BROWNFIELD SITE INVESTIGATION REPORT
LACKAWANNA FOUNDRY
LACKAWANNA, ERIE COUNTY, NEW YORK

CERCLIS ID No.: NYR000073064

EPA Contract No.: 68-W-00-121
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15 June 2001

Prepared for:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Prepared by:

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Date 6/14/01

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1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) tasked the Roy F. Weston, Inc. Site Assessment Team (SAT) to conduct a Brownfield Site Investigation (BSI) at the Lackawanna Foundry site located in Lackawanna, Erie County, New York. The purpose of the BSI was to characterize any residual contamination in soil under a concrete pad on-site, investigate the potential for groundwater contamination, and assess risks posed by the contamination. The sample locations were based on a request/recommendation by the New York State Department of Environmental Conservation. The Comprehensive Environmental Response Compensation and Liability Information System Identification Number (CERCLIS ID No.) for the Lackawanna Foundry site is NYR000073064 (Ref. No. 1, p.1). The Lackawanna Foundry property is being considered for future use as a park to be operated by the City of Lackawanna (Ref. Nos. 1, p.3; 2, p. 5).

1.1 Site Location/Description

The Lackawanna Foundry site is a 2-acre property located at 2 Elm Street in Lackawanna, Erie County, New York (Ref. Nos. 1, p. 1; 3, p. 1; 4, p.17). This site was the location of a foundry that produced specialty cast iron molds for over 60 years. The current owner of the site inherited the business from his father, who operated the foundry at this location for more than 30 years. The previous owner of the property is unknown at this time. Local residents have stated that foundry operations have steadily decreased over the past 20 years. The current owner ceased operations completely in 1997 (Ref. No. 3, p.4).

The site is located in a mixed residential and heavily industrialized area of Lackawanna (Ref. Nos. 1, pp. 1, 2; 3, p. 4). The site is bordered to the north by Smoke Creek; to the south by a multi-use city park, to the east by an active rail yard, and to the west by residential properties (Ref. Nos. 1, p. 2; 3, p.4; 4, p.19). Twelve residential properties are immediately adjacent to the western border of the site property, and approximately 100 residences are located within one-eighth mile of the site. The population within 0.5 mile is approximately 1,000 (Ref. No. 3, p.4). Figure 1 presents a Site Location Map.

Prior to the EPA Removal Action, which began in March 1999, the site consisted of several foundry buildings, approximately 100 drums in varying stages of deterioration located outside of the buildings, and an additional 200 drums, laboratory containers, compressed gas cylinders, and transformers located within the foundry buildings. Wastes on site included slag, foundry sand, binders, oils, resins, and other wastes (Ref. Nos. 1, p. 2; 3, p. 2). The EPA Removal Action was completed in September 2000, and the site now consists of an open grassy plot with a vegetated wetland area located in the north central portion of the property. (Ref. Nos. 1, p.3; 2, p.5; 4, p. 19). The site is currently well vegetated and is surrounded by a fence with a locked gate to control access (Ref. No. 2, p. 5; 4, p.19).

1.2 Previous Investigations/Regulatory History

In 1997, the New York State Department of Environmental Conservation (NYSDEC) performed an

inspection of the site and required the property owner to conduct an inventory of all containers on site, and to collect samples from transformers and suspect areas of polychlorinated biphenyl (PCB) soil contamination (Ref. Nos. 1, p. 2; 3, p. 7). Analytical results for the sampling event indicated that the transformer fluid contained up to 86 percent PCBs and nearby soil contained up to 210 parts per million (ppm) of PCBs (Ref. No. 1, p. 2; 3, pp.6-8). The inventory provided by the property owner listed more than 100 drums located at the site, which were in various stages of deterioration. NYSDEC requested the property owner to take actions to address the threats at the Lackawanna Foundry site; however, the property owner was financially unable to perform the cleanup (Ref. Nos. 1, p. 2; 3, pp. 7, 8).

At the request of NYSDEC, EPA performed a Removal Assessment of the Lackawanna Foundry property that was completed in March 1999 (Ref. Nos. 1, p. 2; 3, p. 2; 5, p.1). The entire site was unfenced and accessible to the public, and evidence of trespassing was observed. Approximately 100 drums were located outside the foundry buildings and another 200 drums, laboratory chemicals, compressed gas cylinders, and PCB transformers were located within the foundry buildings. In addition, the buildings containing the drums and transformers were in extremely poor condition and several access points to the buildings were observed (Ref. Nos. 1, p. 2; 3, p. 2).

On 19 March 1999, EPA was granted verbal authorization to conduct emergency stabilization actions at the Lackawanna Foundry site (Ref. No. 3, pp. 2, 3). EPA mobilized to the site on 22 March 1999 to begin stabilization procedures. EPA installed a fence along the perimeter of the site, inventoried and moved all containers of hazardous substances into the foundry buildings, and overpacked the leaking drums and containers as necessary. EPA then secured the foundry buildings (Ref. No. 1, p. 2; 3, p.3).

During the emergency stabilization operations, field characterization of drum contents revealed the presence of flammable, oxidizing, water reactive, and corrosive substances. Label information indicated that containers of paint-related materials had various concentrations of xylene, acetone, toluene, and naphtha (Ref. No. 3, p.3). Over 1,000 pounds of laboratory chemicals were inventoried and stabilized during the emergency action. Label information from these containers indicated that hazardous substances and wastes such as sulfuric acid, phosphoric acid, flammable alcohols and acetone, ammonium hydroxide, calcium carbide, and many unknown materials were present in these containers (Ref. No. 3, p.3). Eight compressed gas cylinders were collected from throughout the property and staged according to compatibility. Four cylinders contained liquified petroleum gas, one contained propane, one contained oxygen, one contained polymeric isocyanate, and one cylinder contained unknown substances (Ref. No. 3, p.3).

On 14 April 1999, the EPA Environmental Response Team (ERT) and the EPA Response Engineering and Analytical Contract team (Weston) conducted surface and subsurface soil sampling to determine the extent of contamination outside and inside the on-site foundry buildings (Ref. No. 1, p. 2; 3, p. 3; 6, p. 1). Metals detected in the soil at levels exceeding NYSDEC cleanup levels included arsenic, beryllium, cadmium, chromium, copper, iron, mercury, nickel, and zinc (Ref. No. 6, p. 3, Table 3). Arsenic contamination in soil adjacent to the site in the recreational area appeared to be associated with the former use of a baghouse dust collection system. PCBs were detected in

soil at levels up to 39 mg/kg (Ref. No. 6, p.3, Table 1). Semivolatile organic compounds (SVOCs) detected in the soil above NYSDEC cleanup levels included phenol, 2-methylphenol, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene. Phenol was the most frequently detected SVOC, and was detected at the highest concentrations of all SVOCs (Ref. No. 6, p. 3, Table 2).

An Action Memorandum, signed by EPA on 13 August 1999, authorized a Removal Action at the Lackawanna Foundry site to complete the removal actions started in April 1999. On 19 October 1999, the EPA Superfund Technical Assessment and Response Team (Weston) collected 34 soil samples south of the Lackawanna Foundry building, near the recreational area owned by the City of Lackawanna. The surface and subsurface soil samples were collected from predetermined grid locations and analyzed for arsenic to determine its extent (Ref. Nos. 7, p. 2; 8, p. 2, Table 1). The on-site buildings were demolished in November 1999 and excavation of contaminated soil was completed in April 2000 (Ref. No. 1, p. 3).

Hazardous wastes transported off site for disposal included approximately 680 tons of contaminated soils with less than 500 mg/kg PCBs, 900 tons of arsenic-contaminated soils, 160 cubic yards of PCB-contaminated debris, 360 cubic yards of contaminated soil with greater than 500 mg/kg PCBs, 8 PCB-contaminated transformers, 153 PCB capacitors, 2 drums of PCB oils, and 68 drums containing various hazardous substances (Ref. No. 1, p. 4).

Site restoration actions, including the placement of approximately two feet of clean topsoil over the excavated areas, were completed in June 2000. The site was seeded with grass, and the wetland in the center portion of the site was restored by the use of clean marsh sediment from a New York State Parks dredging project (Ref. Nos. 1, p 3; 2, p.4; 4, p.18,).

2.0 BROWNFIELD INVESTIGATION

The Brownfield Site Investigation at the Lackawanna Foundry site consisted of a file review of available background and analytical information, a site reconnaissance to determine soil sample and monitoring well locations, subsurface soil sampling, monitoring well installation, and collection of groundwater samples from the monitoring wells (Ref. No. 2, pp. 1, 4; 4, pp.17-21).

2.1 Site Reconnaissance

On 4 October 2000, EPA and EPA Site Assessment Team (Weston) personnel conducted a site reconnaissance at the Lackawanna Foundry site. The purpose of this visit was to determine the locations for monitoring well installation and subsurface soil sample collection (Ref. No. 2, p. 5; 4, pp.17-21). During the site reconnaissance, no buildings or other structures were observed on the Lackawanna Foundry property. The relatively flat site was well vegetated and surrounded by a fence with a locked gate to control access. All known waste sources were removed from the property during the EPA Removal Action conducted earlier in the year. There were no signs of stressed vegetation or contaminated soil (Ref. No. 2, p. 5; 4, pp.17-21).

2.2 Subsurface Soil Sampling Analytical Results

On 7 November 2000, the EPA Site Assessment Team (Weston) collected 14 subsurface soil samples from six soil boring locations at the Lackawanna Foundry property. Soil samples SS-01, SS-02, SS-03, and SS-07 (duplicate of SS-03) were collected from beneath a buried concrete pad located on the eastern portion of the site. Soil samples SS-04 (A through D), SS-05 (A through C), and SS-06 (A through C) were collected from boring locations at depths of 2 to 10 feet or until groundwater was encountered. Figure 2, Sample Location Map, depicts the soil sampling locations. The soil samples were analyzed for Target Compound List (TCL) organic and Target Analyte List (TAL) inorganic parameters according to EPA Contract Laboratory Program (CLP) protocol (Ref. No. 10, pp. 1, 2, 5, 6; 11, pp.1-4).

Table 1A provides the organic analytical results for the subsurface soil samples collected at the Lackawanna Foundry site. No volatile organic compounds (VOCs) were detected in the soil samples at concentrations exceeding the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) Recommended Soil Cleanup Objectives (RSCO) (Ref. Nos. 12, pp. 1, 2; 13, pp. 83-127). Five semivolatile organic compounds (SVOCs) were detected at levels exceeding their respective RSCOs. Phenol was detected above its RSCO (30 parts per billion [ppb]) in two samples collected from one borehole location (SS-04). Sample SS-04A (2-4 feet) , contained 7,900 ppb of phenol, and sample SS-04B (4-6 feet) contained 3,500 ppb of phenol. Chrysene was detected above its RSCO (400 ppb) in one sample, SS-04B, at 2,800 ppb. Benzo(b)fluoranthene was detected above its RSCO (1,100 ppb) in one sample, SS-04B, at 2,100 ppb. Benzo(a)pyrene was detected in three samples above its RSCO (61 ppb): sample SS-01 (7-9 feet) at an estimated concentration of 170 J ppb, sample SS-02 (6-8 feet) at 230 J ppb, and sample SS-06A (2-4 feet) at 190 J ppb. Dibenz(a,h)anthracene was detected above its RSCO (14 ppb) in one sample, SS-04B, at 530 ppb (Ref. Nos. 12, pp. 3-5; 13, pp. 128-172). No pesticides or PCBs were detected in the soil samples at concentrations exceeding their respective RSCOs (Ref. Nos. 12, pp. 1-9; 13, pp. 173-187).

Table 1B provides the inorganic analytical results for the subsurface soil samples collected at the Lackawanna Foundry site. RSCOs for inorganic hazardous substances are based on site background concentrations, or the higher of site background concentrations and a given numerical value. Since background concentration data are not available, sampling results were compared to the given numerical value (where applicable). Eight inorganic hazardous substances (metals) were detected at concentrations levels exceeding their respective RSCO. Arsenic was detected above its RSCO (7.5 ppm) in two samples, SS-04D (8-10 feet) at 16.9 ppm and SS-06C (6-8 feet) at 8.0 ppm. Chromium was detected above its RSCO (10 ppm) in 12 samples, ranging from 11.5 ppm in sample SS-01 to 27.2 ppm in sample SS-07 (duplicate of sample SS-03). Copper was detected above its RSCO (25 ppm) in three samples, SS-04D at 41.9J ppm, SS-05B (4-6 feet) at 25.1 ppm, and SS-06A (2-4 feet) at 34.4J ppm. Iron was detected above its RSCO (2,000 ppm) in 14 samples, ranging from 7,390 ppm in sample SS-04A to 52,800 ppm in sample SS-04D. Mercury was detected above its RSCO (0.10 ppm) in one sample, SS-04B, at 0.14J ppm. Nickel was detected above its RSCO (13 ppm) in 12 samples, ranging from 27.0 ppm in sample SS-01 to 48.9 ppm in sample SS-04D. Selenium was detected above its RSCO (2 ppm) in two samples, SS-06B at 2.3 ppm and SS-06C at 2.2 ppm. Zinc was detected above its RSCO (20 ppm) in 14 samples, ranging from 23.8 ppm in

sample SS-04A to 139 ppm in sample SS-06A. Beryllium was detected at concentrations exceeding its RSCO (0.16 ppm) in 12 samples, ranging in concentration from 0.45B ppm in sample SS-01 to 1.0B ppm in sample SS-04D (Ref. Nos. 12, pp. 1-9; 14, pp. 38-51).

2.3 Monitoring Well Installation/Groundwater Sampling

One bedrock groundwater monitoring well and four overburden monitoring wells were installed on the Lackawanna Foundry property during 8-13 November. The bedrock well, GW-01, was installed to a depth of 67 feet (Ref. No. 11, p.10). The four overburden wells, GW-02 to GW-05, were drilled to a depth of 20 feet each (Ref. No. 11, pp.4-13).

WESTON SAT collected five groundwater samples (GW-01, GW-03, GW-04, GW-05, and GW-06[duplicate of GW-01]) from four monitoring wells on 5 December 2000 (Ref. No. 11, pp.14-16). Figure 2, Sample Location Map, depicts the monitoring well/groundwater sample locations. The samples were analyzed for TCL organic and TAL inorganic parameters according to EPA CLP protocols. Monitoring well GW-02 was not sampled due to its inability to recharge (Ref. No. 11, p.16)

Table 2 provides the organic and inorganic analytical results for the groundwater sampling event conducted at the Lackawanna Foundry site (Ref. No.15, pp. 1, 6, 8). Results were compared to NYSDEC Ambient Water Quality Standards and Guidance Value (AWQS/GV). No organic compounds were detected at concentrations exceeding their respective AWQS/GVs (Ref. No. 16, Table 1; 17, pp. 2-28). Four inorganic concentrations exceeded their respective AWQS/GVs. Iron exceeded its AWQS/GV (300 ppb) in all five groundwater samples, ranging from 6,200 ppb in sample GW-03 to 42,000 ppb in sample GW-04. Magnesium exceeded its AWQS/GV (35,000 ppb) in one groundwater sample and its duplicate, sample GW-01 at 130,000 ppb and sample GW-06 at 120,000 ppb. Manganese exceeded its AWQS/GV (300 ppb) in three samples: GW-03 at 1,700 ppb, GW-04 at 1,700 ppb, and GW-05 at 2,200 ppb. Sodium exceeded its AWQS/GV (20,000 ppb) in four samples: GW-01 at 540,000 ppb, GW-03 at 22,000 ppb, GW-04 at 25,000 ppb, and GW-06 (duplicate of GW-01) at 550,000 ppb (Ref. No. 16, Table 1; 17, pp. 5, 9, 10, 14, 18, 22, 23, 26-30).

3.0 CONCLUSIONS AND RECOMMENDATIONS

Analytical results for subsurface soil samples collected during the EPA BSI indicate the presence of five SVOCs (phenol and four polynucleur aromatic hydrocarbons, or PAHs) at concentrations exceeding their corresponding NYSDEC RSCOs. Phenols are associated with foundry sands and therefore are attributed to site operations. Eight metals were also found at concentrations exceeding RSCOs. No site background concentration data exist for metals to establish site-specific RSCOs for comparison to the analytical results. However, with the possible exception of iron, metals concentrations were generally found to be comparable across the site, and within expected background ranges. Exceedences of RSCOs were observed in soil samples collected under the concrete pad and from monitoring well pilot borings.

Iron, magnesium, manganese, and sodium exceeded their AWQS/GVs in groundwater. Magnesium

is a common component of subsurface materials in the region, and iron and manganese concentrations were lower in the downgradient monitoring well than in upgradient monitoring wells.

Based on the above, contamination attributable to former site operations exists in soil at depths below that which had been previously removed. However, a two-foot-thick cap of clean fill was emplaced at the site. Previous site operations do not appear to have impacted groundwater. Based on the response/removal actions conducted to date and the existing analytical data, the site appears to be suitable for nonresidential use. The current soil cap must be maintained to prevent exposure to subsurface contamination, and a deed restriction should be executed to control future disturbances of subsurface soil. If the concrete pad is removed from the site enough soil should be removed from beneath it to achieve a total excavation depth of two feet. The excavation should be backfilled with two feet of certified clean fill. Concurrence regarding the above should be obtained from the NYSDEC by the entity ultimately responsible for control, redevelopment, and/or future use of the property.

REFERENCES

1. Final Pollution Report, U.S. Environmental Protection Agency (EPA). 15 September 2000. 4 pages.

2. Field Sampling Plan for Lackawanna Foundry Site, Lackawanna, Erie County, New York. Roy F. Weston, Inc. (WESTON) Site Assessment Team (SAT). October 2000. 22 pages.

3. Action Memorandum for Lackawanna Foundry Site Lackawanna, New York. U.S. EPA 13 August 1999. 35 pages.

4. Personal logbook for Donna Janda, Roy F. Weston, Inc. pp. 17-21.

5. Letter from New York State Department of Environmental Conservation (NYSDEC) to U.S. EPA Region II. 9 July 1999. 3 pages.

6. Final Report, Surface and Subsurface Soil Sampling, Lackawanna Foundry Site, Lackawanna, New York. WESTON Response Engineering and Analytical Contract (REAC). May 1999.

7. Quality Assurance Project Plan for Lackawanna Foundry Site. WESTON Superfund Technical Assessment and Response Team (START). 14 October 1999.

8. Trip Report for Lackawanna Foundry Site. WESTON START. 5 November 1999.

9. Sampling Final Trip Report - Lackawanna Foundry. WESTON START. 30 June 2000. 4 pages with attachments.

10. Sampling Trip Report - Lackawanna Foundry. WESTON SAT. 21 November 2000. 13 pages.

11. Lackawanna Foundry Site Logbook. SAT-1002.16 pages.

12. Technical and Administrative Guidance Memorandum #4046. Table 1. NYSDEC. 9 pages.

13. Record of Communication from Janet Trotter, EPA Region 2, ESAT/RSCC to Yunru Yang, WESTON SAT. Organic Analytical Results for Lackawanna Foundry Site. 5 February 2001. 187 pages.

14. Record of Communication from Janet Trotter, EPA Region 2, ESAT/RSCC to Yunru Yang, WESTON SAT. Inorganic Analytical Results for Lackawanna Foundry Site. 21 February 2001. 53 pages.

15. Sampling Trip Report - Lackawanna Foundry Site. WESTON SAT. 8 January 2001. 8 pages.

16. Technical and Operative Guidance Series. Standard 1.1.1 - Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. NYSDEC. June 1998 edition.

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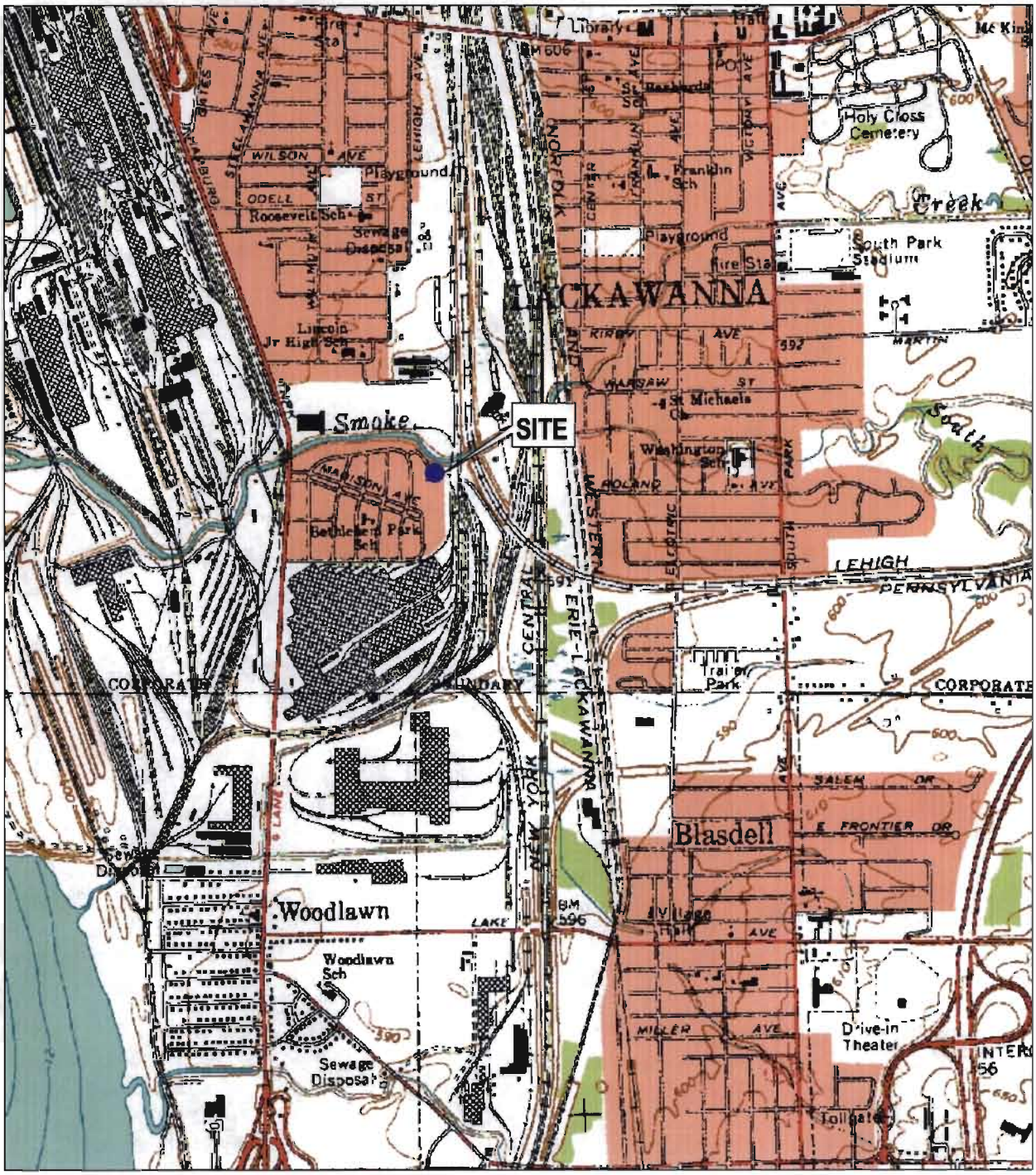
Figures



U.S. Geological Survey
7.5 Minute Series Topographical Map
Buffalo Southeast, NY Quadrangle
1948, Revised 1965

1000 0 1000 2000 Feet

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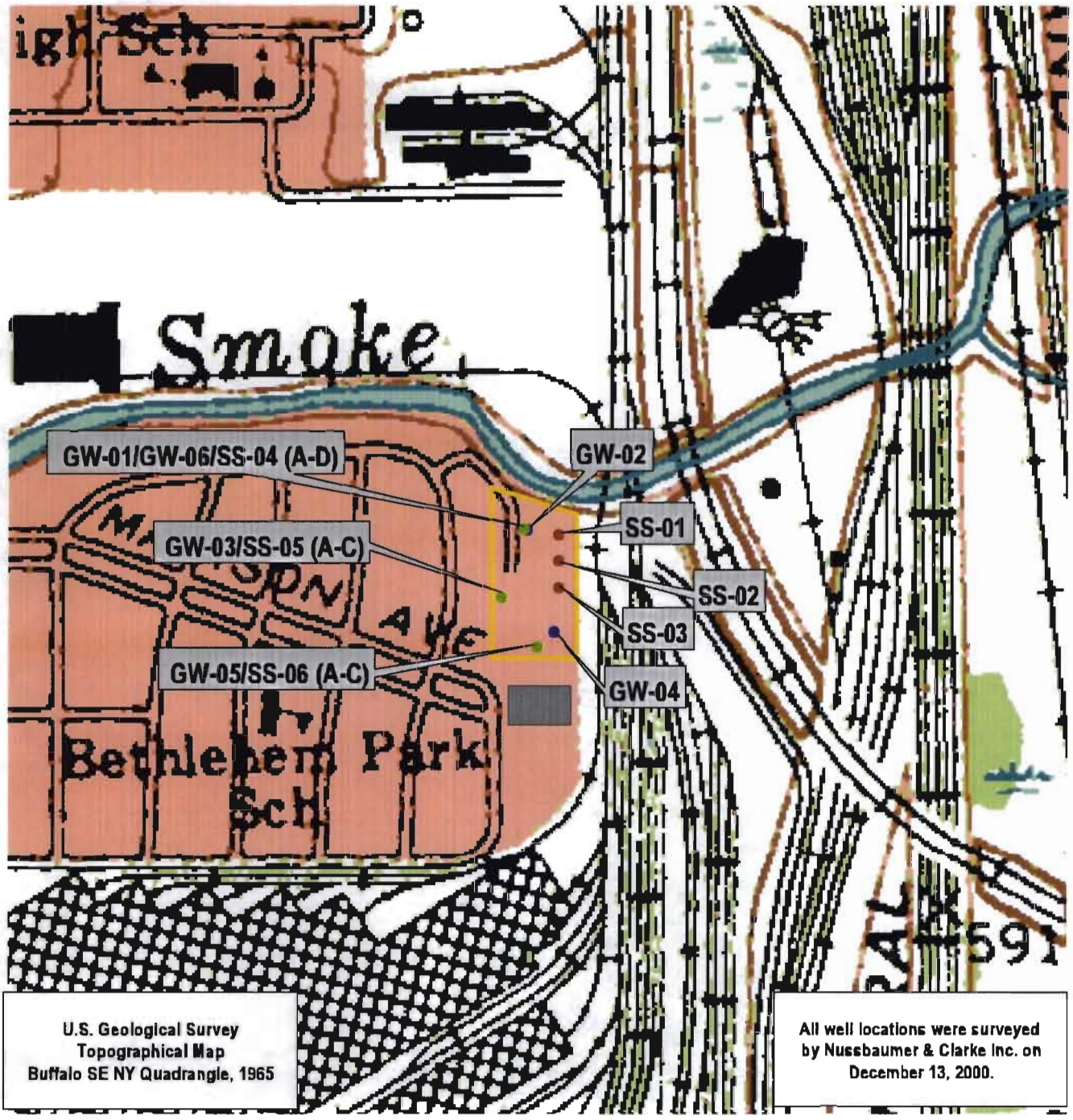
Lackawanna Foundry Site
Lackawanna, Erie Co., NY
Figure 1
Site Location Map

● Site Location



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Lackawanna Foundry Site
Figure 2
Sample Location Map

N W E S

Tables

TABLE 1A

SOIL SAMPLE ORGANIC ANALYSIS RESULTS FOR EPA SAT BROWNFIELD SITE INVESTIGATION (NOVEMBER 2000) LACKAWANNA FOUNDRY, LACKAWANNA, NEW YORK

Field Sample No. CLP Organic Sample No. Time Sampled Hazardous Substance	SS-01 BNP05 10:05	SS-02 BNP06 10:55	SS-03 BNP07 11:25	SS-07 BNQ91 11:35 Dup. Of SS-03	SS-04A BNP08 14:40	SS-04B BNP09 14:50	SS-04C BNP10 14:55	NYSDEC Recommended Soil Cleanup Objective
VOCs								
Carbon disulfide	2 J	---	---	---	---	---	---	2700
2-Butanone	---	29	---	---	---	---	---	300
SVOCs								
Phenol	---	---	---	---	7,900*	3,500*	---	30
Acetophenone	---	---	---	---	830	---	---	NA
Naphthalene	---	---	---	---	1,100	380	---	13000
2-Methylnaphthalene	---	---	---	---	130 J	150 J	---	36400
Acenaphthene	---	---	---	---	---	300 J	---	50000
Phenanthrene	---	---	---	---	---	3,700*	---	50000
Anthracene	---	---	---	---	---	600	---	50000
Di-n-butylphthalate	---	---	---	---	58 J	61 J	---	8100
Fluoranthene	---	---	---	---	67 J	---	---	50000
Pyrene	---	---	---	---	59 J	---	---	50000
Benzo(a)anthracene	---	---	---	---	---	---	---	224
Chrysene	---	---	---	---	41 J	2,800	---	400

Notes:

All results are recorded in units of ug/kg.

Dashed (--) lines indicate hazardous substances not detected.

*-Value reported from dilution run.

NA-None available.

J-Estimated Value

JN-Presumptive evidence of the compound at an estimated value.

Shading indicates exceedence of NYSDEC Recommended Soil Cleanup Objective.

TABLE 1A (CONTINUED)

SOIL SAMPLE ORGANIC ANALYSIS RESULTS FOR EPA SAT BROWNFIELD SITE INVESTIGATION (NOVEMBER 2000) LACKAWANNA FOUNDRY, LACKAWANNA, NEW YORK

Field Sample No. CLP Organic Sample No. Time Sampled Hazardous Substance	SS-01 BNP05 10:05	SS-02 BNP06 10:55	SS-03 BNP07 11:25	SS-07 BNQ91 11:35 Dup. Of SS-03	SS-04A BNP08 14:40	SS-04B BNP09 14:50	SS-04C BNP10 14:55	NYSDEC Recommended Soil Cleanup Objective
SVOCs (cont'd))								
bis(2-Ethylhexyl)phthalate	---	60 J	380 J	83 J	520	870	94 J	50000
Benzo(b)fluoranthene	---	---	---	---	---	2,100*	---	1100
Benzo(k)fluoranthene	---	---	---	---	---	760	---	1100
Benzo(a)pyrene	170 J	230 J	---	---	---	---	---	61
Indeno(1,2,3-cd)pyrene	---	---	---	---	---	1,300	---	3200
Dibenz(a,h)anthracene	---	---	---	---	---	530	---	14
Benzo(g,h,i)perylene	---	---	---	---	---	1,300	---	50000
PESTICIDES								
gamma-Chlordane	0.27 J	---	---	---	---	---	---	540
alpha-BHC	---	---	0.38 J	---	---	---	0.34 J	111
Heptachlor epoxide	---	4.6	0.77 J	---	---	---	---	20
Dieldrin	0.68 J	---	---	---	---	---	---	44
Endosulfan II	---	2.5 J	---	---	---	---	---	900
PCBs								
Aroclor-1248	---	---	---	---	170	210	---	1000(surface), 10000(subsurface)

Notes:

All results are recorded in units of ug/kg.

Dashed (--) lines indicate hazardous substances not detected.

*-Value reported from dilution run.

NA-None available.

J-Estimated Value

JN-Presumptive evidence of the compound at an estimated value.

Shading indicates exceedence of NYSDEC Recommended Soil Cleanup Objective.

TABLE 1B

SOIL SAMPLE INORGANIC ANALYSIS RESULTS FOR EPA SAT BROWNFIELD SITE INVESTIGATION (NOVEMBER 2000) LACKAWANNA FOUNDRY, LACKAWANNA NEW YORK

Field Sample No. CLP Sample No. Time Sampled Hazardous Substance	SS-01 MBNJ51 10:05	SS-02 MBNJ52 10:55	SS-03 MBNJ53 11:25	SS-07 MBNJ66 11:35 Dup. Of SS-03	SS-04A MBNJ54 14:40	SS-04B MBNJ55 14:50	SS-04C MBNJ56 14:55	NYSDEC Recommended Soil Cleanup Objective
Aluminum	6,770	8,590	15,900	18,500	686	4,170	12,300	SB
Antimony	---	---	---	---	---	---	---	SB
Arsenic	2.9 B	---	4.1	2.2 B	---	1.8 B	4.2	7.5 or SB
Barium	67.3	97.3	187	200	9.4 B	35.1 B	110	300 or SB
Beryllium	0.45 B	0.72 B	0.73 B	0.76 B	---	---	0.66 B	0.16 or SB
Cadmium	---	---	---	---	---	---	---	1 or SB
Calcium	2,140	3,220	2,640	2,940	936 B	60,300	1,900	SB
Chromium	11.5	14.7	26.2	27.2	6.2	8	18.9	10 or SB
Cobalt	9.1 B	9.7 B	20.3	14.6	0.99 B	2.4 B	10.1 B	30 or SB
Copper	19.7 J	20.0 J	21.0 J	22.7 J	12.5 J	14.3 J	21.3 J	25 or SB
Iron	12,100	16,200	30,100	27,700	7,390	9,500	24,800	2000 or SB
Lead	12.6	15.3	21.6	18.1	15.2	24.6	18.4	SB
Magnesium	2,630	3,390	5,510	5,910	244 B	2,490	4,430	SB
Manganese	117	138	1,050	754	56.1	145	217	SB
Mercury	---	---	---	---	0.09 J	0.14 J	---	0.1
Nickel	27	27.3	48.7	47.4	3.6 B	7.7 B	34.5	13 or SB
Potassium	639 B	938 B	1,080 B	1,630 J	90.1 B	425 B	847 B	SB
Selenium	1.3 B	---	---	---	---	---	---	2 or SB
Silver	---	---	0.88 B	0.63 B	---	---	0.53 B	SB
Sodium	161 B	---	---	---	---	88.4 B	228 B	SB
Thallium	---	---	---	0.94 B	---	---	---	SB
Vanadium	12.8 B	14.4 B	24	23.6	3.0 B	6.0 B	19.7	150 or SB
Zinc	71.4	72.1	128	136	23.8	46.4	91	20 or SB
Cyanide	---	---	---	---	---	---	---	NA

Notes:
All results are reported in units of mg/kg.
Dashed lines (--) denote hazardous substance not detected.
Shading denotes concentration exceeding NYSDEC Recommended Soil Cleanup Objective.
J-Estimated value.
B-Indicates concentration between the instrument detection limit and the contract required detection limit
SB-site background
NA-None available

TABLE 1A (CONTINUED)

SOIL SAMPLE ORGANIC ANALYSIS RESULTS FOR EPA SAT BROWNFIELD SITE INVESTIGATION (NOVEMBER 2000) LACKAWANNA FOUNDRY, LACKAWANNA, NEW YORK

Field Sample No. CLP Organic Sample No. Time Sampled Hazardous Substance	SS-04D BNP11 15:15	SS-O5A BNP12 13:25	22-05B BNP13 13:40	22-05C BNQ85 13:45	SS-06A BNQ87 13:00	SS-06B BNQ88 13:05	SS06C BNQ89 13:10	NYSDEC Recommended Soil Cleanup Objective
VOCs								
2-Butanone	---	9 J	13	8 J	5 J	---	---	300
SVOCs								
Phenanthrene	---	---	150 J	---	---	---	---	50000
Pyrene	---	130 J	---	---	---	---	---	50000
bis(2-Ethylhexyl)phthalate	240 J	59 J	---	78 J	---	100 J	81 J	50000
Di-n-octylphthalate	---	120 J	---	---	---	---	---	50000
Benzo(a)pyrene	---	---	---	---	190 J	---	---	61
PESTICIDES								
Heptachlor	---	---	0.32 J	---	---	---	---	100
Heptachlor epoxide	---	0.79 J	---	---	---	---	---	20
Endosulfan I	---	0.64 J	0.26 J	---	---	---	---	900
Endrin	---	2.3 J	---	---	---	---	---	100
Endosulfan II	---	---	---	0.14 J	---	---	---	900
4,4'-DDD	---	1.8 J	0.97 J	---	---	---	---	2900
Endosulfan sulfate	---	6.1	---	---	---	0.13 J	---	1000
Methoxychlor	---	9.1 J	7.0 J	---	---	---	---	Total VOCs < 10000
Endrin ketone	---	4.1 J	---	---	---	---	---	NA
Endrin aldehyde	---	7.7 JN	5.0 J	---	---	---	---	NA
gamma-Chlordane	---	0.36 J	0.35 J	---	---	---	---	540

Notes:

All results are recorded in units of ug/kg.

Dashed (--) lines indicate hazardous substances not detected.

*-Value reported from dilution run.

NA-None available.

J-Estimated Value

JN-Presumptive evidence of the compound at an estimated value.

Shading indicates exceedence of NYSDEC Recommended Soil Cleanup Objective.

TABLE 1B (Continued)

SOIL SAMPLE INORGANIC ANALYSIS RESULTS
FOR EPA SAT BROWNFIELD SITE INVESTIGATION (NOVEMBER 2000)
LACKAWANNA FOUNDRY, LACKAWANNA NEW YORK

Field Sample No. CLP Sample No. Time Sampled Hazardous Substance	SS-04D MBNJ57 15:15	SS-05A MBNJ58 13:35	SS-05B MBNJ59 13:40	SS-05C MBNJ60 13:45 Dup. Of SS-03	SS-06A MBNJ62 13:00	SS-06B MBNJ63 13:05	SS-06C MBNJ64 13:10	NYSDEC Recommended Soil Cleanup Objective
Aluminum	15,100	13,800	16,200	18,300	15,400	13,500	12,200	SB
Antimony	---	---	---	---	---	---	---	SB
Arsenic	16.9	5.4	4.8	1.9 B	4.3	6.9	8.0	7.5 or SB
Barium	166	129	157	179	182	114	89.8	300 or SB
Beryllium	1.0 B	0.72 B	0.84 B	0.89 B	0.85 B	0.76 B	0.58 B	0.16 or SB
Cadmium	---	---	---	---	---	---	---	1 or SB
Calcium	2,630	2,210	2,260	2,250	5,220	2,450	2,000	SB
Chromium	23.7	20.4	24	26.1	21.8	19.2	17.6	10 or SB
Cobalt	12.7	12.6	14.9	11.0 B	13.2	15.2	13	30 or SB
Copper	41.9 J	23.4 J	25.1 J	19.9 J	34.4 J	23.9 J	22.0 J	25 or SB
Iron	52,800	26,700	31,000	27,300	26,000	29,800	28,300	2000 or SB
Lead	25.2	19.5	28.8	17.8	24	18.8	14.1	SB
Magnesium	5,450	4,730	5,190	5,830	4,810	4,250	4,000	SB
Manganese	197	364	391	261	484	427	457	SB
Mercury	---	---	---	---	---	---	---	0.1
Nickel	48.9	38.8	42.2	45.9	44.8	36.5	32.5	13 or SB
Potassium	1,030 B	1,200 B	1,420 J	1,940 J	1,870 J	1,420 J	1,140 B	SB
Selenium	---	1.8	1.5	1.8	1.4	2.3	2.2	2 or SB
Silver	1.3 B	0.56 B	0.73 B	0.43 B	0.42 B	0.58 B	0.50 B	SB
Sodium	---	---	138 B	161 B	---	108 B	92. B	SB
Thallium	---	2.3 B	---	1.2 B	---	---	2.2 B	SB
Vanadium	24	20.6	24	24.7	23.8	21.8	18.5	150 or SB
Zinc	127	108	134	134	139	96.9	88.5	20 or SB
Cyanide	---	---	---	---	---	---	---	NA

Notes:
All results are reported in units of mg/kg.
Dashed lines (--) denote hazardous substance not detected.
Shading denotes concentration exceeding NYSDEC Recommended Soil Cleanup Objective.
J-Estimated value.
B-Indicates concentration between the instrument detection limit and the contract required detection limit.
SB-site background
NA-None available

TABLE 2

GROUNDWATER SAMPLE ANALYSIS RESULTS
FOR EPA SAT BROWNFIELD SITE INVESTIGATION (NOVEMEBER 2000)
LACKAWANNA FOUNDRY, LACKAWANNA, NEW YORK

Sample No. / Hazardous Substance	GW-01 (Bedrock/ Downgradient)	GW-03 (Overburden/ Sidegradient)	GW-04 (Overburden/ Upgradient)	GW-05 (Overburden/ Upgradient)	GW-06 (dup. of GW-01)	NYSDEC Ambient Water Quality Standard or Guidance Values
VOCs						
Acetone	---	11	9.0 J	6.0 J	---	50
METALS						
Aluminum	---	---	3,500	2,500	---	NA
Arsenic	---	---	13	12	---	25
Barium	380	240	220	300	380	1000
Calcium	250,000	100,000	60,000	87,000	250,000	NA
Chromium	---	---	---	23	---	50
Iron	13,000	6,200	42,000	34,000	13,000	300
Lead	---	---	---	3.4	---	25
Magnesium	130,000	22,000	14,000	22,000	120,000	35000
Manganese	300	1,700	1,700	2,200	300	300
Potassium	8,100	---	---	---	8,000	NA
Sodium	540,000	22,000	25,000	20,000	550,000	20000
Zinc	---	33	76	---	---	2000
Cyanide	---	---	12	---	---	200

Notes:
All units in ug/l.
J - Estimated value.
- Not Detected
Shading Denotes concentration exceeding New York State Department of Environmental Conservation Ambient Water Quality Standards and Guidance Values.
Analytes not listed were not detected in any groundwater sample.
Rinsate blank and trip blank were non-detect for all analytes.
NA - None available

REFERENCE NO. 1

U.S. ENVIRONMENTAL PROTECTION AGENCY
FINAL POLLUTION REPORT

I. HEADING

Date: September 15, 2000
From: Kevin M. Matheis, On-Scene-Coordinator
U.S. EPA Region II
To:

R. Salkie, EPA	J. Rotola, EPA
T. Johnson, 5202G	B. Bellow, 2CD
R. Cahill, 2CD-PAT	M. Basile, 2CD-POB
P. Simon, 2ORC-NYCSFB	B. Carr, 2ORC-NYCSFB
J. LaPadula, 2ERRD-NYRB	R. Byrnes, 2OIG
T. Riverso, 2OPM-GCMB	B. Deese, 2ERRD-RAB
M. O'Toole, NYSDEC	M. Doster, NYSDEC IX
ERD-Washington (E-Mail)	J. Guyer, City of Lackawanna
START	P. Brandt, EPA
V. Pitruzzello, 2ERRD-PSB	

Subject: Lackawanna Foundry Site, Lackawanna, New York - PCB transformers and capacitors, PCB-contaminated soil, arsenic contaminated soil, drums, lab chemicals and compressed gas cylinders

POLREP NO: Fifteen (15) and **Final**

II. BACKGROUND

SITE/SPILL NO.:	02MY
RESPONSE AUTHORITY:	CERCLA/SARA
NPL STATUS:	Non-NPL
CERCLIS ID:	NYR000073064
START DATE:	March 22, 1999
COMPLETION DATE:	**September 15, 2000**
FUNDING DATE:	Verbal authorization of funds from Deputy Division Director on March 19, 1999. Action Memo Signed on August 13, 1999
VERBAL AUTHORIZATION MEMO STATUS:	Sent to Deputy Director on March 25
ACTION MEMO STATUS:	Signed August 13, 1999

III. RESPONSE INFORMATION

A. Situation

The Lackawanna Foundry Site is located at 2 Elm Street, Lackawanna, New York. This site was the location of a foundry that produced speciality cast iron molds for over 60 years. The foundry owner passed away approximately seven years ago and operations decreased on-site until discontinuing prior to EPA's removal action. The Site is located in a mixed residential and

heavily industrialized area of Lackawanna, New York, adjacent to Smokes Creek, a direct tributary to Lake Erie. Twelve residential properties are immediately adjacent to the site to the west, railroad tracks border the east, Smokes Creek to the north, and a multi-use city park to the South.

Prior to EPA actions at the site, the New York State Department of Environmental Conservation (NYSDEC) ordered the property owner to collect samples from transformers and soil on-site and provide NYSDEC with an inventory of chemicals on-site. The owner complied with this request and analysis of transformers and soils indicated that two transformers contain 86% PCBs. Soil contamination in proximity of the transformers indicated the presence of PCB contaminated soils up to 210 ppm. The inventory also showed more than 100 drums located at the site, stored in various stages of deteriorated condition. NYSDEC requested that the owner undertake a cleanup at the site, but he did not have the financial ability to comply with this request.

As a result, the NYSDEC requested that EPA evaluate the site for a removal action. EPA performed a removal assessment which was completed on March 15, 1999. During this assessment, EPA became aware of several problems areas at the site. The site was completely unfenced and contained over 100 unknown drums outside the foundry buildings, and another 200 drums, laboratory chemicals, compressed gas cylinders, and PCB transformers within the foundry buildings. In addition, the buildings that contain the drums and transformers are in extremely poor condition and several access points to the building were identified. Evidence of trespassing also existed throughout the property. As recently as February, 1999, the attorney for the owner has written to the City of Lackawanna and told them to demolish the buildings on-site because the owner does not have the financial ability to undertake a removal action or comply with building code violations.

B. Actions Taken

EPA began its removal action in March 22, 1999. Initial actions began with the fencing of the perimeter of the site, including fence installation along the residential properties adjacent to the site. EPA then inventoried and moved all containers of hazardous substances into the foundry buildings and over-packed the leaking drums and containers as necessary. EPA then secured the foundry buildings. EPA's Environmental Response Team (ERT) was mobilized to the site and they collected soil samples from the site property and the recreational area adjacent to the site. Results of the sampling showed the presence of PCB contaminated soils inside the foundry buildings and arsenic contaminated soils in the recreational areas.

The Action Memorandum to address the cleanup at the site was was signed on August 13, 1999 and authorized the following actions at the site: the removal of all PCB transformers, capacitors and contaminated soil and debris; removal of drums, laboratory chemicals, and compressed gas cylinders; removal of arsenic contaminated soils from recreational area adjacent to site; possible demolition of on-site buildings; and restoration of site upon completion of removal actions.

Due to the location of the soil contamination in proximity to the site buildings and overall

instability of the site buildings, EPA determined that demolition of the buildings would be necessary to complete its removal action. The site buildings were demolished in November 1999. Soil excavations of contaminated soils were completed in April 2000. Site restoration actions were completed in June 2000. The site was seeded with grass and the wetlands in the center portion of the site was restored by the use of clean marsh sediment from a New York State Parks dredging project.

The site restoration has been satisfactorily completed. The City of Lackawanna will install barriers to prevent unauthorized vehicular access.

C. Future Actions

EPA has designated this site as eligible for an EPA-funded targeted site assessment. This site assessment, when implemented and completed, will provide analytical data to the NYSDEC for site classification purposes and will hopefully lead to acquisition of the site by the City of Lackawanna.

D. Key Issues

None

IV. COST INFORMATION: As of 09/15/00

Site Ceiling as of 09/15/00			
	Total Ceiling	Costs to Date	Amount Remaining
Earth Tech	$ 1,070,000	$ 1,060,000	$ 10,000
START/EPA	$ 200,000	$ 198,000	$ 2,000
Totals	$ 1,270,000	$ 1,258,000	$ 12,000

The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

V. DISPOSITION OF WASTES

LACKAWANNA FOUNDRY SITE
WASTE DISPOSAL TABLE

Waste Material Description	Volume	Disposal Facility	Disposal Method
PCB Contaminated Debris >500ppm	160 y^3	CWM - Model City, NY	Landfill
PCB Contaminated Soil >500ppm	360 y^3	CWM - Model City, NY	Landfill
PCB Capacitors	49 drums containing 153 capacitors.	CWM - Port Arthur, TX	Incineration
PCB Oils	2 drums	Safety Kleen - Twinsburg,OH	Treatment/ Incineration
PCB Transformers >500ppm	6 transformers (1,916 lbs.)	Safety Kleen - Twinsburg,OH	Treatment/ Incineration
PCB Transformers <500ppm	2 transformers (2,467 lbs.)	Safety Kleen - Twinsburg,OH	Treatment/ Incineration
Drums containing various hazardous substances	68 drums	Varies	Treatment/Incineration/Landfill
Foundry slag	20 tons	CID Refuse, Chaffee,NY	Landfill
Hazardous substance containing debris, non-RCRA	550 y^3	BFI Landfill, Niagara Falls, NY	Landfill
Concrete from building demolition	1,600 tons	CTS Recycling	Recycling
Structural and non-structural steel	220 tons	Gateway Recycling, Cheektowaga, NY and Lake Erie Recycling, Buffalo, NY	Recycling
Wood and miscellaneous debris from demolition	650 y^3	Modern Disposal, Model City, NY	Landfill
Arsenic contaminated soils	900 tons	Chaffee Landfill, Chaffee, NY	Landfill
PCB contaminated soils <50ppm	400 tons	Modern Disposal, Model City, NY	Landfill
PCB contaminated soils (50 - 500ppm)	280 tons	CWM, Model City, NY	Landfill

REFERENCE NO. 2

FIELD SAMPLING PLAN
FOR
LACKAWANNA FOUNDRY SITE
LACKAWANNA, ERIE COUNTY, NEW YORK

Prepared for:
U.S. Environmental Protection Agency
Region II
New York, New York 10007

Prepared by:
Region II Site Assessment Team
Roy F. Weston, Inc.
Edison, New Jersey 08837

U. S. EPA Contract No. 68-W-00-121

October 2000

FIELD SAMPLING PLAN
FOR
LACKAWANNA FOUNDRY SITE
LACKAWANNA, ERIE COUNTY, NEW YORK

Prepared by:
Region II Site Assessment Team
Roy F. Weston, Inc.
U.S. EPA CONTRACT NO. 68-W-00-121

DCN: SAT - 1002.013

October 2000

Prepared by: _____ Date: 10/31/00
Donna Janda
Project Manager

Approved by: _____ Date: 10/31/00
Dennis Foerter
Quality Assurance Officer

Approved by: _____ Date: 10/31/00
W. Scott Butterfield
SAT Program Manager

Approved by: _____ Date: _____
Dennis Munhall
U.S. EPA Work Assignment Manager

TABLE OF CONTENTS

LIST OF TABLES

1.0 INTRODUCTION

Presented herein is the Field Sampling Plan for the Lackawanna Foundry Site for sampling to be conducted by the Roy F. Weston, Inc. (WESTON®) Region II Site Assessment Team (SAT). This field sampling plan has been developed at the request of the United States Environmental Protection Agency (U.S. EPA) in accordance with the U.S. EPA Region II CERCLA Quality Assurance Manual (October 1989) and the SAT Quality Assurance Project Plan (September 2000).

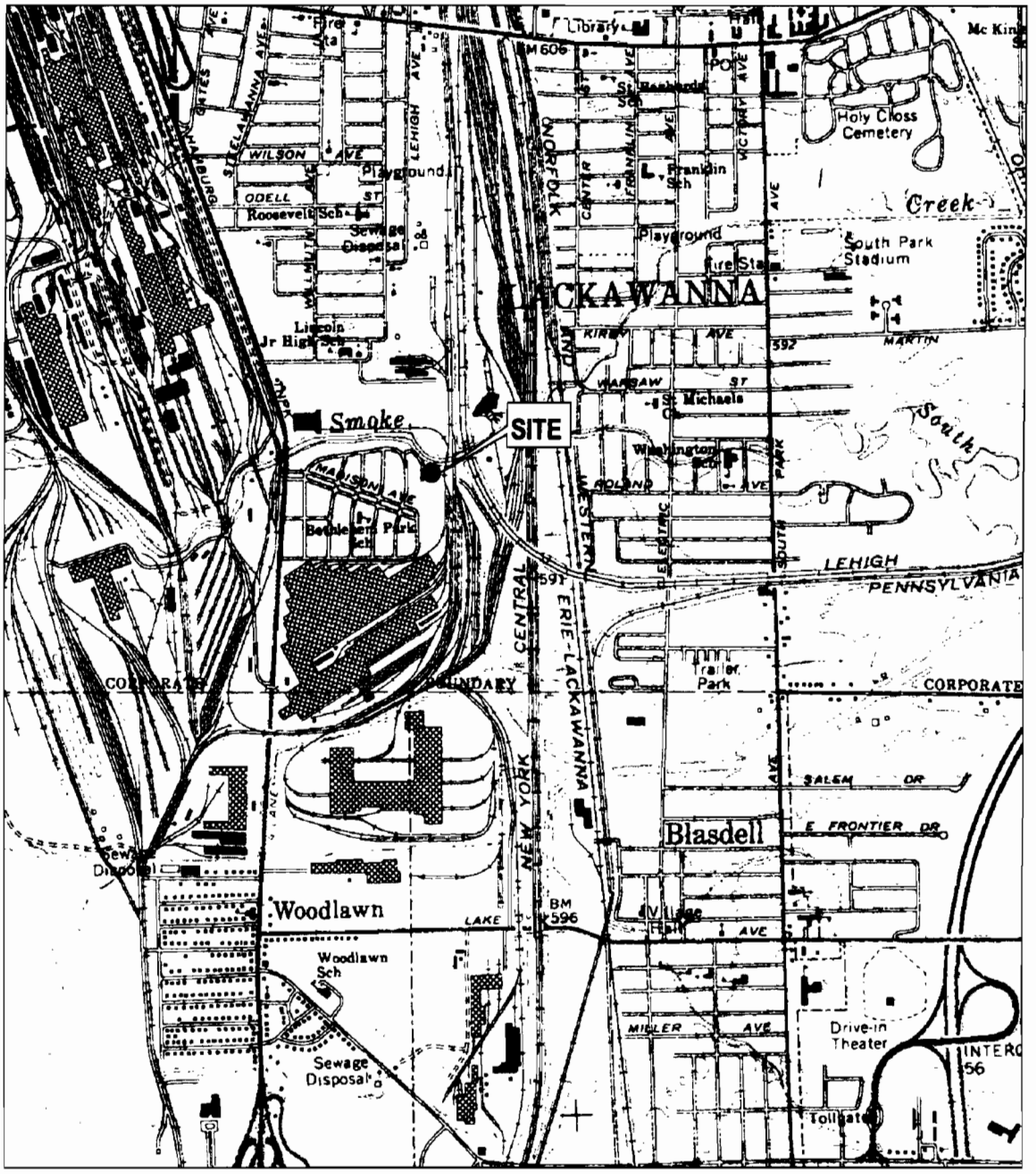
The sampling strategy listed within the sampling plan will emphasize the collection of samples required to evaluate certain pathways of concern to the CERCLA Program. The sampling plan includes the following sections: Site Reconnaissance (2.0), Sampling Visit and Sampling Procedures (3.0), Quality Assurance/Quality Control (4.0), and Field Changes and Corrective Actions (5.0).

1.1 Site Description

The Lackawanna Foundry Site is located at 3 Elm Street in Lackawanna, Erie County, New York. The two-acre property is located in a mixed residential and heavily industrialized area adjacent to Smokes Creek, which is a direct tributary to Lake Erie. The Lackawanna Foundry property is bordered by Smoke Creek to the north, by an open field to the south, by an active rail yard to the east, and by private residences to the west. A vegetated wetland area is located in the north central portion of the property. The residential neighborhood immediately adjacent to the Site consists of 12 residences with over 100 residences located within 1/8 mile of the Site. Approximately 1,000 people reside within 0.5 mile of the Site. The location and layout of the Lackawanna Foundry Site can be found in Figure 1, Site Location Map and Figure 2, Site Map.

A cast-iron foundry has operated on this property since the early 1900s. The current property owner inherited the business from his father who operated the foundry at this location for more than 30 years. The current owner ceased operations in approximately 1997.

On 22 December 1998, the New York State Department of Environmental Conservation (NYSDEC) requested that the U.S. Environmental Protection Agency (EPA) evaluate the site and perform a Removal Action, as appropriate, to address the threats to human health, welfare, and the environment from drums, polychlorinated biphenyls (PCBs) in transformers, and PCB-contaminated soil. A drum inventory completed by the property owner listed over 233 drums of various foundry raw materials and waste.



