instructed on page D-72/PEST, section 12.1.2.3.1. Ask the WAM

YES NO N/

to contact the laboratory if the soil blanks are not reported in soil units (µg/kg).

Flag sample result with a "U":	Report CRQL & qualify "U":	No qualification is needed:
Sample conc. > CRQL, but ≤ 5x blank.	Sample conc. < CRQL & is ≤ 5x blank value.	Sample conc. > CRQL & > 5x blank value.

NOTE: If gross blank contamination exists, all data in the associated samples should be qualified as "R", unusable.

6.5 Are there field/rinse/equipment blanks associated with every sample? [✓] ___ ___

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For analytes with high concentrations, use professional judgement to qualify these values and document in the Data Assessment.

<u>Exception</u>: samples taken from a drinking water tap do not have associated field blanks.

7.0 <u>Calibration and GC Performance</u>

7.1 Are the following Gas Chromatograms and Data Systems Printouts for both columns present for all samples, blanks and MS/MSD:

a. Peak resolution check? [✓] ___ ___

b. Performance evaluation mixtures? [✓] ___ ___

c. Aroclor 1016/1260? [✓] ___ ___

d. Aroclors 1221, 1232, 1242, 1248, 1254? [✓] ___ ___

e. Toxaphene? [✓] ___ ___

f. Low points individual mixtures A & B? [✓] ___ ___

g. Med points individual mixtures A & B? [✓] ___ ___

h. High points individual mixtures A & B? [✓] ___ ___

	YES	NO	N/A
i. Instrument blanks?	✓		
j. Were the appropriate GC columns used as specified on pg. D-11/PEST, sections 6.23.3.1 to 6.23.3.7, in the SOW?	✓		
7.2 Do the chromatograms for all Individual Standard Mixtures and PEM analyses display single component analytes at > 10% but < 100% of full scale (see sections 9.3.5.8.1 thru 9.3.5.8.4, pages D-32 & 33/PEST)?	✓		
Have chromatograms for Individual Standard Mixtures and PEM analyses been replotted, showing scaling factor(s), to meet the above requirements when necessary?	✓		

NOTE: All standard chromatograms must clearly display all peaks at > 10% but < 100% of full scale, and replotted if necessary to accommodate peaks not properly scaled in the initial chromatogram(s). Both the initial and replotted chromatograms must be submitted with the data package.

ACTION: If all single component peaks are not clearly displayed on chromatograms for all Individual Standard Mixtures and PEM analyses, notify the WAM to obtain resubmittal of the necessary data.

	YES	NO	N/A
7.3 Are Forms VI PEST 1-7 present and complete for each column and each analytical sequence? PEM01 for RTX-35 col is missing resubmitted		✓	

ACTION: If no, take action as specified in 3.2 above.

	YES	NO	N/A
7.4 Are there any transcription/ calculation errors between raw data and Forms VI?		✓	

ACTION: If large errors exist, take action as specified in section 3.6 above.

	YES	NO	N/A
7.5 Do all standard retention times, including each pesticide in each level of Individual Mixtures A & B, fall within the windows established during the Initial Calibration (see Form VI PEST-1)?	✓		

ACTION: If no, all samples in the entire analytical sequence are potentially affected. Check to see if the chromatograms contain peaks within an expanded window surrounding the expected

YES NO N/A

retention times. If no peaks are found and the surrogates are visible, non-detects are valid. If peaks are present and cannot be identified through pattern recognition or using a revised RT window, qualify all positive results "JN" and non-detects as unusable (R). For aroclors, the RT may be outside the window, but the aroclor may still be identified from its distinctive pattern.

7.6 Are the linearity criteria for the initial analyses of Individual Standards A & B within limits for both columns? (%RSD must be ≤ 25.0% for alpha and delta BHC, ≤ 30.0 for the two surrogates and ≤ 20% for all other analytes.) [✓] ___ ___

NOTE: Contractual requirements allow up to two single component TCL compounds, but not surrogates, on each column to exceed the criteria provided the %RSD is ≤ 30%. (See page D-28/Pest, sec. 9.2.5.7 in the SOW.) Technical criteria, however, are the same for all analytes.

ACTION: If technical criteria were not met, qualify all associated positive results generated during the entire analytical sequence "J" and all non-detects "UJ". When %RSD > 90%, flag all non-detect results for that analyte "R" (unusable).

ACTION: If more than two analytes failed %RSD, document in the Data Assessment Contract Problems/Non-Compliance section and Organic Regional Data Assessment Summary form.

7.7 Is the resolution between each pair of adjacent peaks in the Resolution Check Mixture ≥ 60.0% for both columns? (See Form VI PEST-4.) [✓] ___ ___

ACTION: If no, qualify positive results for compounds that were not adequately resolved "J". Use professional judgement to determine if non-detects which elute in areas affected by co-eluting peaks should be qualified "N" as presumptive evidence of presence or unusable (R).

7.8 Is Form VI PEST-5 present and complete for each Performance Evaluation Mixture (PEM) standard used for <u>both initial and continuing</u> calibrations (see SOW section 3.12.4.4, page E-52)? [ ] [✓] ___

missing PEM01 resubmitted

	YES	NO	N/A
ACTION: If no, take action as specified in section 3.2 above.			
7.9 For each PEM standard, was the resolution between each pair of adjacent peaks ≥ 90.0% on both columns?	✓		
ACTION: Qualify positive results for compounds not adequately resolved estimated (J). Qualify non-detects based on professional judgement.			
7.10 Have Forms VI PEST-6 & PEST-7 been completed for all midpoint Individual Standards A and B used for initial calibration?	✓		
For each standard, was the resolution between each pair of adjacent peaks ≥ 90.0% on both columns?	✓		
ACTION: If no, qualify positive results for compounds that were not adequately resolved estimated (J). Use professional judgement to determine if non-detects which elute in areas affected by co-eluting peaks should be qualified "N" as presumptive evidence of presence or unusable "R".			
7.11 Is Form VII Pest-1 present and complete for each PEM standard analyzed during the analytical sequence for both columns? (missing resubmitted PEM's.)		✓	
Was the %Breakdown of DDT and Endrin calculated using the equations given on page D-26/PEST, sec. 9.2.4.8 in the SOW?	✓		
Were all pesticides and surrogates in each PEM standard within the RT windows established during the Initial Calibration?	✓		
ACTION: If no, take action as specified in 3.2 above.			
7.12 Has the individual percent breakdown for DDT/Endrin exceeded 20.0% in any PEM on either column? (See Form VII PEST-1.)			
- for 4,4'-DDT?		✓	
- for Endrin?		✓	
Has the combined percent breakdown for DDT/Endrin			

YES NO N/

exceeded 30.0% in any PEM on either column (required for all PEM analyses)? ___ ✓ ___

ACTION: 1. If any percent breakdown has failed the QC criteria in either PEM in steps 2 and 17 in the initial calibration sequence (page D-28/Pest, sec. 9.2.5.6 in the SOW), qualify all samples in the entire analytical sequence as described in sections 2.a, b and c below.

2. If any percent breakdown failed the QC criteria in a PEM calibration verification analysis, review data beginning with the samples which followed the last in-control standard until the next acceptable PEM and qualify the data as described below.

a. 4,4'-DDT Breakdown: If DDT breakdown was > 20.0%:

i. Qualify all positive results for DDT with "J". If DDT was not detected, but DDD and DDE are positive, then qualify the quantitation limit for DDT unusable, "R".

ii. Qualify positive results for DDD and/or DDE as presumptively present at an approximated quantity "JN".

b. Endrin Breakdown: If endrin breakdown was > 20.0%:

i. Qualify all positive results for endrin with "J". If endrin was not detected, but endrin aldehyde and endrin ketone are positive, then qualify the quantitation limit for Endrin as unusable "R".

ii. Qualify positive results for endrin ketone and endrin aldehyde as presumptively present at an approximated quantity "JN".

c. Combined Breakdown: If the combined 4,4'-DDT and endrin breakdown is greater than 30.0%:

i. Qualify all positive results for DDT and Endrin with "J". If endrin was not detected, but endrin aldehyde and endrin ketone are positive, then qualify the quantitation limit for endrin as unusable

	YES	NO	N/A

"R". If DDT was not detected, but DDD and DDE are positive, then qualify the quantitation limit for DDT as unusable "R".

ii. Qualify positive results for endrin ketone and endrin aldehyde as presumptively present at an approximated quantity "JN". Qualify positive results for DDD and/or DDE as presumptively present at an approximated quantity "JN".

7.13 Are all percent difference (%D) values for PEM analytes and surrogates on both columns ≥ -25% and ≤ +25.0%? (See Form VII PEST-1.) [✓] ___ ___

ACTION: If no, qualify all associated positive results generated during the analytical sequence "J" and sample quantitation limits "UJ".

NOTE: If the failing PEM is part of the initial calibration, all samples are potentially affected. If the offending standard is a calibration verification, the associated samples are those which followed the last in-control standard until the next passing standard.

7.14 Is Form VII Pest-2 present and complete for each INDA and INDB calibration verification analyzed? [✓] ___ ___

ACTION: If no, take action specified in 3.2 above.

7.15 Are there any transcription/calculation errors between raw data and Form VII Pest-2? ___ [✓] ___

ACTION: If large errors exists, take action as specified in section 3.6 above.

7.16 Do all standard retention times for each INDA and INDB calibration verification fall within the RT windows established during the initial calibration sequence? (See Form VII PEST-2.) [✓] ___ ___

ACTION: If no, beginning with the samples which followed the <u>last in-control standard</u>, check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and the surrogates are visible, non-detects are valid. If peaks are present and cannot be identified through pattern recognition or using a revised

YES NO N/A

RT window, qualify all positive results and non-detects as unusable (R).

7.17 Are all %D values for INDA and INDB calibration verification compounds ≥ -25.0% and ≤ +25.0%? INDAM02 DOT [ ] [✓] ___

ACTION: If the %D is outside the ±25.0% range for any compound(s), qualify associated positive results for that compound "J" and non-detects "UJ". The "associated samples" are those which followed the last in-control standard up to the next passing standard containing the analyte(s) in question. If the %D is > 90%, flag all non-detects for that analyte "R" (unusable).

8.0 Analytical Sequence Check (Form VIII-PEST)

8.1 Is Form VIII present and complete for each column and each period of analyses? [✓] ___ ___

ACTION: If no, take action specified in 3.2 above.

8.2 Was the proper analytical sequence followed for each initial calibration and subsequent analyses, and all standards analyzed at the required frequency for each GC/EC instrument used.? (See SOW pages D-23 & D-58/PEST.) [✓] ___ ___

ACTION: If no, use professional judgement to determine the severity of the effect on the data and qualify accordingly. Generally, the effect is negligible unless the sequence was grossly altered and/or the calibration was out of QC limits.

8.3 Were all samples analyzed within a 12 hour time period beginning with the injection of an instrument blank and bracketed by acceptable analyses of the proper standards? [✓] ___ ___

ACTION: If no, use professional judgement to determine the severity of the effect on the data and qualify accordingly. Document in the Data Assessment under Contract Problems/Non-Compliance and Organic Regional Data Assessment Summary.

8.4 If a multi-component analyte was detected in a sample, was a matching multi-component standard analyzed within 72 hours of the injection of the

	YES	NO	N/A
sample and within a valid 12 hour sequence?	✓		

NOTE: This additional standard is for identification purposes only. Positive results for Aroclors and Toxaphene are quantitated from the initial calibration.

ACTION: If no, document in the Data Assessment under Contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

9.0 Cleanup Efficiency Verification (Form IX)

	YES	NO	N/A
9.1 Is Form IX PEST-1 present and complete for each lot of Florisil Cartridges used? (Florisil Cleanup is required for all Pest/PCB extracts.)	✓		
Are all samples listed on the Pesticide Florisil Cartridge Check Form?	✓		

ACTION: If no, take action specified in 3.2 above. If data suggests florisil clean-up was not performed, document in the Data Assessment under the Contract Non-compliance section.

	YES	NO	N/A
9.2 Are percent recoveries (%REC) of the pesticide and surrogate compounds used to check the efficiency of the florisil clean-up procedure within QC limits of 80 - 120%?	✓		

ACTION: Qualify only the analyte(s) which failed the recovery criteria as follows:

If %REC is < 80%, qualify positive results "J" and non-detects "UJ".

If any pesticide %REC was zero, flag non-detects "R" for that compound.

Use professional judgement to qualify positive results if any recoveries are > 120%.

NOTE: Sample data should be evaluated for potential interferences if recovery of 2,4,5-trichlorophenol was > 5% in the Florisil Cartridge Performance Check analysis. Document any problems found in the Data Assessment under the Contract Problems/Non-Compliance section.

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	YES	NO	N/A
9.3 If GPC Cleanup was performed (mandatory for all soil sample extracts), is Form IX Pest-2 present?	[✓]		
Are all soil samples listed on Form IX Pest-2?	[✓]		

ACTION: If no, take action specified in 3.2 above. If data suggests GPC clean-up was not performed when required, document in the Data Assessment under the Contract Problems/Non-Compliance section and Organic Regional Data Assessment Summary.

Are the %REC values for all pesticides in the GPC calibration solution between 80 - 110%?	[✓]		

ACTION: Qualify only those analytes which failed the recovery criteria as follows:

If %REC are < 80%, qualify positive results "J" and non-detects "UJ".

If any pesticide %REC was zero, flag non-detects "R" for that compound.

Use professional judgement to qualify positive results if any recoveries are > 110%.

NOTE: An Aroclor mixture containing Aroclors 1016 and 1260 is also analyzed during GPC calibration; however, Aroclor data is not listed on Form IX PEST-2. The raw GPC data for Aroclors 1016/1260 must be evaluated for pattern similarity with previously analyzed Aroclor standards.

9.4 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-35, sec. 3.3.7.8 and 3.3.7.9 of the SOW for further information.

Was the correct identification scheme used for GPC and Florisil blanks?	[✓]		

10.0 Pesticide/PCB Identification

10.1 Is Form X complete for every sample in which a pesticide or PCB was detected?	[✓]		

ACTION: If no, take action specified in 3.2 above.

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	YES	NO	N/A
10.2 Are all sample chromatograms properly scaled, attenuated, etc. as required for proper identification of single and multi-component analytes? (Refer to SOW sections 11.3.7.1 thru 11.3.7.8, page D-70/Pest for specific details.)	[ ]	✓	

NOTE: Proper verification of Pest/PCB results depends on clear, legible presentation of the raw data. Single component pesticides and all peaks chosen for quantitation of multi-component analytes must appear at less than full scale. Toxaphene and PCB patterns must be clearly visible to enable comparison with standard chromatograms.

ACTION: If retention times or apex of peaks cannot be verified, or if multi-component peak patterns cannot be discerned, contact the WAM to obtain rescaled chromatograms from the lab.

	YES	NO	N/A
10.3 Are there any transcription/calculation errors between raw data and Forms 10A and 10B?		[✓]	

ACTION: If large errors exist, take action as specified in section 3.6 above.

	YES	NO	N/A
10.4 Are RTs of sample compounds within the established RT windows for analyses on both columns?	[✓]		
Was GC/MS confirmation provided when required (when compound concentration is > 10 ug/mℓ in the final extract)?	[ ]		✓

ACTION: Use professional judgement to qualify positive results which were not confirmed by GC/MS analysis. Qualify as unusable (R) all positive results which were not confirmed on a second GC column. Also qualify as unusable (R) all positive results which do not meet RT window criteria, unless associated standard compounds are similarly biased. Use professional judgement to assign an appropriate quantitation limit.

	YES	NO	N/A
10.5 Is the percent difference (%D) calculated for the positive sample results on both columns > 25.0%?	✓	[ ]	

ACTION: If the reviewer finds neither column shows interference for the positive hits, the data should be flagged as follows:

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YES NO N/A

% Difference	Qualifier
0 - 25%	None
25 - 70%	"J"
70 - 100%	"JN"
> 100%	"R"
100 - 200% (Interference detected)*	"JN"
> 50% (Pesticide value is < CRQL)**	"U"

* When the reported %D is 100 - 200%, but interference is detected on either column, qualify the data with "J".

** When the reported pesticide value is lower than the CRQL, and the %D is > 50%, raise the value to the CRQL and qualify "U", undetected.

NOTE: For Aroclors, if the %D is > 50%, but the pattern of GC peaks on both columns indicates a specific Aroclor is present, qualify that Aroclor "J".

NOTE: The lower of the two values is reported on Form I. If using professional judgement, the reviewer determines that the higher result was more acceptable, the reviewer should replace the value and indicate the reason for the change in the Data Assessment.

10.6 Check chromatograms for false negatives, especially the multiple-peak compounds (Toxaphene and the PCBs). Were there any false negatives? ___ [√] ___

ACTION: Use professional judgement to decide if the compound should be reported. If the appropriate PCB standards were not analyzed within 72 hrs. of the sample(s) in question, qualify the data unusable "R".

Also note in Data Assessment under Contract Problems/Non-Compliance if the lab failed to analyze Aroclor standards when required.

11.0 Target Compound List (TCL) Analytes

11.1 Are the Organic Analysis Data Sheets (Form I Pest) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate? [√] ___ ___

b. Matrix spikes and matrix spike duplicates? [√] ___ ___

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	YES	NO	N/A
c. Blanks?	[✓]		
d. Instrument Blanks (per column & analysis)? resubmitted	[✓]		
11.2 Are the Pest chromatograms and quant. reports included in the sample data package for each of the following:			
a. Samples and/or fractions as appropriate?	[✓]		
b. Matrix spikes and matrix spike duplicates?	[✓]		
c. Blanks?	[ ]	✓ resubmitte	
d. Instrument Blanks (per column & analysis)?	[✓]		

ACTION: If any data are missing, take action specified in 3.2 above.

11.3 Are the calibration factors shown in the quant. reports?	[ ]	✓	
11.4 Is chromatographic performance acceptable with respect to:			
a. Baseline stability?	[✓]		
b. Resolution?	[✓]		
c. Peak shape?	[✓]		
d. Full-scale graph attenuation?	[✓]		
e. Other: _____?	[ ]		✓
11.5 Were any electropositive displacement (negative peaks) or unusual peaks seen?		[✓]	

ACTION: Use professional judgement to determine the acceptability of the data. Address comments under System Performance section of the Data Assessment.

12.0 Compound Quantitation and Reported Detection Limits

12.1 Are there any transcription/calculation errors in Form I results? Check at least two positive results. Were any errors found?		[✓]	

(75)

YES NO N/

NOTE: Single-peak pesticide results can be checked for rough agreement between quantitative results obtained on the two GC columns. Use professional judgement to decide whether a large discrepancy indicates the presence of an interfering compound. If an interfering compound is visible on the chromatogram, the lower of the two values should be reported and qualified as presumptively present at an approximated quantity "JN". This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has interfered with the evaluation of the second column confirmation.

12.2 Are the CRQLs adjusted to reflect sample dilutions? ✓

ACTION: If large errors exist, take action as specified in section 3.6 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQLs from the diluted sample). Replace concentrations which exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with the result from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including those in the data summary package.

ACTION: Quantitation limits affected by large, off-scale peaks should be qualified as unusable (R). If the interference is on-scale, the reviewer may offer an approximated quantitation limit (UJ) for each affected compound.

NOTE: If a sample required greater than a 10 times dilution, then a 10 times more concentrated analysis must also be performed and submitted (see SOW, page D-60/PEST, section 10.2.3.5).

ACTION: If a more concentrated analysis is unavailable, document in the Contract Problems/Non-Compliance section of the Data Assessment. Use professional judgement to qualify non-detects and positive hits below the CRQL. 13b

	YES	NO	N/A
13.0 Field Duplicates			
13.1 Were any field duplicates submitted?	✓		

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

137

RECEIVED
JAN 12, 2000

ecology and environment, inc.
International Specialists in the Environment

ANALYTICAL SERVICES CENTER
4493 Walden Avenue
Lancaster, New York 14086
Tel. (716) 685-8080, Fax: (716) 685-0852

January 11, 2000

Ms. Jennifer Feranda
USEPA Region II, DESA
2890 Woodbridge Avenue
Building 209, (MS-215)
Edison, NJ 08837

Dear Ms. Feranda,

In response to your telephone request of January 10, 2000, the Forms I SV-1, SV-2, and SV-TIC with the associated raw data for sample BWY13 from Case 27633, SDG BWW62 are submitted. This information was inadvertently omitted from the original data submission.

Also enclosed is an amended Form DC-2.

Should you have any questions concerning this submission, please contact me. Thank you.

Yours truly,

Barbara Krajewski

Barbara Krajewski for
Caryn A. Wojtowicz
Project Manager

CC: SMO

U.S. Environmental Protection Agency
Region II
Division of Environmental Science and Assessment
Hazardous Waste Support Branch
2890 Woodbridge Ave., Bldg. 209, MS-215
Edison, New Jersey 08837

TO:	Caryn Wojtowicz
OFFICE:	Ecology & Environment, Inc. (E&E)
PHONE:	(716) 685-8080
FAX:	(716) 685-0852

FROM:	Jennifer Feranda, PO/RSCC
OFFICE:	US EPA Region II
PHONE:	(732) 321-6687
FAX:	(732) 321-6622
DATE:	01/26/00
SUBJECT:	Case 27633

Number of Pages (including cover sheet): 6

Record of Communication

Caryn: Per my e-mail to you (today - 1:45) here are two more issues concerning Case 27633, SDG BWW62 - Semivolatiles.

Please submit the corrected documentation. If you have any questions, please call me.

Jennifer E. Feranda
CLP PO, EPA Region II

CASE #/SDG:

27633/BWW62

Contract Laboratory Program
REGION II/LABORATORY COMMUNICATION SYSTEM

Telephone Record Log

Date of ~~Call~~ Fax: January 24, 2000

ESAT Reviewer/Date: Andy Panayiotou

Type of Analysis: BNA

Laboratory Name: EANDE

Lab Contact:

Call Initiated By: ___Laboratory _x_Region II

Inquiry made in reference to data for the following sample number(s)

BWW69

Summary of Questions/Issues Discussed:

Form I and Form I-TIC results were calculated based on the wrong %. The Lab used 0 (zero) for % Moisture instead of using 69. Please have the Lab resubmit the corrected forms.

Summary of Resolution:

Signature (Jennifer Feranda) EPA-Region II TPO Date

140

CASE #/SDG:

27633/BWW62

Contract Laboratory Program
REGION II/LABORATORY COMMUNICATION SYSTEM

Telephone Record Log

Date of ~~Call~~ Fax: January 24, 2000

ESAT Reviewer/Date: Andy Panayiotou

Type of Analysis: BNA

Laboratory Name: EANDE

Lab Contact:

Call Initiated By: ___Laboratory _x_ Region II

Inquiry made in reference to data for the following sample number(s)

BWW69

Summary of Questions/Issues Discussed:

Form I and Form I-TIC results were calculated based on the wrong %M. The Lab used 0 (zero) for % Moisture instead of using ~~68~~ 57. Please have the Lab resubmit the corrected forms.

1/28/00 - Received re-submittal from E+E. Forwarded to ESAT on 1/31/00.

Summary of Resolution:

Jennifer Feranda 1/31/00

Signature (Jennifer Feranda) EPA-Region II TPO Date

(141)

ANALYTICAL SERVICES CENTER (ASC)
4493 Walden Avenue
Lancaster, New York 14086-9754
Phone: (716) 685-8080 FAX: (716) 685-0852

International Specialists in the Environment

Ecology & Environment, Inc. (E&E)

Fax

To:	Jennifer Feranda	**From:**	Caryn Wojtowicz
Company:	US EPA Region II	**Pages:**	17
Fax:	(732) 321-6622	**Date:**	January 28, 2000
Re:	Resubmission Requests Case 27633		

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Recycle**

Jennifer,

The following corrections are provided in response to the facsimile requests from you dated 01/26/00 and 01/28/00.

This facsimile will be followed up with hardcopy to be sent out today.

Should you have any additional comments or concerns, please contact me.

Caryn

Caryn

P.S. I have indicated which SDG these replacement pages apply to in the lower left hand corner of each page

FULL SERVICE CAPABILITY:

Atomic Absorption Analysis
Inductively Coupled Plasma Analysis
Gas Chromatography
Gas Chromatography/Mass Spectrometry
High performance Liquid Chromatography
Ion Chromatography, Fourier Transform Infra-red
Ultraviolet/Visible Spectroscopy

Air (Canisters, Bags, Tenax, Charcoal)
Chlorophenols
Nitroaromatics (Explosives), Chemical Agents
NPDES/SPDES
Soil Gas Screening (Field or Laboratory)
TCLP
TPH-BETX

JAN 04, 2000

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster NY 14086

EANDE
Contract: **68-W99-062**
Case: **27633**
SDG: ~~BWXW62~~ JB
BWW62

SDG Narrative

On December 3, 1999, Ecology & Environment received a total of nineteen (19) samples for analysis from Case 27633. An additional sample were received on December 7, 1999. Samples were assigned to SDG: BWW62. Samples were received in good condition.

EPA Sample	Laboratory Number
BWW76	9912043-01
BWY07	9912043-02
BWY08	9912043-03
BWY09	9912043-04
BWY10	9912043-05
BWY11	9912043-06
BWY12	9912043-07
BWY13	9912043-08
BWY14	9912043-09
BWY15	9912043-10
BWW62	9912043-11
BWW63	9912043-12
BWW64	9912043-13
BWW65	9912043-14
BWW66	9912043-15
BWW67	9912043-16
BWW68	9912043-17
BWW69	9912043-18
BWW70	9912043-19
BWX88	9912061-01

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster NY 14086

EANDE
Contract: **68-W99-062**
Case: **27633**
SDG: **BWXW62**

VOLATILES

A DB624 column from J&W which is 30 meters long, 0.53 mm wide and having a 3-um film thickness was used for the volatile analysis. A 30 centimeter TEKMAR #5 Trap was used consisting of approximately 1 cm of OV-1, approximately 8 cm of Tenax, approximately 8 cm of silica gel and approximately 8 cm of activated charcoal.

Sample BWW76 was analyzed at a secondary dilution due to elevated target compounds. Both sets of data have been reported here.

The continuing calibration C5392 had bromomethane at an elevated percent difference.

SEMIVOLATILES

A RESTEK (XTI-5) column, which is 30 m long, 0.25 mm wide, and has a 0.5um film thickness was used for the semivolatile analyses. The column contains 5% diphenyl and 95% dimethylpolysiloxane.

Waters:

A MS/MSD was not specified for any of the water samples.

No other discrepancies were encountered during this analysis.

Soils:

Several soil samples including BWY10 through BWY13, BWY15, BWW62, BWW64, BWW65, BWW66, and BWW68 were analyzed medium level due to matrix. These samples were thick, oily and difficult to concentrate.

The original sample extract for Blank MB-199901561 was prepared incorrectly, resulting in low surrogate recoveries. Method Blank MB-199901562 was extracted on the same day by the same person and this is the blank that is used for SBLK1. The original data is included with the screening data.

Several samples including BWW62, BWW63, BWW64, BWW68, BWW70, and BWY10 had one or more low internal standard area recovery. They were reanalyzed with similar results thus confirming matrix. Both sets of data are included.

The MSD of soil sample BWY07 had a low spike recovery of Acenapthalene. All other spike recoveries were within acceptable limits.

The MS/MSD of medium level sample BWY08 is included for quality control purposes, even though the low level soil results are reported.

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster NY 14086

EANDE
Contract: **68-W99-062**
Case: **27633**
SDG: **BWXW62**

PESTICDE/PCB

The columns used for analysis were an RTX-5 (column 1), and an RTX-35 (column 2), both 30 meters long and 0.53 mm in diameter, with a 1.0 um film thickness.

The method blank associated with the initial extraction of sample BWW76 contained a positive hit for methoxychlor at a level greater that the CRQL. This sample was re-extracted outside of the contract required holdtime and an acceptable method blank was achieved. Results of both analyses are included in this report.

Recovery of the surrogate TCX fell outside advisory QC limits in samples BWW64, and BWX88 Recovery of the surrogate DCB fell outside advisory QC limits in samples BWW63, BWW65, BWW67, BWW69, BWY11, BWY14, and BWY15. No further action is required.

Secondary dilutions were performed on samples BWW62, BWW63, BWW64, BWW65, BWW66, BWW67, BWW68, BWW69, BWW70, BWX88, BWY11, BWY12, BWY13, BWY14, and BWY15 based on the level of target compounds present in the native extract. As a result of the secondary dilutions performed on samples BWW62 and BWW70, the surrogate compounds were diluted out and a percent recovery could not be recorded.

Continuing calibration criteria (%D) was not met for 4,4'-DDT in ending calibration standard INDAM02. Samples affected by this standard were the samples analyzed at the contract required ten times stronger dilution.

Based on analyst interpretation, no pesticide compounds were reported in samples containing PCB's. It is the analyst's judgement that any pesticide hits present are false positives resulting from the presence of PCB's.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the laboratory manager or his/her designee, as verified by the following signature.

Barbara Krajewski

Barbara Krajewski for
Caryn Wojtowicz, Project Manager
December 30, 1999

ALKANE NARRATIVE REPORT
Report date : 12/29/1999
SDG: BWW62

Client Sample ID: BWY10 Lab Sample ID: 9912043-05B File ID: K4148

Compound	RT	Est. Conc.	Q
Branched alkane (Br)	12.00	17000	J
Straight-chain alkane (Sc)	16.31	8200	J
Branched alkane (Br)	16.70	4600	J
Branched alkane (Br)	19.56	8100	J
Straight-chain alkane (Sc)	20.04	5200	J
Branched alkane (Br)	20.10	14000	J
Straight-chain alkane (Sc)	21.05	16000	J
Branched alkane (Br)	21.77	14000	J
Straight-chain alkane (Sc)	21.83	44000	J
Straight-chain alkane (Sc)	24.42	80000	J

Client Sample ID: BWY15 Lab Sample ID: 9912043-10B File ID: K4163

Compound	RT	Est. Conc.	Q
Straight-chain alkane (Sc)	28.19	11000	J

Client Sample ID: BWW64 Lab Sample ID: 9912043-13B File ID: K4164

Compound	RT	Est. Conc.	Q
Branched alkane (Br)	15.44	17000	J
Branched alkane (Br)	16.70	11000	J
Straight-chain alkane (Sc)	16.96	10000	J
Branched alkane (Br)	17.65	16000	J
Branched alkane (Br)	18.62	10000	J
Straight-chain alkane (Sc)	19.07	13000	J
Straight-chain alkane (Sc)	19.55	27000	J
Branched alkane (Br)	20.11	50000	J
Branched alkane (Br)	20.45	13000	J
Branched alkane (Br)	21.06	43000	J
Branched alkane (Br)	21.78	16000	J
Straight-chain alkane (Sc)	21.85	23000	J
Straight-chain alkane (Sc)	22.55	32000	J
Straight-chain alkane (Sc)	22.67	47000	J
Branched alkane (Br)	23.00	40000	J
Branched alkane (Br)	23.31	110000	J
Cycloalkane (Cy)	23.40	29000	J
Straight-chain alkane (Sc)	23.48	33000	J
Branched alkane (Br)	23.59	24000	J
Branched alkane (Br)	23.73	160000	J
Straight-chain alkane (Sc)	24.00	94000	J
Straight-chain alkane (Sc)	24.08	170000	J
Cycloalkane (Cy)	24.16	180000	J
Straight-chain alkane (Sc)	24.44	430000	J
Straight-chain alkane (Sc)	24.61	530000	J
Cycloalkane (Cy)	24.82	180000	J

Client Sample ID: BWW62 Lab Sample ID: 9912043-11B File ID: K4168

Compound	RT	Est. Conc.	Q

Straight-chain alkane (Sc)	16.30	3800	J
Branched alkane (Br)	16.69	2900	J
Branched alkane (Br)	19.55	4900	J
Branched alkane (Br)	20.10	8200	J
Straight-chain alkane (Sc)	21.05	13000	J
Straight-chain alkane (Sc)	24.43	35000	J

Client Sample ID: BWX88 Lab Sample ID: 9912061-01B File ID: E7443

Compound	RT	Est. Conc.	Q
Branched alkane (Br)	16.35	1400	J
Straight-chain alkane (Sc)	17.36	2200	J
Straight-chain alkane (Sc)	18.18	1600	J
Straight-chain alkane (Sc)	19.05	2600	J
Straight-chain alkane (Sc)	19.71	2000	J
Straight-chain alkane (Sc)	19.89	1300	J
Branched alkane (Br)	20.14	1200	J
Straight-chain alkane (Sc)	20.63	980	J
Straight-chain alkane (Sc)	20.87	1100	J
Straight-chain alkane (Sc)	21.29	1200	J
Straight-chain alkane (Sc)	21.88	1600	J
Straight-chain alkane (Sc)	22.44	1500	J
Straight-chain alkane (Sc)	23.64	1400	J
Straight-chain alkane (Sc)	24.32	1100	J
Straight-chain alkane (Sc)	25.09	2400	J
Straight-chain alkane (Sc)	25.97	2300	J
Straight-chain alkane (Sc)	27.00	8300	J

Client Sample ID: BWW64RE Lab Sample ID: 9912043-13BRE File ID: K4331

Compound	RT	Est. Conc.	Q
Branched alkane (Br)	15.32	13000	J
Straight-chain alkane (Sc)	15.67	12000	J
Branched alkane (Br)	16.58	12000	J
Straight-chain alkane (Sc)	16.85	15000	J
Straight-chain alkane (Sc)	17.53	14000	J
Straight-chain alkane (Sc)	18.95	15000	J
Straight-chain alkane (Sc)	19.93	3900	J
Branched alkane (Br)	19.99	20000	J

Client Sample ID: BWY10RE Lab Sample ID: 9912043-05BRE File ID: K4332

Compound	RT	Est. Conc.	Q
Branched alkane (Br)	11.82	11000	J
Straight-chain alkane (Sc)	12.18	7200	J
Branched alkane (Br)	15.32	6400	J
Straight-chain alkane (Sc)	15.66	4800	J
Straight-chain alkane (Sc)	17.93	4100	J
Branched alkane (Br)	19.97	10000	J
Branched alkane (Br)	20.92	29000	J

Client Sample ID: BWW62RE Lab Sample ID: 9912043-11BRE File ID: K4333

Compound	RT	Est. Conc.	Q

Branched alkane (Br)	11.82	4200	J
Branched alkane (Br)	16.58	3800	J
Branched alkane (Br)	17.53	3200	J
Branched alkane (Br)	19.97	10000	J

Client Sample ID: BWW63RE Lab Sample ID: 9912043-12BRE File ID: K434

Compound	RT	Est. Conc.	Q
Branched alkane (Br)	19.97	350	J

Client Sample ID: BWY14RE Lab Sample ID: 9912043-09B File ID: K4359

Compound	RT	Est. Conc.	Q
Straight-chain alkane (Sc)	27.95	1500	J

Contract Laboratory Program

Sample Delivery Group (SDG) Cover Sheet

SDG Number BWW62

Laboratory Name Ecology & Environment Laboratory Code EANDE

Contract No. 68-W99-062 Case No. 27633

Analysis Price _____ SDG Turnaround 21

EPA Sample Numbers in SDG (Listed in Numerical Order)

1) BWW62	7) BWW68	13) BWY09	19) BWY15
2) BWW63	8) BWW69	14) BWY10	20) BWX88
3) BWW64	9) BWW70	15) BWY11	21)
4) BWW65	10) BWW76	16) BWY12	22)
5) BWW66	11) BWY07*	17) BWY13	23)
6) BWW67	12) BWY08	18) BWY14	24)

BWW62
First Sample in SDG

BWX88
Last Sample in SDG

12/3/99
First Sample Receipt Date

12/7/99
Last Sample Receipt Date

Note: *There are a maximum of 20 **field** samples (excluding PE samples) in an SDG. Attach TRs to this form in alphanumeric order (the order listed above on this form).*

Signature J. Schoendler Date 12/7/99

Version 2.0

*MS/MSD

ASC JOB # 9912043, 9912061

STORAGE BLANK, _____

(14a)

007

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW62

Lab Name: ECOLOGY AND ENVIRONMENT, INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-11A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7750

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 22 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	13	U
74-87-3	Chloromethane	13	U
75-01-4	Vinyl Chloride	13	U
74-83-9	Bromomethane	13	U
75-00-3	Chloroethane	13	U
75-69-4	Trichlorofluoromethane	13	U
75-35-4	1,1-Dichloroethene	13	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	13	U
67-64-1	Acetone	77	U
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13	U
156-60-5	trans-1,2-Dichloroethene	13	U
1634-04-4	Methyl tert-Butyl Ether	13	U
75-34-3	1,1-Dichloroethane	13	U
156-59-2	cis-1,2-Dichloroethene	13	U
78-93-3	2-Butanone	13	U
67-66-3	Chloroform	13	U
71-55-6	1,1,1-Trichloroethane	13	U
110-82-7	Cyclohexane	13	U
56-23-5	Carbon Tetrachloride	13	U
71-43-2	Benzene	13	U
107-06-2	1,2-Dichloroethane	13	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW62

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-11A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7750

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 22 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	13	U
108-87-2	Methylcyclohexane	13	U
78-87-5	1,2-Dichloropropane	13	U
75-27-4	Bromodichloromethane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
108-88-3	Toluene	42	
10061-02-6	trans-1,3-Dichloropropene	13	U
79-00-5	1,1,2-Trichloroethane	13	U
127-18-4	Tetrachloroethene	13	U
591-78-6	2-Hexanone	13	U
124-48-1	Dibromochloromethane	13	U
106-93-4	1,2-Dibromoethane	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
1330-20-7	Xylene (total)	13	U
100-42-5	Styrene	13	U
75-25-2	Bromoform	13	U
98-82-8	Isopropylbenzene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
541-73-1	1,3-Dichlorobenzene	13	U
106-46-7	1,4-Dichlorobenzene	1	J
95-50-1	1,2-Dichlorobenzene	13	U
96-12-8	1,2-Dibromo-3-chloropropane	13	UJ
120-82-1	1,2,4-Trichlorobenzene	2	J

1F
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW62

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-11A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7750

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 22 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

Number TICs found: 20

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	21.13	47	J
2.	UNKNOWN OXYGENATED HYDROCARB	21.59	27	J
3.	UNKNOWN HYDROCARBON	22.85	30	J
4.	DECANE ISOMER	23.13	38	J
5.	DECANE ISOMER	24.02	50	J
6.	UNKNOWN	24.57	57	J
7.	UNKNOWN HYDROCARBON	24.84	26	J
8.	UNKNOWN OXYGENATED HYDROCARB	24.99	41	J
9.	DECANE ISOMER	25.21	85	J
10. 702-79-4	ADAMANTANE, 1,3-DIMETHYL-	25.52	37	NJ
11. 2958-75-0	1-METHYLDECAHYDRONAPHTHALENE	25.71	73	NJ
12.	UNKNOWN HYDROCARBON	26.35	160	J
13.	UNKNOWN OXYGENATED HYDROCARB	26.71	84	J
14.	UNKNOWN OXYGENATED HYDROCARB	26.91	35	J
15. 54676-39-0	CYCLOHEXANE, 2-BUTYL-1,1,3-T	27.43	120	NJ
16.	UNKNOWN OXYGENATED HYDROCARB	27.89	57	J
17.	NONANE ISOMER	28.04	110	J
18.	PROPYLCYCLOHEXANE ISOMER	28.31	210	J
19.	UNKNOWN OXYGENATED HYDROCARB	29.38	23	J
20.	UNKNOWN HYDROCARBON	29.57	23	J
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW63

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-12A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7751

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 33 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	15	U
74-87-3	Chloromethane	15	U
75-01-4	Vinyl Chloride	15	U
74-83-9	Bromomethane	15	U
75-00-3	Chloroethane	15	U
75-69-4	Trichlorofluoromethane	15	U
75-35-4	1,1-Dichloroethene	15	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	15	U
67-64-1	Acetone	15	U
75-15-0	Carbon Disulfide	15	U
79-20-9	Methyl Acetate	15	U
75-09-2	Methylene Chloride	15	U
156-60-5	trans-1,2-Dichloroethene	15	U
1634-04-4	Methyl tert-Butyl Ether	15	U
75-34-3	1,1-Dichloroethane	15	U
156-59-2	cis-1,2-Dichloroethene	15	U
78-93-3	2-Butanone	15	U
67-66-3	Chloroform	15	U
71-55-6	1,1,1-Trichloroethane	15	U
110-82-7	Cyclohexane	15	U
56-23-5	Carbon Tetrachloride	15	U
71-43-2	Benzene	15	U
107-06-2	1,2-Dichloroethane	15	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW63

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-12A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7751

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 33 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	15	U
108-87-2	Methylcyclohexane	15	U
78-87-5	1,2-Dichloropropane	15	U
75-27-4	Bromodichloromethane	15	U
10061-01-5	cis-1,3-Dichloropropene	15	U
108-10-1	4-Methyl-2-Pentanone	15	U
108-88-3	Toluene	15	U
10061-02-6	trans-1,3-Dichloropropene	15	U
79-00-5	1,1,2-Trichloroethane	15	U
127-18-4	Tetrachloroethene	15	U
591-78-6	2-Hexanone	15	U
124-48-1	Dibromochloromethane	15	U
106-93-4	1,2-Dibromoethane	15	U
108-90-7	Chlorobenzene	15	U
100-41-4	Ethylbenzene	15	U
1330-20-7	Xylene (total)	15	U
100-42-5	Styrene	15	U
75-25-2	Bromoform	15	U
98-82-8	Isopropylbenzene	15	U
79-34-5	1,1,2,2-Tetrachloroethane	15	U
541-73-1	1,3-Dichlorobenzene	15	U
106-46-7	1,4-Dichlorobenzene	15	U
95-50-1	1,2-Dichlorobenzene	15	U
96-12-8	1,2-Dibromo-3-chloropropane	15	U
120-82-1	1,2,4-Trichlorobenzene	15	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW63

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-12A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7751

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 33 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN SILOXANE	26.01	~~20.5~~ R	
2.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW64

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-13A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7752

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 26 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	13	U
74-87-3	Chloromethane	13	U
75-01-4	Vinyl Chloride	13	U
74-83-9	Bromomethane	13	U
75-00-3	Chloroethane	13	U
75-69-4	Trichlorofluoromethane	13	U
75-35-4	1,1-Dichloroethene	13	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	13	U
67-64-1	Acetone	36	[redacted]
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13	U
156-60-5	trans-1,2-Dichloroethene	13	U
1634-04-4	Methyl tert-Butyl Ether	13	U
75-34-3	1,1-Dichloroethane	2	J
156-59-2	cis-1,2-Dichloroethene	13	U
78-93-3	2-Butanone	13	U
67-66-3	Chloroform	13	U
71-55-6	1,1,1-Trichloroethane	13	U
110-82-7	Cyclohexane	13	U
56-23-5	Carbon Tetrachloride	13	U
71-43-2	Benzene	13	U
107-06-2	1,2-Dichloroethane	13	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW64

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-13A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7752

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 26 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	13	U
108-87-2	Methylcyclohexane	13	U
78-87-5	1,2-Dichloropropane	13	U
75-27-4	Bromodichloromethane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
108-88-3	Toluene	[redacted]	
10061-02-6	trans-1,3-Dichloropropene	13	U
79-00-5	1,1,2-Trichloroethane	13	U
127-18-4	Tetrachloroethene	2	J
591-78-6	2-Hexanone	13	U
124-48-1	Dibromochloromethane	13	U
106-93-4	1,2-Dibromoethane	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
1330-20-7	Xylene (total)	13	U
100-42-5	Styrene	13	U
75-25-2	Bromoform	13	U
98-82-8	Isopropylbenzene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
541-73-1	1,3-Dichlorobenzene	13	U
106-46-7	1,4-Dichlorobenzene	13	U
95-50-1	1,2-Dichlorobenzene	13	U
96-12-8	1,2-Dibromo-3-chloropropane	13	U
120-82-1	1,2,4-Trichlorobenzene	8	J

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW64

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-13A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7752

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 26 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

Number TICs found: 20

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	20.43	94	J
2.	UNKNOWN HYDROCARBON	21.12	260	J
3.	UNKNOWN HYDROCARBON	21.63	200	J
4.	UNKNOWN HYDROCARBON	22.82	220	J
5.	UNKNOWN HYDROCARBON	23.16	170	J
6.	DECANE ISOMER	23.51	260	J
7. 493-02-7	NAPHTHALENE, DECAHYDRO-, TRA	24.10	400	NJ
8.	UNKNOWN HYDROCARBON	24.57	490	J
9.	UNKNOWN HYDROCARBON	24.83	250	J
10.	UNKNOWN OXYGENATED HYDROCARB	25.00	350	J
11.	UNKNOWN OXYGENATED HYDROCARB	25.20	270	J
12. 1000152-47-3	TRANS-DECALIN, 2-METHYL-	25.38	480	NJ
13. 1000152-47-3	TRANS-DECALIN, 2-METHYL-	25.72	600	NJ
14. 2050-24-0	BENZENE, 1,3-DIETHYL-5-METHY	26.24	520	NJ
15.	UNKNOWN HYDROCARBON	26.72	320	J
16.	UNKNOWN OXYGENATED HYDROCARB	26.92	130	J
17. 54676-39-0	CYCLOHEXANE, 2-BUTYL-1,1,3-T	27.43	180	NJ
18.	UNKNOWN OXYGENATED HYDROCARB	27.65	230	J
19.	UNKNOWN HYDROCARBON	28.03	200	J
20.	UNKNOWN HYDROCARBON	28.32	330	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW65

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-14A

Sample wt/vol: 5.7 (g/mL) G Lab File ID: D7771

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 35 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	13	U
74-87-3	Chloromethane	13	U
75-01-4	Vinyl Chloride	13	U
74-83-9	Bromomethane	13	U
75-00-3	Chloroethane	13	U
75-69-4	Trichlorofluoromethane	13	U
75-35-4	1,1-Dichloroethene	13	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	13	U
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13	U
156-60-5	trans-1,2-Dichloroethene	13	U
1634-04-4	Methyl tert-Butyl Ether	13	U
75-34-3	1,1-Dichloroethane	13	U
156-59-2	cis-1,2-Dichloroethene	13	U
78-93-3	2-Butanone	13	U
67-66-3	Chloroform	13	U
71-55-6	1,1,1-Trichloroethane	13	U
110-82-7	Cyclohexane	13	U
56-23-5	Carbon Tetrachloride	13	U
71-43-2	Benzene	13	U
107-06-2	1,2-Dichloroethane	13	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW65

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-14A

Sample wt/vol: 5.7 (g/mL) G Lab File ID: D7771

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 35 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	13	U
108-87-2	Methylcyclohexane	13	U
78-87-5	1,2-Dichloropropane	13	U
75-27-4	Bromodichloromethane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
108-88-3	Toluene	13	U
10061-02-6	trans-1,3-Dichloropropene	13	U
79-00-5	1,1,2-Trichloroethane	13	U
127-18-4	Tetrachloroethene	13	U
591-78-6	2-Hexanone	13	U
124-48-1	Dibromochloromethane	13	U
106-93-4	1,2-Dibromoethane	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
1330-20-7	Xylene (total)	13	U
100-42-5	Styrene	13	U
75-25-2	Bromoform	13	U
98-82-8	Isopropylbenzene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
541-73-1	1,3-Dichlorobenzene	13	U
106-46-7	1,4-Dichlorobenzene	13	U
95-50-1	1,2-Dichlorobenzene	13	U
96-12-8	1,2-Dibromo-3-chloropropane	13	U
120-82-1	1,2,4-Trichlorobenzene	13	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW65

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-14A

Sample wt/vol: 5.7 (g/mL) G Lab File ID: D7771

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 35 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN SILOXANE	26.02	[redacted]	[redacted]
2.	UNKNOWN SILOXANE	28.81	[redacted]	[redacted]
3.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW66

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-15A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7766

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 28 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	13	U
74-87-3	Chloromethane	13	U
75-01-4	Vinyl Chloride	13	U
74-83-9	Bromomethane	13	U
75-00-3	Chloroethane	13	U
75-69-4	Trichlorofluoromethane	13	U
75-35-4	1,1-Dichloroethene	13	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	13	U
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13	U
156-60-5	trans-1,2-Dichloroethene	13	U
1634-04-4	Methyl tert-Butyl Ether	13	U
75-34-3	1,1-Dichloroethane	13	U
156-59-2	cis-1,2-Dichloroethene	13	U
78-93-3	2-Butanone	13	U
67-66-3	Chloroform	13	U
71-55-6	1,1,1-Trichloroethane	13	U
110-82-7	Cyclohexane	13	U
56-23-5	Carbon Tetrachloride	13	U
71-43-2	Benzene	13	U
107-06-2	1,2-Dichloroethane	13	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW66

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-15A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7766

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 28 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	13	U
108-87-2	Methylcyclohexane	13	U
78-87-5	1,2-Dichloropropane	13	U
75-27-4	Bromodichloromethane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
108-88-3	Toluene	13	U
10061-02-6	trans-1,3-Dichloropropene	13	U
79-00-5	1,1,2-Trichloroethane	13	U
127-18-4	Tetrachloroethene	13	U
591-78-6	2-Hexanone	13	U
124-48-1	Dibromochloromethane	13	U
106-93-4	1,2-Dibromoethane	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
1330-20-7	Xylene (total)	13	U
100-42-5	Styrene	13	U
75-25-2	Bromoform	13	U
98-82-8	Isopropylbenzene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
541-73-1	1,3-Dichlorobenzene	13	U
106-46-7	1,4-Dichlorobenzene	13	U
95-50-1	1,2-Dichlorobenzene	13	U
96-12-8	1,2-Dibromo-3-chloropropane	13	U
120-82-1	1,2,4-Trichlorobenzene	13	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW66

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-15A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7766

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 28 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW67

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-16A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7767

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 25 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	13	U
74-87-3	Chloromethane	13	U
75-01-4	Vinyl Chloride	13	U
74-83-9	Bromomethane	13	U
75-00-3	Chloroethane	13	U
75-69-4	Trichlorofluoromethane	13	U
75-35-4	1,1-Dichloroethene	13	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	13	U
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13	U
156-60-5	trans-1,2-Dichloroethene	13	U
1634-04-4	Methyl tert-Butyl Ether	13	U
75-34-3	1,1-Dichloroethane	13	U
156-59-2	cis-1,2-Dichloroethene	13	U
78-93-3	2-Butanone	13	U
67-66-3	Chloroform	13	U
71-55-6	1,1,1-Trichloroethane	13	U
110-82-7	Cyclohexane	13	U
56-23-5	Carbon Tetrachloride	13	U
71-43-2	Benzene	13	U
107-06-2	1,2-Dichloroethane	13	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW67

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-16A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7767

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 25 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
79-01-6	Trichloroethene	13	U
108-87-2	Methylcyclohexane	13	U
78-87-5	1,2-Dichloropropane	13	U
75-27-4	Bromodichloromethane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
108-88-3	Toluene	13	U
10061-02-6	trans-1,3-Dichloropropene	13	U
79-00-5	1,1,2-Trichloroethane	13	U
127-18-4	Tetrachloroethene	13	U
591-78-6	2-Hexanone	13	U
124-48-1	Dibromochloromethane	13	U
106-93-4	1,2-Dibromoethane	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
1330-20-7	Xylene (total)	13	U
100-42-5	Styrene	13	U
75-25-2	Bromoform	13	U
98-82-8	Isopropylbenzene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
541-73-1	1,3-Dichlorobenzene	13	U
106-46-7	1,4-Dichlorobenzene	13	U
95-50-1	1,2-Dichlorobenzene	13	U
96-12-8	1,2-Dibromo-3-chloropropane	13	U
120-82-1	1,2,4-Trichlorobenzene	13	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW67

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-16A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7767

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 25 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW68

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-17A

Sample wt/vol: 5.8 (g/mL) G Lab File ID: D7768

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 33 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	13	U
74-87-3	Chloromethane	13	U
75-01-4	Vinyl Chloride	13	U
74-83-9	Bromomethane	13	U
75-00-3	Chloroethane	13	U
75-69-4	Trichlorofluoromethane	13	U
75-35-4	1,1-Dichloroethene	13	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	13	U
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13	U
156-60-5	trans-1,2-Dichloroethene	13	U
1634-04-4	Methyl tert-Butyl Ether	13	U
75-34-3	1,1-Dichloroethane	13	U
156-59-2	cis-1,2-Dichloroethene	13	U
78-93-3	2-Butanone	13	U
67-66-3	Chloroform	13	U
71-55-6	1,1,1-Trichloroethane	13	U
110-82-7	Cyclohexane	13	U
56-23-5	Carbon Tetrachloride	13	U
71-43-2	Benzene	13	U
107-06-2	1,2-Dichloroethane	13	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW68

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-17A

Sample wt/vol: 5.8 (g/mL) G Lab File ID: D7768

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 33 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	13	U
108-87-2	Methylcyclohexane	13	U
78-87-5	1,2-Dichloropropane	13	U
75-27-4	Bromodichloromethane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
108-88-3	Toluene	13	U
10061-02-6	trans-1,3-Dichloropropene	13	U
79-00-5	1,1,2-Trichloroethane	13	U
127-18-4	Tetrachloroethene	13	U
591-78-6	2-Hexanone	13	U
124-48-1	Dibromochloromethane	13	U
106-93-4	1,2-Dibromoethane	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
1330-20-7	Xylene (total)	13	U
100-42-5	Styrene	13	U
75-25-2	Bromoform	13	U
98-82-8	Isopropylbenzene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
541-73-1	1,3-Dichlorobenzene	13	U
106-46-7	1,4-Dichlorobenzene	13	U
95-50-1	1,2-Dichlorobenzene	13	U
96-12-8	1,2-Dibromo-3-chloropropane	13	U
120-82-1	1,2,4-Trichlorobenzene	13	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW68

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-17A

Sample wt/vol: 5.8 (g/mL) G Lab File ID: D7768

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 33 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW69

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-18A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7769

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 57 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	22	U
74-87-3	Chloromethane	22	U
75-01-4	Vinyl Chloride	22	U
74-83-9	Bromomethane	22	U
75-00-3	Chloroethane	22	U
75-69-4	Trichlorofluoromethane	22	U
75-35-4	1,1-Dichloroethene	22	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	22	U
67-64-1	Acetone	22	U
75-15-0	Carbon Disulfide	22	U
79-20-9	Methyl Acetate	22	U
75-09-2	Methylene Chloride	22	U
156-60-5	trans-1,2-Dichloroethene	22	U
1634-04-4	Methyl tert-Butyl Ether	22	U
75-34-3	1,1-Dichloroethane	22	U
156-59-2	cis-1,2-Dichloroethene	22	U
78-93-3	2-Butanone	22	U
67-66-3	Chloroform	22	U
71-55-6	1,1,1-Trichloroethane	22	U
110-82-7	Cyclohexane	22	U
56-23-5	Carbon Tetrachloride	22	U
71-43-2	Benzene	22	U
107-06-2	1,2-Dichloroethane	22	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW69

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-18A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7769

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 57 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	22	U
108-87-2	Methylcyclohexane	22	U
78-87-5	1,2-Dichloropropane	22	U
75-27-4	Bromodichloromethane	22	U
10061-01-5	cis-1,3-Dichloropropene	22	U
108-10-1	4-Methyl-2-Pentanone	22	U
108-88-3	Toluene	22	U
10061-02-6	trans-1,3-Dichloropropene	22	U
79-00-5	1,1,2-Trichloroethane	22	U
127-18-4	Tetrachloroethene	22	U
591-78-6	2-Hexanone	22	U
124-48-1	Dibromochloromethane	22	U
106-93-4	1,2-Dibromoethane	22	U
108-90-7	Chlorobenzene	22	U
100-41-4	Ethylbenzene	22	U
1330-20-7	Xylene (total)	22	U
100-42-5	Styrene	22	U
75-25-2	Bromoform	22	U
98-82-8	Isopropylbenzene	22	U
79-34-5	1,1,2,2-Tetrachloroethane	22	U
541-73-1	1,3-Dichlorobenzene	22	U
106-46-7	1,4-Dichlorobenzene	22	U
95-50-1	1,2-Dichlorobenzene	22	U
96-12-8	1,2-Dibromo-3-chloropropane	22	U
120-82-1	1,2,4-Trichlorobenzene	22	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW69

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-18A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7769

Level: (low/med) ~~LOW~~ Date Received: 12/03/99

% Moisture: not dec. 57 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW70

Lab Name: ECOLOGY AND ENVIRONMENT, I Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-19A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7770

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 34 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	14	U
74-87-3	Chloromethane	14	U
75-01-4	Vinyl Chloride	14	U
74-83-9	Bromomethane	14	U
75-00-3	Chloroethane	14	U
75-69-4	Trichlorofluoromethane	14	U
75-35-4	1,1-Dichloroethene	14	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	14	U
67-64-1	Acetone	14	U
75-15-0	Carbon Disulfide	14	U
79-20-9	Methyl Acetate	14	U
75-09-2	Methylene Chloride	14	U
156-60-5	trans-1,2-Dichloroethene	14	U
1634-04-4	Methyl tert-Butyl Ether	14	U
75-34-3	1,1-Dichloroethane	14	U
156-59-2	cis-1,2-Dichloroethene	14	U
78-93-3	2-Butanone	14	U
67-66-3	Chloroform	14	U
71-55-6	1,1,1-Trichloroethane	14	U
110-82-7	Cyclohexane	14	U
56-23-5	Carbon Tetrachloride	14	U
71-43-2	Benzene	14	U
107-06-2	1,2-Dichloroethane	14	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW70

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-19A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7770

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 34 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	14	U
108-87-2	Methylcyclohexane	14	U
78-87-5	1,2-Dichloropropane	14	U
75-27-4	Bromodichloromethane	14	U
10061-01-5	cis-1,3-Dichloropropene	14	U
108-10-1	4-Methyl-2-Pentanone	14	U
108-88-3	Toluene	14	U
10061-02-6	trans-1,3-Dichloropropene	14	U
79-00-5	1,1,2-Trichloroethane	14	U
127-18-4	Tetrachloroethene	14	U
591-78-6	2-Hexanone	14	U
124-48-1	Dibromochloromethane	14	U
106-93-4	1,2-Dibromoethane	14	U
108-90-7	Chlorobenzene	14	U
100-41-4	Ethylbenzene	14	U
1330-20-7	Xylene (total)	14	U
100-42-5	Styrene	14	U
75-25-2	Bromoform	14	U
98-82-8	Isopropylbenzene	14	U
79-34-5	1,1,2,2-Tetrachloroethane	14	U
541-73-1	1,3-Dichlorobenzene	14	U
106-46-7	1,4-Dichlorobenzene	14	U
95-50-1	1,2-Dichlorobenzene	14	U
96-12-8	1,2-Dibromo-3-chloropropane	14	U
120-82-1	1,2,4-Trichlorobenzene	14	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW70

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-19A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7770

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 34 Date Analyzed: 12/07/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW76

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) WATER Lab Sample ID: 9912043-01A

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C5388

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. _____ Date Analyzed: 12/10/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	10	U
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
75-69-4	Trichlorofluoromethane	10	U
75-35-4	1,1-Dichloroethene	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	U
67-64-1	Acetone	[illegible]	[illegible]
75-15-0	Carbon Disulfide	10	U
79-20-9	Methyl Acetate	10	U
75-09-2	Methylene Chloride	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
1634-04-4	Methyl tert-Butyl Ether	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	8	J
78-93-3	2-Butanone	10	U
67-66-3	Chloroform	10	U
71-55-6	1,1,1-Trichloroethane	10	U
110-82-7	Cyclohexane	10	U
56-23-5	Carbon Tetrachloride	10	U
71-43-2	Benzene	10	U
107-06-2	1,2-Dichloroethane	10	U

* Value transferred from dilution run

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW76

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) WATER Lab Sample ID: 9912043-01A

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C5388

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. _____ Date Analyzed: 12/10/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	5	J
108-87-2	Methylcyclohexane	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
108-88-3	Toluene	2	J
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	10	U
106-93-4	1,2-Dibromoethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (total)	1	J
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U
98-82-8	Isopropylbenzene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
96-12-8	1,2-Dibromo-3-chloropropane	[redacted]	
120-82-1	1,2,4-Trichlorobenzene	10	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW76

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) WATER Lab Sample ID: 9912043-01A

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C5388

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. _____ Date Analyzed: 12/10/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC OLM04.2

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWX88

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912061-01A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7853

Level: (low/med) LOW Date Received: 12/07/99

% Moisture: not dec. 17 Date Analyzed: 12/12/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	12	U
74-87-3	Chloromethane	12	U
75-01-4	Vinyl Chloride	12	U
74-83-9	Bromomethane	12	U
75-00-3	Chloroethane	12	U
75-69-4	Trichlorofluoromethane	12	U
75-35-4	1,1-Dichloroethene	12	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	12	U
67-64-1	Acetone	79	
75-15-0	Carbon Disulfide	12	U
79-20-9	Methyl Acetate	12	U
75-09-2	Methylene Chloride	12	U
156-60-5	trans-1,2-Dichloroethene	12	U
1634-04-4	Methyl tert-Butyl Ether	12	U
75-34-3	1,1-Dichloroethane	12	U
156-59-2	cis-1,2-Dichloroethene	12	U
78-93-3	2-Butanone	12	U
67-66-3	Chloroform	12	U
71-55-6	1,1,1-Trichloroethane	12	U
110-82-7	Cyclohexane	12	U
56-23-5	Carbon Tetrachloride	12	U
71-43-2	Benzene	12	U
107-06-2	1,2-Dichloroethane	12	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWX88

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912061-01A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7853

Level: (low/med) LOW Date Received: 12/07/99

% Moisture: not dec. 17 Date Analyzed: 12/12/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
79-01-6	Trichloroethene	12	U
108-87-2	Methylcyclohexane	12	U
78-87-5	1,2-Dichloropropane	12	U
75-27-4	Bromodichloromethane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
108-88-3	Toluene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
79-00-5	1,1,2-Trichloroethane	12	U
127-18-4	Tetrachloroethene	12	U
591-78-6	2-Hexanone	12	U
124-48-1	Dibromochloromethane	12	U
106-93-4	1,2-Dibromoethane	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
1330-20-7	Xylene (total)	12	U
100-42-5	Styrene	12	U
75-25-2	Bromoform	12	U
98-82-8	Isopropylbenzene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
541-73-1	1,3-Dichlorobenzene	12	U
106-46-7	1,4-Dichlorobenzene	12	U
95-50-1	1,2-Dichlorobenzene	12	U
96-12-8	1,2-Dibromo-3-chloropropane	12	U
120-82-1	1,2,4-Trichlorobenzene	1	J

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWX88

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912061-01A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7853

Level: (low/med) LOW Date Received: 12/07/99

% Moisture: not dec. 17 Date Analyzed: 12/12/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY07

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-02A

Sample wt/vol: 5.3 (g/mL) G Lab File ID: D7739

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 65 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	27	U
74-87-3	Chloromethane	27	U
75-01-4	Vinyl Chloride	27	U
74-83-9	Bromomethane	27	U
75-00-3	Chloroethane	27	U
75-69-4	Trichlorofluoromethane	27	U
75-35-4	1,1-Dichloroethene	27	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	27	U
67-64-1	Acetone	27	U
75-15-0	Carbon Disulfide	27	U
79-20-9	Methyl Acetate	27	U
75-09-2	Methylene Chloride	27	U
156-60-5	trans-1,2-Dichloroethene	27	U
1634-04-4	Methyl tert-Butyl Ether	27	U
75-34-3	1,1-Dichloroethane	27	U
156-59-2	cis-1,2-Dichloroethene	27	U
78-93-3	2-Butanone	27	U
67-66-3	Chloroform	27	U
71-55-6	1,1,1-Trichloroethane	27	U
110-82-7	Cyclohexane	27	U
56-23-5	Carbon Tetrachloride	27	U
71-43-2	Benzene	27	U
107-06-2	1,2-Dichloroethane	27	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY07

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-02A

Sample wt/vol: 5.3 (g/mL) G Lab File ID: D7739

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 65 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	27	U
108-87-2	Methylcyclohexane	27	U
78-87-5	1,2-Dichloropropane	27	U
75-27-4	Bromodichloromethane	27	U
10061-01-5	cis-1,3-Dichloropropene	27	U
108-10-1	4-Methyl-2-Pentanone	27	U
108-88-3	Toluene	27	U
10061-02-6	trans-1,3-Dichloropropene	27	U
79-00-5	1,1,2-Trichloroethane	27	U
127-18-4	Tetrachloroethene	27	U
591-78-6	2-Hexanone	27	U
124-48-1	Dibromochloromethane	27	U
106-93-4	1,2-Dibromoethane	27	U
108-90-7	Chlorobenzene	27	U
100-41-4	Ethylbenzene	27	U
1330-20-7	Xylene (total)	27	U
100-42-5	Styrene	27	U
75-25-2	Bromoform	27	U
98-82-8	Isopropylbenzene	27	U
79-34-5	1,1,2,2-Tetrachloroethane	27	U
541-73-1	1,3-Dichlorobenzene	27	U
106-46-7	1,4-Dichlorobenzene	27	U
95-50-1	1,2-Dichlorobenzene	27	U
96-12-8	1,2-Dibromo-3-chloropropane	27	U
120-82-1	1,2,4-Trichlorobenzene	27	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY07

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-02A

Sample wt/vol: 5.3 (g/mL) G Lab File ID: D7739

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 65 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY08

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-03A

Sample wt/vol: 5.6 (g/mL) G Lab File ID: D7742

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 27 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	12	U
74-87-3	Chloromethane	12	U
75-01-4	Vinyl Chloride	12	U
74-83-9	Bromomethane	12	U
75-00-3	Chloroethane	12	U
75-69-4	Trichlorofluoromethane	12	U
75-35-4	1,1-Dichloroethene	12	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	12	U
67-64-1	Acetone	12	U
75-15-0	Carbon Disulfide	12	U
79-20-9	Methyl Acetate	12	U
75-09-2	Methylene Chloride	12	U
156-60-5	trans-1,2-Dichloroethene	12	U
1634-04-4	Methyl tert-Butyl Ether	12	U
75-34-3	1,1-Dichloroethane	12	U
156-59-2	cis-1,2-Dichloroethene	12	U
78-93-3	2-Butanone	12	U
67-66-3	Chloroform	12	U
71-55-6	1,1,1-Trichloroethane	12	U
110-82-7	Cyclohexane	12	U
56-23-5	Carbon Tetrachloride	12	U
71-43-2	Benzene	12	U
107-06-2	1,2-Dichloroethane	12	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY08

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-03A

Sample wt/vol: 5.6 (g/mL) G Lab File ID: D7742

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 27 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	12	U
108-87-2	Methylcyclohexane	12	U
78-87-5	1,2-Dichloropropane	12	U
75-27-4	Bromodichloromethane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
108-88-3	Toluene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
79-00-5	1,1,2-Trichloroethane	12	U
127-18-4	Tetrachloroethene	12	U
591-78-6	2-Hexanone	12	U
124-48-1	Dibromochloromethane	12	U
106-93-4	1,2-Dibromoethane	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
1330-20-7	Xylene (total)	12	U
100-42-5	Styrene	12	U
75-25-2	Bromoform	12	U
98-82-8	Isopropylbenzene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
541-73-1	1,3-Dichlorobenzene	12	U
106-46-7	1,4-Dichlorobenzene	12	U
95-50-1	1,2-Dichlorobenzene	12	U
96-12-8	1,2-Dibromo-3-chloropropane	12	U
120-82-1	1,2,4-Trichlorobenzene	12	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY08

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-03A

Sample wt/vol: 5.6 (g/mL) G Lab File ID: D7742

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 27 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC OLM04.2

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY09

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-04A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7743

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 39 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	16	U
74-87-3	Chloromethane	16	U
75-01-4	Vinyl Chloride	16	U
74-83-9	Bromomethane	16	U
75-00-3	Chloroethane	16	U
75-69-4	Trichlorofluoromethane	16	U
75-35-4	1,1-Dichloroethene	16	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	16	U
67-64-1	Acetone	16	U
75-15-0	Carbon Disulfide	16	U
79-20-9	Methyl Acetate	16	U
75-09-2	Methylene Chloride	16	U
156-60-5	trans-1,2-Dichloroethene	16	U
1634-04-4	Methyl tert-Butyl Ether	16	U
75-34-3	1,1-Dichloroethane	16	U
156-59-2	cis-1,2-Dichloroethene	16	U
78-93-3	2-Butanone	16	U
67-66-3	Chloroform	16	U
71-55-6	1,1,1-Trichloroethane	16	U
110-82-7	Cyclohexane	16	U
56-23-5	Carbon Tetrachloride	16	U
71-43-2	Benzene	16	U
107-06-2	1,2-Dichloroethane	16	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY09

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-04A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7743

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 39 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
79-01-6	Trichloroethene	16	U
108-87-2	Methylcyclohexane	16	U
78-87-5	1,2-Dichloropropane	16	U
75-27-4	Bromodichloromethane	16	U
10061-01-5	cis-1,3-Dichloropropene	16	U
108-10-1	4-Methyl-2-Pentanone	16	U
108-88-3	Toluene	16	U
10061-02-6	trans-1,3-Dichloropropene	16	U
79-00-5	1,1,2-Trichloroethane	16	U
127-18-4	Tetrachloroethene	16	U
591-78-6	2-Hexanone	16	U
124-48-1	Dibromochloromethane	16	U
106-93-4	1,2-Dibromoethane	16	U
108-90-7	Chlorobenzene	16	U
100-41-4	Ethylbenzene	16	U
1330-20-7	Xylene (total)	16	U
100-42-5	Styrene	16	U
75-25-2	Bromoform	16	U
98-82-8	Isopropylbenzene	16	U
79-34-5	1,1,2,2-Tetrachloroethane	16	U
541-73-1	1,3-Dichlorobenzene	16	U
106-46-7	1,4-Dichlorobenzene	16	U
95-50-1	1,2-Dichlorobenzene	16	U
96-12-8	1,2-Dibromo-3-chloropropane	16	U
120-82-1	1,2,4-Trichlorobenzene	16	U

1F
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY09

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-04A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7743

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 39 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY10

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-05A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7744

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 57 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	23	U
74-87-3	Chloromethane	23	U
75-01-4	Vinyl Chloride	23	U
74-83-9	Bromomethane	23	U
75-00-3	Chloroethane	23	U
75-69-4	Trichlorofluoromethane	23	U
75-35-4	1,1-Dichloroethene	23	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	23	U
67-64-1	Acetone	61	[illegible]
75-15-0	Carbon Disulfide	23	U
79-20-9	Methyl Acetate	23	U
75-09-2	Methylene Chloride	23	U
156-60-5	trans-1,2-Dichloroethene	23	U
1634-04-4	Methyl tert-Butyl Ether	23	U
75-34-3	1,1-Dichloroethane	10	J
156-59-2	cis-1,2-Dichloroethene	300	[illegible]
78-93-3	2-Butanone	23	U
67-66-3	Chloroform	23	U
71-55-6	1,1,1-Trichloroethane	23	[illegible]
110-82-7	Cyclohexane	23	U
56-23-5	Carbon Tetrachloride	23	U
71-43-2	Benzene	3	J
107-06-2	1,2-Dichloroethane	23	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY10

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-05A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7744

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 57 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	UG/KG	Q
79-01-6	Trichloroethene	[illegible]	[illegible]
108-87-2	Methylcyclohexane	23	U
78-87-5	1,2-Dichloropropane	23	U
75-27-4	Bromodichloromethane	23	U
10061-01-5	cis-1,3-Dichloropropene	23	U
108-10-1	4-Methyl-2-Pentanone	23	U
108-88-3	Toluene	61	[illegible]
10061-02-6	trans-1,3-Dichloropropene	23	U
79-00-5	1,1,2-Trichloroethane	23	U
127-18-4	Tetrachloroethene	50	[illegible]
591-78-6	2-Hexanone	23	U
124-48-1	Dibromochloromethane	23	U
106-93-4	1,2-Dibromoethane	23	U
108-90-7	Chlorobenzene	23	U
100-41-4	Ethylbenzene	3	[illegible]
1330-20-7	Xylene (total)	17	[illegible]
100-42-5	Styrene	23	U
75-25-2	Bromoform	23	U
98-82-8	Isopropylbenzene	23	U
79-34-5	1,1,2,2-Tetrachloroethane	23	U
541-73-1	1,3-Dichlorobenzene	23	U
106-46-7	1,4-Dichlorobenzene	4	[illegible]
95-50-1	1,2-Dichlorobenzene	3	[illegible]
96-12-8	1,2-Dibromo-3-chloropropane	23	U
120-82-1	1,2,4-Trichlorobenzene	3	[illegible]

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY10

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-05A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7744

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 57 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

Number TICs found: 19

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	DODECANE ISOMER	21.14	36	J
2.	DECANE ISOMER	23.16	24	J
3.	TRIMETHYLHEXANE ISOMER	24.01	42	J
4.	UNDECANE ISOMER	24.50	24	J
5.	UNKNOWN HYDROCARBON	24.96	12	J
6.	UNKNOWN HYDROCARBON	25.20	19	J
7. 702-79-4	ADAMANTANE, 1,3-DIMETHYL-	25.51	15	NJ
8.	UNKNOWN HYDROCARBON	25.72	37	J
9.	NONANE ISOMER	26.32	34	J
10.	UNKNOWN HYDROCARBON	26.51	18	J
11.	UNKNOWN HYDROCARBON	26.71	53	J
12.	UNKNOWN HYDROCARBON	27.30	17	J
13.	UNKNOWN HYDROCARBON	27.50	68	J
14.	UNKNOWN	28.05	120	J
15.	UNKNOWN HYDROCARBON	28.48	73	J
16.	UNKNOWN HYDROCARBON	29.00	45	J
17.	UNKNOWN HYDROCARBON	29.37	23	J
18.	UNKNOWN	29.57	15	J
19.	UNKNOWN	29.83	13	J
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FORM I VOA-TIC OLM04.2

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY11

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-06A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7745

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 55 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	22	U
74-87-3	Chloromethane	22	U
75-01-4	Vinyl Chloride	22	U
74-83-9	Bromomethane	22	U
75-00-3	Chloroethane	22	U
75-69-4	Trichlorofluoromethane	22	U
75-35-4	1,1-Dichloroethene	22	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	22	U
67-64-1	Acetone	22	U
75-15-0	Carbon Disulfide	22	U
79-20-9	Methyl Acetate	22	U
75-09-2	Methylene Chloride	22	U
156-60-5	trans-1,2-Dichloroethene	22	U
1634-04-4	Methyl tert-Butyl Ether	22	U
75-34-3	1,1-Dichloroethane	22	U
156-59-2	cis-1,2-Dichloroethene	[illegible]	
78-93-3	2-Butanone	22	U
67-66-3	Chloroform	22	U
71-55-6	1,1,1-Trichloroethane	22	U
110-82-7	Cyclohexane	22	U
56-23-5	Carbon Tetrachloride	22	U
71-43-2	Benzene	22	U
107-06-2	1,2-Dichloroethane	22	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY11

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-06A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7745

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 65 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	22	U
108-87-2	Methylcyclohexane	22	U
78-87-5	1,2-Dichloropropane	22	U
75-27-4	Bromodichloromethane	22	U
10061-01-5	cis-1,3-Dichloropropene	22	U
108-10-1	4-Methyl-2-Pentanone	22	U
108-88-3	Toluene	22	U
10061-02-6	trans-1,3-Dichloropropene	22	U
79-00-5	1,1,2-Trichloroethane	22	U
127-18-4	Tetrachloroethene	3	J
591-78-6	2-Hexanone	22	U
124-48-1	Dibromochloromethane	22	U
106-93-4	1,2-Dibromoethane	22	U
108-90-7	Chlorobenzene	22	U
100-41-4	Ethylbenzene	22	U
1330-20-7	Xylene (total)	22	U
100-42-5	Styrene	22	U
75-25-2	Bromoform	22	U
98-82-8	Isopropylbenzene	22	U
79-34-5	1,1,2,2-Tetrachloroethane	22	U
541-73-1	1,3-Dichlorobenzene	22	U
106-46-7	1,4-Dichlorobenzene	22	U
95-50-1	1,2-Dichlorobenzene	22	U
96-12-8	1,2-Dibromo-3-chloropropane	22	U
120-82-1	1,2,4-Trichlorobenzene	22	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY11

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-06A

Sample wt/vol: 5.1 (g/mL) G Lab File ID: D7745

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 55 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC OLM04.2

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY12

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-07A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7746

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 28 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	13	U
74-87-3	Chloromethane	13	U
75-01-4	Vinyl Chloride	13	U
74-83-9	Bromomethane	13	U
75-00-3	Chloroethane	13	U
75-69-4	Trichlorofluoromethane	13	U
75-35-4	1,1-Dichloroethene	13	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	13	U
67-64-1	Acetone	16	[redacted]
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13	U
156-60-5	trans-1,2-Dichloroethene	13	U
1634-04-4	Methyl tert-Butyl Ether	13	U
75-34-3	1,1-Dichloroethane	13	U
156-59-2	cis-1,2-Dichloroethene	13	U
78-93-3	2-Butanone	13	U
67-66-3	Chloroform	13	U
71-55-6	1,1,1-Trichloroethane	13	U
110-82-7	Cyclohexane	13	U
56-23-5	Carbon Tetrachloride	13	U
71-43-2	Benzene	13	U
107-06-2	1,2-Dichloroethane	13	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY12

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-07A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7746

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 28 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	13	U
108-87-2	Methylcyclohexane	13	U
78-87-5	1,2-Dichloropropane	13	U
75-27-4	Bromodichloromethane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
108-88-3	Toluene	[redacted]	[redacted]
10061-02-6	trans-1,3-Dichloropropene	13	U
79-00-5	1,1,2-Trichloroethane	13	U
127-18-4	Tetrachloroethene	13	U
591-78-6	2-Hexanone	13	U
124-48-1	Dibromochloromethane	13	U
106-93-4	1,2-Dibromoethane	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
1330-20-7	Xylene (total)	13	U
100-42-5	Styrene	13	U
75-25-2	Bromoform	13	U
98-82-8	Isopropylbenzene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
541-73-1	1,3-Dichlorobenzene	13	U
106-46-7	1,4-Dichlorobenzene	13	U
95-50-1	1,2-Dichlorobenzene	13	U
96-12-8	1,2-Dibromo-3-chloropropane	13	U
120-82-1	1,2,4-Trichlorobenzene	13	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY12

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-07A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7746

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 28 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	26.32	9	J
2. 54676-39-0	CYCLOHEXANE, 2-BUTYL-1,1,3-T	27.44	10	NJ
3.	UNKNOWN HYDROCARBON	29.84	7	J
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FORM I VOA-TIC OLM04.2

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY13

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-08A

Sample wt/vol: 6.0 (g/mL) G Lab File ID: D7747

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 36 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	13	U
74-87-3	Chloromethane	13	U
75-01-4	Vinyl Chloride	13	U
74-83-9	Bromomethane	13	U
75-00-3	Chloroethane	13	U
75-69-4	Trichlorofluoromethane	13	U
75-35-4	1,1-Dichloroethene	13	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	13	U
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13	U
156-60-5	trans-1,2-Dichloroethene	13	U
1634-04-4	Methyl tert-Butyl Ether	13	U
75-34-3	1,1-Dichloroethane	13	U
156-59-2	cis-1,2-Dichloroethene	13	U
78-93-3	2-Butanone	13	U
67-66-3	Chloroform	13	U
71-55-6	1,1,1-Trichloroethane	13	U
110-82-7	Cyclohexane	13	U
56-23-5	Carbon Tetrachloride	13	U
71-43-2	Benzene	13	U
107-06-2	1,2-Dichloroethane	13	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY13

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-08A

Sample wt/vol: 6.0 (g/mL) G Lab File ID: D7747

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 36 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	13	U
108-87-2	Methylcyclohexane	13	U
78-87-5	1,2-Dichloropropane	13	U
75-27-4	Bromodichloromethane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
108-88-3	Toluene	13	U
10061-02-6	trans-1,3-Dichloropropene	13	U
79-00-5	1,1,2-Trichloroethane	13	U
127-18-4	Tetrachloroethene	13	U
591-78-6	2-Hexanone	13	U
124-48-1	Dibromochloromethane	13	U
106-93-4	1,2-Dibromoethane	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
1330-20-7	Xylene (total)	13	U
100-42-5	Styrene	13	U
75-25-2	Bromoform	13	U
98-82-8	Isopropylbenzene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
541-73-1	1,3-Dichlorobenzene	13	U
106-46-7	1,4-Dichlorobenzene	13	U
95-50-1	1,2-Dichlorobenzene	13	U
96-12-8	1,2-Dibromo-3-chloropropane	13	U
120-82-1	1,2,4-Trichlorobenzene	13	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY13

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-08A

Sample wt/vol: 6.0 (g/mL) G Lab File ID: D7747

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 36 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY14

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-09A

Sample wt/vol: 5.3 (g/mL) G Lab File ID: D7748

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 42 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	16	U
74-87-3	Chloromethane	16	U
75-01-4	Vinyl Chloride	16	U
74-83-9	Bromomethane	16	U
75-00-3	Chloroethane	16	U
75-69-4	Trichlorofluoromethane	16	U
75-35-4	1,1-Dichloroethene	16	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	16	U
67-64-1	Acetone	16	U
75-15-0	Carbon Disulfide	16	U
79-20-9	Methyl Acetate	16	U
75-09-2	Methylene Chloride	16	U
156-60-5	trans-1,2-Dichloroethene	16	U
1634-04-4	Methyl tert-Butyl Ether	16	U
75-34-3	1,1-Dichloroethane	16	U
156-59-2	cis-1,2-Dichloroethene	16	U
78-93-3	2-Butanone	16	U
67-66-3	Chloroform	16	U
71-55-6	1,1,1-Trichloroethane	16	U
110-82-7	Cyclohexane	16	U
56-23-5	Carbon Tetrachloride	16	U
71-43-2	Benzene	16	U
107-06-2	1,2-Dichloroethane	16	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY14

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-09A

Sample wt/vol: 5.3 (g/mL) G Lab File ID: D7748

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 42 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	16	U
108-87-2	Methylcyclohexane	16	U
78-87-5	1,2-Dichloropropane	16	U
75-27-4	Bromodichloromethane	16	U
10061-01-5	cis-1,3-Dichloropropene	16	U
108-10-1	4-Methyl-2-Pentanone	16	U
108-88-3	Toluene	16	U
10061-02-6	trans-1,3-Dichloropropene	16	U
79-00-5	1,1,2-Trichloroethane	16	U
127-18-4	Tetrachloroethene	16	U
591-78-6	2-Hexanone	16	U
124-48-1	Dibromochloromethane	16	U
106-93-4	1,2-Dibromoethane	16	U
108-90-7	Chlorobenzene	16	U
100-41-4	Ethylbenzene	16	U
1330-20-7	Xylene (total)	16	U
100-42-5	Styrene	16	U
75-25-2	Bromoform	16	U
98-82-8	Isopropylbenzene	16	U
79-34-5	1,1,2,2-Tetrachloroethane	16	U
541-73-1	1,3-Dichlorobenzene	16	U
106-46-7	1,4-Dichlorobenzene	16	U
95-50-1	1,2-Dichlorobenzene	16	U
96-12-8	1,2-Dibromo-3-chloropropane	16	U
120-82-1	1,2,4-Trichlorobenzene	16	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY14

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-09A

Sample wt/vol: 5.3 (g/mL) G Lab File ID: D7748

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 42 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY15

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-10A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7749

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 59 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-71-8	Dichlorodifluoromethane	23	U
74-87-3	Chloromethane	23	U
75-01-4	Vinyl Chloride	23	U
74-83-9	Bromomethane	23	U
75-00-3	Chloroethane	23	U
75-69-4	Trichlorofluoromethane	23	U
75-35-4	1,1-Dichloroethene	23	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	23	U
67-64-1	Acetone	23	U
75-15-0	Carbon Disulfide	23	U
79-20-9	Methyl Acetate	23	U
75-09-2	Methylene Chloride	23	U
156-60-5	trans-1,2-Dichloroethene	23	U
1634-04-4	Methyl tert-Butyl Ether	23	U
75-34-3	1,1-Dichloroethane	23	U
156-59-2	cis-1,2-Dichloroethene	23	U
78-93-3	2-Butanone	23	U
67-66-3	Chloroform	23	U
71-55-6	1,1,1-Trichloroethane	23	U
110-82-7	Cyclohexane	23	U
56-23-5	Carbon Tetrachloride	23	U
71-43-2	Benzene	23	U
107-06-2	1,2-Dichloroethane	23	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY15

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-10A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7749

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 59 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-01-6	Trichloroethene	23	U
108-87-2	Methylcyclohexane	23	U
78-87-5	1,2-Dichloropropane	23	U
75-27-4	Bromodichloromethane	23	U
10061-01-5	cis-1,3-Dichloropropene	23	U
108-10-1	4-Methyl-2-Pentanone	23	U
108-88-3	Toluene	23	U
10061-02-6	trans-1,3-Dichloropropene	23	U
79-00-5	1,1,2-Trichloroethane	23	U
127-18-4	Tetrachloroethene	23	U
591-78-6	2-Hexanone	23	U
124-48-1	Dibromochloromethane	23	U
106-93-4	1,2-Dibromoethane	23	U
108-90-7	Chlorobenzene	23	U
100-41-4	Ethylbenzene	23	U
1330-20-7	Xylene (total)	23	U
100-42-5	Styrene	23	U
75-25-2	Bromoform	23	U
98-82-8	Isopropylbenzene	23	U
79-34-5	1,1,2,2-Tetrachloroethane	23	U
541-73-1	1,3-Dichlorobenzene	23	U
106-46-7	1,4-Dichlorobenzene	23	U
95-50-1	1,2-Dichlorobenzene	23	U
96-12-8	1,2-Dibromo-3-chloropropane	23	U
120-82-1	1,2,4-Trichlorobenzene	23	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY15

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-10A

Sample wt/vol: 5.4 (g/mL) G Lab File ID: D7749

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: not dec. 59 Date Analyzed: 12/06/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW62

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-11B

Sample wt/vol: 1.3 (g/mL) G Lab File ID: K4168

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 22 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.90 Extraction: (Type) SONC

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	9800	U
108-95-2	Phenol	9800	U
111-44-4	bis(2-Chloroethyl)Ether	9800	U
95-57-8	2-Chlorophenol	9800	U
95-48-7	2-Methylphenol	9800	U
108-60-1	2,2'-oxybis(1-Chloropropane)	9800	U
98-86-2	Acetophenone	9800	U
106-44-5	4-Methylphenol	2000	J
621-64-7	N-Nitroso-di-n-propylamine	9800	U
67-72-1	Hexachloroethane	9800	U
98-95-3	Nitrobenzene	9800	U
78-59-1	Isophorone	9800	U
88-75-5	2-Nitrophenol	9800	U
105-67-9	2,4-Dimethylphenol	9800	U
111-91-1	bis(2-Chloroethoxy)methane	9800	U
120-83-2	2,4-Dichlorophenol	9800	U
91-20-3	Naphthalene	9800	U
106-47-8	4-Chloroaniline	9800	U
87-68-3	Hexachlorobutadiene	9800	U
105-60-2	Caprolactam	9800	U
59-50-7	4-Chloro-3-methylphenol	9800	U
91-57-6	2-Methylnaphthalene	9800	U
77-47-4	Hexachlorocyclopentadiene	9800	U
88-06-2	2,4,6-Trichlorophenol	9800	U
95-95-4	2,4,5-Trichlorophenol	25000	U
92-52-4	1,1'-Biphenyl	9800	U
91-58-7	2-Chloronaphthalene	9800	U
88-74-4	2-Nitroaniline	25000	U
131-11-3	Dimethylphthalate	9800	U
606-20-2	2,6-Dinitrotoluene	9800	U
208-96-8	Acenaphthylene	1300	J
99-09-2	3-Nitroaniline	25000	U
83-32-9	Acenaphthene	9800	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW62

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-11B

Sample wt/vol: 1.3 (g/mL) G Lab File ID: K4168

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 22 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.90 Extraction: (Type) SONC

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	25000	U
100-02-7	4-Nitrophenol	25000	U
132-64-9	Dibenzofuran	9800	U
121-14-2	2,4-Dinitrotoluene	9800	U
84-66-2	Diethylphthalate	9800	U
86-73-7	Fluorene	9800	U
7005-72-3	4-Chlorophenyl-phenylether	9800	U
100-01-6	4-Nitroaniline	25000	U
534-52-1	4,6-Dinitro-2-methylphenol	25000	U
86-30-6	N-Nitrosodiphenylamine (1)	9800	U
101-55-3	4-Bromophenyl-phenylether	9800	U
118-74-1	Hexachlorobenzene	9800	U
1912-24-9	Atrazine	9800	U
87-86-5	Pentachlorophenol	25000	U
85-01-8	Phenanthrene	9800	U
120-12-7	Anthracene	1600	J
86-74-8	Carbazole	9800	U
84-74-2	Di-n-butylphthalate	9800	U
206-44-0	Fluoranthene	9800	U
129-00-0	Pyrene	4300	[illegible]
85-68-7	Butylbenzylphthalate	9800	U
91-94-1	3,3'-Dichlorobenzidine	9800	U
56-55-3	Benzo(a)anthracene	9800	U
218-01-9	Chrysene	2200	[illegible]
117-81-7	bis(2-Ethylhexyl)phthalate	17000	[illegible]
117-84-0	Di-n-octylphthalate	9800	U
205-99-2	Benzo(b)fluoranthene	7000	[illegible]
207-08-9	Benzo(k)fluoranthene	9800	U
50-32-8	Benzo(a)pyrene	2600	[illegible]
193-39-5	Indeno(1,2,3-cd)pyrene	1400	[illegible]
53-70-3	Dibenzo(a,h)anthracene	9800	U
191-24-2	Benzo(g,h,i)perylene	1700	[illegible]

(1) - Cannot be separated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BWW62

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-11B

Sample wt/vol: 1.3 (g/mL) G Lab File ID: K4168

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 22 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.9 Extraction: (Type) SONC

Number TICs found: 31

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 106-45-6	BENZENETHIOL, 4-METHYL-	12.77	5800	NJ
2.	UNKNOWN HYDROCARBON	12.83	5100	J
3.	UNKNOWN HYDROCARBON	14.99	4800	J
4.	UNKNOWN	15.10	3600	J
5.	UNKNOWN	15.25	9400	J
6.	UNKNOWN HYDROCARBON	15.72	4800	J
7.	UNKNOWN OXYGENATED HYDROCARB	16.09	5200	J
8.	UNKNOWN HYDROCARBON	16.43	5400	J
9.	UNKNOWN	16.55	3400	J
10.	UNKNOWN HYDROCARBON	16.61	3600	J
11.	UNKNOWN	16.77	4500	J
12.	UNKNOWN	16.97	7400	J
13.	UNKNOWN HYDROCARBON	17.02	4700	J
14.	UNKNOWN	17.12	2900	J
15.	UNKNOWN HYDROCARBON	17.18	4300	J
16.	UNKNOWN	17.61	17000	J
17.	UNKNOWN HYDROCARBON	17.73	4400	J
18.	UNKNOWN HYDROCARBON	18.03	18000	J
19.	UNKNOWN OXYGENATED HYDROCARB	18.17	4100	J
20.	UNKNOWN HYDROCARBON	18.93	15000	J
21.	UNKNOWN HYDROCARBON	19.00	8000	J
22.	UNKNOWN	19.08	11000	J
23.	UNKNOWN	19.15	3000	J
24.	UNKNOWN	19.63	3200	J
25.	UNKNOWN OXYGENATED HYDROCARB	20.32	4000	J
26.	UNKNOWN	20.92	4600	J
27.	UNKNOWN	21.76	7000	J
28.	UNKNOWN OXYGENATED HYDROCARB	24.82	47000	J
29.	UNKNOWN OXYGENATED HYDROCARB	28.47	680000	J
30.	UNKNOWN	31.13	330000	J

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BWW62

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-11B

Sample wt/vol: 1.3 (g/mL) G Lab File ID: K4168

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 22 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.9 Extraction: (Type) SONC

Number TICs found: 31 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	32.15	360000	J
2.				
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW63

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-12B

Sample wt/vol: 30.9 (g/mL) G Lab File ID: K4234

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 33 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/16/99

Injection Volume: 2.0 (uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) Y pH: 7.20 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	1400	U
108-95-2	Phenol	1400	U
111-44-4	bis(2-Chloroethyl)Ether	1400	U
95-57-8	2-Chlorophenol	1400	U
95-48-7	2-Methylphenol	1400	U
108-60-1	2,2'-oxybis(1-Chloropropane)	1400	U
98-86-2	Acetophenone	1400	U
106-44-5	4-Methylphenol	1400	U
621-64-7	N-Nitroso-di-n-propylamine	1400	U
67-72-1	Hexachloroethane	1400	U
98-95-3	Nitrobenzene	1400	U
78-59-1	Isophorone	1400	U
88-75-5	2-Nitrophenol	1400	U
105-67-9	2,4-Dimethylphenol	1400	U
111-91-1	bis(2-Chloroethoxy)methane	1400	U
120-83-2	2,4-Dichlorophenol	1400	U
91-20-3	Naphthalene	270	J
106-47-8	4-Chloroaniline	1400	U
87-68-3	Hexachlorobutadiene	1400	U
105-60-2	Caprolactam	1400	U
59-50-7	4-Chloro-3-methylphenol	1400	U
91-57-6	2-Methylnaphthalene	220	J
77-47-4	Hexachlorocyclopentadiene	1400	U
88-06-2	2,4,6-Trichlorophenol	1400	U
95-95-4	2,4,5-Trichlorophenol	3600	U
92-52-4	1,1'-Biphenyl	1400	U
91-58-7	2-Chloronaphthalene	1400	U
88-74-4	2-Nitroaniline	3600	U
131-11-3	Dimethylphthalate	1400	U
606-20-2	2,6-Dinitrotoluene	1400	U
208-96-8	Acenaphthylene	3400	
99-09-2	3-Nitroaniline	3600	U
83-32-9	Acenaphthene	280	J