U.S. Geological Survey
7.5 Minute Series Topographical Map
Buffalo Southeast, NY Quadrangle
1948, Revised 1965

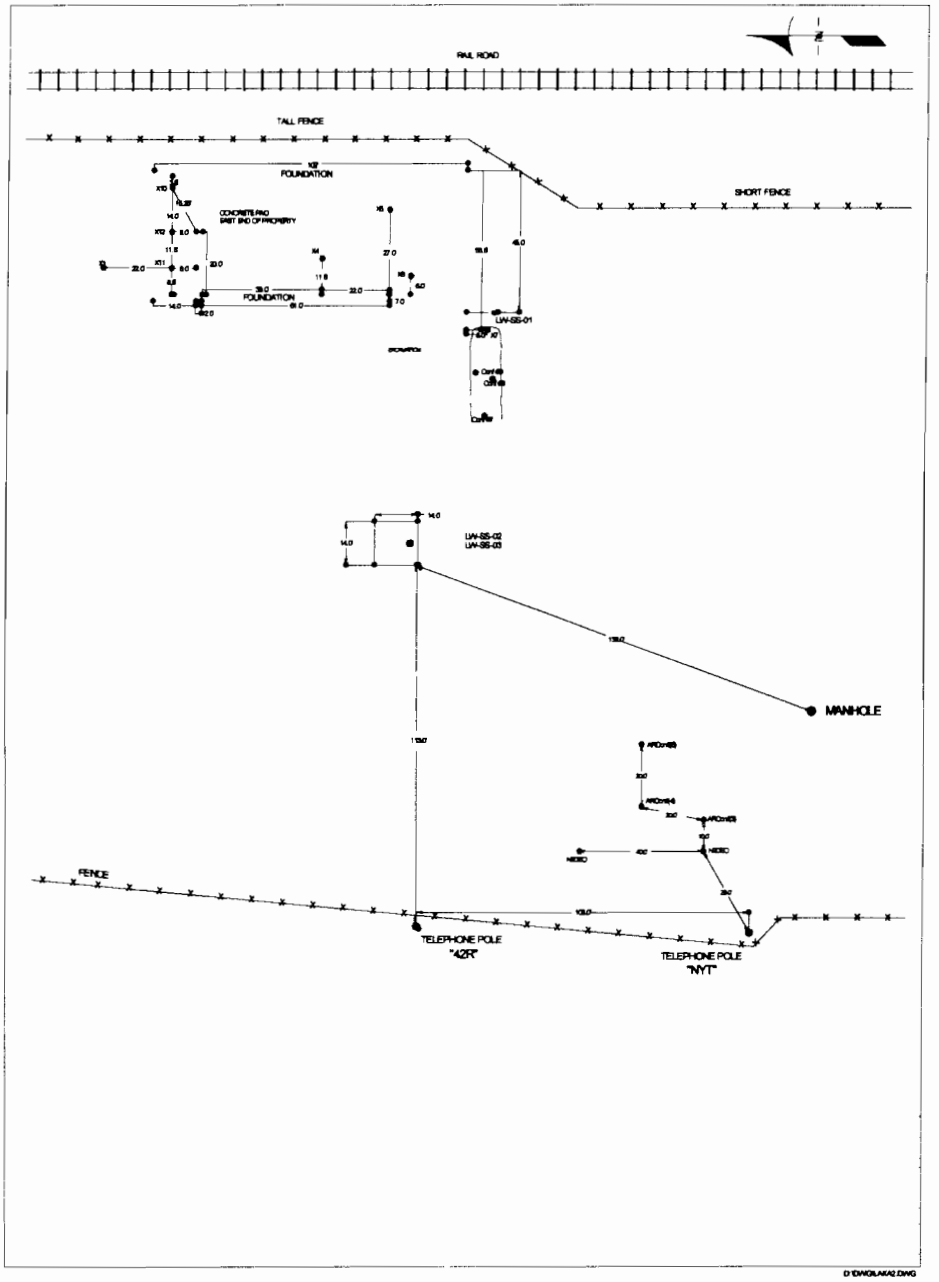
1000 0 1000 2000 Feet

N

WESTON FEDERAL PROGRAMS DIVISION

Lackawanna Foundry Site
Lackawanna, Erie Co., NY
Figure 1
Site Location Map

● Site Location



WESTON FEDERAL PROGRAMS DIVISION

Figure 2
Site Map

Lackawanna Foundry Site
Lackawanna, Erie Co., NY

1.2 Previous Work at the Site

On 22 March 1999, the EPA conducted emergency stabilization activities at the Site, which included fencing the perimeter of the property, securing the buildings, moving drums into a secure location, and stabilizing leaking containers. Two primary areas of contamination were identified at the Lackawanna Foundry Site. The first area included the on-site buildings, which were contaminated with PCBs and contained laboratory chemicals, compressed gas cylinders, paint cans, and several hundred drums. The second area is a recreational area, which is owned by the City of Lackawanna and is located adjacent to the Lackawanna Foundry property. The recreational area is a grassy area that the City maintains by frequent grass and weed cuttings.

Analytical data from an EPA Environmental Response Team soil sampling event conducted in April 1999 indicated arsenic levels as high as 77 parts per million (ppm) in the recreational area. The arsenic contamination in this area appears to be in the location of a former baghouse dust collection system used during foundry operations. The contamination was caused by either airborne deposition or runoff from the baghouse collection area.

EPA conducted a Removal Action at the Lackawanna Foundry property during the spring of 2000. The Removal Action included excavation of contaminated soil and buried PCB-contaminated capacitors, dismantlement of on-site buildings, extent of contamination sampling, confirmation sampling, transportation and disposal of drums, contaminated soil and demolition material, restoration of on-site wetlands area, and backfilling of excavated areas with certified clean topsoil.

1.3 Schedule

EPA and SAT conducted an on-site reconnaissance on 4 October 2000.

The anticipated date for subsurface soil sampling and monitoring well installation is the week of 6 November 2000. The anticipated date for monitoring well sampling is the week of 11 December 2000.

Sample analysis is expected to take 10 to 12 weeks. Receipt of analytical data is expected during March 2001.

The draft Brownfields Site Assessment Report is anticipated to be completed by April 2001. The final report is anticipated to be completed within 30 days of receipt of EPA comments.

p.4

2.0 SITE RECONNAISSANCE

Region II SAT accompanied the EPA Work Assignment Manager and On-Scene Coordinator on a site reconnaissance of the Lackawanna Foundry property on 4 October 2000. There are currently no buildings or other structures on the Lackawanna Foundry property. The relatively flat site is well vegetated and is surrounded by a fence with a locked gate to control access. All known waste sources were removed from the property during the Removal Action conducted earlier this year. There were no signs of stressed vegetation or contaminated soil.

Sample locations were selected based on the recommendations of the NYSDEC to assist in a Brownfields site investigation. The Lackawanna Foundry property is being considered for future use as a recreational park. The nearest residences are located adjacent to the west side of the property. The Bethlehem Steel property is located approximately 0.25 mile south of the Lackawanna Foundry Site.

3.0 SAMPLING VISIT AND SAMPLING PROCEDURES

This section outlines overall sample management and control procedures to be implemented by WESTON personnel during field activities. Standard analytical methods, preservation, holding times, and sample containers are summarized in Table 3-1.

3.1 Sample Tracking System

3.1.1 Sample Identification System

Each sample will be designated by a numeric code which will identify the site. The numeric code will be the site-specific task number (1002). The media type will follow the site code. A hyphen will separate the site code and media type. Specific media types are as follows:

GW - Groundwater
RB - Rinsate Blank
SS - Subsurface Soil
TB - Trip Blank

After the media type, the sequential sample numbers will be listed; sample numbers will begin with 01 and increase accordingly. For example, two groundwater samples collected from a site may be designated as Sample Nos. 1002-GW-01 and 1002-GW-02. A duplicate sample will be identified in the same manner as other samples and will be distinguished in the field logbook.

3.1.2 Sample Bottles

Sample bottles will be obtained from qualified vendors via a competitive bid process and will meet all guidelines specified in OSWER Directive 9240.0-05A, Specifications and Guidance for Obtaining Contaminant-Free Sample Containers (December, 1992).

3.1.3 Sample Packaging and Shipping

Samples will be packaged and shipped according to the U.S. EPA User's Guide to the Contract Laboratory Program (January 1991). Chain of custody forms, sample labels, custody seals, and other sample documents will be completed as specified in the above reference manual. All entries will be made in permanent ink. If errors are made when completing any of these forms, the error will be crossed out with a single line, initialed, and dated by the sampler. Each environmental sample will be properly identified and sealed in a polyethylene bag. The bag shall then be placed in a plastic cooler which has also been lined with a large polyethylene bag. When required, samples shall be packed with sufficient ice (sealed in polyethylene bags) to cool the samples to 4°C. Sufficient non-combustible, adsorbent cushioning material shall be placed in the cooler so as to minimize the possibility of container breakage. The large plastic bag shall then be sealed and the container closed. Custody seals and strapping tape shall then be affixed to the outer packaging. All samples will either be hand-delivered or shipped via common carrier to the laboratory within 24 hours of collection. Sample shipment will conform to Roy F. Weston, Inc., Guidelines For

Classifying Field Sample Shipments and the most current International Air Transport Association (IATA) Dangerous Goods Regulations. Information relating to the shipment of samples, including the airbill number, sample quantity, and sample types, will be reported to the U.S. EPA Sample Management Office (SMO) on the day of or morning after shipment.

3.1.4 Sample Documentation

The sampling team or individual performing a particular sampling activity is required to maintain a field logbook. The bound, numbered, and paginated logbook shall be filled out at the location of sample collection immediately after sampling. The logbook shall contain sampling information, including: sample number, sample collection time, sample location, sample descriptions, sampling methods, weather conditions, field measurements, name of sampler, site-specific observations, and any deviations from protocol. All entries will be entered legibly in permanent ink. If errors are made when completing this logbook, the error will be crossed out with a single line, initialed, and dated by the sampler.

3.2 Sampling Program

A description of all site-specific samples, including the rationale for the collection of each sample, are presented in Table 3-2. All proposed sample locations are presented in Figure 3, Sample Location Map. Site-specific sample analyses, bottle types, and sample preservatives are presented in Table 3-3. Samples will be analyzed for Target Compound List (TCL) and Target Analyte List (TAL) parameters through the U.S. EPA Contract Laboratory Program (CLP).

Listed below are standard operating procedures which will be adhered to during field sampling activities conducted by Region II SAT.

TABLE 3-1
CLP ROUTINE ANALYTICAL SERVICES

Sample Location	Number of Samples	Matrix	Sampling Device	Sample Container [1]	Sample Preservation	Holding Time*	CLP Laboratory Analyses [2]
GW-01 to GW-06	6 (1 at each location & 1 duplicate)	Aqueous (Low/Medium Concentration)	Low flow pump	Two 40-ml glass vials w/ teflon septum caps	HCl to pH<2 Cool to 4°C	10 days (preserved); (7 days [unpreserved] to analyze aromatic hydrocarbons	TCL VOAs CLP SOW
				Four 1-L amber glass bottles	Cool to 4°C	5 days to extract; 40 days to analyze	TCL Extractables CLP SOW
				One 1-L polyethylene bottle	HNO_3 to pH<2 Cool to 4°C	6 months to analyze (except Hg - 28 days)	TAL Inorganics CLP SOW
				One 1-L polyethylene bottle	NaOH to pH>12 Cool to 4°C	12 days to analyze	Cyanide CLP SOW
SS-01 to SS-07	16 (1 each at SS-01 to SS-03; 4 each at SS-04 to SS-06; & one duplicate)	Soil (Low/Medium Concentration)	Split spoon Bowl Trowel	Two 40-ml wide-mouth jars w/ teflon septum caps [3]	Cool to 4°C	10 days to analyze	TCL VOAs CLP SOW
				One 8-oz. wide-mouth glass jar	Cool to 4°C	5 days to extract; 40 days to analyze	TCL Extractables CLP SOW
				One 8-oz. wide-mouth glass jar	Cool to 4°C	6 months to analyze (except Hg - 28 days)	TAL Inorganics CLP SOW
				One 8-oz. wide-mouth glass jar (included in TAL sample fraction)	Cool to 4°C	12 days to analyze	Cyanide CLP SOW

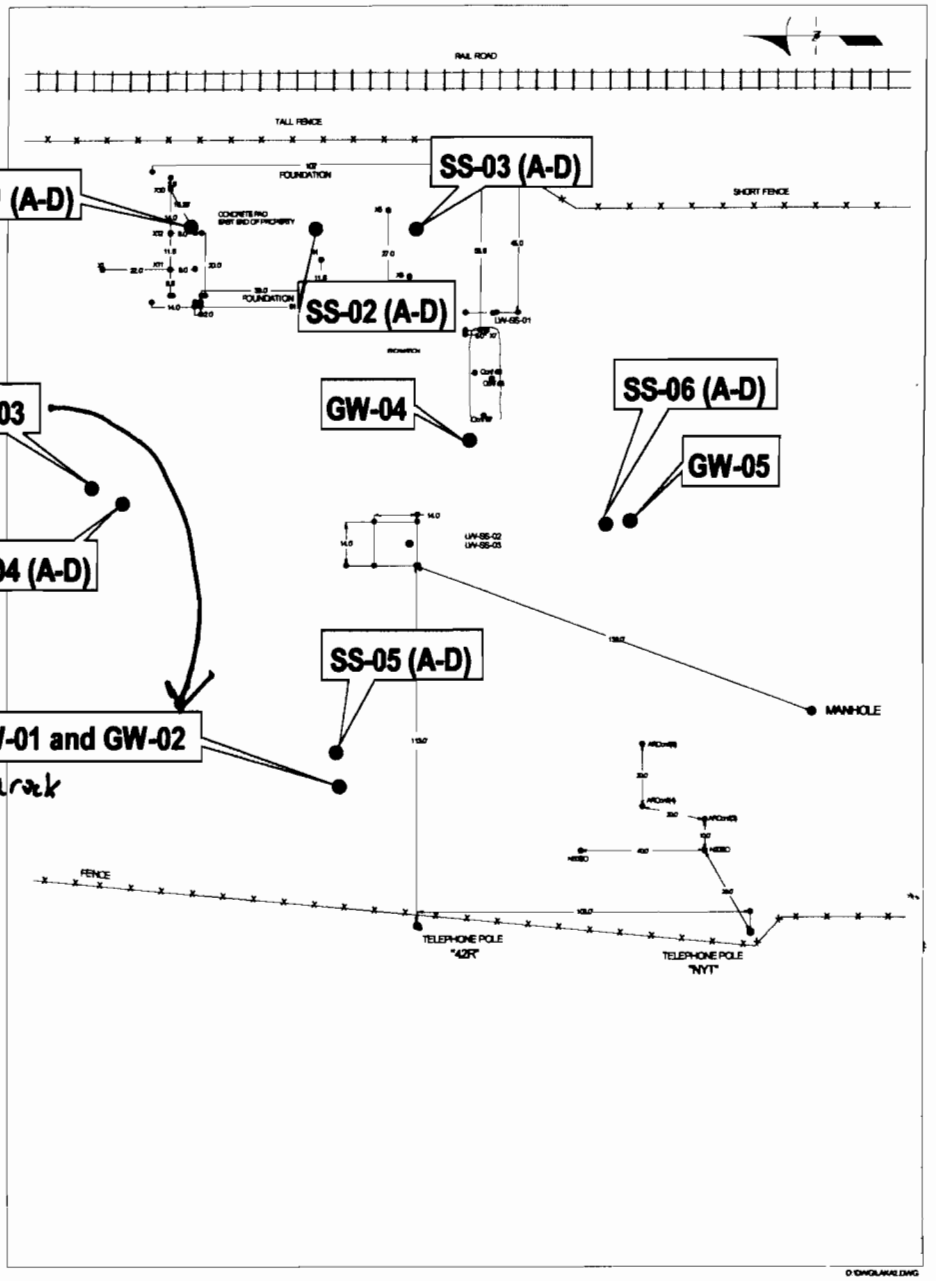
* = All holding times are calculated from Verified Time of Sample Receipt (VTSR).

[1] = Sample containers are certified clean by the manufacturer.

[2] = Contract Laboratory Program (CLP) Statement of Work (SOW) for Organic Analysis OLM04.2, or most current revision; and, CLP SOW for Inorganic Analysis ILM04.1, or most current revision.

[3] = Two 120-ml wide-mouth glass jars may be used if large soil particles preclude 40-ml vials from being completely filled.

Mon. drum cuttings, develop, purge boxes



● Proposed ground-water sample location

● Proposed subsurface soil sample location

● Historical sample location

A = Depth of 2-4 feet
B = Depth of 4-6 feet
C = Depth of 6-8 feet
D = Depth of 8-10 feet

WESTON FEDERAL PROGRAMS DIVISION

Figure 3
Sample Location Map

Lackawanna Foundry Site
Lackawanna, Erie Co., NY

3.2.1 Subsurface Soil Sampling

The following procedures apply to the collection of subsurface soil, from a depth greater than 6 inches, using a stainless steel split spoon:

1) Wear protective gear as specified in the Health and Safety Plan. Samplers shall don new outer gloves prior to sampling at each location.

2) Use a decontaminated, 2" or 3" diameter stainless steel split spoon.

3) Remove unnecessary rocks, twigs, and other non-soil materials from the selected sampling location.

4) Drive split spoon utilizing the direct push method (i.e., Geoprobe). Do not drive past the bottom of the head piece as this will result in the compression of the sample.

5) Withdraw the spoon and open by unscrewing bit and head and splitting barrel. Transfer the samples using clean stainless steel utensils into a clean stainless steel bowl. Collect PID and/or FID readings; record results in field logbook. Repeat step number 4 at an adjacent location until sufficient soil is collected to satisfy analytical requirements.

6) Fill the volatile sample bottles immediately so as to not compromise sample integrity.

7) Homogenize remaining soil for the non-volatile organic analysis fractions in the bowl using a decontaminated, stainless steel utensil. Transfer the samples into required sample containers. Homogenization shall be completed as per the following procedure:

   After collection of the volatile sample fraction, the soil in the stainless steel bowl will be scraped from the sides, corners and bottom of the bowl, rolled to the middle of the bowl, and mixed. The soil will then be quartered and moved to the four corners of the bowl. Each quarter will then be mixed individually, and when completed be rolled to the center of the bowl and mixed once again.

8) Place samples in cooler and chill with ice. Samples will be hand-delivered or shipped within 24 hours of collection to the designated CLP laboratory(ies).

9) Fill out field logbook, custody seals, sample labels, and chain of custody forms.

TABLE 3-2
SAMPLE DESCRIPTIONS/RATIONALE

SAMPLE NUMBER	DESCRIPTION/RATIONALE
1002-GW-01	Sample to be collected from on-site monitoring well MW-01to determine if hazardous substances are migrating from on-site soils into groundwater.
1002-GW-02	Sample to be collected from on-site monitoring well MW-02 to determine if hazardous substances are migrating from on-site soils into groundwater.
1002-GW-03	Sample to be collected from on-site monitoring well MW-03 to determine if hazardous substances are migrating from on-site soils into groundwater.
1002-GW-04	Sample to be collected from on-site monitoring well MW-04 to determine if hazardous substances are migrating from on-site soils into groundwater.
1002-GW-05	Sample to be collected from on-site monitoring well MW-05 to determine if hazardous substances are migrating from on-site soils into groundwater.
1002-GW-06	Duplicate sample of 1002-GW-05.
1002-SS-01	Sample to be collected from under a concrete pad, which is located 3 to 4 feet below the ground surface, to determine the presence of hazardous substances in on-site subsurface soil.
1002-SS-02	Sample to collected from under a concrete pad, which is located 3 to 4 feet below the ground surface, to determine the presence of hazardous substances in on-site subsurface soil.
1002-SS-03	Sample to be collected from under a concrete pad, which is located 3 to 4 feet below the ground surface, to determine the presence of hazardous substances in on-site subsurface soil.
1002-SS-04 A-D	Sample to be collected from an on-site soil boring location at two-foot intervals (A: 2-4 feet; B: 4-6 feet; C: 6-8 feet; and D: 8-10 feet, if necessary) to determine the presence of hazardous substances in the on-site subsurface soil.
1002-SS-05 A-D	Sample to be collected from an on-site soil boring location at two-foot intervals (A: 2-4 feet; B: 4-6 feet; C: 6-8 feet; and D: 8-10 feet, if necessary) to determine the presence of hazardous substances in the on-site subsurface soil.
1002-SS-06 A-D	Sample to be collected from an on-site soil boring location at two-foot intervals (A: 2-4 feet; B: 4-6 feet; C: 6-8 feet; and D: 8-10 feet, if necessary) to determine the presence of hazardous substances in the on-site subsurface soil.
SS-07	Duplicate of 1002-SS-03.

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TABLE 3-3
SAMPLE ANALYSES, BOTTLE TYPES, AND PRESERVATIVES

SAMPLE NUMBER	SAMPLE BOTTLES	ANALYSIS	PRESERVATION
1002-GW-01	Two 40-mL glass vials w/teflon septum caps	TCL VOA CLP SOW	HCl to pH<2 Cool to 4°C
	Four 1-L amber glass bottles	TCL Extractables CLP SOW	Cool to 4°C
	One 1-L polyethylene bottle	TAL Inorganics CLP SOW	HNO_3 to pH<2 Cool to 4°C
	One 1-L polyethylene bottle	Cyanide CLP SOW	NaOH to pH>12 Cool to 4°C
1002-GW-02 (Triple volume for MS/MSD)	Six 40-mL glass vials w/teflon septum caps	TCL VOA CLP SOW	HCl to pH<2 Cool to 4°C
	Twelve 1-L amber glass bottles	TCL Extractables CLP SOW	Cool to 4°C
	Three 1-L polyethylene bottle	TAL Inorganics CLP SOW	HNO_3 to pH<2 Cool to 4°C
	Three 1-L polyethylene bottle	Cyanide CLP SOW	NaOH to pH>12 Cool to 4°C
1002-GW-03	Two 40-mL glass vials w/teflon septum caps	TCL VOA CLP SOW	HCl to pH<2 Cool to 4°C
	Four 1-L amber glass bottles	TCL Extractables CLP SOW	Cool to 4°C
	One 1-L polyethylene bottle	TAL Inorganics CLP SOW	HNO_3 to pH<2 Cool to 4°C
	One 1-L polyethylene bottle	Cyanide CLP SOW	NaOH to pH>12 Cool to 4°C
1002-GW-04	Two 40-mL glass vials w/teflon septum caps	TCL VOA CLP SOW	HCl to pH<2 Cool to 4°C
	Four 1-L amber glass bottles	TCL Extractables CLP SOW	Cool to 4°C
	One 1-L polyethylene bottle	TAL Inorganics CLP SOW	HNO_3 to pH<2 Cool to 4°C
	One 1-L polyethylene bottle	Cyanide CLP SOW	NaOH to pH>12 Cool to 4°C
1002-GW-05	Two 40-mL glass vials w/teflon septum caps	TCL VOA CLP SOW	HCl to pH<2 Cool to 4°C
	Four 1-L amber glass bottles	TCL Extractables CLP SOW	Cool to 4°C

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SAMPLE NUMBER	SAMPLE BOTTLES	ANALYSIS	PRESERVATION
1002-GW-05	One 1-L polyethylene bottle	TAL Inorganics CLP SOW	HNO_3 to pH<2 Cool to 4°C
	One 1-L polyethylene bottle	Cyanide CLP SOW	NaOH to pH>12 Cool to 4°C
1002-GW-06 (Duplicate of GW-05)	Two 40-mL glass vials w/teflon septum caps	TCL VOA CLP SOW	HCl to pH<2 Cool to 4°C
	Four 1-L amber glass bottles	TCL Extractables CLP SOW	Cool to 4°C
	One 1-L polyethylene bottle	TAL Inorganics CLP SOW	HNO_3 to pH<2 Cool to 4°C
	One 1-L polyethylene bottle	Cyanide CLP SOW	NaOH to pH>12 Cool to 4°C
1002-TB-01	Two 40-mL glass vials w/teflon septum caps	TCL VOA CLP SOW	HCl to pH<2 Cool to 4°C
1002-RB-01	Two 40-mL glass vials w/teflon septum caps	TCL VOA CLP SOW	HCl to pH<2 Cool to 4°C
	Four 1-L amber glass bottles	TCL Extractables CLP SOW	Cool to 4°C
	One 1-L polyethylene bottle	TAL Inorganics CLP SOW	HNO_3 to pH<2 Cool to 4°C
	One 1-L polyethylene bottle	Cyanide CLP SOW	NaOH to pH>12 Cool to 4°C
1002-RB-02	Two 40-mL glass vials w/teflon septum caps	TCL VOA CLP SOW	HCl to pH<2 Cool to 4°C
	Four 1-L amber glass bottles	TCL Extractables CLP SOW	Cool to 4°C
	One 1-L polyethylene bottle	TAL Inorganics CLP SOW	HNO_3 to pH<2 Cool to 4°C
	One 1-L polyethylene bottle	Cyanide CLP SOW	NaOH to pH>12 Cool to 4°C
1002-RB-03	Two 40-mL glass vials w/teflon septum caps	TCL VOA CLP SOW	HCl to pH<2 Cool to 4°C
	Four 1-L amber glass bottles	TCL Extractables CLP SOW	Cool to 4°C
	One 1-L polyethylene bottle	TAL Inorganics CLP SOW	HNO_3 to pH<2 Cool to 4°C
	One 1-L polyethylene bottle	Cyanide CLP SOW	NaOH to pH>12 Cool to 4°C

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SAMPLE NUMBER	SAMPLE BOTTLES	ANALYSIS	PRESERVATION
1002-SS-01	Two 40-mL wide-mouth jars w/teflon septum caps	TCL VOA	Cool to 4°C
	One 8-oz. wide-mouth glass jar	TCL Extractables CLP SOW	Cool to 4°C
	One 8-oz. wide-mouth glass jar	TAL Inorganics/Cyanide CLP SOW	Cool to 4°C
1002-SS-02	Two 40-mL wide-mouth jars w/teflon septum caps	TCL VOA	Cool to 4°C
	One 8-oz. wide-mouth glass jar	TCL Extractables CLP SOW	Cool to 4°C
	One 8-oz. wide-mouth glass jar	TAL Inorganics/Cyanide CLP SOW	Cool to 4°C
1002-SS-03	Two 40-mL wide-mouth jars w/teflon septum caps	TCL VOA	Cool to 4°C
	One 8-oz. wide-mouth glass jar	TCL Extractables CLP SOW	Cool to 4°C
	One 8-oz. wide-mouth glass jar	TAL Inorganics/Cyanide CLP SOW	Cool to 4°C
1002-SS-04 A (2-4 ft) B (4-6 ft) C (6-8 ft) D (8-10 ft)	Two 40-mL wide-mouth jars w/teflon septum caps	TCL VOA	Cool to 4°C
	One 8-oz. wide-mouth glass jar	TCL Extractables CLP SOW	Cool to 4°C
	One 8-oz. wide-mouth glass jar	TAL Inorganics/Cyanide CLP SOW	Cool to 4°C
1002-SS-05 A (2-4 ft) B (4-6 ft) C (6-8 ft) D (8-10 ft)	Two 40-mL wide-mouth jars w/teflon septum caps	TCL VOA	Cool to 4°C
	One 8-oz. wide-mouth glass jar	TCL Extractables CLP SOW	Cool to 4°C
	One 8-oz. wide-mouth glass jar	TAL Inorganics/Cyanide CLP SOW	Cool to 4°C
1002-SS-06 A (2-4 ft) B (4-6 ft) C (6-8 ft) D (8-10 ft)	Two 40-mL wide-mouth jars w/teflon septum caps	TCL VOA	Cool to 4°C
	One 8-oz. wide-mouth glass jar	TCL Extractables CLP SOW	Cool to 4°C
	One 8-oz. wide-mouth glass jar	TAL Inorganics/Cyanide CLP SOW	Cool to 4°C

SAMPLE NUMBER	SAMPLE BOTTLES	ANALYSIS	PRESERVATION
1002-SS-07 (Duplicate of SS-03)	Two 40-mL wide-mouth jars w/teflon septum caps	TCL VOA	Cool to 4°C
	One 8-oz. wide-mouth glass jar	TCL Extractables CLP SOW	Cool to 4°C
	One 8-oz. wide-mouth glass jar	TAL Inorganics/Cyanide CLP SOW	Cool to 4°C

3.2.2 Monitoring Well Sampling

Groundwater sampling will be conducted in a manner consistent with current U.S. EPA Region II guidelines. Aeration of the groundwater and disturbance of the sediments/particulate matter within the well bore during sampling will be minimized by matching the pump intake velocity with the natural groundwater flow velocity, thereby providing samples which are more representative of the aquifer conditions. This sampling method generally yields low turbidity samples, eliminating the need for the collection and analysis of filtered groundwater samples.
Six groundwater samples will be collected from five monitoring wells to be installed on site during the week of 6 November 2000. All sampling locations are presented in Figure 3.

Wells will generally be purged using a stainless steel, electric, adjustable rate submersible pump. Pumps will be decontaminated before and after sampling events, as well as between well sampling locations. Pumps shall use ASTM 2239 Teflon or Teflon-lined polyethylene tubing dedicated to each well; the same tubing will be used for purging and sampling. The Teflon or Teflon-lined tubing is suitable for the collection of both organic and inorganic sample fractions. When sampling for inorganic analysis, PVC, Tygon, or polyethylene tubing may be used. If immiscible layers, such as Light and Dense Non-Aqueous Phase Liquids (LNAPLs, DNAPLs), are detected using the interface probe prior to sampling, the LNAPL/DNAPL samples may be collected using a bottom-filling bailer of stainless steel and/or Teflon construction.

The following procedures apply to the collection of monitoring well groundwater samples:

1) Wear protective gear as specified in the Health and Safety Plan. Samplers shall don new outer sampling gloves prior to sampling at each location.

2) Visually examine the exterior of the monitoring well for signs of damage or tampering; record findings in the field logbook.

3) Collect PID and/or FID readings at the well rim; record results in field logbook.

4) Unlock well cap, if present.

5) Collect PID and/or FID readings; record results in field logbook.

6) Measure the static water level in the well with a steel tape or electronic water level indicator. Caution will be exercised in order to minimize disturbance of the water column and any associated sediment/particulate matter. The depths to water of all wells to be sampled will be measured and recorded in the field logbook prior to purging of the wells. The tape or water level indicator will be rinsed with deionized water in between individual wells to prevent cross contamination.

7) Measure the depth of any immiscible phases (e.g., DNAPLs/LNAPLs) using an interface probe; record observations in field logbook. During measurement, care will be taken in order to minimize disturbance of any accumulated sediment. The probe will be rinsed with deionized water between individual wells to prevent cross contamination.

8) Place clean, polyethylene sheeting around well casing to prevent contamination of sampling equipment in the event equipment is dropped.

9) Slowly lower the pump apparatus into the well until it is situated in the middle or slightly above the well screen, ensuring that the pump intake is kept at least 2 feet above the well bottom; this pump position will minimize the potential of pumping stagnant water and the disturbance of bore sediments and DNAPLs.

10) Measure the water level again with the pump in the well; record observations in the field logbook.

11) Begin purging the well at a low rate (e.g., 500 ml/min). At a minimum, the water level should be monitored every three to five minutes during pumping. A flow rate resulting in a stabilized water table should be established and maintained; drawdown should be less than 0.3 foot. Pump suction will also be maintained in order to avoid introduction of air into the tubing during pumping. In the field logbook, record each pumping rate adjustment and subsequent water level measurement. In the event that the well recharge rate is very low, caution will be used in order to prevent pressure loss in the pump tubing, groundwater recharge cascading through the sand pack, and complete evacuation of the well.

During well purging, measure the following field indicator parameters every three to five minutes and record in the field logbook: temperature, pH, turbidity, dissolved oxygen (DO), specific conductance, and redox potential (Eh). When possible, in-line analyzers and continuous readout displays will be utilized. Measurements for DO and Eh will be obtained from groundwater prior to exposure to air. The remainder of parameters may be either in-line or from a clean glass container holding the groundwater sample. Purging will be continued until well is stabilized; the well is considered stabilized when all

field indicator parameters are ±10% for three consecutive readings *and* turbidity is less than 50 NTU. If the field indicators have stabilized and the turbidity is greater than 50 NTU, the pump rate will be decreased to ≤250 ml/minute and the field indicator parameters will be continued to be monitored. When the turbidity decreases to less than 50 NTU, the groundwater well samples can be collected. The recommended sample collection flow rate is 100 to 250 ml/min.

The maximum time between purging and sampling will be three hours. If the well is allowed to sit longer than three hours, the well will be re-evacuated since the water in the casing may no longer be representative of the aquifer.

12) Upon U.S. EPA approval, purge water will be discharged to the ground surface in the immediate vicinity of the well. Should the approval for purge water discharge to ground surface be denied, the purge water will be containerized and disposed of as per OERR Directive 9345.3-02, Management of Investigation-Derived Wastes During Site Inspections (May 1991), or most current directive, and Region II SAT procedures for disposal of investigation-derived waste.

13) Collect the VOA sample fraction first directly from the tubing into pre-preserved glass vials to prevent degassing of the water. (See Item No. 14, below, for preservation procedures.) During sample collection, the containers will be held so the discharge causes minimal internal disturbance. Collect the remaining organic and inorganic sample fractions.

14) Samples shall be preserved as follows:

a) VOAs - Determine the amount of 1:1 HCl preservative required to adjust the pH of the sample to less than 2 in an extra 40 ml glass vial. If effervescence occurs when the bottle is tapped, volatile samples will be submitted without preservative and noted as such on the respective Traffic Report. Add the determined volume of acid to the empty 40 ml glass vials prior to sampling. Fill each container with sample to just overflowing so that no air bubbles are trapped inside. This procedure will be repeated at each new sampling station.

b) Other Parameters - Fill each container and preserve immediately as required in Table 2-1. When adjusting the pH for sample preservation, pour a minimal portion of sample onto broad range pH paper to verify if the appropriate pH level has been obtained.

15) Place samples in cooler and chill with ice. Samples will be hand-delivered or shipped within 24 hours of collection to the designated CLP laboratory(ies).

16) Remove the pump apparatus. The used tubing will be disposed of properly. Gross surface decontamination of the pump will be accomplished by placing

the pump in a large container filled with a detergent/water solution. The pump will then be submerged in another large container filled with potable water and re-started. Water will be allowed to circulate through the pump until it is thoroughly rinsed. The pump will be removed from the container and rinsed with deionized water.

17) Measure the well depth; record observation in field logbook.

18) Re-lock well cap, if present.

19) Fill out field logbook, sample labels, custody seals, and chain of custody forms.

3.3 Decontamination

As detailed in the previous sections, all stainless steel equipment involved in field sampling activities will be decontaminated prior to and subsequent to sampling. Decontamination of sampling equipment will be kept to a minimum in the field and whenever possible dedicated sampling equipment will be used. Decontamination of sampling equipment including stainless steel scoops, trowels, and bowls will be conducted as follows:

1) Alconox detergent and potable water scrub,

2) Potable water rinse,

3) A 10% nitric acid rinse (ultra pure grade) when sampling for inorganic parameters,

4) Distilled or potable water rinse,

5) An acetone *only* rinse or a methanol rinse followed by a hexane rinse (pesticide grade or better),

6) Deionized water rinse,

7) Air dry (sufficient time will be allowed for the equipment to completely dry), and

8) Wrap or cover exposed ends of sampling equipment with aluminum foil (shiny side out) for transport and handling.

4.0 QUALITY ASSURANCE/QUALITY CONTROL

This section details the Quality Assurance/Quality Control (QA/QC) requirements for field activities performed during the sampling effort.

4.1 Field Instrument Calibration and Preventive Maintenance

The sampling team is responsible for assuring that a master calibration/maintenance log will be brought into the field and maintained for each measuring device. Each log will include at a minimum, where applicable:

- name of device and/or instrument calibrated
- device/instrument serial and/or ID number
- frequency of calibration
- date of calibration
- results of calibration
- name of person performing the calibration
- identification of the calibrant (PID, FID, pH meter)

Equipment to be used each day shall be calibrated prior to the commencement of daily activities.

4.2 QA/QC Sample Collection

4.2.1 Trip Blanks

A trip blank will be collected for events involving aqueous sampling for volatile organic parameters. A trip blank is an aliquot of deionized (DI), demonstrated analyte-free water which is prepared in the field prior to the initiation of field work and sealed in 40-ml glass vials with teflon-lined septum caps. Analytical results of the trip blank sample are utilized during sample data validation to determine if any cross contamination has occurred between samples during shipment/storage, or if on-site atmospheric contaminants are seeping into the sample vials. These sealed bottles will be placed in a plastic cooler and will accompany field personnel to the sampling locations.

Trip blanks will be collected in accordance with the procedures listed below:

1) Pour DI water into an extra vial. Determine the amount of 1:1 HCl required to lower sample pH to less than 2, verifying with broad range pH paper. Add the predetermined volume of HCL to the two sample vials.

2) Proceed to fill the two vials with DI water just to overflowing and seal so that no air bubbles are trapped inside. Place in sample cooler. After the sampling event is completed, the trip blank sample will be packaged and hand-delivered or shipped

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within 24 hours of collection, along with the environmental samples, to the designated laboratory.

3) Complete sample labels, custody seals, and chain of custody forms. Record in field logbook.

4.2.2 Field Rinsate Blanks

A field rinsate blank will consist of DI, demonstrated analyte-free water that has been poured over decontaminated sampling equipment. The field rinsate blank analytical results will be utilized in evaluation of potential cross contamination resulting from inadequate decontamination. The frequency of field rinsate blank collection is one blank per decontamination event per type of equipment, not to exceed more than one per day. For the purposes of sampling associated with pre-remedial field activities, field rinsate blank collection will not exceed a total of three samples. Blanks will be collected for all parameters of interest (excluding physical parameters) and shipped with the samples collected the same day.

Field rinsate blanks will be collected in accordance with the procedure listed below:

1) Decontaminate sampling equipment using the procedure specified in Section 3.4 of this plan.

2) Pour DI water over the sampling device and collect the rinsate in the appropriate sample containers. Collect the VOA vials first and preserve in the same manner as trip blank vials.

3) Preserve remaining samples as specified in Table 2-1 of this plan. Test pH by pouring a small portion of sample on broad range pH paper over a collection bowl. Place samples in cooler.

4) Complete sample labels, custody seals, and chain of custody forms. Record in field logbook.

4.2.3 Deionized Water Blanks

The distilled deionized (DI) water utilized for the trip and field blanks will be certified as such. A copy of this certificate will be kept on site and another in the site-specific project file. The criteria to be demonstrated as analyte-free will be consistent with that specified in the U.S. EPA Region II CERCLA Quality Assurance Manual (October 1989), and is as follows:

Purgeable organics < 10 ppb
Semi-volatile organics < CRQL
Pesticides/PCBs < CRQL

Inorganics < CRDL

where the CRQL is represented by the Contract Required Quantitation Limit and the CRDL is represented by the Contract Required Detection Limit in the most recent CLP Statement of Work. For specific common laboratory contaminants such as methylene chloride, acetone, toluene, 2-butanone and phthalates, the allowable limits are three times the respective CRQLs.

4.2.4 Duplicate Samples

Duplicate samples will be sent for laboratory analysis to evaluate the ability of reproducing the sampling methods. At a minimum a rate of one duplicate sample per 20 samples, or one duplicate sample per batch of less than 20 samples, will be obtained for each matrix. For the purpose of pre-remedial site assessment projects, soil and sediment matrices will be considered as same matrix.

In addition, a minimum of one matrix spike/matrix spike duplicate (MS/MSD) sample per matrix will be collected per 20 samples , or one MS/MSD sample per matrix per batch of less than 20 samples. The analysis of CLP TCL parameters for the MS/MSD sample will involve the collection of triple sample volume for aqueous samples only. Extra sample volumes are not required for TCL solid matrix (i.e., soil/sediment matrix) and TAL parameters MS/MSD analyses.

4.2.5 Data Validation

Personnel, trained and approved by U.S. EPA Region II Monitoring Management Branch, will perform all data validation utilizing the most current U.S. EPA Region II data validation guidelines.

5.0 FIELD CHANGES AND CORRECTIVE ACTIONS

The SAT Project Manager (PM) or his/her designee may be required to modify generic site procedures to accommodate site-specific needs or unforeseeable events. In the event it becomes necessary to modify a procedure, the PM will notify the U.S. EPA Region II WAM. Deviations from the field sampling plan are to be documented in the field logbook and signed by the initiator and the PM.

REFERENCE NO. 3

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

AUG 13 1999

ACTION MEMORANDUM

DATE:

SUBJECT: Confirmation of Verbal Authorization of Funding and Request for Ceiling Increase at the Lackawanna Foundry Site, Lackawanna, New York

FROM: Kevin M. Matheis, On-Scene Coordinator
Removal Action Branch

TO: Richard L. Caspe, Director
Emergency and Remedial Response Division

THRU: Richard C. Salkie, Chief
Removal Action Branch

Site ID#: MY

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the proposed removal action described herein for the Lackawanna Foundry Site (Site), located at 2 Elm Street, Lackawanna, Erie County, New York 14218. On March 19, 1999 the Acting Division Director of the Emergency and Remedial Response Division granted verbal authorization for the U.S. Environmental Protection Agency (EPA) to undertake emergency stabilization actions at the Site, authorizing a total project ceiling of $100,000 ($90,000 in contractor mitigation costs and $10,000 in EPA costs) to initiate removal activities to secure and stabilize the Site. This stabilization action was initiated on March 22, 1999.

The actions described herein seek to complete the removal actions at the Site by removing drums, cylinders, PCB contaminated soils and equipment and arsenic contaminated soils at the Site. The proposed project ceiling for this action will be $1,500,000, of which $930,000 is for mitigation contracting.

AUG 13 1999

ACTION MEMORANDUM

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FROM: Kevin M. Matheis, On-Scene Coordinator
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CONCURRENCES

Name: Morgan Chem.		Init: sb	Date: 08/04/99		Filename: A.M.#0166	
Symbol	ERRD-RAB	ERRD-RAB	ERRD-RAB	ORC-NYCSUP	ERRD-DD	ERRD-D
Surname	Matheis	Rocola	Salkie	Simon	McCabe	Caspe
Date	8/11/99	8/11/99	8/11/99	8/13/99 8/19/99		8/13/99

actions at the Site, authorizing a total project ceiling of $100,000 ($90,000 in contractor mitigation costs and $10,000 in EPA costs) to initiate removal activities to secure and stabilize the Site. This stabilization action was initiated on March 22, 1999.

The actions described herein seek to complete the removal actions at the Site by removing drums, cylinders, PCB contaminated soils and equipment and arsenic contaminated soils at the Site. The proposed project ceiling for this action will be $1,500,000, of which $930,000 is for mitigation contracting.

The Site is not on the National Priorities List (NPL). There are no nationally significant or precedent-setting issues associated with the proposed removal action.

II. SITE CONDITIONS AND BACKGROUND

The Comprehensive Environmental Response, Compensation and Liability Information System ID Number for the Site is pending assignment through the application submitted by EPA. Once assigned, the ID will accompany all appropriate paperwork regarding the Site.

A. Site Description

1. Removal site evaluation (RSE)

On December 22, 1998, the New York State Department of Environmental Conservation (NYSDEC) requested that EPA evaluate the Site and perform a removal action, as appropriate, to address the threats at the Site from drums, PCB transformers, and PCB contaminated soils. Included in the referral was an drum inventory performed by the site owner that showed the presence of over 223 drums of various foundry raw materials and waste. This inventory showed 25 drums or binders, oils and resins that were suspected flammable or combustible materials, and 190 drums of slag waste, unknown materials, and foundry sands. One drum of reactive material, calcium carbide, was also listed. Also included in the referral, analysis of transformers indicated that two transformers contain oil with PCBs at concentrations as high as 86 percent and adjacent soils with PCBs as high as 210 parts per million (ppm). On March 16, 1999, EPA performed a RSE. During the RSE, it was observed that the Site had no fencing or security, the buildings were open and evidence of trespassing were quite evident. Graffiti was present at the outer and interior buildings on-site and evidence of splat-ball games were prevalent throughout the building.

It was apparent that the inventory provided by NYSDEC underestimated the amount of drums discovered at the Site. EPA identified over 100 unknown drums outside the foundry buildings and approximately 100 drums, laboratory chemicals, compressed gas cylinders and PCB transformers were noticed within the foundry buildings.

Based upon observations during the RSE and analysis provided by the NYSDEC, verbal authorization of funding was granted by the acting Division Director on March 19, 1999. This funding authorized stabilization actions to commence at the Site. These actions involved fencing the perimeter of the Site and securing the buildings, moving drums into a secure location and stabilizing leaking containers.

During the emergency stabilization operations, EPA's contractor sampled drums and collected label information from containers to identify hazardous substances and to characterize the waste for segregation purposes. During the field characterization, four drums were found to be D001 flammable, 18 drums were D001 oxidizers, one drum was D003 water reactive, five drums were D002 corrosive and the remaining 116 drums contain various solids and chemicals that have yet to be characterized.

In addition, 53 five-gallon and 63 one-gallon containers of paint-related materials were discovered and inventoried. From label information collected, the containers contain various concentrations of xylene, acetone, toluene and naphtha. Many of the paint-related materials indicate they are flammable.

Over 1,000 pounds of laboratory chemicals were inventoried and stabilized during the initial action. Label information from these containers indicate that hazardous substances and wastes such as sulfuric acid, phosphoric acid, flammable alcohols and acetone, ammonium hydroxide, calcium carbide and many unknown materials are contained within these laboratory chemicals. These containers are in poor condition and many have leaked their contents into the site buildings.

Compressed gas cylinders were collected from throughout the property and staged according to compatibility. The following were inventoried: four cylinders contain liquified petroleum gas, a flammable gas; one cylinder contains propane, a flammable gas; one cylinder contains oxygen, an oxidizer in compressed state; one cylinder contains, polymeric isocyanate, a poisonous gas; and one cylinder contains unknown materials.

Key problem areas that exist on-site include leaking drums of unknown solids and liquids, soil contaminated with high levels of PCBs in areas of PCB capacitor dumping, unknown and known cylinders in poor condition, laboratory chemicals stored in poor containers, drums of liquids in poor condition that contain corrosive and flammable liquids, arsenic contaminated soils in an adjacent recreational area and a building that is in an advanced stage of deterioration.

In April 1999, EPA's Environmental Response Team (ERT) performed a preliminary assessment (PA) at the Site to ascertain the extent of surface soil and subsurface soil contamination outside and inside the buildings on-site. The site soil sampling results showed elevated levels of arsenic contamination in a recreational area (66ppm, 48ppm,and 77ppm). In addition, in the areas where the PCB capacitors were dumped, soil contamination for PCBs was found at 256,000 ppm.

Due to the above mentioned conditions, the Site continues to pose a threat to public health and the environment, and thereby qualifies for a removal action.

The site referral from NYSDEC is included as Attachment 1.

2. Physical location

The Site is located in a mixed residential and heavily industrialized area of Lackawanna, New York, adjacent to Smokes Creek, a direct tributary to Lake Erie. Twelve residential properties are immediately adjacent to the Site to the west, railroad tracks border the east, Smokes Creek to the north and a multi-use city park to the south.

The residential neighborhood immediately adjacent to the Site consists of twelve residences with over 100 residences being located within 1/8 mile of the Site. The population of the area within a 1/2 mile of the Site consists of nearly 1,000 people.

3. Site characteristics

The Site has been the location of a cast-iron foundry since the early 1900's. The current owner of the Site inherited the business from his father who operated the foundry at this location for more than 30 years. Residences adjacent to the Site have told EPA that foundry operations have been small-scale and have steadily decreased over the past 20 years. Over the past five years, the current owner has operated a marginal business and has ceased operations completely since approximately 1997. To date, two primary areas of contamination have been identified and are described below:

On-Site Buildings - PCBs located at the Site are suspected to have originated from electrical equipment and machinery operated at the foundry. Items containing PCBs have deteriorated over time and leaked, which resulted in the contamination of soils within the buildings. Sampling from PCB capacitors dumped inside of buildings showed the presence of 100 percent PCBs. Several of these capacitors have leaked inside the on-site buildings and samples showed the soil contaminated with 25 percent PCBs. The removal of these capacitors and associated soil contamination will be part of this proposed removal action. In addition to the high concentrations of PCBs found in the areas of PCB capacitor storage and dumping, several areas within the on-site buildings are suspected to contain hazardous substances and will need to be sampled. A basement area containing runoff water and sediment from the Site will be sampled and evaluated as part of this removal. The drums, laboratory chemicals and cylinders appear to have been utilized as part of the foundry operations and have been abandoned since the operations have ceased.

Recreational Area - The recreational area adjacent to the Site is approximately two acres in size and is owned by the City of Lackawanna. A bocce court and baseball field is on this parcel and is frequented by citizens who live adjacent to the Site and in the surrounding Bethlehem Park community. The recreational area is a grassy area that Lackawanna maintains by frequent grass and weed cutting and trimming. A wide group of citizens of various age groups use the recreational area on a daily basis. The Site is topographically higher than the recreational area. The arsenic contamination adjacent to the Site in the recreational area appears to be in the location of a bag-house dust collection system used during foundry operations. The contamination was caused by either airborne deposition or runoff from the baghouse collection area. Of the arsenic data collected on-site, the highest concentrations of arsenic contaminated soils have been identified in this area.

The actions proposed in this memoranda will be a continuation of site stabilization and cleanup activities. Presently, EPA inspects the Site on a routine basis and maintains a command post and response capabilities in the event of an emergency.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant.

The inventory obtained by EPA as part of the RSE included the following hazardous substances as defined by Section 101(33) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, 42 U.S.C. 9601 et seq. and listed in 40 CFR Table 302.1:

Material	Quantity	Storage Method	Primary Hazard
PCB contaminated soils and debris	1,000 y^3	Soils inside building	toxic, carcinogen 25.6% PCBs
PCB equipment	120 units	Transformers and capacitors	toxic, carcinogen 100% Pure PCBs
Arsenic contaminated soils	800 y^3	Soils outside buildings	toxic, carcinogen
Laboratory Chemicals	1,000 lbs	Various sized containers	D001 - flammables, D002 - corrosives, D001 - oxidizers, D003 - reactives
Compressed gas cylinders	9	Cylinders	D001 - flammables, poisons, D001 - oxidizers, uncharacterized

Drums, known and yet to be characterized	144 x 55 gallon drums	Interior storage buildings, poor condition	D001 - flammables, D002 - corrosives, D003 - reactives, and uncharacterized
Five gallon pails and paints	53 x 5 gallon 63 x 1 gallon	Interior storage buildings, poor conditions	D001 - flammables, D002 - corrosives and uncharacterized

Sampling results and a map depicting sample locations are included in Attachment 2.

Several release mechanisms exist at the Site for the various hazardous substances found. These release mechanisms include the following:

- There is a fire and explosion threat from potential releases of the drums containing flammable, reactive or oxidizing materials. Resulting emissions from a release in conjunction with the amount of uncharacterized materials contained within drums on-site would cause a significant threat to the adjacent residential area. Since the Site has been historically the subject of frequent vandalism and break-ins, the threat of release from intentional causes is high. The drums known to be reactive and/or flammables and oxidizers were identified through thorough on-site field characterization.

- The PCB equipment and highly contaminated PCB soils on-site present a threat of release from poor building conditions that may cause contaminants to migrate. In the area where the PCB capacitors were found dumped, water exists on top of the soil contamination areas. Due to the poor condition of the roof, rainfall events may cause the contamination to migrate further. In addition, the PCB transformers and capacitors are in poor condition and several items have already leaked. Actions are required to remove this equipment off-site to disposal facilities. The concentrations of the PCB capacitors dumped on-site consist of PCBs in the 100 percent pure category. Samples of transformers in the referral by NYSDEC indicated that several transformers contain 86 percent PCBs. Soil samples taken from the location of PCB capacitors leaking on-site indicate the presence of PCBs at 25 percent. Summary of PCB results follows:

Capacitor Sample Results	Transformer Sample Results	Soil Contamination Results
1,000,000 ppm (100%) PCBs	866,000 ppm (86%) PCBs	250,000 ppm (25%) PCBs

- In the area of arsenic soil contamination, the contaminated soil is unsecured and adjacent to a recreational area frequented by citizens of all ages utilizing the property for multi-purposes. The runoff area from the bag house collection system into the recreational area appear to have areas of soil exposed at the surface where vegetation is non-existent. This area would be a prime pathway for exposure to the contaminated soil and for arsenic

contaminated soils to further migrate. The recreational area contains a bocce field and baseball area and is fully grassed, being maintained by the City of Lackawanna. The area is frequented on a daily basis by citizens utilizing this open green space in the Bethlehem Park community. The arsenic contaminated soils, in concentrations ranging from 21-77 ppm arsenic in surface and subsurface soils abuts the foundry buildings in bulldozed piles and weather conditions such as rainfall may cause the contamination to spread further. Actions are needed to remove the arsenic contaminated soils from this area. Sample results from the site adjacent to the residential area follows:

Sample 22 (0 - 12") Arsenic Results	Sample 26 (0 - 12") Arsenic Results	Sample #26D (1' -3' depth) Arsenic Results
77 ppm	66 ppm	48 ppm

All three samples taken in this area exhibited elevated arsenic concentration levels. Other arsenic samples taken away from the bag house dust collection area decreased in arsenic concentrations. These results show a definable area of arsenic concentration that can be remediated as part of this removal action.

This removal action addresses the disposal of these hazardous materials from the Site.

5. NPL status

The Site is not listed or proposed to be included on the NPL. The site assessment program will be contacted to provide an evaluation of NPL inclusion as further site information is collected and evaluated.

6. Maps, pictures, and other graphic representations

Figures 1, 2 and 3 are included as Attachment 3 and provide the location and configuration of the Site.

B. <u>Other Actions to Date</u>

1. Previous actions

In 1997, the facility was marginally operational and the NYSDEC had performed an inspection at the Site which identified drums and transformers. At that time, they required the owner of the Site to undertake an inventory of all containers on-site and to take samples and analysis of transformers and suspected areas of PCB soil contamination. Results of the sampling indicated that the transformers contained up to 86 percent PCBs and soil contamination from the

transformers were up to 210 ppm of PCBs. As a result, the NYSDEC demanded that the owner take actions to address the threats at his property. The owner has been unable financially to perform a cleanup and has abandoned the property.

Since the site buildings are in such poor condition, the City of Lackawanna has also ordered the owner of the property to clean the debris from the property and to demolish several of the structures on-site due to poor structural integrity. The owner has not complied with these requests and has communicated with city officials that they can do what is necessary to bring the building into compliance with city ordinances.

2. Current actions

EPA mobilized to the Site on March 22, 1999 to begin site stabilization operations. During these operations, EPA fenced the perimeter of the buildings and the adjacent residential area. In addition, all drums stored outside the buildings were moved inside, leaking liquid drums were over packed and all drums were sampled and field characterized. PCB transformers were secured and all laboratory chemicals, five-gallon pails and paint cans were organized and segregated. Cylinders of compressed gas were collected from throughout the Site and consolidated into a secure storage area. Over 100 PCB capacitors were discovered in a hidden trench on-site and were excavated and place into steel drums. The trench was sampled and found to contain over 26 percent PCBs in the soil. This area was roped with caution tape pending excavation and removal to off-site disposal facilities.

ERT mobilized to the Site in April 1999 and collected surface and subsurface soil samples from the interior of the building and in areas adjacent to the building. Sampling results indicated that arsenic contamination had migrated to the recreation area located to the south of the Site.

Erie County has identified the recreational area and Site property that borders Smokes Creek as a target for environmental restoration under the 1996 New York Clean Water/Clean Air Bond Act. Upon completion of EPA's actions at the Site, the area may be turned into a recreational area with waterfront access.

EPA has informed the community about the status and the future of the removal action at the Site. Fact sheets have been delivered and personal interviews have been held with residents immediately adjacent to the Site. EPA intends to expand community relations actions when additional removal actions commence.

C. State and Local Authorities' Role

1. State and local actions to date

On December 22, 1998, the NYSDEC requested that EPA evaluate the Site and perform a removal action, as appropriate, to address the threats at the Site from drums, PCB transformers and PCB contaminated soils.

The City of Lackawanna and EPA continue to monitor the Site for breaches in security and vandalism.

2. Potential for continued State/local response

There are no actions being taken by State or local government agencies to address the hazardous substances located at the Site.

Erie County has identified the recreational area and Site property that borders Smokes Creek as a target for environmental restoration under the 1996 New York Clean Water/Clean Air Bond Act. Upon completion of EPA's actions at the Site, the area may be turned into a recreational area with waterfront access.

III. THREATS TO PUBLIC HEALTH, OR WELFARE, OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

The following factors described in 40 CFR Part 300.415(b)(2) of the National Contingency Plan (NCP) were applied in determining the appropriateness of a removal action at the Site.

(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, or pollutants, or contaminants;

(iii) Hazardous substances, or pollutants, or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;

(iv) High levels of hazardous substances, or pollutants, or contaminants in soils largely at or near the surface, that may migrate;

(v) Weather conditions that may cause hazardous substances, pollutants, or contaminants to migrate or be released;

(vi) Threat of fire or explosion; and

(vii) The availability of other appropriate federal or State response mechanisms to respond to the release.

A. Threats to Public Health or Welfare

(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, or pollutants, or contaminants;

The arsenic contaminated soils in the recreational area is unsecured and presents a threat to persons that comes in contact with the contaminated surface soils. The site buildings contain drums of hazardous substances such as PCBs, xylene, toluene, flammable liquids, corrosive liquids and poisons stored in containers that are in poor condition and not intended to be stored indefinitely. Many of these containers have leaked and present a threat of exposure. The PCB contaminated soils contained within the buildings may migrate outside the buildings and cause a direct contact threat.

(iii) Hazardous substances, or pollutants, or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;

The drums found at the Site contain the hazardous substances as listed is Section II.A.4 of this Action Memorandum. The hazardous substances contained within these containers present a threat of continuing release.

(iv) High levels of hazardous substances, or pollutants, or contaminants in soils largely ~~at or~~ near the surface, that may migrate;

The site perimeter contains arsenic contaminated soils that is unsecured and impacting a recreational area next to the Site. The location of the arsenic soils is topographically higher than the surrounding area and the hazardous substances will continue to migrate off-site if not remediated. In addition, high levels of PCB contaminated soils exist in the warehouse on-site and are covered by rainwater infiltration. If the PCB contaminated soil is not removed, the contamination will continue to migrate, perhaps beyond the building perimeter walls.

(v) Weather conditions that may cause hazardous substances, pollutants, or contaminants to migrate or be released;

The building is in poor structural condition with leaking roof and walls and partially collapsed areas. The Site has no utilities and temperature controls and drums and other containers are subject to freeze/thaw cycles. Rainfall causes flooding in several areas of the buildings and contamination from the PCB soils may continue to migrate.

(vi) Threat of fire or explosion; and

The Site contains flammable liquids contained in drums, five-gallon pails, paint cans and laboratory chemicals. In addition, several drums contain reactive materials. Due to the poor conditions of the buildings and the threat of vandalism and chemical incompatibility, a threat of

fire and explosion exists on-site. The Site is immediately adjacent to a residential area and a resulting fire would require the evacuation of the adjacent residential area.

(vii) The availability of other appropriate federal or State response mechanisms to respond to the release.

No other federal or State response mechanism is available to respond to the significant threat to the environment that the Site presents.