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW63

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-12B

Sample wt/vol: 30.9 (g/mL) G Lab File ID: K4234

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 33 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/16/99

Injection Volume: 2.0 (uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) Y pH: 7.20 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	3600	U
100-02-7	4-Nitrophenol	3600	U
132-64-9	Dibenzofuran	1400	U
121-14-2	2,4-Dinitrotoluene	1400	U
84-66-2	Diethylphthalate	1400	U
86-73-7	Fluorene	1400	U
7005-72-3	4-Chlorophenyl-phenylether	1400	U
100-01-6	4-Nitroaniline	3600	U
534-52-1	4,6-Dinitro-2-methylphenol	3600	U
86-30-6	N-Nitrosodiphenylamine (1)	1400	U
101-55-3	4-Bromophenyl-phenylether	1400	U
118-74-1	Hexachlorobenzene	1400	U
1912-24-9	Atrazine	1400	U
87-86-5	Pentachlorophenol	3600	U
85-01-8	Phenanthrene	1300	J
120-12-7	Anthracene	2200	
86-74-8	Carbazole	150	J
84-74-2	Di-n-butylphthalate	1400	U
206-44-0	Fluoranthene	2600	
129-00-0	Pyrene	1400	
85-68-7	Butylbenzylphthalate	1400	U
91-94-1	3,3'-Dichlorobenzidine	1400	U
56-55-3	Benzo(a)anthracene	2000	
218-01-9	Chrysene	2600	
117-81-7	bis(2-Ethylhexyl)phthalate	320	
117-84-0	Di-n-octylphthalate	1400	U
205-99-2	Benzo(b)fluoranthene	1800	
207-08-9	Benzo(k)fluoranthene	2200	
50-32-8	Benzo(a)pyrene	2400	
193-39-5	Indeno(1,2,3-cd)pyrene	980	
53-70-3	Dibenzo(a,h)anthracene	470	
191-24-2	Benzo(g,h,i)perylene	800	

(1) - Cannot be separated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BWW63

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-12B

Sample wt/vol: 30.9 (g/mL) G Lab File ID: K4234

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 33 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/16/99

Injection Volume: 2.0 (uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) Y pH: 7.2 Extraction: (Type) SONC

Number TICs found: 31

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 275-51-4	AZULENE	14.09	580	NJ
2.	UNKNOWN PAH	15.59	300	J
3.	UNKNOWN PAH	15.71	300	J
4. 2443-46-1	BICYCLO[4.4.1]UNDECA-1,3,5,7	15.87	990	NJ
5.	UNKNOWN PAH	16.22	420	J
6.	DIMETHYLNAPHTHALENE ISOMER	17.13	340	J
7.	DIMETHYLNAPHTHALENE ISOMER	17.18	450	J
8.	UNKNOWN PAH	17.41	600	J
9.	DIMETHYLNAPHTHALENE ISOMER	17.49	330	J
10. 827-54-3	NAPHTHALENE, 2-ETHENYL-	17.60	1300	NJ
11.	UNKNOWN	18.55	380	J
12.	UNKNOWN	18.63	370	J
13. 643-58-3	1,1'-BIPHENYL, 2-METHYL-	18.81	680	NJ
14.	UNKNOWN PAH	18.89	330	J
15.	UNKNOWN PAH	19.12	900	J
16.	UNKNOWN PAH	19.28	390	J
17.	UNKNOWN PAH	19.37	470	J
18.	UNKNOWN PAH	19.55	370	J
19.	UNKNOWN PAH	19.69	320	J
20.	UNKNOWN	20.11	570	J
21.	UNKNOWN AROMATIC	20.29	660	J
22.	UNKNOWN	20.52	470	J
23.	UNKNOWN PAH	20.77	750	J
24.	UNKNOWN	20.84	740	J
25.	UNKNOWN PAH	22.30	830	J
26.	UNKNOWN PAH	22.35	610	J
27. 832-69-9	PHENANTHRENE, 1-METHYL-	22.43	680	NJ
28.	UNKNOWN PAH	22.54	1300	J
29.	UNKNOWN PAH	22.89	850	J
30.	UNKNOWN PAH	23.92	1200	J

FORM I SV-TIC OLM04.2

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1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BWW63

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-12B

Sample wt/vol: 30.9 (g/mL) G Lab File ID: K4234

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 33 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/16/99

Injection Volume: 2.0 (uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) Y pH: 7.2 Extraction: (Type) SONC

Number TICs found: 31

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN PAH	24.06	1100	J
2.				
3.				
4.				
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FORM I SV-TIC OLM04.2

217

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW64

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-13B

Sample wt/vol: 1.7 (g/mL) G Lab File ID: K4164

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 26 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ~~7.20~~ 7.30 Extraction: (Type) SONC

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
100-52-7	Benzaldehyde	7900	U
108-95-2	Phenol	7900	U
111-44-4	bis(2-Chloroethyl)Ether	7900	U
95-57-8	2-Chlorophenol	7900	U
95-48-7	2-Methylphenol	7900	U
108-60-1	2,2'-oxybis(1-Chloropropane)	7900	U
98-86-2	Acetophenone	7900	U
106-44-5	4-Methylphenol	7900	U
621-64-7	N-Nitroso-di-n-propylamine	7900	U
67-72-1	Hexachloroethane	7900	U
98-95-3	Nitrobenzene	7900	U
78-59-1	Isophorone	7900	U
88-75-5	2-Nitrophenol	7900	U
105-67-9	2,4-Dimethylphenol	7900	U
111-91-1	bis(2-Chloroethoxy)methane	7900	U
120-83-2	2,4-Dichlorophenol	7900	U
91-20-3	Naphthalene	1100	J
106-47-8	4-Chloroaniline	7900	U
87-68-3	Hexachlorobutadiene	7900	U
105-60-2	Caprolactam	7900	U
59-50-7	4-Chloro-3-methylphenol	7900	U
91-57-6	2-Methylnaphthalene	2100	J
77-47-4	Hexachlorocyclopentadiene	7900	U
88-06-2	2,4,6-Trichlorophenol	7900	U
95-95-4	2,4,5-Trichlorophenol	20000	U
92-52-4	1,1'-Biphenyl	7900	U
91-58-7	2-Chloronaphthalene	7900	U
88-74-4	2-Nitroaniline	20000	U
131-11-3	Dimethylphthalate	7900	U
606-20-2	2,6-Dinitrotoluene	7900	U
208-96-8	Acenaphthylene	7900	U
99-09-2	3-Nitroaniline	20000	U
83-32-9	Acenaphthene	7900	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW64

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-13B

Sample wt/vol: 1.7 (g/mL) G Lab File ID: K4164

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 26 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ~~7.20~~ 7.30 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	20000	U
100-02-7	4-Nitrophenol	20000	U
132-64-9	Dibenzofuran	7900	U
121-14-2	2,4-Dinitrotoluene	7900	U
84-66-2	Diethylphthalate	7900	U
86-73-7	Fluorene	7900	U
7005-72-3	4-Chlorophenyl-phenylether	7900	U
100-01-6	4-Nitroaniline	20000	U
534-52-1	4,6-Dinitro-2-methylphenol	20000	U
86-30-6	N-Nitrosodiphenylamine (1)	7900	U
101-55-3	4-Bromophenyl-phenylether	7900	U
118-74-1	Hexachlorobenzene	7900	U
1912-24-9	Atrazine	7900	U
87-86-5	Pentachlorophenol	20000	U
85-01-8	Phenanthrene	7900	U
120-12-7	Anthracene	910	J
86-74-8	Carbazole	7900	U
84-74-2	Di-n-butylphthalate	7900	U
206-44-0	Fluoranthene	3100	J
129-00-0	Pyrene	7900	U
85-68-7	Butylbenzylphthalate	7900	U
91-94-1	3,3'-Dichlorobenzidine	7900	U
56-55-3	Benzo(a)anthracene	1900	J
218-01-9	Chrysene	2300	J
117-81-7	bis(2-Ethylhexyl)phthalate	14000	J
117-84-0	Di-n-octylphthalate	7900	U
205-99-2	Benzo(b)fluoranthene	4200	J
207-08-9	Benzo(k)fluoranthene	7900	U
50-32-8	Benzo(a)pyrene	2100	J
193-39-5	Indeno(1,2,3-cd)pyrene	7900	U
53-70-3	Dibenzo(a,h)anthracene	7900	U
191-24-2	Benzo(g,h,i)perylene	1200	J

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW64

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-13B

Sample wt/vol: 1.7 (g/mL) G Lab File ID: K4164

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 26 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: [redacted] Extraction: (Type) SONC

Number TICs found: 11

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	14.99	17000	J
2.	UNKNOWN HYDROCARBON	16.54	7500	J
3.	UNKNOWN	17.62	13000	J
4.	UNKNOWN HYDROCARBON	18.04	21000	J
5.	UNKNOWN	18.16	8800	J
6.	TRIIMETHYLNAPHTHALENE ISOMER	18.94	13000	J
7.	BUTYLNAPHTHALENE ISOMER	20.35	15000	J
8.	UNKNOWN	20.82	19000	J
9.	UNKNOWN	22.18	22000	J
10.	UNKNOWN	22.46	21000	J
11.	UNKNOWN HYDROCARBON	24.36	180000	J
12.				
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW65

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-14B

Sample wt/vol: 1.3 (g/mL) G Lab File ID: K4169

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 35 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.30 Extraction: (Type) SONC

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
100-52-7	Benzaldehyde	12000	U
108-95-2	Phenol	12000	U
111-44-4	bis(2-Chloroethyl)Ether	12000	U
95-57-8	2-Chlorophenol	12000	U
95-48-7	2-Methylphenol	12000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	12000	U
98-86-2	Acetophenone	12000	U
106-44-5	4-Methylphenol	12000	U
621-64-7	N-Nitroso-di-n-propylamine	12000	U
67-72-1	Hexachloroethane	12000	U
98-95-3	Nitrobenzene	12000	U
78-59-1	Isophorone	12000	U
88-75-5	2-Nitrophenol	12000	U
105-67-9	2,4-Dimethylphenol	12000	U
111-91-1	bis(2-Chloroethoxy)methane	12000	U
120-83-2	2,4-Dichlorophenol	12000	U
91-20-3	Naphthalene	1300	J
106-47-8	4-Chloroaniline	12000	U
87-68-3	Hexachlorobutadiene	12000	U
105-60-2	Caprolactam	12000	U
59-50-7	4-Chloro-3-methylphenol	12000	U
91-57-6	2-Methylnaphthalene	12000	U
77-47-4	Hexachlorocyclopentadiene	12000	U
88-06-2	2,4,6-Trichlorophenol	12000	U
95-95-4	2,4,5-Trichlorophenol	29000	U
92-52-4	1,1'-Biphenyl	12000	U
91-58-7	2-Chloronaphthalene	12000	U
88-74-4	2-Nitroaniline	29000	U
131-11-3	Dimethylphthalate	12000	U
606-20-2	2,6-Dinitrotoluene	12000	U
208-96-8	Acenaphthylene	3800	J
99-09-2	3-Nitroaniline	29000	U
83-32-9	Acenaphthene	12000	U

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW65

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-14B

Sample wt/vol: 1.3 (g/mL) G Lab File ID: K4169

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 35 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.30 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	29000	U
100-02-7	4-Nitrophenol	29000	U
132-64-9	Dibenzofuran	12000	U
121-14-2	2,4-Dinitrotoluene	12000	U
84-66-2	Diethylphthalate	12000	U
86-73-7	Fluorene	12000	U
7005-72-3	4-Chlorophenyl-phenylether	12000	U
100-01-6	4-Nitroaniline	29000	U
534-52-1	4,6-Dinitro-2-methylphenol	29000	U
86-30-6	N-Nitrosodiphenylamine (1)	12000	U
101-55-3	4-Bromophenyl-phenylether	12000	U
118-74-1	Hexachlorobenzene	12000	U
1912-24-9	Atrazine	12000	U
87-86-5	Pentachlorophenol	29000	U
85-01-8	Phenanthrene	1900	J
120-12-7	Anthracene	1800	J
86-74-8	Carbazole	12000	U
84-74-2	Di-n-butylphthalate	12000	U
206-44-0	Fluoranthene	2800	J
129-00-0	Pyrene	3800	J
85-68-7	Butylbenzylphthalate	12000	U
91-94-1	3,3'-Dichlorobenzidine	12000	U
56-55-3	Benzo(a)anthracene	3000	J
218-01-9	Chrysene	3400	J
117-81-7	bis(2-Ethylhexyl)phthalate	12000	U
117-84-0	Di-n-octylphthalate	12000	U
205-99-2	Benzo(b)fluoranthene	1900	J
207-08-9	Benzo(k)fluoranthene	2000	J
50-32-8	Benzo(a)pyrene	2900	J
193-39-5	Indeno(1,2,3-cd)pyrene	4200	J
53-70-3	Dibenzo(a,h)anthracene	1500	J
191-24-2	Benzo(g,h,i)perylene	5300	J

(1) - Cannot be separated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BWW65

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-14B

Sample wt/vol: 1.3 (g/mL) G Lab File ID: K4169

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 35 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 Extraction: (Type) SONC

Number TICs found: 1

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	20.93	4900	J
2.				
3.				
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FORM I SV-TIC OLM04.2

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW66

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL ✓ Lab Sample ID: 9912043-15B

Sample wt/vol: 1.1 (g/mL) G Lab File ID: K4165

Level: (low/med) MED ✓ Date Received: 12/03/99 ✓

% Moisture: 28 ✓ decanted: (Y/N) N Date Extracted: 12/07/99 ✓

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.60 / Extraction: (Type) SONC

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
100-52-7	Benzaldehyde	13000	U
108-95-2	Phenol	13000	U
111-44-4	bis(2-Chloroethyl)Ether	13000	U
95-57-8	2-Chlorophenol	13000	U
95-48-7	2-Methylphenol	13000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	13000	U
98-86-2	Acetophenone	13000	U
106-44-5	4-Methylphenol	13000	U
621-64-7	N-Nitroso-di-n-propylamine	13000	U
67-72-1	Hexachloroethane	13000	U
98-95-3	Nitrobenzene	13000	U
78-59-1	Isophorone	13000	U
88-75-5	2-Nitrophenol	13000	U
105-67-9	2,4-Dimethylphenol	13000	U
111-91-1	bis(2-Chloroethoxy)methane	13000	U
120-83-2	2,4-Dichlorophenol	13000	U
91-20-3	Naphthalene	13000	U
106-47-8	4-Chloroaniline	13000	U
87-68-3	Hexachlorobutadiene	13000	U
105-60-2	Caprolactam	13000	U
59-50-7	4-Chloro-3-methylphenol	13000	U
91-57-6	2-Methylnaphthalene	13000	U
77-47-4	Hexachlorocyclopentadiene	13000	U
88-06-2	2,4,6-Trichlorophenol	13000	U
95-95-4	2,4,5-Trichlorophenol	31000	U
92-52-4	1,1'-Biphenyl	13000	U
91-58-7	2-Chloronaphthalene	13000	U
88-74-4	2-Nitroaniline	31000	U
131-11-3	Dimethylphthalate	13000	U
606-20-2	2,6-Dinitrotoluene	13000	U
208-96-8	Acenaphthylene	1400	J
99-09-2	3-Nitroaniline	31000	U
83-32-9	Acenaphthene	13000	U

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW66

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-15B

Sample wt/vol: 1.1(g/mL) G Lab File ID: K4165

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 28 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/13/99

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.60 Extraction: (Type) SONC

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	31000	U
100-02-7	4-Nitrophenol	31000	U
132-64-9	Dibenzofuran	13000	U
121-14-2	2,4-Dinitrotoluene	13000	U
84-66-2	Diethylphthalate	13000	U
86-73-7	Fluorene	13000	U
7005-72-3	4-Chlorophenyl-phenylether	13000	U
100-01-6	4-Nitroaniline	31000	U
534-52-1	4,6-Dinitro-2-methylphenol	31000	U
86-30-6	N-Nitrosodiphenylamine (1)	13000	U
101-55-3	4-Bromophenyl-phenylether	13000	U
118-74-1	Hexachlorobenzene	13000	U
1912-24-9	Atrazine	13000	U
87-86-5	Pentachlorophenol	31000	U
85-01-8	Phenanthrene	1700	J
120-12-7	Anthracene	13000	U
86-74-8	Carbazole	13000	U
84-74-2	Di-n-butylphthalate	13000	U
206-44-0	Fluoranthene	2800	J
129-00-0	Pyrene	2800	J
85-68-7	Butylbenzylphthalate	13000	U
91-94-1	3,3'-Dichlorobenzidine	13000	U
56-55-3	Benzo(a)anthracene	2100	J
218-01-9	Chrysene	2500	J
117-81-7	bis(2-Ethylhexyl)phthalate	13000	U
117-84-0	Di-n-octylphthalate	13000	U
205-99-2	Benzo(b)fluoranthene	1600	J
207-08-9	Benzo(k)fluoranthene	1700	J
50-32-8	Benzo(a)pyrene	1900	J
193-39-5	Indeno(1,2,3-cd)pyrene	2500	J
53-70-3	Dibenzo(a,h)anthracene	13000	U
191-24-2	Benzo(g,h,i)perylene	3100	J

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW66

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-15B

Sample wt/vol: 1.1 (g/mL) G Lab File ID: K4165

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 28 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6 Extraction: (Type) SONC

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW67

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-16B

Sample wt/vol: 30.0 (g/mL) G Lab File ID: K4219

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: [redacted] decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) Y pH: [redacted] Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	[redacted]	U
108-95-2	Phenol	31[redacted]0	U
111-44-4	bis(2-Chloroethyl)Ether	31[redacted]0	U
95-57-8	2-Chlorophenol	31[redacted]0	U
95-48-7	2-Methylphenol	31[redacted]0	U
108-60-1	2,2'-oxybis(1-Chloropropane)	[redacted]	U
98-86-2	Acetophenone	[redacted]	J
[redacted]06-44-5	4-Methylphenol	[redacted]	U
[redacted]21-64-7	N-Nitroso-di-n-propylamine	31[redacted]0	U
67-72-1	Hexachloroethane	31[redacted]0	U
98-95-3	Nitrobenzene	31[redacted]0	U
78-59-1	Isophorone	31[redacted]0	U
88-75-5	2-Nitrophenol	31[redacted]0	U
105-67-9	2,4-Dimethylphenol	31[redacted]0	U
111-91-1	bis(2-Chloroethoxy)methane	31[redacted]0	U
120-83-2	2,4-Dichlorophenol	[redacted]	U
91-20-3	Naphthalene	[redacted]	J
106-47-8	4-Chloroaniline	[redacted]	U
87-68-3	Hexachlorobutadiene	31[redacted]0	U
105-60-2	Caprolactam	31[redacted]0	U
59-50-7	4-Chloro-3-methylphenol	[redacted]	U
91-57-6	2-Methylnaphthalene	[redacted]	J
77-47-4	Hexachlorocyclopentadiene	[redacted]	U
88-06-2	2,4,6-Trichlorophenol	[redacted]	U
95-95-4	2,4,5-Trichlorophenol	[redacted]	U
92-52-4	1,1'-Biphenyl	[redacted]	U
91-58-7	2-Chloronaphthalene	[redacted]	U
88-74-4	2-Nitroaniline	[redacted]	U
131-11-3	Dimethylphthalate	[redacted]	U
606-20-2	2,6-Dinitrotoluene	[redacted]	U
208-96-8	Acenaphthylene	[redacted]	
99-09-2	3-Nitroaniline	[redacted]	U
83-32-9	Acenaphthene	[redacted]	J

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW67

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-16B

Sample wt/vol: 30.0 (g/mL) G Lab File ID: K4219

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: [redacted] decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) Y pH: [redacted] Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	[redacted]	U
100-02-7	4-Nitrophenol	[redacted]	U
132-64-9	Dibenzofuran	[redacted]	U
121-14-2	2,4-Dinitrotoluene	3100	U
84-66-2	Diethylphthalate	3100	U
86-73-7	Fluorene	3100	U
7005-72-3	4-Chlorophenyl-phenylether	[redacted]	U
100-01-6	4-Nitroaniline	[redacted]	U
534-52-1	4,6-Dinitro-2-methylphenol	[redacted]	U
86-30-6	N-Nitrosodiphenylamine (1)	[redacted]	U
101-55-3	4-Bromophenyl-phenylether	3100	U
118-74-1	Hexachlorobenzene	3100	U
1912-24-9	Atrazine	[redacted]	U
87-86-5	Pentachlorophenol	[redacted]	U
85-01-8	Phenanthrene	[redacted]	J
120-12-7	Anthracene	[redacted]	J
86-74-8	Carbazole	[redacted]	U
84-74-2	Di-n-butylphthalate	[redacted]	U
206-44-0	Fluoranthene	[redacted]	
129-00-0	Pyrene	[redacted]	
85-68-7	Butylbenzylphthalate	[redacted]	U
91-94-1	3,3'-Dichlorobenzidine	[redacted]	U
56-55-3	Benzo(a)anthracene	[redacted]	
218-01-9	Chrysene	[redacted]	
117-81-7	bis(2-Ethylhexyl)phthalate	[redacted]	J
117-84-0	Di-n-octylphthalate	[redacted]	U
205-99-2	Benzo(b)fluoranthene	[redacted]	
207-08-9	Benzo(k)fluoranthene	[redacted]	
50-32-8	Benzo(a)pyrene	[redacted]	
193-39-5	Indeno(1,2,3-cd)pyrene	[redacted]	J
53-70-3	Dibenzo(a,h)anthracene	[redacted]	J
191-24-2	Benzo(g,h,i)perylene	[redacted]	J

(1) - Cannot be separated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BWW67

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-16B

Sample wt/vol: 30.0 (g/mL) G Lab File ID: K4219

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: [redacted] decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) Y pH: [redacted] Extraction: (Type) SONC

Number TICs found: 28

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	11.06	[redacted]	J
2. 275-51-4	AZULENE	14.12	[redacted]	NJ
3. 264-09-5	BENZOCYCLOHEPTATRIENE	15.89	[redacted]	NJ
4.	DIMETHYLNAPHTHALENE ISOMER	17.20	[redacted]	J
827-54-3	NAPHTHALENE, 2-ETHENYL-	17.62	[redacted]	NJ
	UNKNOWN	18.91	[redacted]	J
7.	UNKNOWN PAH	19.15	[redacted]	J
8.	UNKNOWN PAH	19.39	[redacted]	J
9.	UNKNOWN PAH	19.57	[redacted]	J
10.	UNKNOWN PAH	19.71	[redacted]	J
11.	UNKNOWN AROMATIC	20.31	[redacted]	J
12.	UNKNOWN	20.41	[redacted]	J
13.	UNKNOWN	20.67	[redacted]	J
14. 501-65-5	DIPHENYLETHYNE	20.79	[redacted]	NJ
15.	UNKNOWN OXYGENATED PAH	20.89	[redacted]	J
16.	UNKNOWN PAH	22.32	[redacted]	J
17. 832-71-3	PHENANTHRENE, 3-METHYL-	22.37	[redacted]	NJ
18. 949-41-7	1H-CYCLOPROPA[L]PHENANTHRENE	22.45	[redacted]	NJ
19. 832-64-4	PHENANTHRENE, 4-METHYL-	22.56	[redacted]	NJ
20.	UNKNOWN PAH	22.91	[redacted]	J
21. 84-65-1	9,10-ANTHRACENEDIONE	22.98	[redacted]	NJ
22.	UNKNOWN	23.24	[redacted]	J
23.	UNKNOWN PAH	23.43	[redacted]	J
24. 781-92-0	ANTHRACENE, 1,4-DIMETHYL-	23.46	[redacted]	NJ
25. 69009-90-1	1,1'-BIPHENYL, BIS(1-METHYLE	23.85	[redacted]	NJ
26.	UNKNOWN PAH	23.94	[redacted]	J
27.	UNKNOWN PAH	24.09	[redacted]	J
28.	UNKNOWN PAH	25.08	[redacted]	J
29.				
30.				

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW68

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-17B

Sample wt/vol: 1.4 (g/mL) G Lab File ID: K4229

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 33 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/16/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.50 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	11000	U
108-95-2	Phenol	11000	U
111-44-4	bis(2-Chloroethyl)Ether	11000	U
95-57-8	2-Chlorophenol	11000	U
95-48-7	2-Methylphenol	11000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	11000	U
98-86-2	Acetophenone	11000	U
106-44-5	4-Methylphenol	11000	U
621-64-7	N-Nitroso-di-n-propylamine	11000	U
67-72-1	Hexachloroethane	11000	U
98-95-3	Nitrobenzene	11000	U
78-59-1	Isophorone	11000	U
88-75-5	2-Nitrophenol	11000	U
105-67-9	2,4-Dimethylphenol	11000	U
111-91-1	bis(2-Chloroethoxy)methane	11000	U
120-83-2	2,4-Dichlorophenol	11000	U
91-20-3	Naphthalene	1200	J
106-47-8	4-Chloroaniline	11000	U
87-68-3	Hexachlorobutadiene	11000	U
105-60-2	Caprolactam	11000	U
59-50-7	4-Chloro-3-methylphenol	11000	U
91-57-6	2-Methylnaphthalene	11000	U
77-47-4	Hexachlorocyclopentadiene	11000	U
88-06-2	2,4,6-Trichlorophenol	11000	U
95-95-4	2,4,5-Trichlorophenol	27000	U
92-52-4	1,1'-Biphenyl	11000	U
91-58-7	2-Chloronaphthalene	11000	U
88-74-4	2-Nitroaniline	27000	U
131-11-3	Dimethylphthalate	11000	U
606-20-2	2,6-Dinitrotoluene	11000	U
208-96-8	Acenaphthylene	17000	
99-09-2	3-Nitroaniline	27000	U
83-32-9	Acenaphthene	1700	J

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW68

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-17B

Sample wt/vol: 1.4 (g/mL) G Lab File ID: K4229

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 33 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/16/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.50 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	27000	U
100-02-7	4-Nitrophenol	27000	U
132-64-9	Dibenzofuran	11000	U
121-14-2	2,4-Dinitrotoluene	11000	U
84-66-2	Diethylphthalate	11000	U
86-73-7	Fluorene	2000	J
7005-72-3	4-Chlorophenyl-phenylether	11000	U
[illegible]00-01-6	4-Nitroaniline	27000	U
[illegible]34-52-1	4,6-Dinitro-2-methylphenol	27000	U
86-30-6	N-Nitrosodiphenylamine (1)	11000	U
101-55-3	4-Bromophenyl-phenylether	11000	U
118-74-1	Hexachlorobenzene	11000	U
1912-24-9	Atrazine	11000	U
87-86-5	Pentachlorophenol	27000	U
85-01-8	Phenanthrene	22000	
120-12-7	Anthracene	17000	
86-74-8	Carbazole	1700	J
84-74-2	Di-n-butylphthalate	11000	U
206-44-0	Fluoranthene	59000	
129-00-0	Pyrene	28000	
85-68-7	Butylbenzylphthalate	11000	U
91-94-1	3,3'-Dichlorobenzidine	11000	U
56-55-3	Benzo(a)anthracene	36000	
218-01-9	Chrysene	35000	
117-81-7	bis(2-Ethylhexyl)phthalate	6400	J
117-84-0	Di-n-octylphthalate	11000	U
205-99-2	Benzo(b)fluoranthene	21000	
207-08-9	Benzo(k)fluoranthene	26000	
50-32-8	Benzo(a)pyrene	31000	
193-39-5	Indeno(1,2,3-cd)pyrene	18000	
53-70-3	Dibenzo(a,h)anthracene	7600	
191-24-2	Benzo(g,h,i)perylene	14000	

(1) - Cannot be separated from Diphenylamine

1G

EPA SAMPLE NO.

BWW68

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-17B

Sample wt/vol: 1.4 (g/mL) G Lab File ID: K4229

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 33 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/16/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5 Extraction: (Type) SONC

Number TICs found: 8

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	12.24	3100	J
2.	UNKNOWN PAH	16.72	2400	J
3.	UNKNOWN	18.45	2400	J
4.	UNKNOWN AROMATIC	19.13	2800	J
5.	UNKNOWN PAH	19.55	2200	J
6.	UNKNOWN	20.12	3100	J
7.	UNKNOWN PAH	22.30	5600	J
8. 2531-84-2	PHENANTHRENE, 2-METHYL-	22.36	4900	NJ
9.				
10.				
11.				
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW69

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-18B

Sample wt/vol: 30.1 (g/mL) G Lab File ID: K4220

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: [illegible] decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) Y pH: 7.60 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	[illegible]	U
108-95-2	Phenol	43[illegible]0	U
111-44-4	bis(2-Chloroethyl)Ether	43[illegible]0	U
95-57-8	2-Chlorophenol	43[illegible]0	U
95-48-7	2-Methylphenol	43[illegible]	U
108-60-1	2,2'-oxybis(1-Chloropropane)	[illegible]	U
98-86-2	Acetophenone	[illegible]	[illegible]
106-44-5	4-Methylphenol	[illegible]	U
621-64-7	N-Nitroso-di-n-propylamine	43[illegible]0	U
67-72-1	Hexachloroethane	43[illegible]0	U
98-95-3	Nitrobenzene	43[illegible]0	U
78-59-1	Isophorone	43[illegible]0	U
88-75-5	2-Nitrophenol	43[illegible]0	U
105-67-9	2,4-Dimethylphenol	43[illegible]0	U
111-91-1	bis(2-Chloroethoxy)methane	43[illegible]0	U
120-83-2	2,4-Dichlorophenol	[illegible]	U
91-20-3	Naphthalene	[illegible]	[illegible]
106-47-8	4-Chloroaniline	[illegible]	U
87-68-3	Hexachlorobutadiene	43[illegible]0	U
105-60-2	Caprolactam	43[illegible]0	U
59-50-7	4-Chloro-3-methylphenol	[illegible]	U
91-57-6	2-Methylnaphthalene	[illegible]	[illegible]
77-47-4	Hexachlorocyclopentadiene	[illegible]	U
88-06-2	2,4,6-Trichlorophenol	[illegible]	U
95-95-4	2,4,5-Trichlorophenol	[illegible]	U
92-52-4	1,1'-Biphenyl	[illegible]	U
91-58-7	2-Chloronaphthalene	[illegible]	U
88-74-4	2-Nitroaniline	[illegible]	U
131-11-3	Dimethylphthalate	[illegible]	U
606-20-2	2,6-Dinitrotoluene	[illegible]	U
208-96-8	Acenaphthylene	[illegible]	U
99-09-2	3-Nitroaniline	[illegible]	U
83-32-9	Acenaphthene	[illegible]	[illegible]

BWW62

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW69

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-18B

Sample wt/vol: 30.1 (g/mL) G Lab File ID: K4220

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: [redacted] decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) Y pH: 7.60 Extraction: (Type) SONC

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	[redacted]	U
100-02-7	4-Nitrophenol	[redacted]	U
132-64-9	Dibenzofuran	[redacted]	
121-14-2	2,4-Dinitrotoluene	[redacted]	U
84-66-2	Diethylphthalate	[redacted]	U
86-73-7	Fluorene	[redacted]	
7005-72-3	4-Chlorophenyl-phenylether	[redacted]	U
100-01-6	4-Nitroaniline	[redacted]	U
534-52-1	4,6-Dinitro-2-methylphenol	[redacted]	U
86-30-6	N-Nitrosodiphenylamine (1)	[redacted]	U
101-55-3	4-Bromophenyl-phenylether	[redacted]	U
118-74-1	Hexachlorobenzene	[redacted]	U
1912-24-9	Atrazine	[redacted]	U
87-86-5	Pentachlorophenol	[redacted]	U
85-01-8	Phenanthrene	[redacted]	
120-12-7	Anthracene	[redacted]	
86-74-8	Carbazole	[redacted]	
84-74-2	Di-n-butylphthalate	[redacted]	U
206-44-0	Fluoranthene	[redacted]	
129-00-0	Pyrene	[redacted]	
85-68-7	Butylbenzylphthalate	[redacted]	U
91-94-1	3,3'-Dichlorobenzidine	[redacted]	U
56-55-3	Benzo(a)anthracene	[redacted]	
218-01-9	Chrysene	[redacted]	
117-81-7	bis(2-Ethylhexyl)phthalate	[redacted]	
117-84-0	Di-n-octylphthalate	[redacted]	U
205-99-2	Benzo(b)fluoranthene	[redacted]	
207-08-9	Benzo(k)fluoranthene	[redacted]	
50-32-8	Benzo(a)pyrene	[redacted]	
193-39-5	Indeno(1,2,3-cd)pyrene	[redacted]	
53-70-3	Dibenzo(a,h)anthracene	[redacted]	
191-24-2	Benzo(g,h,i)perylene	[redacted]	

(1) - Cannot be separated from Diphenylamine

BWW62

955R

230

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BWW69

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-18B

Sample wt/vol: 30.1 (g/mL) G Lab File ID: K4220

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: [redacted] decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) Y pH: 7.6 Extraction: (Type) SONC

Number TICs found: 17 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN PAH	14.12	[redacted]	J
2.	UNKNOWN PAH	15.90	[redacted]	J
3.	UNKNOWN PAH	18.84	[redacted]	J
4.	UNKNOWN PAH	19.15	[redacted]	J
[redacted]	UNKNOWN OXYGENATED PAH	19.70	[redacted]	J
[redacted]	UNKNOWN PAH	20.67	[redacted]	J
7.	UNKNOWN PAH	20.79	[redacted]	J
8.	UNKNOWN	21.66	[redacted]	J
9.	UNKNOWN PAH	22.32	[redacted]	J
10. 949-41-7	1H-CYCLOPROPA[L]PHENANTHRENE	22.37	[redacted]	J
11.	UNKNOWN PAH	22.45	[redacted]	J
12.	UNKNOWN PAH	22.56	[redacted]	J
13.	UNKNOWN PAH	22.91	[redacted]	J
14. 84-65-1	9,10-ANTHRACENEDIONE	22.98	[redacted]	NJ
15.	UNKNOWN	23.23	[redacted]	J
16. 3674-66-6	PHENANTHRENE, 2,5-DIMETHYL-	23.46	[redacted]	NJ
17.	UNKNOWN PAH	23.94	[redacted]	J
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BWW62

956 R

23J

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW70

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-19B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: K4235

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 34 decanted: (Y/N) N Date Extracted: [redacted]

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/16/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.00 Extraction: (Type) SONC

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
100-52-7	Benzaldehyde	160	J
108-95-2	Phenol	500	U
111-44-4	bis(2-Chloroethyl)Ether	500	U
95-57-8	2-Chlorophenol	500	U
95-48-7	2-Methylphenol	500	U
108-60-1	2,2'-oxybis(1-Chloropropane)	500	U
98-86-2	Acetophenone	130	J
106-44-5	4-Methylphenol	70	J
621-64-7	N-Nitroso-di-n-propylamine	500	U
67-72-1	Hexachloroethane	500	U
98-95-3	Nitrobenzene	500	U
78-59-1	Isophorone	500	U
88-75-5	2-Nitrophenol	500	U
105-67-9	2,4-Dimethylphenol	500	U
111-91-1	bis(2-Chloroethoxy)methane	500	U
120-83-2	2,4-Dichlorophenol	500	U
91-20-3	Naphthalene	340	J
106-47-8	4-Chloroaniline	500	U
87-68-3	Hexachlorobutadiene	500	U
105-60-2	Caprolactam	500	U
59-50-7	4-Chloro-3-methylphenol	500	U
91-57-6	2-Methylnaphthalene	220	J
77-47-4	Hexachlorocyclopentadiene	500	U
88-06-2	2,4,6-Trichlorophenol	500	U
95-95-4	2,4,5-Trichlorophenol	1200	U
92-52-4	1,1'-Biphenyl	96	J
91-58-7	2-Chloronaphthalene	500	U
88-74-4	2-Nitroaniline	1200	U
131-11-3	Dimethylphthalate	500	U
606-20-2	2,6-Dinitrotoluene	500	U
208-96-8	Acenaphthylene	2200	
99-09-2	3-Nitroaniline	1200	U
83-32-9	Acenaphthene	200	J

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW70

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-19B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: K4235

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 34 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/16/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.00 Extraction: (Type) SONC

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	1200	U
100-02-7	4-Nitrophenol	1200	U
132-64-9	Dibenzofuran	100	J
121-14-2	2,4-Dinitrotoluene	500	U
84-66-2	Diethylphthalate	500	U
86-73-7	Fluorene	500	U
7005-72-3	4-Chlorophenyl-phenylether	500	U
100-01-6	4-Nitroaniline	1200	U
534-52-1	4,6-Dinitro-2-methylphenol	1200	U
86-30-6	N-Nitrosodiphenylamine (1)	500	U
101-55-3	4-Bromophenyl-phenylether	500	U
118-74-1	Hexachlorobenzene	500	U
1912-24-9	Atrazine	500	U
87-86-5	Pentachlorophenol	1200	U
85-01-8	Phenanthrene	1300	
120-12-7	Anthracene	1600	
86-74-8	Carbazole	220	J
84-74-2	Di-n-butylphthalate	150	J
206-44-0	Fluoranthene	3000	
129-00-0	Pyrene	1400	
85-68-7	Butylbenzylphthalate	100	
91-94-1	3,3'-Dichlorobenzidine	500	U
56-55-3	Benzo(a)anthracene	1800	
218-01-9	Chrysene	2200	
117-81-7	bis(2-Ethylhexyl)phthalate	1000	
117-84-0	Di-n-octylphthalate	500	U
205-99-2	Benzo(b)fluoranthene	1900	
207-08-9	Benzo(k)fluoranthene	2000	
50-32-8	Benzo(a)pyrene	2100	
193-39-5	Indeno(1,2,3-cd)pyrene	740	
53-70-3	Dibenzo(a,h)anthracene	290	J
191-24-2	Benzo(g,h,i)perylene	450	J

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW70

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-19B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: K4235

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 34 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/16/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0 Extraction: (Type) SONC

Number TICs found: 32

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	11.46	320	J
2. 95-13-6	INDENE	12.26	270	NJ
3.	METHYLINDENE ISOMER	13.96	150	J
4.	UNKNOWN	15.61	290	J
5. 4453-90-1	1,4-METHANONAPHTHALENE, 1,4-	15.71	200	NJ
6. 120-72-9	INDOLE	15.94	130	NJ
7. 90-12-0	NAPHTHALENE, 1-METHYL-	16.22	350	NJ
8.	UNKNOWN	16.63	150	J
9.	DIMETHYLNAPHTHALENE ISOMER	17.12	320	J
10. 575-43-9	NAPHTHALENE, 1,6-DIMETHYL-	17.31	180	NJ
11.	UNKNOWN PAH	17.41	280	J
12.	DIMETHYLNAPHTHALENE ISOMER	17.49	360	J
13. 827-54-3	NAPHTHALENE, 2-ETHENYL-	17.60	810	NJ
14. 643-58-3	1,1'-BIPHENYL, 2-METHYL-	18.96	160	NJ
15.	UNKNOWN	19.01	320	J
16.	UNKNOWN PAH	19.14	720	J
17.	UNKNOWN PAH	19.28	220	J
18.	UNKNOWN PAH	19.37	310	J
19.	UNKNOWN PAH	19.45	270	J
20.	UNKNOWN HYDROCARBON	20.03	250	J
21. 1000128-38-5	ACENAPHTHENONE	20.11	290	NJ
22.	METHYLBIPHENYL ISOMER	20.18	130	J
23.	UNKNOWN PAH	20.29	390	J
24.	UNKNOWN PAH	20.46	150	J
25.	UNKNOWN PAH	20.78	390	J
26.	UNKNOWN CARBOXYLIC ACID	21.13	270	J
27.	UNKNOWN HYDROCARBON	21.21	190	J
28. 57-10-3	N-HEXADECANOIC ACID	22.30	1100	NJ
29. 4505-48-0	1H-INDENE, 2-PHENYL-	22.35	430	NJ
30.	UNKNOWN	22.68	850	J

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW70

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-19B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: K4235

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 34 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/16/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0 Extraction: (Type) SONC

Number TICs found: 32

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 779-02-2	ANTHRACENE, 9-METHYL-	22.89	590	NJ
2.	UNKNOWN PAH	23.94	310	J
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW76

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) WATER Lab Sample ID: 9912043-01B

Sample wt/vol: 1000 (g/mL) ML Lab File ID: I9529

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 12/06/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.00 Extraction: (Type) CONT

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW76

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) WATER Lab Sample ID: 9912043-01B

Sample wt/vol: 1000 (g/mL) ML Lab File ID: I9529

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 12/06/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.00 Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWW76

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) WATER Lab Sample ID: 9912043-01B

Sample wt/vol: 1000 (g/mL) ML Lab File ID: I9529

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 12/06/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 12/09/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Extraction: (Type) CONT

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWX88

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912061-01B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: E7443

Level: (low/med) LOW Date Received: 12/07/99

% Moisture: 17 decanted: (Y/N) N Date Extracted: 12/08/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/16/99

Injection Volume: 2.0 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 8.40 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	3900	U
108-95-2	Phenol	3900	U
111-44-4	bis(2-Chloroethyl)Ether	3900	U
95-57-8	2-Chlorophenol	3900	U
95-48-7	2-Methylphenol	3900	U
108-60-1	2,2'-oxybis(1-Chloropropane)	3900	U
98-86-2	Acetophenone	3900	U
106-44-5	4-Methylphenol	3900	U
621-64-7	N-Nitroso-di-n-propylamine	3900	U
67-72-1	Hexachloroethane	3900	U
98-95-3	Nitrobenzene	3900	U
78-59-1	Isophorone	3900	U
88-75-5	2-Nitrophenol	3900	U
105-67-9	2,4-Dimethylphenol	3900	U
111-91-1	bis(2-Chloroethoxy)methane	3900	U
120-83-2	2,4-Dichlorophenol	3900	U
91-20-3	Naphthalene	490	J
106-47-8	4-Chloroaniline	3900	U
87-68-3	Hexachlorobutadiene	3900	U
105-60-2	Caprolactam	3900	U
59-50-7	4-Chloro-3-methylphenol	3900	U
91-57-6	2-Methylnaphthalene	3900	U
77-47-4	Hexachlorocyclopentadiene	3900	U
88-06-2	2,4,6-Trichlorophenol	3900	U
95-95-4	2,4,5-Trichlorophenol	9900	U
92-52-4	1,1'-Biphenyl	3900	U
91-58-7	2-Chloronaphthalene	3900	U
88-74-4	2-Nitroaniline	9900	U
131-11-3	Dimethylphthalate	3900	U
606-20-2	2,6-Dinitrotoluene	3900	U
208-96-8	Acenaphthylene	620	J
99-09-2	3-Nitroaniline	9900	U
83-32-9	Acenaphthene	1000	J

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWX88

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912061-01B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: E7443

Level: (low/med) LOW Date Received: 12/07/99

% Moisture: 17 decanted: (Y/N) N Date Extracted: 12/08/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/16/99

Injection Volume: 2.0 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 8.40 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	9900	U
100-02-7	4-Nitrophenol	9900	U
132-64-9	Dibenzofuran	790	J
121-14-2	2,4-Dinitrotoluene	3900	U
84-66-2	Diethylphthalate	3900	U
86-73-7	Fluorene	1600	J
7005-72-3	4-Chlorophenyl-phenylether	3900	U
100-01-6	4-Nitroaniline	9900	U
534-52-1	4,6-Dinitro-2-methylphenol	9900	U
86-30-6	N-Nitrosodiphenylamine (1)	3900	U
101-55-3	4-Bromophenyl-phenylether	3900	U
118-74-1	Hexachlorobenzene	3900	U
1912-24-9	Atrazine	3900	U
87-86-5	Pentachlorophenol	9900	U
85-01-8	Phenanthrene	10000	
120-12-7	Anthracene	3100	J
86-74-8	Carbazole	820	J
84-74-2	Di-n-butylphthalate	3900	U
206-44-0	Fluoranthene	12000	
129-00-0	Pyrene	12000	
85-68-7	Butylbenzylphthalate	3900	U
91-94-1	3,3'-Dichlorobenzidine	3900	U
56-55-3	Benzo(a)anthracene	6500	
218-01-9	Chrysene	6700	
117-81-7	bis(2-Ethylhexyl)phthalate	3200	J
117-84-0	Di-n-octylphthalate	3900	U
205-99-2	Benzo(b)fluoranthene	5600	
207-08-9	Benzo(k)fluoranthene	5500	
50-32-8	Benzo(a)pyrene	5700	
193-39-5	Indeno(1,2,3-cd)pyrene	1900	J
53-70-3	Dibenzo(a,h)anthracene	850	J
191-24-2	Benzo(g,h,i)perylene	1600	

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWX88

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912061-01B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: E7443

Level: (low/med) LOW Date Received: 12/07/99

% Moisture: 17 decanted: (Y/N) N Date Extracted: 12/08/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/16/99

Injection Volume: 2.0 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 8.4 Extraction: (Type) SONC

Number TICs found: 16

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 132-65-0	DIBENZOTHIOPHENE	17.41	1100	NJ
2.	UNKNOWN HYDROCARBON	18.54	1100	J
3. 613-12-7	ANTHRACENE, 2-METHYL-	18.73	1800	NJ
4. 949-41-7	1H-CYCLOPROPA[L]PHENANTHRENE	18.79	2200	NJ
832-69-9	PHENANTHRENE, 1-METHYL-	18.88	1000	NJ
	UNKNOWN PAH	19.01	3000	J
7. 35465-71-5	2-PHENYLNAPHTHALENE	19.38	1500	NJ
8. 84-65-1	9,10-ANTHRACENEDIONE	19.45	1200	NJ
9. 69009-90-1	1,1'-BIPHENYL, BIS(1-METHYLE	20.37	1400	NJ
10. 2381-21-7	PYRENE, 1-METHYL-	21.37	2000	NJ
11.	UNKNOWN PAH	21.48	1300	J
12.	UNKNOWN PAH	21.56	1400	J
13.	UNKNOWN PAH	21.78	1100	J
14. 205-99-2	BENZ[E]ACEPHENANTHRYLENE	26.17	3200	NJ
15.	UNKNOWN	28.15	1600	J
16.	UNKNOWN	29.29	3300	J
17.				
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY07

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-02B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: K4212

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 65 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.60 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	930	U
108-95-2	Phenol	930	U
111-44-4	bis(2-Chloroethyl)Ether	930	U
95-57-8	2-Chlorophenol	930	U
95-48-7	2-Methylphenol	930	U
108-60-1	2,2'-oxybis(1-Chloropropane)	930	U
98-86-2	Acetophenone	130	[illegible]
106-44-5	4-Methylphenol	930	U
621-64-7	N-Nitroso-di-n-propylamine	930	U
67-72-1	Hexachloroethane	930	U
98-95-3	Nitrobenzene	930	U
78-59-1	Isophorone	930	U
88-75-5	2-Nitrophenol	930	U
105-67-9	2,4-Dimethylphenol	930	U
111-91-1	bis(2-Chloroethoxy)methane	930	U
120-83-2	2,4-Dichlorophenol	930	U
91-20-3	Naphthalene	930	U
106-47-8	4-Chloroaniline	930	U
87-68-3	Hexachlorobutadiene	930	U
105-60-2	Caprolactam	930	U
59-50-7	4-Chloro-3-methylphenol	930	U
91-57-6	2-Methylnaphthalene	930	U
77-47-4	Hexachlorocyclopentadiene	930	U
88-06-2	2,4,6-Trichlorophenol	930	U
95-95-4	2,4,5-Trichlorophenol	2300	U
92-52-4	1,1'-Biphenyl	930	U
91-58-7	2-Chloronaphthalene	930	U
88-74-4	2-Nitroaniline	2300	U
131-11-3	Dimethylphthalate	930	U
606-20-2	2,6-Dinitrotoluene	930	U
208-96-8	Acenaphthylene	160	J
99-09-2	3-Nitroaniline	2300	U
83-32-9	Acenaphthene	930	U

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY07

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-02B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: K4212

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 65 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.60 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	2300	U
100-02-7	4-Nitrophenol	2300	U
132-64-9	Dibenzofuran	930	U
121-14-2	2,4-Dinitrotoluene	930	U
84-66-2	Diethylphthalate	930	U
86-73-7	Fluorene	930	U
7005-72-3	4-Chlorophenyl-phenylether	930	U
100-01-6	4-Nitroaniline	2300	U
534-52-1	4,6-Dinitro-2-methylphenol	2300	U
86-30-6	N-Nitrosodiphenylamine (1)	930	U
101-55-3	4-Bromophenyl-phenylether	930	U
118-74-1	Hexachlorobenzene	930	U
1912-24-9	Atrazine	930	U
87-86-5	Pentachlorophenol	2300	U
85-01-8	Phenanthrene	780	J
120-12-7	Anthracene	270	J
86-74-8	Carbazole	930	U
84-74-2	Di-n-butylphthalate	930	U
206-44-0	Fluoranthene	1800	J
129-00-0	Pyrene	1400	J
85-68-7	Butylbenzylphthalate	150	J
91-94-1	3,3'-Dichlorobenzidine	930	U
56-55-3	Benzo(a)anthracene	1100	J
218-01-9	Chrysene	1200	J
117-81-7	bis(2-Ethylhexyl)phthalate	120	J
117-84-0	Di-n-octylphthalate	930	U
205-99-2	Benzo(b)fluoranthene	1200	J
207-08-9	Benzo(k)fluoranthene	970	J
50-32-8	Benzo(a)pyrene	1300	J
193-39-5	Indeno(1,2,3-cd)pyrene	630	J
53-70-3	Dibenzo(a,h)anthracene	210	J
191-24-2	Benzo(g,h,i)perylene	360	J

(1) - Cannot be separated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BWY07

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-02B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: K4212

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 65 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6 Extraction: (Type) SONC

Number TICs found: 29 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN OXYGENATED HYDROCARB	10.70	350	J
2.	UNKNOWN OXYGENATED HYDROCARB	11.07	600	J
3.	UNKNOWN	11.52	370	J
4.	UNKNOWN OXYGENATED HYDROCARB	11.99	390	J
5. 95-13-6	INDENE	12.29	240	NJ
6.	METHYLINDAN ISOMER	13.99	190	J
7.	METHYLINDAN ISOMER	14.11	220	J
8.	UNKNOWN AROMATIC	17.54	2500	J
9. 546-28-1	1H-3A,7-METHANOAZULENE, OCTA	17.60	480	NJ
10.	UNKNOWN TERPENE	18.11	330	J
11. 16982-00-6	BENZENE, 1-METHYL-4-(1,2,2-T	18.47	280	NJ
12.	UNKNOWN	18.73	290	J
13. 65-71-4	THYMINE	19.20	270	NJ
14.	UNKNOWN PAH	19.36	200	J
15.	UNKNOWN	19.56	220	J
16.	UNKNOWN	19.77	310	J
17.	UNKNOWN	19.84	300	J
18.	UNKNOWN	19.97	340	J
19.	UNKNOWN	20.22	500	J
20.	UNKNOWN	20.83	250	J
21.	UNKNOWN CARBOXYLIC ACID	21.17	290	J
22.	UNKNOWN HYDROCARBON	21.50	520	J
23.	UNKNOWN	21.67	220	J
24.	UNKNOWN CARBOXYLIC ACID	22.02	220	J
25.	UNKNOWN OXYGENATED HYDROCARB	22.22	670	J
26. 57-10-3	N-HEXADECANOIC ACID	22.34	1400	NJ
27.	UNKNOWN TERPENE	25.05	2800	J
28. 511-15-9	2-PHENANTHRENOL, 4B,5,6,7,8,	25.22	9500	NJ
29.	UNKNOWN	25.94	1300	J
30.				

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY08

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-03B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: K4215

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 27 ✓ decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.80 ✓ Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	450	U
108-95-2	Phenol	450	U
111-44-4	bis(2-Chloroethyl)Ether	450	U
95-57-8	2-Chlorophenol	450	U
95-48-7	2-Methylphenol	450	U
108-60-1	2,2'-oxybis(1-Chloropropane)	450	U
98-86-2	Acetophenone	78	J
106-44-5	4-Methylphenol	450	U
621-64-7	N-Nitroso-di-n-propylamine	450	U
67-72-1	Hexachloroethane	450	U
98-95-3	Nitrobenzene	450	U
78-59-1	Isophorone	450	U
88-75-5	2-Nitrophenol	450	U
105-67-9	2,4-Dimethylphenol	450	U
111-91-1	bis(2-Chloroethoxy)methane	450	U
120-83-2	2,4-Dichlorophenol	450	U
91-20-3	Naphthalene	450	U
106-47-8	4-Chloroaniline	450	U
87-68-3	Hexachlorobutadiene	450	U
105-60-2	Caprolactam	450	U
59-50-7	4-Chloro-3-methylphenol	450	U
91-57-6	2-Methylnaphthalene	450	U
77-47-4	Hexachlorocyclopentadiene	450	U
88-06-2	2,4,6-Trichlorophenol	450	U
95-95-4	2,4,5-Trichlorophenol	1100	U
92-52-4	1,1'-Biphenyl	450	U
91-58-7	2-Chloronaphthalene	450	U
88-74-4	2-Nitroaniline	1100	U
131-11-3	Dimethylphthalate	450	U
606-20-2	2,6-Dinitrotoluene	450	U
208-96-8	Acenaphthylene	66	J
99-09-2	3-Nitroaniline	1100	U
83-32-9	Acenaphthene	200	J

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY08

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-03B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: K4215

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 27 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.80 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1100	U
100-02-7	4-Nitrophenol	1100	U
132-64-9	Dibenzofuran	90	J
121-14-2	2,4-Dinitrotoluene	450	U
84-66-2	Diethylphthalate	450	U
86-73-7	Fluorene	160	J
7005-72-3	4-Chlorophenyl-phenylether	450	U
100-01-6	4-Nitroaniline	1100	U
534-52-1	4,6-Dinitro-2-methylphenol	1100	U
86-30-6	N-Nitrosodiphenylamine (1)	450	U
101-55-3	4-Bromophenyl-phenylether	450	U
118-74-1	Hexachlorobenzene	450	U
1912-24-9	Atrazine	450	U
87-86-5	Pentachlorophenol	1100	U
85-01-8	Phenanthrene	2200	
120-12-7	Anthracene	570	
86-74-8	Carbazole	340	J
84-74-2	Di-n-butylphthalate	450	U
206-44-0	Fluoranthene	2800	
129-00-0	Pyrene	2000	
85-68-7	Butylbenzylphthalate	450	U
91-94-1	3,3'-Dichlorobenzidine	450	U
56-55-3	Benzo(a)anthracene	1500	
218-01-9	Chrysene	1600	
117-81-7	bis(2-Ethylhexyl)phthalate	55	J
117-84-0	Di-n-octylphthalate	450	U
205-99-2	Benzo(b)fluoranthene	1300	
207-08-9	Benzo(k)fluoranthene	1100	
50-32-8	Benzo(a)pyrene	1400	
193-39-5	Indeno(1,2,3-cd)pyrene	550	
53-70-3	Dibenzo(a,h)anthracene	220	J
191-24-2	Benzo(g,h,i)perylene	320	J

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY08

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-03B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: K4215

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 27 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8 Extraction: (Type) SONC

Number TICs found: 25

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN OXYGENATED HYDROCARB	10.67	120	J
2.	UNKNOWN	11.05	[illegible]	R
3.	UNKNOWN	11.50	190	J
4. 575-41-7	NAPHTHALENE, 1,3-DIMETHYL-	17.51	110	NJ
5. 1689-64-1	9H-FLUOREN-9-OL	19.82	110	NJ
6. 486-25-9	9H-FLUOREN-9-ONE	20.90	140	NJ
7. 132-65-0	DIBENZOTHIOPHENE	21.07	130	NJ
8. 260-94-6	ACRIDINE	21.50	120	NJ
9.	UNKNOWN	22.00	120	J
10. 613-12-7	ANTHRACENE, 2-METHYL-	22.31	270	NJ
11.	UNKNOWN PAH	22.37	320	J
12.	UNKNOWN PAH	22.44	170	J
13. 203-64-5	4H-CYCLOPENTA[DEF]PHENANTHRE	22.56	600	NJ
14. 35465-71-5	2-PHENYLNAPHTHALENE	22.90	180	NJ
15. 84-65-1	9,10-ANTHRACENEDIONE	22.98	300	NJ
16. 35099-60-6	1H-INDENE, 2-METHYL-3-PHENYL	23.46	130	NJ
17. 243-42-5	BENZO[B]NAPHTHO[2,3-D]FURAN	24.28	100	NJ
18.	UNKNOWN PAH	24.39	140	J
19. 243-17-4	11H-BENZO[B]FLUORENE	24.77	230	NJ
20. 33543-31-6	FLUORANTHENE, 2-METHYL-	24.96	270	NJ
21.	UNKNOWN	25.25	790	J
22.	UNKNOWN PAH	25.63	270	J
23. 239-35-0	BENZO[B]NAPHTHO[2,1-D]THIOPH	25.80	200	NJ
24. 82-05-3	7H-BENZ[DE]ANTHRACEN-7-ONE	25.95	270	NJ
25.	UNKNOWN PAH	29.05	1300	J
26.				
27.				
28.				
29.				
30.				

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY09

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-04B

Sample wt/vol: 30.0 (g/mL) G Lab File ID: K4216

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 39 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.60 Extraction: (Type) SONC

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
100-52-7	Benzaldehyde	540	U
108-95-2	Phenol	540	U
111-44-4	bis(2-Chloroethyl)Ether	540	U
95-57-8	2-Chlorophenol	540	U
95-48-7	2-Methylphenol	540	U
108-60-1	2,2'-oxybis(1-Chloropropane)	540	U
98-86-2	Acetophenone	110	J
106-44-5	4-Methylphenol	540	U
621-64-7	N-Nitroso-di-n-propylamine	540	U
67-72-1	Hexachloroethane	540	U
98-95-3	Nitrobenzene	540	U
78-59-1	Isophorone	540	U
88-75-5	2-Nitrophenol	540	U
105-67-9	2,4-Dimethylphenol	540	U
111-91-1	bis(2-Chloroethoxy)methane	540	U
120-83-2	2,4-Dichlorophenol	540	U
91-20-3	Naphthalene	540	U
106-47-8	4-Chloroaniline	540	U
87-68-3	Hexachlorobutadiene	540	U
105-60-2	Caprolactam	540	U
59-50-7	4-Chloro-3-methylphenol	540	U
91-57-6	2-Methylnaphthalene	540	U
77-47-4	Hexachlorocyclopentadiene	540	U
88-06-2	2,4,6-Trichlorophenol	540	U
95-95-4	2,4,5-Trichlorophenol	1400	U
92-52-4	1,1'-Biphenyl	540	U
91-58-7	2-Chloronaphthalene	540	U
88-74-4	2-Nitroaniline	1400	U
131-11-3	Dimethylphthalate	540	U
606-20-2	2,6-Dinitrotoluene	540	U
208-96-8	Acenaphthylene	78	J
99-09-2	3-Nitroaniline	1400	U
83-32-9	Acenaphthene	140	J

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY09

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-04B

Sample wt/vol: 30.0 (g/mL) G Lab File ID: K4216

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 39 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.60 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1400	U
100-02-7	4-Nitrophenol	1400	U
132-64-9	Dibenzofuran	73	J
121-14-2	2,4-Dinitrotoluene	540	U
84-66-2	Diethylphthalate	540	U
86-73-7	Fluorene	130	J
7005-72-3	4-Chlorophenyl-phenylether	540	U
100-01-6	4-Nitroaniline	1400	U
534-52-1	4,6-Dinitro-2-methylphenol	1400	U
86-30-6	N-Nitrosodiphenylamine (1)	540	U
101-55-3	4-Bromophenyl-phenylether	540	U
118-74-1	Hexachlorobenzene	540	U
1912-24-9	Atrazine	540	U
87-86-5	Pentachlorophenol	1400	U
85-01-8	Phenanthrene	1500	
120-12-7	Anthracene	420	J
86-74-8	Carbazole	210	J
84-74-2	Di-n-butylphthalate	540	U
206-44-0	Fluoranthene	2200	
129-00-0	Pyrene	1600	
85-68-7	Butylbenzylphthalate	540	U
91-94-1	3,3'-Dichlorobenzidine	540	U
56-55-3	Benzo(a)anthracene	1200	
218-01-9	Chrysene	1300	
117-81-7	bis(2-Ethylhexyl)phthalate	150	J
117-84-0	Di-n-octylphthalate	540	U
205-99-2	Benzo(b)fluoranthene	1100	
207-08-9	Benzo(k)fluoranthene	920	
50-32-8	Benzo(a)pyrene	1200	
193-39-5	Indeno(1,2,3-cd)pyrene	520	J
53-70-3	Dibenzo(a,h)anthracene	220	J
191-24-2	Benzo(g,h,i)perylene	330	J

(1) - Cannot be separated from Diphenylamine

1G

EPA SAMPLE NO.

BWY09

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-04B

Sample wt/vol: 30.0 (g/mL) G Lab File ID: K4216

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 39 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/15/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6 Extraction: (Type) SONC

Number TICs found: 20

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN OXYGENATED HYDROCARB	10.67	180	J
2.	UNKNOWN CARBOXYLIC ACID	10.99	200	J
3.	UNKNOWN	11.05	[redacted]	
4.	UNKNOWN OXYGENATED HYDROCARB	11.43	140	J
5.	UNKNOWN	11.50	280	J
6.	UNKNOWN OXYGENATED HYDROCARB	14.45	130	J
7.	UNKNOWN	17.52	120	J
8.	UNKNOWN	20.71	150	J
9. 486-25-9	9H-FLUOREN-9-ONE	20.89	110	NJ
10.	UNKNOWN	21.49	150	J
11.	UNKNOWN PAH	22.31	380	J
12. 613-12-7	ANTHRACENE, 2-METHYL-	22.37	340	NJ
13.	UNKNOWN PAH	22.44	120	J
14. 203-64-5	4H-CYCLOPENTA[DEF]PHENANTHRE	22.56	360	NJ
15.	UNKNOWN PAH	22.90	140	J
16. 84-65-1	9,10-ANTHRACENEDIONE	22.98	250	NJ
17.	UNKNOWN PAH	23.46	120	J
18. 243-42-5	BENZO[B]NAPHTHO[2,3-D]FURAN	24.38	150	NJ
19. 33543-31-6	FLUORANTHENE, 2-METHYL-	24.77	260	NJ
20. 192-97-2	BENZO[E]PYRENE	29.04	1300	NJ
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22.				
23.				
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY10

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-05B

Sample wt/vol: 1.2 (g/mL) G Lab File ID: K4148

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 57 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/10/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.80 Extraction: (Type) SONC

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
100-52-7	Benzaldehyde	19000	U
108-95-2	Phenol	19000	U
111-44-4	bis(2-Chloroethyl)Ether	19000	U
95-57-8	2-Chlorophenol	19000	U
95-48-7	2-Methylphenol	19000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	19000	U
98-86-2	Acetophenone	3400	
106-44-5	4-Methylphenol	19000	U
621-64-7	N-Nitroso-di-n-propylamine	19000	U
67-72-1	Hexachloroethane	19000	U
98-95-3	Nitrobenzene	19000	U
78-59-1	Isophorone	19000	U
88-75-5	2-Nitrophenol	19000	U
105-67-9	2,4-Dimethylphenol	19000	U
111-91-1	bis(2-Chloroethoxy)methane	19000	U
120-83-2	2,4-Dichlorophenol	19000	U
91-20-3	Naphthalene	19000	U
106-47-8	4-Chloroaniline	19000	U
87-68-3	Hexachlorobutadiene	19000	U
105-60-2	Caprolactam	19000	U
59-50-7	4-Chloro-3-methylphenol	19000	U
91-57-6	2-Methylnaphthalene	19000	U
77-47-4	Hexachlorocyclopentadiene	19000	U
88-06-2	2,4,6-Trichlorophenol	19000	U
95-95-4	2,4,5-Trichlorophenol	48000	U
92-52-4	1,1'-Biphenyl	19000	U
91-58-7	2-Chloronaphthalene	19000	U
88-74-4	2-Nitroaniline	48000	U
131-11-3	Dimethylphthalate	19000	U
606-20-2	2,6-Dinitrotoluene	19000	U
208-96-8	Acenaphthylene	19000	U
99-09-2	3-Nitroaniline	48000	U
83-32-9	Acenaphthene	19000	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY10

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-05B

Sample wt/vol: 1.2 (g/mL) G Lab File ID: K4148

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 57 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/10/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.80 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	48000	U
100-02-7	4-Nitrophenol	48000	U
132-64-9	Dibenzofuran	19000	U
121-14-2	2,4-Dinitrotoluene	19000	U
84-66-2	Diethylphthalate	19000	U
86-73-7	Fluorene	19000	U
7005-72-3	4-Chlorophenyl-phenylether	19000	U
100-01-6	4-Nitroaniline	48000	U
534-52-1	4,6-Dinitro-2-methylphenol	48000	U
86-30-6	N-Nitrosodiphenylamine (1)	19000	U
101-55-3	4-Bromophenyl-phenylether	19000	U
118-74-1	Hexachlorobenzene	19000	U
1912-24-9	Atrazine	19000	U
87-86-5	Pentachlorophenol	48000	U
85-01-8	Phenanthrene	19000	U
120-12-7	Anthracene	19000	U
86-74-8	Carbazole	19000	U
84-74-2	Di-n-butylphthalate	19000	U
206-44-0	Fluoranthene	19000	U
129-00-0	Pyrene	3200	[illegible]
85-68-7	Butylbenzylphthalate	19000	U
91-94-1	3,3'-Dichlorobenzidine	19000	U
56-55-3	Benzo(a)anthracene	19000	U
218-01-9	Chrysene	19000	U
117-81-7	bis(2-Ethylhexyl)phthalate	28000	[illegible]
117-84-0	Di-n-octylphthalate	19000	U
205-99-2	Benzo(b)fluoranthene	19000	U
207-08-9	Benzo(k)fluoranthene	19000	U
50-32-8	Benzo(a)pyrene	19000	U
193-39-5	Indeno(1,2,3-cd)pyrene	19000	U
53-70-3	Dibenzo(a,h)anthracene	19000	U
191-24-2	Benzo(g,h,i)perylene	5000	[illegible]

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY10

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-05B

Sample wt/vol: 1.2 (g/mL) G Lab File ID: K4148

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 57 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/10/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8 Extraction: (Type) SONC

Number TICs found: 27

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN OXYGENATED HYDROCARB	11.90	16000	J
2. 38360-81-5	3,5-DIMETHYLTHIOPHENOL	14.44	7900	NJ
3.	UNKNOWN	14.61	5800	J
4.	UNKNOWN	15.10	6900	J
	UNKNOWN	15.25	12000	J
	UNKNOWN	16.10	6000	J
7.	UNKNOWN	16.44	7800	J
8.	UNKNOWN HYDROCARBON	16.55	4500	J
9.	UNKNOWN	16.61	6200	J
10.	UNKNOWN	16.78	4100	J
11. 80655-44-3	DECAHYDRO-4,4,8,9,10-PENTAME	16.97	17000	NJ
12.	UNKNOWN	17.19	5400	J
13.	UNKNOWN	17.73	4000	J
14.	UNKNOWN	17.95	10000	J
15.	UNKNOWN	18.03	27000	J
16.	UNKNOWN	18.62	8400	J
17.	UNKNOWN	18.93	16000	J
18.	UNKNOWN	19.00	13000	J
19.	UNKNOWN HYDROCARBON	19.08	14000	J
20.	UNKNOWN	19.86	4900	J
21.	UNKNOWN OXYGENATED HYDROCARB	20.23	4500	J
22.	UNKNOWN OXYGENATED HYDROCARB	20.31	9800	J
23.	UNKNOWN PHTHALATE	20.38	7500	J
24.	UNKNOWN PHTHALATE	20.46	6100	J
25.	UNKNOWN PHTHALATE	20.51	4500	J
26.	UNKNOWN	24.81	61000	J
27.	UNKNOWN	28.46	230000	J
28.				
29.				
30.				

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY11

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-06B

Sample wt/vol: 1.3 (g/mL) G Lab File ID: K4160

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 55 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.70 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	17000	U
108-95-2	Phenol	17000	U
111-44-4	bis(2-Chloroethyl)Ether	17000	U
95-57-8	2-Chlorophenol	17000	U
95-48-7	2-Methylphenol	17000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	17000	U
98-86-2	Acetophenone	17000	U
106-44-5	4-Methylphenol	17000	U
621-64-7	N-Nitroso-di-n-propylamine	17000	U
67-72-1	Hexachloroethane	17000	U
98-95-3	Nitrobenzene	17000	U
78-59-1	Isophorone	17000	U
88-75-5	2-Nitrophenol	17000	U
105-67-9	2,4-Dimethylphenol	17000	U
111-91-1	bis(2-Chloroethoxy)methane	17000	U
120-83-2	2,4-Dichlorophenol	17000	U
91-20-3	Naphthalene	17000	U
106-47-8	4-Chloroaniline	17000	U
87-68-3	Hexachlorobutadiene	17000	U
105-60-2	Caprolactam	17000	U
59-50-7	4-Chloro-3-methylphenol	17000	U
91-57-6	2-Methylnaphthalene	17000	U
77-47-4	Hexachlorocyclopentadiene	17000	U
88-06-2	2,4,6-Trichlorophenol	17000	U
95-95-4	2,4,5-Trichlorophenol	43000	U
92-52-4	1,1'-Biphenyl	17000	U
91-58-7	2-Chloronaphthalene	17000	U
88-74-4	2-Nitroaniline	43000	U
131-11-3	Dimethylphthalate	17000	U
606-20-2	2,6-Dinitrotoluene	17000	U
208-96-8	Acenaphthylene	17000	U
99-09-2	3-Nitroaniline	43000	U
83-32-9	Acenaphthene	17000	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY11

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-06B

Sample wt/vol: 1.3 (g/mL) G Lab File ID: K4160

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 55 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.70 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	43000	U J
100-02-7	4-Nitrophenol	43000	U
132-64-9	Dibenzofuran	17000	U
121-14-2	2,4-Dinitrotoluene	17000	U
84-66-2	Diethylphthalate	17000	U
86-73-7	Fluorene	17000	U
7005-72-3	4-Chlorophenyl-phenylether	17000	U
100-01-6	4-Nitroaniline	43000	U
534-52-1	4,6-Dinitro-2-methylphenol	43000	U
86-30-6	N-Nitrosodiphenylamine (1)	17000	U
101-55-3	4-Bromophenyl-phenylether	17000	U
118-74-1	Hexachlorobenzene	17000	U
1912-24-9	Atrazine	17000	U
87-86-5	Pentachlorophenol	43000	U
85-01-8	Phenanthrene	17000	U
120-12-7	Anthracene	17000	U
86-74-8	Carbazole	17000	U
84-74-2	Di-n-butylphthalate	17000	U
206-44-0	Fluoranthene	17000	U
129-00-0	Pyrene	17000	U
85-68-7	Butylbenzylphthalate	17000	U
91-94-1	3,3'-Dichlorobenzidine	17000	U
56-55-3	Benzo(a)anthracene	17000	U
218-01-9	Chrysene	17000	U J
117-81-7	bis(2-Ethylhexyl)phthalate	4500	~~J~~
117-84-0	Di-n-octylphthalate	17000	U J
205-99-2	Benzo(b)fluoranthene	17000	U
207-08-9	Benzo(k)fluoranthene	17000	U
50-32-8	Benzo(a)pyrene	17000	U
193-39-5	Indeno(1,2,3-cd)pyrene	17000	U
53-70-3	Dibenzo(a,h)anthracene	17000	U
191-24-2	Benzo(g,h,i)perylene	2800	~~J~~

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY11

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-06B

Sample wt/vol: 1.3 (g/mL) G Lab File ID: K4160

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 55 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7 Extraction: (Type) SONC

Number TICs found: 8

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN OXYGENATED HYDROCARB	21.71	4400	J
2.	UNKNOWN CARBOXYLIC ACID	22.33	5900	J
3. 91-76-9	1,3,5-TRIAZINE-2,4-DIAMINE,	23.25	6000	NJ
4.	UNKNOWN	23.37	7000	J
5.	UNKNOWN OXYGENATED HYDROCARB	24.73	15000	J
6.	UNKNOWN	25.94	43000	J
7.	UNKNOWN	27.12	31000	J
8.	UNKNOWN	28.41	2900	J
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY12

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-07B

Sample wt/vol: 1.3 (g/mL) G Lab File ID: K4161

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 28 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.50 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	11000	U
108-95-2	Phenol	11000	U
111-44-4	bis(2-Chloroethyl)Ether	11000	U
95-57-8	2-Chlorophenol	11000	U
95-48-7	2-Methylphenol	11000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	11000	U
98-86-2	Acetophenone	11000	U
106-44-5	4-Methylphenol	11000	U
621-64-7	N-Nitroso-di-n-propylamine	11000	U
67-72-1	Hexachloroethane	11000	U
98-95-3	Nitrobenzene	11000	U
78-59-1	Isophorone	11000	U
88-75-5	2-Nitrophenol	11000	U
105-67-9	2,4-Dimethylphenol	11000	U
111-91-1	bis(2-Chloroethoxy)methane	11000	U
120-83-2	2,4-Dichlorophenol	11000	U
91-20-3	Naphthalene	11000	U
106-47-8	4-Chloroaniline	11000	U
87-68-3	Hexachlorobutadiene	11000	U
105-60-2	Caprolactam	11000	U
59-50-7	4-Chloro-3-methylphenol	11000	U
91-57-6	2-Methylnaphthalene	11000	U
77-47-4	Hexachlorocyclopentadiene	11000	U
88-06-2	2,4,6-Trichlorophenol	11000	U
95-95-4	2,4,5-Trichlorophenol	27000	U
92-52-4	1,1'-Biphenyl	11000	U
91-58-7	2-Chloronaphthalene	11000	U
88-74-4	2-Nitroaniline	27000	U
131-11-3	Dimethylphthalate	11000	U
606-20-2	2,6-Dinitrotoluene	11000	U
208-96-8	Acenaphthylene	11000	U
99-09-2	3-Nitroaniline	27000	U
83-32-9	Acenaphthene	11000	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY12

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-07B

Sample wt/vol: 1.3 (g/mL) G Lab File ID: K4161

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 28 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.50 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	27000	U
100-02-7	4-Nitrophenol	27000	U
132-64-9	Dibenzofuran	11000	U
121-14-2	2,4-Dinitrotoluene	11000	U
84-66-2	Diethylphthalate	11000	U
86-73-7	Fluorene	11000	U
7005-72-3	4-Chlorophenyl-phenylether	11000	U
100-01-6	4-Nitroaniline	27000	U
534-52-1	4,6-Dinitro-2-methylphenol	27000	U
86-30-6	N-Nitrosodiphenylamine (1)	11000	U
101-55-3	4-Bromophenyl-phenylether	11000	U
118-74-1	Hexachlorobenzene	11000	U
1912-24-9	Atrazine	11000	U
87-86-5	Pentachlorophenol	27000	U
85-01-8	Phenanthrene	11000	U
120-12-7	Anthracene	11000	U
86-74-8	Carbazole	11000	U
84-74-2	Di-n-butylphthalate	11000	U
206-44-0	Fluoranthene	11000	U
129-00-0	Pyrene	11000	U
85-68-7	Butylbenzylphthalate	11000	U
91-94-1	3,3'-Dichlorobenzidine	11000	U
56-55-3	Benzo(a)anthracene	11000	U
218-01-9	Chrysene	11000	U
117-81-7	bis(2-Ethylhexyl)phthalate	4900	[illegible]
117-84-0	Di-n-octylphthalate	11000	U
205-99-2	Benzo(b)fluoranthene	11000	U
207-08-9	Benzo(k)fluoranthene	11000	U
50-32-8	Benzo(a)pyrene	11000	U
193-39-5	Indeno(1,2,3-cd)pyrene	11000	U
53-70-3	Dibenzo(a,h)anthracene	11000	U
191-24-2	Benzo(g,h,i)perylene	1600	J

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY12

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-07B

Sample wt/vol: 1.3 (g/mL) G Lab File ID: K4161

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 28 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5 Extraction: (Type) SONC

Number TICs found: 19

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	9.51	2200	J
2.	UNKNOWN OXYGENATED HYDROCARB	15.23	3400	J
3.	UNKNOWN	15.47	2700	J
4.	UNKNOWN PAH	16.77	2300	J
5.	UNKNOWN HYDROCARBON	16.96	4900	J
6.	UNKNOWN HYDROCARBON	17.60	6600	J
7.	UNKNOWN	17.93	2700	J
8.	UNKNOWN HYDROCARBON	18.02	9400	J
9.	UNKNOWN	18.15	2800	J
10.	UNKNOWN HYDROCARBON	18.92	6800	J
11.	UNKNOWN	18.99	2900	J
12.	UNKNOWN	19.06	5100	J
13.	UNKNOWN HYDROCARBON	20:07	5700	J
14.	UNKNOWN	20.90	2300	J
15. 1000130-83-3	Z-11-TETRADECENOIC ACID	20.98	8800	NJ
16.	UNKNOWN HYDROCARBON	21.04	3000	J
17.	UNKNOWN OXYGENATED HYDROCARB	21.74	4300	J
18.	UNKNOWN	22.23	4200	J
19.	UNKNOWN CARBOXYLIC ACID	22.35	8100	J
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY13

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-08B

Sample wt/vol: 1.4 (g/mL) G Lab File ID: K4162

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 36 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.80 Extraction: (Type) SONC

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
100-52-7	Benzaldehyde	11000	U
108-95-2	Phenol	11000	U
111-44-4	bis(2-Chloroethyl)Ether	11000	U
95-57-8	2-Chlorophenol	11000	U
95-48-7	2-Methylphenol	11000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	11000	U
98-86-2	Acetophenone	11000	U
106-44-5	4-Methylphenol	11000	U
621-64-7	N-Nitroso-di-n-propylamine	11000	U
67-72-1	Hexachloroethane	11000	U
98-95-3	Nitrobenzene	11000	U
78-59-1	Isophorone	11000	U
88-75-5	2-Nitrophenol	11000	U
105-67-9	2,4-Dimethylphenol	11000	U
111-91-1	bis(2-Chloroethoxy)methane	11000	U
120-83-2	2,4-Dichlorophenol	11000	U
91-20-3	Naphthalene	11000	U
106-47-8	4-Chloroaniline	11000	U
87-68-3	Hexachlorobutadiene	11000	U
105-60-2	Caprolactam	11000	U
59-50-7	4-Chloro-3-methylphenol	11000	U
91-57-6	2-Methylnaphthalene	11000	U
77-47-4	Hexachlorocyclopentadiene	11000	U
88-06-2	2,4,6-Trichlorophenol	11000	U
95-95-4	2,4,5-Trichlorophenol	28000	U
92-52-4	1,1'-Biphenyl	11000	U
91-58-7	2-Chloronaphthalene	11000	U
88-74-4	2-Nitroaniline	28000	U
131-11-3	Dimethylphthalate	11000	U
606-20-2	2,6-Dinitrotoluene	11000	U
208-96-8	Acenaphthylene	1400	J
99-09-2	3-Nitroaniline	28000	U
83-32-9	Acenaphthene	11000	U

264

1511 A R

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY13

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-08B

Sample wt/vol: 1.4 (g/mL) G Lab File ID: K4162

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 36 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.80 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	28000	U
100-02-7	4-Nitrophenol	28000	U
132-64-9	Dibenzofuran	11000	U
121-14-2	2,4-Dinitrotoluene	11000	U
84-66-2	Diethylphthalate	11000	U
86-73-7	Fluorene	11000	U
7005-72-3	4-Chlorophenyl-phenylether	11000	U
100-01-6	4-Nitroaniline	28000	U
534-52-1	4,6-Dinitro-2-methylphenol	28000	U
86-30-6	N-Nitrosodiphenylamine (1)	11000	U
101-55-3	4-Bromophenyl-phenylether	11000	U
118-74-1	Hexachlorobenzene	11000	U
1912-24-9	Atrazine	11000	U
87-86-5	Pentachlorophenol	28000	U
85-01-8	Phenanthrene	11000	U
120-12-7	Anthracene	11000	U
86-74-8	Carbazole	11000	U
84-74-2	Di-n-butylphthalate	11000	U
206-44-0	Fluoranthene	1700	J
129-00-0	Pyrene	2200	J
85-68-7	Butylbenzylphthalate	11000	U
91-94-1	3,3'-Dichlorobenzidine	11000	U
56-55-3	Benzo(a)anthracene	1600	J
218-01-9	Chrysene	1800	J
117-81-7	bis(2-Ethylhexyl)phthalate	11000	U
117-84-0	Di-n-octylphthalate	11000	U
205-99-2	Benzo(b)fluoranthene	1200	J
207-08-9	Benzo(k)fluoranthene	1200	J
50-32-8	Benzo(a)pyrene	1500	J
193-39-5	Indeno(1,2,3-cd)pyrene	1800	J
53-70-3	Dibenzo(a,h)anthracene	11000	U
191-24-2	Benzo(g,h,i)perylene	2100	J

(1) - Cannot be separated from Diphenylamine

265

1511B
R

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY13

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-08B

Sample wt/vol: 1.4 (g/mL) G Lab File ID: K4162

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 36 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8 Extraction: (Type) SONC

Number TICs found: 3

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	9.51	2500	J
2.	UNKNOWN AROMATIC	23.25	2400	J
3.	UNKNOWN	26.09	670	J
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266

1511 L
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY14

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-09B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: K4359

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 42 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/29/99

Injection Volume: 2.0 (uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) Y pH: 6.70 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	1700	U
108-95-2	Phenol	1700	U
111-44-4	bis(2-Chloroethyl)Ether	1700	U
95-57-8	2-Chlorophenol	1700	U
95-48-7	2-Methylphenol	1700	U
108-60-1	2,2'-oxybis(1-Chloropropane)	[illegible]	UR
98-86-2	Acetophenone	320	J
106-44-5	4-Methylphenol	1700	U
621-64-7	N-Nitroso-di-n-propylamine	1700	U
67-72-1	Hexachloroethane	1700	U
98-95-3	Nitrobenzene	1700	U
78-59-1	Isophorone	1700	U
88-75-5	2-Nitrophenol	1700	U
105-67-9	2,4-Dimethylphenol	1700	U
111-91-1	bis(2-Chloroethoxy)methane	1700	U
120-83-2	2,4-Dichlorophenol	1700	U
91-20-3	Naphthalene	650	J
106-47-8	4-Chloroaniline	1700	U
87-68-3	Hexachlorobutadiene	1700	U
105-60-2	Caprolactam	1700	U
59-50-7	4-Chloro-3-methylphenol	1700	U
91-57-6	2-Methylnaphthalene	400	J
77-47-4	Hexachlorocyclopentadiene	1700	U
88-06-2	2,4,6-Trichlorophenol	1700	U
95-95-4	2,4,5-Trichlorophenol	4300	U
92-52-4	1,1'-Biphenyl	1700	U
91-58-7	2-Chloronaphthalene	1700	U
88-74-4	2-Nitroaniline	4300	U
131-11-3	Dimethylphthalate	1700	U
606-20-2	2,6-Dinitrotoluene	1700	U
208-96-8	Acenaphthylene	3200	
99-09-2	3-Nitroaniline	4300	U
83-32-9	Acenaphthene	310	J

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY14

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-09B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: K4359

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 42 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/29/99

Injection Volume: 2.0 (uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) Y pH: 6.70 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	4300	U
100-02-7	4-Nitrophenol	4300	U
132-64-9	Dibenzofuran	1700	U
121-14-2	2,4-Dinitrotoluene	1700	U
84-66-2	Diethylphthalate	1700	U
86-73-7	Fluorene	210	J
7005-72-3	4-Chlorophenyl-phenylether	1700	U
100-01-6	4-Nitroaniline	4300	U
534-52-1	4,6-Dinitro-2-methylphenol	4300	U
86-30-6	N-Nitrosodiphenylamine (1)	1700	U
101-55-3	4-Bromophenyl-phenylether	1700	U
118-74-1	Hexachlorobenzene	1700	U
1912-24-9	Atrazine	1700	U
87-86-5	Pentachlorophenol	4300	U
85-01-8	Phenanthrene	1800	
120-12-7	Anthracene	1700	
86-74-8	Carbazole	230	J
84-74-2	Di-n-butylphthalate	1700	U
206-44-0	Fluoranthene	1800	
129-00-0	Pyrene	2200	
85-68-7	Butylbenzylphthalate	1700	U
91-94-1	3,3'-Dichlorobenzidine	1700	U
56-55-3	Benzo(a)anthracene	2100	
218-01-9	Chrysene	2400	
117-81-7	bis(2-Ethylhexyl)phthalate	980	J
117-84-0	Di-n-octylphthalate	1700	U
205-99-2	Benzo(b)fluoranthene	1600	J
207-08-9	Benzo(k)fluoranthene	1800	
50-32-8	Benzo(a)pyrene	2600	
193-39-5	Indeno(1,2,3-cd)pyrene	1700	
53-70-3	Dibenzo(a,h)anthracene	690	J
191-24-2	Benzo(g,h,i)perylene	1200	J

(1) - Cannot be separated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BWY14

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-09B

Sample wt/vol: 30.3 (g/mL) G Lab File ID: K4359

Level: (low/med) LOW Date Received: 12/03/99

% Moisture: 42 decanted: (Y/N) N Date Extracted: 12/06/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/29/99

Injection Volume: 2.0 (uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) Y pH: 6.7 Extraction: (Type) SONC

Number TICs found: 29

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	10.86	590	J
2. 275-51-4	AZULENE	13.97	950	NJ
3.	BUTYLBENZENE ISOMER	15.06	670	J
4. 2443-46-1	BICYCLO[4.4.1]UNDECA-1,3,5,7	15.49	440	NJ
5. 2443-46-1	BICYCLO[4.4.1]UNDECA-1,3,5,7	15.76	930	NJ
6. 85-44-9	PHTHALIC ANHYDRIDE	16.11	620	NJ
7.	DIMETHYLNAPHTHALENE ISOMER	17.01	390	J
8.	UNKNOWN PAH	17.30	400	J
9. 827-54-3	NAPHTHALENE, 2-ETHENYL-	17.48	1100	NJ
10.	UNKNOWN PAH	18.69	600	J
11.	METHYLBIPHENYL ISOMER	18.77	380	J
12.	UNKNOWN	18.90	340	J
13.	UNKNOWN PAH	19.01	680	J
14.	UNKNOWN PAH	19.24	490	J
15.	UNKNOWN PAH	19.58	540	J
16. 1000128-38-5	ACENAPHTHENONE	19.98	640	NJ
17.	UNKNOWN PAH	20.18	620	J
18.	UNKNOWN PAH	20.65	740	J
19.	UNKNOWN CARBOXYLIC ACID	21.02	680	J
20.	UNKNOWN	21.35	370	J
21. 57-10-3	N-HEXADECANOIC ACID	22.20	3600	NJ
22. 1961-96-2	1H-INDENE, 1-PHENYL-	22.29	710	NJ
23.	UNKNOWN PAH	22.42	880	J
24.	UNKNOWN CARBOXYLIC ACID	22.57	510	J
25.	UNKNOWN PAH	22.75	490	J
26. 84-65-1	9,10-ANTHRACENEDIONE	22.83	560	NJ
27.	UNKNOWN	23.09	1000	J
28. 57-11-4	OCTADECANOIC ACID	23.78	1300	NJ
29.	UNKNOWN PAH	24.97	650	J
30.				

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY15

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-10B

Sample wt/vol: 1.0 (g/mL) G Lab File ID: K4163

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 58 59 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.40 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	24000	U
108-95-2	Phenol	24000	U
111-44-4	bis(2-Chloroethyl)Ether	24000	U
95-57-8	2-Chlorophenol	24000	U
95-48-7	2-Methylphenol	24000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	24000	U
98-86-2	Acetophenone	24000	U
106-44-5	4-Methylphenol	24000	U
621-64-7	N-Nitroso-di-n-propylamine	24000	U
67-72-1	Hexachloroethane	24000	U
98-95-3	Nitrobenzene	24000	U
78-59-1	Isophorone	24000	U
88-75-5	2-Nitrophenol	24000	U
105-67-9	2,4-Dimethylphenol	24000	U
111-91-1	bis(2-Chloroethoxy)methane	24000	U
120-83-2	2,4-Dichlorophenol	24000	U
91-20-3	Naphthalene	24000	U
106-47-8	4-Chloroaniline	24000	U
87-68-3	Hexachlorobutadiene	24000	U
105-60-2	Caprolactam	24000	U
59-50-7	4-Chloro-3-methylphenol	24000	U
91-57-6	2-Methylnaphthalene	24000	U
77-47-4	Hexachlorocyclopentadiene	24000	U
88-06-2	2,4,6-Trichlorophenol	24000	U
95-95-4	2,4,5-Trichlorophenol	59000	U
92-52-4	1,1'-Biphenyl	24000	U
91-58-7	2-Chloronaphthalene	24000	U
88-74-4	2-Nitroaniline	59000	U
131-11-3	Dimethylphthalate	24000	U
606-20-2	2,6-Dinitrotoluene	24000	U
208-96-8	Acenaphthylene	3100	J
99-09-2	3-Nitroaniline	59000	U
83-32-9	Acenaphthene	24000	U

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY15

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-10B

Sample wt/vol: 1.0 (g/mL) G Lab File ID: K4163

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 68 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.40 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	59000	U
100-02-7	4-Nitrophenol	59000	U
132-64-9	Dibenzofuran	24000	U
121-14-2	2,4-Dinitrotoluene	24000	U
84-66-2	Diethylphthalate	24000	U
86-73-7	Fluorene	24000	U
7005-72-3	4-Chlorophenyl-phenylether	24000	U
100-01-6	4-Nitroaniline	59000	U
534-52-1	4,6-Dinitro-2-methylphenol	59000	U
86-30-6	N-Nitrosodiphenylamine (1)	24000	U
101-55-3	4-Bromophenyl-phenylether	24000	U
118-74-1	Hexachlorobenzene	24000	U
1912-24-9	Atrazine	24000	U
87-86-5	Pentachlorophenol	59000	U
85-01-8	Phenanthrene	24000	U
120-12-7	Anthracene	24000	U
86-74-8	Carbazole	24000	U
84-74-2	Di-n-butylphthalate	24000	U
206-44-0	Fluoranthene	3000	[illegible]
129-00-0	Pyrene	3900	[illegible]
85-68-7	Butylbenzylphthalate	24000	U
91-94-1	3,3'-Dichlorobenzidine	24000	U
56-55-3	Benzo(a)anthracene	3200	[illegible]
218-01-9	Chrysene	4100	[illegible]
117-81-7	bis(2-Ethylhexyl)phthalate	2600	[illegible]
117-84-0	Di-n-octylphthalate	24000	U
205-99-2	Benzo(b)fluoranthene	2800	[illegible]
207-08-9	Benzo(k)fluoranthene	2400	[illegible]
50-32-8	Benzo(a)pyrene	3300	[illegible]
193-39-5	Indeno(1,2,3-cd)pyrene	4600	[illegible]
53-70-3	Dibenzo(a,h)anthracene	24000	U
191-24-2	Benzo(g,h,i)perylene	6200	[illegible]

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWY15

Lab Name: ECOLOGY AND ENVIRONMENT, Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: _____ SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 9912043-10B

Sample wt/vol: 1.0 (g/mL) G Lab File ID: K4163

Level: (low/med) MED Date Received: 12/03/99

% Moisture: 58 decanted: (Y/N) N Date Extracted: 12/07/99

Concentrated Extract Volume: 500 (uL) Date Analyzed: 12/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4 Extraction: (Type) SONC

Number TICs found: 1

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	36.88	10000	J
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FORM I SV-TIC OLM04.2

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW62

Lab Name: E & E INC. Contract: 68W99062

L[redacted] Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-11B

Sample wt/vol: 30.8 (g/mL) G Lab File ID:

% Moisture: 22 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/11/99

Injection Volume: 2.00 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 6.9 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	21	U
319-85-7	beta-BHC	[redacted]	[redacted]
319-86-8	delta-BHC	21	U
58-89-9	gamma-BHC (Lindane)	21	U
76-44-8	Heptachlor	21	U
309-00-2	Aldrin	[redacted]	
1024-57-3	Heptachlor epoxide	190	[redacted]
959-98-8	Endosulfan I	21	U
60-57-1	Dieldrin	41	U
72-55-9	4,4'-DDE	99	[redacted]
72-20-8	Endrin	[redacted]	[redacted]
33213-65-9	Endosulfan II	41	U
72-54-8	4,4'-DDD	41	U
1031-07-8	Endosulfan sulfate	[redacted]	[redacted]
50-29-3	4,4'-DDT	41	U
72-43-5	Methoxychlor	[redacted]	[redacted]
53494-70-5	Endrin ketone	41	U
7421-93-4	Endrin aldehyde	41	U
5103-71-9	alpha-Chlordane	21	U
5103-74-2	gamma-Chlordane	[redacted]	
8001-35-2	Toxaphene	2100	U
12674-11-2	Aroclor-1016	410	U
11104-28-2	Aroclor-1221	840	U
11141-16-5	Aroclor-1232	* 410	U
53469-21-9	Aroclor-1242	[redacted]	
12672-29-6	Aroclor-1248	410	U
11097-69-1	Aroclor-1254	410	U
11096-82-5	Aroclor-1260	3000	

[redacted]

FORM I PEST OLM04.2

(273) 1858R

1E
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW63

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-12B

Sample wt/vol: 30.1 (g/mL) G Lab File ID:

% Moisture: 33 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/12/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.5	U
319-85-7	beta-BHC	5.5	[redacted]
319-86-8	delta-BHC	2.5	U
58-89-9	gamma-BHC (Lindane)	2.5	U
76-44-8	Heptachlor	[redacted]	
309-00-2	Aldrin	38	[redacted]
1024-57-3	Heptachlor epoxide	65	
959-98-8	Endosulfan I	2.5	U
60-57-1	Dieldrin	4.9	U
72-55-9	4,4'-DDE	[redacted]	
72-20-8	Endrin	[redacted]	
33213-65-9	Endosulfan II	4.9	U
72-54-8	4,4'-DDD	36	
1031-07-8	Endosulfan sulfate	4.9	U
50-29-3	4,4'-DDT	30	[redacted]
72-43-5	Methoxychlor	25	U
53494-70-5	Endrin ketone	4.9	U
7421-93-4	Endrin aldehyde	21	[redacted]
5103-71-9	alpha-Chlordane	2.5	U
5103-74-2	gamma-Chlordane	13	[redacted]
8001-35-2	Toxaphene	250	U
12674-11-2	Aroclor-1016	49	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	49	U
53469-21-9	Aroclor-1242	220	
12672-29-6	Aroclor-1248	49	U
11097-69-1	Aroclor-1254	49	U
11096-82-5	Aroclor-1260	580	[redacted]

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW64

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-13B

Sample wt/vol: 30.5 (g/mL) G Lab File ID:

% Moisture: 26 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/12/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	17	[illegible]
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	74	
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	26	[redacted]
72-55-9	4,4'-DDE	39	[redacted]
72-20-8	Endrin	4.4	U
33213-65-9	Endosulfan II	4.4	U
72-54-8	4,4'-DDD	4.4	U
1031-07-8	Endosulfan sulfate	4.4	U
50-29-3	4,4'-DDT	4.4	U
72-43-5	Methoxychlor	54	[redacted]
53494-70-5	Endrin ketone	[redacted]	
7421-93-4	Endrin aldehyde	4.4	U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	[redacted]	
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	44	U
11104-28-2	Aroclor-1221	89	U
11141-16-5	Aroclor-1232	44	U
53469-21-9	Aroclor-1242	[redacted]	
12672-29-6	Aroclor-1248	44	U
11097-69-1	Aroclor-1254	44	U
11096-82-5	Aroclor-1260	[redacted]	

* value transferred from dilution run.