B. Threats to the Environment

(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, or pollutants, or contaminants;

The arsenic contaminated soils in the recreational area is unsecured and presents a threat to animals that comes in contact with the contaminated surface soils. The site buildings contain drums of hazardous substances such as PCBs, xylene, toluene, flammable liquids, corrosive liquids and poisons stored in containers that are in poor condition and not intended to be stored indefinitely. Many of these containers have leaked and present a threat of exposure. The PCB contaminated soils contained within the buildings may migrate outside the buildings and cause a direct contact threat. The Site is immediately adjacent to Smokes Creek, a direct tributary to Lake Erie. Fishing is very prevalent in the creek and fish can bioaccumulate PCBs from the Site. This bioaccumulation would cause damage to the food chain as a result.

(iii) Hazardous substances, or pollutants, or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;

The drums found at the Site contain the hazardous substances as listed is Section II.A.4 of this Action Memorandum. The hazardous substances contained within these containers present a threat of continuing release to the environment.

(iv) High levels of hazardous substances, or pollutants, or contaminants in soils largely at or near the surface, that may migrate;

The Site perimeter contains arsenic contaminated soils that is unsecured and impacting a recreational area next to the Site. The location of the arsenic soils is topographically higher than the surrounding area and the hazardous substances will continue to migrate off-site if not remediated. In addition, high levels of PCB contaminated soils exist in the warehouse on-site and are covered by rainwater infiltration. If the PCB contaminated soil is not removed, the contamination will continue to migrate, perhaps beyond the building perimeter walls. The Site is immediately adjacent to Smokes Creek, a direct tributary of Lake Erie. Run-off from the Site would directly enter the creek, causing contamination to migrate off-site.

(v) Weather conditions that may cause hazardous substances, pollutants, or contaminants to migrate or be released;

The building is in poor structural condition with leaking roof and walls and partially collapsed areas. The Site has no utilities and temperature controls and drums and other containers are subject to freeze/thaw cycles. Rainfall causes flooding in several areas of the buildings and contamination from the PCB soils may continue to migrate.

(vi) Threat of fire or explosion; and

The Site contains flammable liquids contained in drums, five-gallon pails, paint cans and laboratory chemicals. In addition, several drums contain reactive materials. Due to the poor conditions of the buildings and the threat of vandalism and chemical incompatibility, a threat of fire and explosion exists on-site. Firefighting water from the resulting fire may enter the adjacent creek causing contamination and hazardous substances to further migrate.

(vii) The availability of other appropriate federal or State response mechanisms to respond to the release.

No other federal or State response mechanism is available to respond to the significant threat to the environment that the Site presents.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COST

A. Proposed Actions

1. Proposed action description

The following activities are proposed to address the immediate threats to human health and the environment posed by hazardous substances, or pollutants, or contaminants present at the Site.

a. Stabilization - All containers that are open or of questionable integrity will be over packed or transferred into a new container.

b. Sampling - All hazardous substances, pollutants and contaminants in containers, soil and debris will be sampled prior to disposal. Where possible, composite samples will be taken to reduce the total amount of samples analyzed. In order to quantify and delineate the

extent of soil contamination, additional samples will be taken in areas of arsenic and PCB soil contamination prior to excavation.

c. Analysis - All samples will be evaluated for compatibility. The samples will be analyzed for disposal parameters, anticipated to be full toxicity characteristic leaching procedure (TCLP) analysis. The analysis will be sent to disposal facilities in compliance with EPA's off-site disposal rule to ensure proper disposal.

d. Excavation - Upon receipt of approvals at disposal facilities, the areas of arsenic and PCB soil contamination will be excavated and sent to off-site disposal facilities. For the arsenic contaminated soils, a cleanup level of 20 ppm will be utilized. For PCB contaminated soils, a cleanup level of ten ppm will be implemented. Delineation of the contamination will be performed prior to excavation. Based upon existing data, the volume estimate for soil to be removed in this Action Memorandum should be similar to the area identified in the proposed delineation. Excavations will occur in areas that are adjacent to support structures of the steel framed building and partial demolition of the building may be required. The building is constructed of structural steel and sheet metal so the fabric and structure of the building will be recycled as scrap, if demolition is necessary.

e. Disposal - Upon receipt of disposal analysis, waste profiles will be completed and sent to disposal facilities for acceptance. Hazardous substance, pollutants and contaminants will be sent to off-site disposal facilities in compliance with EPA's Off-Site Disposal Rule.

f. Restoration - Areas of the recreational area impacted by the excavation of arsenic contaminated soils will be returned to original condition by replacing soil with certified clean fill and re-seeding the grassy areas. In addition, any access road necessary to excavate this area will be removed.

2. Contribution to remedial performance

The removal action at the Site is consistent with the requirement of Section 104(a)(2) of CERCLA, which states, "any removal action undertaken . . . should . . . to the extent practicable, contribute to the efficient performance of any long-term remedial action with respect to the release or the threatened release concerned." Since any remedial action undertaken would encompass the elements in this response, this removal action is consistent with any future remedial work.

3. Description of alternative technologies

Because of the quantities and types of the hazardous substances and/or wastes at the Site, on-site treatment and/or incineration is not appropriate. The selected removal action includes the characterization of hazardous substances found at the Site and the transportation of all hazardous substances off-site for treatment and/or disposal. The selected removal action has been

determined to be the appropriate response action for the Site based upon the criteria of effectiveness, implement ability and cost.

4. EE/CA

Due to the time-critical nature of this removal action, an EE/CA will not be prepared.

5. Applicable or Relevant and Appropriate Requirements (ARARS)

ARARS that are within the scope of this removal action will be met to the extent practicable. Federal ARARS determined to be applicable for the proposed scope of work include the Resource Conservation and Recovery Act, Occupational Safety and Health Act and Hazardous Materials Transportation Uniform Safety Act.

6. Project schedule

It is anticipated that the project will be completed within three months. Upon mobilization to the Site, all samples will be collected for disposal approvals. Upon receipt of disposal approvals, the removal of hazardous substances will commence.

Estimated Costs:

The estimated costs for the completion of this project are summarized below. A summary of costs is included as Attachment 4.

Extramural Costs:

	Previous Ceiling	Increase Requested	Total Ceiling
Regional Allowance Costs:			
Total ERCS Cost	$ 90,000	$ 840,000	$ 930,000
20% contingency		$ 168,000	$ 168,000
Other Extramural Costs Not Funded From the Regional Allowance:			
Total START costs	$ 2,000	$ 128,000	$ 130,000
TOTAL, EXTRAMURAL COSTS	**$ 92,000**	**$ 1,136,000**	**$ 1,228,000**

Intramural Costs:

Intramural Direct Costs	$ 3,000	$ 88,000	$ 91,000
Intramural Indirect Costs	$ 5,000	$ 176,000	$ 181,000
TOTAL, INTRAMURAL COSTS	**$ 8,000**	**$ 264,000**	**$ 272,000**
TOTAL, REMOVAL PROJECT CEILING	**$100,000**	**$ 1,400,000**	**$ 1,500,000**

VI. EXPECTED CHANGE IN THE SITUATION SHOULD NO ACTION BE TAKEN OR ACTION DELAYED

Should no action be taken or the planned action be delayed, hazardous substances in drums or contaminated soils could be released. A release of hazardous substances from these containers and soil could result in the exposure of the neighboring population and/or contamination of the environment to the adjacent creek. Releases of contaminants to the ground and/or groundwater would increase the cost of the required removal action.

VII. OUTSTANDING POLICY ISSUES

No known outstanding policy issues are associated with the Site.

VIII. ENFORCEMENT

EPA has a signed access agreement from the property owner and has received information on his financial ability to undertake a removal action. At this time it appears that the owner does not have the ability to undertake an emergency removal action at the Site. EPA will continue to evaluate the ability of the owner to undertake a removal action at various times during the removal, but expects to pursue cost-recovery as a means to reimburse actions undertaken by EPA.

IX. RECOMMENDATION

This decision document represents the selected removal action for the Lackawanna Foundry Site located in Lackawanna, New York, developed in accordance with CERCLA, as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a removal and I recommend your approval of the proposed removal action. The total project ceiling, including actions from the verbal authorization of funding if approved, will be $1,500,000. Of this, $90,000

has already been allocated to the project and an estimated $840,000 additional will come from the Regional removal allowance. Funds for this removal action are currently within the Regional Advice of Allowance.

Please indicate your approval, or disapproval, and authorization of funding as per current Delegation of Authority, by signing below.

APPROVAL: _____ **DATE:** _____
Richard L. Caspe, Director
Emergency and Remedial Response Division

DISAPPROVAL: _____ **DATE:** _____
Richard L. Caspe, Director
Emergency and Remedial Response Division

cc: (after approval)
W. Muszynski, DRA
R. Caspe, ERRD-D
W. McCabe, ERRD-DD
R. Salkie, ERRD-RAB
J. Rotola, ERRD-RAB
G. Zachos, ACSMO
B. Dease, ERRD-RPB
B. Bellow, EPD
P. Simon, ORC-NYCSUP
K. Weaver, OPM-FIN
R. Gherardi, OPM-FIN
C. Moyik, ERRD-PS
T. Johnson, 5202G
M. O'Toole, NYSDEC
T. Vickerson, NYSDEC
P. McKechnie, OIG
A. Raddant, DOI
G. Wheaton, NOAA
O. Douglas, START

Attachment 1

New York State Department of Environmental Conserva
Division of Environmental Remediation, Room 260B
50 Wolf Road, Albany, New York 12233-7010
Phone: (518) 457-5861 FAX: (518) 485-8404

TJV:ts

cc: M. O'Toole (2)
H. Koelling
P. Buechi - NYSDEC, Region 9
T. Vickerson
Dayfile
tjv.disc1:hightech1.wpd

f
High Tech Metals
Lackawanna (Unlisted)

Mr. Richard Caspe
Director
Emergency & Remedial Response Division
USEPA, Region II
290 Broadway
New York, New York 10007- 1866

Dear Mr. Caspe:

Re: High Tech Metals Site
Lackawanna (C), Erie County
Request for Emergency Removal

The New York State Department of Environmental Conservation (NYSDEC) hereby requests the United States Environmental Protection Agency (USEPA) to perform an appropriate CERCLA/SARA authorized emergency response action at the former High Tech Metals site (a.k.a. Lackawanna Foundry).

The site consists of a several story block, brick and wood foundry building in a mixed residential/industrial area off Elm and Jackson Streets in the City of Lackawanna. A residential area is located adjacent to the west of this site and surface water drainage is mostly to Smokes Creek less than 500 feet north of the site.

Previous site investigations by NYSDEC staff and a limited sampling program by the owner have reported accumulations of numerous pails, drums and other containers of wastes from past site operations. An inventory of these drums has been completed but contents were not verified by sampling. Additionally, and of most concern are eight transformers located in the building. A total of five samples of transformer oil were collected. All five samples contained PCB contamination from 12 ppm to 860,000 ppm. Surface soils surrounding the transformer areas have been sampled. PCB contamination was noted as high as 210 ppm from a composite sample. Evidence of past releases have been witnessed and documented by NYSDEC staff during site visits. The current property owner has not been responsive to requests for further action from the Department and has since vacated the premises and has not paid taxes on the facility for a number of quarters.

Due to location of the facility adjacent to a residential area and to Smokes Creek (a tributary of Lake Erie) and indications that a release(s) has/have been noted (i.e., visible stains originating from containers, deteriorating/bulging containers) and the potential for vandalism that would result in a release of undetermined wastes and/or PCB contaminated oil into the environment, it is necessary that a timely response action be undertaken to stabilize, identify and dispose of these materials properly.

Messrs. Joe Rotola and Kevin Matheis of your Removal Action Branch have visited the site with DEC staff and are aware of the situation concerning the PRP and the abandoned wastes which require disposal.

A report entitled "Summary of Sampling Results Lackawanna Foundry, 184 Madison Avenue, Buffalo, New York" is available and will be provided, along with other information, as necessary.

If you have any questions, please contact Mr. Peter Buechi at (716) 851-7220 or Tom Vickerson at (518) 457-7878.

Sincerely,

Michael J. O'Toole, Jr.
Director
Division of Environmental Remediation

cc: Mr. R. Salkie - USEPA, Region II, Edison, NJ
Mr. J. Rotola - USEPA, Region II, Edison, NJ
Mr. B. Sprague - USEPA, Region II, Edison, NJ
Mr. G. Zachos - USEPA, Region II, Edison, NJ

Attachment 2

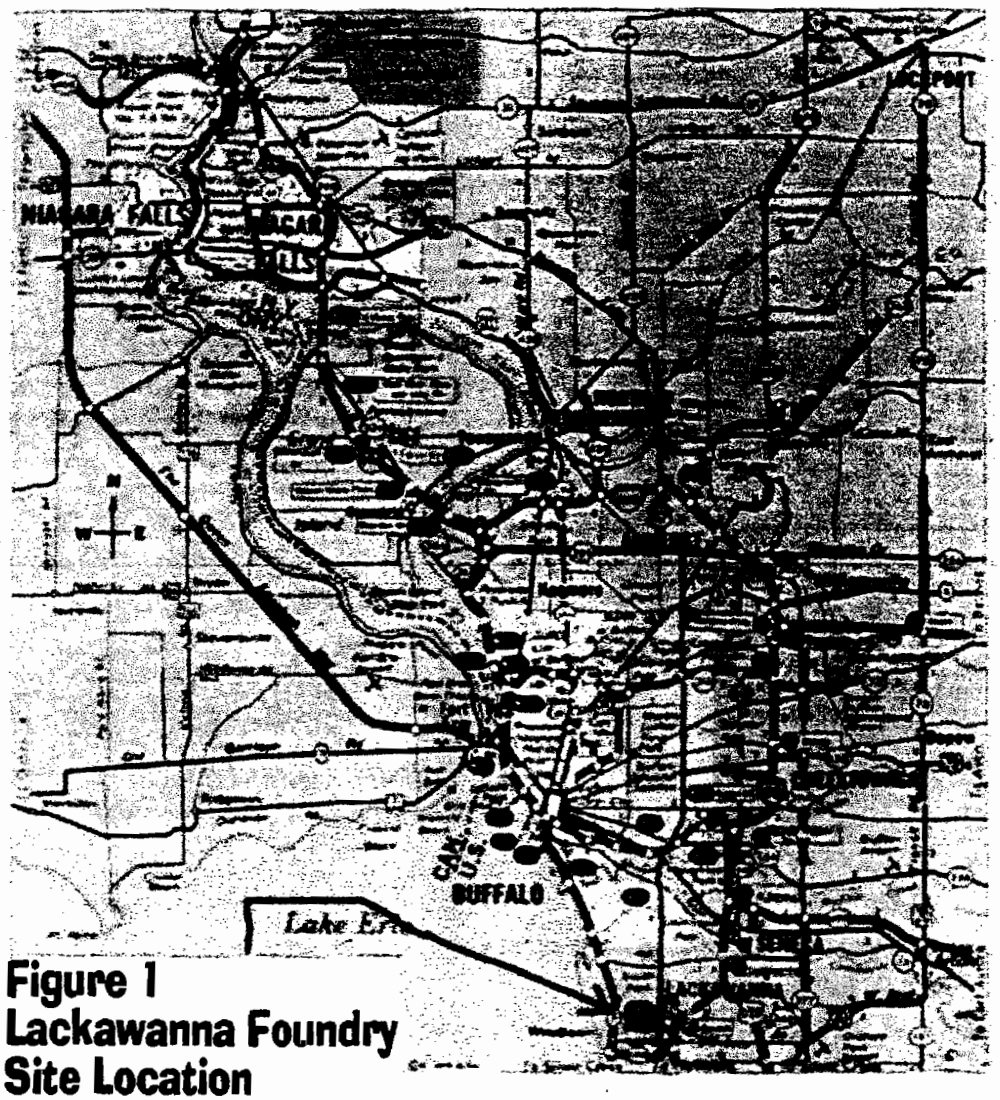


Figure 1
Lackawanna Foundry
Site Location

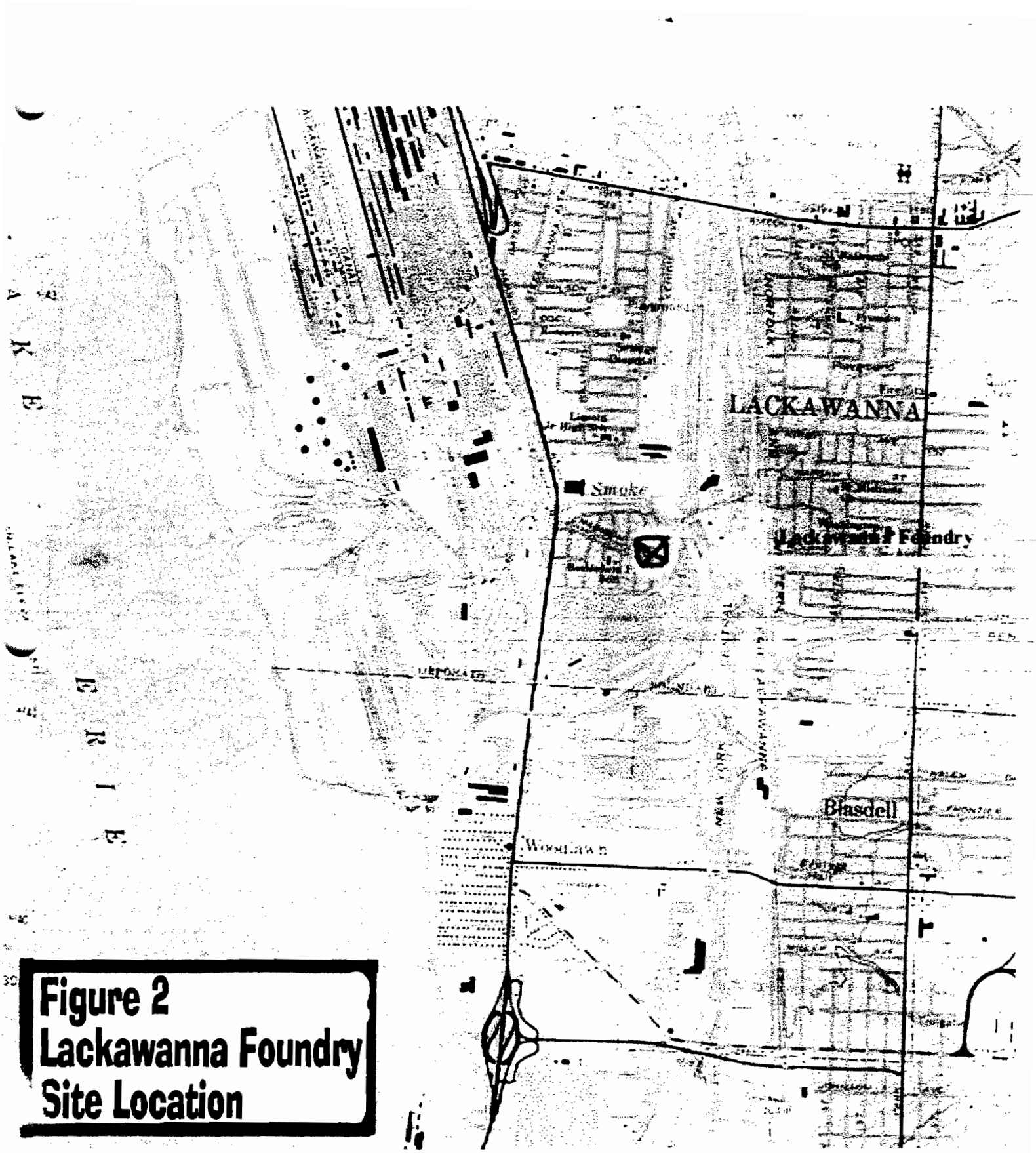
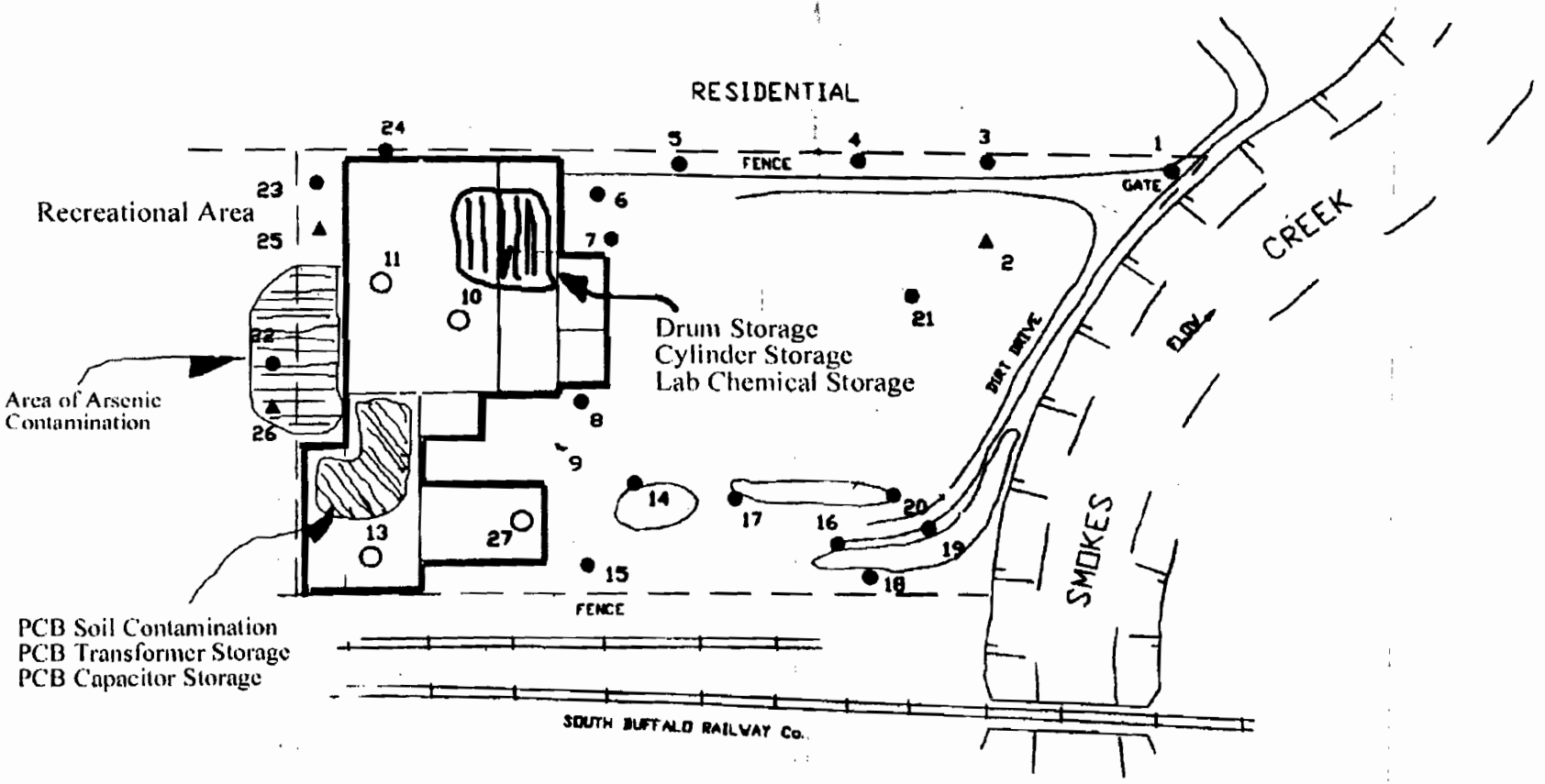


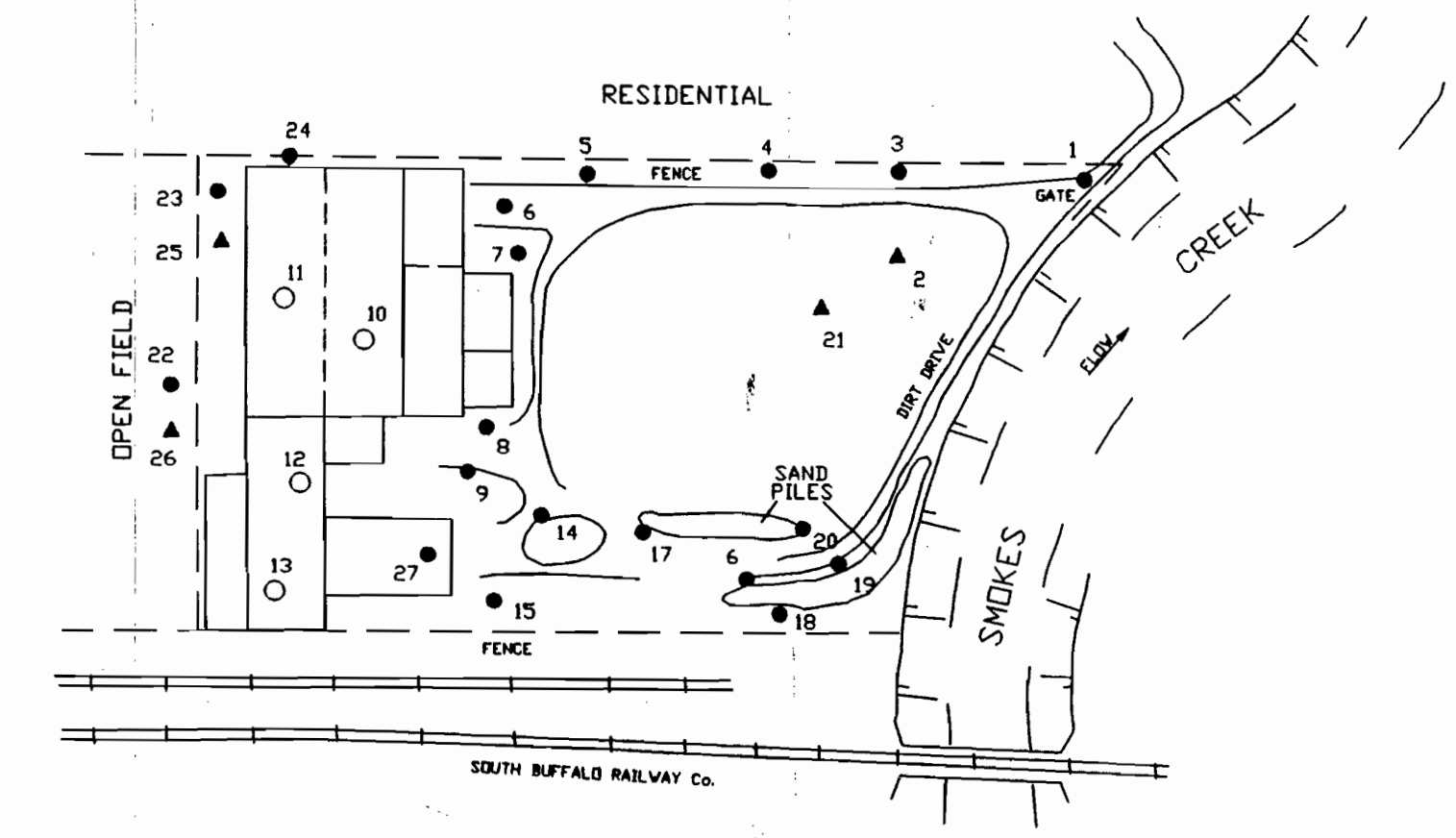
Figure 2
Lackawanna Foundry
Site Location



U.S. EPA ENVIRONMENTAL RESPONSE TEAM CENTER
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
68-C4-0022

FIGURE 1
SAMPLING LOCATION MAP
LACKAWANNA FOUNDRY SITE
LACKAWANNA, NEW YORK
MAY 1999

Attachment 3



● SURFACE SAMPLE

○ COMPOSITE SAMPLE

▲ SURFACE AND SUBSURFACE SAMPLE

0 25 50 100 ft

LACKAWANNA FOUNDRY SITE

LACKAWANNA, NEW YORK

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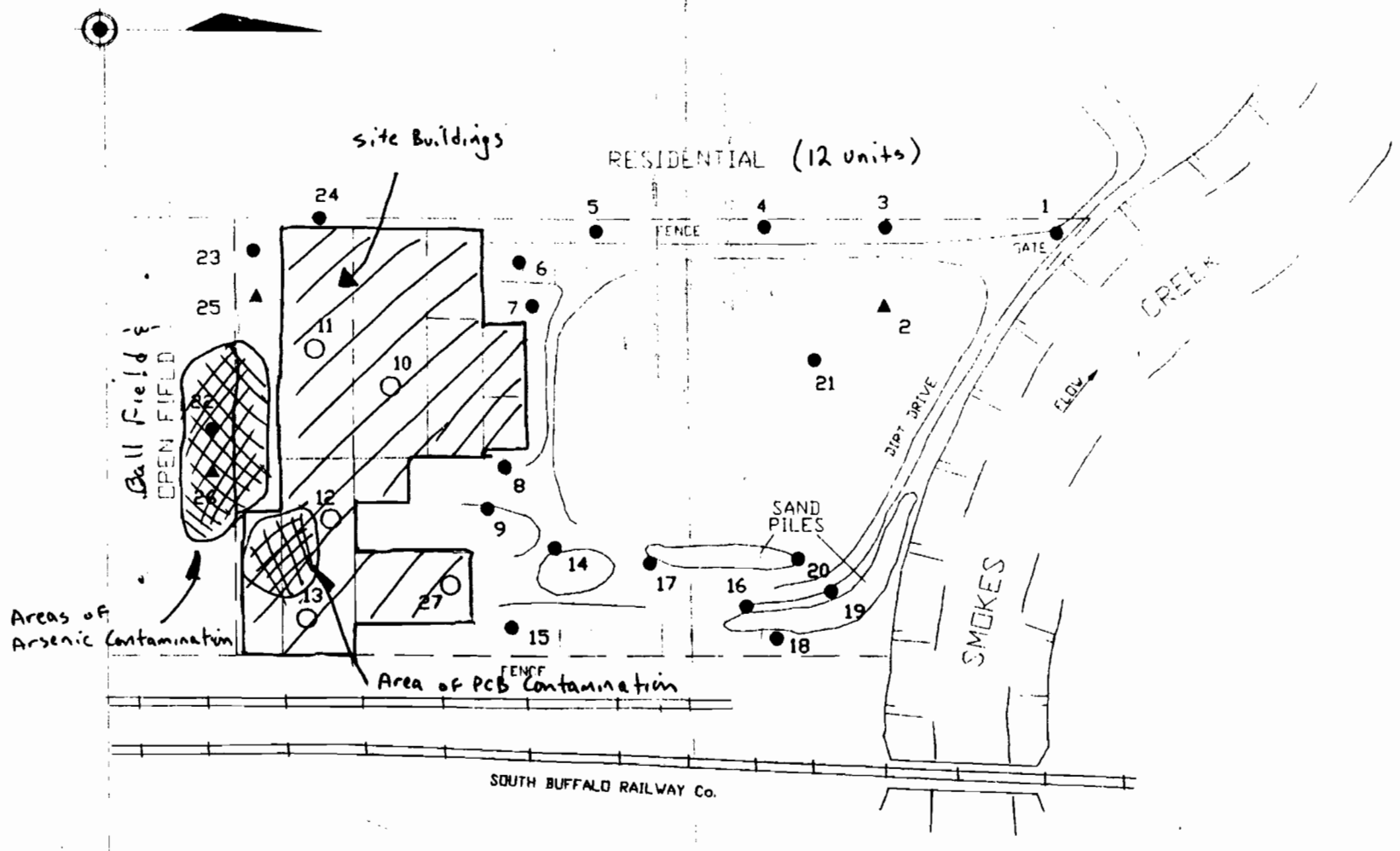

● SURFACE SAMPLE

○ COMPOSITE SAMPLE

▲ SURFACE AND SUBSURFACE SAMPLE

0 25 50 100 ft

U.S. EPA ENVIRONMENTAL RESPONSE TEAM CENTER
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
68-[illegible]0022
W.O.# 033[illegible]001-3439-01

FIGURE 3
SAMPLING LOCATION MAP
LACKAWANNA FOUNDRY SITE
LACKAWANNA, NEW YORK
MAY 1999

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Table 1
Summarized Pesticide/PCB Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A16650 1		A16651 2		A16652 2D		A16653 3		A16654 4		A16655 5		A16656 6		A16657 7	
Analyte	Conc. µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Heptachlor	100	ND	5.8	ND	3.5	ND	3.5	ND	4.6	ND	4.1	ND	4.1	ND	3.9	ND	4.4
p,p'-DDE	2100	12	5.8	ND	3.5	ND	3.5	30	4.6	19	4.1	0.9 J	4.1	12	3.9	4.5	4.4
Dieldrin	44	ND	5.8	ND	3.5	ND	3.5	ND	4.6	ND	4.1	ND	4.1	ND	3.9	2.9 J	4.4
p,p'-DDD	2900	ND	5.8	ND	3.5	ND	3.7	ND	4.6	6.9	4.1	ND	4.1	ND	3.9	ND	4.4
Endosulfan (II)	900	ND	5.8	ND	3.5	ND	3.5	ND	4.6	ND	4.1	ND	4.1	ND	3.9	ND	4.4
p,p'-DDT	2100	25	5.8	ND	3.5	ND	3.5	14	4.6	6.4	4.1	ND	4.1	ND	3.9	9.6	4.4
Aroclor 1242	Surf. 1000	ND	73	ND	3.5	ND	46	ND	57	ND	51	ND	52	ND	3.9	ND	55
Aroclor 1248		ND	73	560	44	2700	46	ND	57	120	51	15 J	52	770	49	590	55
Aroclor 1254	Sub. 10000	ND	73	ND	44	ND	46	25 J	57	81	51	16JW	52	1200	49	200	55
Aroclor 1260		ND	73	ND	44	ND	46	19 J	57	31 J	51	13 J	52	680	49	67	55

MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM - New York State Department of Environmental Conservation-Technical & Administrative Guidance Memorandum
Surf. - Surface
Sub. - Subsurface
NA - Not Applicable
W - Weathering
Shading indicates above NYSDEC-TAGM

Table 1(Continued)
Summarized Pesticide/PCB Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A16658 8		A16659 9		A16660 10		A16661 11		A16662 12		A16663 13		A16664 14		A16665 15	
Analyte	Conc. µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Heptachlor	100	ND	3.8	ND	3.7	ND	3.4	ND	3.9	ND	4.2	ND	3.7	ND	4.5	ND	5.3
p,p'-DDE	2100	2.5 J	3.8	17	3.7	4.7	3.4	3.9 J	3.9	28	4.2	13	3.7	93	4.5	ND	5.3
Dieldrin	44	2.0 J	3.8	ND	3.7	2.7 J	3.4	1.1 J	3.9	6.3	4.2	2.6 J	3.7	2.4 J	4.5	ND	5.3
p,p'-DDD	2900	ND	3.8	ND	3.7	ND	3.4	ND	3.9	ND	4.2	ND	3.7	ND	4.5	ND	5.3
Endosulfan (II)	900	ND	3.8	ND	3.7	ND	3.4	ND	3.9	ND	4.2	ND	3.7	ND	4.5	ND	5.3
p,p'-DDT	2100	5.3	3.8	ND	3.7	ND	3.4	5.2	3.9	ND	4.2	ND	3.7	ND	4.5	ND	5.3
Aroclor 1242	Surf. 1000	ND	48	ND	3.7	**6500**	42	ND	49	ND	52	ND	46	ND	4.5	ND	5.3
Aroclor 1248		68	48	**3500**	46	ND	42	**1000**	49	**7400**	52	**3100**	46	**2800**	57	42 J	67
Aroclor 1254	Sub. 10000	68	48	**1300**	46	ND	42	ND	49	81	52	**1300**	46	**ND**	57	ND	67
Aroclor 1260		32 J	48	**320**	46	ND	42	ND	49	31 J	52	**240**	46	**ND**	57	ND	67

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Conc. - Concentration
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Surf - Surface
Sub - Subsurface
NA - Not Applicable
Shading indicates above TAGM

Table 1(Continued)
Summarized Pesticide/PCB Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A16666 16		A16667 17		A16668 18		A16669 19		A16670 20		A16671 21		A16672 22		A16673 23	
Analyte	Conc. µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
g-BHC	300	ND	3.7	ND	3.8	ND	3.6	ND	3.6	2.5 J	3.7	ND	6.9	ND	4.1	ND	4.1
Heptachlor	100	ND	3.7	ND	3.8	ND	3.6	ND	3.6	ND	3.7	ND	6.9	ND	4.1	ND	4.1
p,p'-DDE	2100	0.7 J	3.7	2.2 J	3.8	ND	3.6	5.1	3.6	ND	3.7	8.4	6.9	2.3 J	4.1	2.5 J	4.1
Dieldrin	44	ND	3.7	0.6 J	3.8	ND	3.6	2.2 J	3.6	ND	3.7	21	6.9	ND	4.1	ND	4.1
p,p'-DDD	2900	ND	3.7	ND	3.8	ND	3.6	ND	3.6	ND	3.7	ND	6.9	1.6 J	4.1	ND	4.1
Endosulfan (II)	900	ND	3.7	ND	3.8	ND	3.6	ND	3.6	ND	3.7	ND	6.9	ND	4.1	ND	4.1
p,p'-DDT	2100	ND	3.7	ND	3.8	ND	3.6	4.9	3.6	ND	3.7	ND	6.9	1.9 J	4.1	ND	4.1
Aroclor 1242	Surf. 1000	340	47	ND	3.8	ND	45	2500	45	ND	46	ND	86	ND	4.1	ND	51
Aroclor 1248		ND	47	620	47	77	45	ND	45	ND	46	320	86	11JW	51	110	51
Aroclor 1254	Sub. 10000	ND	47	ND	47	33 J	45	ND	45	ND	46	300	86	16JW	51	ND	51
Aroclor 1260		ND	47	ND	47	ND	45	ND	45	3900	46	200	86	ND	51	14 J	51

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W - Weathering
Shading indicates above TAGM

Table 1(Continued)
Summarized Pesticide/PCB Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A16674 24		A16675 25		A16676 25D		A16677 26		A16678 26-D		A16679 27	
Analyte	Conc. µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
g-BHC	300	ND	4.4	ND	4.0	ND	4.3	ND	4.8	ND	4.4	ND	4.0
Heptachlor	100	ND	4.4	ND	4.0	ND	4.3	ND	4.8	ND	4.4	ND	4.0
p,p'-DDE	2100	1.9 J	4.4	3.3 J	4.0	ND	4.3	11	4.8	ND	4.4	ND	4.0
Dieldrin	44	ND	4.4	ND	4.0	ND	4.3	ND	4.8	ND	4.4	ND	4.0
p,p'-DDD	2900	ND	4.4	ND	4.0	ND	4.3	ND	4.8	ND	4.4	ND	4.0
Endosulfan (II)	900	ND	4.4	ND	4.0	ND	4.3	ND	4.8	ND	4.4	ND	4.0
p,p'-DDT	2100	ND	4.4	ND	4.0	ND	4.3	18	4.8	ND	4.4	ND	4.0
Aroclor 1242	Surf. 1000	340	55	ND	4.0	ND	54	ND	60	ND	54	ND	50
Aroclor 1248		120	55	270	50	ND	54	170	60	ND	54	39000	50
Aroclor 1254	Sub. 10000	ND	55	83	50	ND	54	ND	60	ND	54	ND	50
Aroclor 1260		10 J	55	ND	50	ND	54	42 J	60	3900	54	ND	50

MDL - Method Detection Limit
Conc. - Concentration
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Table 2
Summarized BNAs Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A166501	A16651 2	A16652 2-D	A16653 3	A16654 4	A16655 5	A16656 6	A1665 7
Analyte	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg
Phenol	30	ND	**16000**	**23000**	ND	ND	ND	ND	1900 J
2-Methylphenol	100	ND	**370**	410 J	ND	ND	ND	ND	ND
Naphthalene	13000	ND	970	960 J	ND	ND	310 J	ND	ND
2-Methylnaphthalene	36400	ND	360	640 J	ND	ND	270 J	ND	ND
Acenaphthylene	41000	ND	ND	ND	ND	ND	200 J	ND	ND
Acenaphthene	50000	ND	95 J	ND	ND	ND	740	ND	ND
Dibenzofuran	6200	ND	100 J	ND	ND	ND	490	ND	ND
Fluorene	50000	ND	87 J	ND	ND	ND	880	ND	ND
Phenanthrene	50000	ND	1400	ND	ND	ND	7900	ND	ND
Anthracene	50000	ND	220 J	ND	ND	ND	1800	ND	ND
Carbazole	NA	ND	190 J	ND	ND	ND	1200	ND	ND
Di-n-butylphthalate	8100	ND	150 J	ND	ND	ND	ND	ND	ND
Fluoranthene	50000	ND	2000	380 J	1000 J	2300 J	9900	2000 J	2400 J
Pyrene	50000	ND	1500	ND	ND	1900 J	7800	1700 J	2200 J
Benzo(a)anthracene	224	ND	800	ND	ND	1100 J	**5000**	1000 J	1500 J
Chrysene	400	ND	920	ND	ND	1400 J	**5300**	1100 J	1900 J
Bis(2-Ethylhexyl)phthalate	50000	ND	640	1300 J	1000 J	1000 J	260 J	810 J	ND
Benzo(b)fluoranthene	1100	ND	**1100**	ND	ND	1700 J	**5800**	1400 J	3100 J
Benzo(k)fluoranthene	1100	ND	880	ND	ND	1400 J	**4500**	1200 J	2400 J
Benzo(a)pyrene	61	ND	1,100	ND	ND	1700 J	**5800**	1300 J	3300 J
Indeno(1,2,3,-cd)pyrene	3200	ND	750	ND	ND	1,300 J	**3400**	990 J	3200 J
Dibenzo(a,h)anthracene	14	ND	300 J	ND	ND	ND	**1300**	ND	1200 J
Benzo(g,h,i)perylene	50000	ND	890	ND	ND	1600 J	3700	1100 J	3600 J

MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM - New York State Department of Environmental Conservation-Technical & Administrative Guidance Memorandum
Surf - Surface
Sub - Subsurface
NA - Not Applicable
Shading indicates above TAGM

Summarized BNAs Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A16658 8	A16659 9	A16660 10	A16661 11	A16662 12	A16663 13	A16664 14	A16665 15
Analyte	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc µg/kg
Phenol	30	**1500**	**4900**	**1800**	**9700**	**4700**	**2200**	**7000**	1600 J
2-Methylphenol	100	ND	ND	570 J	ND	ND	ND	ND	ND
Naphthalene	13000	ND	ND	3100	2100 J	960 J	670 J	1400 J	ND
2-Methylnaphthalene	36400	ND	ND	1500 J	ND	500 J	400 J	ND	ND
Acenaphthylene	41000	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	50000	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	6200	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	50000	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	50000	ND	ND	680 J	ND	530 J	ND	ND	ND
Anthracene	50000	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NA	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	8100	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	50000	1300 J	1000 J	ND	ND	600 J	ND	ND	ND
Pyrene	50000	1200 J	880 J	ND	ND	900 J	ND	ND	ND
Butylbenzylphthalate	50000	ND	6000	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	224	ND	NA	ND	ND	ND	ND	460 J	ND
Chrysene	400	1000 J	NA	ND	ND	ND	ND	ND	ND
Bis(2-Ethylhexyl)phthalate	50000	8700	1200 J	1300 J	16000	1300 J	540 J	ND	ND
Benzo(b)fluoranthene	1100	1600 J	940 J	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	1100	1400 J	830 J	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	61	1400 J	920 J	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,-cd)pyrene	3200	1700 J	770 J	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	14	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	50000	1900 J	920 J	ND	ND	ND	ND	ND	ND

MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM - New York State Department of Environmental Conservation-Technical & Administrative Guidance Memorandum
NA - Not Applicable
Shading indicates above TAGM

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Table 2 (Continued)
Summarized BNAs Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A16666 16	A16667 17	A16668 18	A16669 19	A16670 20	A16671 21	A16672 22	A16673 23
Analyte	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg
Phenol	30	840 J	910 J	**11000**	**4000**	**18000**	5600 J	ND	2400 J
2-Methylphenol	100	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	13000	ND	ND	850 J	580	4400	ND	ND	1100 J
2-Methylnaphthalene	36400	ND	ND	ND	100 J	1100 J	ND	ND	850 J
Acenaphthylene	41000	ND	ND	ND	ND	ND	ND	420 J	1300 J
Acenaphthene	50000	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	62000	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	50000	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	50000	ND	ND	ND	ND	ND	ND	ND	2200 J
Anthracene	50000	ND	ND	ND	ND	ND	ND	ND	1400 J
Carbazole	NA	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	8100	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	50000	ND	860 J	ND	74 J	1600 J	3400 J	4700	8500
Pyrene	50000	ND	740 J	ND	ND	1400 J	3400 J	4100	8800
Butylbenzylphthalate	224	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	400	ND	410 J	ND	ND	840 J	2100 J	**2600**	**5200**
Chrysene	400	ND	510 J	ND	ND	900 J	2600 J	**2400**	**5400**
Bis(2-Ethylhexyl)phthalate	50000	ND	ND	ND	180 J	760 J	1700 J	430 J	ND
Benzo(b)fluoranthene	1100	ND	580 J	ND	ND	910 J	3500 J	**2700**	**5700**
Benzo(k)fluoranthene	1100	ND	520 J	ND	ND	890 J	3400 J	**2500**	**5700**
Benzo(a)pyrene	61	ND	570 J	ND	ND	980 J	3700 J	**3100**	**5300**
Indeno(1,2,3,-cd)pyrene	3200	ND	420 J	ND	ND	660 J	3100 J	1600 J	3100 J
Dibenzo(a,h)anthracene	14	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	50000	ND	470 J	ND	ND	770 J	3600 J	1700 J	3200 J

MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM - New York State Department of Environmental Conservation-Technical & Administrative Guidance Memorandum
NA - Not Applicable, Shading indicates above TAGM

Table 3
Summarized TAL Metals Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	C16650 1	C16651 2	C16652 2-D	C16653 3	C16654 4	C16655 5	C16656 6	C16657 7
Analyte	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg
Aluminum	*	11000	1300	1200	7800	13000	12000	4600	5300
Antimony	*	ND	ND	ND	ND	ND	ND	6.4	ND
Arsenic	7.5*	**14**	1.6	2.5	**11**	**13**	**15**	**20**	6.3
Barium	300*	160	18	17	140	150	130	270	120
Beryllium	0.16*	**0.93**	ND	ND	**0.81**	**2.2**	**0.85**	ND	ND
Cadmium	1*	**3.2**	0.48	0.66	**3.7**	**2.4**	**2.4**	**20**	**3.6**
Calcium	*	21000	1900	3300	94000	120000	14000	21000	18000
Chromium	10*	**45**	**25**	**15**	**33**	**28**	**29**	**190**	**55**
Cobalt	30*	12	2.1	1.2	7.7	6.2	14	20	6.7
Copper	25*	74	57	35	75	67	200	440	110
Iron	2000*	**43000**	**24000**	**13000**	**46000**	**30000**	**35000**	**200000**	**47000**
Lead	*	300	44	38	200	260	180	610	2100
Magnesium	*	4800	600	560	7200	11000	4800	3100	3300
Manganese	*	1200	250	140	800	1300	700	1800	1100
Mercury	0.1	**0.21**	0.06	**0.1**	**0.11**	**0.16**	**0.11**	**1.1**	**0.22**
Nickel	13*	**42**	**15**	9.2	**28**	**32**	**41**	**160**	**110**
Potassium	*	1500	ND	ND	920	1500	1200	630	570
Selenium	2*	1.0	ND	ND	0.79	0.98	0.58	0.77	ND
Silver	*	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	*	110	ND	64	140	520	79	410	230
Thallium	*	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	150*	27	5.2	3.7	17	18	23	20	20
Zinc	20*	**760**	**140**	**79**	**640**	**540**	**340**	**1100**	**1000**

- See TAGM Memorandum Appendix A
DL - Method Detection Limit
nc. - Concentration
kg - micrograms per kilogram
) - Not Detected
- Detected Below the MDL
-New York State Department of Environmental Conservation-Technical & Administrative Guidance Memorandum
ding indicates above TAGM

Table 3 (Continued)
Summarized TAL Metals Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	C16666 16	C16667 17	C16668 18	C16669 19	C16670 20	C16671 21	C16672 22	C16673 23
Analyte	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg
Aluminum	*	1300	5900	790	1400	2400	12000	15000	9300
Antimony	*	ND	6.5	ND	ND	ND	ND	ND	ND
Arsenic	7.5*	1.5	7.1	4.4	6.7	6.5	**20**	**77**	**8.4**
Barium	300*	15	180	9.0	29	130	200	170	94
Beryllium	0.16*	ND	ND	ND	ND	ND	**0.96**	**1.2**	**0.66**
Cadmium	1*	ND	ND	ND	0.59	**2.3**	**13**	**2.3**	**1.5**
Calcium	*	1200	130000	1200	850	3800	23000	34000	12000
Chromium	10*	6.1	**33**	8.9	**97**	**130**	**95**	**32**	**24**
Cobalt	30*	1.4	47	ND	4.4	12	15	11	8.0
Copper	25*	**44**	**240**	**28**	**300**	**720**	**270**	**47**	**52**
Iron	2000*	**16000**	**25000**	**5800**	**58000**	**93000**	**110000**	**32000**	**30000**
Lead	*	58	300	21	140	280	660	180	160
Magnesium	*	410	19000	340	410	1000	4700	5900	3600
Manganese	*	210	840	75	760	690	1600	1200	560
Mercury	0.1	ND	0.06	0.04	ND	**1.3**	**0.77**	**0.73**	**0.13**
Nickel	13*	9.5	38	2.7	57	150	100	36	28
Potassium	*	ND	470	ND	ND	280	900	1500	1100
Selenium	2*	ND	ND	ND	ND	ND	1.0	ND	0.57
Silver	*	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	*	ND	330	ND	68	68	360	120	130
Thallium	*	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	150*	3.1	11	2.6	14	21	36	27	19
Zinc	20*	**98**	**1300**	**55**	**310**	**290**	**1000**	**1100**	**660**

* - See TAGM Memorandum Appendix A
MDL - Method Detection Limit
Conc. - Concentration
ug/kg - micrograms per kilogram
ND - Not Detected
- Detected Below the MDL
TAGM -New York State Department of Environmental Conservation Technical & Administrative Guidance Memorandum
Shading indicates above TAGM

REFERENCE NO. 4

Personal Logbook

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4 Oct 2000 SAT member Donna Janda
1030 arrives at Lackawanna Foundry Site, 2 Elm Street, Lackawanna, Erie County, NY to meet with EPA ~~Work~~ Work Assignment Manager (WAM) Dennis Munhall and On-Scene Coordinator (OSC) Kevin Matheis.

1045 WAM Munhall onsite

1100 OSC Matheis onsite. OSC Matheis begins to discuss history of site and Removal action which began in 1999. The Lackawanna site is the location of a former foundry (approx. 2 acres) that produced specialty cast iron molds for over 60 years. The current property owner inherited the site from his father. Foundry operations steadily decreased over the past 20 years. Operations ceased completely in 1997. In 1997, NYSDEC inspected the site + had the property owner conduct an inventory of all on-site containers and 6 surplus PCB transformers. The property owner provided the inventory but was subsequently unable to conduct a cleanup due to financial reasons. NYSDEC requested EPA assistance. In March 1999, EPA began Emergency Stabilization measures (mobilization

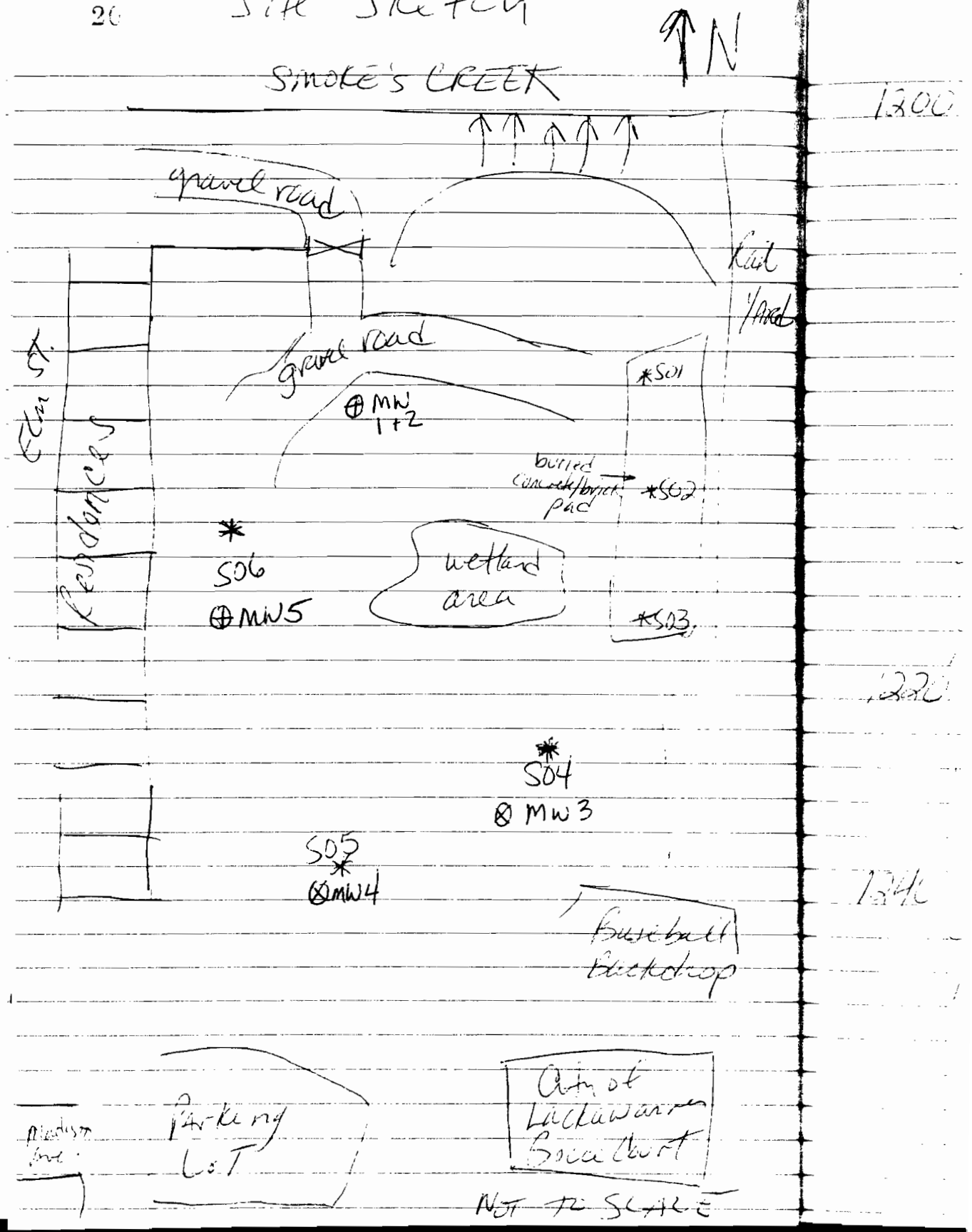
fence(s) along the perimeter of the site, inventoried + moved all containers of hazardous substances into the foundry buildings, and overpacked the leaking drums + containers. 1130
In April 1999 EPA Environmental Response Team (ERT) + WESTON Response Engineering + Analytical Contract (REAC) collected surface + subsurface soil samples for an extent of contamination study. Arsenic + PCBs were the main contaminants of concern at this site. EPA began a Removal Action in October 1999 to address the issues found during previous investigations. The buildings were demolished + up to 2 feet of surface soil was excavated from across the property. Excavation activities were completed in April 2000. Restoration activities, 1135
including placement of 2 feet of clean topsoil and restoration of the "wetlands" area in the middle of the site, were completed in June 2000. The purpose of the Brownfields Investigation is to determine if (the) subsurface soil + GW are contaminated + to what extent (if so). The City of Lackawanna (LBC) intends to make this area into a park if it meets the criteria for a recreational site.

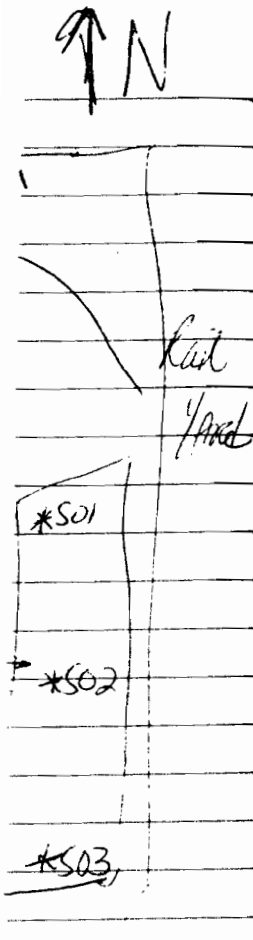
1130 ESA + SAT conduct a site walk-through to determine soil sampling locations & monitoring well installation locations. ~~The site~~ There are no buildings on site. The site is well vegetated with a small pond + associated "wetlands" area in the central portion of the site. The site is mainly flat with a hilly area in the north section of the property that slopes down to Smokes Creek. According to OSC Mathews, there is a concrete/brick pad buried approx 2-3 feet underground along the eastern portion of the site. ~~Also~~ The area beneath this pad was not sampled previously + he would like samples collected from under this pad.

1135 Smokes Creek lies directly north of the site. ~~Conrail~~ active rail yard lies to the east, a City of Lackawanna Recreational area lies to the south + residential properties lie to the west of the Lackawanna site. Site sketch is on next page. No areas of stressed vegetation were observed. The site is enclosed by a fence with a locked gate. However, there is limited access for pedestrians through a gap between the gate + fence.