FORM I PEST OLM04.2

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW65

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-14B

Sample wt/vol: 30.2 (g/mL) G Lab File ID:

% Moisture: 35 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/21/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	J
319-85-7	beta-BHC	4.5	
319-86-8	delta-BHC	2.6	U
58-89-9	gamma-BHC (Lindane)	2.6	U
76-44-8	Heptachlor	2.6	U
309-00-2	Aldrin	12	[redacted]
1024-57-3	Heptachlor epoxide	36	
959-98-8	Endosulfan I	2.6	U
60-57-1	Dieldrin	5.0	U
72-55-9	4,4'-DDE	12	[redacted]
72-20-8	Endrin	5.0	U
33213-65-9	Endosulfan II	5.0	U
72-54-8	4,4'-DDD	31	[redacted]
1031-07-8	Endosulfan sulfate	5.0	U
50-29-3	4,4'-DDT	19	[redacted]
72-43-5	Methoxychlor	50	[redacted]
53494-70-5	Endrin ketone	5.0	U
7421-93-4	Endrin aldehyde	17	[redacted]
5103-71-9	alpha-Chlordane	[redacted]	[redacted]
5103-74-2	gamma-Chlordane	5.7	
8001-35-2	Toxaphene	260	U
12674-11-2	Aroclor-1016	50	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	50	U
53469-21-9	Aroclor-1242	320	[redacted]
12672-29-6	Aroclor-1248	50	U
11097-69-1	Aroclor-1254	50	U
11096-82-5	Aroclor-1260	610	[redacted]

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW66

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-15B

Sample wt/vol: 30.2 (g/mL) G Lab File ID:

% Moisture: 28 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/12/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	7.2	
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	5.1	[redacted]
1024-57-3	Heptachlor epoxide	16	
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.6	U
72-55-9	4,4'-DDE	9.6	[redacted]
72-20-8	Endrin	[redacted]	
33213-65-9	Endosulfan II	4.6	U
72-54-8	4,4'-DDD	12	[redacted]
1031-07-8	Endosulfan sulfate	4.6	U
50-29-3	4,4'-DDT	[redacted]	
72-43-5	Methoxychlor	75	
53494-70-5	Endrin ketone	4.6	U
7421-93-4	Endrin aldehyde	[redacted]	
5103-71-9	alpha-Chlordane	[redacted]	
5103-74-2	gamma-Chlordane	7.4	
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	46	U
11104-28-2	Aroclor-1221	92	U
11141-16-5	Aroclor-1232	46	U
53469-21-9	Aroclor-1242	53	[redacted]
12672-29-6	Aroclor-1248	46	U
11097-69-1	Aroclor-1254	46	U
11096-82-5	Aroclor-1260	360	

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW67

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-16B

Sample wt/vol: 30.9 (g/mL) G Lab File ID:

% Moisture: 25 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/12/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	4.2	[redacted]
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	U
309-00-2	Aldrin	[redacted]	
1024-57-3	Heptachlor epoxide	33	
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.3	U
72-55-9	4,4'-DDE	[redacted]	
72-20-8	Endrin	4.3	U
33213-65-9	Endosulfan II	4.3	U
72-54-8	4,4'-DDD	21	[redacted]
1031-07-8	Endosulfan sulfate	4.3	U
50-29-3	4,4'-DDT	[redacted]	
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.3	U
7421-93-4	Endrin aldehyde	[redacted]	
5103-71-9	alpha-Chlordane	[redacted]	
5103-74-2	gamma-Chlordane	6.3	
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	43	U
11104-28-2	Aroclor-1221	87	U
11141-16-5	Aroclor-1232	43	U
53469-21-9	Aroclor-1242	100	
12672-29-6	Aroclor-1248	43	U
11097-69-1	Aroclor-1254	43	U
11096-82-5	Aroclor-1260	550	[redacted]

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW68

Lab Name: E & E INC. Contract: 68W99062

L[redacted]Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-17B

Sample wt/vol: 31.0 (g/mL) G Lab File ID:

% Moisture: 33 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/12/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.5 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	14	[redacted]
319-85-7	beta-BHC	6.4	[redacted]
319-86-8	delta-BHC	1.4	[redacted]
58-89-9	gamma-BHC (Lindane)	[redacted]	[redacted]
76-44-8	Heptachlor	2.5	U
309-00-2	Aldrin	16	[redacted]
1024-57-3	Heptachlor epoxide	20	
959-98-8	Endosulfan I	2.5	U
60-57-1	Dieldrin	4.8	U
72-55-9	4,4'-DDE	15	[redacted]
72-20-8	Endrin	4.8	U
33213-65-9	Endosulfan II	4.8	U
72-54-8	4,4'-DDD	53	
1031-07-8	Endosulfan sulfate	4.8	U
50-29-3	4,4'-DDT	86	[redacted]
72-43-5	Methoxychlor	25	U
53494-70-5	Endrin ketone	[redacted]	[redacted]
7421-93-4	Endrin aldehyde	6.4	[redacted]
5103-71-9	alpha-Chlordane	[redacted]	[redacted]
5103-74-2	gamma-Chlordane	8.1	[redacted]
8001-35-2	Toxaphene	250	U
12674-11-2	Aroclor-1016	48	U
11104-28-2	Aroclor-1221	97	U
11141-16-5	Aroclor-1232	48	U
53469-21-9	Aroclor-1242	48	U
12672-29-6	Aroclor-1248	48	U
11097-69-1	Aroclor-1254	48	U
11096-82-5	Aroclor-1260	280	

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW69

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-18B

Sample wt/vol: 30.7 (g/mL) G Lab File ID:

% Moisture: 57 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/12/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	54	[illegible]
319-85-7	beta-BHC	63	[illegible]
319-86-8	delta-BHC	6.5	[illegible]
58-89-9	gamma-BHC (Lindane)	3.2	[illegible]
76-44-8	Heptachlor	3.9	U
309-00-2	Aldrin	29	[illegible]
1024-57-3	Heptachlor epoxide	31	[illegible]
959-98-8	Endosulfan I	3.9	U
60-57-1	Dieldrin	7.5	U
72-55-9	4,4'-DDE	38	[illegible]
72-20-8	Endrin	[illegible]	[illegible]
33213-65-9	Endosulfan II	7.5	U
72-54-8	4,4'-DDD	45	[illegible]
1031-07-8	Endosulfan sulfate	7.5	U
50-29-3	4,4'-DDT	16	[illegible]
72-43-5	Methoxychlor	140	[illegible]
53494-70-5	Endrin ketone	8.0	[illegible]
7421-93-4	Endrin aldehyde	14	[illegible]
5103-71-9	alpha-Chlordane	3.9	U
5103-74-2	gamma-Chlordane	17	[illegible]
8001-35-2	Toxaphene	390	U
12674-11-2	Aroclor-1016	75	U
11104-28-2	Aroclor-1221	150	U
11141-16-5	Aroclor-1232	75	U
53469-21-9	Aroclor-1242	280	[illegible]
12672-29-6	Aroclor-1248	75	U
11097-69-1	Aroclor-1254	75	U
11096-82-5	Aroclor-1260	480	[illegible]

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW70

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-19B

Sample wt/vol: 30.1 (g/mL) G Lab File ID:

% Moisture: 34 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/11/99

Injection Volume: 2.00 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 8.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	26	U
319-85-7	beta-BHC	26	U
319-86-8	delta-BHC	26	U
58-89-9	gamma-BHC (Lindane)	26	U
76-44-8	Heptachlor	26	U
309-00-2	Aldrin	[redacted]	
1024-57-3	Heptachlor epoxide	190	[redacted]
959-98-8	Endosulfan I	26	U
60-57-1	Dieldrin	50	U
72-55-9	4,4'-DDE	120	
72-20-8	Endrin	[redacted]	[redacted]
33213-65-9	Endosulfan II	50	U
72-54-8	4,4'-DDD	[redacted]	[redacted]
1031-07-8	Endosulfan sulfate	[redacted]	[redacted]
50-29-3	4,4'-DDT	50	U
72-43-5	Methoxychlor	[redacted]	[redacted]
53494-70-5	Endrin ketone	50	U
7421-93-4	Endrin aldehyde	50	U
5103-71-9	alpha-Chlordane	26	U
5103-74-2	gamma-Chlordane	[redacted]	
8001-35-2	Toxaphene	2600	U
12674-11-2	Aroclor-1016	500	U
11104-28-2	Aroclor-1221	1000	U
11141-16-5	Aroclor-1232	* 500	U
53469-21-9	Aroclor-1242	[redacted]	
12672-29-6	Aroclor-1248	500	U
11097-69-1	Aroclor-1254	500	U
11096-82-5	Aroclor-1260	3000	

* Value transferred from dilution run

FORM I PEST OLM04.2

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1E
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWW76

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) WATER Lab Sample ID: 12043-01C

Sample wt/vol: 1000 (g/mL) ML Lab File ID:

% Moisture: decanted: (Y/N) Date Received: 12/03/99

Extraction: (Type) SEPF Date Extracted: 12/06/99

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 12/09/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	1.8	[illegible]
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

282 2136R

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWX88

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12061-01B

Sample wt/vol: 30.6 (g/mL) G Lab File ID:

% Moisture: 17 decanted: (Y/N) N Date Received: 12/07/99

Extraction: (Type) SONC Date Extracted: 12/09/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/12/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.4 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	8.9	
319-85-7	beta-BHC	16	
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.0	U
309-00-2	Aldrin	[illegible]	
1024-57-3	Heptachlor epoxide	15	
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	3.9	U
72-55-9	4,4'-DDE	[illegible]	
72-20-8	Endrin	6.5	
33213-65-9	Endosulfan II	3.9	U
72-54-8	4,4'-DDD	120	
1031-07-8	Endosulfan sulfate	3.9	U
50-29-3	4,4'-DDT	170	
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	3.9	U
7421-93-4	Endrin aldehyde	3.9	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	2.0	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	39	U
11104-28-2	Aroclor-1221	79	U
11141-16-5	Aroclor-1232	39	U
53469-21-9	Aroclor-1242	39	U
12672-29-6	Aroclor-1248	39	U
11097-69-1	Aroclor-1254	39	U
11096-82-5	Aroclor-1260	39	U

283 2146R

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY07

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-02B

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 65 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/10/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	4.9	U
319-85-7	beta-BHC	4.9	U
319-86-8	delta-BHC	4.9	U
58-89-9	gamma-BHC (Lindane)	4.9	U
76-44-8	Heptachlor	4.9	U
309-00-2	Aldrin	14	
1024-57-3	Heptachlor epoxide	6.3	
959-98-8	Endosulfan I	4.9	U
60-57-1	Dieldrin	9.4	U
72-55-9	4,4'-DDE	9.4	U
72-20-8	Endrin	9.4	U
33213-65-9	Endosulfan II	9.4	U
72-54-8	4,4'-DDD	9.4	U
1031-07-8	Endosulfan sulfate	9.4	U
50-29-3	4,4'-DDT	9.4	U
72-43-5	Methoxychlor	49	U
53494-70-5	Endrin ketone	9.4	U
7421-93-4	Endrin aldehyde	9.4	U
5103-71-9	alpha-Chlordane	4.9	U
5103-74-2	gamma-Chlordane	4.9	U
8001-35-2	Toxaphene	490	U
12674-11-2	Aroclor-1016	94	U
11104-28-2	Aroclor-1221	190	U
11141-16-5	Aroclor-1232	94	U
53469-21-9	Aroclor-1242	94	U
12672-29-6	Aroclor-1248	94	U
11097-69-1	Aroclor-1254	94	U
11096-82-5	Aroclor-1260	94	U

284 2162R

1E
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY08

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-03B

Sample wt/vol: 30.2 (g/mL) G Lab File ID:

% Moisture: 27 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/11/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.3	U
319-85-7	beta-BHC	2.3	U
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	2.3	U
309-00-2	Aldrin	2.3	U
1024-57-3	Heptachlor epoxide	12	[redacted]
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.5	U
72-55-9	4,4'-DDE	4.6	[redacted]
72-20-8	Endrin	4.5	U
33213-65-9	Endosulfan II	4.5	U
72-54-8	4,4'-DDD	5.0	[redacted]
1031-07-8	Endosulfan sulfate	4.5	U
50-29-3	4,4'-DDT	11	[redacted]
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	4.5	U
7421-93-4	Endrin aldehyde	4.5	U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	[redacted]	
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	45	U
11104-28-2	Aroclor-1221	91	U
11141-16-5	Aroclor-1232	45	U
53469-21-9	Aroclor-1242	45	U
12672-29-6	Aroclor-1248	45	U
11097-69-1	Aroclor-1254	45	U
11096-82-5	Aroclor-1260	180	[redacted]

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1E
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY09

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-04B

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 39 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/10/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.8	U
319-85-7	beta-BHC	2.8	U
319-86-8	delta-BHC	2.8	U
58-89-9	gamma-BHC (Lindane)	2.8	U
76-44-8	Heptachlor	2.8	U
309-00-2	Aldrin	2.8	U
1024-57-3	Heptachlor epoxide	2.8	U
959-98-8	Endosulfan I	2.8	U
60-57-1	Dieldrin	5.4	U
72-55-9	4,4'-DDE	5.4	U
72-20-8	Endrin	5.4	U
33213-65-9	Endosulfan II	5.4	U
72-54-8	4,4'-DDD	5.4	U
1031-07-8	Endosulfan sulfate	5.4	U
50-29-3	4,4'-DDT	5.4	U
72-43-5	Methoxychlor	28	U
53494-70-5	Endrin ketone	5.4	U
7421-93-4	Endrin aldehyde	5.4	U
5103-71-9	alpha-Chlordane	2.8	U
5103-74-2	gamma-Chlordane	2.8	U
8001-35-2	Toxaphene	280	U
12674-11-2	Aroclor-1016	54	U
11104-28-2	Aroclor-1221	110	U
11141-16-5	Aroclor-1232	54	U
53469-21-9	Aroclor-1242	54	U
12672-29-6	Aroclor-1248	54	U
11097-69-1	Aroclor-1254	54	U
11096-82-5	Aroclor-1260	54	U

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY10

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-05B

Sample wt/vol: 30.2 (g/mL) G Lab File ID:

% Moisture: 57 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/10/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3.9	U
319-85-7	beta-BHC	3.9	U
319-86-8	delta-BHC	3.9	U
58-89-9	gamma-BHC (Lindane)	3.9	U
76-44-8	Heptachlor	3.9	U
309-00-2	Aldrin	[illegible]	[illegible]
1024-57-3	Heptachlor epoxide	3.9	U
959-98-8	Endosulfan I	3.9	U
60-57-1	Dieldrin	7.6	U
72-55-9	4,4'-DDE	7.6	U
72-20-8	Endrin	7.6	U
33213-65-9	Endosulfan II	7.6	U
72-54-8	4,4'-DDD	7.6	U
1031-07-8	Endosulfan sulfate	7.6	U
50-29-3	4,4'-DDT	7.6	U
72-43-5	Methoxychlor	39	U
53494-70-5	Endrin ketone	7.6	U
7421-93-4	Endrin aldehyde	7.6	U
5103-71-9	alpha-Chlordane	3.9	U
5103-74-2	gamma-Chlordane	3.9	U
8001-35-2	Toxaphene	390	U
12674-11-2	Aroclor-1016	76	U
11104-28-2	Aroclor-1221	150	U
11141-16-5	Aroclor-1232	76	U
53469-21-9	Aroclor-1242	76	U
12672-29-6	Aroclor-1248	76	U
11097-69-1	Aroclor-1254	76	U
11096-82-5	Aroclor-1260	76	U

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1E
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY11

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-06B

Sample wt/vol: 30.2 (g/mL) G Lab File ID:

% Moisture: 55 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/20/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.7 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	33	
319-85-7	beta-BHC	140	
319-86-8	delta-BHC	3.8	U
58-89-9	gamma-BHC (Lindane)	3.8	U
76-44-8	Heptachlor	[illegible]	
309-00-2	Aldrin	[illegible]	
1024-57-3	Heptachlor epoxide	120	
959-98-8	Endosulfan I	3.8	U
60-57-1	Dieldrin	59	
72-55-9	4,4'-DDE	[illegible]	
72-20-8	Endrin	7.3	U
33213-65-9	Endosulfan II	7.3	U
72-54-8	4,4'-DDD	130	
1031-07-8	Endosulfan sulfate	7.3	U
50-29-3	4,4'-DDT	[illegible]	
72-43-5	Methoxychlor	210	
53494-70-5	Endrin ketone	7.3	U
7421-93-4	Endrin aldehyde	7.3	U
5103-71-9	alpha-Chlordane	3.8	U
5103-74-2	gamma-Chlordane	[illegible]	
8001-35-2	Toxaphene	380	U
12674-11-2	Aroclor-1016	73	U
11104-28-2	Aroclor-1221	150	U
11141-16-5	Aroclor-1232	73	U
53469-21-9	Aroclor-1242	[illegible]	
12672-29-6	Aroclor-1248	73	U
11097-69-1	Aroclor-1254	* 73	U
11096-82-5	Aroclor-1260	[illegible]	

* values transferred from diluted run

FORM I PEST OLM04.2

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY12

Lab Name: E & E INC. Contract: 68W99062

L[redacted]Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-07B

Sample wt/vol: 31.0 (g/mL) G Lab File ID:

% Moisture: 28 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/20/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.5 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	9.4	[redacted]
319-85-7	beta-BHC	12	[redacted]
319-86-8	delta-BHC	2.3	U
58-89-9	gamma-BHC (Lindane)	2.3	U
76-44-8	Heptachlor	44	[redacted]
309-00-2	Aldrin	[redacted]	
1024-57-3	Heptachlor epoxide	14	[redacted]
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	[redacted]	
72-55-9	4,4'-DDE	30	[redacted]
72-20-8	Endrin	50	[redacted]
33213-65-9	Endosulfan II	4.4	U
72-54-8	4,4'-DDD	4.4	U
1031-07-8	Endosulfan sulfate	4.4	U
50-29-3	4,4'-DDT	4.4	U
72-43-5	Methoxychlor	99	
53494-70-5	Endrin ketone	4.4	U
7421-93-4	Endrin aldehyde	170	[redacted]
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	26	[redacted]
8001-35-2	Toxaphene	230	U
12674-11-2	Aroclor-1016	44	U
11104-28-2	Aroclor-1221	90	U
11141-16-5	Aroclor-1232	44	U
53469-21-9	Aroclor-1242	970	
12672-29-6	Aroclor-1248	44	U
11097-69-1	Aroclor-1254	44	U
11096-82-5	Aroclor-1260	[redacted]	[redacted]

* value transferred from dilution run.

FORM I PEST OLM04.2

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2232R

1E
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY13

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-08B

Sample wt/vol: 30.4 (g/mL) G Lab File ID:

% Moisture: 36 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/12/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.8 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	12	
319-85-7	beta-BHC	15	
319-86-8	delta-BHC	1.7	J
58-89-9	gamma-BHC (Lindane)	2.6	U
76-44-8	Heptachlor	8.3	
309-00-2	Aldrin	14	
1024-57-3	Heptachlor epoxide	15	~~J~~
959-98-8	Endosulfan I	2.6	U
60-57-1	Dieldrin	5.1	U
72-55-9	4,4'-DDE	26	
72-20-8	Endrin	[illegible]	~~JP U~~
33213-65-9	Endosulfan II	5.1	U
72-54-8	4,4'-DDD	62	
1031-07-8	Endosulfan sulfate	5.1	U
50-29-3	4,4'-DDT	~~9.5~~	~~P Q~~
72-43-5	Methoxychlor	38	~~P J~~
53494-70-5	Endrin ketone	5.1	U
7421-93-4	Endrin aldehyde	~~5.1~~	~~JP U~~
5103-71-9	alpha-Chlordane	2.6	U
5103-74-2	gamma-Chlordane	17	
8001-35-2	Toxaphene	260	U
12674-11-2	Aroclor-1016	51	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	51	U
53469-21-9	Aroclor-1242	260	
12672-29-6	Aroclor-1248	51	U
11097-69-1	Aroclor-1254	51	U
11096-82-5	Aroclor-1260	410	

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY14

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-09B

Sample wt/vol: 30.3 (g/mL) G Lab File ID:

% Moisture: 42 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/12/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.7 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	12	
319-85-7	beta-BHC	15	
319-86-8	delta-BHC	1.6	~~UP J~~
58-89-9	gamma-BHC (Lindane)	2.9	U
76-44-8	Heptachlor	2.9	U
309-00-2	Aldrin	23	~~P J~~
1024-57-3	Heptachlor epoxide	22	~~P J~~
959-98-8	Endosulfan I	2.9	U
60-57-1	Dieldrin	22	~~P J~~
72-55-9	4,4'-DDE	5.6	U
72-20-8	Endrin	~~5.6 2.8~~	~~JPU~~
33213-65-9	Endosulfan II	~~5.6 1.5~~	~~JPU~~
72-54-8	4,4'-DDD	52	
1031-07-8	Endosulfan sulfate	5.6	U
50-29-3	4,4'-DDT	~~9.8~~	~~P R~~
72-43-5	Methoxychlor	35	~~P U~~
53494-70-5	Endrin ketone	5.6	U
7421-93-4	Endrin aldehyde	~~7.6~~	~~P R~~
5103-71-9	alpha-Chlordane	2.9	U
5103-74-2	gamma-Chlordane	26	~~P JN~~
8001-35-2	Toxaphene	290	U
12674-11-2	Aroclor-1016	56	U
11104-28-2	Aroclor-1221	110	U
11141-16-5	Aroclor-1232	56	U
53469-21-9	Aroclor-1242	410	
12672-29-6	Aroclor-1248	56	U
11097-69-1	Aroclor-1254	56	U
11096-82-5	Aroclor-1260	560	

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWY15

Lab Name: E & E INC. Contract: 68W99062

Lab Code: EANDE Case No.: 27633 SAS No.: SDG No.: BWW62

Matrix: (soil/water) SOIL Lab Sample ID: 12043-10B

Sample wt/vol: 30.1 (g/mL) G Lab File ID:

% Moisture: 59 decanted: (Y/N) N Date Received: 12/03/99

Extraction: (Type) SONC Date Extracted: 12/07/99

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 12/12/99

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.4 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	19	
319-85-7	beta-BHC	31	
319-86-8	delta-BHC	4.1	U
58-89-9	gamma-BHC (Lindane)	4.1	U
76-44-8	Heptachlor	4.1	U
309-00-2	Aldrin	27	
1024-57-3	Heptachlor epoxide	28	
959-98-8	Endosulfan I	4.1	U
60-57-1	Dieldrin	8.0	U
72-55-9	4,4'-DDE	33	
72-20-8	Endrin	8.0	U
33213-65-9	Endosulfan II	8.0	U
72-54-8	4,4'-DDD	81	
1031-07-8	Endosulfan sulfate	8.0	U
50-29-3	4,4'-DDT	8.7	
72-43-5	Methoxychlor	45	
53494-70-5	Endrin ketone	13	
7421-93-4	Endrin aldehyde	13	
5103-71-9	alpha-Chlordane	8.7	
5103-74-2	gamma-Chlordane	22	
8001-35-2	Toxaphene	410	U
12674-11-2	Aroclor-1016	80	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	80	U
53469-21-9	Aroclor-1242	320	
12672-29-6	Aroclor-1248	80	U
11097-69-1	Aroclor-1254	80	U
11096-82-5	Aroclor-1260	730	

292

2324R

REFERENCE 9

REPORT
FOR
HARBOR CONSULTANTS, INC.
ATTN: MR. VICTOR VINEGRA, PRES.
444 PINE AVE.
GARWOOD, NJ 07027

TO CONDUCT A NON-TIDAL WETLAND DELINEATION ON A TRACT DESIGNATED AS: BLOCK 294, LOTS 3,15 AND 14, KEARNY, NJ.

PREPARED BY:
NOVA CONSULTANTS LTD.
251 BURGUNDY LANE
NEWTOWN, PA 18940

JOHN F. SZCZEPANSKI, PHD.
PRINCIPAL INVESTIGATOR/PRESIDENT

SEPTEMBER 1990

TEST PROCEDURE

NOVA CONSULTANTS LTD.

TEST PROCEDURES TO DETERMINE WETLAND BOUNDARIES

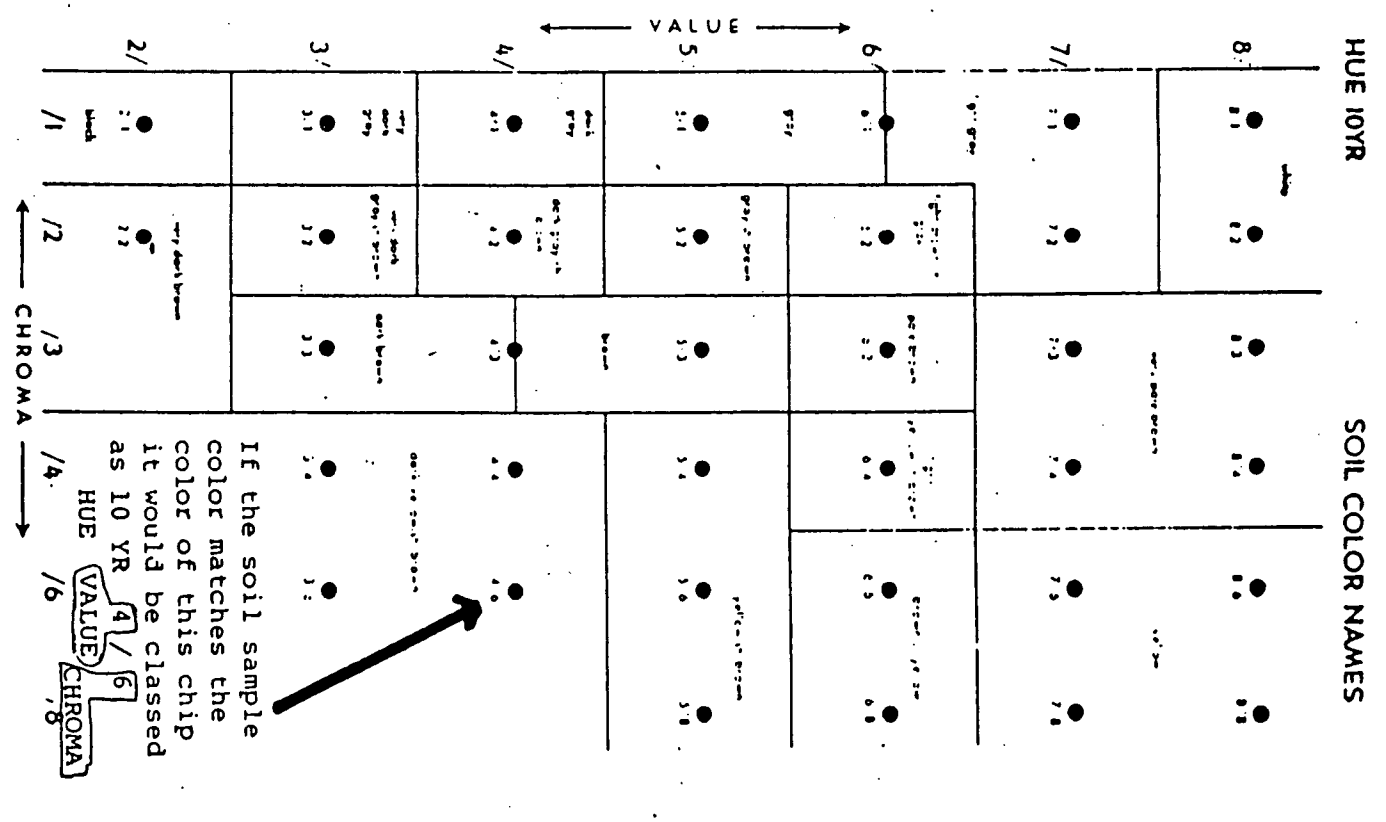
Tests are made by making soil borings and determining plant identities in the vicinity of each hole.

Soil borings are made at many locations where the wetlands boundaries appear to be located. The borings are from 12 inches to 3 feet. Three tests are applied at each soil boring site:
(1) A soil color test including water table depth usually at a depth of 18-24 inches which is the depth range compliance utilized by the U.S. Army Corp of Engineers and the N.J.D.E.P.Bureau of Freshwater Wetlands.
(2) The hydric or non-hydric classification of the soil is checked in the field against type as mapped in the USDA Soil Conservation Service's County Survey.
(3) A hydric classification of all plants within 10 ft. of each soil boring site.

(1) SOIL

The Munsell Color Charts comprise a series of 9 cards with a total of 199 chips of intergrading colors. The soil color notation is developed as a three parameter system of HUE, VALUE and CHROMA.

The HUE notation is taken from the one of the nine cards used. The 20-30 color chips on each card are numbered in a vertical/horizontal grid. The vertically numbered rows of chips constitute the VALUE while the horizontally numbered rows of chips become the CHROMA. See sample below.



(2) HYDRIC SOIL CLASSIFICATION

Soils in most counties are mapped by the U.S.D.A. Soil Conservation Service and displayed on aerial photo maps produced for each county. Wetlands are classified and displayed as overlays of U.S.G. quadrangles; these are produced for the National Wetlands Inventory. Each soil type has been assigned a hydric status by the National Wetlands Inventory staff. The hydric soil class thus forms the third parameter used for wetland delineation. Hydric/non-hydric soil data are also shown in Table I.

(3) HYDRIC PLANT TEST

A hydric plant classification was produced with the U.S. Fish and Wildlife Service's Wetlands Inventory. The hydric or non-hydric status of each plant is one of the significant factors in determining wetland boundaries. These data are shown in Table II. The symbols used for hydric plant status are listed below.

OBL	Obligate wetland plant-always wetland
FAC-W	Facultative wetland plant-more commonly wetland
FAC	Facultative-wet or dry
FAC-U	Facultative wetland plant-more commonly upland
UPL	Upland plant-never wetland
N/C	Not classified-listed but not yet classified; may or may not be hydric

The wetland status of any location is determined as a combination of the Munsell hue/value/chroma rating, the hydric plant classification and the hydric/non-hydric soil classification and is shown on the data pages of Tables I and II. The summary page following provides the general determination.

Frequency of occurrence in wetland versus nonwetland across the entire distribution of the species. A frequency, for example, of 67%-99% (Facultative Wetland) means that 67%-99% of all individuals of a species that occur in an area occur in wetlands. A question mark following the indicator denotes a tentative assignment based upon the botanical literature and not confirmed by regional review. When two indicators are given, they reflect the range from the lowest to the highest frequency of occurrence in wetlands across the regions in which the species is found.

Obligate (OBL). Always found in wetlands under natural (not planted) conditions (frequency greater than 99%), but may persist in nonwetlands if planted there by man or in wetlands that have been drained, filled, or otherwise transformed into nonwetlands.

Facultative Wetland (FACW). Usually found in wetlands (67%-99% frequency), but occasionally found in nonwetlands.

Facultative (FAC). Sometimes found in wetlands (34%-66% frequency), but also occurs in nonwetlands.

Facultative Upland (FACU). Seldom found in wetlands (1%-33% frequency) and usually occurs in nonwetlands.

Nonwetland (UPL). Occurs in wetlands in another region, but not found (<1% frequency) in wetlands in the region specified. If a species does not occur in wetlands in any region, it is not on the list.

Drawdown (DRA). Typically associated with the drier stages of wetlands, such as mud flats, vernal pools, and playa lakes.

WETLAND DETERMINATION

NOVA CONSULTANTS LTD.

DATA FORM

ROUTINE ONSITE DETERMINATION METHOD

Boring# 1

Invesigator(s): JFS/BB — Date:6-21-90

ct/site:TOWN OF KEARNY — State: NJ County:HUDSON

pplicant: — Plant Community: FALLOW FIELD

o normal environmental conditions exist at the plant community?
es No X PREVIOUS CONSTRUCTION FILL
las the vegetation, soils and/or hydrology been significantly disturbed?
es X No PREVIOUS FILL ACTIVITIES

==========

VEGETATION

ominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
.PHRAGMITES AUSTRALIS	FACW	HERB	11.			
.AMBROSIA ARTEMISIIFOLIA	FACU	"	12.			
.POLYGONUM PENSYLVANICUM	FACW	"	13.			
.MELILOTUS OFFICINALIS	NL	"	14.			
.ARTEMISIA VULGARIS	FACU	"	15.			
.THLASPI ARVENSE	NL	"	16.			
.LEPIDIUM CAMPESTRE	NL	"	17.			
.			18.			
.			19.			
0.			20.			

ercent of dominant species that are OBL,FAC and/or FAC: 28%
s the hydrophytic vegetation criterion met? Yes No X
ationale:FILL AREA CONTAINING UNCONSOLIDATED

==========

SOILS

Boring depth: 12"

eries/phase: UNCONSOLIDATED FILL MATERIAL Subgroup:UNKNOWN ORIGIN
s the soil on the hydric soils list? Yes No X Undetermined
s the soil a histosol? Yes No X Histic epipedon present? Yes No X
s the soil: Mottled? Yes No X Gleyed? Yes No X
atrix Color: 5YR 4/4 Mottle Colors: NONE OBSERVED
ther hydric soil indicators: NONE
s the hydric soil criterion met? Yes No X
ationale:

==========

HYDROLOGY

s the ground surface inundated? Yes No X Surface water depth:NONE OBSERVED
s the soil saturated? Yes No X
epth to free-standing water in pit/soil probe hole:NONE OBSERVED
ist other field evidence of surface inundation or soil saturation:NO BSERVED EVIDENCE
s the wetland hydrology criterion met? Yes No X
ationale:NO OBSERVED EVIDENCE

==========

JURISDICTIONAL DETERMINATION AND RATIONALE

the plant community a wetland? Yes No X
ale for jurisdictional decision:FALLOW FIELD CONTAINING OLD CONSTRUCTION IL. NCONSOLIDATED UPLAND CONDITIONS

NOVA CONSULTANTS LTD.

DATA FORM

ROUTINE ONSITE DETERMINATION METHOD

Boring# 2

ld Invesigator(s): Date:

ct/site: State: County:

plicant: Plant Community:FALLOW FIELD

normal environmental conditions exist at the plant community?
s X No PREVIOUS CONSTRUCTION FILL
s the vegetation, soils and/or hydrology been significantly disturbed?
s X No PREVIOUS CONSTRUCTION FILL

==========

VEGETATION

Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
SIMILAR TO B-1			11.			
			12.			
			13.			
			14.			
			15.			
			16.			
			17.			
			18.			
			19.			
			20.			

rcent of dominant species that are OBL,FAC and/or FAC: 28%
the hydrophytic vegetation criterion met? Yes No X
tionale:UPLAND FILL AREA

==========

SOILS

Boring depth: 18"

ries/phase: ALLUVIAL LAND Subgroup:UNKNOWN ORIGIN
the soil on the hydric soils list? Yes No X Undetermined
the soil a histosol? Yes No X Histic epipedon present? Yes No X
the soil: Mottled? Yes X No Gleyed? Yes X No
trix Color: 10YR 6/2 Mottle Colors: 10YR 5/1
her hydric soil indicators: NONE
the hydric soil criterion met? Yes No X
tionale:IMPERMEABLE MATERIAL AT 18", CONSTRUCTION FILL MATERIAL

==========

HYDROLOGY

the ground surface inundated? Yes X No Surface water depth:INTERMIT-
the soil saturated? Yes X No TENT VARYING
pth to free-standing water in pit/soil probe hole:18"
st other field evidence of surface inundation or soil saturation:INTERMIT-
NT PONDING
the wetland hydrology criterion met? Yes No X
tionale:

==========

JURISDICTIONAL DETERMINATION AND RATIONALE

the plant community a wetland? Yes X No
ionale for jurisdictional decision:DISTRUBED AREA OF ORIGINAL MARSH LIKE
NS' CTION FILL AREA EXCAVATED AT DELINEATED WETLAND LINE.

NOVA CONSULTANTS LTD.

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD

Boring# 3

Field Invesigator(s): Date:
Project/site: State: County:
Applicant: Plant Community: FILL MARSH ECOTONE

Do normal environmental conditions exist at the plant community?
Yes No X
Has the vegetation, soils and/or hydrology been significantly disturbed?
Yes X No PREVIOUS BORDER OF CONSTRUCTION FILL

==========

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1.POPULUS DELTOIDES	FAC	TREE	11.		
2.AMBROSIA ARTEMISIIFOLIA	FACU	HERB	12.		
3.POLYGONUM PENSYLVANICUM	FACW	"	13.		
4.SOLIDAGO ALTISSIMA	FACU-	"	14.		
5.PHRAGMITES AUSTRALIS	FACW	"	15.		
6.ARTEMISIA VULGARIS	FACU	"	16.		
7.THASPI ARVENSE	NL	"	17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL,FAC and/or FAC: 42%
Is the hydrophytic vegetation criterion met? Yes No X
Rationale:PEM/FILL AREA ALONG ORIGINAL MARSH AREA PROBLEM WETLAND SITUATION

==========

SOILS

Boring depth: 18"
Series/phase: MUCK ALLUVIAL LAND Subgroup:UNKNOWN ORIGIN
Is the soil on the hydric soils list? Yes No X Undetermined
Is the soil a histosol? Yes X No Histic epipedon present? Yes No X
Is the soil: Mottled? Yes No X Gleyed? Yes No X
Matrix Color: 7.5YR 3/0 Mottle Colors: NONE OBSERVED
Other hydric soil indicators: NONE
Is the hydric soil criterion met? Yes X No
Rationale:HISTOSOLIC CONDITIONS

==========

HYDROLOGY

Is the ground surface inundated? Yes No X Surface water depth:NONE OBSERVED
Is the soil saturated? Yes X No
Depth to free-standing water in pit/soil probe hole:18"
List other field evidence of surface inundation or soil saturation:INTERMITTENT SURFACE PONDING/RUNOFF
Is the wetland hydrology criterion met? Yes X No
Rationale:HYDRIC SOIL CONDITIONS WITHIN ORIGINAL AREA OF MARSH WETLAND DRAINAGE PATTERN

==========

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No
Rationale for jurisdictional decision: INTERMITTENT DRAINAGE AREA ADJACENT TO [illegible]M

NOVA CONSULTANTS LTD.

DATA FORM

ROUTINE ONSITE DETERMINATION METHOD

Boring# 4

eld Invesigator(s): bl

Date:

ject/site:

State: County:

Applicant:

Plant Community:PEM

Do normal environmental conditions exist at the plant community?
Yes X No

Has the vegetation, soils and/or hydrology been significantly disturbed?
Yes X No

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1.PHRAGMITES AUSTRALIS	FACW	HERB	11.		
2.ALLIARIA PETIOLATA	NR	"	12.		
3.POLYGONUM PENSYLVANICUM	FACW	"	13.		
4.AMBROSIA ARTEMISIIFOLIA	FACU	"	14.		
5.ARTEMISIA VULGARIS	FACU	"	15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL,FAC and/or FAC: 40%

Is the hydrophytic vegetation criterion met? Yes No X

Rationale:PEM FRINGE AREA OF POW MARSH AREA

SOILS

Boring depth: 16"

Series/phase: MUCK ALLUVIAL LAND

Subgroup:UNKNOWN ORIGIN

Is the soil on the hydric soils list? Yes No X Undetermined

Is the soil a histosol? Yes X No Histic epipedon present? Yes No X

Is the soil: Mottled? Yes No X Gleyed? Yes No X

Matrix Color: 7.5YR 3/0 Mottle Colors: NONE OBSERVED

Other hydric soil indicators: NONE

Is the hydric soil criterion met? Yes No X

Rationale:HISTOSOLIC ALLUVIAL DEPOSIT

HYDROLOGY

Is the ground surface inundated? Yes X No Surface water depth:VARYING

Is the soil saturated? Yes X No

Depth to free-standing water in pit/soil probe hole:12"

List other field evidence of surface inundation or soil saturation:HYDRIC SOIL CONDITION

Is the wetland hydrology criterion met? Yes X No

Rationale:WETLAND DRAINAGE PATTERN

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No

Rationale for jurisdictional decision: PEM/POW ECOTONE ALONG BANK OF DELINEATED WETLAND AREA.

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DATA FORM
ROUTINE ONSITE DETERMINATION METHOD

Boring# 5

d Invesigator(s): Date:
ct/site: State: County:
Applicant: Plant Community: FALLOW FIELD

Do normal environmental conditions exist at the plant community?
Yes No X
Has the vegetation, soils and/or hydrology been significantly disturbed?
Yes X No PREVIOUS FILL AREA

==========

VEGETATION

Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1.PHRAGMITES AUSTRALIS	FACW	HERB	11.			
2.AMBROSIA ARTEMISIIFOLIA	FACU	"	12.			
3.ARTEMISIA VULGARIS	FACU	"	13.			
4.			14.			
5.			15.			
6.			16.			
7.			17.			
8.			18.			
9.			19.			
10.			20.			

Percent of dominant species that are OBL,FAC and/or FAC: 33%
Is the hydrophytic vegetation criterion met? Yes No X
Rationale:UPLAND FILL AREA ALONG TOE OF DRAINAGE DITCH

==========

SOILS

Boring depth: 12"
Series/phase: UNCONSOLIDATED FILL MATERIAL Subgroup:UNKNOWN ORIGIN
Is the soil on the hydric soils list? Yes No Undetermined X
Is the soil a histosol? Yes No X Histic epipedon present? Yes No X
Is the soil: Mottled? Yes No X Gleyed? Yes No X
Matrix Color: 10YR 5/4 Mottle Colors: NONE OBSERVED
Other hydric soil indicators: NONE
Is the hydric soil criterion met? Yes No X
Rationale:UNCONSOLIDATED CONSTRUCTION MATERIAL CONCRETE AT 13"

==========

HYDROLOGY

Is the ground surface inundated? Yes No X Surface water depth:NONE OBSERVED
Is the soil saturated? Yes No X
Depth to free-standing water in pit/soil probe hole:NONE
List other field evidence of surface inundation or soil saturation:NONE

Is the wetland hydrology criterion met? Yes No X
Rationale:NO OBSERVED EVIDENCE

==========

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes No X
Rationale for jurisdictional decision:UPLAND BANK AREA OF FILL MATERIAL
ADJACENT TO A DRAINAGE DITCH

NOVA CONSULTANTS LTD.

DATA FORM

ROUTINE ONSITE DETERMINATION METHOD

Boring# 6

ld Invesigator(s): Date:

ject/site: State: County:

Applicant: Plant Community:DRAINAGE DITCH

Do normal environmental conditions exist at the plant community?
Yes No X

Has the vegetation, soils and/or hydrology been significantly disturbed?
Yes X No PREVIOUS FILL AND EXCAVATION

==========

VEGETATION

Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1.POPULUS DELTOIDES	FAC	SAPLING	11.			
2.PHRAGMITES AUSTRALIS	FACW	HERB	12.			
3.ARTEMISIA VULGARIS	FACU	"	13.			
4.SOLIDAGO ALTISSIMA	FACU-	"	14.			
5.			15.			
6.			16.			
7.			17.			
8.			18.			
9.			19.			
10.			20.			

Percent of dominant species that are OBL,FAC and/or FAC: 50%

Is the hydrophytic vegetation criterion met? Yes X No

Rationale:PEM1 HABITAT CONDITIONS

==========

SOILS

Boring depth: 16"

Series/phase: ALLUVIAL LAND Subgroup:UNKNOWN ORIGIN

Is the soil on the hydric soils list? Yes No Undetermined X

Is the soil a histosol? Yes X No Histic epipedon present? Yes No X

Is the soil: Mottled? Yes No X Gleyed? Yes No X

Matrix Color: 7.5YR 3/0 Mottle Colors: NONE OBSERVED

Other hydric soil indicators: NONE

Is the hydric soil criterion met? Yes X No

Rationale:HISTOSOLIC ALLUVIAL DEPOSITION

==========

HYDROLOGY

Is the ground surface inundated? Yes X No Surface water depth:VARYING/ INTERMITTENT

Is the soil saturated? Yes X No

Depth to free-standing water in pit/soil probe hole:IMMEDIATE

List other field evidence of surface inundation or soil saturation:HYDRIC SOIL CONDITIONS

Is the wetland hydrology criterion met? Yes X No

Rationale:WETLAND DRAINAGE PATTERN

==========

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No

Rationale for jurisdictional decision: PEM1 HABITAT CONDITIONS WITHIN LINEAR DRAINAGE DITCH AREA PARALLELLING THE SOUTHERLY BOUNDARY

NOVA CONSULTANTS LTD.

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD

Boring# 7

d Invesigator(s): Date:
ct/site: State: County:
Applicant: Plant Community:DRAINAGE AREA MARSH

Do normal environmental conditions exist at the plant community?
Yes No X
Has the vegetation, soils and/or hydrology been significantly disturbed?
Yes X No PREVIOUS CONSTRUCTING FILL R.O.W. MAINTENANCE

==========

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1.PHRAGMITES AUSTRALIS	FACW	HERB	11.		
2.			12.		
3.			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL,FAC and/or FAC: 99%
Is the hydrophytic vegetation criterion met? Yes X No
Rationale:PEM1 HABITAT SUBSYSTEM

==========

SOILS

Boring depth: 10"
Series/phase:MUCK ALLUVIAL LANDS Subgroup:UNKNOWN ORIGIN
Is the soil on the hydric soils list? Yes No Undetermined X
Is the soil a histosol? Yes X No Histic epipedon present? Yes No X
Is the soil: Mottled? Yes No X Gleyed? Yes No X
Matrix Color: 7.5YR 3/0 Mottle Colors: NONE OBSERVED
Other hydric soil indicators: NONE
Is the hydric soil criterion met? Yes X No
Rationale:HISTOSOLIC DEPOSITION

==========

HYDROLOGY

Is the ground surface inundated? Yes X No Surface water depth:VARYING
Is the soil saturated? Yes X No INTERMITTENT
Depth to free-standing water in pit/soil probe hole:IMMEDIATE
List other field evidence of surface inundation or soil saturation:HYDRIC SOIL CONDITIONS
Is the wetland hydrology criterion met? Yes X No
Rationale: WETLAND DRAINAGE PATTERN

==========

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No
Rationale for jurisdictional decision: PEM1 HABITAT CONDITIONS WITHIN A DRAINAGE DITCH AREA, FILL BOTH BANKS

NOVA CONSULTANTS LTD.

DATA FORM

ROUTINE ONSITE DETERMINATION METHOD

Boring# 8

eld Invesigator(s): Date:

oject/site: State: County:

Applicant: Plant Community: FALLOW FIELD

Do normal environmental conditions exist at the plant community?
Yes No X

Has the vegetation, soils and/or hydrology been significantly disturbed?
Yes X No PREVIOUS UNCONSOLIDATED FILL CONDITION

==========

VEGETATION

Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1. ROSA MULTIFLORA	FACU	SHRUB	11.			
2. AMBROSIA ARTEMISIIFOLIA	FACU	HERB	12.			
3. PHRAGMITES AUSTRALIS	FACW	"	13.			
4. ARTEMISIA VULGARIS	FACU	"	14.			
5.			15.			
6.			16.			
7.			17.			
8.			18.			
9.			19.			
10.			20.			

Percent of dominant species that are OBL,FAC and/or FAC: 25%

Is the hydrophytic vegetation criterion met? Yes No X

Rationale: UPLAND AREA OF FILL ABOVE PEM CONDITION

==========

SOILS

Boring depth: 10"

Series/phase: UNCONSOLIDATED FILL Subgroup: UNKNOWN ORIGIN

Is the soil on the hydric soils list? Yes No Undetermined X

Is the soil a histosol? Yes No X Histic epipedon present? Yes No X

s the soil: Mottled? Yes No X Gleyed? Yes No X

atrix Color: 7.5YR 5/6 Mottle Colors: NONE OBSERVED

Other hydric soil indicators: NONE

Is the hydric soil criterion met? Yes No X

Rationale: CONSTRUCTION FILL DOMESTIC WASTE, IMPERVIOUS AT 11"

==========

HYDROLOGY

Is the ground surface inundated? Yes No X Surface water depth: NONE OBSERVED

Is the soil saturated? Yes No X

Depth to free-standing water in pit/soil probe hole: NONE OBSERVED

List other field evidence of surface inundation or soil saturation: NONE OBSERVED

Is the wetland hydrology criterion met? Yes No X

Rationale: NO OBSERVED EVIDENCE

==========

JURISDICTIONAL DETERMINATION AND RATIONALE

s the plant community a wetland? Yes No X

ionale for jurisdictional decision: PREVIOUSLY FILLED BANK AREA UPLAND FROM DRA AGE DITCH.

NOVA CONSULTANTS LTD.

DATA FORM

ROUTINE ONSITE DETERMINATION METHOD

Boring# 9

Field Invesigator(s):

Date:

Project/site:

State: County:

Applicant:

Plant Community:MARSH/DRAINAGE DITCH

Do normal environmental conditions exist at the plant community?
Yes No X

Has the vegetation, soils and/or hydrology been significantly disturbed?
Yes X No PREVIOUS CONSTRUCTION FILL R.O.W. MAINTENANCE

==========

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1.PHRAGMITES AUSTRALIS	FACW	HERB	11.		
2.			12.		
3.			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL,FAC and/or FAC: 99%

Is the hydrophytic vegetation criterion met? Yes X No

Rationale:PEM1 SUBSYSTEM CHARACTERISTICS

==========

SOILS

Boring depth: 10"

Series/phase: MUCK ALLUVIAL DEPOSITION

Subgroup:UNKNOWN ORIGIN

Is the soil on the hydric soils list? Yes No Undetermined X

Is the soil a histosol? Yes X No Histic epipedon present? Yes No X

Is the soil: Mottled? Yes No X Gleyed? Yes No X

Matrix Color: 7.5YR 3/0 Mottle Colors: NONE OBSERVED

Other hydric soil indicators: NONE

Is the hydric soil criterion met? Yes X No

Rationale:HISTOSOLIC ALLUVIAL DEPOSITION

==========

HYDROLOGY

Is the ground surface inundated? Yes X No Surface water depth:VARYING

Is the soil saturated? Yes X No

Depth to free-standing water in pit/soil probe hole:IMMEDIATE

List other field evidence of surface inundation or soil saturation:HYDRIC SOIL CONDITIONS

Is the wetland hydrology criterion met? Yes X No

Rationale: WETLAND DRAINAGE PATTERN

==========

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No

Rationale for jurisdictional decision:PEM1 HABITAT CONDITIONS WITHIN WETLAND DRAINAGE DITCH AREA.

NOVA CONSULTANTS LTD.

DATA FORM

ROUTINE ONSITE DETERMINATION METHOD

Boring# 10

Field Invesigator(s): Date:

Project/site: State: County:

Applicant: Plant Community: FALLOW FIELD

Do normal environmental conditions exist at the plant community?
Yes No X

Has the vegetation, soils and/or hydrology been significantly disturbed?
Yes X No PREVIOUS FILL

==========

VEGETATION

Dominant Plant Species	Indicator Status	Stratum		Dominant Plant Species	Indicator Status	Stratum
1. PRUNUS SEROTINA	NC	SAPLING	11.			
2. PHRAGMITES AUSTRALIS	FACW	HERB	12.			
3. ARTEMISIA VULGARIS	FACU	"	13.			
4. AMBROSIA ARTEMISIIFOLIA	FACU	"	14.			
5.			15.			
6.			16.			
7.			17.			
8.			18.			
9.			19.			
10.			20.			

Percent of dominant species that are OBL,FAC and/or FAC: 25%

Is the hydrophytic vegetation criterion met? Yes No X

Rationale: UPLAND BANK CONTAINING UNCONSOLIDATED FILL

==========

SOILS

Boring depth: 14"

Series/phase: UNCONSOLIDATED FILL MATERIAL Subgroup: UNKNOWN ORIGIN

Is the soil on the hydric soils list? Yes No Undetermined X

Is the soil a histosol? Yes No X Histic epipedon present? Yes No X

Is the soil: Mottled? Yes No X Gleyed? Yes No X

Matrix Color: 7.5YR 4/6 Mottle Colors: NONE OBSERVED

Other hydric soil indicators: NONE

Is the hydric soil criterion met? Yes No X

Rationale: EXTRACTED SOIL FILL MATERIAL

==========

HYDROLOGY

Is the ground surface inundated? Yes No X Surface water depth: NONE OBSERVED

Is the soil saturated? Yes No X

Depth to free-standing water in pit/soil probe hole: NONE

List other field evidence of surface inundation or soil saturation: NONE

Is the wetland hydrology criterion met? Yes No X

Rationale: NO OBSERVED EVIDENCE

==========

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes No X

Rationale for jurisdictional decision: UPLAND PREVIOUSLY FILLED AREA CONTAINING UNKNOWN ORIGIN(SOLIUM) OVER CONSTRUCTION FILL.

WETLAND SUMMARY

SUMMARY OF ON SITE PALUSTRINE HABITAT CONDITIONS

PALUSTRINE HABITAT CONDITIONS WITHIN THE TRACT EXIST AS TWO DISJUNCT AREAS LOCATED WITHIN THE SOUTHERLY HALF OF THE SITE DESIGNATED AS AREA 'A' AND AREA 'C' AND WERE PREVIOUSLY FLOODPLAIN AREA OF THE PASSAIC RIVER(REFER TO MAP E).

THE ENTIRE SITE IS SURROUNDED BY PREVIOUS WAY AND STREET CONSTRUCTION ALONG THE NORTH, EASTERLY AND SOUTHERLY BOUNDARIES AND AN ELECTRIC R.O.W./MAINTENANCE ROAD AND AN INDUSTRIAL COMPLEX ALONG THE WESTERLY BOUNDARY.

ALSO, THE ENTIRE SITE WAS PREVIOUSLY FILLED MARSH AREA WITH OLD CONSTRUCTION FILL AND DOMESTIC WASTE THROUGHOUT WITH THE EXCEPTION OF THE DELINEATED WETLAND AREAS AFOREMENTIONED.

ALTHOUGH MAPPED BY USF&W ELIZABETH/ORANGE NJ QUADRANGLE AS CONTAINING POW AND PEM SUBSYSTEM HABITATS IT IS DIFFICULT TO ASCERTAIN IF THE MAPPED AREAS AND THE APPROXIMATE SITE LOCATION COINCIDE WITH THE DELINEATED AREAS ON THE SITE PLAN(MAP F).

FURTHER THE PREVIOUS HISTORIC DEGRADATION OF THE ENTIRE SITE AND ESPECIALLY THE WETLAND AREAS SEVERELY AFFECTS AND LIMITS THE QUALITY OF THE HABITATS ESTABLISHED AS PALUSTRINE.

WETLAND AREA 'A' IS A DISJUNCT R.O.W.(PALUSTRINE OPEN WATER IMPOUNDED) CONTAINING FRINGE AREA OF PEM/PSS1(PALUSTRINE HERBACEOUS EMERGENT PERSISTENT/PALUSTRINE SCRUB SHRUB BROAD LEAVED DECIDUOUS) DOMINATED BY PHRAGMITES AUSTRIALIS, POPULUS AND SALIX SAPLINGS AND ALONG AREAS OF IRREGULAR FILL SPOIL. THIS AREA ALSO CONTAINS LARGER EXAMPLES OF THESE TREE SPECIES.

THIS WETLAND AREA IS DISJUNCT AND IS SEPARATED BY FILL SPOIL.

WETLAND AREA 'C' IS REPRESENTATIVE OF A DRAINAGE SWALE CONTAINING PEM HABITAT CHARACTERISTICS FOUND ALONG THE SOUTHERLY SIDE BOUNDARY WITH A CONFLUENCE WHICH RUNS ALONG THE WESTERN BOUNDARY BOTH DRAIN SOUTHERLY AND OUTBOUND.

THE SOUTHERLY BOUNDARY DELINEATION OF THIS WETLAND LINE CONTAINED NO SURFACE HYDROLOGY WITH THE WESTERLY PORTION CONTAINING AREAS OF ISOLATED SURFACE HYDROLOGY. THIS WESTERLY DRAINAGE SWALE CONTINUES NORTHERLY OUTBOUND AND CONTIGUOUS TO THE WESTERLY SITE BOUNDARY AND BETWEEN THE ELECTRIC R.O.W. MAINTENANCE ROAD. THE ENTIRE LENGTH OF THESE SWALE AREAS CONTAINS UNCONSOLIDATED CONSTRUCTION FILL AND DOMESTIC WASTE FORMING A BANK OR SLOPE.

THIS SWALE AREA IS DOMINATED BY PHRAGMITES AUSTRALIS THROUGHOUT ITS LENGTH WITHIN THE SITE AND IS SEVERELY DISTURBED. THE TOTAL AREA DELINEATED AS PALUSTRINE HABITAT IS 1.71 AC.

IN ESSENCE, THE WETLAND AREAS WITHIN THIS TRACT ARE SEVERELY DEGRADADED WITH LOW SPP. DIVERSITY WITH WETLAND AREA 'A' COMPLETELY SURROUNDED AND IMPACTED BY FILL WITH WETLAND AREA 'C' DISPLAYING SIMILAR DISTURBANCE AND IS UTILIZED PRIMARILY AS A DRAINAGE SWALE FOR THE HIGHWAY AND SURROUNDING INDUSTRIAL AND STREET RUNOFF.

NO OTHER AREA WITHIN THE SITE EXHIBITED CHARACTERISTICS ATTRIBUTED TO PALUSTRINE HABITAT CONDITIONS.

APPENDIX I

TABLES

NOVA CONSULTANTS LTD.

SOIL BORING FIELD DATA PAGE

TABLE # I

REF.#	DEPTH IN FT./IN.	SUBSOIL DESCRIPTION	HUE	CHROMA VALUE
1	12"	**MATRIX:** UNCONSOLIDATED CONSTRUCTION FILL	5YR	4/4
		MOTTLE: NONE OBSERVED		
2	18"	MATRIX: ALLUVIAL LAND/PSAMMENTS	10YR	6/2
	18"	**MOTTLE:** MEDIUM, PROMINENT	10YR	5/1
3	18"	**MATRIX:** ALLUVIAL LAND/PSAMMENTS	7.5YR	3/0
		MOTTLE: NONE OBSERVED		
4	16"	MATRIX: ALLUVIAL LAND PSAMMENTS	7.5YR	3/0
		MOTTLE: NONE OBSERVED		
5	12"	**MATRIX:** UNCONSOLIDATED CONSTRUCTION FILL	10YR	5/4
		MOTTLE: NONE OBSERVED		
6	16"	**MATRIX:** ALLUVIAL LAND/PSAMMENTS	7.5YR	3/0
		MOTTLE: NONE OBSERVED		
	10"	MATRIX: ALLUVIAL LAND/PSAMMENTS	7.5YR	3/0
		MOTTLE: NONE OBSERVED		
8	10"	MATRIX: UNCONSOLIDATED CONSTRUCTION FILL	7.5YR	5/6
		MOTTLE: NONE OBSERVED		
9	10"	MATRIX: ALLUVIAL LAND/PSAMMENTS	7.5YR	3/0
		MOTTLE: NONE OBSERVED		
10	14"	MATRIX: UNCONSOLIDATED CONSTRUCTION	7.5YR	4/6
		MOTTLE: NONE OBSERVED		
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	5/6

NOVA CONSULTANTS LTD.

LIST OF PLANTS FOUND NEAR(5-10") OF ALL TEST HOLES
DUG TO TEST HYDRIC SOILS

LE # II

DOMINANT TREE/SAPLING SPECIES

REF. #	SCIENTIFIC NAME	COMMON NAME	USF & WS HYDRIC CLASS
1.	POPULUS DELTOIDES	EASTERN COTTONWOOD	FAC
2.	SALIX NIGRA	BLACK WILLOW	FACW+
3.	PRUNUS SEROTINA	BLACK CHERRY	NC

NOVA CONSULTANTS LTD.

LIST OF PLANTS FOUND NEAR(5-10") OF ALL TEST HOLES
DUG TO TEST HYDRIC SOILS

LE # III

DOMINANT SHRUB/VINE SPP.

REF. #	SCIENTIFIC NAME	COMMON NAME	USF & WS HYDRIC CLASS
1.	ROSA MULTIFLORA	MULTIFLORA ROSE	FACU
2.	TOXIDODENDRON RADICANS	POISON IVY	FAC

NOVA CONSULTANTS LTD.

LIST OF PLANTS FOUND NEAR(5-10") OF ALL TEST HOLES
DUG TO TEST HYDRIC SOILS

E # IV

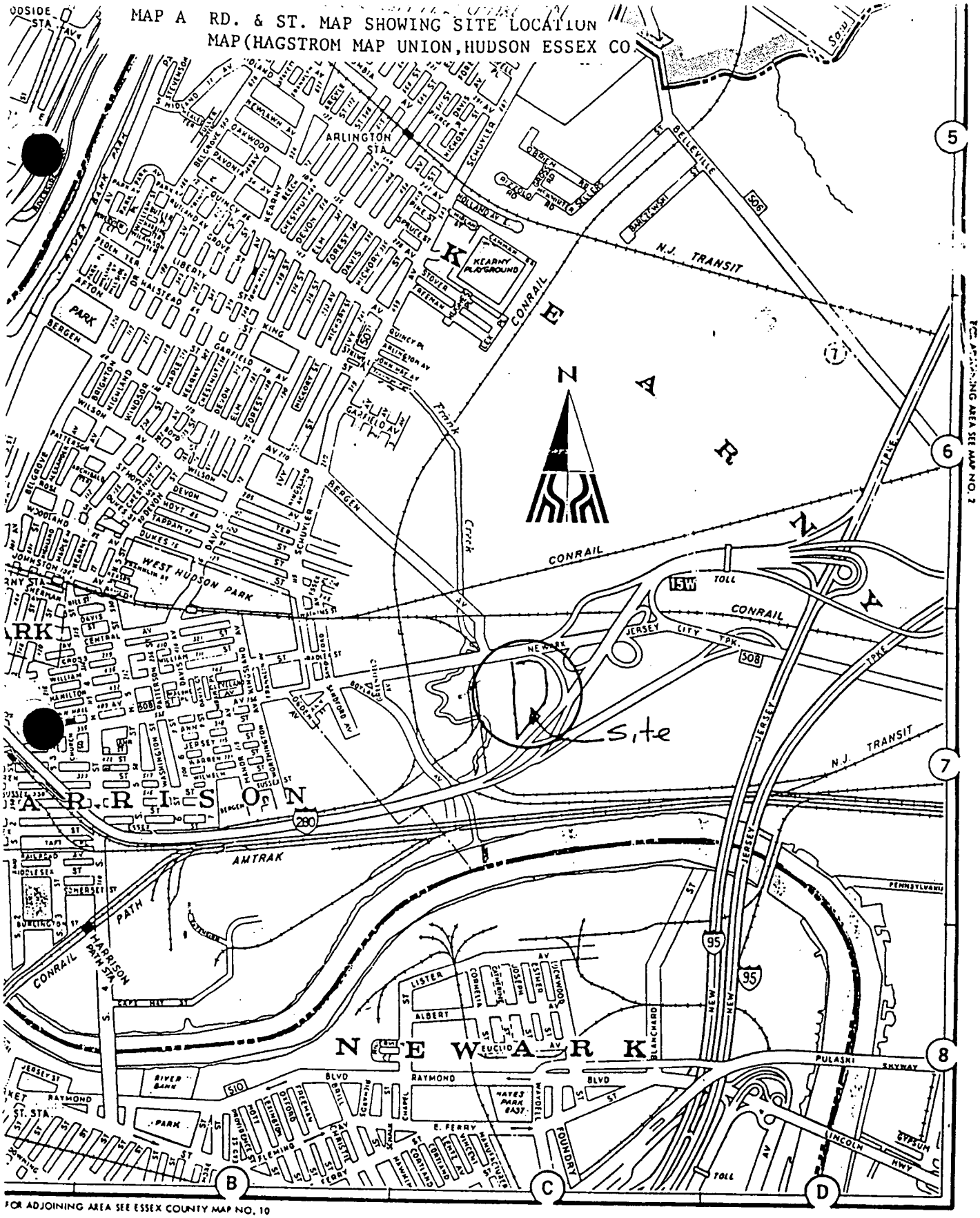
DOMINANT HERBACEOUS SPP.

REF. #	SCIENTIFIC NAME	COMMON NAME	USF & WS HYDRIC CLASS
1.	PHRAGMITES AUSTRALIS	GREAT REED GRASS	FACW
2.	AMBROSIA ARTEMISIIFOLIA	COMMON RAGWEED	FACU
3.	POLYGONUM PENSULVANICUM	YELLOW SWEETCLOVER	NL
4.	MELILOTUS OFFICINALIS	YELLOW SWEETCLOVER	NL
5.	ARTEMISIA VULGARIS	MUGWORT	FACU
6.	THALSPI ARVENSE	FIELDCRESS	NL
7.	LEPIDIUM CAMPESTRE	FIELD PEPPER GRASS	NL
8.	SOLIDAGO ALTISSIMA	TALL GOLDENROD	FACU-
9.	ALLIARIA PETIOLATA	GARLIC MUSTARD	NR

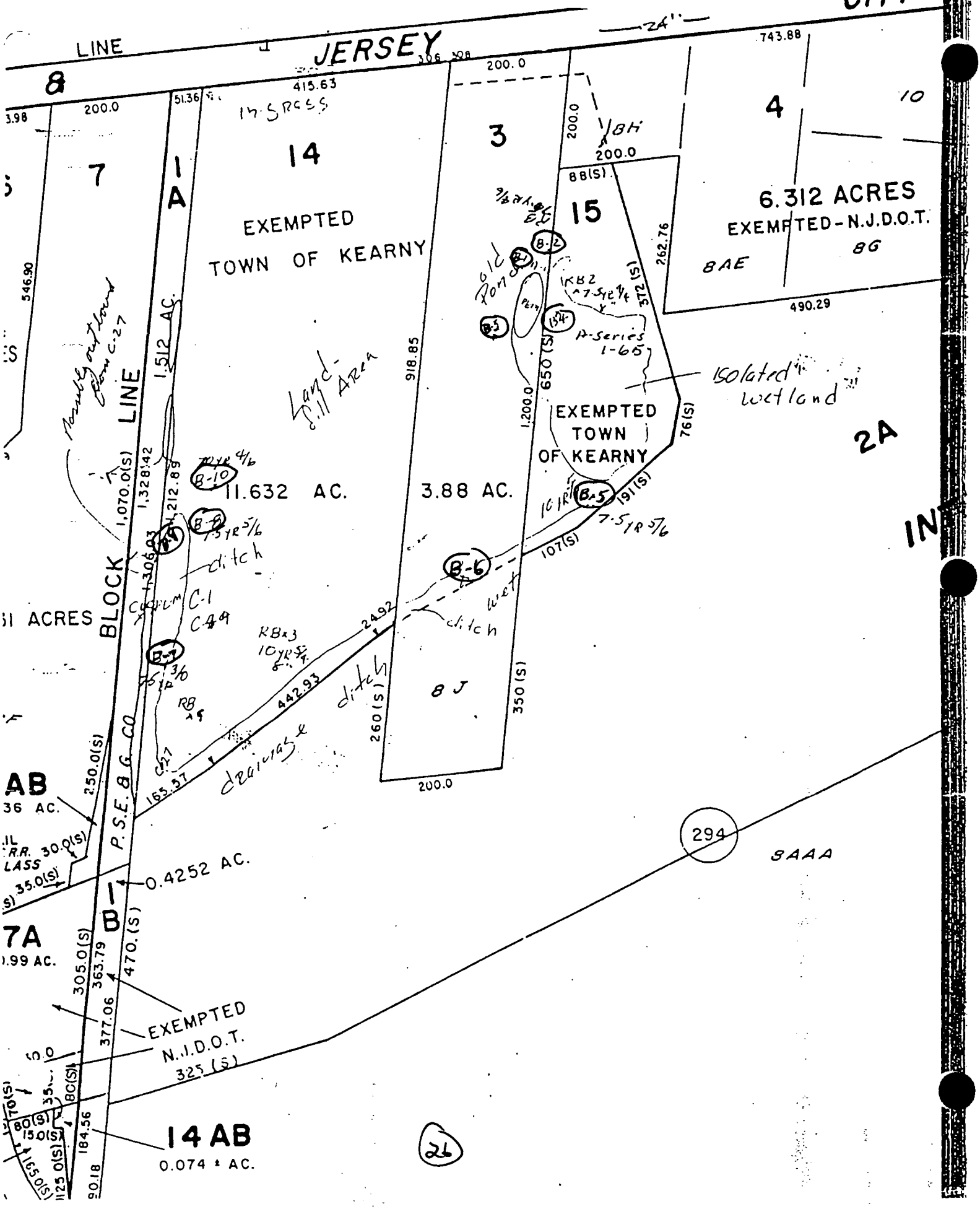
APPENDIX II

MAPS

MAP A RD. & ST. MAP SHOWING SITE LOCATION
MAP (HAGSTROM MAP UNION, HUDSON ESSEX CO.



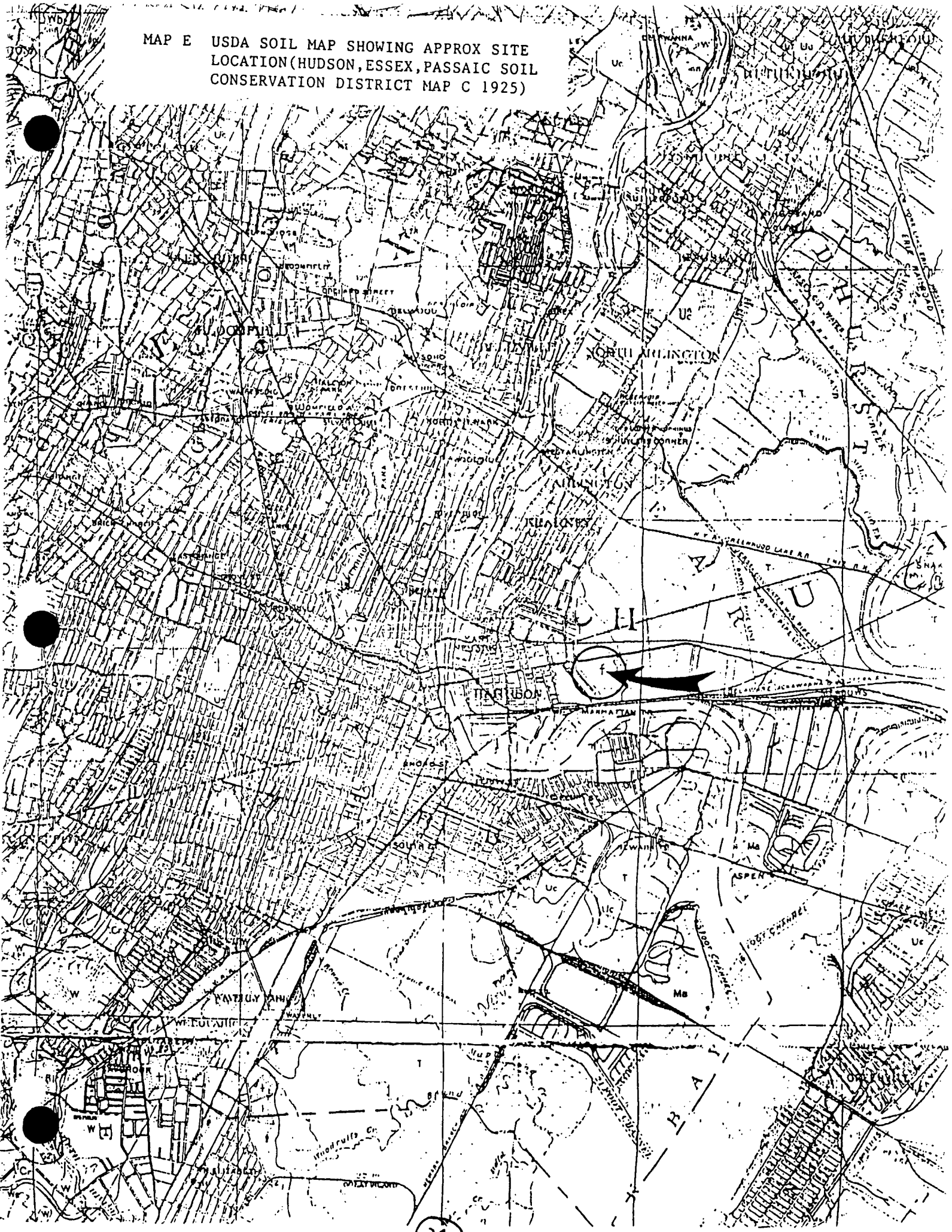
MAP B TAX MAP SHOWING SITE LOCATION



MAP C USGS TOPOGRAPHIC MAP SHOWING APPROX. SITE LOCATION(ELIZABETH/ORANGE NJ QUAD.)

MAP D NWI WETLAND MAP SHOWING APPROX. SITE LOCATION(ELIZABETH/ORANGE NJ QUAD.)

MAP E USDA SOIL MAP SHOWING APPROX SITE LOCATION(HUDSON,ESSEX,PASSAIC SOIL CONSERVATION DISTRICT MAP C 1925)



APPENDIX III

FIELD PHOTOGRAPHS

PHOTOGRAPHIC ESSAY OF ON SITE CONDITIONS

PHOTO 1 (P-1) VIEW LOOKING SOUTH ALONG WESTERLY BOUNDARY WITH THE P.S.E. & G. ELECTRIC R.O.W. TAKEN WITHIN NORTHERLY BOUNDARIES.

PHOTO 2 (P-2) SOUTHEASTERLY VIEW LOOKING ACROSS THE CENTRAL PORTION OF THE SITE P.O.W. AREA REAR OF VIEW AT TREE LINE, TAKEN ALONG THE NORTHERLY SITE BOUNDARY AREA.

PHOTO 3 (P-3) NORTHERN DIRECTIONAL VIEW LOOKING TOWARD THE NEWARK AND JERSEY CITY TURNPIKE EXHIBITING FALLOW UPLAND FIELD CHARACTERISTICS WITHIN PREVIOUSLY FILLED AREA.

PHOTO 4 (P-4) VIEW LOOKING NORTHEASTERLY TOWARD CORNER OF TRACT. FOREGROUND AND MIDDLE GROUND VIEW UPLAND FALLOW FIELD PREVIOUSLY FILLED. MIDDLE VIEW AREA REVEALS PONDING RESULTING FROM IMPERMEABLE FILL MATERIAL.

PHOTO 5 (P-5) UPLAND AREA VIEW OF FALLOW FIELD CONDITIONS. P.O.W. AREA 'A' MIDDLE REAR OF VIEW AT FARTHEST TREE LINE LOOKING SOUTHEAST.

PHOTO 6 (P-6) SIMILAR DIRECTIONAL VIEW AS P-5 SHOWING DISTURBANCE CREATED BY UNCONSOLIDATED FILL ALONG THE NORTHERLY LIMIT OF WETLAND AREA 'A'(P.O.W.) NEAR FLAGPOINT A-3 TAKEN ABOVE THE DELINEATED LINE.

PHOTO 7 (P-7) VIEW LOOKING IN SIMILAR DIRECTION WITHIN WETLAND AREA 'A' MINOR VARIATIONS OF PALUSTRINE HABITAT CONDITIONS WITHIN THIS MAJOR P.O.W. SUBSYSTEM.

PHOTO 8 (P-8) EASTERLY VIEW LOOKING TOWARD NJ TURNPIKE HIGHWAY BERM SHOWING PEM HABITAT CONDITIONS WITHIN WETLAND AREA 'A' AND LOOKING TOWARD FLAGPOINTS 54-55.

PHOTO 9 (P-9) NORTHERLY DIRECTIONAL VIEW SHOWING P.O.W. WETLAND AREA 'A' AND AREA OF PREVIOUS UNCONSOLIDATED FILL SURROUNDING THE AREA TO THE WEST OF THE POND.

PHOTO 10 (P-10) UPLAND AREA OF FALLOW FIELD LOOKING TOWARD THE NORTHWEST CORNER OF THE TRACT.

PHOTO 11 (P-11) UPLAND AREA VIEW OF FALLOW FIELD CONDITIONS LOOKING TOWARD THE WESTERN BOUNDARY OF THE TRACT WITH THE ELECTRIC R.O.W. AND ADJACENT INDUSTRY PARALLELING THIS BOUNDARY.

PHOTO 12 (P-12) SIMILAR UPLAND VIEW LOOKING TOWARD THE SOUTHWEST CORNER OF THE TRACT.

PHOTO 13 (P-13) VIEW OF HEADWATER AREA OF WETLAND AREA 'C' TAKEN FROM FILL BANK LOOKING SOUTH AT FENCE BOUNDARY VIEW SOUTHWEST OF BERM SEPARATING WETLAND AREA 'A'. AREA REPRESENTATIVE

A DRAINAGE SWALE AREA RUNNING TOWARD THE SOUTHWEST CORNER OF THE SITE.

PHOTO 14 (P-14) VIEW WITHIN DRAINAGE SWALE WITHIN THE SOUTHERLY BOUNDARY OF THE SITE SHOWING TYPICAL HABITAT CONDITIONS WITHIN WETLAND AREA 'C' AT THE SOUTHERN BOUNDARY. LOOKING TOWARD THE SOUTHWEST CORNER OF THE SITE.

PHOTO 15 (P-15) OPPOSITE DIRECTIONAL VIEW OF THE SOUTHERLY PORTION OF THE DRAINAGE SWALE LOOKING TOWARD THE HEADWATER AREA OF THIS DRAINAGE CORRIDOR.

PHOTO 16 (P-16) OPPOSITE DIRECTIONAL VIEW OF THE SOUTHERLY PORTION OF THE DRAINAGE SWALE LOOKING TOWARD THE HEADWATER AREA OF THIS DRAINAGE CORRIDOR.

PHOTO 17 (P-17) NORTHWESTERLY VIEW WITHIN UPLAND FALLOW FILL AREA LOOKING TOWARD THE WESTERLY PORTION OF THE DRAINAGE SWALE PARALLELING THE WESTERLY BOUNDARY OF THE SITE WITH THE ELECTRIC R.O.W.

PHOTO 18 (P-18) WESTERN VIEW OF CONDITIONS OF DRAINAGE SWALE ALONG THE WESTERN BOUNDARY OF THE SITE SHOWING INTERMITTENT PONDED AREAS SEPARATED BY OCCASIONAL FILL BERM. TAKEN ABOVE DELINEATED LINE NEAR FLAGPOINT C-36.

PHOTO 19 (P-19) NORTHERN VIEW TAKEN OUTBOUND WITHIN THE ELECTRIC CO. R.O.W. SHOWING TYPICAL CONDITIONS WITHIN THIS AREA OF THE SITE PARALLELING THE WESTERN BOUNDARY OF THE SITE RIGHT AND OUTBOUND OF VIEW.

PHOTO 20 (P-20) OPPOSITE VIEW OF P-19 WITHIN R.O.W. LOOKING TOWARD SOUTHWEST CORNER OF THE SITE. SITE LEFT AND OUTBOUND OF VIEW.

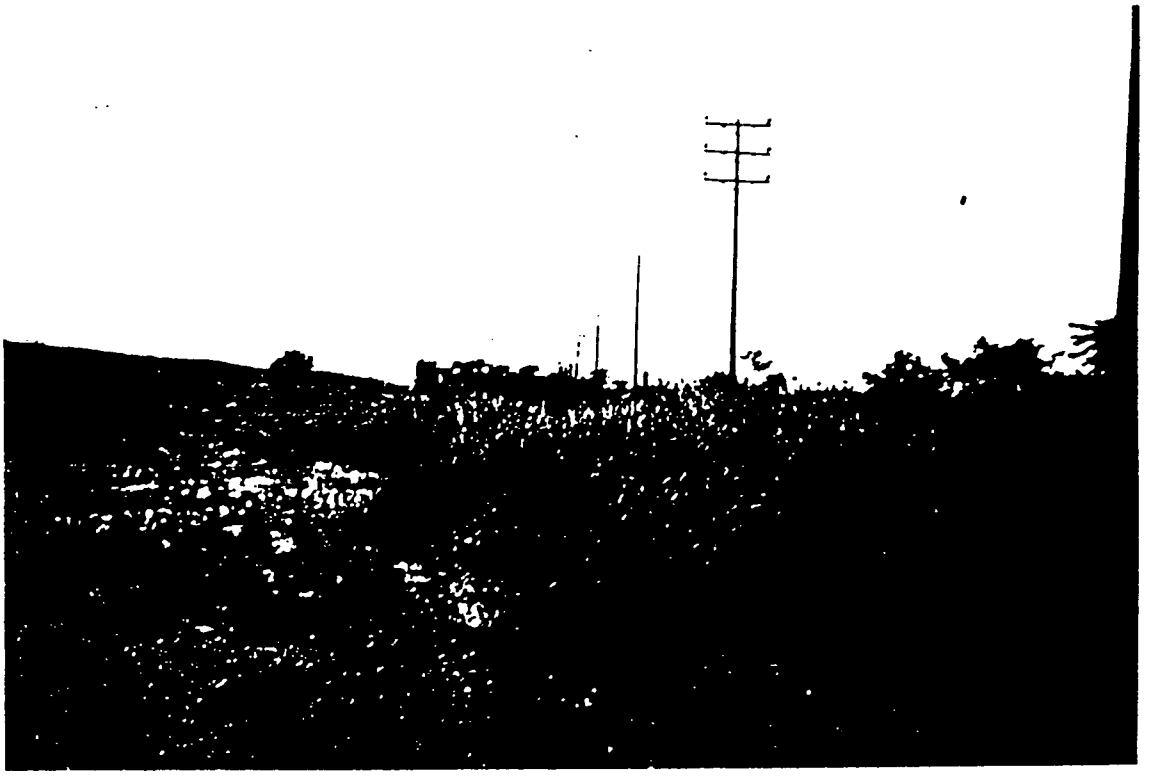


PHOTO-1

PHOTO-2

PHOTO-3

PHOTO-4

PHOTO-5

PHOTO-6

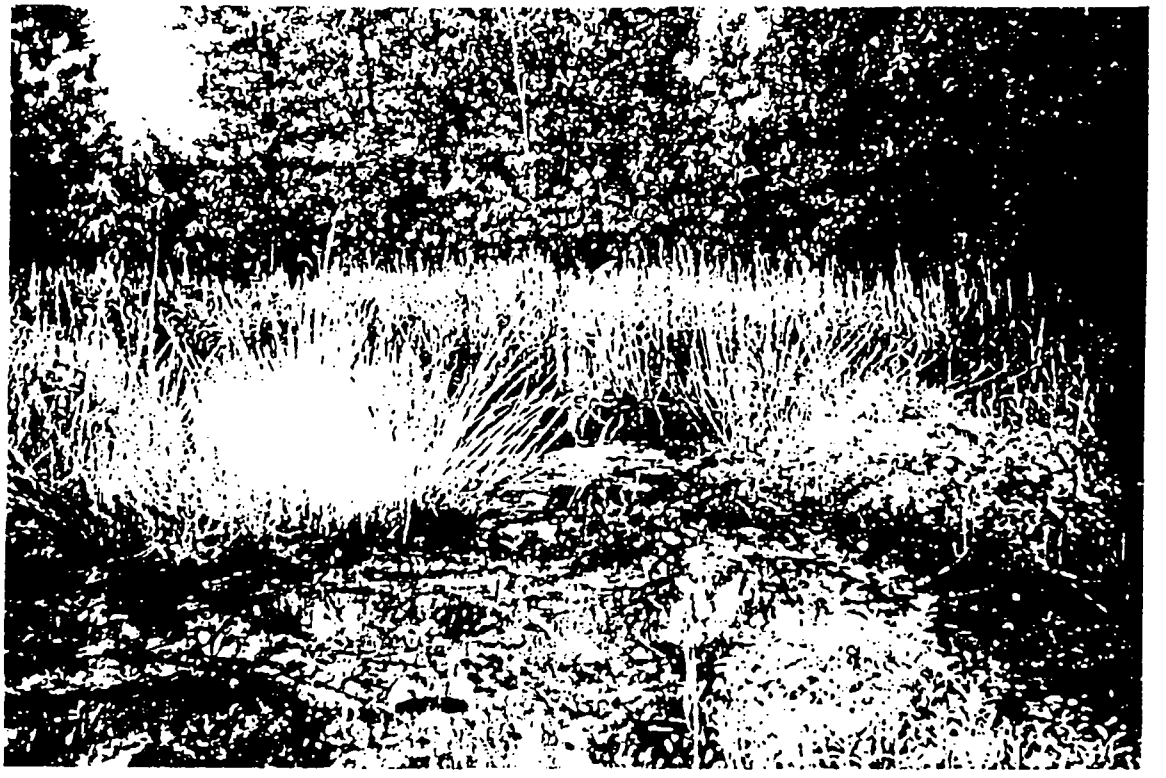


PHOTO-7

PHOTO-8

PHOTO-9

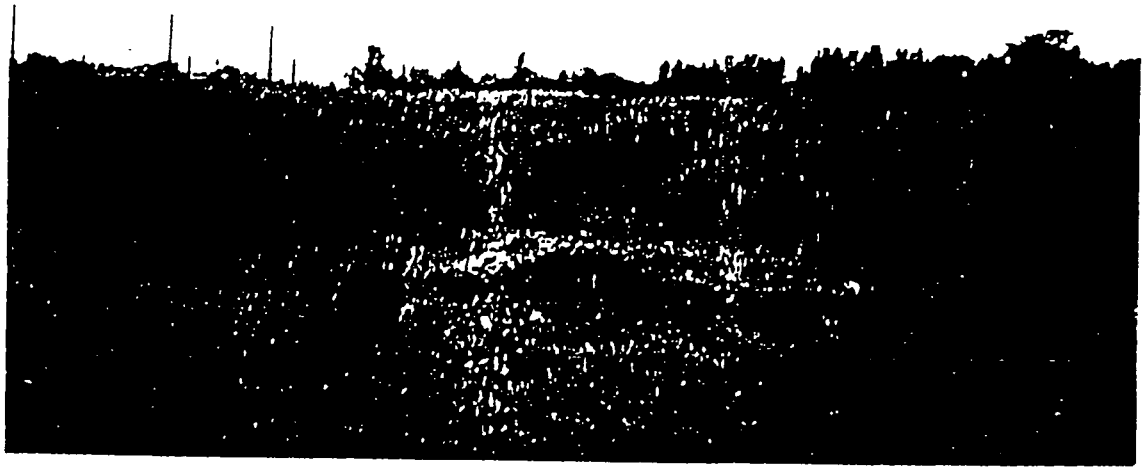


PHOTO-10

PHOTO-11

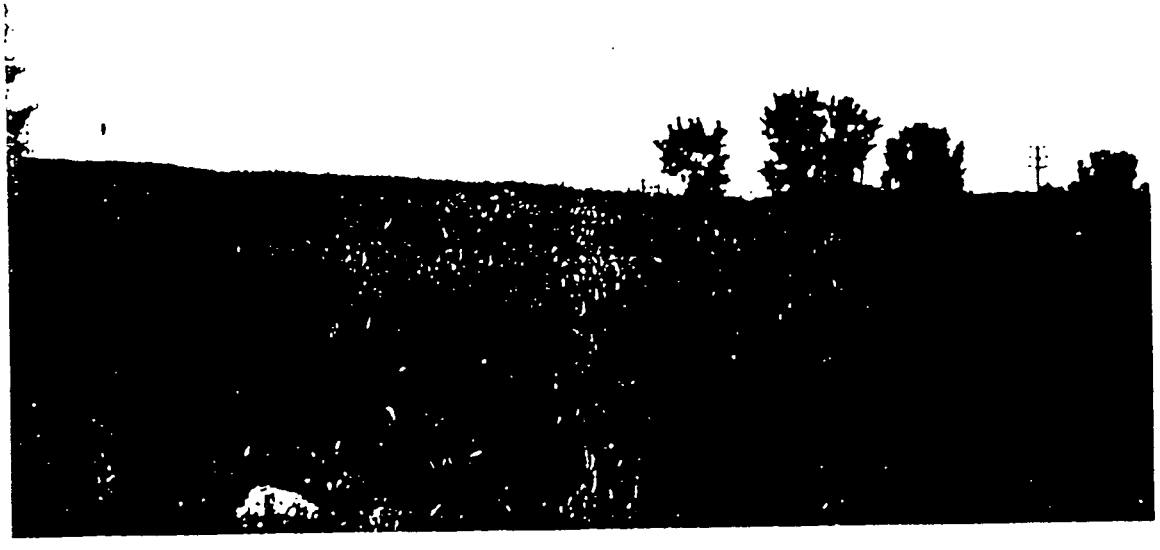


PHOTO-12

PHOTO-13

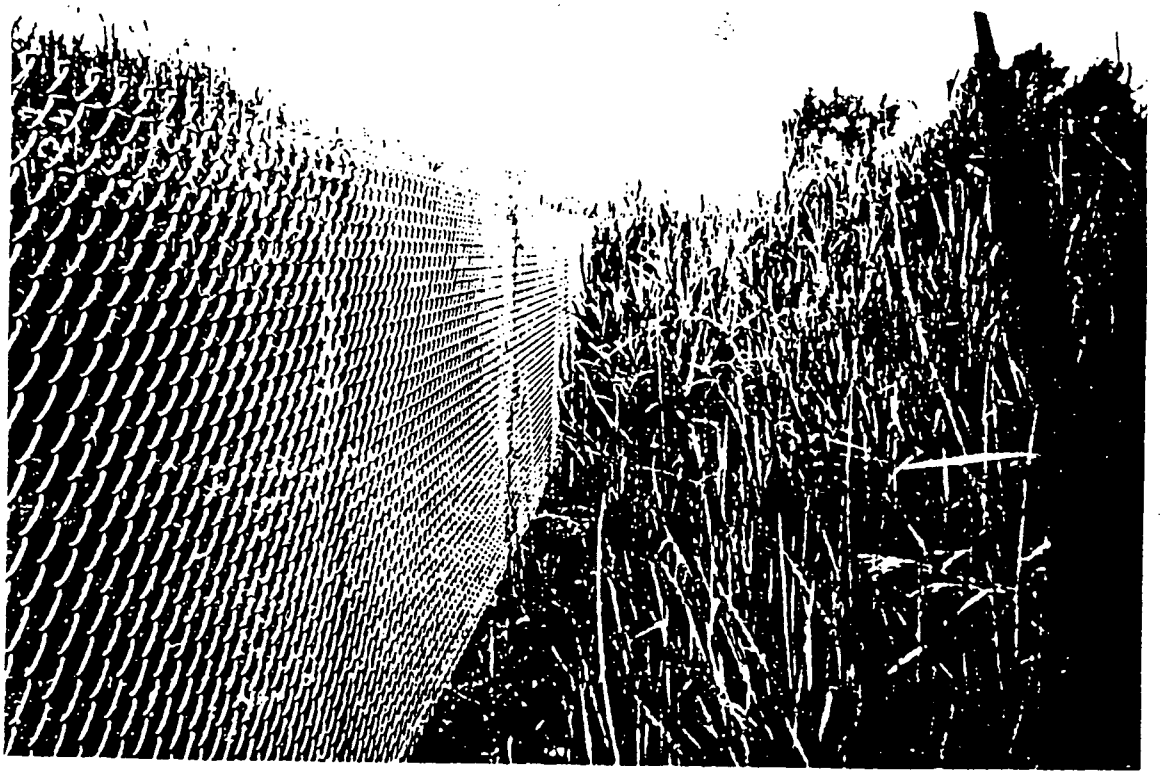


PHOTO-14

PHOTO-15

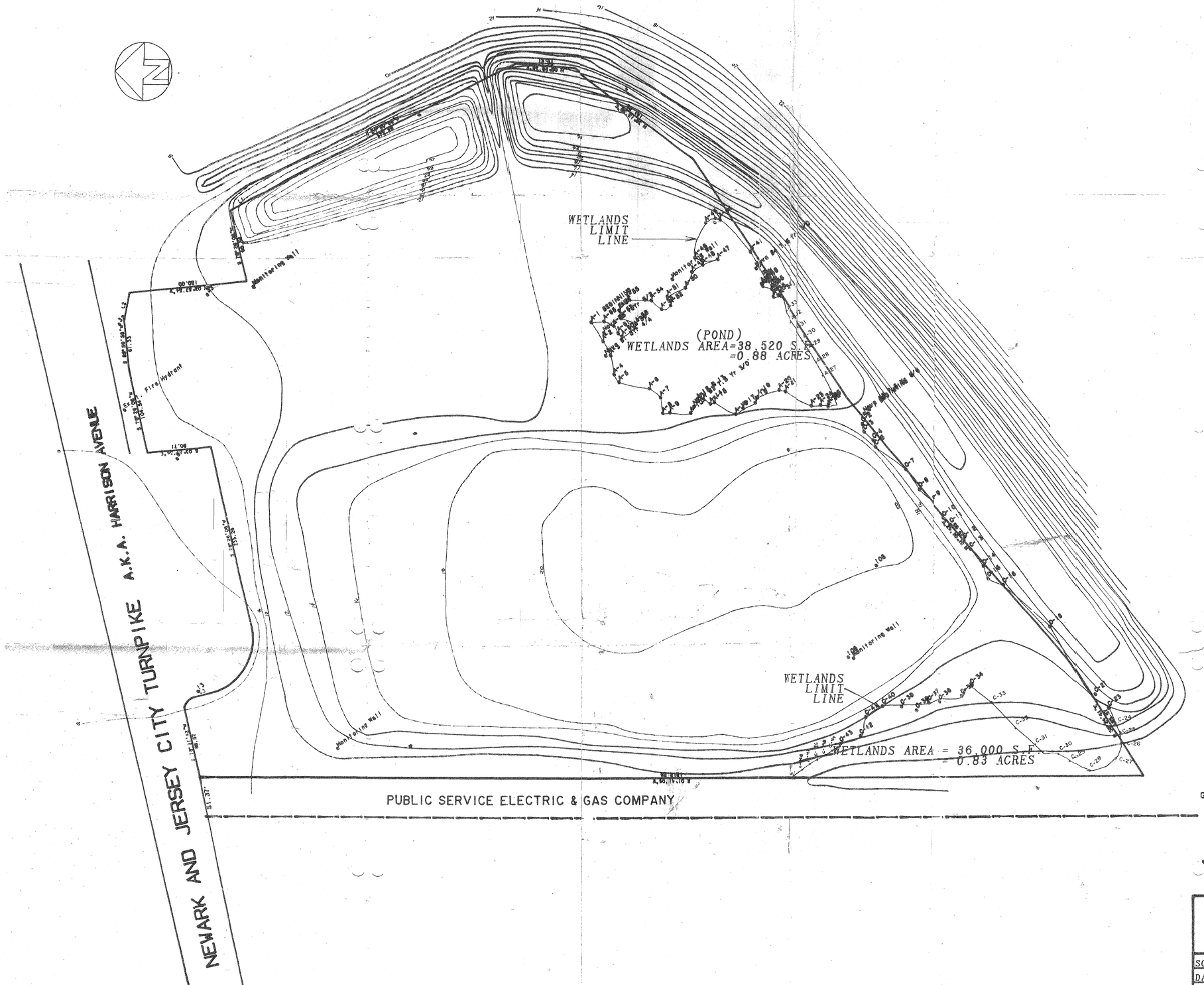
PHOTO-16

PHOTO--17

PHOTO--18

PHOTO-19

PHOTO-20



GENERAL NOTES: 1. ETLANDS DELINEATED BY NOVA CONSULTANTS LTD. ON JUNE 8, 1990.
2. ETLANDS FIELD LOCATED BY HARBOR CONSULTANTS ON JUNE 23, 1990.