20

Site Sketch





1200 Subsurface soil sample locations chosen (see map on previous page. Sample locations denoted S01 - S06). One sample will be collected from locations S01 - S03 for a total of 3 samples. For sample locations S04 to S06, samples will be collected at 2 foot intervals, beginning at 2-4 foot depth until either a 10 foot depth or groundwater is reached. Depth to GW at the Lackawanna Site is approx. 8-10 feet according to OSC Mathews. Also, according to OSC Mathews, no one in the Lackawanna area uses groundwater for drinking. No one is on private wells.

1220 WAM Marshall would like a total of 5 monitoring wells installed at various locations throughout the site. Tentative locations are depicted on site sketch on previous page.

1240 OSC Mathews gives SAT member Jordan copies of reports regarding the Lackawanna Foundry site. The reports include an Electrical Res. HSA for Removal Action + REAC sampling events.

REFERENCE NO. 5

New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 9
270 Michigan Avenue, Buffalo, New York, 14203-2999
Phone: (716) 851-7220 • **FAX:** (716) 851-7226
Website: www.dec.state.ny.us

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John P. Cahill
Commissioner

July 9, 1999

Mr. Kevin Matheis
On-Scene Coordinator
USEPA, Region II
Federal Building, Rm. 1114
111 West Huron Street
Buffalo, New York 14202

Post-it® Fax Note 7671 | Date 9-27-00 | # of pages 3
To Kevin Matheis | From M. Doster
Co./Dept. EPA | Co. DEC
Phone # | Phone #
Fax # 551-9191 | Fax #

Dear Mr. Matheis:

LACKAWANNA FOUNDRY SITE
LACKAWANNA (C), ERIE COUNTY
REQUEST FOR ADDITIONAL SAMPLING

As we had discussed during our telephone conversation of July 7, 1999, the Department would like to ask your assistance in furthering the work at Lackawanna Foundry to close data gaps from previous investigations.

Currently no data exists to determine if local groundwater has been affected by the contaminants found at the site. It would greatly enhance the knowledge of the site if five (5) shallow monitoring wells could be installed to the top of the bedrock. Monitoring wells drilled at nearby sites, such as the Lehigh Industrial Park site, have shown auger refusals at 15 to 16 feet. Split spoon samples could be obtained from this drilling effort and yield valuable information to determine if contamination is at depth.

We had discussed the value of digging test pits in selected areas. Since capacitors containing PCB oils were hidden in the floor of the facility, it is necessary to learn if anything has been covered by the piles surrounding the property.

Additional sampling of the surface soils in the playground areas are needed to determine if contamination exists beyond that found in the previous investigations.

Sampling of the stream bank of Smokes Creek would help determine if the foundry sands have been placed into the stream channel and if so, how far have they been placed.

Finally, a sample of the accumulated water and sediment in the cellar area is necessary to determine potential for contamination existing at the facility to enter the groundwater from surface runoff and infiltration.

Enclosed is a figure to point out the location of the above items. It is the desire of this Department to see the site returned to beneficial use. Currently, the site presents the possiblity of a "brownfields" restoration. Any assistance your agency can give at this site is welcomed and appreciated. If there is an opportunity to pursue the above items please let me know and I will lend any assistance I can. If you have any questions, please call me at 716/851-7220.

Sincerely,

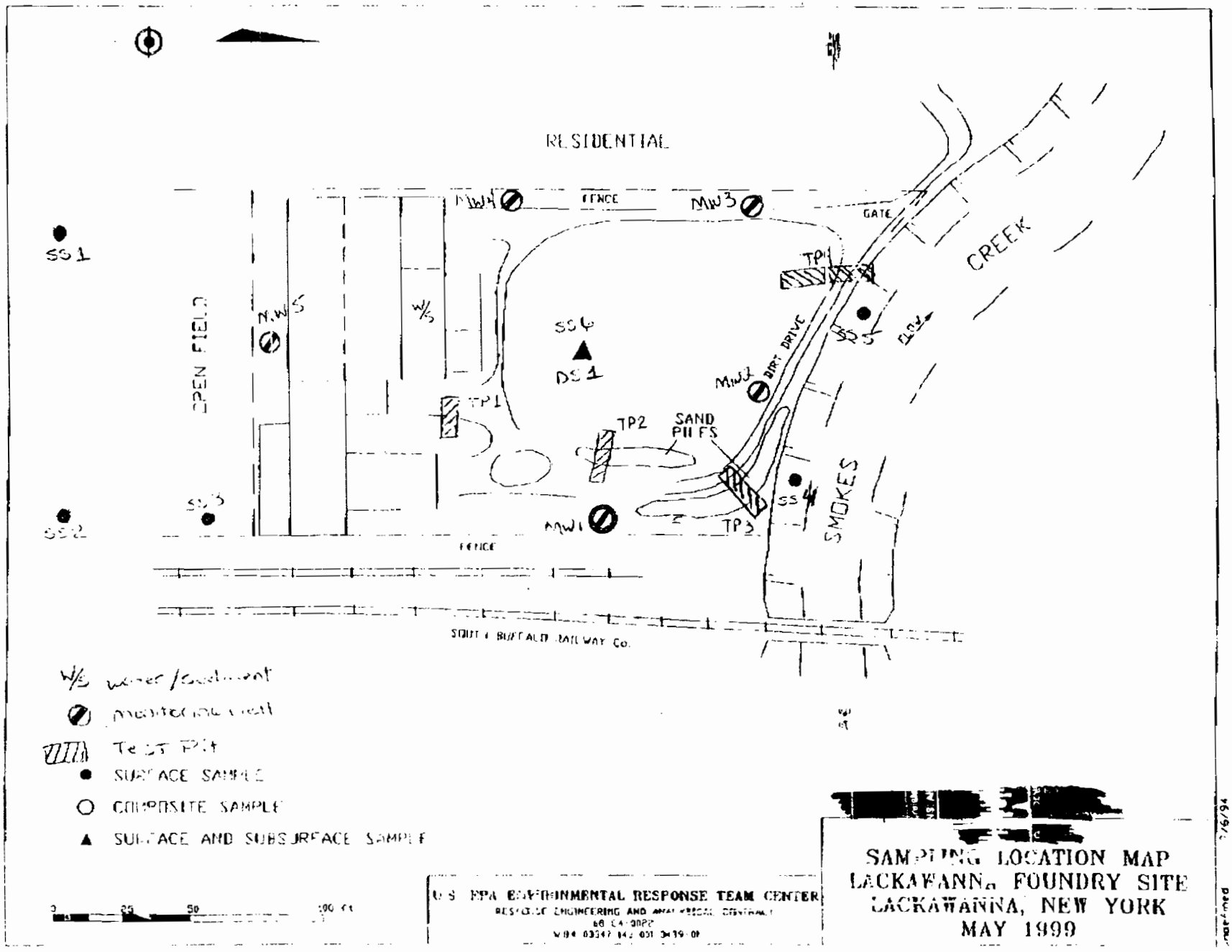
Maurice F. Moore
Project Manager
Hazardous Waste Remediation

MFM:lj

Enclosure

cc: Mr. Martin Doster, Regional Hazardous Waste Remediation Engineer

a:matheis.mfm


RESIDENTIAL
FENCE
MW4
MW3
GATE
CREEK
SS1
OPEN FIELD
N.W.S
W/S
SS6
DS1
TP1
DIRT DRIVE
MW2
FLOW
TP2
SAND PILES
SS5
SS3
SS2
MW1
TP3
SMOKES
SS4
FENCE
SOUTH BUFFALO RAILWAY Co.
W/S water/sediment
monitoring well
Test Pit
SURFACE SAMPLE
COMPOSITE SAMPLE
SURFACE AND SUBSURFACE SAMPLE
0
25
50
100 Ft
U.S. EPA ENVIRONMENTAL RESPONSE TEAM CENTER
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
68-C4-0022
WORK ORDER 03547.042.001.3439.00
SAMPLING LOCATION MAP
LACKAWANNA FOUNDRY SITE
LACKAWANNA, NEW YORK
MAY 1999

p.3

REFERENCE NO. 6

REAC

FINAL REPORT
SURFACE AND SUBSURFACE SOIL SAMPLING
LACKAWANNA FOUNDRY SITE
LACKAWANNA, NEW YORK
MAY 1999

U.S. EPA Work Assignment No.: 3-439

Assessment Samples

Fill material along Creek & Banks of Creek

#16, 18, 19 + 20

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESPONSE TEAM
EPA

OFFICE OF EMERGENCY AND REMEDIAL RESPONSE

FINAL REPORT
SURFACE AND SUBSURFACE SOIL SAMPLING
LACKAWANNA FOUNDRY SITE
LACKAWANNA, NEW YORK
MAY 1999

U.S. EPA Work Assignment No.: 3-439
Weston Work Order No.: 03347-143-001-3439-01
U.S. EPA Contract No.: 68-C4-0022

Prepared by:

Roy F. Weston, Inc.

Salvatore J. Fama
Task Leader

5/27/99
Date

Edward F. Gilardi
Program Manager

5/27/99
Date

Prepared for:

U.S. EPA/ERTC

Philip Campagna
Work Assignment Manager

439\del\fr\9905\fr3439

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Objective of this Study

The objective of this project was for the Response Engineering and Analytical Contract (REAC) to provide technical support to the United States Environmental Protection Agency/Environmental Response Team Center (U.S. EPA/ERTC) in conducting surface and subsurface soil sampling for volatile organic compounds (VOCs), pesticides, polychlorinated biphenyl (PCBs), base neutral acid extractables (BNA), target analyte list (TAL) metals, and cyanide at the Lackawanna Foundry Site in Lackawanna, New York.

1.2 Site Background

The Lackawanna Foundry is located on Madison Avenue off of State Route 5 in Lackawanna, New York. The 3-acre site is an old abandoned foundry. Currently, the site is being remediated by the U.S. EPA. The property is bordered by smoke creek to the north, an open field to the south, a rail road to the east, and residences to the west. A building constructed of metal, brick and wood occupies the south end of the site. The rest of the site is made up of sand piles and uneven ground which is loosely occupied by grass and shrubs. Soil sampling was conducted at 27 locations specified by the U.S. EPA work assignment manager (WAM) to identify and quantitate potential contamination by the target compounds.

2.0 METHODOLOGY

2.1 Surface Soil Sampling

The top layer of soil or debris were removed with a dedicated stainless steel spoon. Using another dedicated stainless steel spoon, a thin layer of soil was collected and the sample was placed into the appropriate sample jar. Samples and locations were documented on field sample data sheets and a site map provided in Figure 1.

2.2 Subsurface Soil Sampling

A bucket auger was used to bore a 3-foot hole. The auger was removed from the boring and soil from the tip of the auger was placed into the appropriate sample jar. Samples and locations were documented on field sample data sheets and a site map.

2.3 Composite Surface Sampling

A stainless steel trowel and mixing bucket were used to collect composite surface samples within the building. The samples were mixed, then placed into the appropriate sample jar. Samples and locations were documented on field data sheets and a site map.

2.4 Analytical Methods

VOCs were analyzed according to SW-846, U.S. EPA Method 8260, *"Volatile Compounds By Gas Chromatography/Mass Spectrometry (GS/MS): Capillary Column Technique"*. Pesticides/PCBs were analyzed according to SW-846, U.S. EPA Method 8080, *"Organochlorine Pesticides And PCBs"*. BNAs were analyzed according to SW-846, U.S. EPA Method 8270, *"GC/MS For Semivolatile Organics: Capillary Column Technique"*. TAL Metals were analyzed according to SW-846, U.S. EPA Method 3050, *"Acid Digestion Of Sediments, Sludges, Soils"*. Cyanides were analyzed according to SW-846, U.S. EPA Method 9012, *"Total And Amenable Cyanide (colorimetric, Automated UV)"*.

1.0 INTRODUCTION

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3.0 RESULTS

3.1 VOCs

Methylene chloride was detected below the method detection limit (MDL) in the method blanks. The only measurable VOC compound detected above the MDL was m&p-xylene at 13 micrograms per kilogram (µg/kg). This concentration is well below the New York State Department of Environmental Conservation (NYSDEC) Technical & Administrative Guidance Memorandum (TAGM) (Appendix A) soil cleanup objectives and levels of 1200 µg/kg. It was found within the building at sampling location 10.

3.2 Pesticides/PCBs

Concentrations of p,p'-DDE, dieldrin, p,p'-DDT, aroclor 1242, aroclor 1248, aroclor 1254, and aroclor 1260, exceeding the MDL, were found at various sampling locations throughout the site. The highest concentration found was at location 27 (aroclor 1248 at 39,000 µg/kg) in sample A16679. This sample was a composite sample collected inside the building. Summarized results compared to the NYSDEC-TAGM soil cleanup objectives and levels can be found in table 1.

3.3 BNAs

Concentrations of semi-volatile compounds were detected at various sampling locations. Phenol in particular, was detected at relatively high concentrations in 20 of the 27 sampling locations. The highest concentration was found at location 2-D. At this location, phenol was detected at 23,000 µg/kg in sample A16652. Most of the phenol concentrations detected were above the NYSDEC-TAGM cleanup levels. Various identified and unidentified non-target compounds were also detected. Summarized results compared to the NYSDEC-TAGM soil cleanup objectives and levels can be found in Table 2.

3.4 TAL Metals

All metals analyzed were detected above their MDLs with the exeption of silver and thallium. Arsenic was detected at 77 mg/kg at location 22 (sample number C16672). Cadmium was detected at 20 mg/kg at location 6 (sample number C16656). Chromium was detected at 190 mg/kg in location 6 (sample number C16656). Lead was detected at 2100 mg/kg at location 7 (sample number 16657). Summarized results compared to listed NYSDEC-TAGM soil cleanup objectives and levels can be found in Table 3.

3.5 Cyanides

No cyanide concentrations were detected above the MDL in any of the samples.

4.0 DISCUSSION OF RESULTS

4.1 VOCs

VOC concentrations identified in the samples on site were all below the NYSDEC-TAGM soil clean-up level.

4.2 Pesticides/PCBs

Pesticides concentrations identified in the samples collected on site, were all below the NYSDEC-TAGM clean up levels. PCB weathering indicates that the aroclors in question are present, but due to breakdown, most predominant peaks changed peak ratios. PCBs were detected above the NYDEC-TAGM criteria at location 2 and 2-D. PCBs were present at the surface and subsurface, however concentrations were below NYDEC-TAGM. PCBs were detected above the NYDEC-TAGM at locations 6, 9, 11, 12, 13, 14, 19, and location 27. PCB concentrations were 39 times greater than NYDEC-TAGM levels for surface soil at location 27, however, this sample was collected within the building. The NYDEC-TAGM refers to soil clean up levels.

4.3 BNAs

BNAs concentrations identified in the samples collected on site exceeded the NYSDEC-TAGM clean up levels. Phenol in particular, was detected well above the 30 µg/kg guideline at locations 2, 2-D, 8, 9, 10, 11, 12, 13, 14, 18, 19, 20, 24, and 27. Benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3,-cd)pyrene, and dibenzo(a,h)anthracene were also detected above the NYSDEC-TAGM criteria.

4.4 TAL Metals

Arsenic, beryllium, cadmium, chromium, copper, iron, mercury, nickel, and zinc were detected above the NYSDEC-TAGM criteria. The memorandum states that measured levels should be compared to site background levels. According to the results, antimony, silver and thallium do not seem to be a concern at the site.

4.5 Cyanides

No cyanides were detected above the MDL, hence they are not a concern in the sampling locations.

Table 1
Summarized Pesticide/PCB Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A16650 1		A16651 2		A16652 2D		A16653 3		A16654 4		A16655 5		A16656 6		A16657 7	
Analyte	Conc. µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Heptachlor	100	ND	5.8	ND	3.5	ND	3.5	ND	4.6	ND	4.1	ND	4.1	ND	3.9	ND	4.4
p,p'-DDE	2100	12	5.8	ND	3.5	ND	3.5	30	4.6	19	4.1	0.9 J	4.1	12	3.9	4.5	4.4
Dieldrin	44	ND	5.8	ND	3.5	ND	3.5	ND	4.6	ND	4.1	ND	4.1	ND	3.9	2.9 J	4.4
p,p'-DDD	2900	ND	5.8	ND	3.5	ND	3.7	ND	4.6	6.9	4.1	ND	4.1	ND	3.9	ND	4.4
Endosulfan (II)	900	ND	5.8	ND	3.5	ND	3.5	ND	4.6	ND	4.1	ND	4.1	ND	3.9	ND	4.4
p,p'-DDT	2100	25	5.8	ND	3.5	ND	3.5	14	4.6	6.4	4.1	ND	4.1	ND	3.9	9.6	4.4
Aroclor 1242	Surf. 1000 Sub. 10000	ND	73	ND	3.5	ND	46	ND	57	ND	51	ND	52	ND	3.9	ND	55
Aroclor 1248		ND	73	560	44	2700	46	ND	57	120	51	15 J	52	770	49	590	55
Aroclor 1254		ND	73	ND	44	ND	46	25 J	57	81	51	16JW	52	1200	49	200	55
Aroclor 1260		ND	73	ND	44	ND	46	19 J	57	31 J	51	13 J	52	680	49	67	55

MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM - New York State Department of Environmental Conservation-Technical & Administrative Guidance Memorandum
Surf. - Surface
Sub. - Subsurface
NA - Not Applicable
W - Weathering
Shading indicates above NYSDEC-TAGM

Table 1(Continued)
Summarized Pesticide/PCB Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A16658 8		A16659 9		A16660 10		A16661 11		A16662 12		A16663 13		A16664 14		A16665 15	
Analyte	Conc. µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Heptachlor	100	ND	3.8	ND	3.7	ND	3.4	ND	3.9	ND	4.2	ND	3.7	ND	4.5	ND	5.3
p,p'-DDE	2100	2.5 J	3.8	17	3.7	4.7	3.4	3.9 J	3.9	28	4.2	13	3.7	93	4.5	ND	5.3
Dieldrin	44	2.0 J	3.8	ND	3.7	2.7 J	3.4	1.1 J	3.9	6.3	4.2	2.6 J	3.7	2.4 J	4.5	ND	5.3
p,p'-DDD	2900	ND	3.8	ND	3.7	ND	3.4	ND	3.9	ND	4.2	ND	3.7	ND	4.5	ND	5.3
Endosulfan (II)	900	ND	3.8	ND	3.7	ND	3.4	ND	3.9	ND	4.2	ND	3.7	ND	4.5	ND	5.3
p,p'-DDT	2100	5.3	3.8	ND	3.7	ND	3.4	5.2	3.9	ND	4.2	ND	3.7	ND	4.5	ND	5.3
Aroclor 1242	Surf. 1000	ND	48	ND	3.7	**6500**	42	ND	49	ND	52	ND	46	ND	4.5	ND	5.3
Aroclor 1248		68	48	**3500**	46	ND	42	**1000**	49	**7400**	52	**3100**	46	**2800**	57	42 J	67
Aroclor 1254	Sub. 10000	68	48	**1300**	46	ND	42	ND	49	81	52	**1300**	46	**ND**	57	ND	67
Aroclor 1260		32 J	48	**320**	46	ND	42	ND	49	31 J	52	**240**	46	**ND**	57	ND	67

MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM - New York State Department of Environmental Conservation-Technical & Administrative Guidance Memorandum
Surf - Surface
Sub - Subsurface
NA - Not Applicable
Shading indicates above TAGM

Table 1(Continued)
Summarized Pesticide/PCB Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A16666 16		A16667 17		A16668 18		A16669 19		A16670 20		A16671 21		A16672 22		A16673 23	
Analyte	Conc. µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
g-BHC	300	ND	3.7	ND	3.8	ND	3.6	ND	3.6	2.5 J	3.7	ND	6.9	ND	4.1	ND	4.1
Heptachlor	100	ND	3.7	ND	3.8	ND	3.6	ND	3.6	ND	3.7	ND	6.9	ND	4.1	ND	4.1
p,p'-DDE	2100	0.7 J	3.7	2.2 J	3.8	ND	3.6	5.1	3.6	ND	3.7	8.4	6.9	2.3 J	4.1	2.5 J	4.1
Dieldrin	44	ND	3.7	0.6 J	3.8	ND	3.6	2.2 J	3.6	ND	3.7	21	6.9	ND	4.1	ND	4.1
p,p'-DDD	2900	ND	3.7	ND	3.8	ND	3.6	ND	3.6	ND	3.7	ND	6.9	1.6 J	4.1	ND	4.1
Endosulfan (II)	900	ND	3.7	ND	3.8	ND	3.6	ND	3.6	ND	3.7	ND	6.9	ND	4.1	ND	4.1
p,p'-DDT	2100	ND	3.7	ND	3.8	ND	3.6	4.9	3.6	ND	3.7	ND	6.9	1.9 J	4.1	ND	4.1
Aroclor 1242	Surf. 1000	340	47	ND	3.8	ND	45	2500	45	ND	46	ND	86	ND	4.1	ND	51
Aroclor 1248		ND	47	620	47	77	45	ND	45	ND	46	320	86	11JW	51	110	51
Aroclor 1254	Sub. 10000	ND	47	ND	47	33 J	45	ND	45	ND	46	300	86	16JW	51	ND	51
Aroclor 1260		ND	47	ND	47	ND	45	ND	45	3900	46	200	86	ND	51	14 J	51

MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM - New York State Department of Environmental Conservation-Technical & Administrative Guidance Memorandum
Surf - Surface
Sub - Subsurface
NA - Not Applicable
W - Weathering
Shading indicates above TAGM

Table 1(Continued)
Summarized Pesticide/PCB Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A16674 24		A16675 25		A16676 25D		A16677 26		A16678 26-D		A16679 27	
Analyte	Conc. µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
g-BHC	300	ND	4.4	ND	4.0	ND	4.3	ND	4.8	ND	4.4	ND	4.0
Heptachlor	100	ND	4.4	ND	4.0	ND	4.3	ND	4.8	ND	4.4	ND	4.0
p,p'-DDE	2100	1.9 J	4.4	3.3 J	4.0	ND	4.3	11	4.8	ND	4.4	ND	4.0
Dieldrin	44	ND	4.4	ND	4.0	ND	4.3	ND	4.8	ND	4.4	ND	4.0
p,p'-DDD	2900	ND	4.4	ND	4.0	ND	4.3	ND	4.8	ND	4.4	ND	4.0
Endosulfan (II)	900	ND	4.4	ND	4.0	ND	4.3	ND	4.8	ND	4.4	ND	4.0
p,p'-DDT	2100	ND	4.4	ND	4.0	ND	4.3	18	4.8	ND	4.4	ND	4.0
Aroclor 1242	Surf. 1000	340	55	ND	4.0	ND	54	ND	60	ND	54	ND	50
Aroclor 1248		120	55	270	50	ND	54	170	60	ND	54	39000	50
Aroclor 1254	Sub. 10000	ND	55	83	50	ND	54	ND	60	ND	54	ND	50
Aroclor 1260		10 J	55	ND	50	ND	54	42 J	60	3900	54	ND	50

MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM - New York State Department of Environmental Conservation-Technical & Administrative Guidance Memorandum
Surf - Surface
Sub - Subsurface
NA - Not Applicable
Shading indicates above TAGM

Table 2
Summarized BNAs Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A166501	A16651 2	A16652 2-D	A16653 3	A16654 4	A16655 5	A16656 6	A16657 7
Analyte	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg
Phenol	30	ND	**16000**	**23000**	ND	ND	ND	ND	1900 J
2-Methylphenol	100	ND	**370**	410 J	ND	ND	ND	ND	ND
Naphthalene	13000	ND	970	960 J	ND	ND	310 J	ND	ND
2-Methylnaphthalene	36400	ND	360	640 J	ND	ND	270 J	ND	ND
Acenaphthylene	41000	ND	ND	ND	ND	ND	200 J	ND	ND
Acenaphthene	50000	ND	95 J	ND	ND	ND	740	ND	ND
Dibenzofuran	6200	ND	100 J	ND	ND	ND	490	ND	ND
Fluorene	50000	ND	87 J	ND	ND	ND	880	ND	ND
Phenanthrene	50000	ND	1400	ND	ND	ND	7900	ND	ND
Anthracene	50000	ND	220 J	ND	ND	ND	1800	ND	ND
Carbazole	NA	ND	190 J	ND	ND	ND	1200	ND	ND
Di-n-butylphthalate	8100	ND	150 J	ND	ND	ND	ND	ND	ND
Fluoranthene	50000	ND	2000	380 J	1000 J	2300 J	9900	2000 J	2400 J
Pyrene	50000	ND	1500	ND	ND	1900 J	7800	1700 J	2200 J
Benzo(a)anthracene	224	ND	800	ND	ND	1100 J	**5000**	1000 J	1500 J
Chrysene	400	ND	920	ND	ND	1400 J	**5300**	1100 J	1900 J
Bis(2-Ethylhexyl)phthalate	50000	ND	640	1300 J	1000 J	1000 J	260 J	810 J	ND
Benzo(b)fluoranthene	1100	ND	**1100**	ND	ND	1700 J	**5800**	1400 J	3100 J
Benzo(k)fluoranthene	1100	ND	880	ND	ND	1400 J	**4500**	1200 J	2400 J
Benzo(a)pyrene	61	ND	1,100	ND	ND	1700 J	**5800**	1300 J	3300 J
Indeno(1,2,3,-cd)pyrene	3200	ND	750	ND	ND	1,300 J	**3400**	990 J	3200 J
Dibenzo(a,h)anthracene	14	ND	300 J	ND	ND	ND	**1300**	ND	1200 J
Benzo(g,h,i)perylene	50000	ND	890	ND	ND	1600 J	3700	1100 J	3600 J

MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM - New York State Department of Environmental Conservation-Technical & Administrative Guidance Memorandum
Surf - Surface
Sub - Subsurface
NA - Not Applicable
Shading indicates above TAGM

Table 2 (Continued)
Summarized BNAs Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A16658 8	A16659 9	A16660 10	A16661 11	A16662 12	A16663 13	A16664 14	A166(15
Analyte	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc µg/k
Phenol	30	**1500**	**4900**	**1800**	**9700**	**4700**	**2200**	**7000**	1600
2-Methylphenol	100	ND	ND	570 J	ND	ND	ND	ND	ND
Naphthalene	13000	ND	ND	3100	2100 J	960 J	670 J	1400 J	ND
2-Methylnaphthalene	36400	ND	ND	1500 J	ND	500 J	400 J	ND	ND
Acenaphthylene	41000	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	50000	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	6200	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	50000	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	50000	ND	ND	680 J	ND	530 J	ND	ND	ND
Anthracene	50000	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NA	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	8100	ND	ND	ND	ND	ND	ND	ND	)
Fluoranthene	50000	1300 J	1000 J	ND	ND	600 J	ND	ND	ND
Pyrene	50000	1200 J	880 J	ND	ND	900 J	ND	ND	ND
Butylbenzylphthalate	50000	ND	6000	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	224	ND	NA	ND	ND	ND	ND	460 J	ND
Chrysene	400	1000 J	NA	ND	ND	ND	ND	ND	ND
Bis(2-Ethylhexyl)phthalate	50000	8700	1200 J	1300 J	16000	1300 J	540 J	ND	ND
Benzo(b)fluoranthene	1100	1600 J	940 J	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	1100	1400 J	830 J	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	61	1400 J	920 J	ND	ND	ND	ND	ND	ND
Indeno(1,2,3,-cd)pyrene	3200	1700 J	770 J	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	14	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	50000	1900 J	920 J	ND	ND	ND	ND	ND	ND

MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM - New York State Department of Environmental Conservation-Technical & Administrative Guidance Memorandum
NA - Not Applicable
Shading indicates above TAGM

Table 2 (Continued)
Summarized BNAs Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A16666 16	A16667 17	A16668 18	A16669 19	A16670 20	A16671 21	A16672 22	A16673 23
Analyte	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg
Phenol	30	840 J	910 J	**11000**	**4000**	**18000**	5600 J	ND	2400 J
2-Methylphenol	100	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	13000	ND	ND	850 J	580	4400	ND	ND	1100 J
2-Methylnaphthalene	36400	ND	ND	ND	100 J	1100 J	ND	ND	850 J
Acenaphthylene	41000	ND	ND	ND	ND	ND	ND	420 J	1300 J
Acenaphthene	50000	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	62000	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	50000	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	50000	ND	ND	ND	ND	ND	ND	ND	2200 J
Anthracene	50000	ND	ND	ND	ND	ND	ND	ND	1400 J
Carbazole	NA	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	8100	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	50000	ND	860 J	ND	74 J	1600 J	3400 J	4700	8500
Pyrene	50000	ND	740 J	ND	ND	1400 J	3400 J	4100	8800
Butylbenzylphthalate	224	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	400	ND	410 J	ND	ND	840 J	2100 J	**2600**	**5200**
Chrysene	400	ND	510 J	ND	ND	900 J	2600 J	**2400**	**5400**
Bis(2-Ethylhexyl)phthalate	50000	ND	ND	ND	180 J	760 J	1700 J	430 J	ND
Benzo(b)fluoranthene	1100	ND	580 J	ND	ND	910 J	3500 J	**2700**	**5700**
Benzo(k)fluoranthene	1100	ND	520 J	ND	ND	890 J	3400 J	**2500**	**5700**
Benzo(a)pyrene	61	ND	570 J	ND	ND	980 J	3700 J	**3100**	**5300**
Indeno(1,2,3,-cd)pyrene	3200	ND	420 J	ND	ND	660 J	3100 J	1600 J	3100 J
Dibenzo(a,h)anthracene	14	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	50000	ND	470 J	ND	ND	770 J	3600 J	1700 J	3200 J

MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM - New York State Department of Environmental Conservation-Technical & Administrative Guidance Memorandum
NA - Not Applicable, Shading indicates above TAGM

Table 2 (Continued)
Summarized BNAs Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	A16674 24	A16675 25	A16676 25-D	A16677 26	A16678 26-D	A16679 27
Analyte	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg	Conc. µg/kg
Phenol	30	4000	990 J	ND	ND	ND	16000
2-Methylphenol	100	ND	ND	ND	ND	ND	820 J
1,2,4-Trichlorobenzene	NA	ND	ND	ND	ND	ND	1700 J
Naphthalene	13000	1400 J	ND	ND	ND	ND	2900
2-Methylnaphthalene	36400	790 J	ND	ND	ND	ND	810 J
Acenaphthylene	41000	ND	ND	ND	ND	96 J	ND
Acenaphthene	50000	ND	ND	ND	ND	ND	ND
Dibenzofuran	6200	ND	ND	ND	ND	ND	ND
Fluorene	50000	ND	ND	ND	ND	ND	ND
Phenanthrene	50000	ND	ND	ND	ND	440	ND
Anthracene	50000	ND	ND	ND	ND	92 J	ND
Carbazole	NA	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	8100	ND	ND	ND	ND	ND	ND
Fluoranthene	50000	1200 J	5800	100 J	3300 J	930	420 J
Pyrene	50000	940 J	4800	ND	2900 J	810	500 J
Butylbenzylphthalate	50000	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	224	650 J	2700 J	ND	1600 J	470	ND
Chrysene	400	910 J	3100 J	ND	2000 J	500	ND
Bis(2-Ethylhexyl)phthalate	50000	ND	ND	ND	1100 J	ND	1000 J
Benzo(b)fluoranthene	1100	1200 J	3600 J	ND	2100 J	540	ND
Benzo(k)fluoranthene	1100	1000 J	3200 J	ND	1900 J	520	ND
Benzo(a)pyrene	61	1100 J	3700 J	ND	2200 J	600	ND
Indeno(1,2,3,-cd)pyrene	3200	860 J	2400 J	ND	1400 J	360 J	ND
Dibenzo(a,h)anthracene	14	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	50000	970 J	2700 J	ND	ND	400 J	ND

TAGM - New York State Department of Environmental Conservation-Technical & Administrative Guidance Memorandum
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
MDL - Method Detection Limit, Shading indicates above TAGM

Table 3
Summarized TAL Metals Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	C16650 1	C16651 2	C16652 2-D	C16653 3	C16654 4	C16655 5	C16656 6	C16657 7
Analyte	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg
Aluminum	*	11000	1300	1200	7800	13000	12000	4600	5300
Antimony	*	ND	ND	ND	ND	ND	ND	6.4	ND
Arsenic	7.5*	**14**	1.6	2.5	**11**	**13**	**15**	**20**	6.3
Barium	300*	160	18	17	140	150	130	270	120
Beryllium	0.16*	**0.93**	ND	ND	**0.81**	**2.2**	**0.85**	ND	ND
Cadmium	1*	**3.2**	0.48	0.66	**3.7**	**2.4**	**2.4**	**20**	**3.6**
Calcium	*	21000	1900	3300	94000	120000	14000	21000	18000
Chromium	10*	**45**	**25**	**15**	**33**	**28**	**29**	**190**	**55**
Cobalt	30*	12	2.1	1.2	7.7	6.2	14	20	6.7
Copper	25*	74	57	35	75	67	200	440	110
Iron	2000*	**43000**	**24000**	**13000**	**46000**	**30000**	**35000**	**200000**	**47000**
Lead	*	300	44	38	200	260	180	610	2100
Magnesium	*	4800	600	560	7200	11000	4800	3100	3300
Manganese	*	1200	250	140	800	1300	700	1800	1100
Mercury	0.1	**0.21**	0.06	**0.1**	**0.11**	**0.16**	**0.11**	**1.1**	**0.22**
Nickel	13*	**42**	**15**	9.2	**28**	**32**	**41**	**160**	**110**
Potassium	*	1500	ND	ND	920	1500	1200	630	570
Selenium	2*	1.0	ND	ND	0.79	0.98	0.58	0.77	ND
Silver	*	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	*	110	ND	64	140	520	79	410	230
Thallium	*	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	150*	27	5.2	3.7	17	18	23	20	20
Zinc	20*	**760**	**140**	**79**	**640**	**540**	**340**	**1100**	**1000**

* - See TAGM Memorandum Appendix A
MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM -New York State Department of Environmental Conservation-Technical & Administrative Guidance Memorandum
Shading indicates above TAGM

Table 3 (Continued)
Summarized TAL Metals Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	C16658 8	C16659 9	C16660 10	C16661 11	C16662 12	C16663 13	C16664 14	C1666 15
Analyte	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc mg/k
Aluminum	*	3900	5800	2100	740	4200	4600	2300	2200
Antimony	*	ND	ND	ND	ND	ND	13	ND	ND
Arsenic	7.5*	6.5	**16**	1.3	1.8	7.0	**16**	4.4	2.7
Barium	300*	83	170	22	14	84	100	39	50
Beryllium	0.16*	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	1*	**2.4**	**4.4**	0.59	**4.2**	**2.0**	**3.4**	0.92	0.48
Calcium	*	8300	14000	2200	1100	21000	1200	24000	1600
Chromium	10*	**36**	**63**	**14**	**13**	**100**	**79**	**86**	**14**
Cobalt	30*	8.5	8.4	2.0	1.7	7.0	11	3.6	0.98
Copper	25*	**81**	**200**	**41**	**33**	**270**	**370**	**93**	**100**
Iron	2000*	**73000**	**76000**	**19000**	**22000**	**56000**	**140000**	**39000**	**11000**
Lead	*	230	340	34	48	150	540	110	58
Magnesium	*	1800	4300	610	240	2400	480	3400	460
Manganese	*	790	1100	180	160	810	770	2500	120
Mercury	0.1	**0.13**	**0.95**	**0.27**	0.04	**0.17**	0.07	**0.12**	ND
Nickel	13*	**41**	**160**	**15**	**13**	**75**	**72**	**25**	**31**
Potassium	*	540	390	500	ND	430	500	260	ND
Selenium	2*	ND	ND	ND	ND	ND	0.39	ND	ND
Silver	*	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	*	230	270	1500	ND	210	200	92	72
Thallium	*	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	150*	14	16	4.2	2.7	14	16	43	5.4
Zinc	20*	**450**	**550**	**42**	**81**	**280**	**660**	**190**	**110**

* - See TAGM Memorandum Appendix A
MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM - New York State Department of Environmental Conservation Technical & Administrative Guidance Memorandum
Shading indicates above TAGM

Table 3 (Continued)
Summarized TAL Metals Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	C16666 16	C16667 17	C16668 18	C16669 19	C16670 20	C16671 21	C16672 22	C16673 23
Analyte	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg
Aluminum	*	1300	5900	790	1400	2400	12000	15000	9300
Antimony	*	ND	6.5	ND	ND	ND	ND	ND	ND
Arsenic	7.5*	1.5	7.1	4.4	6.7	6.5	**20**	**77**	**8.4**
Barium	300*	15	180	9.0	29	130	200	170	94
Beryllium	0.16*	ND	ND	ND	ND	ND	**0.96**	**1.2**	**0.66**
Cadmium	1*	ND	ND	ND	0.59	**2.3**	**13**	**2.3**	**1.5**
Calcium	*	1200	130000	1200	850	3800	23000	34000	12000
Chromium	10*	6.1	**33**	8.9	**97**	**130**	**95**	**32**	**24**
Cobalt	30*	1.4	47	ND	4.4	12	15	11	8.0
Copper	25*	**44**	**240**	**28**	**300**	**720**	**270**	**47**	**52**
Iron	2000*	**16000**	**25000**	**5800**	**58000**	**93000**	**110000**	**32000**	**30000**
Lead	*	58	300	21	140	280	660	180	160
Magnesium	*	410	19000	340	410	1000	4700	5900	3600
Manganese	*	210	840	75	760	690	1600	1200	560
Mercury	0.1	ND	0.06	0.04	ND	**1.3**	**0.77**	**0.73**	**0.13**
Nickel	13*	9.5	38	2.7	57	150	100	36	28
Potassium	*	ND	470	ND	ND	280	900	1500	1100
Selenium	2*	ND	ND	ND	ND	ND	1.0	ND	0.57
Silver	*	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	*	ND	330	ND	68	68	360	120	130
Thallium	*	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	150*	3.1	11	2.6	14	21	36	27	19
Zinc	20*	**98**	**1300**	**55**	**310**	**290**	**1000**	**1100**	**660**

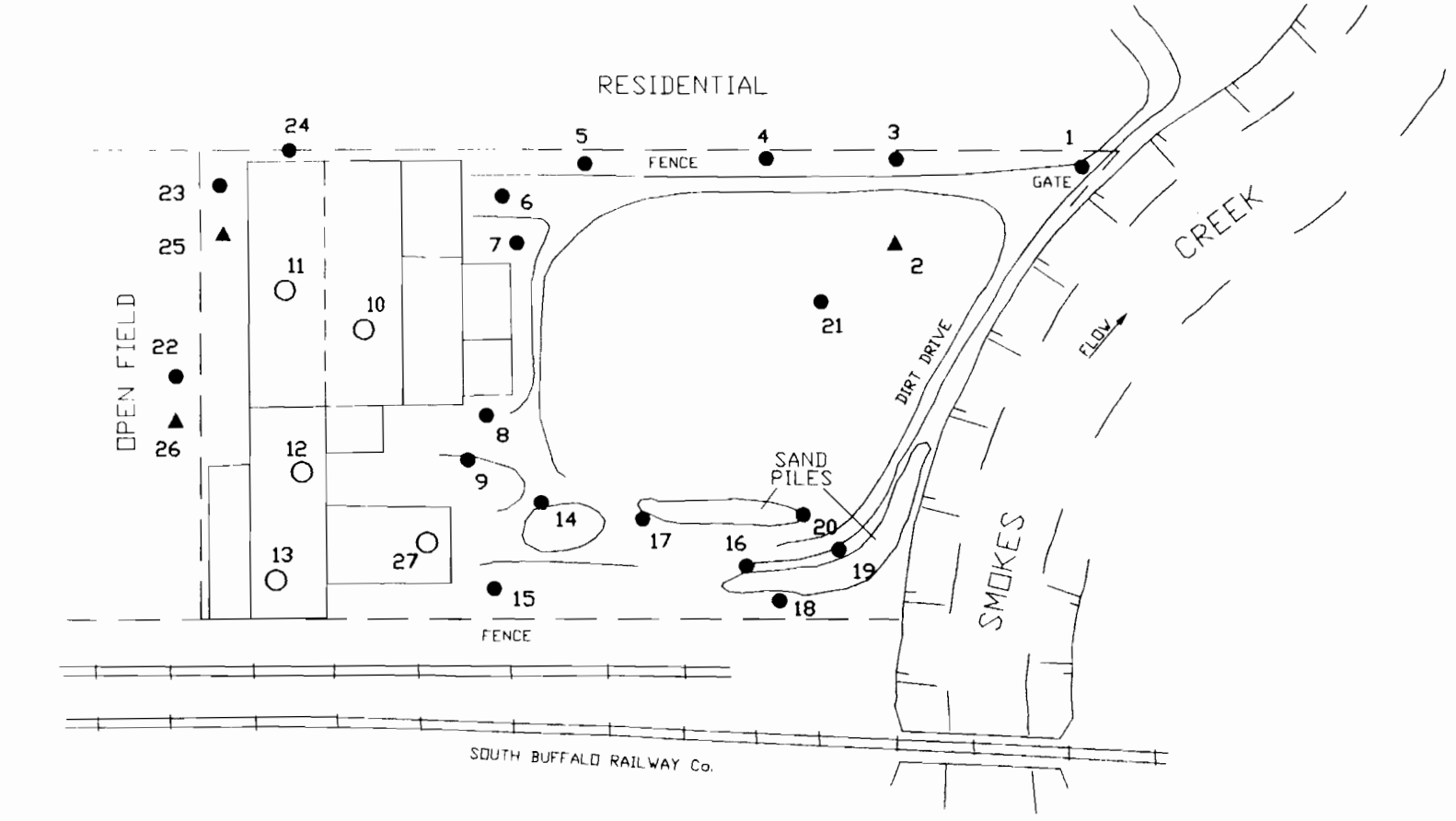
* - See TAGM Memorandum Appendix A
MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM -New York State Department of Environmental Conservation Technical & Administrative Guidance Memorandum
Shading indicates above TAGM

Table 3 (Continued)
Summarized TAL Metals Sampling Results
Lackawanna Foundry Site
Lackawanna, New York
May 1999

Sample Number Location	TAGM	C16674 24	C16675 25	C16676 25-D	C16677 26	C16678 26-D	C16679 27
Analyte	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg	Conc. mg/kg
Aluminum	*	7300	12000	17000	14000	14000	2900
Antimony	*	ND	ND	ND	ND	ND	ND
Arsenic	7.5*	5	**21**	**25**	**66**	**48**	**19**
Barium	300*	64	130	140	250	280	59
Beryllium	0.16*	ND	**0.73**	**0.97**	**1.3**	**0.67**	ND
Cadmium	1*	1.2	2.3	ND	5.2	1.3	0.84
Calcium	*	10000	39000	11000	53000	120000	15000
Chromium	10*	**18**	**31**	**25**	**51**	**23**	**95**
Cobalt	30*	4.8	9.7	15	9.7	7.3	8.7
Copper	25*	**49**	**65**	**27**	**110**	**34**	**280**
Iron	2000*	**25000**	**29000**	**32000**	**45000**	**20000**	**78000**
Lead	*	130	230	40	740	100	140
Magnesium	*	3500	5400	5400	6300	7300	2500
Manganese	*	390	710	610	1500	570	770
Mercury	0.1	**0.13**	**0.17**	0.08	**1.6**	**0.17**	0.09
Nickel	13*	**18**	**38**	**41**	**39**	**22**	**89**
Potassium	*	1100	1400	1500	1600	1400	320
Selenium	2*	ND	ND	ND	1.6	ND	ND
Silver	*	ND	ND	ND	ND	ND	ND
Sodium	*	250	170	ND	190	190	120
Thallium	*	ND	ND	ND	ND	ND	ND
Vanadium	150*	14	23	27	29	20	15
Zinc	20*	**350**	**760**	**150**	**1600**	**330**	**250**

* - See TAGM Memorandum Appendix A
MDL - Method Detection Limit
Conc. - Concentration
µg/kg - micrograms per kilogram
ND - Not Detected
J - Detected Below the MDL
TAGM -New York State Department of Environmental Conservation Technical & Administrative Guidance Memorandum
Shading indicates above TAGM

Figures



● SURFACE SAMPLE

○ COMPOSITE SAMPLE

▲ SURFACE AND SUBSURFACE SAMPLE

0 25 50 100 Ft

U.S. EPA ENVIRONMENTAL RESPONSE TEAM CENTER
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
68-C4-0022
WO# 03347-143-001-3439-01

FIGURE 1
SAMPLING LOCATION MAP
LACKAWANNA FOUNDRY SITE
LACKAWANNA, NEW YORK
MAY 1999

7/6/94

undefined

Appendix A

15 (12-75)

HWR-94-4046
January 24, 1994
(REVISED)

New York State Department of Environmental Conservation

MEMORANDUM

TO: Regional Hazardous Waste Remediation Engineers, Bureau Directors and Section Chiefs
FROM: Michael J. O'Toole, Jr., Director, Division of Hazardous Waste Remediation
SUBJECT: Revised TAGM - Determination of Soil Cleanup Objectives and Cleanup Levels

DATE: JAN 24 1994

Attached is the revised Division Technical and Administrative Guidance Memorandum (TAGM) on Determination of Soil Cleanup Objectives and Cleanup Levels in its final form. The changes are to the Tables of Appendix A. They are minor in nature and do not change the content of the TAGM. The changes include:

1. Alphabetizing contaminants in Table 1 through Table 4.

2. The addition of a few contaminants to Table 1 and Table 2.

3. Table 4 has been revised to indicate that background levels for lead vary widely and provide a range for undeveloped and developed areas. It also has been revised to indicate that site-specific form(s) of cyanide should be considered when establishing soil cleanup objectives for cyanide.

If you have any questions, please contact Ajay Shroff of my staff at (518)485-8792.

Attachment

cc: T. Jorling
J. Lacey
M. Gerstman
A. DeBarbieri
E. Sullivan
T. Donovan
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J. Eckl
R. Davies
R. Dana
C. Goddard
C. Costopoulos
P. Counterman
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D. Johnson
M. Kadlecek
Regional Directors
Regional Engineers
Regional Solid and Haz. Waste Engrs.
Regional Citizen Participation Spec.

HWR-94-4046
January 24, 1994
(REVISED)

New York State Department of Environmental Conservation

MEMORANDUM

TO: Regional Haz. Waste Remediation Engineers, Bureau Dirs. & Section Chiefs
FROM: Michael J. O'Toole, Jr., Director, Div. of Hazardous Waste Remediation
SUBJECT: DIVISION TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM: DETERMINATION OF SOIL CLEANUP OBJECTIVES AND CLEANUP LEVELS
DATE: JAN 24 1994

The cleanup goal of the Department is to restore inactive hazardous waste sites to predisposal conditions, to the extent feasible and authorized by law. However, it is recognized that restoration to predisposal conditions will not always be feasible.

1. INTRODUCTION:

This TAGM provides a basis and procedure to determine soil cleanup levels at individual Federal Superfund, State Superfund, 1986 EQBA Title 3 and Responsible Party (RP) sites, when the Director of the DHWR determines that cleanup of a site to predisposal conditions is not possible or feasible.

The process starts with development of soil cleanup objectives by the Technology Section for the contaminants identified by the Project Managers. The Technology Section uses the procedure described in this TAGM to develop soil cleanup objectives. Attainment of these generic soil cleanup objectives will, at a minimum, eliminate all significant threats to human health and/or the environment posed by the inactive hazardous waste site. Project Managers should use these cleanup objectives in selecting alternatives in the Feasibility Study (FS). Based on the proposed selected remedial technology (outcome of FS), final site specific soil cleanup levels are established in the Record of Decision (ROD) for these sites.

It should be noted that even after soil cleanup levels are established in the ROD, these levels may prove to be unattainable when remedial construction begins. In that event, alternative remedial actions or institutional controls may be necessary to protect the environment.

2. BASIS FOR SOIL CLEANUP OBJECTIVES:

The following alternative bases are used to determine soil cleanup objectives:

(a) Human health based levels that correspond to excess lifetime

cancer risks of one in a million for Class A[1] and B[2] carcinogens, or one in 100,000 for Class C[3] carcinogens. These levels are contained in USEPA's Health Effects Assessment Summary Tables (HEASTs) which are compiled and updated quarterly by the NYSDEC's Division of Hazardous Substances Regulation;

(b) Human health based levels for systemic toxicants, calculated from Reference Doses (RfDs). RfDs are an estimate of the daily exposure an individual (including sensitive individuals) can experience without appreciable risk of health effects during a lifetime. An average scenario of exposure in which children ages one to six (who exhibit the greatest tendency to ingest soil) is assumed. An intake rate of 0.2 gram/day for a five-year exposure period for a 16-kg child is assumed. These levels are contained in USEPA's Health Effects Assessment Summary Tables (HEASTs) which are compiled and updated quarterly by the NYSDEC's Division of Hazardous Substances Regulation;

(c) Environmental concentrations which are protective of groundwater/drinking water quality; based on promulgated or proposed New York State Standards;

(d) Background values for contaminants; and

(e) Detection limits.

A recommendation on the appropriate cleanup objective is based on the criterion that produces the most stringent cleanup level using criteria a, b, and c for organic chemicals, and criteria a, b, and d for heavy metals. If criteria a and/or b are below criterion d for a contaminant, its background value should be used as the cleanup objective. However, cleanup objectives developed using this approach must be, at a minimum, above the method detection limit (MDL) and it is preferable to have the soil cleanup objectives above the Contract Required Quantitation Limit (CRQL) as defined by NYSDEC. If the cleanup objective of a compound is "non-detectable", it should mean that it is not detected at the MDL. Efforts should be made to obtain the best MDL detection possible when selecting a laboratory and analytical protocol.

The water/soil partitioning theory is used to determine soil cleanup objectives which would be protective of groundwater/drinking water quality for its best use. This theory is conservative in nature and assumes that contaminated soil and groundwater are in direct contact. This theory is based upon the ability of organic matter in soil to adsorb organic chemicals. The approach predicts the maximum amount of contamination that may remain in soil so that leachate from the contaminated soil will not violate groundwater and/or drinking water

standards.

(1) Class A are proved human carcinogens
(2) Class B are probable human carcinogens
(3) Class C are possible human carcinogens

This approach is not used for heavy metals, which do not partition appreciably into soil organic matter. For heavy metals, eastern USA or New York State soil background values may be used as soil cleanup objectives. A list of values that have been tabulated is attached. Soil background data near the site, if available, is preferable and should be used as the cleanup objective for such metals. Background samples should be free from the influences of this site and any other source of contaminants. Ideal background samples may be obtained from uncontaminated upgradient and upwind locations.

3. DETERMINATION OF SOIL CLEANUP GOALS FOR ORGANICS IN SOIL FOR PROTECTION OF WATER QUALITY

Protection of water quality from contaminated soil is a two-part problem. The first is predicting the amount of contamination that will leave the contaminated media as leachate. The second part of the problem is to determine how much of that contamination will actually contribute to a violation of groundwater standards upon reaching and dispersing into groundwater. Some of the contamination which initially leaches out of soil will be absorbed by other soil before it reaches groundwater. Some portion will be reduced through natural attenuation or other mechanism.

PART A: PARTITION THEORY MODEL

There are many test and theoretical models which are used to predict leachate quality given a known value of soil contamination. The Water-Soil Equilibrium Partition Theory is used as a basis to determine soil standard or contamination limit for protection of water quality by most of the models currently in use. It is based on the ability of organic carbon in soil to adsorb contamination. Using a water quality value which may not be exceeded in leachate and the partition coefficient method, the equilibrium concentration (Cs) will be expressed in the same units as the water standards. The following expression is used:

Allowable Soil Concentration $Cs = f \times Koc \times Cw$ . . . . (1)

Where: f = fraction of organic carbon of the natural soil medium.

Koc = partition coefficient between water and soil media. Koc can be estimated by the following equation:

log Koc = 3.64 - 0.55 log S

S = water solubility in ppm
Cw = appropriate water quality value from TOGS 1.1.1

Most Koc and S values are listed in the Exhibit A-1 of the USEPA Superfund Public Health Evaluation Manual (EPA/540/1-86/060). The Koc values listed in this manual should be used for the purpose. If the Koc value for a contaminant is not listed, it should be estimated using the above mentioned equation.

PART-B: PROCEDURE FOR DETERMINATION OF SOIL CLEANUP OBJECTIVES

When the contaminated soil is in the unsaturated zone above the water table, many mechanisms are at work that prevent all of the contamination that would leave the contaminated soil from impacting groundwater. These mechanisms occur during transport and may work simultaneously. They include the following: (1) volatility, (2) sorption and desorption, (3) leaching and diffusion, (4) transformation and degradation, and (5) change in concentration of contaminants after reaching and/or mixing with the groundwater surface. To account for these mechanisms, a correction factor of 100 is used to establish soil cleanup objectives. This value of 100 for the correction is consistent with the logic used by EPA in its Dilution Attenuation Factor (DAF) approach for EP Toxicity and TCLP. (Federal Register/Vol. 55, No. 61, March 29, 1990/Pages 11826-27). Soil cleanup objectives are calculated by multiplying the allowable soil concentration by the correction factor. If the contaminated soil is very close (<3' - 5') to the groundwater table or in the groundwater, extreme caution should be exercised when using the correction factor of 100 (one hundred) as this may not give conservative cleanup objectives. For such situations the Technology Section should be consulted for site-specific cleanup objectives.

Soil cleanup objectives are limited to the following maximum values. These values are consistent with the approach promulgated by the States of Washington and Michigan.

1) Total VOCs $\leq$ 10 ppm.
2) Total Semi VOCs $\leq$ 500 ppm.
3) Individual Semi VOCs $\leq$ 50 ppm.
4) Total Pesticides $\leq$ 10 ppm.

One concern regarding the semi-volatile compounds is that some of these compounds are so insoluble that their Cs values are fairly large. Experience (Draft TOGS on Petroleum

Contaminated Soil Guidance) has shown that soil containing some of these insoluble substances at high concentrations can exhibit a distinct odor even though the substance will not leach from the soil. Hence any time a soil exhibits a discernible odor nuisance, it shall not be considered clean even if it has met the numerical criteria.

4. DETERMINATION OF FINAL CLEANUP LEVELS:

Recommended soil cleanup objectives should be utilized in the development of final cleanup levels through the Feasibility Study (FS) process. During the FS, various alternative remedial actions developed during the Remedial Investigation (RI) are initially screened and narrowed down to the list of potential alternative remedial actions that will be evaluated in detail. These alternative remedial actions are evaluated using the criteria discussed in TAGM 4030, Selection of Remedial Actions at Inactive Hazardous Waste Sites, revised May 15, 1990, and the preferred remedial action will be selected. After the detailed evaluation of the preferred remedial action, the final cleanup levels which can be actually achieved using the preferred remedial action must be established. Remedy selection, which will include final cleanup levels, is the subject of TAGM 4030.

Recommended soil cleanup objectives that have been calculated by the Technology Section are presented in Appendix A. These objectives are based on a soil organic carbon content of 1% (0.01) and should be adjusted for the actual organic carbon content if it is known. For determining soil organic carbon content, use attached USEPA method (Appendix B). Please contact the Technology Section, Bureau of Program Management for soil cleanup objectives not included in Appendix A.

Attachments

cc: T. Jorling
J. Lacey
M. Gerstman
A. DeBarbieri
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Regional Citizen Participation Spec.

APPENDIX A

TABLE 1

Recommended soil cleanup objectives (mg/kg or ppm)

Volatile Organic Contaminants

ntaminant	Partition coefficient Koc	Groundwater Standards/ Criteria Cw ug/l or ppb.	a Allowable Soil conc. ppm. Cs	b ** Soil Cleanup objectives to Protect GW Quality (ppm)	USEPA Health Based (ppm) Carcinogens	Systemic Toxicants	CRQL (ppb)	*** Rec.soi Cleanup Ob (ppm
etone	2.2	50	0.0011	0.11	N/A	8,000	10	0.
nzene	83	0.7	0.0006	0.06	24	N/A	5	0.
enzoic Acid	54*	50	0.027	2.7	N/A	300,000	5	2.
2-Butanone	4.5*	50	0.003	0.3	N/A	4,000	10	0.
rbon Disulfide	54*	50	0.027	2.7	N/A	8,000	5	2.
rbon Tetrachloride	110*	5	0.006	0.6	5.4	60	5	0.
hlorobenzene	330	5	0.017	1.7	N/A	2,000	5	1.
loroethane	37*	50	0.019	1.9	N/A	N/A	10	1.
loroform	31	7	0.003	0.30	114	800	5	0.
bromochloromethane	N/A	50	N/A	N/A	N/A	N/A	5	N/
1,2-Dichlorobenzene	1,700	4.7	0.079	7.9	N/A	N/A	330	7.
1,3-Dichlorobenzene	310 *	5	0.0155	1.55	N/A	N/A	330	1.
1,4-Dichlorobenzene	1,700	5	0.085	8.5	N/A	N/A	330	8.
1,1-Dichloroethane	30	5	0.002	0.2	N/A	N/A	5	0.
1,2-Dichloroethane	14	5	0.001	0.1	7.7	N/A	5	0.
1-Dichloroethene	65	5	0.004	0.4	12	700	5	0.
2-Dichloroethene(trans)	59	5	0.003	0.3	N/A	2,000	5	0.
3-dichloropropane	51	5	0.003	0.3	N/A	N/A	5	0.
Ethylbenzene	1,100	5	0.055	5.5	N/A	8,000	5	5.
13 Freon(1,1,2 Trichloro-1,2,2 Trifluoroethane)	1,230*	5	0.060	6.0	N/A	200,000	5	6.
Methylene chloride	21	5	0.001	0.1	93	5,000	5	0.
Methyl-2-Pentanone	19*	50	0.01	1.0	N/A	N/A	10	1.
rachloroethene	277	5	0.014	1.4	14	800	5	1.
,1-Trichloroethane	152	5	0.0076	0.76	N/A	7,000	5	0.
,1,2,2-Tetrachloroethane	118	5	0.006	0.6	35	N/A	5	0.
2,3-trichloropropane	68	5	0.0034	0.34	N/A	80	5	0.
2,4-Trichlorobenzene	670 *	5	0.034	3.4	N/A	N/A	330	3.
Toluene	300	5	0.015	1.5	N/A	20,000	5	1.
Trichloroethene	126	5	0.007	0.70	64	N/A	5	0.
nyl chloride	57	2	0.0012	0.12	N/A	N/A	10	0.
lenes	240	5	0.012	1.2	N/A	200,000	___	1.

a. Allowable Soil Concentration Cs = f x Cw x Koc

b. Soil cleanup objective = Cs x Correction Factor (CF)

N/A is not available

* Partition coefficient is calculated by using the following equation:
log Koc = -0.55 log S + 3.64, where S is solubility in water in ppm.
All other Koc values are experimental values.