SCALE: 1" = 60'

HABOR CONSULTANTS
Engineers & Surveyors
44 Pine Avenue
Cranford, N.J. 07027
276-2048

SCALE: AS SHN | DATE: 6/28/90

DATE	REVISION

WETLANDS LOCATION MAP
LOTS 3, 15, 14, BLOCK 294
HUDSON MEADOWS

TOWNSHIP OF KEARNY
HUDSON COUNTY, NEW JERSEY

VICTOR VINEGRA P.E. & L.S. 11659

DRAWN BY:	CHECKED BY:	PROJECT #	FIELD BOOK #
D.M.P.	V.E.V.		H-5 pp. 42-49

REFERENCE 10

OCT 17 1997

United States Environmental Protection Agency

Solid Waste and Emergency Response

EPA 540-F-94-028
OSWER 9285.7-14FS
PB94-963311
November 1996

EPA

Using Qualified Data to Document an Observed Release and Observed Contamination

Office of Emergency and Remedial Response (5204G)

Quick Reference Fact Sheet

This fact sheet discusses the use of the U.S. Environmental Protection Agency's (EPA) Contract Laboratory Program (CLP) data and other sources of data qualified with a "J", "U", or "UJ" qualifier or flag. This guidance provides a management decision tool for the optional use of qualified data to document an observed release and observed contamination by chemical analysis under EPA's Hazard Ranking System (HRS). The analyte and sample matrix (i.e., soil or water) specific adjustment factors given in this fact sheet allow biased CLP and non-CLP data to be adjusted to meet the HRS criteria for documenting an observed release and observed contamination with data that are of known and documented quality. This fact sheet does not address using qualified data for identifying hazardous substances in a source.

INTRODUCTION

The EPA established the HRS to rank hazardous waste sites for National Priorities List (NPL) purposes under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). This fact sheet was developed in response to a need to determine the usability of qualified data for site assessment and HRS scoring purposes. This fact sheet illustrates that qualified data are often of sufficiently known and documented quality, and may be used in establishing an observed release and observed contamination. This fact sheet explains the rationale for why some qualified data may be used for HRS purposes; presents the background information needed to use qualified data with and without adjustment factors; provides examples of qualified data use; and discusses issues raised during the development of the adjustment factor approach.

Under the HRS, chemical analytical data are often used to demonstrate an observed release and observed contamination when the release sample concentration is three times the background concentration and background levels are greater than or equal to the appropriate detection limit; or if the release sample concentration is greater than or equal to the appropriate quantitation limit when background levels are below the appropriate detection limit. The release must also be at least partially attributable to the site under investigation (*Hazard Ranking System, Final Rule*, 40 CFR Part 300, App. A). The data used to establish the release must be of known and documented quality. (*Hazard Ranking System Guidance Manual*, Interim Final, November 1992, OSWER Directive 9345.1-07). Data that cannot be validated may not be of known and documented quality. For more information on observed release and observed contamination, refer to the fact sheets: *Establishing an Observed Release*, September 1995, PB94-963314; *Establishing Areas of Observed Contamination*, September 1995, PB94-963312; and *Establishing Background Levels*, September 1995, PB94-963313. The factor of three represents the minimum difference in sample results that demonstrate an increase in contaminant concentration above background levels, with reasonable confidence.

Although much of the analytical data used for identifying an observed release is generated under EPA's CLP, this fact sheet applies to all data regardless of the source of the data (non-CLP data). EPA procedures require that

CLP analytical data be reviewed, or validated by EPA or third party reviewers, to ensure the data are of known and documented quality and that the determination be discussed in a data validation report that accompanies the analytical results. Based on this data validation, CLP data are classified into three categories: (1) data for which all quality control (QC) requirements have passed contract-required acceptance criteria; (2) data for which at least one QC requirement has not met acceptance criteria; and (3) data for which most or all QC requirements have not met acceptance criteria. Data in the first category typically are not qualified. Data in the second category are often qualified with a "J" qualifier and, as discussed in this fact sheet, are usually usable for HRS purposes. Data in the third category are usually qualified by an "R" qualifier and are not usable for HRS purposes.

Whether data are placed into the second or third category is determined by the amount of bias associated with the analytical results. Data validation evaluates biases resulting from laboratory analytical deficiencies or sample matrices to determine whether the data are usable. Bias indicates that the reported concentration is either higher or lower than the true concentration, and the data validation report identifies the direction of the bias or if the bias is unknown.

The EPA CLP also sets minimum quantitation limits for all analytes; the Contract Required Quantitation Limit (CRQL) for organic analytes and the Contract Required Detection Limit (CRDL) for inorganic analytes. For HRS purposes and for this fact sheet, the term CRQL refers to both the contract required quantitation limit and the contract required detection limit. (40 CFR Part 300, App. A). The CRQLs are substance specific levels that a CLP laboratory must be able to routinely and reliably detect in specific sample matrices (i.e.; soil, water, sediment). The CRQLs are usually set above most instrument detection limits (IDLs) and method detection limits (MDLs).

CONSIDERATIONS FOR NON-CLP DATA

Because various laboratories and analytical methods may be used to develop non-CLP data, the following list provides the general information sufficient for determining whether non-CLP data are usable for HRS purposes.

(1) Identification of the method used for analysis. Methods include RCRA methods, SW-846, EPA methods, etc.
(2) Quality control (QC) data. Check each method of analysis to determine if specific QC requirements are defined. If not, seek out another method.
(3) Instrument-generated data sheets for sample results. These data sheets would be the equivalent of Form I's in CLP data.
(4) MDLs and sample quantitation limits (SQLs). The analytical method should provide the MDL. The SQL is an adjusted MDL using sample specific measurements such as percent moisture and weight.
(5) Data validation report.

USE OF BIASED QUALIFIED DATA

In the past, all qualified data have been inappropriately perceived by some people as data of low confidence or poor quality and have not been used for HRS evaluation. With careful assessment of the nature of the analytical biases or QC deficiencies in the data on a case-by-case basis, qualified data can represent an additional resource of data for establishing an observed release. Further, the D.C. District Court of Appeals in 1996 upheld EPA's case-by-case approach to assess data quality. In reviewing the use of qualified data to identify an observed release, the Court stated that if there are deficiencies in the data, "...the appropriate response is to review the deficiencies on a 'case-by-case basis' to determine their impact on 'usability of the data.'" The Court also stated with regards to data quality that, "...EPA does not face a standard of absolute perfection....Rather, it is statutorily required to 'assure, to the maximum extent *feasible,*' that it 'accurately assesses the relative degree of risk' posed by sites" [*Board of Regents of the University of Washington, et al., v. EPA*, No. 95-1324, slip op. at 8-10 (D.C. Cir. June 25, 1996).]

As discussed in this fact sheet, the application of adjustment factors to "J" qualified data can serve as a management decision tool to "adjust," or take into account, the analytical uncertainty in the data indicated by the qualifier, thereby making qualified data usable for HRS evaluation. The use of adjustment factors to account for the larger uncertainty in "J" qualified data is a conservative approach enabling a quantitative comparison of the data for use in documenting an observed release. It should be noted that the use of

adjustment factors only addresses analytical variability and does not take into account variabilities which may be introduced during field sampling. Some guidelines for using the adjustment factor approach are discussed in Exhibit 1.

CLP QA/QC PROCEDURES

CLP qualifiers are applied to analytical data based on the results of various Quality Assurance/Quality Control (QA/QC) procedures used at the laboratory. EPA analytical methods use a number of QA/QC mechanisms during sample analysis in order to assess qualitative and quantitative accuracy (*Contract Laboratory Program Statement of Work for Inorganic Analyses*, Document No. ILM02.0; *Contract Laboratory Program Statement of Work for Organic Analyses*, Document No. OLM1.8; *Quality Assurance/Quality Control Samples*, Environmental Response Team Quality Assurance Technical Information Bulletin; *Test Methods for Evaluating Solid Waste (SW-846): Physical and Chemical Methods*, Document No. SW-846). To assess data quality, the laboratory uses matrix spikes, matrix spike duplicates, laboratory control samples, surrogates, blanks, laboratory duplicates, and quarterly blind performance evaluation (PE) samples. The Agency assumes that if biases are found in the QA/QC samples, the field sample concentrations may also be biased.

Surrogates are chemically similar to the analytes of interest. They are added or "spiked" at a known concentration into the field samples before analysis. Also, selected target analytes are "spiked" into samples at a specified frequency to assess potential interferences from the sample matrix. These samples are called matrix spikes. Comparison of the known concentration of the surrogates and matrix spikes with their actual analytical results reflects the analytical accuracy. Because the surrogates are expected to behave similarly to the target analytes, they may indicate bias caused by interferences from the sample matrices. These types of interferences from the sample matrix are known as matrix effects (*CLP National Functional Guidelines for Inorganic Data Review*, Publication 9240.1-05-01; *CLP National Functional Guidelines for Organic Data Review*, Publication 9240.1-05; *Test Methods for Evaluating Solid Waste (SW-846): Physical and Chemical Methods*, Document No. SW-846).

Laboratory control samples are zero blind samples which contain known concentrations of specific analytes and are analyzed in the same batch as field samples. Their results are used to measure laboratory accuracy. Blanks are analyzed to detect any extraneous contamination introduced either in the field or in the laboratory.

Laboratory duplicates are created when one sample undergoes two separate analyses. The duplicate results are compared to determine laboratory precision. Quarterly blind PE samples are single blind samples that evaluate the laboratory's capability of performing the specified analytical protocol.

CLP and other EPA analytical methods include specifications for acceptable analyte identification, target analytes, and minimum and maximum percent recovery of the QA/QC compounds. Data are validated according to guidelines which set performance criteria for instrument calibration, analyte identification, and identification and recovery of QA/QC compounds (*CLP Statement of Work and SW-846*). The *National Functional Guidelines for Data Review*, used in EPA validation, was designed for the assessment of data generated under the CLP organic and inorganic analytical protocols (*CLP Statement of Work; National Functional Guidelines for Data Review*). The guidelines do not preclude the validation of field and other non-CLP data. Thus, many EPA Regions have also adapted the *National Functional Guidelines for Data Review* to validate non-CLP data. Data which do not meet the guidelines' performance criteria are qualified to indicate bias or QA/QC deficiencies. The data validation report usually explains why the data were qualified and indicates the bias direction when it can be determined. Validated data that are not qualified are considered unbiased and can be used at their reported numerical value for HRS evaluation.

QUALIFIER DEFINITIONS

Most EPA validation guidelines use the data qualifiers presented in Exhibit 2 (*CLP National Functional Guidelines for Data Review*). Other qualifiers besides these may be used; the validation report should always be checked for the exact list of qualifiers and their meanings.

It should be emphasized that not meeting one or some of the contract required QA/QC acceptance criteria is often an indication that the sample was difficult to analyze, not that there is low confidence in the analysis (i.e., the

EXHIBIT 1 GUIDELINES FOR THE USE OF ADJUSTMENT FACTORS
• The use of adjustment factors identified in this fact sheet is a management tool for the optional use of "J" qualified data generated under CLP or other sources of data to document an observed release.
• Adjusted qualified data should be used with non-qualified data whenever possible.
• EPA maintains a "worst sites first" policy for placing sites on the NPL (*Additional Guidance on "Worst Sites" and "NPL Caliber Sites" to assist in SACM Implementation*, OSWER Directive 9320.2-07).
• EPA Regions should use adjustment factors with discretion on a case-by-case basis and should always carefully consider the use of qualified data in borderline cases.
• Resampling and/or reanalysis may be warranted if qualified data do not appear adequate to document an observed release.
• EPA Regions may substitute higher adjustment factors based on documented, justifiable reasons but may never use a lower adjustment factor value.
• The adjustment factors should only be applied to analytes listed in the tables. These adjustment factors should not be interpolated or extrapolated to develop factors for analytes not listed in the tables.
• The adjustment factors apply only to "J" qualified data above the CRQL.
• Detection below the CRQL is treated as non-quantifiable for HRS purposes.
• "UJ" data may be used under strict circumstances as explained in this fact sheet.
• The adjustment factors only apply to biased "J" qualified data, not to other "J" qualified data.
• The adjustment factors do not apply to "N", "NJ", or "R" qualified data. These data can not be used to document an observed release for HRS purposes.

analysis is "under control" and can be adequate for HRS decision making). Often "J", "U", and "UJ" qualified data fall into this category.

There are instances when qualified data cannot be used since the uncertainty of the results is unknown. For example, violations of laboratory instrument calibration and tuning requirements, and gross violations of holding times reflect the possibility that the results are of unknown quality (i.e., the analysis is "out of control"). Most often these data would be qualified with an "R" or an "N" (not usable for HRS purposes).

USING "U" QUALIFIED DATA

The "U" qualifier simply means that the reported concentration of the analyte was at or below the CRQL—there can be confidence that the true concentration is at or below the quantitation limit. Therefore, "U" qualified data can be used for establishing background levels. If the release sample concentration is above this level, as specified in the HRS, an observed release can be established. The quantitation limit for that analyte could be used as a maximum background concentration if a more conservative background level seems appropriate.

USING "J" QUALIFIED DATA

As discussed previously, some "J" qualified data can be used in establishing an observed release if the uncertainty in the reported values is documented. Qualified data should always be carefully examined by the Regions to determine the reasons for qualification before use in HRS evaluation. Resampling and/or reanalysis may be warranted if qualified data only marginally document an observed release. Whenever possible, qualified data should be used in conjunction with non-qualified data.

As described in Exhibit 2, "J" qualified data indicates that bias has been detected in the sample analysis and although the analyte is definitively present, the reported concentration is an estimate. Depending on the reasons and the direction of bias, with the use of adjustment factors, "J" qualified data can represent data of known and documented quality sufficient for use in establishing an observed release and observed contamination under the HRS.

USING "UJ" QUALIFIED DATA

A combination of the "U" and "J" qualifiers indicates that the reported value may not accurately represent the concentration necessary to positively detect the analyte in the sample. Under limited conditions, "UJ" qualified data can be used to represent background concentrations for establishing an observed release. These conditions are: instances when there is confidence that the background concentration is not detectable above the CRQL, the background concentration is biased high, and the sample measurement establishing the observed release equals or exceeds the CRQL.

DIRECTION OF BIAS IN "J" QUALIFIED DATA

It is important to understand the direction of bias associated with "J" qualified data before using the data to document an observed release. Qualified data may have high, low, or unknown bias. A low bias means that the reported concentration is likely an underestimate of the true concentration. For example, data may be biased low when sample holding times for volatile organic compounds (VOCs) are moderately exceeded or when recovery of QA/QC compounds is significantly less than the amount introduced into the sample. Low surrogate recovery would also indicate a low bias. A high bias means the reported concentration is likely an overestimate of the true concentration. For example, data may be biased high when recovery of QA/QC compounds is significantly higher than the amount in the sample. A bias is unknown when it is impossible to ascertain whether the concentration is an overestimate or an underestimate. For example, an unknown bias could result when surrogate recoveries exceed method recovery criteria and matrix spike/matrix spike duplicate compounds below method recovery criteria fail the relative percent difference (RPD) criteria in the same sample.

Despite the bias, certain qualified data may be used without application of adjustment factors for determining an observed release under certain circumstances. The following are examples of using "J" qualified data without adjustment factors:

- Low bias release samples are likely to be underestimates of true concentrations. If the reported concentration of a low bias release sample is three times above unbiased background levels, these release samples would still meet the HRS criteria. The true concentrations would still be three times above the background level.

- High bias background samples are likely to be overestimates of true concentrations. If the reported concentration of unbiased release samples are three times above the reported background concentration, they would still meet the HRS observed release criteria because they would still be three times above the true background concentration.

The above examples show that both low bias "J" qualified release samples at their reported concentrations and high bias "J" qualified background samples may be used at their reported concentrations in these situations.

High bias release samples may not be used at their reported concentrations because they are an overestimate of true concentrations in this situation; resampling and/or re-analysis of the release samples should be considered. The true difference in the background and release concentrations may be less than the HRS criteria for establishing an observed release. The reported concentration for low bias background concentrations may not be compared to release samples because it is most likely an underestimate of background level; the release sample concentration may not significantly exceed the true background concentration. However, in lieu of re-sampling and/or re-analysis, high bias release data and low bias background data may be used with adjustment factors which compensate for the probable uncertainty in the analyses.

ADJUSTMENT FACTORS FOR BIASED "J" QUALIFIED DATA

Applying adjustment factors to "J" qualified data will enable EPA to be more confident that the increase in contaminant concentrations between the background and

EXHIBIT 2 EPA CLP DATA QUALIFIERS AND THEIR USABILITY FOR DOCUMENTING AN OBSERVED RELEASE	
Usable*	**Not Usable**
"U" The substance or analyte was analyzed for, but no quantifiable concentration was found at or above the CRQL (*CLP National Functional Guidelines for Data Review*).	"N" The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification" (*CLP National Functional Guidelines for Data Review*).
"J" The analyte was positively identified–the associated numerical value is the approximate concentration of the analyte in the sample. The "J" qualifier indicates that one or more QA/QC requirements have not met contract required acceptance criteria, but the instrumentation was functioning properly during the analysis. For example, a "J" qualifier may indicate that the sample was difficult to analyze or that the value may lay near the low end of the linear range of the instrument. "J" data are considered biased, but provide definitive analyte identification (*CLP National Functional Guidelines for Data Review*).	"R" The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria. The presence or absence of the analyte can not be verified and the result has been rejected. A sample result may be qualified with an "R" qualifier when the instrument did not remain "in control" or the stability or sensitivity of the instrument were not maintained during the analysis (*CLP National Functional Guidelines for Data Review*).
"UJ" The analyte was not quantifiable at or above the CRQL. In addition to not being quantifiable, one or more QA/QC requirements have not met contract acceptance criteria (*CLP National Functional Guidelines for Data Review*).	"NJ" The analysis indicates the presence of the analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration (*CLP National Functional Guidelines for Data Review*).

* Usable under certain circumstances as explained in this fact sheet.

release samples is due to a release. The adjustment factors are applied as "safety factors" to compensate for analytical uncertainty, allowing biased data to be used for determining an observed release. Dividing the high bias result by an adjustment factor deflates it from the high end of the acceptable range towards a low bias value. Multiplying a low bias concentration by an adjustment factor inflates it to the high end of the acceptable range.

Tables 1 through 4 (pages 11 - 18) present analyte and matrix-specific adjustment factors to address the analytical uncertainty when determining an observed release using high bias release samples and low bias background data. The factors are derived from percent recoveries of matrix spikes, surrogates, and laboratory control samples in the CLP Analytical Results Database (CARD) from January 1991 to March 1996. A total of 32,447 samples were reviewed for volatile organic analytes; 32,913 samples for semivolatile organic analytes; 59,508 samples for pesticides/PCB analytes; and 5,954 samples for inorganic analytes.

The range of CARD data for each analyte includes 97 percent of all percent recoveries in the database, discarding outliers. The adjustment factors are ratios of percent recovery values at the 98.5 and 1.5 percentiles. The ratios generally show a consistent pattern.

Adjustment factors have been determined for all analytes in the CLP Target Compound List (organic analytes) and Target Analyte List (inorganic analytes). A tiered approach was used to derive the organic adjustment factors. Percent recoveries for surrogates were

examined first, followed by matrix spike recoveries. When both matrix spike and surrogate data were available for the same analyte, the larger adjustment factor (representing more extreme high and low percent recoveries) was used. Laboratory control samples were used to calculate the inorganic adjustment factors. Quarterly blind sample data were not used to determine adjustment factors because of the small data set available. A default adjustment factor of 10 was used for analytes when percent recovery data were unavailable.

Adjustment factors do not correct the biased sample concentration to its true value, as such "correction" is not possible. CARD data do not differentiate and quantify individual sources of variation. Instead, the ratio of percentile used to develop adjustment factors represents a "worst-case" scenario. Adjustment factors either inflate background values to the high end of the range or deflate release data to the low end. Therefore, adjustment factors compensate or adjust for the apparent analytical variability when comparing a high bias value to a low bias value (see Exhibit 3).

USING THE ADJUSTMENT FACTORS

This section of the fact sheet demonstrates how adjustment factors can be used with "J" qualified data for HRS scoring purposes, including documentation and detection limit issues.

Documentation Requirements for Using Qualified Data

In using "J" qualified data to determine an observed release, include a discussion of "J" qualifiers from the data validation report and cite it as a reference in the site assessment report or HRS documentation record. If adjustment factors are applied to "J" qualified data, reference and cite this fact sheet. These steps will ensure that the direction of bias is documented and will demonstrate how biases have been adjusted.

Detection Limit Restrictions

Adjustment factors may only be applied to "J" qualified data with concentrations above the CLP CRQL for organics or CRDL for inorganics. "J" qualified data with concentrations below the CRQL can not be used to document an observed release except as specified in the previous section entitled "Using "UJ" Qualified Data."

Application of Factors

Exhibit 3 shows how to apply the factors to "J" qualified data. Multiply low bias background sample results by the analyte-specific adjustment factor or the default factor of 10 when an analyte-specific adjustment factor is not available. The resulting new background value effectively becomes a high bias value that may be used to determine an observed release. Divide high bias release sample data by the analyte-specific adjustment factor or the default factor of 10 when an analyte-specific adjustment factor is not available. The resulting new release sample value effectively becomes a low bias value that may be used to determine an observed release.

Note: High bias background data, low bias release data, and unbiased data may be used at their reported concentrations.

Note: Adjusted release and background values must still meet HRS criteria (e.g., release concentration must be at least three times above background level) to determine an observed release.

Examples Using Trichloroethene in Soil and Water

1. *Release water sample is unbiased, background water sample is unbiased but all data are qualified with a "J" due to an contractual laboratory error not analytical error.*

Background sample value: 12 μg/L (J) *no bias*
Release sample value: 40 μg/L (J) *no bias*

The CRQL for trichloroethene is 10 μg/Kg for soil and 10 μg/L for water.

In this example, the qualification of the data is not related to bias in the reported concentrations. Thus, using adjustment factors is not needed and an observed release is established if all other criteria are met.

2. *Release soil sample data is biased low, background soil sample data is biased high.*

Background sample value: 12 μg/Kg (J) *high bias*
Release sample value: 40 μg/Kg (J) *low bias*

In this example, the direction of bias indicates that the true release value may be higher and the true background value may be lower than reported values. The release sample concentration still exceeds background by more than three times, so an observed release is established, provided all other HRS criteria are met. Using adjustment factors is not needed.

EXHIBIT 3 USE OF ADJUSTMENT FACTORS FOR "J" QUALIFIED DATA		
Type of Sample	**Type of Bias**	**Action Required**
Background Sample	No Bias	None: Use concentration without factor
	Low Bias	Multiply concentration by factor
	High Bias	None: Use concentration without factor
	Unknown Bias	Multiply concentration by factor
Release Sample	No Bias	None: Use concentration without factor
	Low Bias	None: Use concentration without factor
	High Bias	Divide concentration by factor
	Unknown Bias	Divide concentration by factor

3. *Release soil sample data is unbiased, background soil sample is biased low.*

Background sample value: 12 μg/Kg (J) *low bias*
Release sample value: 30 μg/Kg *no bias*

In this example, the true background value is assumed to be less than the reported value; however, an observed release may still be possible. To use the data to establish an observed release, multiply the background sample data value by the adjustment factor given for trichloroethene in soil (2.11). No adjustment factor is needed for the release sample.

New background sample value:
(12 μg/Kg) x (2.11) = 25.32 μg/Kg (J) *high bias*

The release sample concentration does not meet or exceed the new background level by three times, so an observed release is not established.

4. *Release water sample data is biased high, background water sample data is unbiased.*

Background sample value: 15 μg/L *no bias*
Release sample value: 70 μg/L (J) *high bias*

In this example, the true release value may be lower than the reported value; however, an observed release may still be possible. To use the data to establish an observed release, divide the release sample by the adjustment factor for trichloroethene in water (1.66). No adjustment factor is needed for the background sample.

New release sample value:
(70 μg/L) ÷ (1.66) = 42.17 μg/L (J) *low bias*

The new release sample concentration does not meet or exceed the background level by three times, so an observed release is not established.

5. *Release soil sample data has unknown bias; background soil sample data has unknown bias.*

The following example is the most conservative approach to using adjustment factors with qualified data.

Background sample value: 20 μg/Kg (J) *unknown bias*
Release sample value: 325 μg/Kg (J) *unknown bias*

In this example, it is not possible to determine from the reported values if an observed release is possible. To use the data to establish an observed release, divide the release sample value and multiply the background sample value by the adjustment factor given for trichloroethene in soil (2.11).

New release sample value:
(325 μg/Kg) ÷ (2.11) = 154.03 μg/Kg (J) *low bias*

New background sample value:
(20 μg/Kg) x (2.11) = 42.2 μg/Kg (J) *high bias*

The new release sample is at least three times the new background concentration, so an observed release is established, provided all other HRS criteria are met.

ISSUES WITH USING ADJUSTMENT FACTOR APPROACH

Some issues were raised regarding the application of adjustment factors to qualified data during the Agency's internal review process.

One issue is that "J" qualifiers are added to analytical results for many reasons that may or may not affect the accuracy and precision of the analytical result. The application of an adjustment factor to "J" qualified data in which bias is not affected could be considered overly conservative.

All qualified data should be carefully evaluated to determine if the data are biased. Based on the reasons for bias, the use of an adjustment factor should only be considered as a management tool that provides a quick screening of the data for site assessment, not a means for correcting the biased value to a true value. Application of adjustment factors are intended for use with qualified data reported at or above the CRQL and may not be applicable to data which are qualified but technically sound. As stated previously, qualified data should always be carefully reviewed on a case-by-case basis prior to use in HRS evaluation.

Another issue is the validity of "10" as a default adjustment factor. A default adjustment factor of 10 was a policy decision based on the range of adjustment factors and an industry approach. The default was chosen in order to account for the maximum variability regardless of the direction of the bias. Therefore, the default value of 10 is generally considered to be a conservative adjustment factor. EPA reviewed the use of the default value of 10 and determined that this value was conservative.

Even if using adjustment factors is sometimes overly conservative, this approach is preferable to not using the data at all. EPA maintains a "worst sites first" policy that only the sites considered most harmful to human health and/or the environment should be listed. EPA considers the use of adjustment factors appropriate as a management decision tool. However, discretion is needed when applying adjustment factors. The use of adjustment factors may not be appropriate in all cases.

USE OF OTHER ADJUSTMENT FACTORS

EPA Regions may substitute higher, but never lower, adjustment factor values for the ones listed in this fact sheet on a case-by-case basis when technically justified. For example, other adjustment factors may be applied to conform with site-specific Data Quality Objectives (DQOs) or with Regional Standard Operating Procedures (SOPs) (*Data Quality Objectives Process for Superfund*, Publication 9355.9-01).

SUMMARY

For site assessment purposes, EPA Regions should not automatically discard "J" qualified data. However, site-specific data usability determinations may result in the data's not being used.

Data qualified under the EPA's CLP or from other sources of validated data may be used to demonstrate an observed release if certain measures are taken to ensure that the bias of the data qualifier is adjusted using the factor approach specified in this fact sheet. (This fact sheet provides a management decision tool for making qualified data usable for documenting an observed release.) The analyte and matrix-specific adjustment factors provided in Tables 1 through 4 of this fact sheet present these adjustment factors.

The scope of this fact sheet is limited to the situations described in Exhibit 1. The use of qualified analytical data without the adjustment factors presented in this fact sheet is limited. Higher adjustment factors may be substituted by EPA Regions on a case-by-case basis when technically justified by site-specific DQOs or SOPs.

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TABLE 1
FACTORS FOR VOLATILE ORGANIC ANALYTES

VOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Samples Reviewed	Factor	Number of CARD Samples Reviewed	Factor
1,1,1-TRICHLOROETHANE	—	10.0	—	10.0
1,1,2,2-TETRACHLOROETHANE	—	10.0	—	10.0
1,1,2-TRICHLOROETHANE	—	10.0	—	10.0
1,1-DICHLOROETHANE	—	10.0	—	10.0
1,1-DICHLOROETHENE	7,031	2.71	5,015	2.35
1,2-DICHLOROETHANE-D4	32,446	1.52	25,516	1.38
1,2-DICHLOROETHENE (TOTAL)	—	10.0	—	10.0
1,2-DICHLOROPROPANE	—	10.0	—	10.0
2-BUTANONE	—	10.0	—	10.0
2-HEXANONE	—	10.0	—	10.0
4-METHYL-2-PENTANONE	—	10.0	—	10.0
ACETONE	—	10.0	—	10.0
BENZENE	7,024	1.97	5,001	1.64
BROMODICHLOROMETHANE	—	10.0	—	10.0
BROMOFORM	—	10.0	—	10.0
BROMOFLUOROBENZENE	32,444	1.7	25,518	1.26
BROMOMETHANE	—	10.0	—	10.0
CARBON DISULFIDE	—	10.0	—	10.0

TABLE 1
FACTORS FOR VOLATILE ORGANIC ANALYTES

VOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Samples Reviewed	Factor	Number of CARD Samples Reviewed	Factor
CARBON TETRACHLORIDE	—	10.0	—	10.0
CHLOROBENZENE	7,018	2.0	5,015	1.54
CHLOROETHANE	—	10.0	—	10.0
CHLOROFORM	—	10.0	—	10.0
CHLOROMETHANE	—	10.0	—	10.0
CIS-1,3-DICHLOROPROPENE	—	10.0	—	10.0
DIBROMOCHLOROMETHANE	—	10.0	—	10.0
ETHYLBENZENE	—	10.0	—	10.0
METHYLENE CHLORIDE	—	10.0	—	10.0
STYRENE	—	10.0	—	10.0
TETRACHLOROETHENE	—	10.0	—	10.0
TOLUENE-D8	32,447	1.63	25,526	1.21
TRANS-1,3-DICHLOROPROPENE	—	10.0	—	10.0
TRICHLOROETHENE	6,988	2.11	4,938	1.66
VINYL CHLORIDE	—	10.0	—	10.0
XYLENE (TOTAL)	—	10.0	—	10.0

TABLE 2
FACTORS FOR SEMIVOLATILE ORGANIC ANALYTES

SEMIVOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Samples Reviewed	Factor	Number of CARD Samples Reviewed	Factor
1,2,4-TRICHLOROBENZENE	6,792	4.83	4,605	3.71
1,2-DICHLOROBENZENE-D4	32,848	4.22	21,506	3.0
1,3-DICHLOROBENZENE	—	10.0	—	10.0
1,4-DICHLOROBENZENE	6,796	6.0	4,599	3.85
2,2'-OXYBIS(1-CHLOROPROPANE)	—	10.0	—	10.0
2,4,6-TRIBROMOPHENOL	32,605	9.38	21,509	3.57
2,4,5-TRICHLOROPHENOL	—	10.0	—	10.0
2,4,6-TRICHLOROPHENOL	—	10.0	—	10.0
2,4-DICHLOROPHENOL	—	10.0	—	10.0
2,4-DIMETHYLPHENOL	—	10.0	—	10.0
2,4-DINITROPHENOL	—	10.0	—	10.0
2,4-DINITROTOLUENE	6,798	4.88	4,623	3.52
2,6-DINITROTOLUENE	—	10.0	—	10.0
2-CHLORONAPHTHALENE	—	10.0	—	10.0
2-CHLOROPHENOL-D4	32,798	4.08	21,506	2.92
2-FLUOROBIPHENYL	32,913	3.38	21,532	2.84
2-FLUORPHENOL	32,781	5.05	21,511	3.34
2-METHYLNAPHTHALENE	—	10.0	—	10.0
2-METHYLPHENOL	—	10.0	—	10.0
2-NITROANILINE	—	10.0	—	10.0
2-NITROPHENOL	—	10.0	—	10.0
3,3'-DICHLOROBENZIDINE	—	10.0	—	10.0
3-NITROANILINE	—	10.0	—	10.0
4,6-DINITRO-2-METHYLPHENOL	—	10.0	—	10.0
4-BROMOPHENYL-PHENYLETHER	—	10.0	—	10.0

TABLE 2
FACTORS FOR SEMIVOLATILE ORGANIC ANALYTES

SEMIVOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Samples Reviewed	Factor	Number of CARD Samples Reviewed	Factor
4-CHLORO-3-METHYLPHENOL	6,715	6.26	4,609	4.46
4-CHLOROANILINE	—	10.0	—	10.0
4-CHLOROPHENYL-PHENYLETHER	—	10.0	—	10.0
4-METHYLPHENOL	—	10.0	—	10.0
4-NITROANILINE	—	10.0	—	10.0
4-NITROPHENOL	6,627	9.33	4,586	5.96
ACENAPHTHENE	6,773	4.68	4,600	3.63
ACENAPHTHYLENE	—	10.0	—	10.0
ANTHRACENE	—	10.0	—	10.0
BENZO(A)ANTHRACENE	—	10.0	—	10.0
BENZO(A)PYRENE	—	10.0	—	10.0
BENZO(B)FLUORANTHENE	—	10.0	—	10.0
BENZO(G,H,I)PERYLENE	—	10.0	—	10.0
BENZO(K)FLUORANTHENE	—	10.0	—	10.0
BIS(2-CHLOROETHOXY)METHANE	—	10.0	—	10.0
BIS(2-CHLOROETHYL)ETHER	—	10.0	—	10.0
BIS(2-ETHYLHEXYL)PHTHALATE	—	10.0	—	10.0
BUTYLBENZYLPHTHALATE	—	10.0	—	10.0
CARBAZOLE	—	10.0	—	10.0
CHRYSENE	—	10.0	—	10.0
DI-N-BUTYLPHTHALATE	—	10.0	—	10.0
DI-N-OCTYLPHTHALATE	—	10.0	—	10.0
DIBENZ(A,H)ANTHRACENE	—	10.0	—	10.0
DIBENZOFURAN	—	10.0	—	10.0
DIETHYLPHTHALATE	—	10.0	—	10.0

TABLE 2
FACTORS FOR SEMIVOLATILE ORGANIC ANALYTES

SEMIVOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Samples Reviewed	Factor	Number of CARD Samples Reviewed	Factor
DIMETHYLPHTHALATE	—	10.0	—	10.0
FLUORANTHENE	—	10.0	—	10.0
FLUORENE	—	10.0	—	10.0
HEXACHLOROBENZENE	—	10.0	—	10.0
HEXACHLOROBUTADIENE	—	10.0	—	10.0
HEXACHLOROCYCLOPENTADIENE	—	10.0	—	10.0
HEXACHLOROETHANE	—	10.0	—	10.0
INDENO(1,2,3-CD)PYRENE	—	10.0	—	10.0
ISOPHORONE	—	10.0	—	10.0
N-NITROSO-DI-N-PROPYLAMINE	6,725	4.92	4,513	4.0
N-NITROSODIPHENYLAMINE(1)	—	10.0	—	10.0
NAPHTHALENE	—	10.0	—	10.0
NITROBENZENE-D5	32,867	3.96	21,533	2.73
PENTACHLOROPHENOL	6,597	72.5	4,550	10.12
PHENANTHRENE	—	10.0	—	10.0
PHENOL-D5	32,855	3.85	21,489	3.53
PYRENE	6,543	11.86	4,612	5.67
TERPHENYL-D14	32,899	4.35	21,541	6.32

TABLE 3
FACTORS FOR PESTICIDES/PCB ANALYTES

VOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Samples Reviewed	Factor	Number of CARD Samples Reviewed	Factor
4,4'-DDD	—	10.0	—	10.0
4,4'-DDE	—	10.0	—	10.0
4,4'-DDT	5,343	12.82	3,850	7.14
ALDRIN	5,526	14.26	3,829	6.63
ALPHA-BHC	—	10.0	—	10.0
ALPHA-CHLORDANE	—	10.0	—	10.0
AROCLOR-1016	—	10.0	—	10.0
AROCLOR-1221	—	10.0	—	10.0
AROCLOR-1232	—	10.0	—	10.0
AROCLOR-1242	—	10.0	—	10.0
AROCLOR-1248	—	10.0	—	10.0
AROCLOR-1254	—	10.0	—	10.0
AROCLOR-1260	—	10.0	—	10.0
BETA-BHC	—	10.0	—	10.0
DECACHLOROBIPHENYL	57,315	17.79	33,592	10.0
DELTA-BHC	—	10.0	—	10.0
DIELDRIN	5,539	11.93	3,861	4.87

TABLE 3
FACTORS FOR PESTICIDES/PCB ANALYTES

VOLATILE ORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Samples Reviewed	Factor	Number of CARD Samples Reviewed	Factor
ENDOSULFAN I	—	10.0	—	10.0
ENDOSULFAN II	—	10.0	—	10.0
ENDOSULFAN SULFATE	—	10.0	—	10.0
ENDRIN	5,521	14.13	3,850	5.33
ENDRIN ALDEHYDE	—	10.0	—	10.0
ENDRIN KETONE	—	10.0	—	10.0
GAMMA-BHC (LINDANE)	5,545	11.79	3,832	10.0
GAMMA-CHLORDANE	—	10.0	—	10.0
HEPTACHLOR	5,548	7.88	3,836	5.26
HEPTACHLOR EPOXIDE	—	10.0	—	10.0
METHOXYCHLOR	—	10.0	—	10.0
TETRACHLORO-M-XYLENE	59,508	8.5	33,787	5.29
TOXAPHENE	—	10.0	—	10.0

TABLE 4
FACTORS FOR INORGANIC ANALYTES

INORGANIC ANALYTES	SOIL MATRIX		WATER MATRIX	
	Number of CARD Samples Reviewed	Factor	Number of CARD Samples Reviewed	Factor
ALUMINUM	5387	1.66	6208	1.30
ANTIMONY	5392	1.98	6170	1.27
ARSENIC	5675	1.74	6303	1.35
BARIUM	5360	3.99	6201	1.25
BERYLLIUM	5399	1.28	6208	1.25
CADMIUM	5385	1.41	6166	1.29
CALCIUM	5383	1.28	6201	1.24
CHROMIUM	5389	1.29	6210	1.30
COBALT	5392	1.25	6212	1.27
COPPER	5394	1.22	6205	1.25
CYANIDE	3281	1.55	225	1.36
IRON	5391	1.34	6216	1.27
LEAD	5982	1.44	6384	1.31
MAGNESIUM	5397	1.23	6210	1.24
MANGANESE	5395	1.24	6214	1.28
MERCURY	5954	1.83	256	1.50
NICKEL	5400	1.35	6210	1.29
POTASSIUM	3874	17.49	6175	1.24
SELENIUM	5620	2.38	6278	1.41
SILVER	5392	1.74	6215	1.42
SODIUM	5024	25.43	6195	1.26
THALLIUM	5621	1.86	6253	1.37
VANADIUM	5393	1.34	6212	1.25
ZINC	5404	1.50	6224	1.29

REFERENCE 11

ESI FIELD LOGBOOK - DCN: START-02-423
DIAMOND HEAD OIL REFINERY DIV. 1
KEARNY, NEW JERSEY

TABLE OF CONTENTS

EVENT	PAGE(S)
• ON-SITE RECONNAISSANCE - 21 October 1994	2-4
• RI wetland sediment Field Screening & CLP Sampling - 30 November - 1 Dec. 1994	5-10
• Surface/Subsurface Soil Sampling	11-14
• Groundwater Sampling	15
ESI Summary	16
• Downstream wetland sample measurements	17

Diamond Head Oil Refinery
On-site Reconnaissance
21 October 1999

1000 Arrive on site. waiting for Hudson Meadows Contact to open the front gate

1005 Grace Chen from ELM consulting arrives on site. Call Hudson Meadows, will be sending someone with a key shortly to open the gate

1110 Maintenance person from ~~ELM cont~~ (DT) Hudson Meadows arrives on site to open gate. Existing lock is cut and START was given a replacement pad lock. START will lock the gate when the reconnaissance is completed.

1115 START getting equipment ready for recon
Note: D Munnell from EPA is also on site.
HNu 898119 calibrated by K. Dorneman & Scott Snyder. See logbook for Results. Background: 0 ppm.
START personnel - D. Foerter, K. Dorneman and Scott Snyder.

1118 A dump truck arrives on site and dumps road debris on Hudson Meadows property

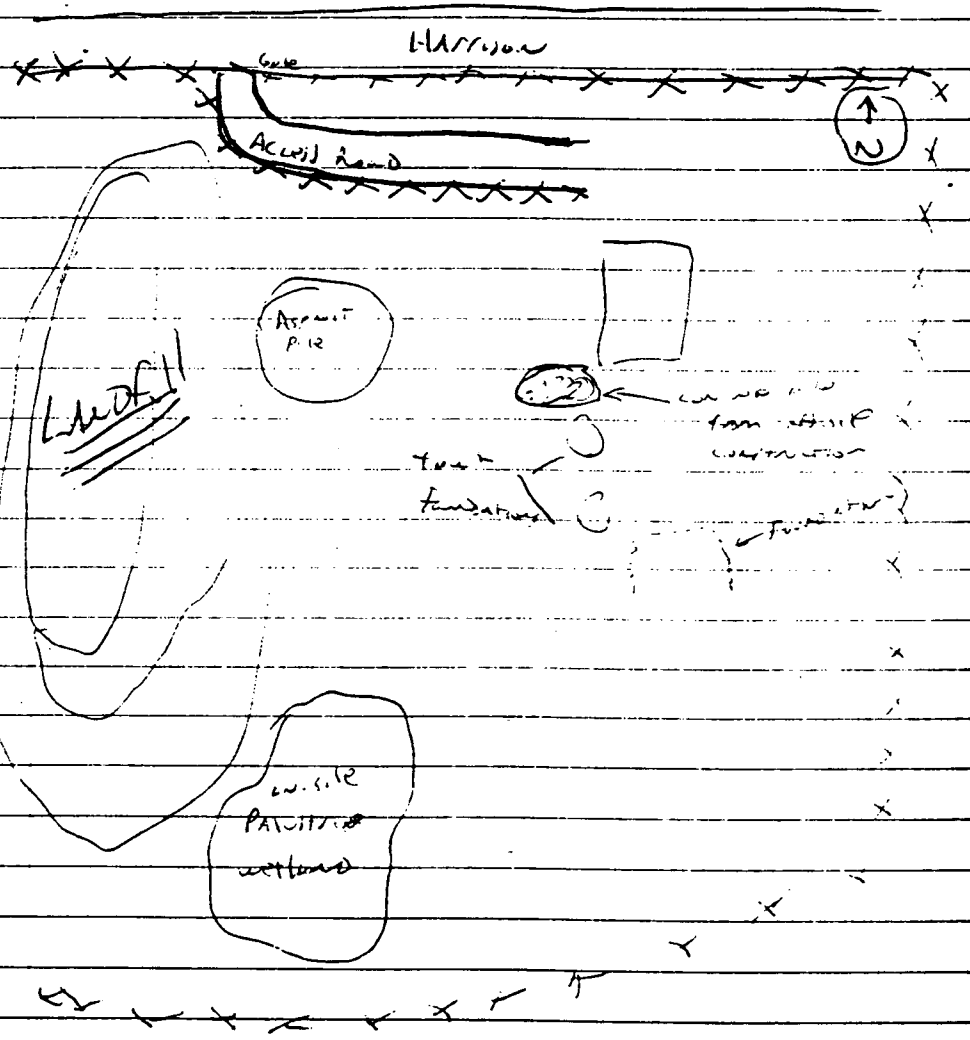
(DT) ~~1120~~ Rogangela - XYZ H37
USDOT 596114 GVW 26,000
#233

1120 D. Foerter and D. Munnell approach the driver. He says he is working on a construction road project in Kearny and the ~~driver~~ (DT) foreman instructed him to dump on the property. He pointed to a large pile (on the Kearny property) and said his company was dumping there for a while.