Correction Factor (CF) of 100 is used as per TAGM #4046

As per TAGM #4046, Total VOCs < 10 ppm.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1% , and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX A (cont.)

TABLE 2

Recommended Soil Cleanup Objectives (mg/kg or ppm)

Semi-Volatile Organic Contaminants

Contaminant	Partition coefficient Koc	Groundwater Standards/ Criteria Cw ug/l or ppb.	a Allowable Soil conc. ppm. Cs	b ** Soil Cleanup objectives to Protect GW Quality (ppm)	USEPA Health Based (ppm) Carcinogens	Systemic Toxicants	CRQL (ppb)	Rec.soil Cleanup Ob, (ppm
Acenaphthene	4,600	20	0.9	90.0	N/A	5,000	330	50.0
Acenaphtnylene	2,056*	20	0.41	41.0	N/A	N/A	330	[illegible]
Aniline	13.8	5	0.001	0.1	123	N/A	330	0.1
Anthracene	14,000	50	7.00	700.0	N/A	20,000	330	50.0*
Benzo(a)anthracene	1,380,000	0.002	0.03	3.0	0.224	N/A	330	0.224 or
Benzo(a)pyrene	5,500,000	0.002(ND)	0.110	11.0	0.0609	N/A	330	0.061 or
Benzo(b)fluoranthene	550,000	0.002	0.011	1.1	N/A	N/A	330	1.1
Benzo(g,h,i)perylene	1,600,000	5	8.0	800	N/A	N/A	330	50.0*
Benzo(k)fluoranthene	550,000	0.002	0.011	1.1	N/A	N/A	330	1.1
bis(2-ethylhexyl)phthalate	8,706*	50	4.35	435.0	50	2,000	330	50.0
Butylbenzylphthlate	2,430	50	1.215	122.0	N/A	20,000	330	50.0*
Chrysene	200,000	0.002	0.004	0.4	N/A	N/A	330	0.4
4-Chloroaniline	43 ****	5	0.0022	0.22	200	300	330	0.220 or
4-Chloro-3-methylphenol	47	5	0.0024	0.24	N/A	N/A	330	0.240 or
2-Chlorophenol	15*	50	0.008	0.8	N/A	400	330	0.8
Dibenzofuran	1,230*	5	0.062	6.2	N/A	N/A	330	[illegible]
Dibenzo(a,h)anthracene	33,000,000	50	1,650	165,000	0.0143	N/A	330	0.014 or
3,3'-Dichlorobenzidine	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dichlorophenol	380	1	0.004	0.4	N/A	200	330	0.4
2,4-Dinitrophenol	38	5	0.002	0.2	N/A	200	1,600	0.200 or
2,6 Dinitrotoluene	198*	5	0.01	1.0	1.03	N/A	330	1.0
Diethylphthlate	142	50	0.071	7.1	N/A	60,000	330	7.1
Dimethylphthlate	40	50	0.020	2.0	N/A	80,000	330	2.0
Di-n-butyl phthalate	162*	50	0.081	8.1	N/A	8,000	330	8.1
Di-n-octyl phthlate	2,346*	50	1.2	120.0	N/A	2,000	330	50.0
Fluoranthene	38,000	50	19	1900.0	N/A	3,000	330	50.0*
Fluorene	7,300	50	3.5	350.0	N/A	3,000	330	50.0
Hexachlorobenzene	3,900	0.35	0.014	1.4	0.41	60	330	0.4
Indeno(1,2,3-cd)pyrene	1,600,000	0.002	0.032	3.2	N/A	N/A	330	3.2
Isophorone	88.31*	50	0.044	4.40	1,707	20,000	330	4.4
2-methylnaphthalene	727*	50	0.364	36.4	N/A	N/A	330	36.4
2-Methylphenol	15	5	0.001	0.1	N/A	N/A	330	0.100 or
4-Methylphenol	17	50	0.009	0.9	N/A	4,000	330	0.9
Naphthalene	1,300	10	0.130	13.0	N/A	300	330	13.0
Nitrobenzene	36	5	0.002	0.2	N/A	40	330	0.200 or
2-Nitroaniline	86	5	0.0043	0.43	N/A	N/A	1,600	0.430 or
3-Nitrophenol	65	5	0.0033	0.33	N/A	N/A	330	0.330 or
4-Nitrophenol	21	5	0.001	0.1	N/A	N/A	1,600	0.100 or
3-Nitroaniline	93	5	0.005	0.5	N/A	N/A	1,600	0.500 or
Pentachlorophenol	1,022	1	0.01	1.0	N/A	2,000	1,600	1.0 or MC
Phenanthrene	4,365*	50	2.20	220.0	N/A	N/A	330	50.0
Phenol	27	1	0.0003	0.03	N/A	50,000	330	0.03 or
Pyrene	13,295*	50	6.65	665.0	N/A	2,000	330	50.0*
2,4,5-Trichlorophenol	89*	1	0.001	0.1	N/A	8,000	330	[illegible]

APPENDIX A
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
TECHNICAL & ADMINISTRATIVE GUIDANCE MEMORADUM
LACKAWANNA FOUNDRY SITE
LACKAWANNA, NEW YORK
MAY 1999

a. Allowable Soil Concentration Cs = f x Cw x Koc
b. Soil cleanup objective = Cs x Correction Factor (CF)

N/A is not available
MDL is Method Detection Limit

Partition coefficient is calculated by using the following equation:
log Koc = -0.55 log S + 3.64, where S is solubility in water in ppm. Other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm., Total Semi-VOCs < 500 ppm. and Individual Semi-VOCs < 50 ppm.

** Koc is derived from the correlation Koc = 0.63 Kow (Determining Soil Response Action Levels..... EPA/540/2-89/057). Kow is obtained from the USEPA computer database 'MAIN'.

te: Soil cleanup objectives are developed for soil organic carbon content (f) of 1%, and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX A (cont.)

TABLE 3

Recommended soil cleanup objectives (mg/kg or ppm)

Organic Pesticides / Herbicides and PCBs

Contaminant	Partition coefficient Koc	Groundwater Standards/ Criteria Cw ug/l or ppb.	a Allowable Soil conc. ppm. Cs	b ** Soil Cleanup objectives to Protect GW Quality (ppm)	USEPA Health Based (ppm) Carcinogens	Systemic Toxicants	CRQL (ppb)	*** Rec.soil Cleanup Obj (ppm)
Aldrin	96,000	ND(<0.01)	0.005	0.5	0.041	2	8	0.04
Alpha - BHC	3,800	ND(<0.05)	0.002	0.2	0.111	N/A	8	0.02
Beta - BHC	3,800	ND(<0.05)	0.002	0.2	3.89	N/A	8	0.2
Delta - BHC	6,600	ND(<0.05)	0.003	0.3	N/A	N/A	8	0.3
Chlordane	21,305*	0.1	0.02	2.0	0.54	50	80	0.54
2,4-D	104*	4.4	0.005	0.5	N/A	800	800	0.5
4,4'-DDD	770,000*	ND(<0.01)	0.077	7.7	2.9	N/A	16	2.9
4,4'-DDE	440,000*	ND(<0.01)	0.0440	4.4	2.1	N/A	16	2.1
4,4'-DDT	243,000*	ND(<0.01)	0.025	2.5	2.1	40	16	2.1
Dibenzo-P-dioxins(PCDD)								
2,3,7,8 TCDD	1709800	0.000035	0.0006	0.06	N/A	N/A	N/A	N/A
Dieldrin	10,700*	ND(<0.01)	0.0010	0.1	0.044	4	16	0.04
Endosulfan I	8,168*	0.1	0.009	0.9	N/A	N/A	16	0.9
Endosulfan II	8,031*	0.1	0.009	0.9	N/A	N/A	16	0.9
Endosulfan Sulfate	10,032*	0.1	0.01	1.0	N/A	N/A	16	1.0
Endrin	9,157*	ND(<0.01)	0.001	0.1	N/A	20	8	0.
Endrin keytone	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gamma - BHC (Lindane)	1,080	ND(<0.05)	0.0006	0.06	5.4	20	8	0.06
Gamma - chlordane	140,000	0.1	0.14	14.0	0.54	5	80	0.54
Heptachlor	12,000	ND(<0.01)	0.0010	0.1	0.16	40	8	0.10
Heptachlor epoxide	220	ND(<0.01)	0.0002	0.02	0.077	0.8	8	0.02
Methoxychlor	25,637	35.0	9.0	900	N/A	400	80	***
Mirex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Parathion	760	1.5	0.012	1.2	N/A	500	8	1.2
PCBs	17,510*	0.1	0.1	10.0	1.0	N/A	160	1.0(Surface 10(Sub-sur
Polychlorinated dibenzo-furans(PCDF)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silvex	2,600	0.26	0.007	0.7	N/A	600	330	0.7
2,4,5-T	53	35	0.019	1.9	N/A	200	330	1.9

a. Allowable Soil Concentration Cs = f x Cw x Koc

b. Soil cleanup objective = Cs x Correction Factor (CF)

N/A is not available

Partition coefficient is calculated by using the following equation:

log Koc = -0.55 log S + 3.64, where S is solubility in water in ppm.

All other Koc values are experimental values.

Correction Factor (CF) of 100 is used as per TAGM #4046

* As per TAGM #4046, Total Pesticides < 10 ppm.

te: Soil cleanup objectives are developed for soil organic carbon content (f) of 1% (5% for PCBs as per PCB guidance document), and should be adjusted for the actual soil organic Carbon content if it is known.

APPENDIX A

Rev. 12/93

TABLE 4

Recommended Soil Cleanup Objectives (mg/kg or ppm) for Heavy Metals

taminants	Protect Water Quality ppm	Eastern USA Background ppm	* CRDL mg/kg or ppm	***** Rec.soil Clnup Objct. (ppm)
minum	N/A	33,000	2.0	SB
Antimony	N/A	N/A	0.6	SB
enic	N/A	3-12 **	0.1	7.5 or SB
ium	N/A	15-600	2.0	300 or SB
eryllium	N/A	0-1.75	0.05	0.16(HEAST) or SB
Cadmium	N/A	0.1-1	0.05	1 or SB
cium	N/A	130 - 35,000 **	50.0	SB
mium	N/A	1.5-40 **	0.1	10 or SB
CoBalt	N/A	2.5-60 **	0.5	30 or SB
Copper	N/A	1-50	0.25	25 or SB
nide	N/A	N/A	0.1	***
n	N/A	2,000 - 550,000	1.0	2,000 or SB
Lead	N/A	****	0.03	SB****
nesium	N/A	100 - 5,000	50.0	SB
anese	N/A	50 - 5,000	0.15	SB
cury	N/A	0.001-0.2	0.002	0.1
Nickel	N/A	0.5-25	0.4	13 or SB
ssium	N/A	8,500 - 43,000 **	50.0	SB
nium	N/A	0.1-3.9	0.05	2 or SB
ver	N/A	N/A	0.1	SB
dium	N/A	6,000 - 8,000	50.0	SB
lium	N/A	N/A	0.1	SB
dium	N/A	1-300	0.5	150 or SB
Zinc	N/A	9-50	0.2	20 or SB

ote: Some forms of metal salts such as Aluminum Phosphide, Calcium Cyanide, Potassium Cyanide, Copper cyanide, Silver cyanide, Sodium cyanide, Zinc phosphide, Thallium salts, Vanadium pentoxide, and Chromium (VI) compounds are more toxic in nature. Please refer to the USEPA HEASTs database to find cleanup objectives if such metal salts are present in soil.

SB is site background
N/A is not available

CRDL is contract required detection limit which is approx. 10 times the CRDL for water.
New York State backgrond
-- Some forms of Cyanide are complex and very stable while other forms are pH dependent and hence are very unstable. Site-specific form(s) of Cyanide should be taken into consideration when establishing soil cleanup objective.
*** Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.
*Recommended soil cleanup objectives are average background concentrations as reported in a 1984 survey of reference material by E. Carol McGovern, NYSDEC.

TOTAL ORGANIC CARBON (TOC)

USE AND LIMITATIONS

Total organic carbon is a measure of the total amount of nonvolatile, volatile, partially volatile, and particulate organic compounds in a sample. Total organic carbon is independent of the oxidation state of the organic compounds and is not a measure of the organically bound and inorganic elements that can contribute to the biochemical and chemical oxygen demand tests.

Because inorganic carbon (e.g., carbonates, bicarbonates, free CO_2) will interfere with total organic carbon determinations, samples should be treated to remove inorganic carbon before being analyzed.

FIELD PROCEDURES

Collection

Samples can be collected in glass or plastic containers. A minimum sample size of 25 g is recommended. If unrepresentative material is to be removed from the sample, it should be removed in the field under the supervision of the chief scientist and noted on the field log sheet.

Processing

Samples should be stored frozen and can be held for up to 6 mo under that condition. Excessive temperatures should not be used to thaw samples.

LABORATORY PROCEDURES

Analytical Procedures

- Equipment
  - Induction furnace
    e.g., Leco WR-12, Dohrmann DC-50, Coleman CH analyzer, Perkin Elmer 240 elemental analyzer, Carlo-Erba 1106
  - Analytical balance
    0.1 mg accuracy
  - Desiccator
  - Combustion boats
  - 10 percent hydrochloric acid (HCl)
  - Cupric oxide fines (or equivalent material)
  - Benzoic acid or other carbon source as a standard.

- Equipment preparation
  - Clean combustion boats by placing them in the induction furnace at 950° C. After being cleaned, combustion boats should not be touched with bare hands.
  - Cool boats to room temperature in a desiccator.
  - Weigh each boat to the nearest 0.1 mg.

- Sample preparation
  - Allow frozen samples to warm to room temperature.
  - Homogenize each sample mechanically, incorporating any overlying water.
  - Transfer a representative aliquot (5-10 g) to a clean container.

- Analytical procedures
  - Dry samples to constant weight at 70 ± 2° C. The drying temperature is relatively low to minimize loss of volatile organic compounds.
  - Cool dried samples to room temperature in a desiccator.
  - Grind sample using a mortar and pestle to break up aggregates.
  - Transfer a representative aliquot (0.2-0.5 g) to a clean, preweighed combustion boat.
  - Determine sample weight to the nearest 0.1 mg.
  - Add several drops of HCl to the dried sample to remove carbonates. Wait until the effervescing is completed and add more acid. Continue this process until the incremental addition of acid causes no further effervescence. Do not add too much acid at one time as this may cause loss of sample due to frothing. Exposure of small samples (i.e., 1-10 mg) having less than 50 percent carbonate to an HCl atmosphere for 24-48 h has been shown to be an effective means of removing carbonates (Hedges and Stern 1984). If this method is used for sample sizes greater than 10 mg, its effectiveness should be demonstrated by the user.
  - Dry the HCl-treated sample to constant weight at 70 ± 2° C.
  - Cool to room temperature in a desiccator.
  - Add previously asned cupric oxide fines or equivalent material (e.g., alumina oxide) to the sample in the combustion boat.
  - Combust the sample in an induction furnace at a minimum temperature of 950 ± 10° C.

- Calculations
  - If an ascarite-filled tube is used to capture CO_2, the carbon content of the sample can be calculated as follows:

$$\text{Percent carbon} = \frac{A(0.2729)(100)}{B}$$

Where:

A = the weight (g) of CO_2 determined by weighing the ascarite tube before and after combustion
B = dry weight (g) of the unacidified sample in the combustion boat
0.2729 = the ratio of the molecular weight of carbon to the molecular weight of carbon dioxide

A silica gel trap should be placed before the ascarite tube to catch any moisture driven off during sample combustion. Additional silica gel should be placed at the exit end of the ascarite tube to trap any water that might be formed by reaction of the trapped CO_2 with the NaOH in the ascarite.

- If an elemental analyzer is used, the amount of CO_2 will be measured by a thermal conductivity detector. The instrument should be calibrated daily using an empty boat blank as the zero point and at least two standards. Standards should bracket the expected range of carbon concentrations in the samples.

QA/QC Procedures

It is critical that each sample be thoroughly homogenized in the laboratory before a subsample is taken for analysis. Laboratory homogenization should be conducted even if samples were homogenized in the field.

Dried samples should be cooled in a desiccator and held there until they are weighed. If a desiccator is not used, the sediment will accumulate ambient moisture and the sample weight will be overestimated. A color-indicating desiccant is recommended so that spent desiccant can be detected easily. Also, the seal on the desiccator should be checked periodically and, if necessary, the ground glass rims should be greased or the "O" rings should be replaced.

It is recommended that triplicate analyses be conducted on one of every 20 samples, or on one sample per batch if less than 20 samples are analyzed. A method blank should be analyzed at the same frequency as the triplicate analyses. The analytical balance should be inspected daily and calibrated at least once per week. The carbon analyzer should be calibrated daily with freshly prepared standards. A standard reference material should be analyzed at least once for each major survey.

DATA REPORTING REQUIREMENTS

Total organic carbon should be reported as a percentage of the dry weight of the unacidified sample to the nearest 0.1 unit. The laboratory should report the results of all samples (including QA replicates, method

Appendix B

APPENDIX B
SOIL SAMPLING FIELD DATA SHEETS
LACKAWANNA FOUNDRY SITE
LACKAWANNA, NEW YORK
MAY 1999

16650

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/99 Samplers: Fama, Magda Metz Chain of Custody No.:
Time: 1100 Site Name: Lackawanna Foundry REAC Task Leader: Fama
Sample Location: 1 west Fence line EPA WAM:
Work Assignment No.:

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS	
surface water	effluent	kemmerer	ponar	color Black	pH	ambient temp	
groundwater	sludge	trowel	other Spoon	odor	ORP	barometric pressure	
potable water	leachate	bucket		temp 50°F	salinity	relative humidity	
sediment	waste	auger		DO	sample depth	weather conditions	
(soil)	other	ekman		cond	tide stage		

ANALYSES TO BE PERFORMED

ORGANICS
A. halogenated & aromatic volatiles
(B. volatiles)
C. trihalomethanes
(D. pesticides/PCB)
E. PCB
(F. base neutral/acid extractables)
G. pesticides, drinking water
H. herbicides, drinking water
I. other

INORGANICS
A. metals, priority pollutant
(B. metals, TAL)
C. metals scan (ICP)
D. metals, other

RCRA
A. TCLP
B. ignitability
C. corrosivity pH
D. reactivity
E. other

OTHER ANALYSES
(A. total cynanide)
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M. other

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
(glass jar)		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other		other

STORAGE
(wet ice)
dry ice
ambient

COMMENTS

FORM #1

16651

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/96 Samplers: Fama, Metz, Maya Chain of Custody No.:
Time: 1100 Site Name: Lackawanna REAC Task Leader: Fama
Sample Location: #2 surface Middle area EPA WAM:
Work Assignment No.:

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
industrial	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color Brown			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS	
surface water	effluent	kemmerer	ponar	color Brown	pH	ambient temp 40°F	
groundwater	sludge	trowel	other Spoon	odor	ORP	barometric pressure	
potable water	leachate	bucket		temp 50°F	salinity	relative humidity 30%	
sediment	waste	auger		DO	sample depth	weather conditions	
soil	other	ekman		cond	tide stage		

ANALYSES TO BE PERFORMED

ORGANICS
A. halogenated & aromatic volatiles
B. volatiles
C. trihalomethanes
D. pesticides/PCB
E. PCB
F. base neutral/acid extractables
G. pesticides, drinking water
H. herbicides, drinking water
I. other

INORGANICS
A. metals, priority pollutant
B. metals, TAL
C. metals scan (ICP)
D. metals, other

RCRA
A. TCLP
B. ignitability
C. corrosivity pH
D. reactivity
E. other

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M. other

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO,
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na,SO,
other		other

STORAGE
wet ice
dry ice
ambient

COMMENTS

FORM #1

16652

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/96 Samplers: Fama, Nipte, Maga Chain of Custody No.: _____
Time: 1100 Site Name: Lockwood Farm REAC Task Leader: Fama
Sample Location: #20 Sub Surface EPA WAM: Campagna
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color _____	width _____	rock	silt
industrial	wooded	lowland riverine	gravel	muck	odor _____	depth _____	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow _____	velocity ___ cm/s	gravel	organic
residential	gully		silt	peat	direction _____	pools _____ %	shell	other _____
hedgerows	floodplain		color Brown			riffles _____ %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS	
surface water	effluent	kemmerer	ponar	color Brown	pH _____	ambient temp 40°F	
groundwater	sludge	trowel	other _____	odor _____	ORP _____	barometric pressure _____	
potable water	leachate	bucket		temp _____	salinity _____	relative humidity _____	
sediment	waste	auger		DO _____	sample depth ____	weather conditions _____	
soil	other _____	ekman		cond _____	tide stage _____	_____	

ANALYSES TO BE PERFORMED

ORGANICS
A. halogenated & aromatic volatiles
B. volatiles
C. trihalomethanes
D. pesticides/PCB
E. PCB
F. base neutral/acid extractables
G. pesticides, drinking water
H. herbicides, drinking water
I. other _____

INORGANICS
A. metals, priority pollutant
B. metals, TAL
C. metals scan (ICP)
D. metals, other _____

RCRA
A. TCLP
B. ignitability
C. corrosivity _____ pH ____
D. reactivity
E. other _____

OTHER ANALYSES
A. total cynamide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other _____		other _____

STORAGE
wet ice
dry ice
ambient

COMMENTS

16553

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/96 Samplers: Fama, McKie, Magda Chain of Custody No.:
Time: 1100 Site Name: Lackawanna Foundry REAC Task Leader: Fama
Sample Location: #3 West Fence EPA WAM: Compagna
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	(sand)	(loam)	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS	
surface water	effluent	kemmerer	ponar	color Black	pH	ambient temp 40°F	
groundwater	sludge	trowel	other Spoon	odor	ORP	barometric pressure	
potable water	leachate	bucket		temp 50°F	salinity	relative humidity	
sediment	waste	auger		DO	sample depth	weather conditions	
(soil)	other	ekman		cond	tide stage		

ANALYSES TO BE PERFORMED

ORGANICS
A halogenated & aromatic volatiles
(B. volatiles)
C. trihalomethanes
(D. pesticides/PCB)
E. PCB
F. base neutral/acid extractables
G pesticides, drinking water
H herbicides, drinking water
I. other _____

INORGANICS
A metals, priority pollutant
(B metals, TAL)
C metals scan (ICP)
D metals, other _____

RCRA
A TCLP
B ignitability
C corrosivity _____ pH____
D reactivity
E other _____

OTHER ANALYSES
(A. total cyanide)
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H total suspended solids
I. sulfate
J TOC
K. grain size
L. percent moisture
M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
(glass jar)		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other		other _____
_____		

STORAGE
(wet ice)
dry ice
ambient

COMMENTS

FORM #1

16654

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Chain of Custody No.: _____

Date: 4/14/96 Samplers: _____ REAC Task Leader: Fam

Site Name: Lackawanna EPA WAM: Compliance

Time: 1105 Sample Location: #4 Fancl lane Work Assignment No.: _____

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color _____	width _____	rock	silt
industrial	wooded	lowland riverine	gravel	muck	odor _____	depth _____	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow _____	velocity ___ cm/s	gravel	organic
residential	gully		silt	peat	direction _____	pools _____ %	shell	other _____
hedgerows	floodplain		color Black			riffles _____ %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color _____	pH _____	ambient temp _____
groundwater	sludge	trowel	other Spoon	odor _____	ORP _____	barometric pressure _____
potable water	leachate	bucket		temp _____	salinity _____	relative humidity _____
sediment	waste	auger		DO _____	sample depth ____	weather conditions _____
soil	other _____	ekman		cond _____	tide stage _____	_____

ANALYSES TO BE PERFORMED

ORGANICS
- A. halogenated & aromatic volatiles
- B. volatiles
- C. trihalomethanes
- D. pesticides/PCB
- E. PCB
- F. base neutral/acid extractables
- G. pesticides, drinking water
- H. herbicides, drinking water
- I. other _____

INORGANICS
- A. metals, priority pollutant
- B. metals, TAL
- C. metals scan (ICP)
- D. metals, other _____

RCRA
- A. TCLP
- B. ignitability
- C. corrosivity _____ pH____
- D. reactivity
- E. other _____

OTHER ANALYSES
- A. total cynanide
- B. total phenol
- C. petroleum hydrocarbons
- D. pH
- E. alkalinity
- F. hardness
- G. total dissolved solids
- H. total suspended solids
- I. sulfate
- J. TOC
- K. grain size
- L. percent moisture
- M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
~~plastic jar~~	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other _____		other _____

STORAGE
- wet ice
- ~~dry ice~~
- ambient

COMMENTS

FORM #1

16655

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/99 Samplers: Fama, Metz, Maja Chain of Custody No.:
Time: 1100 Site Name: Lackawanna Foundry REAC Task Leader: Fama
Sample Location: #5 Fence Line EPA WAM: Compagne
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	(sand)	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color Black			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color	pH	ambient temp
groundwater	sludge	trowel	other Spoon	odor	ORP	barometric pressure
potable water	leachate	bucket		temp	salinity	relative humidity
sediment	waste	auger		DO	sample depth	weather conditions
(soil)	other	ekman		cond	tide stage	

ANALYSES TO BE PERFORMED

ORGANICS
A. halogenated & aromatic volatiles
B volatiles
C. trihalomethanes
D. pesticides/PCB
E PCB
F base neutral/acid extractables
G. pesticides, drinking water
H herbicides, drinking water
I other _____

INORGANICS
A. metals, priority pollutant
B. metals, TAL
C. metals scan (ICP)
D. metals, other _____

RCRA
A TCLP
B. ignitability
C corrosivity _____ pH____
D reactivity
E. other _____

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other		other _____
_____		

STORAGE
wet ice
dry ice
ambient

COMMENTS

FORM #1

16656

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/96 Samplers: Fama, Metz, Magda Chain of Custody No.:
Time: 1100 Site Name: Lackawanna Foundry REAC Task Leader: Fama
Sample Location: #6 ~~Fama's Yard~~ near white shed (#7) NW EPA WAM: Compegna
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	(gravel)	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color Black			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color	pH	ambient temp
groundwater	sludge	trowel	other Spoon	odor	ORP	barometric pressure
potable water	leachate	bucket		temp	salinity	relative humidity
sediment	waste	auger		DO	sample depth	weather conditions
(soil)	other	ekman		cond	tide stage	

ANALYSES TO BE PERFORMED

ORGANICS
- A. halogenated & aromatic volatiles
- B. volatiles
- C. trihalomethanes
- D. pesticides/PCB
- E. PCB
- F. base neutral/acid extractables
- G. pesticides, drinking water
- H. herbicides, drinking water
- I. other _____

INORGANICS
- A. metals, priority pollutant
- B. metals, TAL
- C. metals scan (ICP)
- D. metals, other _____

RCRA
- A. TCLP
- B. ignitability
- C. corrosivity _____ pH____
- D. reactivity
- E. other _____

OTHER ANALYSES
- A. total cynanide
- B. total phenol
- C. petroleum hydrocarbons
- D. pH
- E. alkalinity
- F. hardness
- G. total dissolved solids
- H. total suspended solids
- I. sulfate
- J. TOC
- K. grain size
- L. percent moisture
- M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other		other

STORAGE
- wet ice
- dry ice
- ambient

COMMENTS

FORM #1

16657

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/94 Samplers: Fama, Metz, Maya Chain of Custody No.: _____
Time: 1102 Site Name: Lackawanna Foundry REAC Task Leader: Fama
Sample Location: #7 North Side center 5' away From building EPA WAM: Campagna
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color _____	width _____	rock	silt
industrial	wooded	lowland riverine	gravel	muck	odor _____	depth _____	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow _____	velocity ___ cm/s	gravel	organic
residential	gully		silt	peat	direction _____	pools _____ %	shell	other _____
hedgerows	floodplain		color Black-wet			riffles _____ %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color _____	pH _____	ambient temp _____
groundwater	sludge	trowel	other Spoon	odor _____	ORP _____	barometric pressure _____
potable water	leachate	bucket		temp _____	salinity _____	relative humidity _____
sediment	waste	auger		DO _____	sample depth ____	weather conditions _____
soil	other _____	ekman		cond _____	tide stage _____	_____

ANALYSES TO BE PERFORMED

ORGANICS
A. halogenated & aromatic volatiles
B volatiles
C. trihalomethanes
D. pesticides/PCB
E PCB
F base neutral/acid extractables
G. pesticides. drinking water
H herbicides. drinking water
I. other _____

INORGANICS
A metals. priority pollutant
B metals. TAL
C metals scan (ICP)
D metals. other _____

RCRA
A. TCLP
B ignitability
C. corrosivity _____ pH____
D reactivity
E. other _____

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other		other _____
_____		

STORAGE
wet ice
dry ice
ambient

COMMENTS

FORM #1

16658

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/99 Samplers: Fama, Mebz, Magan Chain of Custody No.: _____
Time: 1100 Site Name: Lackawanna Foundry REAC Task Leader: Fama
Sample Location: #8 North Side 6' from building EPA WAM: Compagnone
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color _____	width _____	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor _____	depth _____	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow _____	velocity ___ cm/s	gravel	organic
residential	gully		silt	peat	direction _____	pools _____ %	shell	other _____
hedgerows	floodplain		color Black			riffles _____ %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS	
surface water	effluent	kemmerer	ponar	color _____	pH _____	ambient temp	_____
groundwater	sludge	trowel	other Spoon	odor _____	ORP _____	barometric pressure	_____
potable water	leachate	bucket		temp _____	salinity _____	relative humidity	_____
sediment	waste	auger		DO _____	sample depth ____	weather conditions	_____
(soil)	other _____	ekman		cond _____	tide stage _____		_____

ANALYSES TO BE PERFORMED

ORGANICS
- A halogenated & aromatic volatiles
- B volatiles
- C. trihalomethanes
- D. pesticides/PCB
- E. PCB
- F. base neutral/acid extractables
- G. pesticides, drinking water
- H herbicides, drinking water
- I other _____

INORGANICS
- A metals, priority pollutant
- B metals, TAL
- C metals scan (ICP)
- D metals, other _____

RCRA
- A TCLP
- B ignitability
- C corrosivity _____ pH____
- D reactivity
- E other _____

OTHER ANALYSES
- A. total cynanide
- B. total phenol
- C. petroleum hydrocarbons
- D. pH
- E. alkalinity
- F. hardness
- G. total dissolved solids
- H. total suspended solids
- I. sulfate
- J. TOC
- K. grain size
- L. percent moisture
- M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO,
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na,SO,
other _____		other _____

STORAGE
- wet ice
- dry ice
- ambient

COMMENTS

FORM #1

16559

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/06 Samplers: Fama, Metz, Majka Chain of Custody No.: _____
Time: 1100 Site Name: Lackawanna Foundry REAC Task Leader: Fama
Sample Location: #9 North side middle courtyard EPA WAM: Compajka
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color _____	width _____	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor _____	depth _____	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow _____	velocity ___ cm/s	gravel	organic
residential	gully		(silt)	peat	direction _____	pools _____ %	shell	other _____
hedgerows	floodplain		color Black			riffles _____ %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color _____	pH _____	ambient temp _____
groundwater	sludge	trowel	other Spoon	odor _____	ORP _____	barometric pressure _____
potable water	leachate	bucket		temp _____	salinity _____	relative humidity _____
sediment	waste	auger		DO _____	sample depth ____	weather conditions _____
(soil)	other _____	ekman		cond _____	tide stage _____	_____

ANALYSES TO BE PERFORMED

ORGANICS
A halogenated & aromatic volatiles
B volatiles
C. trihalomethanes
D pesticides/PCB
E PCB
F base neutral/acid extractables
G pesticides, drinking water
H herbicides drinking water
I other _____

INORGANICS
A metals, priority pollutant
B metals, TAL
C metals scan (ICP)
D metals, other _____

RCRA
A TCLP
B ignitability
C corrosivity _____ pH ____
D reactivity
E other _____

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other		other _____
_____		

STORAGE
wet ice
dry ice
ambient

COMMENTS

FORM #1

16660

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/4/96 Samplers: Fama, Metz, Magan Chain of Custody No.:
Time: 1100 Site Name: Lackawanna Foundry uppin REAC Task Leader: Fama
Sample Location: #10 inside building northtaren EPA WAM: Compagna
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
industrial	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color Black			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color	pH	ambient temp
groundwater	sludge	trowel	other	odor	ORP	barometric pressure
potable water	leachate	bucket		temp	salinity	relative humidity
sediment	waste	auger		DO	sample depth	weather conditions
soil	other Composite	ekman		cond	tide stage	

ANALYSES TO BE PERFORMED

ORGANICS
- A halogenated & aromatic volatiles
- B volatiles
- C trihalomethanes
- D. pesticides/PCB
- E. PCB
- F base neutral/acid extractables
- G. pesticides, drinking water
- H herbicides, drinking water
- I other _____

INORGANICS
- A metals, priority pollutant
- B. metals, TAL
- C metals scan (ICP)
- D metals, other _____

RCRA
- A. TCLP
- B ignitability
- C corrosivity _____ pH____
- D. reactivity
- E. other _____

OTHER ANALYSES
- A. total cynanide
- B. total phenol
- C. petroleum hydrocarbons
- D. pH
- E. alkalinity
- F. hardness
- G. total dissolved solids
- H. total suspended solids
- I. sulfate
- J. TOC
- K. grain size
- L. percent moisture
- M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other _____		other _____

STORAGE
- wet ice
- dry ice
- ambient

COMMENTS

FORM # 1

16661

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/94 Samplers: Metz
Site Name: Lackawanna Foundry
Time: 1100 Sample Location: #11 inside SW Area under Conveyor Belt

Chain of Custody No.:
REAC Task Leader: Fama
EPA WAM: Campagna
Work Assignment No.: 3-43C

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color Black			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color	pH	ambient temp
groundwater	sludge	(trowel)	other	odor	ORP	barometric pressure
potable water	leachate	bucket		temp	salinity	relative humidity
(sediment)	waste	auger		DO	sample depth	weather conditions
soil	other Composite	ekman		cond	tide stage	

ANALYSES TO BE PERFORMED

ORGANICS
A halogenated & aromatic volatiles
B volatiles
C trihalomethanes
D pesticides/PCB
E PCB
F. base neutral/acid extractables
G pesticides, drinking water
H herbicides, drinking water
I other _____

INORGANICS
A metals, priority pollutant
B metals, TAL
C metals scan (ICP)
D metals, other _____

RCRA
A TCLP
B ignitability
C corrosivity _____ pH____
D reactivity
E other _____

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other		other

STORAGE
wet ice
dry ice
ambient

COMMENTS under conveyor belt

FORM #1

16662

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/95 Samplers: Metz
Time: 1100 Site Name: Locke Lumma Foundry
Sample Location: #12 SE Low area

Chain of Custody No.:
REAC Task Leader: Famc
EPA WAM: Campagna
Work Assignment No.: 3-439

SITE DESCRIPTION

landfill, industrial, commercial, residential, hedgerows
old field, wooded, farmland, gully, floodplain
upland palustrine, lowland riverine, lacustrine

SOIL TYPE

rock, clay, gravel, muck, sand, loam, silt, peat
color Black-wet

SURFACE WATER

color ____
odor ____
flow ____
direction ____

STREAM

width ____
depth ____
velocity ___ cm/s
pools ____ %
riffles ____ %

BOTTOM

rock, silt, rubble, clay, gravel, organic, shell, other ____, sand

SAMPLE TYPE

surface water, effluent, groundwater, sludge, potable water, leachate, sediment, waste, soil, other Composite

DEVICE

kemmerer, ponar, trowel, other ____, bucket, auger, ekman

SAMPLE INFORMATION

color ____ pH ____
odor ____ ORP ____
temp ____ salinity ____
DO ____ sample depth ____
cond ____ tide stage ____

WEATHER PARAMETERS

ambient temp ____
barometric pressure ____
relative humidity ____
weather conditions ____

ANALYSES TO BE PERFORMED

ORGANICS
A halogenated & aromatic volatiles
B volatiles
C. trihalomethanes
D pesticides/PCB
E PCB
F base neutral/acid extractables
G pesticides, drinking water
H herbicides, drinking water
I other ____

INORGANICS
A metals, priority pollutant
B metals, TAL
C metals scan (ICP)
D metals, other ____

RCRA
A TCLP
B ignitability
C corrosivity ____ pH ____
D reactivity
E other ____

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M. other ____

SAMPLE PREPARATION

CONTAINER
glass jar
plastic jar
acetate core
plastic bag
plastic bucket
other ____

PRESERVATIVES
HNO_3
NaOH
Zn Acetate
HCl
Na_2SO_4
other ____

STORAGE
wet ice
dry ice
ambient

COMMENTS

16663

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/96 Samplers: Metz
Time: 1100 Site Name: Lackawanna Foundry
Sample Location: #13 SE under stack

Chain of Custody No.:
REAC Task Leader: Farms
EPA WAM: Campagna
Work Assignment No.: 3-439

SITE DESCRIPTION
landfill, old field, upland palustrine
industrial, wooded, lowland riverine
commercial, farmland, lacustrine
residential, gully
hedgerows, floodplain

SOIL TYPE
rock, clay
gravel, muck
sand, loam
silt, peat
color Black + Lt Brn

SURFACE WATER
color
odor
flow
direction

STREAM
width
depth
velocity cm/s
pools %
riffles %

BOTTOM
rock, silt
rubble, clay
gravel, organic
shell, other
sand

SAMPLE TYPE
surface water, effluent
groundwater, sludge
potable water, leachate
sediment, waste
soil, other Comp. HP

DEVICE
kemmerer, ponar
trowel, other
bucket
auger
ekman

SAMPLE INFORMATION
color, pH
odor, ORP
temp, salinity
DO, sample depth
cond, tide stage

WEATHER PARAMETERS
ambient temp
barometric pressure
relative humidity
weather conditions

ANALYSES TO BE PERFORMED

ORGANICS
A. halogenated & aromatic volatiles
B. volatiles
C. trihalomethanes
D. pesticides/PCB
E. PCB
F. base neutral/acid extractables
G. pesticides, drinking water
H. herbicides, drinking water
I. other

INORGANICS
A. metals, priority pollutant
B. metals, TAL
C. metals scan (ICP)
D. metals, other

RCRA
A. TCLP
B. ignitability
C. corrosivity pH
D. reactivity
E. other

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M. other

SAMPLE PREPARATION

CONTAINER
glass jar
plastic jar
acetate core
plastic bag
plastic bucket
other

PRESERVATIVES
HNO_3
NaOH
Zn Acetate
HCl
Na_2SO_4
other

STORAGE
wet ice
dry ice
ambient

COMMENTS

FORM #1

16664

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/99 Samplers: Fama Metz, Magan Chain of Custody No.:
Time: 1100 Site Name: Lackawanna Foundry REAC Task Leader: Fama
Sample Location: #14 low muddy driveway area EPA WAM: Campagna
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color black-wet			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color	pH	ambient temp
groundwater	sludge	trowel	other spoon	odor	ORP	barometric pressure
potable water	leachate	bucket		temp	salinity	relative humidity
sediment	waste	auger		DO	sample depth	weather conditions
(soil)	other	ekman		cond	tide stage	

ANALYSES TO BE PERFORMED

ORGANICS
A halogenated & aromatic volatiles
B. volatiles
C. trihalomethanes
D pesticides/PCB
E. PCB
F base neutral/acid extractables
G. pesticides, drinking water
H. herbicides, drinking water
I other _____

INORGANICS
A metals, priority pollutant
B metals, TAL
C metals scan (ICP)
D metals, other _____

RCRA
A TCLP
B. ignitability
C. corrosivity _____ pH____
D reactivity
E. other _____

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other _____		other _____

STORAGE
wet ice
dry ice
ambient

COMMENTS South of Fence

FORM #1

16655

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/99 Samplers: Fama, Metz, Maglen Chain of Custody No.:

Time: 1100 Site Name: Lackawanna Foundry REAC Task Leader: Fama

Sample Location: ~~#14~~ #15 Eastgrey Matrix EPA WAM: Campagna

Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color grey-Brown			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color	pH	ambient temp
groundwater	sludge	trowel	other Spoon	odor	ORP	barometric pressure
potable water	leachate	bucket		temp	salinity	relative humidity
(sediment)	waste	auger		DO	sample depth	weather conditions
soil	other	ekman		cond	tide stage	

ANALYSES TO BE PERFORMED

ORGANICS
- A halogenated & aromatic volatiles
- B volatiles
- C trihalomethanes
- D. pesticides/PCB
- E. PCB
- F base neutral/acid extractables
- G. pesticides, drinking water
- H herbicides, drinking water
- I other _____

INORGANICS
- A metals, priority pollutant
- B. metals, TAL
- C metals scan (ICP)
- D metals, other _____

RCRA
- A TCLP
- B. ignitability
- C corrosivity _____ pH____
- D reactivity
- E other _____

OTHER ANALYSES
- A. total cynanide
- B. total phenol
- C. petroleum hydrocarbons
- D. pH
- E. alkalinity
- F hardness
- G. total dissolved solids
- H. total suspended solids
- I. sulfate
- J. TOC
- K. grain size
- L percent moisture
- M other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other _____		other _____

STORAGE
- wet ice
- dry ice
- ambient

COMMENTS NE of buildings

FORM #1

16666

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 1/14/99 Samplers: Fama, Moya, Metz
Time: 1105 Site Name: Lackawanna Foundry
Sample Location: #16 SWQ East Pile
Chain of Custody No.:
REAC Task Leader: Fama
EPA WAM: Company
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	(sand)	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color Brown			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS	
surface water	effluent	kemmerer	ponar	color	pH	ambient temp	
groundwater	sludge	trowel	other Spoon	odor	ORP	barometric pressure	
potable water	leachate	bucket		temp	salinity	relative humidity	
sediment	waste	auger		DO	sample depth	weather conditions	
(soil)	other	ekman		cond	tide stage		

ANALYSES TO BE PERFORMED

ORGANICS
A halogenated & aromatic volatiles
B volatiles
C trihalomethanes
D. pesticides/PCB
E PCB
F base neutral/acid extractables
G. pesticides, drinking water
H herbicides, drinking water
I. other _____

INORGANICS
A. metals, priority pollutant
B metals, TAL
C metals scan (ICP)
D metals, other _____

RCRA
A TCLP
B. ignitability
C corrosivity _____ pH____
D. reactivity
E. other _____

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J TOC
K. grain size
L. percent moisture
M other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other		other _____

STORAGE
(wet ice)
dry ice
ambient

COMMENTS South west corner of east pit

FORM #1

16667

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 1/14/96 Samplers: Fama, Metz, Megan Chain of Custody No.:
Time: 1120 Site Name: Lackawanna Foundry REAC Task Leader: Fama
Sample Location: #17 SE Corner gw pile EPA WAM: Campagna
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	(sand)	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color Brown			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color	pH	ambient temp
groundwater	sludge	trowel	other Spoon	odor	ORP	barometric pressure
potable water	leachate	bucket		temp	salinity	relative humidity
sediment	waste	auger		DO	sample depth	weather conditions
(soil)	other	ekman		cond	tide stage	

ANALYSES TO BE PERFORMED

ORGANICS
A halogenated & aromatic volatiles
B. volatiles
C trihalomethanes
D pesticides/PCB
E. PCB
F. base neutral/acid extractables
G pesticides, drinking water
H herbicides, drinking water
I other _____

INORGANICS
A metals, priority pollutant
B metals, TAL
C metals scan (ICP)
D metals, other _____

RCRA
A TCLP
B ignitability
C corrosivity _____ pH____
D reactivity
E other _____

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J TOC
K. grain size
L. percent moisture
M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other		other

STORAGE
wet ice
dry ice
ambient

COMMENTS Southeast corner west pile

FORM #1

16668

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/98 Samplers: Fann, Metz, Magan Chain of Custody No.: _____
Time: 1100 Site Name: Lackawanna REAC Task Leader: Fann
Sample Location: #18 east side of east pile EPA WAM: Campagne
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color _____	width _____	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor _____	depth _____	rubble	clay
commercial	farmland	lacustrine	(sand)	loam	flow _____	velocity ___ cm/s	gravel	organic
residential	gully		silt	peat	direction _____	pools _____%	shell	other _____
hedgerows	floodplain		color Brown			riffles _____%	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color _____	pH _____	ambient temp _____
groundwater	sludge	trowel	other Spoon	odor _____	ORP _____	barometric pressure _____
potable water	leachate	bucket		temp _____	salinity _____	relative humidity _____
sediment	waste	auger		DO _____	sample depth ____	weather conditions _____
(soil)	other _____	ekman		cond _____	tide stage _____	_____

ANALYSES TO BE PERFORMED

ORGANICS
- A. halogenated & aromatic volatiles
- B. volatiles
- C. trihalomethanes
- D. pesticides/PCB
- E. PCB
- F. base neutral/acid extractables
- G. pesticides, drinking water
- H. herbicides, drinking water
- I. other _____

INORGANICS
- A. metals, priority pollutant
- B. metals, TAL
- C. metals scan (ICP)
- D. metals, other _____

RCRA
- A. TCLP
- B. ignitability
- C. corrosivity _____ pH____
- D. reactivity
- E. other _____

OTHER ANALYSES
- A. total cynanide
- B. total phenol
- C. petroleum hydrocarbons
- D. pH
- E. alkalinity
- F. hardness
- G. total dissolved solids
- H. total suspended solids
- I. sulfate
- J. TOC
- K. grain size
- L. percent moisture
- M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_3
other _____		other _____

STORAGE
- wet ice
- dry ice
- ambient

COMMENTS east side of east pile

FORM #1

16659

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 7/14/98 Samplers: Fama, Metz, Magee Chain of Custody No.:
Site Name: Lackawanna Foundry REAC Task Leader: Fama
Time: 1105 Sample Location: ~~#~~ A center west side of East pile EPA WAM: Compagna
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	(sand)	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color Red-Brown			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color	pH	ambient temp
groundwater	sludge	trowel	other Spoon	odor	ORP	barometric pressure
potable water	leachate	bucket		temp	salinity	relative humidity
sediment	waste	auger		DO	sample depth	weather conditions
(soil)	other	ekman		cond	tide stage	

ANALYSES TO BE PERFORMED

ORGANICS
- A halogenated & aromatic volatiles
- B volatiles
- C trihalomethanes
- D. pesticides/PCB
- E PCB
- F. base neutral/acid extractables
- G pesticides, drinking water
- H herbicides, drinking water
- I other _____

INORGANICS
- A metals, priority pollutant
- B metals, TAL
- C metals scan (ICP)
- D metals, other _____

RCRA
- A TCLP
- B ignitability
- C corrosivity _____ pH____
- D reactivity
- E. other _____

OTHER ANALYSES
- A. total cynanide
- B. total phenol
- C. petroleum hydrocarbons
- D. pH
- E. alkalinity
- F. hardness
- G. total dissolved solids
- H. total suspended solids
- I. sulfate
- J TOC
- K grain size
- L percent moisture
- M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO,
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na,SO,
other _____		other _____

STORAGE
- wet ice
- dry ice
- ambient

COMMENTS Center west side of East pile

FORM #1

1667U

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/96 Samplers: Fama, Metz, Magan Chain of Custody No.: _____
Time: 1100 Site Name: Lackawanna Foundry REAC Task Leader: Fama
Sample Location: #20 North corner west pile EPA WAM: Compagne
Work Assignment No.: 3-439

SITE DESCRIPTION
landfill, industrial, commercial, residential, hedgerows; old field, wooded, farmland, gully, floodplain; upland palustrine, lowland riverine, lacustrine

SOIL TYPE
rock, clay, gravel, muck, sand, loam, silt, peat
color Brown

SURFACE WATER
color _____
odor _____
flow _____
direction _____

STREAM
width _____
depth _____
velocity ___ cm/s
pools _____%
riffles _____%

BOTTOM
rock, silt, rubble, clay, gravel, organic, shell, other _____, sand

SAMPLE TYPE
surface water, effluent, groundwater, sludge, potable water, leachate, sediment, waste, soil, other _____

DEVICE
kemmerer, ponar, trowel, other spoon, bucket, auger, ekman

SAMPLE INFORMATION
color _____ pH _____
odor _____ ORP _____
temp _____ salinity _____
DO _____ sample depth ____
cond _____ tide stage _____

WEATHER PARAMETERS
ambient temp _____
barometric pressure _____
relative humidity _____
weather conditions _____

ANALYSES TO BE PERFORMED

ORGANICS
A. halogenated & aromatic volatiles
B volatiles
C. trihalomethanes
D. pesticides/PCB
E. PCB
F base neutral/acid extractables
G. pesticides, drinking water
H herbicides, drinking water
I other _____

INORGANICS
A metals, priority pollutant
B metals TAL
C metals scan (ICP)
D metals, other _____

RCRA
A TCLP
B. ignitability
C corrosivity _____ pH____
D reactivity
E other _____

OTHER ANALYSES
A. total cynanide
B total phenol
C. petroleum hydrocarbons
D. pH
E alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M other _____

SAMPLE PREPARATION

CONTAINER
glass jar
plastic jar
acetate core
plastic bag
plastic bucket
other _____

PRESERVATIVES
HNO,
NaOH
Zn Acetate
HCl
Na,SO,
other _____

STORAGE
wet ice
dry ice
ambient

COMMENTS north corner of west pile

FORM #1

16671

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/06 Samplers: Fama, Mehr, Megan
Time: 1100 Site Name: Lackawanna
Sample Location: #21 Center pond area

Chain of Custody No.:
REAC Task Leader: Fama
EPA WAM: Campagna
Work Assignment No.: 3-439

SITE DESCRIPTION
landfill, industrial, commercial, residential, hedgerows, old field, wooded, farmland, gully, floodplain, upland palustrine, lowland riverine, lacustrine

SOIL TYPE
rock, clay, gravel, muck, sand, loam, silt, peat
color Black

SURFACE WATER
color ____
odor ____
flow ____
direction ____

STREAM
width ____
depth ____
velocity ___ cm/s
pools ____%
riffles ____%

BOTTOM
rock, silt, rubble, clay, gravel, organic, shell, other ____, sand

SAMPLE TYPE
surface water, effluent, groundwater, sludge, potable water, leachate, sediment, waste, soil, other ____

DEVICE
kemmerer, ponar, trowel, other ____, bucket, auger, ekman

SAMPLE INFORMATION
color ____ pH ____
odor ____ ORP ____
temp ____ salinity ____
DO ____ sample depth ____
cond ____ tide stage ____

WEATHER PARAMETERS
ambient temp ____
barometric pressure ____
relative humidity ____
weather conditions ____

ANALYSES TO BE PERFORMED

ORGANICS
A. halogenated & aromatic volatiles
B volatiles
C trihalomethanes
D pesticides/PCB
E PCB
F. base neutral/acid extractables
G pesticides, drinking water
H herbicides, drinking water
I other ____

INORGANICS
A metals, priority pollutant
B metals, TAL
C metals scan (ICP)
D metals, other ____

RCRA
A TCLP
B ignitability
C corrosivity ____ pH ____
D reactivity
E other ____

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M. other ____

SAMPLE PREPARATION

CONTAINER
glass jar
plastic jar
acetate core
plastic bag
plastic bucket
other ____

PRESERVATIVES
HNO,
NaOH
Zn Acetate
HCl
Na,SO,
other ____

STORAGE
wet ice
dry ice
ambient

COMMENTS

16672

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 7/14/98 Samplers: Fama, Metz, Majan Chain of Custody No.:
Time: 1100 Site Name: Lackawanna REAC Task Leader: Fama
Sample Location: #22 12 Southey buildings EPA WAM: Campagna
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color Black			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color	pH	ambient temp
groundwater	sludge	trowel	other Spoon	odor	ORP	barometric pressure
potable water	leachate	bucket		temp	salinity	relative humidity
sediment	waste	auger		DO	sample depth	weather conditions
(soil)	other	ekman		cond	tide stage	

ANALYSES TO BE PERFORMED

ORGANICS
A. halogenated & aromatic volatiles
B volatiles
C trihalomethanes
D. pesticides/PCB
E PCB
F base neutral/acid extractables
G. pesticides, drinking water
H herbicides, drinking water
I other _____

INORGANICS
A metals, priority pollutant
B. metals, TAL
C metals scan (ICP)
D metals, other _____

RCRA
A TCLP
B ignitability
C corrosivity _____ pH____
D reactivity
E other _____

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H total suspended solids
I. sulfate
J. TOC
K grain size
L. percent moisture
M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other		other _____
_____		

STORAGE
wet ice
dry ice
ambient

COMMENTS

16673

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 9/14/99 Samplers: Fama, Magda Chain of Custody No.: _____
Time: 1100 Site Name: Lackawanna REAC Task Leader: Fama
Sample Location: #23 12' Southwest of building EPA WAM: Campagna
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color _____	width _____	rock	silt
industrial	wooded	lowland riverine	gravel	muck	odor _____	depth _____	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow _____	velocity ___ cm/s	gravel	organic
residential	gully		silt	peat	direction _____	pools _____ %	shell	other _____
hedgerows	floodplain		color Brown			riffles _____ %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color _____	pH _____	ambient temp _____
groundwater	sludge	trowel	other Spoon	odor _____	ORP _____	barometric pressure _____
potable water	leachate	bucket		temp _____	salinity _____	relative humidity _____
sediment	waste	auger		DO _____	sample depth ____	weather conditions _____
soil	other _____	ekman		cond _____	tide stage _____	_____

ANALYSES TO BE PERFORMED

ORGANICS
- A halogenated & aromatic volatiles
- B volatiles
- C. trihalomethanes
- D pesticides/PCB
- E PCB
- F. base neutral/acid extractables
- G. pesticides, drinking water
- H herbicides, drinking water
- I other _____

INORGANICS
- A metals, priority pollutant
- B metals, TAL
- C metals scan (ICP)
- D metals, other _____

RCRA
- A TCLP
- B. ignitability
- C corrosivity _____ pH____
- D reactivity
- E other _____

OTHER ANALYSES
- A. total cynanide
- B. total phenol
- C. petroleum hydrocarbons
- D. pH
- E. alkalinity
- F. hardness
- G. total dissolved solids
- H. total suspended solids
- I. sulfate
- J. TOC
- K. grain size
- L. percent moisture
- M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other _____		other _____

STORAGE
- wet ice
- dry ice
- ambient

COMMENTS 12' South of west side of bulding

FORM #1

16674

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/96 Samplers: Fame, Magan Chain of Custody No.:
Time: 1100 Site Name: Lackawanna Foundry REAC Task Leader: Fame
Sample Location: #24 5' from Southwest Corner EPA WAM: Campaign
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color Black			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color	pH	ambient temp
groundwater	sludge	trowel	other Spoon	odor	ORP	barometric pressure
potable water	leachate	bucket		temp	salinity	relative humidity
sediment	waste	auger		DO	sample depth	weather conditions
(soil)	other	ekman		cond	tide stage	

ANALYSES TO BE PERFORMED

ORGANICS
A halogenated & aromatic volatiles
B volatiles
C. trihalomethanes
D pesticides/PCB
E PCB
F. base neutral/acid extractables
G pesticides, drinking water
H herbicides drinking water
I other

INORGANICS
A metals, priority pollutant
B metals, TAL
C metals scan (ICP)
D metals, other

RCRA
A TCLP
B ignitability
C. corrosivity pH
D reactivity
E other

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M. other

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other		other

STORAGE
wet ice
dry ice
ambient

COMMENTS 5' from southwest corner of building

FORM #1

16675

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/99 Samplers: Fama, Majan
Time: 1105 Site Name: Lackawanna Foundry
Sample Location: #25 surface South of building
Chain of Custody No.:
REAC Task Leader: Fama
EPA WAM: Compagna
Work Assignment No.: 7-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
industrial	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color Black			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color	pH	ambient temp
groundwater	sludge	trowel	other	odor	ORP	barometric pressure
potable water	leachate	bucket		temp	salinity	relative humidity
sediment	waste	auger		DO	sample depth	weather conditions
soil	other	ekman		cond	tide stage	

ANALYSES TO BE PERFORMED

ORGANICS
A halogenated & aromatic volatiles
B volatiles
C. trihalomethanes
D. pesticides/PCB
E PCB
F. base neutral/acid extractables
G. pesticides, drinking water
H herbicides, drinking water
I other _____

INORGANICS
A metals, priority pollutant
B. metals, TAL
C metals scan (ICP)
D metals, other _____

RCRA
A TCLP
B ignitability
C. corrosivity _____ pH____
D. reactivity
E. other _____

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I sulfate
J. TOC
K. grain size
L. percent moisture
M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other		other

STORAGE
wet ice
dry ice
ambient

COMMENTS (1) 12' South of Building on South west side

FORM #1

16676

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/99 Samplers: Fama, Megan Chain of Custody No.:
Time: 1100 Site Name: Lackawanna Foundry REAC Task Leader: Fama
Sample Location: #250 Subsurface South of bldg EPA WAM: Compagna
Work Assignment No.: 1-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color Black			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color	pH	ambient temp
groundwater	sludge	trowel	other	odor	ORP	barometric pressure
potable water	leachate	bucket		temp	salinity	relative humidity
sediment	waste	(auger)		DO	sample depth	weather conditions
(soil)	other	ekman		cond	tide stage	

ANALYSES TO BE PERFORMED

ORGANICS
- A. halogenated & aromatic volatiles
- B. volatiles
- C. trihalomethanes
- D. pesticides/PCB
- E. PCB
- F. base neutral/acid extractables
- G. pesticides, drinking water
- H herbicides, drinking water
- I. other _____

INORGANICS
- A metals, priority pollutant
- B metals, TAL
- C metals scan (ICP)
- D metals, other _____

RCRA
- A TCLP
- B ignitability
- C. corrosivity _____ pH____
- D reactivity
- E. other _____

OTHER ANALYSES
- A. total cynanide
- B. total phenol
- C. petroleum hydrocarbons
- D. pH
- E. alkalinity
- F. hardness
- G. total dissolved solids
- H. total suspended solids
- I. sulfate
- J. TOC
- K. grain size
- L. percent moisture
- M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other _____		other _____

STORAGE
- wet ice
- dry ice
- ambient

COMMENTS 12' South of building on South west side

FORM #1

16671

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/95 Samplers: Fama, Magan Chain of Custody No.:
Time: 1100 Site Name: Lackawanna REAC Task Leader: Fama
Sample Location: #26 Surface 12' South of building EPA WAM: Campaign
Work Assignment No.:

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color	pH	ambient temp
groundwater	sludge	trowel	other Spoon	odor	ORP	barometric pressure
potable water	leachate	bucket		temp	salinity	relative humidity
sediment	waste	auger		DO	sample depth	weather conditions
(soil)	other	ekman		cond	tide stage	

ANALYSES TO BE PERFORMED

ORGANICS
- A. halogenated & aromatic volatiles
- B volatiles
- C trihalomethanes
- D pesticides/PCB
- E. PCB
- F. base neutral/acid extractables
- G pesticides, drinking water
- H herbicides, drinking water
- I other _____

INORGANICS
- A metals, priority pollutant
- B metals, TAL
- C metals scan (ICP)
- D metals, other _____

RCRA
- A TCLP
- B ignitability
- C corrosivity _____ pH____
- D reactivity
- E other _____

OTHER ANALYSES
- A. total cynanide
- B. total phenol
- C. petroleum hydrocarbons
- D. pH
- E. alkalinity
- F. hardness
- G. total dissolved solids
- H. total suspended solids
- I. sulfate
- J. TOC
- K. grain size
- L. percent moisture
- M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other		other
_____		

STORAGE
- wet ice
- dry ice
- ambient

COMMENTS 12' South of Southeast Section of building

FORM #1

16678

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 9/14/96 Samplers: Fame, Megan
Time: 1100 Site Name: Jackawanna Foundry
Sample Location: #26 Subsurface

Chain of Custody No.:
REAC Task Leader: Fame
EPA WAM: Compagna
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color Black			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color	pH	ambient temp
groundwater	sludge	trowel	other	odor	ORP	barometric pressure
potable water	leachate	bucket		temp	salinity	relative humidity
sediment	waste	(auger)		DO	sample depth	weather conditions
(soil)	other	ekman		cond	tide stage	

ANALYSES TO BE PERFORMED

ORGANICS
- A halogenated & aromatic volatiles
- B volatiles
- C. trihalomethanes
- D pesticides/PCB
- E. PCB
- F. base neutral/acid extractables
- G. pesticides, drinking water
- H herbicides, drinking water
- I other

INORGANICS
- A. metals, priority pollutant
- B metals, TAL
- C metals scan (ICP)
- D. metals other

RCRA
- A TCLP
- B. ignitability
- C. corrosivity pH
- D. reactivity
- E other

OTHER ANALYSES
- A. total cynanide
- B. total phenol
- C. petroleum hydrocarbons
- D pH
- E alkalinity
- F hardness
- G. total dissolved solids
- H total suspended solids
- I. sulfate
- J TOC
- K grain size
- L. percent moisture
- M other

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO,
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na,SO,
other		other

STORAGE
- (wet ice)
- dry ice
- ambient

COMMENTS
12' South of Southeast section of building

FORM-I

16679

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Date: 4/14/00 Samplers: Fama, Metz Chain of Custody No.:
Time: 1100 Site Name: Lackawanna Foundry REAC Task Leader: Fama
Sample Location: #27 Composite east wing inside EPA WAM: Campana
Work Assignment No.: 3-439

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	width	rock	silt
(industrial)	wooded	lowland riverine	gravel	muck	odor	depth	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow	velocity cm/s	gravel	organic
residential	gully		silt	peat	direction	pools %	shell	other
hedgerows	floodplain		color			riffles %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS	
surface water	effluent	kemmerer	ponar	color	pH	ambient temp	
groundwater	sludge	(trowel)	other	odor	ORP	barometric pressure	
potable water	leachate	bucket		temp	salinity	relative humidity	
(sediment)	waste	auger		DO	sample depth	weather conditions	
soil	other Composite	ekman		cond	tide stage		

ANALYSES TO BE PERFORMED

ORGANICS
A halogenated & aromatic volatiles
B volatiles
C trihalomethanes
D pesticides/PCB
E PCB
F base neutral/acid extractables
G pesticides, drinking water
H herbicides, drinking water
I other _____

INORGANICS
A metals, priority pollutant
B metals, TAL
C metals scan (ICP)
D metals, other _____

RCRA
A TCLP
B ignitability
C corrosivity _____ pH____
D reactivity
E other _____

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO_3
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na_2SO_4
other _____		other _____

STORAGE
(wet ice)
dry ice
ambient

COMMENTS

FORM #1

16680

FIELD DATA SHEET

REAC, EDISON, NJ
(908) 321-4200
EPA CONTRACT 68-C4-0022

Chain of Custody No.: _____
REAC Task Leader: Famc
EPA WAM: Compass
Work Assignment No.: 3-439

Date: 4/14/99 Samplers: _____
Site Name: Lackawanna Foundry
Time: _____ Sample Location: Field Blank/Trip Blank (VOC)

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color _____	width _____	rock	silt
industrial	wooded	lowland riverine	gravel	muck	odor _____	depth _____	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow _____	velocity ___ cm/s	gravel	organic
residential	gully		silt	peat	direction _____	pools _____ %	shell	other _____
hedgerows	floodplain		color _____			riffles _____ %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
surface water	effluent	kemmerer	ponar	color _____	pH _____	ambient temp _____
groundwater	sludge	trowel	other _____	odor _____	ORP _____	barometric pressure _____
potable water	leachate	bucket		temp _____	salinity _____	relative humidity _____
sediment	waste	auger		DO _____	sample depth _____	weather conditions _____
soil	other Sand	ekman		cond _____	tide stage _____	_____

ANALYSES TO BE PERFORMED

ORGANICS
A. halogenated & aromatic volatiles
B. volatiles
C. trihalomethanes
D. pesticides/PCB
E. PCB
F. base neutral/acid extractables
G. pesticides, drinking water
H. herbicides, drinking water
I. other _____

INORGANICS
A. metals, priority pollutant
B. metals, TAL
C. metals scan (ICP)
D. metals, other _____

RCRA
A. TCLP
B. ignitability
C. corrosivity _____ pH ____
D. reactivity
E. other _____

OTHER ANALYSES
A. total cynanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate
J. TOC
K. grain size
L. percent moisture
M. other _____

SAMPLE PREPARATION

CONTAINER		PRESERVATIVES
glass jar		HNO,
plastic jar	NaOH	
acetate core		Zn Acetate
plastic bag		HCl
plastic bucket		Na,SO,
other _____		other _____

STORAGE
wet ice
dry ice
ambient

COMMENTS Field Blank (VOC) A 16180
Trip Blank (VOC) B 16630

FORM #1

Appendix C

APPENDIX C
CHAIN OF CUSTODY RECORDS
LACKAWANNA FOUNDRY SITE
LACKAWANNA, NEW YORK
MAY 1999

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: Lackawanna Foundry Site
Project Number: 03347-148-001-3439-01
RFW Contact: John Fan/Jane Phone: 732-321-4200

No: 06909

SHEET NO 2 OF 3

Sample Identification / Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA PEST/PCB	VOC	TAL Metals	
	C16656	6 NEAR ENTRANCE	S	4/14/96	1	4oz/4°C			✓	
	A16657	7	|	|	|	8oz/4°C	✓			
	B16657	7	|	|	|	40ml/4°C		✓		
	C16657	7	|	|	|	4oz/4°C			✓	
	A16658	8	|	|	|	8oz/4°C	✓			
	B16658	8	|	|	|	40ml/4°C		✓		
	C16658	8	|	|	|	4oz/4°C			✓	
	A16659	9	|	|	|	8oz/4°C	✓			
	B16659	9	|	|	|	40ml/4°C		✓		
	C16659	9	|	|	|	4oz/4°C			✓	
	A16660	10	|	|	|	8oz/4°C	✓			
(#)	B16660	10	|	|	|	40ml/4°C		✓		
	C16660	10	|	|	|	4oz/4°C			✓	
	A16661	11	|	|	|	8oz/4°C	✓			
	B16661	11	|	|	|	40ml/4°C		✓		
	C16661	11	|	|	|	4oz/4°C			✓	
	A16662	12	|	|	|	8oz/4°C	✓			
	B16662	12	|	|	|	40ml/4°C		✓		
	C16662	12	|	|	|	4oz/4°C			✓	
	A16663	13	✓	✓	✓	8oz/4°C	✓			

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions: Lab to select MS/MSD

BNA - Base neutral/acid extractable
PEST - pesticides
PCB - Polychlorinated biphenyls
VOC - volatile organic compounds

oz - ounces
ml - milliliters
°C - degrees celsius

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
all analysis	[signature]	4/14/96									

FORM #4

8/94

(000) 021-7200
EPA Contract 68-C4-0022

Project Name: Lake Ivanhoe Landfill Site
Project Number: 03-47-143-01-3439-01
RFW Contact: Johnson/Fama Phone: 732-321-4200

No: 06908
SHEET NO. 1 OF 3

Sample Identification / Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA, PEST, PCB	VOC	TALME lab's	
A	16650	1 west Fence	S	4/14/99	1	8oz / 4°C	✓			
B	16650	1 west Fence	S	4/14/99	1	40ml / 4°C		✓		
C	16650	1 west Fence	S	4/14/99	1	4oz / 4°C			✓	
A	16651	2 Surface Middle	S	4/14/99	1	8oz / 4°C	✓			
B	16651	2 Surface Middle	S	4/14/99	1	40ml / 4°C		✓		
C	16651	2 Surface Middle	S	4/14/99	1	4oz / 4°C			✓	
A	16652	2D Middle	S	4/14/99	1	8oz / 4°C	✓			
B	16652	2D Middle				40ml / 4°C		✓		
C	16652	2D Middle				4oz / 4°C			✓	
A	16653	3 west Fence				8oz / 4°C	✓			
B	16653	3 west Fence				40ml / 4°C		✓		
C	16653	3 west Fence				4oz / 4°C			✓	
A	16654	4 west Fence				8oz / 4°C	✓			
B	16654 (MS)	4 west Fence				40ml / 4°C		✓		
C	16654	4 west Fence				4oz / 4°C			✓	
A	16655	5 west Fence				8oz / 4°C	✓			
(MS) B	16655	5 west Fence				40ml / 4°C		✓		
C	16655	5 west Fence				4oz / 4°C			✓	
A	16656	6 Near Entrance				8oz / 4°C	✓			
B	16656	6 Near Entrance	↓	↓	↓	40ml / 4°C		✓		

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions: Lab to choose MS/MSD

oz-ounce
BNA-Base Neutral-Acid extractables
Pest-Pesticides
PCB-Polychlorinated biphenyls
VOC-volatile organic compounds
ml-milliliter

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
Analysis	[signature]	4/14/99									

FORM #4 8/94

★ U.S. GPO: 1994-383-015

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: LACKAWANNA FOUNDRY
Project Number: 03347-143-001-3439-01
RFW Contact: Salvatore Fama Phone: 732 321 4200

No: 06911

SHEET NO. 1 OF 3

Sample Identification / Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA/Pest/PCBs	VOCs	Metals
	A166666	LOCATION 16	S	14-APR-99	1	8oz glass / Ice	✓		
	B166666	↓	↓	↓	1	40ml glass / ICE		✓	
	C166666	↓	↓	↓	1	4oz glass / Ice			✓
	A166667	LOCATION 17			1	8oz / ICE	✓		
	B166667	↓			1	40ml / ICE		✓	
	C166667	↓			1	4oz / ICE			✓
	A166668	LOCATION 18			1	8 oz / ICE	✓		
	B166668	↓			1	4oml / ICE		✓	
	C166668	↓			1	4 oz / ICE			✓
	A166669	LOCATION 19			1	8oz / Ice	✓		
	B166669	↓			1	40 ml / Ice		✓	
	C166669	↓			1	4 oz / Ice			✓
	A166670	LOCATION 20			1	8 oz / Ice	✓		
	B166670	↓			1	40ml / Ice		✓	
	C166670	↓			1	4 oz / Ice	~~✓~~ ND		✓
	A166671	LOCATION 21			1	8oz / Ice	✓	✓ (NO)	
	B166671	↓			1	40ml / Ice		✓	~~✓~~ (NO)
	C166671	↓			1	4 oz / Ice			✓
	A166672	LOCATION 22			1	8 oz / Ice	✓		
	B166672	↓	↓	↓	1	40 ml / Ice		✓	

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions: LAB to choose MS/MSD

oz-ounce
ml-milliliter
BNA-Base neutral/acid extractable
Pest-pesticides
PCB-polychlorinated biphenyls
VOC-volatile organic compounds

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
All analysis	Sal Fama	4/14/99									

(908) 3[illegible]4200
EPA Contract 68-C4-0022

Project Name: Lee Lumac Foundry Site
Project Number: 03747-143-001-3439-01
RFW Contact: Johnson, Lena Phone: 732-321-4200

No: 06910

SHEET NO 3 OF 3

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA/PEST/PCB	VOC	TAL Metals
	B16663	13	S	4/14/99	1	40ml/4°C		✓	
	C16663	13				4oz/4°C			✓
	A16664	14				8oz/4°C	✓		
	B16664	14				40ml/4°C		✓	
	C16664	14				4oz/4°C			✓
	A16665	15				8oz/4°C	✓		
	B16665	15				40ml/4°C		✓	
	C16665	15	↓	↓	↓	4oz/4°C			✓

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

VOC - volatile organic compounds

Special Instructions: Ldr to select MS/MSD
BNA - Base neutral/Acid extractable
PEST - pesticides
PCB - poly chlorinated biphenyls
ml - milliliters
oz - ounces

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
all/anal, S.I	[signature]	4/14/99									

FORM #4 8/94

(908) 321-4200
EPA Contract 68-C4-0022

Project Name: LACKAWANNA FOUNDRY
Project Number: 03347 143 001 3439 01
RFW Contact: SALVATORE FAMA Phone: 732 321 4200

No: 06912

SHEET NO 2 OF 3

Sample Identification / Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA/PES/PCB	VOAs	METALS	
	C16672	LOCATION 22	S	14-APR-99	1	4 oz glass/ICE			✓	
	A16673	LOCATION 23			1	8 oz glass/	✓			
	B16673				1	40 ml glass/		✓		
	C16673				1	4 oz glass/			✓	
	A16674	LOCATION 24			1	8 oz /	✓			
	B16674				1	40 ml /		✓		
	C16674				1	4 oz /			✓	
	A16675	LOCATION 25			1	8 oz /	✓			
	B16675				1	40 ml /		✓		
	C16675				1	4 oz /			✓	Mtg
	A16676	LOCATION 25-D			1	8 oz /	✓			
	B16676				1	40 ml /		✓		
	C16676				1	4 oz /			✓	
	A16677	LOCATION 26			1	8 oz /	✓			
	B16677				1	40 ml /		✓		
	C16677				1	4 oz /			✓	
	A16678	LOCATION 26D			1	8 oz /	✓			
	B16678				1	40 ml /		✓		
	C16678				1	4 oz /			✓	
	A16679	LOCATION 27			1	8 oz	✓			

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions: Lab to select MS/MSD

OZ - ounce
ML - milliliter
BNA - Base neutral/acid extractables
VOC - Volatile organic compounds
PCB - Polychlorinated biphenyls

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
all analysis	Sal Fama	4/14/99									

FORM #4 8/94

REAC, L)on, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CH.) OF CUSTODY RECORD

Project Name: LACKAWANNA FOUNDRY
Project Number: 03547 M3 001 3439 01
RFW Contact: Sal FAMA Phone: 732 321 4200

No: 06913

SHEET NO: 3 OF 3

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA/Pest/PCB	VOCs	Metals
	B16679	LOCATION 27	S	14-APR-99	1	40 ml glass / ICE		✓	
	C16679	↓			1	4 oz glass /			✓
	A16680	FIELD BLANK (VOC)			1	40 ml /		✓	
	B16680	TRIP BLANK (VOC)	↓	↓	1	40 ml / ↓		✓	

Matrix:

SD -	Sediment	PW -	Potable Water	(S -	Soil)
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions: Lab to select MS/MSD
BNA - base neutral/acid extractable
pest - pesticides
PCB - poly chlorinated biphenyl
oz - ounce
ml - milliliter

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
all analysis	Sal Fama	4/14/99									

(000) 321-4200
EPA Contract 68-C4-0022

Project Name: LACKAWANNA FOUNDRY
Project Number: 03347 143 001 3439 01
RFW Contact: SAL FAMA Phone: 732 321 4200

No: 06915

SHEET NO 2 OF 2

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	CYANIDE
	D16670	LOCATION 20	S	14-APR-99	1	8 OZ GLASS / ICE	/
	D16671	21			1		/
	D16672	22			1		/
	D16673	23			1		/
	D16674	24			1		/
	D16675	25			1		/
	D16676	25-D			1		/
	D16677	26			1		/
	D16678	26-D			1		/
	D16679	27			1		/

MATRIX

MATRIX

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions:

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
all analysis	Sal Fama	4/14/99									

FORM #4 8/94

★ U.S. GPO 1994-383-015

REAC, E[illegible]on, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHA[illegible] OF CUSTODY RECORD

Project Name: LACKAWANNA FOUNDRY
Project Number: 03347 143 001 3A39 01
RFW Contact: SALVATORE FAIA Phone: 732 321 4200

No: 06914

SHEET NO. 1 OF 2

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	CYANIDE
	D16650	LOCATION 1	S	14-APR-99	1	8 OZ Glass / ICE	✓
	D16651	2			1		✓
	D16652	2-D			1		✓
	D16653	3			1		✓
	D16654	4			1		✓
	D16655	5			1		✓
	D16656	6			1		✓
	D16657	7			1		✓
	D16658	8			1		✓
	D16659	9			1		✓
	D16660	10			1		✓
	D16661	11			1		✓
	D16662	12			1		✓
	D16663	13			1		✓
	D16664	14			1		✓
	D16665	15			1		✓
	D16666	16			1		✓
	D16667	17			1		✓
	D16668	18			1		✓
	D16669	19	↓	↓	1	↓	✓

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions:

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
all analyses	[signature]	4/14/99									

FORM #1

Appendix D

APPENDIX D
FINAL ANALYTICAL REPORT
LACKAWANNA FOUNDRY SITE
LACKAWANNA, NEW YORK
MAY 1999

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ANALYTICAL REPORT

Prepared by
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Lackawanna Foundry Site
Lackawanna, NY

May 1999

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Table of Contents

Appendices will be furnished on request.

Introduction

REAC, in response to WA 3-439, provided analytical support for environmental samples collected from Lackawanna Foundry Site located in Lackawanna, NY as described in the following table. The support also included QA/QC, data review, and preparation of an analytical report containing a summary of the analytical methods, the results, and the QA/QC results.

The samples were treated with procedures consistent with those described in SOP # 1008 and are summarized in the following table:

COC #	Number of Samples	Sampling Date	Date Received	Matrix	Analysis	Laboratory
06908	7	4/14/99	4/15/99	Soil	BNA	REAC
06908	6	4/14/99	4/15/99	Soil	Metals	REAC
06909	7	4/14/99	4/15/99	Soil	BNA	REAC
06909	7	4/14/99	4/15/99	Soil	Metals	REAC
06910	2	4/14/99	4/15/99	Soil	BNA	REAC
06910	3	4/14/99	4/15/99	Soil	Metals	REAC
06911	7	4/14/99	4/15/99	Soil	BNA	REAC
06911	6	4/14/99	4/15/99	Soil	Metals	REAC
06912	7	4/14/99	4/15/99	Soil	BNA	REAC
06912	7	4/14/99	4/15/99	Soil	Metals	REAC
06913	1	4/14/99	4/15/99	Soil	Metals	REAC
06914	20	4/14/99	4/15/99	Soil	Cyanide	Accutest
06915	10	4/14/99	4/15/99	Soil	Cyanide	Accutest

Analyses requested on these chains of custody, but not presented in this report, will be given in a separate report.

Case Narrative

The data in this report have been validated to two significant figures. Any other representation of the data is the responsibility of the user.

Metals in Soil Package I 171

The percent recoveries for C 16655 MS/MSD exceeded the acceptable QC limits for antimony (0%, 0%), copper (20%, 63%), lead (12%, 38%), selenium (42%, 54%) and arsenic C 16655 MSD (126%). The antimony results for samples C 16650, C 16651, C 16652, C 16653, C 16654, C 16655, C 16657, C 16658, C 16659, C 16660 should be regarded as unusable. The result for antimony in sample C 16656 should be regarded as estimated. The results for copper, lead, selenium and arsenic for samples C 16650, C 16651, C 16652, C 16653, C 16654, C 16655, C 16656, C 16657, C 16658, C 16659 and C 16660 should be regarded as estimated.

The percent recoveries for C 16661 MS/MSD exceeded the acceptable QC limits for antimony (64%, 58%), manganese (10%, 0%), zinc (44%, 26%) and thallium C 16661 MS (69%). The antimony, manganese, zinc and thallium results for samples C 16661, C 16662, C 16663, C 16664, C 16665, C 16666, C 16667 and C 16668 should be regarded as estimated.

The percent recoveries for C 16669 MS/MSD exceeded the acceptable QC limits for antimony (46%, 39%), chromium (219%, 139%), nickel (173%, 136%), selenium (43%, 45%), thallium (20%, 21%) and C 16669 MS for arsenic (145%) and vanadium (126%). The thallium results for samples C 16669, C 16670, C 16671, C 16672, C 16673, C 16674, C 16675, C 16676, C 16677, C 16678 and C 16679 should be regarded as unusable. The results for antimony, chromium, nickel, selenium, arsenic and vanadium for samples C 16669, C 16670, C 16671, C 16672, C 16673, C 16674, C 16675, C 16676, C 16677, C 16678 and C 16679 should be regarded as estimated.

Cyanide in Soil Package I 182

The data were examined and were found to be acceptable.

BNA in Soil Package I 190

In the continuing calibration check standard of 4/28/99, the acceptable QC limits were exceeded for bis (2-chloroisopropyl) ether (29%). The data are not affected because this analyte was not detected in the associated samples.

The acceptable QC limits were exceeded for the percent recoveries of one base/neutral surrogate for A 16652 MS. The data are not affected.

Summary of Abbreviations

AA	Atomic Absorption
B	The analyte was found in the blank
BFB	Bromofluorobenzene
C	Centigrade
D	(Surrogate Table) this value is from a diluted sample and was not calculated (Result Table) this result was obtained from a diluted sample
Dioxin PCDD	denotes Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans and/or and PCDF
CLP	Contract Laboratory Protocol
COC	Chain of Custody
CONC	Concentration
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
DFTPP	Decafluorotriphenylphosphine
DL	Detection Limit
E	The value is greater than the highest linear standard and is estimated
EMPC	Estimated maximum possible concentration
ICAP	Inductively Coupled Argon Plasma
ISTD	Internal Standard
J	The value is below the method detection limit and is estimated
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDL	Method Detection Limit
MI	Matrix Interference
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MW	Molecular Weight
NA	either Not Applicable or Not Available
NC	Not Calculated
NR	Not Requested
NS	Not Spiked
% D	Percent Difference
% REC	Percent Recovery
PPB	Parts per billion
PPBV	Parts per billion by volume
PQL	Practical Quantitation Limit
QL	Quantitation Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SIM	Selected Ion Monitoring
TCLP	Toxic Characteristics Leaching Procedure
U	Denotes not detected
W	Weathered sample; the results should be regarc as estimated

m^3	cubic meter	kg	kilogram	μg	microgram
L	liter	g	gram	pg	picogram
mL	milliliter	mg	milligram	ng	nanogram
μL	microliter				

*	denotes a value that exceeds the acceptable QC limit
	Abbreviations that are specific to a particular table are explained in footnotes on that table

Revision 7/23/98

Analytical Procedure for Metals in Soil

Sample Preparation

A representative 1-2 g (wet weight) sample, weighed to 0.01 g accuracy, was mixed with 10-mL 1:1 nitric acid, placed in a clean beaker and digested in nitric acid and hydrogen peroxide according to SW-846, Method 3050. The final reflux was either nitric acid or hydrochloric acid depending on the metals to be determined. After digestion , the samples were allowed to cool to room temperature and transferred to 100 mL volumetric flasks and diluted to volume with ASTM Type II water. The samples were analyzed for all metals, except mercury, by USEPA SW-846, Method 7000 (Atomic absorption) or Method 6010 (Inductively Coupled Argon Plasma-ICAP) procedures.

A representative 0.5-0.6 g (wet weight) sample, weighed to 0.01-g accuracy, was prepared and analyzed separately for mercury on a Varian SpectrAA-300 Atomic Absorption Spectrophotometer equipped with a Varian VGA-76 vapor gas analyzer according to SW-846, Method 7471.

A separate sample was used to determine total solids.

A reagent blank and a blank spike sample were carried through the sample preparation procedure for each batch of samples processed. One matrix spike (MS) and one matrix spike duplicate (MSD) were analyzed for each batch or for every ten samples.

Analysis and Calculations

The instruments were calibrated and operated according to SW-846, Method 7000/7471/6010 and the manufacturers operating instructions. After calibration, initial calibration verification (ICV), initial calibration blank (ICB) and quality control check standards were run to verify proper calibration. The continuing calibration verification (CCV) and continuing calibration blank (CCB) were run after every ten samples to assure proper operation during sample analysis.

The metal concentrations in solution , in micrograms per liter (µg/L) were taken from the read-out systems of the Atomic Absorption instruments. The results were converted to milligrams per kilogram (mg/kg) by correcting the reading for the sample weight and percent solids. The ICAP results (mg/kg) were corrected for sample weight prior to instrument read-out; the instrument read-out was then corrected for percent solids.
Final concentrations, based on wet weight are given by:

mg metal/kg sample = [(AxV)/W]xDFxCF

where:

A = Instrument read-out (µg/L, AA; mg/kg, ICAP)
V = final volume of processed sample (mL, AA; 100 ICAP)
W = weight of sample (g, AA; 1.00 ICAP)
DF = Dilution Factor (1.00 for no dilution)
CF = conversion factor (0.001, AA; 1.00, ICAP)

For samples that required dilution to be within the instrument calibration range, DF is given by:

$$DF = (C+B)/C$$

where:

B = acid blank matrix used for dilution (mL)
C = sample blank aliquot (mL)

Final concentrations, based on dry weight, are given by:

$$mg/kg(dry) = [mg/kg\ (wet) \times 100] / S$$

where

S = percent solids

The results of the analysis are listed in Table 1.1.

Analytical Procedure for Cyanide in Soil

The subcontract laboratory determined the concentration of cyanide in the samples by analyzing them for cyanide by USEPA Method 9012 M found in SW-846. The results of both analyses are listed in Table 1.2.

Analytical Procedure for BNA in Soil

Extraction Procedure

Prior to extraction each sample was spiked with a six component surrogate mixture consisting of nitrobenzene-d_5, 2-fluorobiphenyl, terphenyl-d_{14}, phenol-d_5, 2-fluorophenol, and 2,4,6-tribromophenol. Thirty grams of sample was mixed with 30 g anhydrous sodium sulfate, and Soxhlet extracted for 16 hours with 300 mL of methylene chloride. The extract was concentrated to 1.0 mL., an internal standard mixture consisting of 1,4-dichlorobenzene-d_4, naphthalene-d_8, acenaphthene-d_{10}, phenanthrene-d_{10}, chrysene-d_{12}, and perylene-d_{12} was added, and analyzed.

Analysis Procedure

An HP 6890/5972 Gas Chromatograph/Mass Spectrometer (GC/MS), equipped with a 6890 autosampler and controlled by a PC computer equipped with Enviroquant software was used to analyze the samples.

The instrument conditions were:

Column	Restek Rtx-5 (crossbonded SE-54) 30 meter x 0.25mm ID, 0.50 µm film thickness
Injection Temperature	280° C
Transfer Temperature	280° C
Source Temperature and Analyzer Temperature	Controlled by thermal transfer of heat from transfer line
Temperature Program	50°C for 0.5 min 20° C/min to 295° C hold for 8.5 min 25° C/min to 310° C hold for 15 min
Pulsed Split Injection	Split time = 2.00 min @ 8:1 split ratio Pressure Pulse = 16 psi for 0.5 min, then normal
Injection Volume	1µL Must use 4 mm ID single gooseneck liners packed with 10 mm plug of silanized and conditioned glass wool.

The GC MS system was calibrated using 5 BNA standard mixtures at 20, 50, 80, 120, and 160 µg/mL. Before analysis each day, the system was tuned with 50-ng decafluorotriphenylphosphine (DFTPP) and passed a continuing calibration check when analyzing a 50-µg/mL standard mixture in which the responses were evaluated by comparison to the average response of the calibration curve.

The BNA results, based on dry weight, are listed in Table 1.3; the tentatively identified compounds are listed in Table 1.4. The concentration of the detected compounds was calculated using the following equation:

$$C_u = \frac{DF \times A_u \times I_{is} \times V_t}{A_{is} \times RF(\text{ or } RF_{ave}) \times V_i \times W \times D}$$

where

C_u	=	Concentration of target analyte (µg/Kg)
DF	=	Dilution Factor
A_u	=	Area of target analyte
I_{is}	=	Mass of specific internal standard (ng)
V_t	=	Volume of extract (µL)
A_{is}	=	Area of specific internal standard
RF	=	Response Factor (unitless)
RF_{ave}	=	average Response Factor
V_i	=	Volume of extract injected (µL)
W	=	Weight of sample (g)
D	=	Decimal per cent solids

The RF_{ave} is used when a sample is associated with an initial calibration curve. The RF is used when a sample is associated with a continuing calibration.

Response Factor calculation:

The RF for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_c \times I_{is}}{A_{is} \times I_c}$$

where

RF	=	Response factor for a specific analyte
A_c	=	Area of the analyte in the standard
I_{is}	=	Mass of the specific internal standard
A_{is}	=	Area of the specific internal standard
I_c	=	Mass of the analyte in the standard

$$RF_{ave} = \frac{RF_1 + \ldots - RF_n}{n}$$

and

n = number of Samples

Revision of 7/08/94

Table 1.1 Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		Method Blank		C16650		C16651		C16652		C16653		C16654	
Location		Lab		1 West Fence		2 Surface Middle		2D middle		3 West Fence		4 wes	
% Solids		NA		64.02		94.99		94.41		79.41		80.	
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MI mg/
Aluminum	ICAP	U	18	11000	24	1300	16	1200	16	7800	21	13000	
Antimony	ICAP	U	6.0	U	8.0	U	5.2	U	5.4	U	7.1	U	
Arsenic	AA-Fur	U	0.50	14	1.5	1.6	0.50	2.5	0.48	11	0.62	13	(
Barium	ICAP	U	1.0	160	1.3	18	0.87	17	0.90	140	1.2	150	
Beryllium	ICAP	U	0.50	0.93	0.67	U	0.44	U	0.45	0.81	0.59	2.2	(
Cadmium	ICAP	U	0.50	3.2	0.67	0.48	0.44	0.66	0.45	3.7	0.59	2.4	(
Calcium	ICAP	U	50	21000	67	1900	44	3300	45	94000	59	120000	
Chromium	ICAP	U	0.50	45	0.67	25	0.44	15	0.45	33	0.59	28	(
Cobalt	ICAP	U	1.0	12	1.3	2.1	0.87	1.2	0.90	7.7	1.2	6.2	
Copper	ICAP	U	1.0	74	1.3	57	0.87	35	0.90	75	1.2	67	
Iron	ICAP	U	10	43000	13	24000	8.7	13000	9.0	46000	12	30000	
Lead	ICAP	U	4.0	300	5.3	44	3.5	38	3.6	200	4.7	260	
Magnesium	ICAP	U	50	4800	67	600	44	560	45	7200	59	11000	
Manganese	ICAP	U	1.0	1200	1.3	250	0.87	140	0.90	800	1.2	1300	
Mercury	Cold Vapor	U	0.04	0.21	0.06	0.06	0.03	0.1	0.04	0.11	0.05	0.16	(
Nickel	ICAP	U	1.0	42	1.3	15	0.87	9.2	0.90	28	1.2	32	
Potassium	ICAP	U	200	1500	270	U	170	U	180	920	240	1500	
Selenium	AA-Fur	U	0.50	1.0	0.75	U	0.50	U	0.48	0.79	0.62	0.98	(
Silver	ICAP	U	0.50	U	0.67	U	0.44	U	0.45	U	0.59	U	(
Sodium	ICAP	U	50	110	67	U	44	64	45	140	59	520	
Thallium	AA-Fur	U	0.50	U	0.75	U	0.50	U	0.48	U	0.62	U	(
Vanadium	ICAP	U	2.0	27	2.7	5.2	1.7	3.7	1.8	17	2.4	18	
Zinc	ICAP	U	2.0	760	2.7	140	1.7	79	1.8	640	2.4	540	

Table 1.1 (Cont) Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		C16655		C16656		C16657		C16658		C16659		C16660	
Location		5 west Fence		6 Near Entrance		7		8		9		10	
% Solids		81.63		82.59		75.99		67.39		88.49		99.00	
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg
Aluminum	ICAP	12000	20	4600	15	5300	22	3900	23	5800	18	2100	16
Antimony	ICAP	U	6.6	6.4	4.9	U	7.4	U	7.5	U	6.0	U	5.4
Arsenic	AA-Fur	15	0.55	20	0.50	6.3	0.63	6.5	0.69	16	0.51	1.3	0.49
Barium	ICAP	130	1.1	270	0.81	120	1.2	83	1.3	170	1.0	22	0.90
Beryllium	ICAP	0.85	0.55	U	0.41	U	0.62	U	0.63	U	0.50	U	0.45
Cadmium	ICAP	2.4	0.55	20	0.41	3.6	0.62	2.4	0.63	4.4	0.50	0.59	0.45
Calcium	ICAP	14000	55	21000	41	18000	62	8300	63	14000	50	2200	45
Chromium	ICAP	29	0.55	190	0.41	55	0.62	36	0.63	63	0.50	14	0.45
Cobalt	ICAP	14	1.1	20	0.81	6.7	1.2	8.5	1.3	8.4	1.0	2.0	0.90
Copper	ICAP	200	1.1	440	0.81	110	1.2	81	1.3	200	1.0	41	0.90
Iron	ICAP	35000	11	200000	41	47000	12	73000	13	76000	10	19000	9.0
Lead	ICAP	180	4.4	610	3.3	2100	5.0	230	5.0	340	4.0	34	3.6
Magnesium	ICAP	4800	55	3100	41	3300	62	1800	63	4300	50	610	45
Manganese	ICAP	700	1.1	1800	0.81	1100	1.2	790	1.3	1100	1.0	180	0.90
Mercury	Cold Vapor	0.11	0.04	1.1	0.04	0.22	0.05	0.13	0.05	0.95	0.04	0.27	0.04
Nickel	ICAP	41	1.1	160	0.81	110	1.2	41	1.3	160	1.0	15	0.90
Potassium	ICAP	1200	220	630	160	570	250	540	250	390	200	500	180
Selenium	AA-Fur	0.58	0.55	0.77	0.50	U	0.63	U	0.69	U	0.51	U	0.49
Silver	ICAP	U	0.55	U	2.1	U	0.62	U	0.63	U	0.50	U	0.45
Sodium	ICAP	79	55	410	41	230	62	230	63	270	50	1500	45
Thallium	AA-Fur	U	0.55	U	0.50	U	0.63	U	0.69	U	0.51	U	0.49
Vanadium	ICAP	23	2.2	20	1.6	20	2.5	14	2.5	16	2.0	4.2	1.8
Zinc	ICAP	340	2.2	1100	1.6	1000	2.5	450	2.5	550	2.0	42	1.8

Table 1.1 (Cont) Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		C16661		C16662		C16663		C16664		C16665		C16666	
Location		11		12		13		14		15		Loc	
% Solids		85.56		81.01		89.86		78.52		94.98		9	
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	M mg
Aluminum	ICAP	740	18	4200	12	4600	19	2300	15	2200	17	1300	
Antimony	ICAP	U	5.9	U	4.2	13	6.3	U	4.8	U	5.6	U	
Arsenic	AA-Fur	1.8	0.40	7.0	0.35	16	0.39	4.4	0.41	2.7	0.48	1.5	
Banum	ICAP	14	0.98	84	0.69	100	1.0	39	0.81	50	0.93	15	
Beryllium	ICAP	U	0.49	U	0.35	U	0.52	U	0.40	U	0.47	U	
Cadmium	ICAP	4.2	0.49	2.0	0.35	3.4	0.52	0.92	0.40	0.48	0.47	U	
Calcium	ICAP	1100	49	21000	35	1200	52	24000	40	1600	47	1200	
Chromium	ICAP	13	0.49	100	0.35	79	0.52	86	0.40	14	0.47	6.1	
Cobalt	ICAP	1.7	0.98	7.0	0.69	11	1.0	3.6	0.81	0.98	0.93	1.4	
Copper	ICAP	33	0.98	270	0.69	370	1.0	93	0.81	100	0.93	44	
Iron	ICAP	22000	9.8	56000	6.9	140000	53	39000	8.1	11000	9.3	16000	
Lead	ICAP	48	3.9	150	2.8	540	4.2	110	3.2	58	3.7	58	
Magnesium	ICAP	240	49	2400	35	480	52	3400	40	460	47	410	
Manganese	ICAP	160	0.98	810	0.69	770	1.0	2500	0.81	120	0.93	210	
Mercury	Cold Vapor	0.04	0.04	0.17	0.03	0.07	0.03	0.12	0.03	U	0.04	U	
Nickel	ICAP	13	0.98	75	0.69	72	1.0	25	0.81	31	0.93	9.5	
Potassium	ICAP	U	200	430	140	500	210	260	160	U	190	U	
Selenium	AA-Fur	U	0.40	U	0.35	0.39	0.39	U	0.41	U	0.48	U	
Silver	ICAP	U	0.49	U	0.35	U	0.52	U	0.40	U	0.47	U	
Sodium	ICAP	U	49	210	35	200	52	92	40	72	47	U	
Thallium	AA-Fur	U	0.40	U	0.35	U	0.39	U	0.41	U	0.48	U	
Vanadium	ICAP	2.7	2.0	14	1.4	16	2.1	43	1.6	5.4	1.9	3.1	
Zinc	ICAP	81	2.0	280	1.4	660	2.1	190	1.6	110	1.9	98	

Table 1.1 (Cont) Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		C16667		C16668		C16669		C16670		C16671		C16672	
Location		Location 17		Location 18		Location 19		Location 20		Location 21		Location 22	
% Solids		90.83		92.93		95.49		88.29		51.93		78.77	
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg
Aluminum	ICAP	5900	17	790	17	1400	15	2400	17	12000	23	15000	20
Antimony	ICAP	6.5	5.8	U	5.6	U	5.0	U	5.7	U	7.8	U	6.7
Arsenic	AA-Fur	7.1	0.95	4.4	0.45	6.7	0.51	6.5	0.46	20	0.54	77	0.58
Barium	ICAP	180	0.97	9.0	0.94	29	0.83	130	0.94	200	1.3	170	1.1
Beryllium	ICAP	U	0.48	U	0.47	U	0.42	U	0.47	0.96	0.65	1.2	0.56
Cadmium	ICAP	U	0.48	U	0.47	0.59	0.42	2.3	0.47	13	0.65	2.3	0.56
Calcium	ICAP	130000	48	1200	47	850	42	3800	47	23000	65	34000	56
Chromium	ICAP	33	0.48	8.9	0.47	97	0.42	130	0.47	95	0.65	32	0.56
Cobalt	ICAP	47	0.97	U	0.94	4.4	0.83	12	0.94	15	1.3	11	1.1
Copper	ICAP	240	0.97	28	0.94	300	0.83	720	0.94	270	1.3	47	1.1
Iron	ICAP	25000	9.7	5800	9.4	58000	8.3	93000	9.4	110000	13	32000	11
Lead	ICAP	300	3.9	21	3.7	140	3.3	280	3.8	660	5.2	180	4.5
Magnesium	ICAP	19000	48	340	47	410	42	1000	47	4700	65	5900	56
Manganese	ICAP	840	0.97	75	0.94	760	0.83	690	0.94	1600	1.3	1200	1.1
Mercury	Cold Vapor	0.06	0.04	0.04	0.04	U	0.03	1.3	0.04	0.77	0.05	0.73	0.04
Nickel	ICAP	38	0.97	2.7	0.94	57	0.83	150	0.94	100	1.3	36	1.1
Potassium	ICAP	470	190	U	190	U	170	280	190	900	260	1500	220
Selenium	AA-Fur	U	0.47	U	0.45	U	0.51	U	0.46	1.0	0.54	U	0.58
Silver	ICAP	U	0.48	U	0.47	U	0.42	U	0.47	U	0.65	U	0.56
Sodium	ICAP	330	48	U	47	68	42	68	47	360	65	120	56
Thallium	AA-Fur	U	0.47	U	0.45	U	0.51	U	0.46	U	0.54	U	0.58
Vanadium	ICAP	11	1.9	2.6	1.9	14	1.7	21	1.9	36	2.6	27	2.2
Zinc	ICAP	1300	1.9	55	1.9	310	1.7	290	1.9	1000	2.6	1100	2.2

Table 1.1 (Cont) Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		C16673		C16674		C16675		C16676		C16677		C16678	
Location		Location 23		Location 24		Location 25		Location 25-D		Location 26		Loca	
% Solids		81.54		77.01		80.54		78.92		74.19		6	
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MI mg
Aluminum	ICAP	9300	19	7300	19	12000	18	17000	21	14000	23	14000	
Antimony	ICAP	U	6.5	U	6.5	U	6.1	U	7.0	U	7.6	U	
Arsenic	AA-Fur	8.4	0.46	5	0.98	21	0.49	25	0.50	66	0.53	48	(
Barium	ICAP	94	1.1	64	1.1	130	1.0	140	1.2	250	1.3	280	(
Beryllium	ICAP	0.66	0.54	U	0.54	0.73	0.50	0.97	0.59	1.3	0.64	0.67	(
Cadmium	ICAP	1.5	0.54	1.2	0.54	2.3	0.50	U	0.59	5.2	0.64	1.3	(
Calcium	ICAP	12000	54	10000	54	39000	50	11000	59	53000	64	120000	
Chromium	ICAP	24	0.54	18	0.54	31	0.50	25	0.59	51	0.64	23	(
Cobalt	ICAP	8.0	1.1	4.8	1.1	9.7	1.0	15	1.2	9.7	1.3	7.3	(
Copper	ICAP	52	1.1	49	1.1	65	1.0	27	1.2	110	1.3	34	(
Iron	ICAP	30000	11	25000	11	29000	10	32000	12	45000	13	20000	
Lead	ICAP	160	4.3	130	4.3	230	4.0	40	4.7	740	5.1	100	
Magnesium	ICAP	3600	54	3500	54	5400	50	5400	59	6300	64	7300	
Manganese	ICAP	560	1.1	390	1.1	710	1.0	610	1.2	1500	1.3	570	(
Mercury	Cold Vapor	0.13	0.04	0.13	0.04	0.17	0.04	0.08	0.04	1.6	0.04	0.17	(
Nickel	ICAP	28	1.1	18	1.1	38	1.0	41	1.2	39	1.3	22	(
Potassium	ICAP	1100	220	1100	220	1400	200	1500	230	1600	250	1400	
Selenium	AA-Fur	0.57	0.46	U	0.49	U	0.49	U	0.50	1.6	0.53	U	(
Silver	ICAP	U	0.54	U	0.54	U	0.50	U	0.59	U	0.64	U	(
Sodium	ICAP	130	54	250	54	170	50	U	59	190	64	190	
Thallium	AA-Fur	U	0.46	U	0.49	U	0.49	U	0.50	U	0.53	U	(
Vanadium	ICAP	19	2.2	14	2.2	23	2.0	27	2.3	29	2.5	20	
Zinc	ICAP	660	2.2	350	2.2	760	2.0	150	2.3	1600	2.5	330	

Table 1.1 (Cont) Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		C16679	
Location		Location 27	
% Solids		83.78	
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg
Aluminum	ICAP	2900	17
Antimony	ICAP	U	5.6
Arsenic	AA-Fur	19	0.34
Barium	ICAP	59	0.94
Beryllium	ICAP	U	0.47
Cadmium	ICAP	0.84	0.47
Calcium	ICAP	15000	47
Chromium	ICAP	95	0.47
Cobalt	ICAP	8.7	0.94
Copper	ICAP	280	0.94
Iron	ICAP	78000	9.4
Lead	ICAP	140	3.8
Magnesium	ICAP	2500	47
Manganese	ICAP	770	0.94
Mercury	Cold Vapor	0.09	0.04
Nickel	ICAP	89	0.94
Potassium	ICAP	320	190
Selenium	AA-Fur	U	0.34
Silver	ICAP	U	0.47
Sodium	ICAP	120	47
Thallium	AA-Fur	U	0.34
Vanadium	ICAP	15	1.9
Zinc	ICAP	250	1.9

Table 1.2 Results of the Analysis for Cyanide in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Sample ID	Location	% Solids	Cyanide	
			Conc mg/kg	MDL mg/kg
Method Blank	-	100	U	1.0
Method Blank	-	100	U	1.0
D16650	1	56.3	U	1.8
D16651	2	94.1	U	1.1
D16652	2-D	95.2	U	1.0
D16653	3	81.4	U	1.2
D16654	4	86.6	U	1.2
D16655	5	84.0	U	1.2
D16656	6	86.6	U	1.2
D16657	7	79.9	U	1.2
D16658	8	79.1	U	1.3
D16659	9	89.7	U	1.1
D16660	10	99.2	U	1.0
D16661	11	85.8	U	1.2
D16662	12	77.3	U	1.3
D16663	13	92.0	U	1.1
D16664	14	75.9	U	1.3
D16665	15	94.7	U	1.0
D16666	16	90.3	U	1.1
D16667	17	91.8	U	1.1
D16668	18	93.1	U	1.1
D16669	19	93.2	U	1.1
D16670	Location 20	90.8	U	1.1
D16671	21	43.8	U	2.3
D16672	22	81.8	U	1.2
D16673	23	84.0	U	1.2
D16674	24	81.4	U	1.2
D16675	25	87.5	U	1.1
D16676	25-D	78.2	U	1.3
D16677	26	76.7	U	1.3
D16678	26-D	75.2	U	1.3
D16679	27	84.7	U	1.2

Table 1.3 Results of the Analysis for BNA in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	SBLK041599		A16650		A16651		A16652		A16653	
Sample Location	Lab Blank		1 West Fence		2 Surface Middle		2D Middle		3 West Fence	
GC/MS File Name	LFS002		LFS003		LFS004		LFS005		LFS008	
Dilution Factor	1		10		1		5		10	
% Solid	100		57		95		91		73	

Compound Name	Conc. µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Phenol	U	330	U	5800	16000	350	23000	1800	U	4600
bis(-2-Chloroethyl)Ether	U	330	U	5800	U	350	U	1800	U	4600
2-Chlorophenol	U	330	U	5800	U	350	U	1800	U	4600
1,3-Dichlorobenzene	U	330	U	5800	U	350	U	1800	U	4600
1,4-Dichlorobenzene	U	330	U	5800	U	350	U	1800	U	4600
Benzyl alcohol	U	330	U	5800	U	350	U	1800	U	4600
1,2-Dichlorobenzene	U	330	U	5800	U	350	U	1800	U	4600
2-Methylphenol	U	330	U	5800	370	350	410 J	1800	U	4600
bis(2-Chloroisopropyl)ether	U	330	U	5800	U	350	U	1800	U	4600
4-Methylphenol	U	330	U	5800	U	350	U	1800	U	4600
N-Nitroso-Di-n-propylamine	U	330	U	5800	U	350	U	1800	U	4600
Hexachloroethane	U	330	U	5800	U	350	U	1800	U	4600
Nitrobenzene	U	330	U	5800	U	350	U	1800	U	4600
Isophorone	U	330	U	5800	U	350	U	1800	U	4600
2-Nitrophenol	U	330	U	5800	U	350	U	1800	U	4600
2,4-Dimethylphenol	U	330	U	5800	U	350	U	1800	U	4600
bis(2-Chloroethoxy)methane	U	330	U	5800	U	350	U	1800	U	4600
2,4-Dichlorophenol	U	330	U	5800	U	350	U	1800	U	4600
1,2,4-Trichlorobenzene	U	330	U	5800	U	350	U	1800	U	4600
Naphthalene	U	330	U	5800	970	350	960 J	1800	U	4600
4-Chloroaniline	U	330	U	5800	U	350	U	1800	U	4600
Hexachlorobutadiene	U	330	U	5800	U	350	U	1800	U	4600
4-Chloro-3-methylphenol	U	330	U	5800	U	350	U	1800	U	4600
2-Methylnaphthalene	U	330	U	5800	360	350	640 J	1800	U	4600
Hexachlorocyclopentadiene	U	330	U	5800	U	350	U	1800	U	4600
2,4,6-Trichlorophenol	U	330	U	5800	U	350	U	1800	U	4600
2,4,5-Trichlorophenol	U	330	U	5800	U	350	U	1800	U	4600
2-Chloronaphthalene	U	330	U	5800	U	350	U	1800	U	4600
2-Nitroaniline	U	330	U	5800	U	350	U	1800	U	4600
Dimethylphthalate	U	330	U	5800	U	350	U	1800	U	4600
Acenaphthylene	U	330	U	5800	U	350	U	1800	U	4600
2,6-Dinitrotoluene	U	330	U	5800	U	350	U	1800	U	4600
3-Nitroaniline	U	330	U	5800	U	350	U	1800	U	4600
Acenaphthene	U	330	U	5800	95 J	350	U	1800	U	4600
2,4-Dinitrophenol	U	330	U	5800	U	350	U	1800	U	4600
4-Nitrophenol	U	330	U	5800	U	350	U	1800	U	4600
Dibenzofuran	U	330	U	5800	100 J	350	U	1800	U	4600
2,4-Dinitrotoluene	U	330	U	5800	U	350	U	1800	U	4600
Diethylphthalate	U	330	U	5800	U	350	U	1800	U	4600
4-Chlorophenyl-phenylether	U	330	U	5800	U	350	U	1800	U	4600
Fluorene	U	330	U	5800	87 J	350	U	1800	U	4600
4-Nitroaniline	U	330	U	5800	U	350	U	1800	U	4600
4,6-Dinitro-2-methylphenol	U	330	U	5800	U	350	U	1800	U	4600
N-Nitrosodiphenylamine	U	330	U	5800	U	350	U	1800	U	4600
4-Bromophenyl-phenylether	U	330	U	5800	U	350	U	1800	U	4600
Hexachlorobenzene	U	330	U	5800	U	35	U	1800	U	4600
Pentachlorophenol	U	330	U	5800	U	35	U	1800	U	4600
Phenanthrene	U	330	U	5800	1400	35	U	1800	U	4600
Anthracene	U	330	U	5800	220 J	35	U	1800	U	4600
Carbazole	U	330	U	5800	190 J	35	U	1800	U	4600
Di-n-butylphthalate	U	330	U	5800	150 J	350	U	1800	U	4600
Fluoranthene	U	330	U	5800	2000	350	380 J	1800	1000 J	4600
Pyrene	U	330	U	5800	1500	350	U	1800	U	4600
Butylbenzylphthalate	U	330	U	5800	U	350	U	1800	U	4600
Benzo(a)anthracene	U	330	U	5800	800	350	U	1800	U	4600
3,3'-Dichlorobenzidine	U	330	U	5800	U	350	U	1800	U	4600
Chrysene	U	330	U	5800	920	350	U	1800	U	4600
Bis(2-Ethylhexyl)phthalate	U	330	U	5800	640	350	1300 J	1800	1000 J	4600
Di-n-octylphthalate	U	330	U	5800	U	350	U	1800	U	4600
Benzo(b)fluoranthene	U	330	U	5800	1100	350	U	1800	U	4600
Benzo(k)fluoranthene	U	330	U	5800	880	350	U	1800	U	4600
Benzo(a)pyrene	U	330	U	5800	1100	350	U	1800	U	4600
Indeno(1,2,3-cd)pyrene	U	330	U	5800	750	350	U	1800	U	4600
Dibenzo(a,h)anthracene	U	330	U	5800	300 J	350	U	1800	U	4600
Benzo(g,h,i)perylene	U	330	U	5800	890	350	U	1800	U	4600

Table 1.3 (cont.) Results of the Analysis for BNA in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No	A16654			A16655			A16656		
Sample Location	4 West Fence			5 West Fence			6 Near Entrance		
GC/MS File Name	LFS009			LFS010			LFS012		
Dilution Factor	10			1			10		
% Solid	82			81			85		
Compound Name	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg
Phenol	U		4100	U		410	U		3900
bis(-2-Chloroethyl)Ether	U		4100	U		410	U		3900
2-Chlorophenol	U		4100	U		410	U		3900
1,3-Dichlorobenzene	U		4100	U		410	U		3900
1,4-Dichlorobenzene	U		4100	U		410	U		3900
Benzyl alcohol	U		4100	U		410	U		3900
1,2-Dichlorobenzene	U		4100	U		410	U		3900
2-Methylphenol	U		4100	U		410	U		3900
bis(2-Chloroisopropyl)ether	U		4100	U		410	U		3900
4-Methylphenol	U		4100	U		410	U		3900
N-Nitroso-Di-n-propylamine	U		4100	U		410	U		3900
Hexachloroethane	U		4100	U		410	U		3900
Nitrobenzene	U		4100	U		410	U		3900
Isophorone	U		4100	U		410	U		3900
2-Nitrophenol	U		4100	U		410	U		3900
2,4-Dimethylphenol	U		4100	U		410	U		3900
bis(2-Chloroethoxy)methane	U		4100	U		410	U		3900
2,4-Dichlorophenol	U		4100	U		410	U		3900
1,2,4-Trichlorobenzene	U		4100	U		410	U		3900
Naphthalene	U		4100	310	J	410	U		3900
4-Chloroaniline	U		4100	U		410	U		3900
Hexachlorobutadiene	U		4100	U		410	U		3900
4-Chloro-3-methylphenol	U		4100	U		410	U		3900
2-Methylnaphthalene	U		4100	270	J	410	U		3900
Hexachlorocyclopentadiene	U		4100	U		410	U		3900
2,4,6-Trichlorophenol	U		4100	U		410	U		3900
2,4,5-Trichlorophenol	U		4100	U		410	U		3900
2-Chloronaphthalene	U		4100	U		410	U		3900
2-Nitroaniline	U		4100	U		410	U		3900
Dimethylphthalate	U		4100	U		410	U		3900
Acenaphthylene	U		4100	200	J	410	U		3900
2,6-Dinitrotoluene	U		4100	U		410	U		3900
3-Nitroaniline	U		4100	U		410	U		3900
Acenaphthene	U		4100	740		410	U		3900
2,4-Dinitrophenol	U		4100	U		410	U		3900
4-Nitrophenol	U		4100	U		410	U		3900
Dibenzofuran	U		4100	490		410	U		3900
2,4-Dinitrotoluene	U		4100	U		410	U		3900
Diethylphthalate	U		4100	U		410	U		3900
4-Chlorophenyl-phenylether	U		4100	U		410	U		3900
Fluorene	U		4100	880		410	U		3900
4-Nitroaniline	U		4100	U		410	U		3900
4,6-Dinitro-2-methylphenol	U		4100	U		410	U		3900
N-Nitrosodiphenylamine	U		4100	U		410	U		3900
4-Bromophenyl-phenylether	U		4100	U		410	U		3900
Hexachlorobenzene	U		4100	U		410	U		3900
Pentachlorophenol	U		4100	U		410	U		3900
Phenanthrene	U		4100	7900		410	U		3900
Anthracene	U		4100	1800		410	U		3900
Carbazole	U		4100	1200		410	U		3900
Di-n-butylphthalate	U		4100	U		410	U		3900
Fluoranthene	2300	J	4100	9900		410	2000	J	3900
Pyrene	1900	J	4100	7800		410	1700	J	3900
Butylbenzylphthalate	U		4100	U		410	U		3900
Benzo(a)anthracene	1100	J	4100	5000		410	1000	J	3900
3,3'-Dichlorobenzidine	U		4100	U		410	U		3900
Chrysene	1400	J	4100	5300		410	1100	J	3900
Bis(2-Ethylhexyl)phthalate	1000	J	4100	260	J	410	810	J	3900
Di-n-octylphthalate	U		4100	U		410	U		3900
Benzo(b)fluoranthene	1700	J	4100	5800		410	1400	J	3900
Benzo(k)fluoranthene	1400	J	4100	4500		410	1200	J	3900
Benzo(a)pyrene	1700	J	4100	5800		410	1300	J	3900
Indeno(1,2,3-cd)pyrene	1300	J	4100	3400		410	990	J	3900
Dibenzo(a,h)anthracene	U		4100	1300		410	U		3900
Benzo(g,h,i)perylene	1600	J	4100	3700		410	1100	J	3900