1175 Foreman comes on site. Said he is authorized by the Town of Kearny to dump asphalt debris on site. The lock which was cut belonged to his company. He said he would replace the lock with another. We informed the foreman that they were currently dumping on Hudson Meadows property and informed him

to dump on Keany's property in the future. He said he would comply.

1150 START conducts Reconnaissance. K Dorneman utilizes the GPS to plot the approximate perimeter of the on-site wetland located in the southern portion of the site southeast of the on-site landfill. Other areas on site which were plotted using the GPS include the old building foundation, Tiedo Storage tank foundations and the access road leading from Harrison Ave. toward the building. See below



1245 START concludes Reconnaissance, parking arrangement and will lock gate.

1300 START off site. As START leaves the site, another truck with construction tool arrives. START tried to move them down, driver ignored. START then locked the gate with another lock, possibly left by the construction contractor (same type) START took the lock left by Hudson Meadows and will use the lock left by the construction company, since the truck inside the site has the key and apparently uses the site throughout the day.

START

November 30, 1999 Wetland Field Screening

1000 Arrive on site, crew begins setting up Decon Area.

Personnel on site.

D. Foerter - Project mgr

J. Sy — PCB immunoassay

K. Dorneman - XRF Operator/CLP SMO

G. Gilliland - Health and Safety

S. Snyzer — sampler

M. Kaplan — sampler

Note: Gate was open when START arrived.

Grace Chen from ELM consulting meets us on site.

1044 M. Kaplan and S. Snyder decontaminating trowels with alconox and Potable H2O

NOTE: G. Gilliland calibrating air monitoring instruments.

Instrument	Background Reading
Miniram	0 ppm (mg/m³)
HNu	0 ppm
Mouldtox	0 → no Alarm

Weather: Overcast, approximately ~~50~~ 40°F

1100 K. Dorneman setting up XRF, J. Sy getting samples ready for immunoassay testing for PCBs.

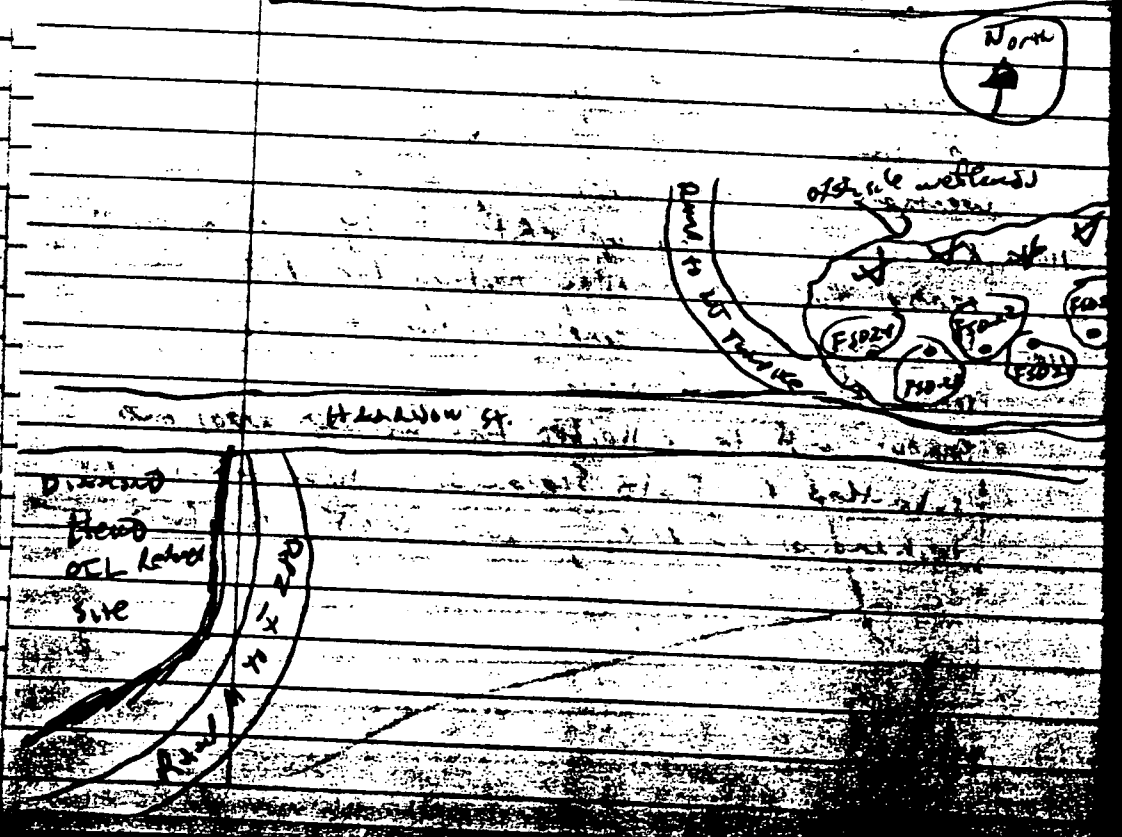
1105 Field crew leaves for sampling locations to obtain sediment samples for Field Screening

Samples will be collected from wetland areas and submitted for Field Screening utilizing immunoassay techniques for VCBs, and XRF for [illegible]

1645 START has collected screening samples FSD-01 through FSD-25. The remaining samples will be collected on 8/1/88. START begins to break down decon area.

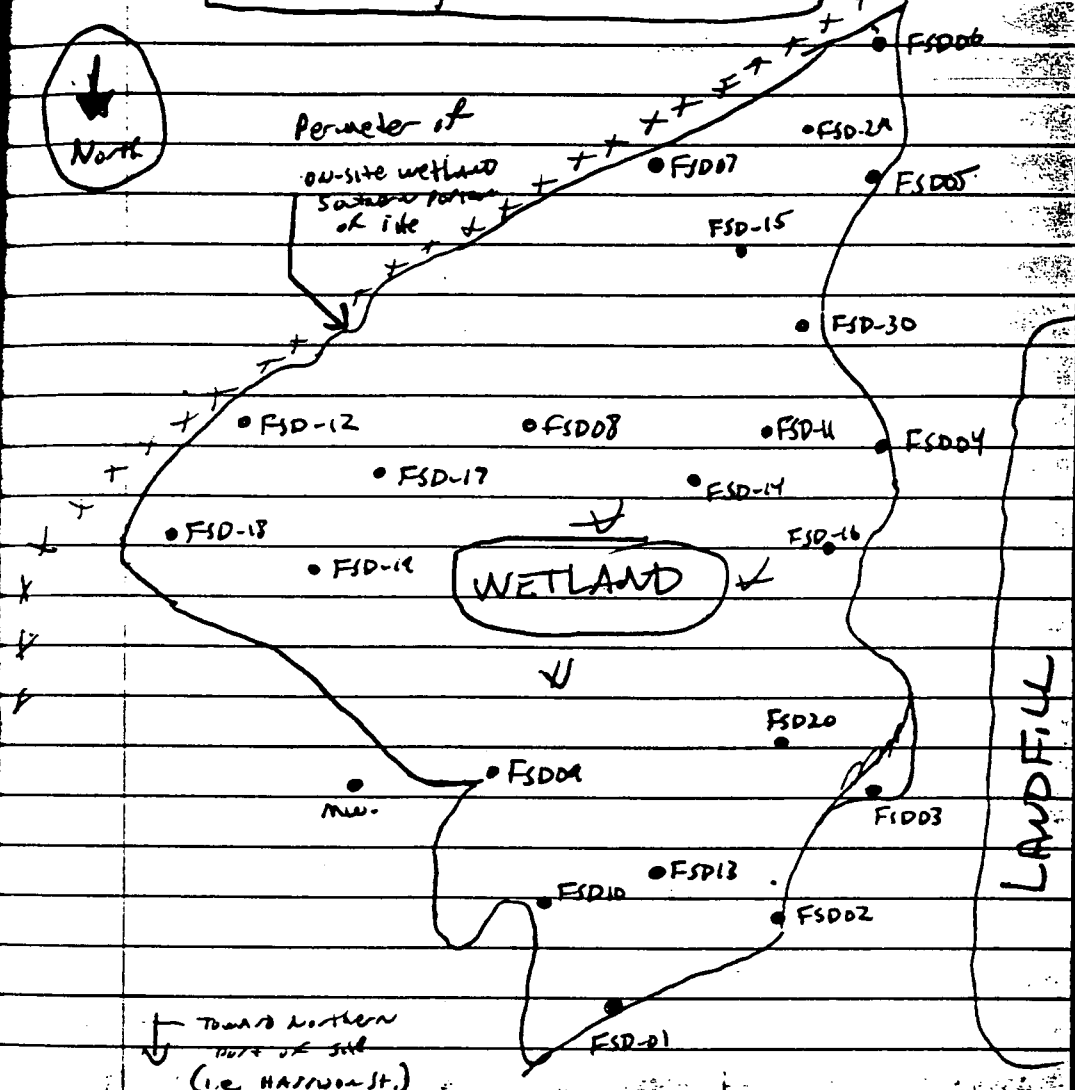
1730 START Departs site. The gate which was open is now closed and secured with a lock supplied by START. This was done as per a phone call to D. Marshall of EPA, who contacted the Hudson Meadows Urban Renewal Development Corp. to ask what we should do when completed with site work.

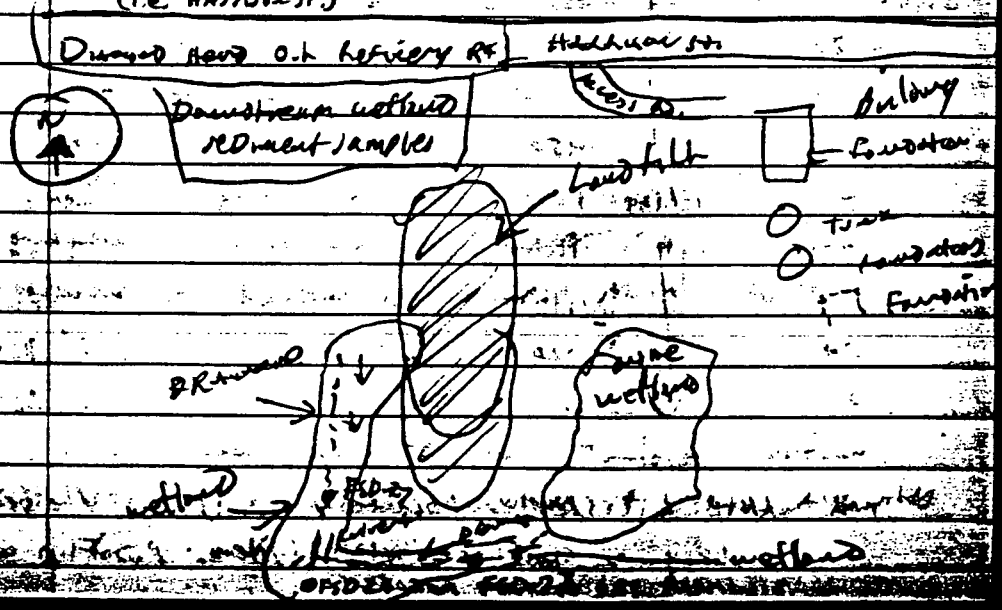
Diamond Head background wetland sediment location map



Diamond Head O&L RI
NOV. 30 - DEC 1
Field Screening Sample Location Map

7





FIELD Screening - Diamond Head Oil RI
11/30 - 12/1 1999

Sample No.	Date/Time	PID/FID Reading	Comments
FSD01	11/30/99 / 1120	ND	✓
02	1126	ND	✓
03	1133	ND	✓
04	1138	ND	✓
05	1144	ND	✓
06	1200	ND	✓
07	1205	ND	✓
08	1210	ND	✓
09	1215	ND	✓
10	1220	ND	Petroleum odor
11	1410	ND	✓
12	1430	ND	✓
13	1440	1-2 ppm	Petroleum odor
14	1445	ND	✓
15	1500	ND	✓
16	1556	ND	✓
17	1600	ND	✓
18	1605	ND	Fill material (Plastic)
19	1610	ND	✓
20	1615	ND	✓
21	1410	ND	✓
22	1420	ND	✓
23	1430	ND	[illegible]
24	1440	ND	[illegible]
25	1450	ND	[illegible]
26	12/1/99 1055	ND	wetland marker C-27
27	1100	ND	wetland marker C-28
28	1110	ND	wetland marker C-14
29	1120	ND	1-2' BGS Slag Pet
30	1130	ND	1-2' BGS

* Note All sample locations [illegible] Plotted [illegible] a [illegible] [illegible] current [illegible] the [illegible]

December 1, 1999 Wetland Sediment Field Screening (Day 2)

1030 START's Gerry Gilliland and D. Foerter arrive on site to collect the remaining five wetland sediment samples (i.e. FSD-26 — FSD-30). Grace Chen of ELM is also on-site
weather: sunny, ~20° F very windy, ~15-20 mph out of west.

1145 START completes sampling. Sample information for these samples is located on pages 7 and 8 of this logbook.

1215 START off site to deliver samples to START crew at EPA Edison, where Field Screening analysis is taking place. Sample Locations for CLP analysis will be selected when Field Screening is completed.

Note: No readings above background were established on the HNu Photoionization Detector, which was calibrated utilizing isobutylene. The background readings was 0 ppm.

Dec. 2, 1999 — Duff 12/1/99

~~1015~~ 0930 START on site to conduct CLP sediment sampling of on-site wetlands. Locations were selected based on Results of Field Screening Locations from 30 NOV and 1 Dec 1999

Personnel on site

D. Foerter — PM, sampler
G. Gilliland — Sampler / ASD
K. Donovan / M. Kaplan — Sample Mgmt Officer
S. Snyder — Field Support
G. Chen — ELM

1015 G. Gilliland conducts Hal Tailgate meeting

1020 START conducts sampling of sediment samples for CLP analysis

Diamond Head Oil Refinery
CLP Sampling → Case No. 22633

CLP Sample No.	Date/Time	Field Screening Location	Comments
SD01	12/2/94 1025	FSD-~~24~~ 25	MS/MSD
SD02	1040	FSD-24	Dup of SD03
SD03	1045	FSD-24	Dup of SD02
SD04	1130	FSD-01	ON-site wetland
SD05	1133	FSD-02	
SD06	1140	FSD-03	
SD07	1145	FSD-04	
SD08	1200	FSD-06	
SD09	1205	FSD-07	
SD10	1415	FSD-10	
SD11	1345	FSD-12	
SD12	1410	FSD-13	
SD13	1400	FSD-17	
SD14	1340	FSD-18	
SD15	1355	FSD-19	
SD16	1040	FSD-28	Southern Boundary
SD17	1030	FSD-27	Southern Boundary
SD18	1030	FSD-26	Southern Boundary
RB01	0945	N/A	Field Blank collected from bowl/towel for QA/QC

off site Background

1500 START concludes sampling. Crew now packing samples and Decomming equipment.

1530 START leaves site locks gate?

December 6, 1999 Surface & Subsurface Soil Sampling {GEOPROBE Days}

0800 START arrives on site. Meet with Kurt Fendler of Terra Probe
weather: cold, ~40° Rain, winds to east at 5-10 mph.
START personnel on site:

D. Foerter - Site PM, Health & Safety, QA.
G. Gilliland - GEOPROBE oversight, sampler
M. Kaplan - Sample Mgmt officer

0830 D. Foerter Holds Health & Safety Tailgate meeting
0900 D. Foerter & M. Kaplan collect rinsate sample RB02 from bowl, trowel, and split spoon shoe collar. All equipment was decontaminated prior to collection of the sample
0920 Field crew initiates borings at boring location B-1.

Boring	Sample	Depth (ft)	Date/Time	GW Depth	Notes/Comments
B-1	S01	0-2'	12/6/99 /0930	-	variable fill material, cinder
-	SS01	2-4'	/0940	4'	ash, etc. Petroleum odor
-	-	-	-	-	at 2'-4' interval
B-2	S02	0-2'	0955	-	Same as B-1, except
	SS02	2-4'	1000	4'	no Petroleum odor
B-3	S03	0-2	1030	-	Same as B-1, except
	SS03	2'-4'	1040	4'	no Petroleum odor
B-4	S04	0-2'	1055	-	Meadow mat at 6-8'
-	SS04	2-4'	1105	4	interval
B-5	S05	0-2'	1130	-	Petroleum odor
-	SS05	2-4'	1135	4'	Petroleum odor
B-6	S06	0-2	1200	-	Strong Petroleum odor
-	SS06	2-4'	1205	4'?	Product at 4'
B-7	S07	0-2'	1340	-	Petroleum odor, Fill
	SS07	3-5'	1400	5'	material
	S25	0-2	1345	5	S25, Duplicate of S07
B-8	S08	0-2	1420		Fill
	SS08	7-9	1430	9'	Cinder 3-5, 7-9'
-			-	-	

Boring	Sample	Depth (ft)	Date/Time	GW Depth (ft)	Notes
B-9	S09	0-2	12/6/99 1515	2'	
—	SS09	2-4	1530		4' Petroleum Sheen
					Jersey City Chromium at 4-5'
B-10	S10	0-2'	1545	2'	Petroleum odor
	SS10	2-4'	1550		Petroleum odor
B-11	S-11	0-2	1605	2'	—
	SS-11	6-8'	1615	—	Thin saturated clay at 3-4' interval
—	—	—	—	—	
B-12	S12	0-2'	1630	2'	—
—	SS12	5-7'	1635		Petroleum saturated soil at 6-7'

1700 START personnel packing of equipment and packing samples for shipment to organic and inorganic laboratories

1730 START leaves site. Site is locked at the gate with a pad lock

1800 START arrives at FedEx in Edison with the samples collected on 12/6/99

December 7, 1999 (GEOPROBE)

Surface + Subsurface Soil & Groundwater Sampling (Day 2)

0815 Arrive on site. Teraprobe is on site to GEOprobe D.F. holds Health & Safety Tailgate meeting

Weston personnel on site:

D. Foerter	Site PM, H&S, QA
M. Kaplan	Sample Mgmt officer
G. Gilliland	Geoprobe oversite
H. Allen	Sampler

0830 D. Foerter and M. Kaplan collect rinsate blank sample RB03, which is collected from the stainless steel well screen

At the same time the crew has initiated Boring B-13, which is being collected in the loading dock area.

Boring	Sample	Depth (ft bgs)	Date/Time	GW Depth (ft bgs)	Notes/comments
B-13	S13	0-2'	12-7-99/0830		Fill in silty sand matrix
	SS13	6-8'	0835		0.1 saturated black clayey soil; pet.
					odor, brick, sand, till
B-14	S-14	0-2'	12-7-99/0900		Fill, sandy, brick, gravel; oil sat.
(cut fence	SS14	4-6'	0910		at 4' - Free oil at 4' - refusal
to left)					at 6' Concrete at base
					concrete not oil saturated
B-15	S15	0-2	0930		Fill: 0.5' clayey silt, 2' of
(cut fence	SS15	6-8	0940		brown fine sand. Concrete at
to right)					2.5'; oil saturated soil below
					~3.5'
B-16	S16	0-2'	0950		Silty clay, then gravelly, silty sand
	SS16	5-7'	1005		Refusal at 2.5'; black clayey soil
					@ 2'-2.5'; slight petroleum odor
					Busted through on 3rd try; black
					sandy silt from 2.5'; petroleum
					odor; black soil at 5-6'

BORING	SAMPLE	DEPTH	Date/Time	GW Depth	Notes
B-17	S-17	0-2	12-7-99 / 1020		Fill, including concrete layers @ 1.5-2' and 3-5', Black, oil stained soil/Brick @ 2.5-3'
	SS17	2-4	1030	4'	
B-18	S18	0-2	1040		Fill: soil, brick, gravel, yellowish clayey sand @ 2-3' Free oil (saturated) at 6-7'
	SS18	6-8	1045		
B-19	S19	0-1.5'	1100		Soil to refusal on concrete at 1.5' Bushed through on 3rd Hole then refusal @ 7.5' Black fill, petroleum odor at 2-4'; dry concrete @ 4-5' - saturated. wet sandy clay at 5-7'; green staining at 7-7.5'
	SS19	2-4'	1110		
B-20	S20	0-2'	1125		Lt. brown sand from 3-6' Black oil @ 5.5'-7'; concrete refusal @ 7' Broke through at 2nd Location. Oil saturated soil continues beyond 8'. Pushed spoon to 12'; no recovery, but sleeve and coated with oil.
	SS20	5-7	1140		
	S24 (Dup of S20)	6-2'	1130		

1200 Boring and soil sampling complete; will commence groundwater sampling in the afternoon

Note: Melissa Kaplan collected a trip blank to accompany the field crew to the groundwater sample location. This sample was collected at [illegible]

GROUNDWATER SAMPLING (12-7-99)

Groundwater sample GW01 collected from Boring 2D at a depth interval of 5 to 9 feet below ground surface (bgs). The sample is the aqueous MS/MSD. The sample had a PID reading of 10 ppm. The sample also exhibited a petroleum odor.

DD

Sample GW03 collected from Boring B-16 at the 16-20 feet bgs interval. Sample GW04 is collected at 1530 and is a duplicate of GW03. Both samples exhibited a slight petroleum odor. There was no adequate flow at the 5-9, and 8-12 bgs LEVEL. These samples had a PID reading of 1 ppm ~~and~~ elsewhere.

DD

Sample GW02 is collected from Boring A-4 at a depth of 5-9' bgs. There is a petroleum odor and a reading of 1 ppm on the PID.

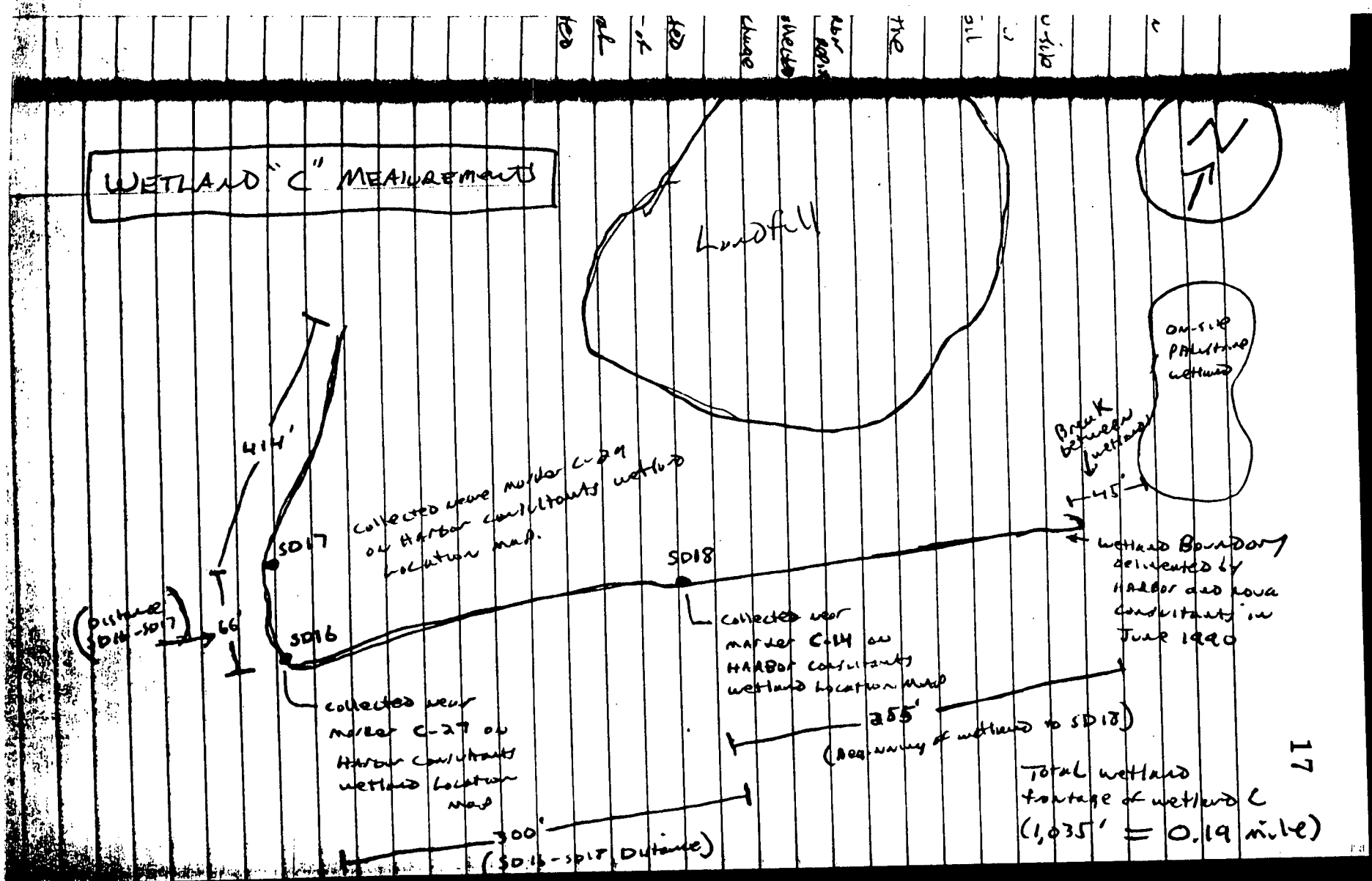
1630 Crew packing up truck and samples

1700 Leave site

DD

EST Summary

- CLP samples SD01 - SD03 were collected from an off-site wetland in locations judged not to have been impacted by previous site activities.
- CLP samples SD04 - SD14 were collected from the on-site pond, which is a palustrine wetland. This pond is believed to have been a part of the former oil lake, which was filled in.
- CLP samples SD15 - SD18 were collected from the wetland extending along the site's southern and western perimeter. These wetlands are delineated in the Harbor and 17 Report
- Samples collected from Borings 1 through 8 were collected in areas where there may have been illegal discharge of oil to the surface. [Samples SO1-SO8 SS01-SS08 S13, SS13]
- Samples collected from Borings 14 - 20 were collected from areas which are believed to have been part of the former lake. Product was observed in several of these borings. Petroleum odors were also noted in these borings. [Samples S14-S20, SS14-SS20 S24, SS24]
- All sediment samples were collected at the surface (0-6")


WETLAND "C" MEASUREMENTS
Landfill
N
On-site Palustrine wetland
Break between wetlands
45'
414'
SD17
collected near marker C-29 on Harbor consultants wetland location map.
SD18
wetland Boundary delineated by Harbor and Nova consultants in June 1990
(Distance SD16-SD17)
66'
SD16
collected near marker C-14 on Harbor consultants wetland location map
collected near marker C-27 on Harbor consultants wetland location map
255'
(Beginning of wetland to SD18)
300'
(SD16-SD17 Distance)
Total wetland frontage of wetland C
(1,035' = 0.19 mile)

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REFERENCE 12

REGION II
SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

PROJECT NOTE

TO: Diamond Head Oil Refinery Div. (TDD No.: 02-00-08-0015)
FROM: Dennis J. Foerter, CHMM
DATE: 30 May 2000
SUBJECT: Observations of Oil Discharge and Oil-stained Soil at Diamond Head Oil

Attached are three New Jersey Department of Environmental Protection memorandums which document observations of oil discharges and/or oil-stained soil in the northern and western portions of the Diamond Head Oil Refinery Div. Site between 1977 and 1985. Specifically, these areas were observed adjacent to the former building foundations, in the area of the access road adjacent to Harrison Avenue, and along the western property boundary in the vicinity of the right-of-way.

Signature/Date Dennis Foerter 5/30/00

MEMORANDUM

TO

FROM William T. Shader

Resident Engineer

Rt. 280, Sec. 8A &

SUBJECT Flooding of Harrison Avenue

DATE December 15, 1977

MEMORANDUM OF RECORDS

On Monday, December 12, 1977 it was noticed that large quantities of oil had been deposited on an area adjacent to Diamond Head Oil Company following existing drainage patterns, the oil moved to an area on the South side of the Access Road to the Diamond Head Oil Company. Standing water in this area was displaced by the oil and the water moved across the Access Road to the area between the Access Road and Harrison Avenue.

The situation was reported to the Hackensack Meadowlands Development Commission and the Attorney Generals office. This office stressed the fact that additional rains would cause the oil to move out unto Harrison Avenue causing a very hazardous condition.

On Wednesday December 14, 1977 heavy rains displaced the oil and an area of Harrison Avenue approximately 100 feet long was covered with water and oil. Attempts were made to contact Hudson County Officials, but without success.

On Thursday, December 15th. the water and oil level had receded, however, oil remains on the roadway and oil has been tracked up and down the roadway by traffic. The Hackensack Meadowlands Development Commission and the Hudson County Road Development were notified of the above condition. Efforts by Crescent Construction Co., Hudson County Road Development and the Kearny Fire Department corrected the above situation.

cc.: Kearny City Engineer &
Director of Public Works
Attorney General
Hackensack Meadowlands Dev. Comm.
Mr. William T. Kirchner
Mr. R. Jones - Design
File

SURFACE DESIGN AREA 2
DEC 22 1977
ALL TF CT BD RH ES RD JP EE AW RR JS
INF.
ACT.
File

New Jersey Department of Transportation

MEMORANDUM

TO _____ FROM _____

SUBJECT _____ DATE April 3, 1978

MEMORANDUM OF RECORD

On March 30, 1978 it was observed that Diamond Head Oil Co. was draining one of their tanks using a hose, to the west side of their property. This oil and water mixture follows the existing ground contours and winds up on States R.O.W.

Matters are further complicated as the 24" Kearny water line is under construction in this area. The contractor has notified this office that compensation for additional work will be claimed due to the oil conditions in this area.

The Hackensack Meadowlands Commission was notified of the situation.

cc.: Mr. John Bolan, H.M.D.C.
Hudson Cty.Dept.of Public Works
Mr. Richard Hernan, County Engineer
Mr. R. Jones, Area 2 Design
Mr. G. Hess, Attorney General
Mr. W. Kirchner, Supervising Engineer
Mr. Frank Bartholomew, Fed.Hwy.Administration
File

H. M. D. C.
APR 10 1978
RECEIVED

MEMO

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO Joseph Rogalski, Assistant Director

FROM Frank Gagliano thru Anthony J. Cavalier, Region Chief DATE January 16, 1985

SUBJECT Diamond Head Oil, Kearny

Pursuant to your memo of December 31, 1985, I was assigned the subject case for a site inspection. The site was co-inspected by Gary Allen, BFO, who had some involvement with the site during the late 1970's.

The site inspection took place on January 8, 1985. The weather was sunny and clear, temperature about 25°F, and winds from the west-north west at 15-20 mph. The entrance road gate was unlocked and open. No buildings, tanks or other facilities remain at the site. However, the foundation of a work building and several tank ring foundations were observed. The site is extensively covered with demolition rubble which evidently was bulldozed throughout the property. The area is surrounded by a chain link fenced which divides the site from the I 280 right of way.

Immediately to the west of the building foundation, was a 60' x 30' oil stain. Continuing to the south from the building foundation led us to the first tank base. This area did not reveal any visual contamination. In the vicinity of this tank base were several small oil stains on the ground. The second tank base was filled with water (frozen) and we observed that the substrate was covered with a heavy black tarry material. Further south, approximately 200', we observed 6-10 drums or partial drums. Surrounding one group of drums was a heavily stained area. It could not be determined at the time of the inspection if the partially buried drums contained any liquids. The surface drums were empty.

We then walked the fenceline where we observed some isolated stains in the soil. The fence was down and pulled aside along the easterly perimeter. As we walked to the south from this point we came upon a open ponded area (frozen over), with evidence of oily residue around the edges. The pond was irregular in shape and about 50' across. It drains to its southwesterly corner, where it exits to a marshy area which again opens up into a shallow ponded area. There was no evidence of the black tarry material visible at this location. The pond was also iced over.

We walked back along the westerly edge of this narrow property. When we got about 200' - 250' from the old building foundation, we observed a very thick tarry substance mounding up from the surface. This material was frozen hard but there remained evidence that it was probably softer during the warmer months. This black substance covered dozens of square feet and indicates that the soil is saturated with it.

The site revealed evidence of the illegal dumping of solid waste. This is due to the fact that the site is unsecured. During our inspection we came upon a new car which was abandoned in the tall weeds on the site. A vehicle check was performed and the automobile came up positive stolen. The Kearny Police Department was notified.

These observations are consistent with previous inspections conducted by Matthew J. Bigley, NFO, on April 23, 1985, by Bob Dante, NFO, on May 30, 1984, and by Donna Dawson, NFO, on June 15, 1982.

REFERENCE 13

REGION II
SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

PROJECT NOTE

TO: Diamond Head Oil Refinery Div. (TDD No.: 02-00-08-0015)
FROM: Dennis J. Foerter, CHMM
DATE: 16 June 2000
SUBJECT: Non-Contaminated Portion of Wetland C

Attached is a portion of a State of New Jersey, DEP Freshwater Wetlands Map which shows the lower non-contaminated portion of Wetland C (wetland type 19 in the map). This map illustrates that there is approximately 600 feet (0.11 mile) of frontage which extends from the most downstream ESI sediment sample (SD16) southwest toward Franks Creek.

Signature/Date 6/16/00

FRESHWATER WETLANDS MAP

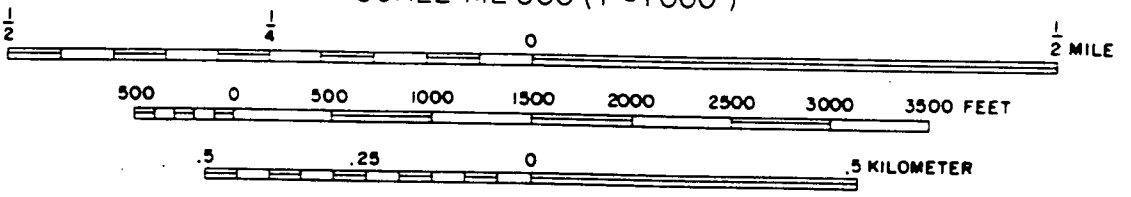
STATE OF NEW JERSEY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

ELIZABETH NE

ELIZABETH

SCALE 1:12 000 (1" = 1 000')



WETLAND/WATER TYPES FOUND ON THIS MAP:
(For Further Information on These Classification Types, See Supplemental Key.)

01	UPLAND	48	MODD
05	PEMIC	64	PEMIE
06	R2OW	124	R2OWx
07	POWH	392	R3UBIx
19	PEMIB	409	R3UB3x
43	POWHx	424	UWL

REFERENCE 14

REGION II
SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

PROJECT NOTE

TO: Diamond Head Oil Refinery Div. (TDD No.: 02-00-08-0015)
FROM: Dennis J. Foerter, CHMM
DATE: 16 June 2000
SUBJECT: Analytical Data/Sample Quantitation Limits (Diamond Head Oil Refinery)

Contacted Jennifer Sy, who is a Certified Data Validation Specialist in EPA Region II, to discuss inorganic analytical data utilized in scoring an observed release to surface water at the Diamond Head Oil Refinery Div. Site.

Samples SD01, SD16, and SD17 were flagged with a "J" qualifier due to the fact that the percent solids for these samples were less than 50 but greater than 10. Jennifer stated that the data would be biased low in this case.

In addition, Jennifer gave me information which could be utilized to determine sample quanititation limits for the background and observed release samples used in scoring the observed release (see attached). The following formula is utilized to determine SQLs:

{C x V x F) / ((1,000 x W) x (%solids/100))}

where: C = CRDL in ug/L
V = final volume (200 mL for all analytes except mercury, which is 100 mL)
F = dilution factor (normally 1 according to Jennifer)
W = wet weight of sample in grams (normally 1 according to Jennifer)

Based on this information, the following SQLs were obtained for the samples:

Sample	%solid	Lead SQL	Zinc SQL	Mercury SQL
SD01	42.3	1.42	9.46	0.008
SD02	76.1	0.79	5.27	0.015
SD03	68.8	0.87	5.81	0.014
SD16	48.2	1.24	8.3	0.010
SD17	49.4	1.21	8.1	0.010
SD18	64.5	0.93	6.2	0.010

Signature/Date Dennis Foerter 6/16/00

USEPA CONTRACT LABORATORY PROGRAM

STATEMENT OF WORK

FOR

INORGANICS ANALYSIS

Multi-Media

Multi-Concentration

Document Number ILM04.0

INORGANIC TARGET ANALYTE LIST (TAL) - TABLE 1

Analyte	Contract Required Detection Limit[1,2] (ug/L)
Aluminum	200
Antimony	60
Arsenic	10
Barium	200
Beryllium	5
Cadmium	5
Calcium	5000
Chromium	10
Cobalt	50
Copper	25
Iron	100
Lead	3
Magnesium	5000
Manganese	15
Mercury	0.2
Nickel	40
Potassium	5000
Selenium	5
Silver	10
Sodium	5000
Thallium	10
Vanadium	50
Zinc	20
Cyanide	10

(1) Subject to the restrictions specified in Exhibits D and E, any analytical method specified in ILM04.0, Exhibit D may be utilized as long as the documented instrument or method detection limits meet the Contract Required Detection Limit (CRDL) requirements. Higher detection limits may only be used in the following circumstance:

If the sample concentration exceeds five times the detection limit of the instrument or method in use, the value may be reported even though the instrument or method detection limit may not equal the Contract Required Detection Limit. This is illustrated in the example below:

For lead: Method in use = ICP
Instrument Detection Limit (IDL) = 40
Sample concentration = 220
Contract Required Detection Limit (CRDL) = 3

The value of 220 may be reported even though the instrument detection limit is greater than CRDL. The instrument or method detection limit must be documented as described in Exhibits B and E.

(2) The CRDLs are the minimum levels of detection acceptable under the contract Statement of Work.

ARCS II CONTRACT 68-W9-0051
MALCOLM PIRNIE, INC.
RECORD OF TELEPHONE CONVERSATION/AGREEMENT

File No. 8003-337

Date: July 27, 1995 Time: 2:00 AM [] PM []

Outgoing Call

To: Hanif Sheikh (908)-906-6169 Telephone No.

Affiliation: USEPA Region II - Edison Facility, MMB

Malcolm Pirnie Staff: Lisa Greco (609) 860-0100 Telephone No.

Summary of Conversation:

The correct formula to use to calculate SQL's for inorganic data is the following:

{C X V X F) / ((1,000 X W) X (% solids/100))}

where:
C = CRDL in ug/l
V = final volume (200 mL for all analytes except Hg. Hg final volume = 100 mL)
F = dilution factor
W = wet weight of sample in grams

This will result in a value given in mg/kg.

Analytical Results (Qualified Data)

Case #: 27633 | SDG : MBTE74
Site : DIAMOND HEAD OIL REFINERY | Number of Soil Samples : 19
Lab. : CHEM | Number of Water Samples : 1
Reviewer :
Date :

Sample Number :	MBTA27		MBTE74		MBTE74D-Do Not Use		MBTE74S-Do Not Use		MBTE75	
Sampling Location :	6363-S10		6363-SD01		6363-SD01		6363-SD01		6363-SD02	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/06/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	15:45		10:25		10:25		10:25		10:40	
%Solids :	85.8		42.3		42.4		42.3		76.1	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	6350		4700	J	4970	J			1740	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ARSENIC	5.9		6.2	J	4.9	J	27.0	J	2.0	B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BERYLLIUM	0.28	B	0.47	UJ	0.47	UJ	27.2	J	0.25	U
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CALCIUM	11700		7970	J	7720	J			969	B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
COBALT	13.2		7.4	BJ	7.0	J	257	J	2.3	B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
IRON	19300		16000	J	16500	J			5520	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAGNESIUM	6620		2450	J	2530	J			997	B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MERCURY	0.43		0.24	UJ	0.24	UJ	1.2	J	0.13	U
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
POTASSIUM	670	B	819	BJ	828	J			309	B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SILVER	0.69	B	0.74	BJ	0.47	UJ	26.9	J	0.39	B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
THALLIUM	1.6	U	3.3	UJ	3.3	UJ	27.7	J	1.8	U
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ZINC	391		235	J	231	J	485	J	77.2	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Analytical Results (Qualified Data)

Case #: 27633 SDG : MBTE74
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBTE76		MBTE77		MBTE78		MBTE79		MBTE80	
Sampling Location :	6363-SD03		6363-SD04		6363-SD05		6363-SD06		6363-SD07	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	10:45		11:30		11:33		11:40		11:45	
%Solids :	68.8		44.0		30.4		54.6		66.7	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	1810		5240	J	5900	J	3490		3690	
ANTIMONY	[illegible]	[illegible]	[illegible]	BJ	[illegible]	BJ	[illegible]	[illegible]	[illegible]	[illegible]
ARSENIC	2.7	B	7.2	J	11.9	J	4.6		6.0	
BARIUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BERYLLIUM	0.29	U	0.48	BJ	0.65	UJ	0.36	U	0.30	U
BORON	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CALCIUM	1690		44300	J	6600	J	2290		2380	
CHROMIUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
COBALT	2.9	B	10.9	BJ	7.6	BJ	3.1	B	5.1	B
COPPER	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
IRON	6070		10400	J	20400	J	8610		10700	
LEAD	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAGNESIUM	926	B	12400	J	3710	J	898	B	1510	
MANGANESE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MERCURY	0.14	U	1.0	J	1.0	J	0.30		1.7	
NICKEL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
POTASSIUM	235	B	1580	BJ	1140	BJ	604	B	426	B
SELENIUM	1.5	UJ	2.3	UJ	3.3	UJ	1.8	UJ	1.5	UJ
SILVER	0.50	B	2.0	BJ	2.4	BJ	0.76	B	1.4	B
SODIUM	416	B	1620	BJ	1130	BJ	420	B	225	B
THALLIUM	2.0	U	7.2	J	4.6	UJ	2.5	U	2.1	U
VANADIUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ZINC	102		17700	J	3680	J	251		396	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Case #: 27633 SDG : MBTE74
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBTE86		MBTE87		MBTE88		MBTE89		MBTE90	
Sampling Location :	6363-SD13		6363-SD14		6363-SD15		6363-SD16		6363-SD17	
Matrix :	Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	12/02/1999		12/02/1999		12/02/1999		12/02/1999		12/02/1999	
Time Sampled :	14:00		13:40		13:55		10:40		10:30	
%Solids :	60.8		74.7		75.5		48.2		49.4	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	7380		5580		4860		7460	J	5770	J
ANTIMONY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ARSENIC	37.7		14.8		19.8		15.7	J	16.6	J
BARIUM	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
BERYLLIUM	0.51	B	0.35	B	0.34	B	0.57	BJ	0.43	BJ
CADMIUM	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
CALCIUM	5480		7790		5110		19200	J	21100	J
CHROMIUM	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
COBALT	6.7	B	6.3	B	5.1	B	9.0	BJ	6.4	BJ
COPPER	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
IRON	22900		21500		14200		19400	J	28800	J
LEAD	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
MAGNESIUM	2750		3030		2150		3020	J	2670	J
MANGANESE	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
MERCURY	3.5		2.2		3.4		2.9	J	3.3	J
NICKEL	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
POTASSIUM	725	B	586	B	581	B	890	BJ	692	BJ
SELENIUM	[illegible]		[illegible]	U	[illegible]	U	[illegible]	UJ	[illegible]	UJ
SILVER	3.2		1.7	B	2.4	B	3.6	BJ	3.3	BJ
SODIUM	[illegible]	B	[illegible]	B	[illegible]	B	[illegible]	BJ	[illegible]	BJ
THALLIUM	2.2	U	1.8	U	1.8	U	2.9	UJ	2.8	UJ
VANADIUM	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
ZINC	944		660		680		1240	J	1170	J
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Case #: 27633 SDG : MBTE74
Site : DIAMOND HEAD OIL REFINERY
Lab. : CHEM
Reviewer :
Date :

Sample Number :	MBTE91		IDL(ug/L)							
Sampling Location :	6363-SD18									
Matrix :	Soil		Soil							
Units :	mg/Kg		mg/Kg							
Date Sampled :	12/02/1999									
Time Sampled :	10:30									
%Solids :	64.5									
Dilution Factor :	1.0		1.0							
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	6370									
ANTIMONY	[illegible]	B								
ARSENIC	11.5									
BARIUM	107									
BERYLLIUM	0.41	B								
BORON	23									
CALCIUM	8600									
CHROMIUM	5.7									
COBALT	6.0	B								
COPPER	157									
IRON	20400									
LEAD	552									
MAGNESIUM	3530									
MANGANESE	230									
MERCURY	2.1									
NICKEL	30.0									
POTASSIUM	943	B								
SELENIUM	1.5	U								
SILVER	1.9	B								
SODIUM	293	B								
THALLIUM	2.1	U								
VANADIUM	50.0									
ZINC	1120									
CYANIDE	N/A		N/A							

REFERENCE 15

REGION II
SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

PROJECT NOTE

TO: Diamond Head Oil Refinery Div. (TDD No.: 02-00-08-0015)
FROM: Dennis J. Foerter, CHMM
DATE: 6 December 1999
SUBJECT: Background ESI Sediment Samples

During the ESI Sampling Event Region II START collected sediment samples from wetland A and Wetland C, which are both considered Palustrine Emergent wetlands located on the Diamond Head Oil Refinery property. Region II START also collected background sediment samples from a wetland deemed to be unaffected by previous site activities at the Diamond Head Oil Refinery. Background sediment samples were collected from a wetland which had similar vegetation indicative of palustrine emergent wetlands. This wetland was similar in appearance to Wetland A and Wetland C. The sediment type was also similar, as well as the percent moisture. These samples were collected utilizing the same sampling procedures and were analyzed by the same laboratory for TCL organic compounds and TAL inorganics through the U.S. EPA contract Laboratory Program.

Signature/Date Dennis J. Foerter 12/6/99

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