Table 1.3 (cont.) Results of the Analysis for BNA in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	SBLK041999		A16657		A16658		A16659		A16660	
Sample Location	Lab Blank		7		8		9		10	
GC/MS File Name	LFS023		LFS024		LFS025		LFS026		LFS027	
Dilution Factor	1		10		10		10		5	
% Solid	100		76		87		91		99	

Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg
Phenol	U	330	1900	J	4400	1500	J	3800	4900		3700	1800		1700
bis(-2-Chloroethyl)Ether	U	330	U		4400	U		3800	U		3700	U		1700
2-Chlorophenol	U	330	U		4400	U		3800	U		3700	U		1700
1,3-Dichlorobenzene	U	330	U		4400	U		3800	U		3700	U		1700
1,4-Dichlorobenzene	U	330	U		4400	U		3800	U		3700	U		1700
Benzyl alcohol	U	330	U		4400	U		3800	U		3700	U		1700
1,2-Dichlorobenzene	U	330	U		4400	U		3800	U		3700	U		1700
2-Methylphenol	U	330	U		4400	U		3800	U		3700	570	J	1700
bis(2-Chloroisopropyl)ether	U	330	U		4400	U		3800	U		3700	U		1700
4-Methylphenol	U	330	U		4400	U		3800	U		3700	U		1700
N-Nitroso-Di-n-propylamine	U	330	U		4400	U		3800	U		3700	U		1700
Hexachloroethane	U	330	U		4400	U		3800	U		3700	U		1700
Nitrobenzene	U	330	U		4400	U		3800	U		3700	U		1700
Isophorone	U	330	U		4400	U		3800	U		3700	U		1700
2-Nitrophenol	U	330	U		4400	U		3800	U		3700	U		1700
2,4-Dimethylphenol	U	330	U		4400	U		3800	U		3700	U		1700
bis(2-Chloroethoxy)methane	U	330	U		4400	U		3800	U		3700	U		1700
2,4-Dichlorophenol	U	330	U		4400	U		3800	U		3700	U		1700
1,2,4-Trichlorobenzene	U	330	U		4400	U		3800	U		3700	U		1700
Naphthalene	U	330	U		4400	U		3800	U		3700	3100		1700
4-Chloroaniline	U	330	U		4400	U		3800	U		3700	U		1700
Hexachlorobutadiene	U	330	U		4400	U		3800	U		3700	U		1700
4-Chloro-3-methylphenol	U	330	U		4400	U		3800	U		3700	U		1700
2-Methylnaphthalene	U	330	U		4400	U		3800	U		3700	1500	J	1700
Hexachlorocyclopentadiene	U	330	U		4400	U		3800	U		3700	U		1700
2,4,6-Trichlorophenol	U	330	U		4400	U		3800	U		3700	U		1700
2,4,5-Trichlorophenol	U	330	U		4400	U		3800	U		3700	U		1700
2-Chloronaphthalene	U	330	U		4400	U		3800	U		3700	U		1700
2-Nitroaniline	U	330	U		4400	U		3800	U		3700	U		1700
Dimethylphthalate	U	330	U		4400	U		3800	U		3700	U		1700
Acenaphthylene	U	330	U		4400	U		3800	U		3700	U		1700
2,6-Dinitrotoluene	U	330	U		4400	U		3800	U		3700	U		1700
3-Nitroaniline	U	330	U		4400	U		3800	U		3700	U		1700
Acenaphthene	U	330	U		4400	U		3800	U		3700	U		1700
2,4-Dinitrophenol	U	330	U		4400	U		3800	U		3700	U		1700
4-Nitrophenol	U	330	U		4400	U		3800	U		3700	U		1700
Dibenzofuran	U	330	U		4400	U		3800	U		3700	U		1700
2,4-Dinitrotoluene	U	330	U		4400	U		3800	U		3700	U		1700
Diethylphthalate	U	330	U		4400	U		380(	U		3700	U		1700
4-Chlorophenyl-phenylether	U	330	U		4400	U		380(	U		3700	U		1700
Fluorene	U	330	U		4400	U		380(	U		3700	U		1700
4-Nitroaniline	U	330	U		4400	U		380	U		3700	U		1700
4,6-Dinitro-2-methylphenol	U	330	U		4400	U		380	U		3700	U		1700
N-Nitrosodiphenylamine	U	330	U		4400	U		380	U		3700	U		1700
4-Bromophenyl-phenylether	U	330	U		4400	U		380	U		3700	U		1700
Hexachlorobenzene	U	330	U		4400	U		380	U		3700	U		1700
Pentachlorophenol	U	330	U		4400	U		380	U		3700	U		1700
Phenanthrene	U	330	U		4400	U		380	U		3700	680	J	1700
Anthracene	U	330	U		4400	U		380	U		3700	U		1700
Carbazole	U	330	U		4400	U		380	U		3700	U		1700
Di-n-butylphthalate	U	330	U		4400	U		380	U		3700	U		1700
Fluoranthene	U	330	2400	J	4400	1300	J	3800	1000	J	3700	U		1700
Pyrene	U	330	2200	J	4400	1200	J	3800	880	J	3700	U		1700
Butylbenzylphthalate	U	330	U		4400	U		3800	6000		3700	U		1700
Benzo(a)anthracene	U	330	1500	J	4400	U		3800	U		3700	U		1700
3,3'-Dichlorobenzidine	U	330	U		4400	U		3800	U		3700	U		1700
Chrysene	U	330	1900	J	4400	1000	J	3800	U		3700	U		1700
Bis(2-Ethylhexyl)phthalate	U	330	U		4400	8700		3800	1200	J	3700	1300	J	1700
Di-n-octylphthalate	U	330	U		4400	U		3800	U		3700	U		1700
Benzo(b)fluoranthene	U	330	3100	J	4400	1600	J	3800	940	J	3700	U		1700
Benzo(k)fluoranthene	U	330	2400	J	4400	1400	J	3800	830	J	3700	U		1700
Benzo(a)pyrene	U	330	3300	J	4400	1400	J	3800	920	J	3700	U		1700
Indeno(1,2,3-cd)pyrene	U	330	3200	J	4400	1700	J	3800	770	J	3700	U		1700
Dibenzo(a,h)anthracene	U	330	1200	J	4400	U		3800	U		3700	U		1700
Benzo(g,h,i)perylene	U	330	3600	J	4400	1900	J	3800	920	J	3700	U		1700

Table 1.3 (cont.) Results of the Analysis for BNA in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	A16661	A16662	A16663	A16664	A16665
Sample Location	11	12	13	14	15
GC/MS File Name	LS030	LS031	LS032	LS033	LS034
Dilution Factor	10	5	5	5	5
% Solid	85	80	91	74	62

Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Phenol	9700	3900	4700	2100	2200	1800	7000	2300	1600 J	2700
bis(-2-Chloroethyl)Ether	U	3900	U	2100	U	1800	U	2300	U	2700
2-Chlorophenol	U	3900	U	2100	U	1800	U	2300	U	2700
1,3-Dichlorobenzene	U	3900	U	2100	U	1800	U	2300	U	2700
1,4-Dichlorobenzene	U	3900	U	2100	U	1800	U	2300	U	2700
Benzyl alcohol	U	3900	U	2100	U	1800	U	2300	U	2700
1,2-Dichlorobenzene	U	3900	U	2100	U	1800	U	2300	U	2700
2-Methylphenol	U	3900	U	2100	U	1800	U	2300	U	2700
bis(2-Chloroisopropyl)ether	U	3900	U	2100	U	1800	U	2300	U	2700
4-Methylphenol	U	3900	U	2100	U	1800	U	2300	U	2700
N-Nitroso-Di-n-propylamine	U	3900	U	2100	U	1800	U	2300	U	2700
Hexachloroethane	U	3900	U	2100	U	1800	U	2300	U	2700
Nitrobenzene	U	3900	U	2100	U	1800	U	2300	U	2700
Isophorone	U	3900	U	2100	U	1800	U	2300	U	2700
2-Nitrophenol	U	3900	U	2100	U	1800	U	2300	U	2700
2,4-Dimethylphenol	U	3900	U	2100	U	1800	U	2300	U	2700
bis(2-Chloroethoxy)methane	U	3900	U	2100	U	1800	U	2300	U	2700
2,4-Dichlorophenol	U	3900	U	2100	U	1800	U	2300	U	2700
1,2,4-Trichlorobenzene	U	3900	U	2100	U	1800	U	2300	U	2700
Naphthalene	2100 J	3900	960 J	2100	670 J	1800	1400 J	2300	U	2700
4-Chloroaniline	U	3900	U	2100	U	1800	U	2300	U	2700
Hexachlorobutadiene	U	3900	U	2100	U	1800	U	2300	U	2700
4-Chloro-3-methylphenol	U	3900	U	2100	U	1800	U	2300	U	2700
2-Methylnaphthalene	U	3900	500 J	2100	400 J	1800	U	2300	U	2700
Hexachlorocyclopentadiene	U	3900	U	2100	U	1800	U	2300	U	2700
2,4,6-Trichlorophenol	U	3900	U	2100	U	1800	U	2300	U	2700
2,4,5-Trichlorophenol	U	3900	U	2100	U	1800	U	2300	U	2700
2-Chloronaphthalene	U	3900	U	2100	U	1800	U	2300	U	2700
2-Nitroaniline	U	3900	U	2100	U	1800	U	2300	U	2700
Dimethylphthalate	U	3900	U	2100	U	1800	U	2300	U	2700
Acenaphthylene	U	3900	U	2100	U	1800	U	2300	U	2700
2,6-Dinitrotoluene	U	3900	U	2100	U	1800	U	2300	U	2700
3-Nitroaniline	U	3900	U	2100	U	1800	U	2300	U	2700
Acenaphthene	U	3900	U	2100	U	1800	U	2300	U	2700
2,4-Dinitrophenol	U	3900	U	2100	U	1800	U	2300	U	2700
4-Nitrophenol	U	3900	U	2100	U	1800	U	2300	U	2700
Dibenzofuran	U	3900	U	2100	U	1800	U	2300	U	2700
2,4-Dinitrotoluene	U	3900	U	2100	U	1800	U	2300	U	2700
Diethylphthalate	U	3900	U	2100	U	1800	U	2300	U	2700
4-Chlorophenyl-phenylether	U	3900	U	2100	U	1800	U	2300	U	2700
Fluorene	U	3900	U	2100	U	1800	U	2300	U	2700
4-Nitroaniline	U	3900	U	2100	U	1800	U	2300	U	2700
4,6-Dinitro-2-methylphenol	U	3900	U	2100	U	1800	U	2300	U	2700
N-Nitrosodiphenylamine	U	3900	U	2100	U	1800	U	2300	U	2700
4-Bromophenyl-phenylether	U	3900	U	2100	U	1800	U	2300	U	2700
Hexachlorobenzene	U	3900	U	2100	U	1800	U	2300	U	2700
Pentachlorophenol	U	3900	U	2100	U	1800	U	2300	U	2700
Phenanthrene	U	3900	530 J	2100	U	1800	U	2300	U	2700
Anthracene	U	3900	U	2100	U	1800	U	2300	U	2700
Carbazole	U	3900	U	2100	U	1800	U	2300	U	2700
Di-n-butylphthalate	U	3900	U	2100	U	1800	U	2300	U	2700
Fluoranthene	U	3900	600 J	2100	U	1800	U	2300	U	2700
Pyrene	U	3900	900 J	2100	U	1800	U	2300	U	2700
Butylbenzylphthalate	U	3900	U	2100	U	1800	U	2300	U	2700
Benzo(a)anthracene	U	3900	U	2100	U	1800	U	2300	U	2700
3,3'-Dichlorobenzidine	U	3900	U	2100	U	1800	U	2300	U	2700
Chrysene	U	3900	U	2100	U	1800	U	2300	U	2700
Bis(2-Ethylhexyl)phthalate	16000	3900	1300 J	2100	540 J	1800	U	2300	U	2700
Di-n-octylphthalate	U	3900	U	2100	U	1800	U	2300	U	2700
Benzo(b)fluoranthene	U	3900	U	2100	U	1800	U	2300	U	2700
Benzo(k)fluoranthene	U	3900	U	2100	U	1800	U	2300	U	2700
Benzo(a)pyrene	U	3900	U	2100	U	1800	460 J	2300	U	2700
Indeno(1,2,3-cd)pyrene	U	3900	U	2100	U	1800	U	2300	U	2700
Dibenzo(a,h)anthracene	U	3900	U	2100	U	1800	U	2300	U	2700
Benzo(g,h,i)perylene	U	3900	U	2100	U	1800	U	2300	U	2700

Table 1.3 (cont.) Results of the Analysis for BNA in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	A16666		A16667		A16668	
Sample Location	Location 16		Location 17		Location 18	
GC/MS File Name	LFS035		LFS036		LFS037	
Dilution Factor	5		5		5	
% Solid	90		88		93	

Compound Name	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg
Phenol	840	J	1900	910	J	1900	11000		1800
bis(-2-Chloroethyl)Ether	U		1900	U		1900	U		1800
2-Chlorophenol	U		1900	U		1900	U		1800
1,3-Dichlorobenzene	U		1900	U		1900	U		1800
1,4-Dichlorobenzene	U		1900	U		1900	U		1800
Benzyl alcohol	U		1900	U		1900	U		1800
1,2-Dichlorobenzene	U		1900	U		1900	U		1800
2-Methylphenol	U		1900	U		1900	U		1800
bis(2-Chloroisopropyl)ether	U		1900	U		1900	U		1800
4-Methylphenol	U		1900	U		1900	U		1800
N-Nitroso-Di-n-propylamine	U		1900	U		1900	U		1800
Hexachloroethane	U		1900	U		1900	U		1800
Nitrobenzene	U		1900	U		1900	U		1800
Isophorone	U		1900	U		1900	U		1800
2-Nitrophenol	U		1900	U		1900	U		1800
2,4-Dimethylphenol	U		1900	U		1900	U		1800
bis(2-Chloroethoxy)methane	U		1900	U		1900	U		1800
2,4-Dichlorophenol	U		1900	U		1900	U		1800
1,2,4-Trichlorobenzene	U		1900	U		1900	U		1800
Naphthalene	U		1900	U		1900	850	J	1800
4-Chloroaniline	U		1900	U		1900	U		1800
Hexachlorobutadiene	U		1900	U		1900	U		1800
4-Chloro-3-methylphenol	U		1900	U		1900	U		1800
2-Methylnaphthalene	U		1900	U		1900	U		1800
Hexachlorocyclopentadiene	U		1900	U		1900	U		1800
2,4,6-Trichlorophenol	U		1900	U		1900	U		1800
2,4,5-Trichlorophenol	U		1900	U		1900	U		1800
2-Chloronaphthalene	U		1900	U		1900	U		1800
2-Nitroaniline	U		1900	U		1900	U		1800
Dimethylphthalate	U		1900	U		1900	U		1800
Acenaphthylene	U		1900	U		1900	U		1800
2,6-Dinitrotoluene	U		1900	U		1900	U		1800
3-Nitroaniline	U		1900	U		1900	U		1800
Acenaphthene	U		1900	U		1900	U		1800
2,4-Dinitrophenol	U		1900	U		1900	U		1800
4-Nitrophenol	U		1900	U		1900	U		1800
Dibenzofuran	U		1900	U		1900	U		1800
2,4-Dinitrotoluene	U		1900	U		1900	U		1800
Diethylphthalate	U		1900	U		1900	U		1800
4-Chlorophenyl-phenylether	U		1900	U		1900	U		1800
Fluorene	U		1900	U		1900	U		1800
4-Nitroaniline	U		1900	U		1900	U		1800
4,6-Dinitro-2-methylphenol	U		1900	U		1900	U		1800
N-Nitrosodiphenylamine	U		1900	U		1900	U		1800
4-Bromophenyl-phenylether	U		1900	U		1900	U		1800
Hexachlorobenzene	U		1900	U		1900	U		1800
Pentachlorophenol	U		1900	U		1900	U		1800
Phenanthrene	U		1900	U		1900	U		1800
Anthracene	U		1900	U		1900	U		1800
Carbazole	U		1900	U		1900	U		1800
Di-n-butylphthalate	U		1900	U		1900	U		1800
Fluoranthene	U		1900	860	J	1900	U		1800
Pyrene	U		1900	740	J	1900	U		1800
Butylbenzylphthalate	U		1900	U		1900	U		1800
Benzo(a)anthracene	U		1900	410	J	1900	U		1800
3,3'-Dichlorobenzidine	U		1900	U		1900	U		1800
Chrysene	U		1900	510	J	1900	U		1800
Bis(2-Ethylhexyl)phthalate	U		1900	U		1900	U		1800
Di-n-octylphthalate	U		1900	U		1900	U		1800
Benzo(b)fluoranthene	U		1900	580	J	1900	U		1800
Benzo(k)fluoranthene	U		1900	520	J	1900	U		1800
Benzo(a)pyrene	U		1900	570	J	1900	U		1800
Indeno(1,2,3-cd)pyrene	U		1900	420	J	1900	U		1800
Dibenzo(a,h)anthracene	U		1900	U		1900	U		1800
Benzo(g,h,i)perylene	U		1900	470	J	1900	U		1800

Table 1.3 (cont.) Results of the Analysis for BNA in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	SBLK042099		A16669		A16670		A16671		A16672	
Sample Location	Lab Blank		Location 19		Location 20		Location 21		Location 22	
GC/MS File Name	LFS041		LFS042		LFS043		LFS044		LFS045	
Dilution Factor	1		1		5		10		5	
% Solid	100		93		91		48		81	

Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Phenol	U	330	4000	360	18000	1800	5600 J	6900	U	2000
bis(-2-Chloroethyl)Ether	U	330	U	360	U	1800	U	6900	U	2000
2-Chlorophenol	U	330	U	360	U	1800	U	6900	U	2000
1,3-Dichlorobenzene	U	330	U	360	U	1800	U	6900	U	2000
1,4-Dichlorobenzene	U	330	U	360	U	1800	U	6900	U	2000
Benzyl alcohol	U	330	U	360	U	1800	U	6900	U	2000
1,2-Dichlorobenzene	U	330	U	360	U	1800	U	6900	U	2000
2-Methylphenol	U	330	U	360	400 J	1800	U	6900	U	2000
bis(2-Chloroisopropyl)ether	U	330	U	360	U	1800	U	6900	U	2000
4-Methylphenol	U	330	U	360	U	1800	U	6900	U	2000
N-Nitroso-Di-n-propylamine	U	330	U	360	U	1800	U	6900	U	2000
Hexachloroethane	U	330	U	360	U	1800	U	6900	U	2000
Nitrobenzene	U	330	U	360	U	1800	U	6900	U	2000
Isophorone	U	330	U	360	U	1800	U	6900	U	2000
2-Nitrophenol	U	330	U	360	U	1800	U	6900	U	2000
2,4-Dimethylphenol	U	330	U	360	U	1800	U	6900	U	2000
bis(2-Chloroethoxy)methane	U	330	U	360	U	1800	U	6900	U	2000
2,4-Dichlorophenol	U	330	U	360	U	1800	U	6900	U	2000
1,2,4-Trichlorobenzene	U	330	U	360	U	1800	U	6900	U	2000
Naphthalene	U	330	580	360	4400	1800	U	6900	U	2000
4-Chloroaniline	U	330	U	360	U	1800	U	6900	U	2000
Hexachlorobutadiene	U	330	U	360	U	1800	U	6900	U	2000
4-Chloro-3-methylphenol	U	330	U	360	U	1800	U	6900	U	2000
2-Methylnaphthalene	U	330	100 J	360	1100 J	1800	U	6900	U	2000
Hexachlorocyclopentadiene	U	330	U	360	U	1800	U	6900	U	2000
2,4,6-Trichlorophenol	U	330	U	360	U	1800	U	6900	U	2000
2,4,5-Trichlorophenol	U	330	U	360	U	1800	U	6900	U	2000
2-Chloronaphthalene	U	330	U	360	U	1800	U	6900	U	2000
2-Nitroaniline	U	330	U	360	U	1800	U	6900	U	2000
Dimethylphthalate	U	330	U	360	U	1800	U	6900	U	2000
Acenaphthylene	U	330	U	360	U	1800	U	6900	420 J	2000
2,6-Dinitrotoluene	U	330	U	360	U	1800	U	6900	U	2000
3-Nitroaniline	U	330	U	360	U	1800	U	6900	U	2000
Acenaphthene	U	330	U	360	U	1800	U	6900	U	2000
2,4-Dinitrophenol	U	330	U	360	U	1800	U	6900	U	2000
4-Nitrophenol	U	330	U	360	U	1800	U	6900	U	2000
Dibenzofuran	U	330	U	360	U	1800	U	6900	U	2000
2,4-Dinitrotoluene	U	330	U	360	U	1800	U	6900	U	2000
Diethylphthalate	U	33[illegible]	U	360	U	1800	U	6900	U	2000
4-Chlorophenyl-phenylether	U	3[illegible]	U	360	U	1800	U	6900	U	2000
Fluorene	U	3[illegible]	U	360	U	1800	U	6900	U	2000
4-Nitroaniline	U	3[illegible]	U	360	U	1800	U	6900	U	2000
4,6-Dinitro-2-methylphenol	U	33[illegible]	U	360	U	1800	U	6900	U	2000
N-Nitrosodiphenylamine	U	330	U	360	U	1800	U	6900	U	2000
4-Bromophenyl-phenylether	U	33[illegible]	U	360	U	1800	U	6900	U	2000
Hexachlorobenzene	U	33[illegible]	U	360	U	1800	U	6900	U	2000
Pentachlorophenol	U	330	U	360	U	1800	U	6900	U	2000
Phenanthrene	U	330	U	360	U	1800	U	6900	U	2000
Anthracene	U	330	U	360	U	1800	U	6900	U	2000
Carbazole	U	330	U	360	U	1800	U	6900	U	2000
Di-n-butylphthalate	U	330	U	360	U	1800	U	6900	U	2000
Fluoranthene	U	330	74 J	360	1600 J	1800	3400 J	6900	4700	2000
Pyrene	U	330	U	360	1400 J	1800	3400 J	6900	4100	2000
Butylbenzylphthalate	U	330	U	360	U	1800	U	6900	U	2000
Benzo(a)anthracene	U	330	U	360	840 J	1800	2100 J	6900	2600	2000
3,3'-Dichlorobenzidine	U	330	U	360	U	1800	U	6900	U	2000
Chrysene	U	330	U	360	900 J	1800	2600 J	6900	2400	2000
Bis(2-Ethylhexyl)phthalate	U	330	180 J	360	760 J	1800	1700 J	6900	430 J	2000
Di-n-octylphthalate	U	330	U	360	U	1800	U	6900	U	2000
Benzo(b)fluoranthene	U	330	U	360	910 J	1800	3500 J	6900	2700	2000
Benzo(k)fluoranthene	U	330	U	360	890 J	1800	3400 J	6900	2500	2000
Benzo(a)pyrene	U	330	U	360	980 J	1800	3700 J	6900	3100	2000
Indeno(1,2,3-cd)pyrene	U	330	U	360	660 J	1800	3100 J	6900	1600 J	2000
Dibenzo(a,h)anthracene	U	330	U	360	U	1800	U	6900	U	2000
Benzo(g,h,i)perylene	U	330	U	360	770 J	1800	3600 J	6900	1700 J	2000

Table 1.3 (cont.) Results of the Analysis for BNA in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	A16673		A16674		A16675		A16676		A16677	
Sample Location	Location 23		Location 24		Location 25		Location 25-D		Location 26	
GC/MS File Name	LFS048		LFS049		LFS050		LFS051		LFS052	
Dilution Factor	10		5		10		1		10	
% Solid	82		75		83		77		70	
Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg
Phenol	2400 J	4100	4000	2200	990 J	4000	U	430	U	4800
bis(-2-Chloroethyl)Ether	U	4100	U	2200	U	4000	U	430	U	4800
2-Chlorophenol	U	4100	U	2200	U	4000	U	430	U	4800
1,3-Dichlorobenzene	U	4100	U	2200	U	4000	U	430	U	4800
1 4-Dichlorobenzene	U	4100	U	2200	U	4000	U	430	U	4800
Benzyl alcohol	U	4100	U	2200	U	4000	U	430	U	4800
1,2-Dichlorobenzene	U	4100	U	2200	U	4000	U	430	U	4800
2-Methylphenol	U	4100	U	2200	U	4000	U	430	U	4800
bis(2-Chloroisopropyl)ether	U	4100	U	2200	U	4000	U	430	U	4800
4-Methylphenol	U	4100	U	2200	U	4000	U	430	U	4800
N-Nitroso-Di-n-propylamine	U	4100	U	2200	U	4000	U	430	U	4800
Hexachloroethane	U	4100	U	2200	U	4000	U	430	U	4800
Nitrobenzene	U	4100	U	2200	U	4000	U	430	U	4800
Isophorone	U	4100	U	2200	U	4000	U	430	U	4800
2-Nitrophenol	U	4100	U	2200	U	4000	U	430	U	4800
2,4-Dimethylphenol	U	4100	U	2200	U	4000	U	430	U	4800
bis(2-Chloroethoxy)methane	U	4100	U	2200	U	4000	U	430	U	4800
2,4-Dichlorophenol	U	4100	U	2200	U	4000	U	430	U	4800
1,2,4-Trichlorobenzene	U	4100	U	2200	U	4000	U	430	U	4800
Naphthalene	1100 J	4100	1400 J	2200	U	4000	U	430	U	4800
4-Chloroaniline	U	4100	U	2200	U	4000	U	430	U	4800
Hexachlorobutadiene	U	4100	U	2200	U	4000	U	430	U	4800
4-Chloro-3-methylphenol	U	4100	U	2200	U	4000	U	430	U	4800
2-Methylnaphthalene	850 J	4100	790 J	2200	U	4000	U	430	U	4800
Hexachlorocyclopentadiene	U	4100	U	2200	U	4000	U	430	U	4800
2,4,6-Trichlorophenol	U	4100	U	2200	U	4000	U	430	U	4800
2,4,5-Trichlorophenol	U	4100	U	2200	U	4000	U	430	U	4800
2-Chloronaphthalene	U	4100	U	2200	U	4000	U	430	U	4800
2-Nitroaniline	U	4100	U	2200	U	4000	U	430	U	4800
Dimethylphthalate	U	4100	U	2200	U	4000	U	430	U	4800
Acenaphthylene	1300 J	4100	U	2200	U	4000	U	430	U	4800
2,6-Dinitrotoluene	U	4100	U	2200	U	4000	U	430	U	4800
3-Nitroaniline	U	4100	U	2200	U	4000	U	430	U	4800
Acenaphthene	U	4100	U	2200	U	4000	U	430	U	4800
2 4-Dinitrophenol	U	4100	U	2200	U	4000	U	430	U	4800
4-Nitrophenol	U	4100	U	2200	U	4000	U	430	U	4800
Dibenzofuran	U	4100	U	2200	U	4000	U	430	U	4800
2 4-Dinitrotoluene	U	4100	U	2200	U	4000	U	430	U	4800
Diethylphthalate	U	4100	U	2200	U	400(	U	430	U	4800
4-Chlorophenyl-phenylether	U	4100	U	2200	U	400	U	430	U	4800
Fluorene	U	4100	U	2200	U	400	U	430	U	4800
4-Nitroaniline	U	4100	U	2200	U	40(	U	430	U	4800
4 6-Dinitro-2-methylphenol	U	4100	U	2200	U	40(	U	430	U	4800
N-Nitrosodiphenylamine	U	4100	U	2200	U	40(	U	430	U	4800
4-Bromophenyl-phenylether	U	4100	U	2200	U	40(	U	430	U	4800
Hexachlorobenzene	U	4100	U	2200	U	40(	U	430	U	4800
Pentachlorophenol	U	4100	U	2200	U	40(	U	430	U	4800
Phenanthrene	2200 J	4100	U	2200	U	40(	U	430	U	4800
Anthracene	1400 J	4100	U	2200	U	40(	U	430	U	4800
Carbazole	U	4100	U	2200	U	40(	U	430	U	4800
Di-n-butylphthalate	U	4100	U	2200	U	400	U	430	U	4800
Fluoranthene	8500	4100	1200 J	2200	5800	4000	100 J	430	3300 J	4800
Pyrene	8800	4100	940 J	2200	4800	4000	U	430	2900 J	4800
Butylbenzylphthalate	U	4100	U	2200	U	4000	U	430	U	4800
Benzo(a)anthracene	5200	4100	650 J	2200	2700 J	4000	U	430	1600 J	4800
3,3'-Dichlorobenzidine	U	4100	U	2200	U	4000	U	430	U	4800
Chrysene	5400	4100	910 J	2200	3100 J	4000	U	430	2000 J	4800
Bis(2-Ethylhexyl)phthalate	U	4100	U	2200	U	4000	U	430	1100 J	4800
Di-n-octylphthalate	U	4100	U	2200	U	4000	U	430	U	4800
Benzo(b)fluoranthene	5700	4100	1200 J	2200	3600 J	4000	U	430	2100 J	4800
Benzo(k)fluoranthene	5700	4100	1000 J	2200	3200 J	4000	U	430	1900 J	4800
Benzo(a)pyrene	5300	4100	1100 J	2200	3700 J	4000	U	430	2200 J	4800
Indeno(1,2,3-cd)pyrene	3100 J	4100	860 J	2200	2400 J	4000	U	430	1400 J	4800
Dibenzo(a,h)anthracene	U	4100	U	2200	U	4000	U	430	U	4800
Benzo(g,h,i)perylene	3200 J	4100	970 J	2200	2700 J	4000	U	430	U	4800

Table 1.3 (cont.) Results of the Analysis for BNA in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	A16678			A16679		
Sample Location	Location 26-D			Location 27		
GC/MS File Name	LFS053			LFS054		
Dilution Factor	1			5		
% Solid	77			83		
Compound Name	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg
Phenol	U		440	16000		2000
bis(-2-Chloroethyl)Ether	U		440	U		2000
2-Chlorophenol	U		440	U		2000
1,3-Dichlorobenzene	U		440	U		2000
1,4-Dichlorobenzene	U		440	U		2000
Benzyl alcohol	U		440	U		2000
1,2-Dichlorobenzene	U		440	U		2000
2-Methylphenol	U		440	820	J	2000
bis(2-Chloroisopropyl)ether	U		440	U		2000
4-Methylphenol	U		440	U		2000
N-Nitroso-Di-n-propylamine	U		440	U		2000
Hexachloroethane	U		440	U		2000
Nitrobenzene	U		440	U		2000
Isophorone	U		440	U		2000
2-Nitrophenol	U		440	U		2000
2,4-Dimethylphenol	U		440	U		2000
bis(2-Chloroethoxy)methane	U		440	U		2000
2,4-Dichlorophenol	U		440	U		2000
1,2,4-Trichlorobenzene	U		440	1700	J	2000
Naphthalene	U		440	2900		2000
4-Chloroaniline	U		440	U		2000
Hexachlorobutadiene	U		440	U		2000
4-Chloro-3-methylphenol	U		440	U		2000
2-Methylnaphthalene	U		440	810	J	2000
Hexachlorocyclopentadiene	U		440	U		2000
2,4,6-Trichlorophenol	U		440	U		2000
2,4,5-Trichlorophenol	U		440	U		2000
2-Chloronaphthalene	U		440	U		2000
2-Nitroaniline	U		440	U		2000
Dimethylphthalate	U		440	U		2000
Acenaphthylene	96	J	440	U		2000
2,6-Dinitrotoluene	U		440	U		2000
3-Nitroaniline	U		440	U		2000
Acenaphthene	U		440	U		2000
2,4-Dinitrophenol	U		440	U		2000
4-Nitrophenol	U		440	U		2000
Dibenzofuran	U		440	U		2000
2,4-Dinitrotoluene	U		440	U		2000
Diethylphthalate	U		440	U		2000
4-Chlorophenyl-phenylether	U		440	U		2000
Fluorene	U		440	U		2000
4-Nitroaniline	U		440	U		2000
4,6-Dinitro-2-methylphenol	U		440	U		2000
N-Nitrosodiphenylamine	U		440	U		2000
4-Bromophenyl-phenylether	U		440	U		2000
Hexachlorobenzene	U		440	U		2000
Pentachlorophenol	U		440	U		2000
Phenanthrene	440		440	U		2000
Anthracene	92	J	440	U		2000
Carbazole	U		440	U		2000
Di-n-butylphthalate	U		440	U		2000
Fluoranthene	930		440	420	J	2000
Pyrene	810		440	500	J	2000
Butylbenzylphthalate	U		440	U		2000
Benzo(a)anthracene	470		440	U		2000
3,3'-Dichlorobenzidine	U		440	U		2000
Chrysene	500		440	U		2000
Bis(2-Ethylhexyl)phthalate	U		440	1000	J	2000
Di-n-octylphthalate	U		440	U		2000
Benzo(b)fluoranthene	540		440	U		2000
Benzo(k)fluoranthene	520		440	U		2000
Benzo(a)pyrene	600		440	U		2000
Indeno(1,2,3-cd)pyrene	360	J	440	U		2000
Dibenzo(a,h)anthracene	U		440	U		2000
Benzo(g,h,i)perylene	400	J	440	U		2000

Table 1.4 Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample ID	LabFile#	CAS #	Compound	Conc** ug/kg
SBLK 041599	LFS 002		No TICs were detected	
A 16650	LFS 003		No TICs were detected	
A 16653	LFS 008		Unknown	2500
A 16653	LFS 008		Unknown Alkane	3800
A 16653	LFS 008		Unknown Alkane	5900
A 16654	LFS 009		Unknown Aldehyde + Unknown	1700
A 16654	LFS 009		Unknown Alkane	2600
A 16656	LFS 012		No TICs were detected	
SBLK 041999	LFS 023		Unknown	210
SBLK 041999	LFS 023		Unknown	140
A 16659	LFS 026		Benzene, methylenebis[isocyananato-] + alkyl benzene	1600
A 16665	LFS 034		No TICs were detected	
A 16666	LFS 035		Unknown	890
A 16666	LFS 035		Unknown Phthalate	760
A 16666	LFS 035	000127-63-9	Diphenyl sulfone	1200
A 16667	LFS 036		No TICs were detected	
SBLK 042099	LFS 041		Unknown	160
A 16671	LFS 044		Phenylpropyl-pyridine isomer	4000
A 16671	LFS 044		Hexadecenoic acid + unknown	5600
A 16675	LFS 050		Unknown PAH isomer	2700
A 16676	LFS 051		Unknown	340
A 16676	LFS 051		Unknown	210

** the concentration is estimated - the response factor was assumed to be 1

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16651
LabFile# LFS004 Con. Factor 35

	CAS#	Compound	Q	RT	Con µg/kg
1		Trimethyl-benzene isomer		4.92	1600
2		Trimethyl-benzene isomer		5.09	1500
3		Trimethyl-benzene isomer		5.21	4900
4		Trimethyl-benzene isomer		5.48	1900
5		Ethyl-dimethyl-benzene isomer		5.73	2200
6		2-butoxyethyl acetate		5.87	4300
7		Ethyl-dimethyl-benzene isomer		5.91	860
8		Ethyl-dimethyl-benzene isomer		5.93	650
9		Ethyl-dimethyl-benzene isomer		5.98	1200
10		Ethyl-dimethyl-benzene isomer		6.25	870
11		Ethyl-dimethyl-benzene isomer		6.29	710
12		Alkyl benzene isomer		6.43	670
13		Alkylbenzene isomer + dihydro-methyl-indene isomer		6.57	1100
14	000627-93-0	Hexanedioic acid, dimethyl ester	91	7.08	670
15	000090-01-7	Salicyl Alcohol	90	7.39	2600
16		Unknown acid		8.36	560
17		Phenylpropyl-pyridine + unknown		10.69	4200
18		Phthalate isomer		11.08	5100
19	000101-68-8	Benzene, 1,1'-methylenebis{4-isocyananato-}	99	12.37	3400
20		Unknown PAH isomer		18.15	820

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16652
LabFile# LFS005 Con. Factor 180

	CAS#	Compound	Q	RT	Conc.* µg/kg
1		Trimethyl-benzene isomer		4.92	1600
2		Trimethyl-benzene isomer		5.09	1600
3		Trimethyl-benzene isomer		5.21	5400
4		Trimethyl-benzene isomer		5.49	2000
5		Ethyl-dimethyl-benzene isomer		5.73	2100
6		Butoxyethyl acetate		5.87	6500
7		Ethyl-dimethyl-benzene isomer		5.91	810
8		Ethyl-dimethyl-benzene isomer		5.98	940
9		Alkyl benzene isomer + dihydro-methyl-indene isomer		6.57	990
10	000090-1-7	Salicyl Alcohol	90	7.39	2500
11		Phenylpropyl-pyridine + unknown		10.69	5900
12		Phthalate isomer		11.08	6700
13		Unknown		12.02	810
14	000101-68-8	Benzene, 1,1'-methylenebis{4-isocyananato}-	99	12.37	9400
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16655
LabFile# LFS010 Con. Factor 41

	CAS#	Compound	Q	RT	Cor µg/kg
1	000132-65-0	Dibenzothiophene	97	10.78	500
2		Methyl-phenanthrene isomer		11.53	780
3		Methyl-phenanthrene isomer		11.57	920
4		Methyl-phenanthrene isomer		11.61	380
5		Cyclopenta[xxx]phenanthrene isomer		11.70	2000
6		Unknown PAH isomer		11.89	640
7		9,10-Anthracenedione + unknown		11.95	690
8		Unknown + unknown PAH isomer		12.31	420
9		Unknown		16.80	480
10		Unknown + unknown alkane		17.08	1400
11		Unknown PAH isomer		17.59	1100
12		Unknown PAH isomer		18.18	4900
13		Unknown PAH isomer		18.65	1500
14		Unknown alkane		19.69	1600
15		Unknown aldehyde + unknown		22.22	1200
16		Unknown PAH isomer		22.45	550
17		Unknown PAH isomer		22.54	460
18		Unknown PAH isomer		23.33	420
19		Unknown PAH isomer		23.49	860
20		Unknown PAH isomer		29.50	1300

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16657
LabFile# LFS024 Con. Factor 440

	CAS#	Compound	Q	RT	Conc.* µg/kg
1		Unknown		12.31	2300
2		Unknown aldehyde		16.53	2500
3		Unknown alkane		17.05	2900
4		Unknown benzo pyrene isomer		18.14	2400
5		Unknown alkane		19.66	6900
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16658
LabFile# LFS025 Con. Factor

	CAS#	Compound	Q	RT	Co µg/kg
1		Unknown		3.90	2300
2		Benzoic acid, [[[acetylamino)sulfonyl]phenyl]		7.86	1900
3		Unknown ketone		8.37	2300
4		Unknown		11.54	1700
5		Unknown		12.31	4100
6		Unknown alkane		19.67	1800
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16660
LabFile# LFS027 Con. Factor 170

	CAS#	Compound	Q	RT	Conc.* µg/kg
1		Trimethyl-benzene isomer		5.21	1300
2		Trimethyl-benzene isomer		5.48	830
3		Unknown acid		6.26	1400
4		Phenyl-butene		6.57	740
5		Methyl-naphthalene isomer		7.87	1100
6		Dimethyl-naphthalene isomer		8.61	980
7		Trimethyl-naphthalene isomer + unknown		9.28	720
8		Unknown alkane + unknown		9.44	1400
9		Trimethyl-naphthalene isomer + unknown alkane		9.72	1400
10		Unknown alkane		10.58	1300
11		Unknown alkane		10.63	910
12		Unknown alkane		11.10	930
13		Trichloro-biphenyl isomer + unknown		11.31	710
14		Trichloro-biphenyl isomer + unknown		11.33	710
15		Trichloro-biphenyl isomer + unknown		11.53	690
16		Unknown phthalate + methyl-phenanthrene isomer		11.56	690
17		Unknown alkane		11.60	1100
18		Unknown alkane		12.08	980
19		Unknown alkane		12.54	740
20		Unknown alkane		12.71	1500

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16661
LabFile# LFS030 Con. Factor

	CAS#	Compound	Q	RT	Con. µg/kg
1		Unknown		3.90	1900
2		Trimethyl-benzene isomer		5.21	3400
3		Hydroxy benzaldehyde + alkyl benzene		5.68	2300
4		Tetramethyl-benzene isomer		5.73	2500
5		Tetramethyl-benzene isomer		5.98	2100
6		Tetramethyl-benzene isomer + unknown		6.25	2400
7		Tetramethyl-benzene isomer		6.29	2400
8		Tetramethyl-benzene isomer + alkyl benzene		6.57	2600
9		Pyridine, (phenypropyl-) + unknown		10.69	2100
10		Unknown phthalate		11.08	3600
11	000127-63-9	Diphenyl sulfone	96	11.62	7700
12	000101-68-8	Benzene, 1,1'-methylenebis[4-isocyanato-	98	12.37	5700
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16662
LabFile# LFS031 Con. Factor 210

	CAS#	Compound	Q	RT	Conc.* µg/kg
1		Trimethyl-benzene isomer		5.21	1400
2		Benzaldehyde, hydroxy- + alkyl benzene		5.68	960
3	000090-01-7	Salicyl Alcohol	91	7.39	1200
4		Unknown alkane		8.82	1200
5		Unknown alkane		9.44	2600
6		Unknown alkane		9.73	2600
7		Azulene, ethyl dimethyl- + unknown		10.28	1200
8		Unknown alkane		10.58	2200
9		Unknown alkane		10.64	3100
10		Pyridine, (phenypropyl-) + unknown		10.69	1400
11		Unknown phthalate		11.07	1000
12		Unknown alkane		11.10	1600
13		Trichloro-biphenyl isomer + unknown		11.33	1300
14		Trichloro-biphenyl isomer + unknown		11.52	1000
15		Unknown alkane		11.61	1600
16	000127-63-9	Diphenyl sulfone	93	11.62	2600
17		Tetra-chloro-biphenyl isomer + unknown		11.67	1100
18		Unknown alkane		12.08	1500
19		Benzene,methtlenebis[isocyanato-] + unknown		12.37	1700
20		Trimethyl-phenanthrene isomer		12.79	1300

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16663
LabFile# LFS032 Con. Factor

	CAS#	Compound	Q	RT	Conc. µg/kg
1		Unknown		10.63	1700
2		Unknown phthalate		11.08	730
3	000127-63-9	Diphenyl sulfone	90	11.62	750
4		Unknown		12.09	2600
5		Tetra-chloro-biphenyl isomer + unknown		12.52	750
6		Unknown		13.41	1500
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16664
LabFile# LFS033 Con. Factor 230

	CAS#	Compound	Q	RT	Conc.* µg/kg
1		Trimethyl-benzene isomer		5.21	1500
2		Hydroxy-benzaldehyde + alkyl benzene		5.68	1700
3		Tetramethyl-benzene isomer		5.73	1500
4		Tetramethyl-benzene isomer		5.98	1200
5		Tetramethyl-benzene isomer		6.25	1500
6		Tetramethyl-benzene isomer		6.29	1700
7		Tetramethyl-benzene isomer + alkyl benzene		6.57	1600
8		Phenylpropyl-pyridine		10.69	1900
9		Unknown phthalate		11.08	2500
10		Trichloro-biphenyl isomer		11.31	1000
11		Trichloro-biphenyl isomer		11.33	1300
12	000127-63-9	Diphenyl sulfone	95	11.62	1300
13		Tetrachloro-biphenyl isomer + unknown		11.67	1200
14		Tetrachloro-biphenyl isomer + unknown		11.91	1200
15		Tetrachloro-biphenyl isomer + unknown		12.29	1100
16		Tetrachloro-biphenyl isomer + unknown		12.34	950
17		Benzene, methylenebis[isocyanato-]		12.37	3300
18		Tetrachloro-biphenyl isomer + unknown		12.52	1000
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16668
LabFile# LFS037 Con. Factor 1

	CAS#	Compound	Q	RT	Conc. µg/kg
1		Trimethyl-benzene isomer		5.21	2300
2		Trimethyl-benzene isomer		5.48	790
3		Benzaldehyde, hydroxy + alkyl benzene		5.68	4300
4		Tetramethyl-benzene isomer		5.73	880
5		Butoxyethyl acetate		5.86	1500
6		Dimethyl ester hexanedioic acid + unknown		7.08	760
7		Unknown		7.34	970
8		Unknown		7.97	1200
9		Phenylpropyl-pyridine		10.69	940
10		Unknown phthalate		11.08	4400
11		Benzene, methylenebis[isocyanato-] + unknown		12.37	3800
12		Unknown alkane		17.06	1100
13		Unknown aldehyde + unknown		18.95	1000
14		Unknown aldehyde + unknown		22.20	1000
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16669
LabFile# LFS042 Con. Factor 36

	CAS#	Compound	Q	RT	Conc.* µg/kg
1		Trimethyl-benzene isomer		4.92	460
2		Trimethyl-benzene isomer		5.21	1300
3		Trimethyl-benzene isomer		5.48	550
4		Benzaldehyde, hydroxy- + alkyl benzene		5.67	2500
5		Tetramethyl-benzene isomer		5.73	960
6		Butoxyethyl acetate		5.86	420
7		Tetramethyl-benzene isomer		5.91	490
8		Tetramethyl-benzene isomer		5.98	570
9		Tetramethyl-benzene isomer		6.25	610
10		Tetramethyl-benzene isomer		6.28	610
11		Alkyl benzene		6.43	370
12		Tetramethyl-benzene isomer + alkyl benzene		6.57	510
13		Unknown acid		7.08	450
14		Unknown		7.34	370
15		Unknown alcohol		7.39	420
16		Unknown		7.97	510
17		Unknown		8.36	460
18		Unknown phthalate		11.08	500
19		Unknown		11.67	390
20		Benzene, methylenebis[isocyanato-] + unknown		12.37	1400

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16670
LabFile# LFS043 Con. Factor 1

	CAS#	Compound	Q	RT	Conc. µg/kg
1		Trimethyl-benzene isomer		4.92	2900
2		Trimethyl-benzene isomer		5.09	2100
3		Trimethyl-benzene isomer		5.21	7500
4		Trimethyl-benzene isomer		5.48	4000
5		Tetramethylbenzene isomer		5.73	5600
6		Methyl-propyl-benzene isomer		5.83	1200
7		Tetramethylbenzene isomer		5.90	3400
8		Tetramethylbenzene isomer		5.93	2500
9		Tetramethylbenzene isomer		5.97	5200
10		Tetramethylbenzene isomer		6.25	4600
11		Tetramethylbenzene isomer		6.28	4700
12		Alkyl benzene		6.42	1200
13		Tetramethylbenzene isomer + unknown		6.57	4600
14		Alkyl benzene		6.69	1400
15		Unknown acid		7.08	2000
16		Unknown alcohol		7.38	2600
17		Unknown		8.36	1200
18	2057-49-0	Pyridine, 4-(3-phenylpropyl-)	93	10.69	6300
19		Unknown phthalate		11.08	2900
20	101-68-8	Benzene, 1,1'-methylenebis[4-isocyanato-	99	12.37	3700

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16672
LabFile# LFS045 Con. Factor 200

	CAS#	Compound	Q	RT	Conc.* µg/kg
1		Unknown PAH isomer		11.70	980
2		H-Benzo fluorene isomer		13.16	920
3		Unknown aldehyde		16.54	1200
4		Unknown alkane		17.06	1700
5		Unknown PAH isomer		18.15	2000
6		Unknown aldehyde		18.94	1200
7		Unknown alkane		19.66	1200
8		Unknown aldehyde		22.19	1400
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16673
LabFile# LFS048 Con. Factor

	CAS#	Compound	Q	RT	Conc. µg/kg
1		Unknown		12.31	1700
2		Benzene, methylenebis[isocyanato]- + unknown		12.37	1800
3		Unknown PAH isomer		13.15	2300
4		Unknown alkane		17.05	1800
5		Unknown PAH isomer		18.15	4800
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16674
LabFile# LFS049

Con. Factor 220

	CAS#	Compound	Q	RT	Conc.* µg/kg
1		Trimethyl-benzene isomer		5.21	1100
2		Benzaldehyde, hydroxy + tetramethyl-benzene isomer		5.68	1100
3		Unknown alkane		9.44	910
4		Unknown		12.31	2000
5	101-68-8	Benzene, 1,1'-methylenebis[4-isocyanato]-	97	12.37	2100
6		Unknown		16.55	880
7		Unknown alkane		17.06	2400
8		Unknown alkane		19.67	3300
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16677
LabFile# LFS052 Con. Factor 4

	CAS#	Compound	Q	RT	Conc. µg/kg
1		Unknown aldehyde		16.55	2600
2		Unknown alkane		17.06	3300
3		Unknown aldehyde		18.95	2000
4		Unknown alkane		19.67	3200
5		Unknown alkane + alkene/cycloalkene		22.21	3100
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16678
LabFile# LFS053 Con. Factor 44

	CAS#	Compound	Q	RT	Conc.* µg/kg
1		Unknown		3.90	280
2		Unknown		3.95	180
3		Unknown alkane		9.44	280
4		Unknown alkane + unknown		9.73	310
5		Unknown alkane		10.58	280
6		Unknown alkane		10.64	180
7		Unknown alkane		11.11	230
8		Unknown alkane		11.60	240
9		Unknown PAH isomer		18.16	420
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.4 (cont.) Results of TIC for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample # A16679
LabFile# LFS054 Con. Factor 2

	CAS#	Compound	Q	RT	Conc. µg/kg
1		Trimethyl-benzene isomer		4.92	2100
2		Trimethyl-benzene isomer		5.21	4500
3		Tetramethyl-benzene isomer		5.98	2800
4		Tetramethyl-benzene isomer		6.25	3200
5		Tetramethyl-benzene isomer		6.28	2700
6		Dihydro methylindene + tetramethyl-benzene isomer		6.57	3200
7	000090-01-7	Salicyl Alcohol	94	7.39	4800
8		Tetrachloro-benzene isomer + unknown		8.36	2100
9	2057-49-0	Pyridine, 4-(3-phenylpropyl)	94	10.69	9300
10		Trichloro-biphenyl isomer + unknown		10.82	2700
11		Trichloro-biphenyl isomer + unknown		11.05	2100
12		Trichloro-biphenyl isomer		11.31	3600
13		Trichloro-biphenyl isomer		11.33	3800
14		Tetrachloro-biphenyl isomer + trichloro-biphenyl isomer		11.67	2800
15		Tetrachloro-biphenyl isomer + trichloro-biphenyl isomer		11.72	2100
16		Tetrachloro-biphenyl isomer + trichloro-biphenyl isomer		11.91	2600
17		Tetrachloro-biphenyl isomer + trichloro-biphenyl isomer		11.95	2400
18		Tetrachloro-biphenyl isomer		12.29	2200
19		Tetrachloro-biphenyl isomer		12.34	2700
20		Tetrachloro-biphenyl isomer		12.52	2300

* Estimated Concentration (Response Factor = 1)

Results of the QC Standard Analysis for Metals (Soil)

QC standards QC-7x100, QC-21x100, ERA-434, TMAA #1, TMAA #2 and TMWS were used to check the accuracy of the calibration curve. The percent recoveries, listed in Table 2.1, ranged from 90 to 115 and all twenty recovered concentrations for which 95% confidence limits are available were within the 95% confidence limits. The 95% confidence limits for nineteen values are not available.

Results of the MS/MSD Analysis for Metals in Soil

Samples C 16655, C 16661 and C 16669 were chosen for the matrix spike/matrix spike duplicate analysis (MS/MSD). The percent recoveries, listed in Table 2.2, ranged from 0 (zero) to 219. Sixty-four out of ninety-two reported values were within the acceptable QC limits. Ten values were not calculated because the concentration of analyte in the sample was greater than four times the concentration spiked. The relative percent differences, also listed in Table 2.2, ranged from 0 (zero) to 104. Thirty-five out of forty-four values were within the acceptable QC limits. Seven values were not calculated either because the spike recoveries were not calculated or none of the spiked analyte was recovered.

Results of the Blank Spike Analysis for Metals in Soil

The results of the blank spike analysis are reported in Table 2.3. The percent recoveries ranged from 92 to 109 and all twenty-three recovered values were within the acceptable QC limits.

Table 2.1 Results of the QC Standard Analysis for Metals (Soil)
WA # 3-439 Lackawanna Foundry Site

Metal	Date Analyzed	Quality Control Standard	Conc. Rec µg/L	Certified Value µg/L	95 % Confidence Interval µg/L	% Rec
Aluminum	04/20/99	QC-7 x100	998	1000	NA	100
	04/20/99	ERA-434	703	647	531-763	109
Antimony	04/20/99	QC-21 x100	981	1000	NA	98
Arsenic	04/19/99	TMAA #1	49.7	50	41.9-55.9	99
	04/20/99	TMAA #1	52.3	50	41.9-55.9	105
Barium	04/20/99	QC-7 x100	964	1000	NA	96
	04/20/99	ERA-434	723	735	603 - 867	98
Beryllium	04/20/99	QC-21 x100	1048	1000	NA	105
	04/20/99	ERA-434	86.2	82	68 - 97	105
Cadmium	04/20/99	QC-21 x100	1045	1000	NA	105
	04/20/99	ERA-434	78.3	77	63 - 90	102
Calcium	04/20/99	QC-21 x100	1061	1000	NA	106
Chromium	04/20/99	QC-21 x100	1061	1000	NA	106
	04/20/99	ERA-434	113	106	87 - 125	107
Cobalt	04/20/99	QC-21 x100	1074	1000	NA	107
	04/20/99	ERA-434	94.1	88	72 - 104	107
Copper	04/20/99	QC-21 x100	1019	1000	NA	102
	04/20/99	ERA-434	151	147	121 - 173	103
Iron	04/20/99	QC-21 x100	1082	1000	NA	108
	04/20/99	ERA-434	223	206	169 - 243	108
Lead	04/20/99	QC-21 x100	1067	1000	NA	107
	04/20/99	ERA-434	108	94	77 - 111	115
Magnesium	04/20/99	QC-21 x100	1005	1000	NA	100
Manganese	04/20/99	QC-21 x100	1053	1000	NA	105
	04/20/99	ERA-434	244	235	193 - 277	104
Mercury	04/19/99	TMWS	2.8	2.9	2.13 - 3.53	97
Nickel	04/20/99	QC-21 x100	1099	1000	NA	110
	04/20/99	ERA-434	124	112	92 - 132	111
Potassium	04/20/99	QC-7 x100	8988	10000	NA	90
Selenium	04/16/99	TMAA #1	54.76	50	39.4-57.4	110
	04/26/99	TMAA #1	49.16	50	39.4-57.4	98
Silver	04/20/99	QC-7 x100	997	1000	NA	100
	04/20/99	ERA-434	92.3	88	72 - 104	105
Sodium	04/20/99	QC-7 x100	952	1000	NA	95
Thallium	04/16/989	TMAA #2	51.1	50	39.9-57.97	102
Vanadium	04/20/99	QC-21 x100	1046	1000	NA	105
	04/20/99	ERA-434	123	118	97 - 139	104
Zinc	04/20/99	QC-21 x100	1071	1000	NA	107
	04/20/99	ERA-434	280	265	217 - 313	106

Table 2.2 Results of the MS/MSD Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Sample ID: C16655

Metal	Sample Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MS % Rec		MSD Spike Added mg/kg	MSD Conc mg/kg	MSD % Rec		RPD		Recommended QC Limits %Rec	RPD
Antimony	U	50.6	U	0	*	50.6	U	0	*	NC		75-125	20
Arsenic	15.1	5.89	20.1	85		5.83	22.5	127	*	40	*	75-125	20
Banum	129	50.6	171	83		50.6	172	85		2		75-125	20
Beryllium	0.853	50.6	51.9	101		50.6	52.9	103		2		75-125	20
Cadmium	2.44	50.6	51.7	97		50.6	52.3	98		1		75-125	20
Chromium	29	50.6	76.5	94		50.6	78.5	98		4		75-125	20
Cobalt	13.9	50.6	61.8	95		50.6	62.9	97		2		75-125	20
Copper	195	50.6	205	20	*	50.6	227	63	*	104	*	75-125	20
Lead	179	50.6	185	12	*	50.6	198	38	*	104	*	75-125	20
Manganese	700	50.6	722	NC		50.6	691	NC		NC		75-125	20
Mercury	0.111	0.438	0.525	95		0.438	0.525	95		0		75-125	20
Nickel	41	50.6	87.7	92		50.6	87.5	92		0		75-125	20
Selenium	0.578	5.89	3.066	42	*	5.83	3.74	54	*	25	*	75-125	20
Silver	U	50.6	48.1	95		50.6	48.3	95		0		75-125	20
Thallium	U	5.89	4.84	82		5.83	4.67	80		3		75-125	20
Vanadium	23 4	50.6	73.5	99		50.6	72.4	97		2		75-125	20
Zinc	340	50.6	301	NC		50.6	319	NC		NC		75-125	20

Table 2.2 (Cont) Results of the MS/MSD Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Sample ID. C16661

Metal	Sample Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MS % Rec		MSD Spike Added mg/kg	MSD Conc mg/kg	MSD % Rec		RPD		Recommended QC Limits %Rec	RPD
Antimony	U	47.9	30.6	64	*	48.3	27.8	58	*	10		75-125	20
Arsenic	1.8	4.64	5.87	88		4.60	5.7	85		3		75-125	20
Barium	14.2	47.9	58.4	92		48.3	57.7	90		2		75-125	20
Beryllium	U	47.9	50.1	105		48.3	50.6	105		0		75-125	20
Cadmium	4.15	47.9	49.2	94		48.3	49.3	93		1		75-125	20
Chromium	12.9	47.9	58.3	95		48.3	58.1	94		1		75-125	20
Cobalt	1.69	47.9	50.3	101		48.3	50.7	101		0		75-125	20
Copper	32.8	47.9	77.7	94		48.3	82.8	104		10		75-125	20
Lead	47.7	47.9	89.9	88		48.3	87.8	83		6		75-125	20
Manganese	164	47.9	169	10	*	48.3	148	0	*	NC		75-125	20
Mercury	0.038	0.354	0.39	99		0.354	0.39	99		0		75-125	20
Nickel	13.2	47.9	59.3	96		48.3	60	97		1		75-125	20
Selenium	U	4.64	3.88	84		4.60	3.79	82		2		75-125	20
Silver	U	47.9	46.4	97		48.3	46.6	96		0		75-125	20
Thallium	U	4.64	3.22	69	*	4.60	3.53	77		10		75-125	20
Vanadium	2.74	47.9	50.9	101		48.3	51.6	101		1		75-125	20
Zinc	81	47.9	102	44	*	48.3	93.7	26	*	50	*	75-125	20

Table 2.2 (Cont) Results of the MS/MSD Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Sample ID: C16669

Metal	Sample Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MS % Rec		MSD Spike Added mg/kg	MSD Conc mg/kg	MSD % Rec		RPD		Recommended QC Limits %Rec	RPD
Antimony	U	44.4	20.5	46	*	44.8	17.3	39	*	18		75-125	20
Arsenic	6.74	4.72	13.6	145	*	4.76	10.7	85		52	*	75-125	20
Barium	28.7	44.4	68.4	89		44.8	75.8	105		16		75-125	20
Beryllium	U	44.4	45.6	103		44.8	47.4	106		3		75-125	20
Cadmium	0.592	44.4	44.8	100		44.8	46.2	102		2		75-125	20
Chromium	96.9	44.4	194	219	*	44.8	159	139	*	45	*	75-125	20
Cobalt	4.42	44.4	56.6	118		44.8	52.9	108		8		75-125	20
Copper	297	44.4	402	NC		44.8	284	NC		NC		75-125	20
Lead	141	44.4	185	99		44.8	177	80		21	*	75-125	20
Manganese	763	44.4	736	NC		44.8	899	NC		NC		75-125	20
Mercury	U	0.343	0.361	105		0.349	0.367	105		0		75-125	20
Nickel	57.1	44.4	134	173	*	44.8	118	136	*	24	*	75-125	20
Selenium	U	4.72	2.03	43	*	4.76	2.16	45	*	5		75-125	20
Silver	U	44.4	39	88		44.8	42.5	95		8		75-125	20
Thallium	U	4.72	0.925	20	*	4.76	0.99	21	*	6		75-125	20
Vanadium	13.7	44.4	69.5	126	*	44.8	63.5	111		12		75-125	20
Zinc	308	44.4	381	NC		44.8	413	NC		NC		75-125	20

Table 2.3 Results of the Blank Spike Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site

Metal	Spiked Conc. mg/kg	Sand Blank Conc. mg/kg	Rec Conc. mg/kg	% Rec	Recommended QC Limits %Rec
Aluminum	400	37.1	470	108	75-125
Antimony	50.0	U	45.9	92	75-125
Arsenic	5.00	U	4.88	98	75-125
Barium	50.0	U	49	98	75-125
Beryllium	50.0	U	53.1	106	75-125
Cadmium	50.0	U	51.2	102	75-125
Calcium	400	U	422	106	75-125
Chromium	50.0	U	52.8	106	75-125
Cobalt	50.0	U	53.2	106	75-125
Copper	50.0	U	50.8	102	75-125
Iron	400	14.7	439	106	75-125
Lead	50.0	U	53.3	107	75-125
Magnesium	400	U	408	102	75-125
Manganese	50.0	U	51.3	103	75-125
Mercury	0.400	U	0.4	100	75-125
Nickel	50.0	U	54.5	109	75-125
Potassium	800	U	756	95	75-125
Selenium	5.00	U	5.4	108	75-125
Silver	50.0	U	49.5	99	75-125
Sodium	400	U	393	98	75-125
Thallium	5.00	U	4.98	100	75-125
Vanadium	50.0	U	51.9	104	75-125
Zinc	50.0	U	52.9	106	75-125

Results of the Blank Spike Analysis for Cyanide in Soil

Four blanks were spiked with cyanide. The percent recoveries, listed in Table 2.4, ranged from 99 to 104 and all four values were within the acceptable QC limits.

Results of the Matrix Spike Analysis for Cyanide in Soil

Samples D 16651 and D 16670 were chosen for the matrix spike analysis (MS). The percent recoveries, listed in Table 2.5, were 75 and 83 and both values were within the acceptable QC limits.

Results of the Duplicate Analysis for Cyanide in Soil

Samples D 16651 and D 16670 were chosen for the duplicate analysis. The relative percent differences, listed in Table 2.6, were not calculated because cyanide was not detected in either analysis.

Table 2.4 Results of the Blank Spike Analysis for Cyanide in Soil
WA # 3-439 Lackawanna Foundry Site

Analyte	Spiked Conc mg/kg	Rec Conc mg/kg	% Rec	Recommended Limit
Cyanide	4.87	4.86	100	90-110
Cyanide	24.4	24.7	101	90-110
Cyanide	4.87	4.84	99	90-110
Cyanide	24.4	25.3	104	90-110

Table 2.5 Results of the Matrix Spike Analysis for Cyanide in Soil
WA # 3-439 Lackawanna Foundry Site
(based on dry weight)

Analyte	Sample ID	Sample Conc mg/kg	Spike Conc mg/kg	Rec Conc mg/kg	% Rec	QC Limits
Cyanide	D 16651	U	5.18	4.3	83	75-125
Cyanide	D 16670	U	5.36	4.0	75	75-125

Table 2.6 Results of the Duplicate Analysis
for Cyanide in Soil
WA # 3-439 Lackawanna Foundry Site
(based on dry weight)

Analyte	Sample ID	Initial Analysis mg/kg	Duplicate Analysis mg/kg	RPD
Cyanide	D 16651	U	U	NC
Cyanide	D 16670	U	U	NC

Results of the Internal Standard Areas for BNA in Soil

The internal standard areas (for 1,4-dichlorobenzene-d_4, naphthalene-d_8, acenaphthene-d_{10}, phenanthrene-d_{10}, chrysene-d_{12}, perylene-d_{12}) are listed in Table 2.7. All two hundred and forty-six areas were within the acceptable QC limits.

Results of the Surrogate Recoveries for BNA in Soil

Before extraction, each sample was spiked with a six component mixture of CLP surrogate standards consisting of nitrobenzene-d_5, 2-fluorobiphenyl, terphenyl-d_{14}, phenol-d_5, 2-fluorophenol, and 2,4,6-tribromophenol. The surrogate percent recoveries, listed in Table 2.8, ranged from 51 to 129. Two hundred and forty-five values out of two hundred and forty-six were within the acceptable QC limits.

Results of the MS/MSD Analysis for BNA in Soil

Samples A 16552, A 16660 and A 16672 were chosen for the matrix spike/matrix spike duplicate (MS/MSD) analyses. The percent recoveries, ranging from 63 to 134, are listed in Table 2.9. Fifty-four calculated values out of sixty-four were within the acceptable QC limits. Two values were not calculated because the concentration spiked was less than one fourth the concentration of analyte in the sample. The relative percent differences, also listed in Table 2.9, ranged from 1 to 26. All thirty-two calculated values were within the acceptable QC limits. One value was not calculated because the concentration spiked was less than one fourth the concentration of analyte in the sample.

Table 2.7 Results of the Internal Standard Areas for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample No	File ID	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
Cal Check Area	LFS001.D	48688	179730	97785	167866	177152	186601
SBLK041599	LFS002.D	38510	140571	78553	148212	150207	125993
A16650	LFS003.D	40571	153235	85090	163211	173252	148749
A16651	LFS004.D	41330	160993	91734	175743	180938	151966
A16652	LFS005.D	40603	154160	85563	162650	169517	144850
A16652 MS	LFS006.D	43881	164833	92390	173001	175900	150056
A16652 MSD	LFS007.D	44986	165422	92428	172362	178812	152838
A16653	LFS008.D	43557	167418	93790	175400	183577	156110
A16654	LFS009.D	39551	147585	82831	157607	162902	138293
A16655	LFS010.D	44828	164660	92090	171161	177732	151656
A16656	LFS012.D	45814	172544	94436	174912	178680	150439
A16651 10x	LFS013.D	43165	166651	89943	172543	168251	138359
Cal Check Area	LFS018.D	44996	167440	91487	152765	171184	194601
A16655 5x	LFS021.D	47925	181511	102192	199801	226495	203962
Cal Check Area	LFS022.D	41707	157767	85588	147737	183361	230722
SBLK041999	LFS023.D	35683	129660	77135	151823	185395	183296
A16657	LFS024.D	40423	150208	86919	176546	244298	286758
A16658	LFS025.D	44152	165587	96299	184119	260997	288930
A16659	LFS026.D	49458	187128	105200	205351	272397	303064
A16660	LFS027.D	49412	183395	101781	200160	256189	283017
A16660 MS	LFS028.D	46718	175020	98247	193740	246912	262896
A16660 MSD	LFS029.D	43718	165428	90664	180347	231438	246412
A16661	LFS030.D	58684	223720	120367	235952	286248	300780
A16662	LFS031.D	52142	205487	113587	228180	283717	305523
A16663	LFS032.D	49650	189790	105506	203526	268843	293669
A16664	LFS033.D	53371	195883	109444	210447	257593	262743
A16665	LFS034.D	48865	190182	107469	206609	247928	244841
A16666	LFS035.D	46744	172641	95122	186850	224118	215563
A16667	LFS036.D	50906	187711	104538	200840	250667	261343
A16668	LFS037.D	45448	172680	97365	187800	230510	230929
Cal Check Area	LFS040.D	63317	245039	131024	221397	257165	289256
SBLK042099	LFS041.D	57662	219169	119222	221156	250826	238932
A16669	LFS042.D	61237	231646	131722	250037	288580	267026
A16670	LFS043.D	61347	235871	132611	252844	285675	269351
A16671	LFS044.D	64388	246847	137526	259184	292471	275487
A16672	LFS045.D	68500	257101	140215	269153	297219	270768
A16672 MS	LFS046.D	70715	265245	149403	282760	302277	277111
A16672 MSD	LFS047.D	66152	248321	136489	261503	286018	256846
A16673	LFS048.D	61738	231114	135262	255710	281387	256022
A16674	LFS049.D	64391	245974	138772	261573	287460	261662
A16675	LFS050.D	64370	241735	135554	260538	287491	256002
A16676	LFS051.D	61034	230354	127683	241923	264551	235349
A16677	LFS052.D	64642	246201	138026	262796	277436	249518
A16678	LFS053.D	66386	250243	141199	270854	286069	255431
A16679	LFS054.D	67843	263200	147376	279196	297023	266294

IS 1 = d4-Dichlorobenzene
IS 2 = d8-Naphthalene
IS 3 = d10-Acenaphthene
IS 4 = d10-Phenanthrene
IS 5 = d12-Chrysene
IS 6 = d12-Perylene

Table 2.8 Results of the Surrogate Recoveries for BNA in Soil
WA # 3-439 Lackawanna Foundry Site

Sample No	File ID	Surr. 1	Surr. 2	Surr. 3	Surr. 4	Surr. 5	Surr. 6
SBLK041599	LFS002.D	81	90	89	94	81	108
A16650	LFS003.D	70	78	67	82	75	90
A16651	LFS004.D	63	74	70	78	89	103
A16652	LFS005.D	51	67	63	74	85	114
A16652 MS	LFS006.D	97	112	105	116 *	105	129
A16652 MSD	LFS007.D	83	95	89	101	104	118
A16653	LFS008.D	81	93	90	94	77	100
A16654	LFS009.D	91	98	98	108	88	111
A16655	LFS010.D	66	77	73	86	95	105
A16656	LFS012.D	59	72	67	80	64	99
A16651 10x	LFS013.D	59	69	65	76	72	97
A16655 5x	LFS021.D	52	60	63	69	63	78
SBLK041999	LFS023.D	91	101	102	102	90	112
A16657	LFS024.D	80	85	82	99	62	90
A16658	LFS025.D	81	90	88	91	84	90
A16659	LFS026.D	72	78	84	90	68	92
A16660	LFS027.D	81	85	88	94	83	96
A16660 MS	LFS028.D	78	87	83	99	91	101
A16660 MSD	LFS029.D	89	104	100	106	106	115
A16661	LFS030.D	75	85	84	96	81	95
A16662	LFS031.D	82	98	93	103	101	104
A16663	LFS032.D	70	89	89	96	99	108
A16664	LFS033.D	80	91	91	99	95	102
A16665	LFS034.D	72	86	90	98	63	102
A16666	LFS035.D	67	85	103	109	73	109
A16667	LFS036.D	86	95	97	111	90	110
A16668	LFS037.D	83	97	95	107	93	110
SBLK042099	LFS041.D	82	92	98	97	84	104
A16669	LFS042.D	72	82	88	91	89	101
A16670	LFS043.D	69	83	85	87	82	100
A16671	LFS044.D	81	87	97	90	80	94
A16672	LFS045.D	76	82	87	97	88	103
A16672 MS	LFS046.D	64	78	79	83	87	108
A16672 MSD	LFS047.D	73	83	89	98	92	113
A16673	LFS048.D	75	82	87	89	77	95
A16674	LFS049.D	77	90	99	104	87	107
A16675	LFS050.D	81	90	95	96	90	99
A16676	LFS051.D	76	87	91	92	79	102
A16677	LFS052.D	82	87	88	92	81	94
A16678	LFS053.D	75	87	88	88	87	99
A16679	LFS054.D	82	93	94	99	97	111

Surrogate Limits

		Soil
Surr 1 =	2-Fluorophenol	(25-121)
Surr 2 =	Phenol-d5	(24-113)
Surr 3 =	Nitrobenzene-d5	(23-120)
Surr 4 =	2-Fluorobiphenyl	(30-115)
Surr 5 =	2,4,6-Tribromophenol	(19-122)
Surr 6 =	Terphenyl-d14	(18-137)

Table 2.9 Results of the MS/MSD Analysis for BNA in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Sample ID: A16552

Compound Name	Sample Conc µg/kg	MS Spike Added µg/kg	MS Conc. µg/kg	MS % Rec.		MSD Spike Added µg/kg	MSD Conc. µg/kg	MSD % Rec.		RPD	QC Limits % Rec.	RPD
Phenol	22700	3683	34000	NC		3683	29460	NC		NC	26 - 90	35
2-Chlorophenol	U	3683	4007	109	*	3683	3175	86		23	25 - 102	50
1,4-Dichlorobenzene	U	1842	1764	96		1842	1444	78		20	28 - 104	27
N-Nitroso-Di-N-Propylamine	U	1842	2024	110		1842	1667	91		19	41 - 126	38
1,2,4-Trichlorobenzene	U	1842	1937	105		1842	1610	87		18	38 - 107	23
4-Chloro-3-Methylphenol	U	3683	4536	123	*	3683	4031	109	*	12	26 - 103	33
Acenaphthene	U	1842	2149	117		1842	1843	100		15	31 - 137	19
4-Nitrophenol	U	3683	4042	110		3683	3823	104		6	11 - 114	50
2,4-Dinitrotoluene	U	1842	1941	105	*	1842	1762	96	*	10	28 - 89	47
Pentachlorophenol	U	3683	3313	90		3683	3168	86		5	17 - 109	47
Pyrene	U	1842	2464	134		1842	2131	116		14	35 - 142	36

Sample ID: A16660

Compound Name	Sample Conc. µg/kg	MS Spike Added µg/kg	MS Conc. µg/kg	MS % Rec.		MSD Spike Added µg/kg	MSD Conc. µg/kg	MSD % Rec.		RPD	QC Limits % Rec.	RPD
Phenol	1840	3370	4963	93	*	3370	5738	116	*	22	26 - 90	35
2-Chlorophenol	U	3370	2668	79		3370	2979	88		11	25 - 102	50
1,4-Dichlorobenzene	U	1685	1242	74		1685	1478	88		17	28 - 104	27
N-Nitroso-Di-N-Propylamine	U	1685	1535	91		1685	1798	107		16	41 - 126	38
1,2,4-Trichlorobenzene	U	1685	1333	79		1685	1567	93		16	38 - 107	23
4-Chloro-3-Methylphenol	U	3370	3231	96		3370	3696	110	*	13	26 - 103	33
Acenaphthene	U	1685	1657	98		1685	1823	108		10	31 - 137	19
4-Nitrophenol	U	3370	2787	83		3370	3134	93		12	11 - 114	50
2,4-Dinitrotoluene	U	1685	1626	97	*	1685	1665	99	*	2	28 - 89	47
Pentachlorophenol	U	3370	2540	75		3370	2755	82		8	17 - 109	47
Pyrene	U	1685	1749	104		1685	1899	113		8	35 - 142	36

Sample ID: A16672

Compound Name	Sample Conc µg/kg	MS Spike Added µg/kg	MS Conc µg/kg	MS % Rec.		MSD Spike Added µg/kg	MSD Conc. µg/kg	MSD % Rec		RPD	QC Limits % Rec	RPD
Phenol	U	4095	3280	80		4095	3575	87		9	26 - 90	35
2-Chlorophenol	U	4095	2858	70		4095	3251	79		13	25 - 102	50
1,4-Dichlorobenzene	U	2048	1298	63		2048	1462	71		12	28 - 104	27
N-Nitroso-Di-N-Propylamine	U	2048	1562	76		2048	1736	85		11	41 - 126	38
1,2,4-Trichlorobenzene	U	2048	1607	79		2048	1755	86		9	38 - 107	23
4-Chloro-3-Methylphenol	U	4095	3786	93		4095	3954	97		4	26 - 103	33
Acenaphthene	U	2048	1744	85		2048	1982	97		13	31 - 137	19
4-Nitrophenol	U	4095	3661	89		4095	3628	89		1	11 - 114	50
2,4-Dinitrotoluene	U	2048	1564	76		2048	1747	85		11	28 - 89	47
Pentachlorophenol	U	4095	3149	77		4095	3301	81		5	17 - 109	47
Pyrene	4120	2048	6905	95		2048	6658	124		26	35 - 142	36

Roy F. Weston, Inc.
GSA Raritan Depot
Bldg. 209 Annex (Bay F)
2890 Woodbridge Avenue
Edison, New Jersey 08837-3679
732-321-4200 • Fax 732-494-4021

Accutest Labs
Fresh Ponds Corp Village, Bldg B
2235 Route 130
Dayton, NJ 08810

Attn: Matt Cordova

9 April 1999

Project # 3347-143-001-3439 Lackawanna Foundry

As per Weston REAC Purchase Order number 102694, please analyze samples according to the following parameters:

Analysis/Method	Matrix	# of samples
Cyanide\ SW-846-9012	Soil	30
Data package: Package with Diskette Deliverable		

Samples are expected to arrive at your laboratory on April 15,1999. **All applicable QA/QC analysis as per method, will be performed on our sample matrix.** Preliminary sample and QC result tables plus a signed copy of our Chain of Custody must be faxed to REAC 10 business days after receipt of the last samples. The complete data package is due 21 business days after receipt of last batch of samples. The complete data package must include all items on the deliverables checklist. **Expect all samples to be difficult matrix and all raw data must be included in final analytical report.**

All sample and QC results(ie:LCS, Duplicates, and Blanks) must be summarized in a ExCel diskette deliverable.

Please submit all reports and technical questions concerning this project to **John Johnson at (732) 321-4248 or fax to (732) 494-4020**. Any contractual question, please call Cynthia Lentini at (732) 321-4296.

Sincerely,

Misty Barkley
Data Validation and Report Writing Group Leader
Roy F. Weston, Inc. / REAC Project

MB:jj Attachments

cc R. Singhvi
P. Campagna
3439\non\mem\9904\sub\3439Con
V. Kansal
Subcontracting File
D. Angwenyi
C. Lentini
S. Fama
M. Barkley

REAC, . son, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHA OF CUSTODY RECORD

Project Name [illegible] Ford / Site
Project Number [illegible]
RFW Contact [illegible] Phone: [illegible]

No 06908

SHEET NO. 1 OF 3

041549-

Sample Identification / Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA, PEST, PCB	VOC	TAL Metals	
-754	A16650	1 west Fence	S	4/14/99	1	8oz / 4°C	✓			
-755 MA	B16650	1 west Fence	S	4/14/99	1	40ml / 4°C		✓		
-756	C16650	1 west Fence	S	4/14/99	1	4oz / 4°C			✓	
-757	A16651	2 Surface Middle	S	4/14/99	1	8oz / 4°C	✓			
-758	B16651	2 Surface Middle	S	4/14/99	1	40ml / 4°C		✓		
-759	C16651	2 Surface Middle	S	4/14/99	1	4oz / 4°C			✓	
-760	A16652	2D Middle	S	4/14/99	1	8oz / 4°C	✓			
-761	B16652	2D Middle				40ml / 4°C		✓		
-762	C16652	2D Middle				4oz / 4°C			✓	
-763	A16653	3 west Fence				8oz / 4°C	✓			
-764	B16653	3 west Fence				40ml / 4°C		✓		
-765	C16653	3 west Fence				4oz / 4°C			✓	
-766	A16654	4 west Fence				8oz / 4°C	✓			
-767	B16653(4)(MS)	4 west Fence				40ml / 4°C		✓		
-768	C16654	4 west Fence				4oz / 4°C			✓	
-769	A16655	5 west Fence				8oz / 4°C	✓			
-770 MSD	B16655	5 west Fence				40ml / 4°C		✓		
-771	C16655	5 west Fence				4oz / 4°C			✓	
-772	A16656	6 NE - Entrance				8oz / 4°C	✓			
-773	B16656	6 NE - Entrance	↓	↓	↓	40ml / 4°C		✓		

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions: Lab to perform MS/MSD on 8oz containers

BNA - Base Neutral/Acid extractables
PEST - Pesticides
PCB - Polychlorinated biphenyls

VOC - volatile organic compounds
MS - matrix.

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time
all TAL's	[signature]	4/14/99	David Angwenyi	4/15/99	10:30am

Items/Reason	Relinquished By	Date	Received By	Date	Time
All Analysis	David Angwenyi	4/15/99	[signature]	4/15/99	11:25
All Analysis	David Angwenyi	4/15/99	[signature]	4/15/99	01:40pm
All Analysis	David Angwenyi		[signature]	4/15/99	1352

REAC, [illegible]on, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHA[illegible] OF CUSTODY RECORD

Project Name [illegible] Foundry Site
Project Number 03347-143-001-3459-01
RFW Contact [illegible]   Phone: 732-321-4200

No: 06909

SHEET NO 2 OF 3

041599.

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA PEST,PCB	VOC	TAL Metals	
-774	C16656	6 Major Entrance	S	4/14/99	1	4oz/4°C			✓	
-775	A16657	7				8oz/4°C	✓			
-776	B16657	7				40ml/4°C		✓		
-777	C16657	7				4oz/4°C			✓	
-778	A16658	8				8oz/4°C	✓			
-779	B16658	8				40ml/4°C		✓		
-780	C16658	8				4oz/4°C			✓	
-781	A16659	9				8oz/4°C	✓			
-782	B16659	9				40ml/4°C		✓		
-783	C16659	9				4oz/4°C			✓	
-784	A16660	10				8oz/4°C	✓			
-785 B	A16660	10				40ml/4°C		✓		
-786	C16660	10				4oz/4°C			✓	
-787	A16661	11				8oz/4°C	✓			
-788	B16661	11				40ml/4°C		✓		
-789	C16661	11				4oz/4°C			✓	
-790	A16662	12				8oz/4°C	✓			
-791	B16662	12				40ml/4°C		✓		
-792	C16662	12				4oz/4°C			✓	
-793	A16663	13	✓	✓	✓	8oz/4°C	✓			

Matrix:
SD - Sediment
DS - Drum Solids
DL - Drum Liquids
X - Other
PW - Potable Water
GW - Groundwater
SW - Surface Water
SL - Sludge
S - Soil
W - Water
O - Oil
A - Air

oz - ounce
ml - milliliter
oc - degrees celsius

Special Instructions: Lab to select MS/MSD
BNA - Base neutral/acid extractable
PEST - pesticides
PCB - Polychlorinated biphenyls
VOC - volatile organic compounds

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
all/analysis	[signature]	4/15/99	David Angwenyi	4/15/99	1045am	All/Analysis	David Angwenyi	4/15/99	[signature]	4/15/99	1125
						All/Analysis	David Angwenyi	4/15/99	M. [illegible]	4/15/99	1140/am
							David Angwenyi	4/15/99	[signature]	4/15/99	1352

FORM #4

8/94

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHA... OF CUSTODY RECORD

Project Name Lipari Landfill Superfund Site
Project Number 02742-RT-0021-3437-01
RFW Contact Jim Sickels Phone 732-321-4200

No: 06910

SHEET NO. 1 OF 3

041599-

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA, PEST, PCB	VOC	TAL Metals
-794	B16613	13	S	4/14/99	1	40ml/4°C		✓	
-795	C16613	13				4oz/4°C			✓
-796	A16614	14				8oz/4°C	✓		
-797*	B16614	14				40ml/4°C		✓	
-798	C16614	14				4oz/4°C			✓
-799	A16615	15				8oz/4°C	✓		
-800	B16615	15				40ml/4°C		✓	
-801	C16615	15				4oz/4°C			✓

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

VOC- volatile organic compounds

Special Instructions: Ref to select MS/MSD
BNA- Base neutral/Acid extractable
PEST- Pesticides
PCB- poly chlorinated biphenyls
ml- milliliters
oz- ounces

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time
all anal, SIS	Jeff Flynn	4/14/99	David Angweniyi	4/15/99	1045am

Items/Reason	Relinquished By	Date	Received By	Date	Time
All Analysis	David Angweniyi	4/15/99	Y. Exume	4/15/99	11:25
All Analysis	David Angweniyi	4/15/99	M Yoon	4/15/99	11:40Am
all analysis	David Angweniyi	4/15/99	[illegible]	4/15/99	1353

REAC, :on, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHA OF CUSTODY RECORD

Project Name LACKAWANNA FOUNDRY
Project Number 0337-143-001-3487-01
RFW Contact Salvatore Fama Phone: 732 321 4200

No: 06911

SHEET NO. 1 OF 3

04154-1-

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA/Pest/PCBs	VOCs	Metals
-802	A166666	LOCATION 16	S	14-APR-99	1	8oz glass / Ice	✓		
-803	B166666	↓	↓	↓	1	40 ml glass / ICE		✓	
-804	C166666	↓	↓	↓	1	4oz glass / Ice			✓
-805	A166667	LOCATION 17	↓	↓	1	8oz / ICE	✓		
-806	B166667	↓	↓	↓	1	40ml / Ice		✓	
-807	C166667	↓	↓	↓	1	4oz / Ice			✓
-808	A166668	LOCATION 18	↓	↓	1	8oz / ICE	✓		
-809	B166668	↓	↓	↓	1	4oml / Ice		✓	
-810	C166668	↓	↓	↓	1	4 oz / ice			✓
-811	A166669	LOCATION 19	↓	↓	1	8oz / Ice	✓		
-812	B166669	↓	↓	↓	1	40 ml / Ice		✓	
-813	C166669	↓	↓	↓	1	4 oz / Ice			✓
-814	A166670	LOCATION 20	↓	↓	1	8 oz / Ice	✓		
-815	B166670	↓	↓	↓	1	40ml / Ice		✓	
-816	C166670	↓	↓	↓	1	4 oz / Ice			✓
-817	A166671	LOCATION 21	↓	↓	1	8oz / Ice	✓		
-818	B166671	↓	↓	↓	1	40 ml / Ice		✓	
-819	C166671	↓	↓	↓	1	4 oz / Ice			✓
-820	A166672	LOCATION 22	↓	↓	1	8 oz / Ice	✓		
-821	B166672	↓	↓	↓	1	40 ml / Ice		✓	

Matrix:

SD -	Sediment	PW -	Potable Water	(S -	Soil)
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions: LAB to choose MS/MSD

oz-ounce
ml-milliliter
BNA-Base Neutral/acid extractables
pest-pesticides
PCB-polychlorinated biphenyls
VOC-volatile organic compounds

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
all/analysis	[signature] Fama	4/14/99	David Angweni	4/15/99	11:00am	ALL/Analysis	David Angweni	4/15/99	Y. Exume	4/15/99	11:25
						ALL/Analysis	David Angweni	4/15/99	M. Yoder	4/15/99	11:40
						all/analysis	David Angweni	4/15/99	[illegible]	4/15/99	1353

FORM #4

8/94

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: LACKAWANNA FOUNDRY
Project Number: 03347.143.001.3431.01
RFW Contact: SILVANUS FAMA Phone: 732 321 4200

No: 06912

SHEET NO 2 OF 3

041549 -

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA/PES/PCB	VOCs	METALS
-822	C166672	LOCATION 22	S	14-APR-99	1	4oz glass/ICE			✓
-823	A166673	LOCATION 23			1	8oz glass/	✓		
-824	B166673	↓			1	40ml glass/		✓	
-825	C166673	↓			1	4 oz glass/			✓
-826	A166674	LOCATION 24			1	8 oz /	✓		
-827	B166674	↓			1	40 ml /		✓	
-828	C166674	↓			1	4 oz /			✓
-829	A166675	LOCATION 25			1	8 oz /	✓		
-830	B166675	↓			1	40 ml /		✓	
-831	C166675	↓			1	4 oz /			✓
-832	A166676	LOCATION 25 D			1	8oz /	✓		
-833	B166676	↓			1	40 ml /		✓	
-834	C166676	↓			1	4 oz /			✓
-835	A166677	LOCATION 26			1	8 oz /	✓		
-836	B166677	↓			1	40 ml /		✓	
-837	C166677	↓			1	4 oz /			✓
-838	A166678	LOCATION 26D			1	8 oz /	✓		
-839	B166678	↓			1	40 ml /		✓	
-840	C166678	↓			1	4 oz /			✓
-841	A166679	LOCATION 27	↓	↓	1	8oz	✓		

Matrix:
SD - Sediment
DS - Drum Solids
DL - Drum Liquids
X - Other
PW - Potable Water
GW - Groundwater
SW - Surface Water
SL - Sludge
S - Soil
W - Water
O - Oil
A - Air

Special Instructions: Lab to select MS/MSD

OZ - ounce
ml - milliliter
BNA - Base neutral/acid extractable
VOC - volatile organic compounds
PCB Polychlorinated biphenyls

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time
all analysis	Sil Fama	4/14/99	David Angevine	4/15/99	1100

Items/Reason	Relinquished By	Date	Received By	Date	Time
ALL/Analysis	David Angevine	4/15/99	Y. C[illegible]	4/15/99	1125
ALL/Analysis	David Angevine	4/15/99	M. Davis	4/15/99	1140
ALL analysis	David Angevine		[illegible]	4/15/	1352

REAC, on, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: LACKAWANNA FOUNDRY
Project Number: 02547 143 001 3439 01
RFW Contact: Jack Fama Phone: 732 321 4200

No: 06913

SHEET NO. 3 OF 3

041549

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	Fraction/RT	VOCs	Metals
842	B16671	Location 27	S	14-APR-99	1	40 ml glass / ICE		✓	
843	C16671	↓	↓	↓	1	40 oz glass / ↓			✓
844	A16680	Field Blank (VOC)	↓	↓	1	40 ml / ↓		✓	
845	B16680	Field Blank (VOC)	↓	↓	1	40 ml / ↓		✓	

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions: Lab to select MS/MSD
BNA - base neutral/acid extractable
pest - pesticides
PCB - poly chlorinated biphenyl
oz - ounce
ml - milliliter

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time
all analysis	Jack Fama	4/14/99	David Angweni	4/15/99	1100am

Items/Reason	Relinquished By	Date	Received By	Date	Time
All Analysis	David Angweni	4/15/99	[illegible]	4/15/99	1125
all analysis	David Angweni	4/15/99	[illegible]	4/15/99	1353

FORM #4

8/94

REAC, Ed[illegible]n, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAI[illegible]OF CUSTODY RECORD

Project Name: LACKAWANNA FOUNDRY
Project Number: 03517.143.001.3435.01
RFW Contact: SALVATORE FAMA Phone: 732 321 4200

No: 06914
SHEET NO. 1 OF 2

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	CYANIDE
8409-1	D166650	LOCATION 1	S	14-APR-99	1	8oz Glass / ICE	✓
-2	D166651	2			1		✓
-3	D166652	2-D			1		✓
-4	D166653	3			1		✓
-5	D166654	4			1		✓
-6	D166655	5			1		✓
-7	D166656	6			1		✓
-8	D166657	7			1		✓
-9	D166658	8			1		✓
-10	D166659	9			1		✓
-11	D166660	10			1		✓
-12	D166661	11			1		✓
-13	D166662	12			1		✓
-14	D166663	13			1		✓
-15	D166664	14			1		✓
-16	D166665	15			1		✓
-17	D166666	16			1		✓
-18	D166667	17			1		✓
-19	D166668	18			1		✓
-20	D166669	19	↓	↓	1	↓	✓

I182 0043

Matrix:
- Sediment
- Drum Solids
- Drum Liquids
- Other
- PW - Potable Water
- GW - Groundwater
- SW - Surface Water
- SL - Sludge
- S - Soil
- W - Water
- O - Oil
- A - Air

Special Instructions:
122!

RECEIVED AT ACCUTEST AT THE FOLLOWING TEMPERATURE 6.0°

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
		4/14/99	Fed Ex				Fed Ex	4/15/99			

Table of Contents

Appendices will be furnished on request.

Case Narrative

The data in this report have been validated to two significant figures. Any other representation of the data is the responsibility of the user.

Metals in Soil Package I 171

The percent recoveries for C 16655 MS/MSD exceeded the acceptable QC limits for antimony (0%, 0%), copper (20%, 63%), lead (12%, 38%), selenium (42%, 54%) and arsenic C 16655 MSD (126%). The antimony results for samples C 16650, C 16651, C 16652, C 16653, C 16654, C 16655, C 16657, C 16658, C 16659, C 16660 should be regarded as unusable. The result for antimony in sample C 16656 should be regarded as estimated. The results for copper, lead, selenium and arsenic for samples C 16650, C 16651, C 16652, C 16653, C 16654, C 16655, C 16656, C 16657, C 16658, C 16659 and C 16660 should be regarded as estimated.

The percent recoveries for C 16661 MS/MSD exceeded the acceptable QC limits for antimony (64%, 58%), manganese (10%, 0%), zinc (44%, 26%) and thallium C 16661 MS (69%). The antimony, manganese, zinc and thallium results for samples C 16661, C 16662, C 16663, C 16664, C 16665, C 16666, C 16667 and C 16668 should be regarded as estimated.

The percent recoveries for C 16669 MS/MSD exceeded the acceptable QC limits for antimony (46%, 39%), chromium (219%, 139%), nickel (173%, 136%), selenium (43%, 45%), thallium (20%, 21%) and C 16669 MS for arsenic (145%) and vanadium (126%). The thallium results for samples C 16669, C 16670, C 16671, C 16672, 16673, C 16674, C 16675, C 16676, C 16677, C 16678 and C 16679 should be regarded as unusable. The results for antimony, chromium, nickel, selenium, arsenic and vanadium for samples C 16669, C 16670, C 16671, C 16672, C 16673, C 16674, C 16675, C 16676, C 16677, C 16678 and C 16679 should be regarded as estimated.

Cyanide in Soil Package I 182

The data were examined and were found to be acceptable.

BNA in Soil Package I 190

In the continuing calibration check standard of 4/28/99, the acceptable QC limits were exceeded for bis (2-chloroisopropyl) ether (29%). The data are not affected because this analyte was not detected in the associated samples.

The acceptable QC limits were exceeded for the percent recoveries of one base/neutral surrogate for A 16652 MS. The data are not affected.

Analytical Procedure for Metals in Soil

Sample Preparation

A representative 1-2 g (wet weight) sample, weighed to 0.01 g accuracy, was mixed with 10-mL 1:1 nitric acid, placed in a clean beaker and digested in nitric acid and hydrogen peroxide according to SW-846, Method 3050. The final reflux was either nitric acid or hydrochloric acid depending on the metals to be determined. After digestion , the samples were allowed to cool to room temperature and transferred to 100 mL volumetric flasks and diluted to volume with ASTM Type II water. The samples were analyzed for all metals, except mercury, by USEPA SW-846, Method 7000 (Atomic absorption) or Method 6010 (Inductively Coupled Argon Plasma-ICAP) procedures.

A representative 0.5-0.6 g (wet weight) sample, weighed to 0.01-g accuracy, was prepared and analyzed separately for mercury on a Varian SpectrAA-300 Atomic Absorption Spectrophotometer equipped with a Varian VGA-76 vapor gas analyzer according to SW-846, Method 7471.

A separate sample was used to determine total solids.

A reagent blank and a blank spike sample were carried through the sample preparation procedure for each batch of samples processed. One matrix spike (MS) and one matrix spike duplicate (MSD) were analyzed for each batch or for every ten samples.

Analysis and Calculations

The instruments were calibrated and operated according to SW-846, Method 7000/7471/6010 and the manufacturers operating instructions. After calibration, initial calibration verification (ICV), initial calibration blank (ICB) and quality control check standards were run to verify proper calibration. The continuing calibration verification (CCV) and continuing calibration blank (CCB) were run after every ten samples to assure proper operation during sample analysis.

The metal concentrations in solution , in micrograms per liter (µg/L) were taken from the read-out systems of the Atomic Absorption instruments. The results were converted to milligrams per kilogram (mg/kg) by correcting the reading for the sample weight and percent solids. The ICAP results (mg/kg) were corrected for sample weight prior to instrument read-out; the instrument read-out was then corrected for percent solids.
Final concentrations, based on wet weight are given by:

$$\text{mg metal/kg sample} = [(A \times V)/W] \times DF \times CF$$

where:

A = Instrument read-out (µg/L, AA; mg/kg, ICA)
V = final volume of processed sample (mL, AA .00 ICAP)
W = weight of sample (g, AA; 1.00 ICAP)
DF = Dilution Factor (1.00 for no dilution)
CF = conversion factor (0.001, AA; 1.00, ICAP)

Extraction Procedure

Prior to extraction each sample was spiked with a six component surrogate mixture consisting of nitrobenzene-d_5, 2-fluorobiphenyl, terphenyl-d_{14}, phenol-d_5, 2-fluorophenol, and 2,4,6-tribromophenol. Thirty grams of sample was mixed with 30 g anhydrous sodium sulfate, and Soxhlet extracted for 16 hours with 300 mL of methylene chloride. The extract was concentrated to 1.0 mL., an internal standard mixture consisting of 1,4-dichlorobenzene-d_4, naphthalene-d_8, acenaphthene-d_{10}, phenanthrene-d_{10}, chrysene-d_{12}, and perylene-d_{12} was added, and analyzed.

Analysis Procedure

An HP 6890/5972 Gas Chromatograph/Mass Spectrometer (GC/MS), equipped with a 6890 autosampler and controlled by a PC computer equipped with Enviroquant software was used to analyze the samples.

The instrument conditions were:

Column	Restek Rtx-5 (crossbonded SE-54) 30 meter x 0.25mm ID, 0.50 µm film thickness
Injection Temperature	280° C
Transfer Temperature	280° C
Source Temperature and Analyzer Temperature	Controlled by thermal transfer of heat from transfe line
Temperature Program	50°C for 0.5 min 20° C/min to 295° C hold for 8.5 min 25° C/min to 310° C hold for 15 min
Pulsed Split Injection	Split time = 2.00 min @ 8:1 split ratio Pressure Pulse = 16 psi for 0.5 min, then normal
Injection Volume	1µL
	Must use 4 mm ID single gooseneck liners packed with 10 mm plug of silanized and conditioned glass wool.

The GC/MS system was calibrated using 5 BNA standard mixtures at 20, 50, 80, 120, and 160 µg/mL. Before analysis each day, the system was tuned with 50-ng decafluorotriphenylphosphine (DFTPP) and passed a continuing calibration check when analyzing a 50-µg/mL standard mixture in which the responses were evaluated by comparison to the average response of the calibration curve.

Table 1.1 Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		Method Blank		C16650		C16651		C16652		C16653		C1665
Location		Lab		1 West Fence		2 Surface Middle		2D middle		3 West Fence		4 west F
% Solids		NA		64.02		94.99		94.41		79.41		80.67
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg
Aluminum	ICAP	U	18	11000	24	1300	16	1200	16	7800	21	13000
Antimony	ICAP	U	6.0	U	8.0	U	5.2	U	5.4	U	7.1	U
Arsenic	AA-Fur	U	0.50	14	1.5	1.6	0.50	2.5	0.48	11	0.62	13
Banum	ICAP	U	1.0	160	1.3	18	0.87	17	0.90	140	1.2	150
Beryllium	ICAP	U	0.50	0.93	0.67	U	0.44	U	0.45	0.81	0.59	2.2
Cadmium	ICAP	U	0.50	3.2	0.67	0.48	0.44	0.66	0.45	3.7	0.59	2.4
Calcium	ICAP	U	50	21000	67	1900	44	3300	45	94000	59	120000
Chromium	ICAP	U	0.50	45	0.67	25	0.44	15	0.45	33	0.59	28
Cobalt	ICAP	U	1.0	12	1.3	2.1	0.87	1.2	0.90	7.7	1.2	6.2
Copper	ICAP	U	1.0	74	1.3	57	0.87	35	0.90	75	1.2	67
Iron	ICAP	U	10	43000	13	24000	8.7	13000	9.0	46000	12	30000
Lead	ICAP	U	4.0	300	5.3	44	3.5	38	3.6	200	4.7	260
Magnesium	ICAP	U	50	4800	67	600	44	560	45	7200	59	11000
Manganese	ICAP	U	1.0	1200	1.3	250	0.87	140	0.90	800	1.2	1300
Mercury	Cold Vapor	U	0.04	0.21	0.06	0.06	0.03	0.1	0.04	0.11	0.05	0.16
Nickel	ICAP	U	1.0	42	1.3	15	0.87	9.2	0.90	28	1.2	32
Potassium	ICAP	U	200	1500	270	U	170	U	180	920	240	1500
Selenium	AA-Fur	U	0.50	1.0	0.75	U	0.50	U	0.48	0.79	0.62	0.98
Silver	ICAP	U	0.50	U	0.67	U	0.44	U	0.45	U	0.59	U
Sodium	ICAP	U	50	110	67	U	44	64	45	140	59	520
Thallium	AA-Fur	U	0.50	U	0.75	U	0.50	U	0.48	U	0.62	U
Vanadium	ICAP	U	2.0	27	2.7	5.2	1.7	3.7	1.8	17	2.4	18
Zinc	ICAP	U	2.0	760	2.7	140	1.7	79	1.8	640	2.4	540

Table 1.1 (Cont) Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		C16655		C16656		C16657		C16658		C16659		C16660	
Location		5 west Fence		6 Near Entrance		7		8		9		10	
% Solids		81.63		82.59		75.99		67.39		88.49		99.00	
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg
Aluminum	ICAP	12000	20	4600	15	5300	22	3900	23	5800	18	2100	16
Antimony	ICAP	U	6.6	6.4	4.9	U	7.4	U	7.5	U	6.0	U	5.4
Arsenic	AA-Fur	15	0.55	20	0.50	6.3	0.63	6.5	0.69	16	0.51	1.3	0.49
Banum	ICAP	130	1.1	270	0.81	120	1.2	83	1.3	170	1.0	22	0.90
Beryllium	ICAP	0.85	0.55	U	0.41	U	0.62	U	0.63	U	0.50	U	0.45
Cadmium	ICAP	2.4	0.55	20	0.41	3.6	0.62	2.4	0.63	4.4	0.50	0.59	0.45
Calcium	ICAP	14000	55	21000	41	18000	62	8300	63	14000	50	2200	45
Chromium	ICAP	29	0.55	190	0.41	55	0.62	36	0.63	63	0.50	14	0.45
Cobalt	ICAP	14	1.1	20	0.81	6.7	1.2	8.5	1.3	8.4	1.0	2.0	0.90
Copper	ICAP	200	1.1	440	0.81	110	1.2	81	1.3	200	1.0	41	0.90
Iron	ICAP	35000	11	200000	41	47000	12	73000	13	76000	10	19000	9.0
Lead	ICAP	180	4.4	610	3.3	2100	5.0	230	5.0	340	4.0	34	3.6
Magnesium	ICAP	4800	55	3100	41	3300	62	1800	63	4300	50	610	45
Manganese	ICAP	700	1.1	1800	0.81	1100	1.2	790	1.3	1100	1.0	180	0.90
Mercury	Cold Vapor	0.11	0.04	1.1	0.04	0.22	0.05	0.13	0.05	0.95	0.04	0.27	0.04
Nickel	ICAP	41	1.1	160	0.81	110	1.2	41	1.3	160	1.0	15	0.90
Potassium	ICAP	1200	220	630	160	570	250	540	250	390	200	500	180
Selenium	AA-Fur	0.58	0.55	0.77	0.50	U	0.63	U	0.69	U	0.51	U	0.49
Silver	ICAP	U	0.55	U	2.1	U	0.62	U	0.63	U	0.50	U	0.45
Sodium	ICAP	79	55	410	41	230	62	230	63	270	50	1500	45
Thallium	AA-Fur	U	0.55	U	0.50	U	0.63	U	0.69	U	0.51	U	0.49
Vanadium	ICAP	23	2.2	20	1.6	20	2.5	14	2.5	16	2.0	4.2	1.8
Zinc	ICAP	340	2.2	1100	1.6	1000	2.5	450	2.5	550	2.0	42	1.8

Table 1.1 (Cont) Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		C16673		C16674		C16675		C16676		C16677		C166
Location		Location 23		Location 24		Location 25		Location 25-D		Location 26		Location
% Solids		81.54		77.01		80.54		78.92		74.19		63.2
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg
Aluminum	ICAP	9300	19	7300	19	12000	18	17000	21	14000	23	14000
Antimony	ICAP	U	6.5	U	6.5	U	6.1	U	7.0	U	7.6	U
Arsenic	AA-Fur	8.4	0.46	5	0.98	21	0.49	25	0.50	66	0.53	48
Barium	ICAP	94	1.1	64	1.1	130	1.0	140	1.2	250	1.3	280
Beryllium	ICAP	0.66	0.54	U	0.54	0.73	0.50	0.97	0.59	1.3	0.64	0.67
Cadmium	ICAP	1.5	0.54	1.2	0.54	2.3	0.50	U	0.59	5.2	0.64	1.3
Calcium	ICAP	12000	54	10000	54	39000	50	11000	59	53000	64	120000
Chromium	ICAP	24	0.54	18	0.54	31	0.50	25	0.59	51	0.64	23
Cobalt	ICAP	8.0	1.1	4.8	1.1	9.7	1.0	15	1.2	9.7	1.3	7.3
Copper	ICAP	52	1.1	49	1.1	65	1.0	27	1.2	110	1.3	34
Iron	ICAP	30000	11	25000	11	29000	10	32000	12	45000	13	20000
Lead	ICAP	160	4.3	130	4.3	230	4.0	40	4.7	740	5.1	100
Magnesium	ICAP	3600	54	3500	54	5400	50	5400	59	6300	64	7300
Manganese	ICAP	560	1.1	390	1.1	710	1.0	610	1.2	1500	1.3	570
Mercury	Cold Vapor	0.13	0.04	0.13	0.04	0.17	0.04	0.08	0.04	1.6	0.04	0.17
Nickel	ICAP	28	1.1	18	1.1	38	1.0	41	1.2	39	1.3	22
Potassium	ICAP	1100	220	1100	220	1400	200	1500	230	1600	250	1400
Selenium	AA-Fur	0.57	0.46	U	0.49	U	0.49	U	0.50	1.6	0.53	U
Silver	ICAP	U	0.54	U	0.54	U	0.50	U	0.59	U	0.64	U
Sodium	ICAP	130	54	250	54	170	50	U	59	190	64	190
Thallium	AA-Fur	U	0.46	U	0.49	U	0.49	U	0.50	U	0.53	U
Vanadium	ICAP	19	2.2	14	2.2	23	2.0	27	2.3	29	2.5	20
Zinc	ICAP	660	2.2	350	2.2	760	2.0	150	2.3	1600	2.5	330

Table 1.1 (Cont) Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		C16679
Location		Location 27
% Solids		83.78

Parameter	Analysis Method	Conc mg/kg	MDL mg/kg
Aluminum	ICAP	2900	17
Antimony	ICAP	U	5.6
Arsenic	AA-Fur	19	0.34
Barium	ICAP	59	0.94
Beryllium	ICAP	U	0.47
Cadmium	ICAP	0.84	0.47
Calcium	ICAP	15000	47
Chromium	ICAP	95	0.47
Cobalt	ICAP	8.7	0.94
Copper	ICAP	280	0.94
Iron	ICAP	78000	9.4
Lead	ICAP	140	3.8
Magnesium	ICAP	2500	47
Manganese	ICAP	770	0.94
Mercury	Cold Vapor	0.09	0.04
Nickel	ICAP	89	0.94
Potassium	ICAP	320	190
Selenium	AA-Fur	U	0.34
Silver	ICAP	U	0.47
Sodium	ICAP	120	47
Thallium	AA-Fur	U	0.34
Vanadium	ICAP	15	1.9
Zinc	ICAP	250	1.9

Table 1.3 (cont.) Results of the Analysis for BNA in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No	A16654		A16655		A16656	
Sample Location	4 West Fence		5 West Fence		6 Near Entrance	
GC/MS File Name	LFS009		LFS010		LFS012	
Dilution Factor	10		1		10	
% Solid	82		81		85	

Compound Name	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg
Phenol	U		4100	U		410	U		3900
bis(-2-Chloroethyl)Ether	U		4100	U		410	U		3900
2-Chlorophenol	U		4100	U		410	U		3900
1,3-Dichlorobenzene	U		4100	U		410	U		3900
1,4-Dichlorobenzene	U		4100	U		410	U		3900
Benzyl alcohol	U		4100	U		410	U		3900
1,2-Dichlorobenzene	U		4100	U		410	U		3900
2-Methylphenol	U		4100	U		410	U		3900
bis(2-Chloroisopropyl)ether	U		4100	U		410	U		3900
4-Methylphenol	U		4100	U		410	U		3900
N-Nitroso-Di-n-propylamine	U		4100	U		410	U		3900
Hexachloroethane	U		4100	U		410	U		3900
Nitrobenzene	U		4100	U		410	U		3900
Isophorone	U		4100	U		410	U		3900
2-Nitrophenol	U		4100	U		410	U		3900
2,4-Dimethylphenol	U		4100	U		410	U		3900
bis(2-Chloroethoxy)methane	U		4100	U		410	U		3900
2,4-Dichlorophenol	U		4100	U		410	U		3900
1,2,4-Trichlorobenzene	U		4100	U		410	U		3900
Naphthalene	U		4100	310	J	410	U		3900
4-Chloroaniline	U		4100	U		410	U		3900
Hexachlorobutadiene	U		4100	U		410	U		3900
4-Chloro-3-methylphenol	U		4100	U		410	U		3900
2-Methylnaphthalene	U		4100	270	J	410	U		3900
Hexachlorocyclopentadiene	U		4100	U		410	U		3900
2,4,6-Trichlorophenol	U		4100	U		410	U		3900
2,4,5-Trichlorophenol	U		4100	U		410	U		3900
2-Chloronaphthalene	U		4100	U		410	U		3900
2-Nitroaniline	U		4100	U		410	U		3900
Dimethylphthalate	U		4100	U		410	U		3900
Acenaphthylene	U		4100	200	J	410	U		3900
2,6-Dinitrotoluene	U		4100	U		410	U		3900
3-Nitroaniline	U		4100	U		410	U		3900
Acenaphthene	U		4100	740		410	U		3900
2,4-Dinitrophenol	U		4100	U		410	U		3900
4-Nitrophenol	U		4100	U		410	U		3900
Dibenzofuran	U		4100	490		410	U		3900
2,4-Dinitrotoluene	U		4100	U		410	U		3900
Diethylphthalate	U		4100	U		410	U		3900
4-Chlorophenyl-phenylether	U		4100	U		410	U		3900
Fluorene	U		4100	880		410	U		3900
4-Nitroaniline	U		4100	U		410	U		3900
4,6-Dinitro-2-methylphenol	U		4100	U		410	U		3900
N-Nitrosodiphenylamine	U		4100	U		410	U		3900
4-Bromophenyl-phenylether	U		4100	U		410	U		3900
Hexachlorobenzene	U		4100	U		410	U		3900
Pentachlorophenol	U		4100	U		410	U		3900
Phenanthrene	U		4100	7900		410	U		3900
Anthracene	U		4100	1800		410	U		3900
Carbazole	U		4100	1200		410	U		3900
Di-n-butylphthalate	U		4100	U		410	U		3900
Fluoranthene	2300	J	4100	9900		410	2000	J	3900
Pyrene	1900	J	4100	7800		410	1700	J	3900
Butylbenzylphthalate	U		4100	U		410	U		3900
Benzo(a)anthracene	1100	J	4100	5000		410	1000	J	3900
3,3'-Dichlorobenzidine	U		4100	U		410	U		3900
Chrysene	1400	J	4100	5300		410	1100	J	3900
Bis(2-Ethylhexyl)phthalate	1000	J	4100	260	J	410	810	J	3900
Di-n-octylphthalate	U		4100	U		410	U		3900
Benzo(b)fluoranthene	1700	J	4100	5800		410	1400	J	3900
Benzo(k)fluoranthene	1400	J	4100	4500		410	1200	J	3900
Benzo(a)pyrene	1700	J	4100	5800		410	1300	J	3900
Indeno(1,2,3-cd)pyrene	1300	J	4100	3400		410	990	J	3900
Dibenzo(a,h)anthracene	U		4100	1300		410	U		3900
Benzo(g,h,i)perylene	1600	J	4100	3700		410	1100	J	3900

Table 1.3 (cont.) Results of the Analysis for BNA in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No	A16661	A16662	A16663	A16664	A16665
Sample Location	11	12	13	14	15
GC/MS File Name	LS030	LS031	LS032	LS033	LS034
Dilution Factor	10	5	5	5	5
% Solid	85	80	91	74	62

Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Phenol	9700	3900	4700	2100	2200	1800	7000	2300	1600 J	2700
bis(-2-Chloroethyl)Ether	U	3900	U	2100	U	1800	U	2300	U	2700
2-Chlorophenol	U	3900	U	2100	U	1800	U	2300	U	2700
1,3-Dichlorobenzene	U	3900	U	2100	U	1800	U	2300	U	2700
1,4-Dichlorobenzene	U	3900	U	2100	U	1800	U	2300	U	2700
Benzyl alcohol	U	3900	U	2100	U	1800	U	2300	U	2700
1,2-Dichlorobenzene	U	3900	U	2100	U	1800	U	2300	U	2700
2-Methylphenol	U	3900	U	2100	U	1800	U	2300	U	2700
bis(2-Chloroisopropyl)ether	U	3900	U	2100	U	1800	U	2300	U	2700
4-Methylphenol	U	3900	U	2100	U	1800	U	2300	U	2700
N-Nitroso-Di-n-propylamine	U	3900	U	2100	U	1800	U	2300	U	2700
Hexachloroethane	U	3900	U	2100	U	1800	U	2300	U	2700
Nitrobenzene	U	3900	U	2100	U	1800	U	2300	U	2700
Isophorone	U	3900	U	2100	U	1800	U	2300	U	2700
2-Nitrophenol	U	3900	U	2100	U	1800	U	2300	U	2700
2,4-Dimethylphenol	U	3900	U	2100	U	1800	U	2300	U	2700
bis(2-Chloroethoxy)methane	U	3900	U	2100	U	1800	U	2300	U	2700
2,4-Dichlorophenol	U	3900	U	2100	U	1800	U	2300	U	2700
1,2,4-Trichlorobenzene	U	3900	U	2100	U	1800	U	2300	U	2700
Naphthalene	2100 J	3900	960 J	2100	670 J	1800	1400 J	2300	U	2700
4-Chloroaniline	U	3900	U	2100	U	1800	U	2300	U	2700
Hexachlorobutadiene	U	3900	U	2100	U	1800	U	2300	U	2700
4-Chloro-3-methylphenol	U	3900	U	2100	U	1800	U	2300	U	2700
2-Methylnaphthalene	U	3900	500 J	2100	400 J	1800	U	2300	U	2700
Hexachlorocyclopentadiene	U	3900	U	2100	U	1800	U	2300	U	2700
2,4,6-Trichlorophenol	U	3900	U	2100	U	1800	U	2300	U	2700
2,4,5-Trichlorophenol	U	3900	U	2100	U	1800	U	2300	U	2700
2-Chloronaphthalene	U	3900	U	2100	U	1800	U	2300	U	2700
2-Nitroaniline	U	3900	U	2100	U	1800	U	2300	U	2700
Dimethylphthalate	U	3900	U	2100	U	1800	U	2300	U	2700
Acenaphthylene	U	3900	U	2100	U	1800	U	2300	U	2700
2,6-Dinitrotoluene	U	3900	U	2100	U	1800	U	2300	U	2700
3-Nitroaniline	U	3900	U	2100	U	1800	U	2300	U	2700
Acenaphthene	U	3900	U	2100	U	1800	U	2300	U	2700
2,4-Dinitrophenol	U	3900	U	2100	U	1800	U	2300	U	2700
4-Nitrophenol	U	3900	U	2100	U	1800	U	2300	U	2700
Dibenzofuran	U	3900	U	2100	U	1800	U	2300	U	2700
2,4-Dinitrotoluene	U	3900	U	2100	U	1800	U	2300	U	2700
Diethylphthalate	U	3900	U	2100	U	1800	U	2300	U	2700
4-Chlorophenyl-phenylether	U	3900	U	2100	U	1800	U	2300	U	2700
Fluorene	U	3900	U	2100	U	1800	U	2300	U	2700
4-Nitroaniline	U	3900	U	2100	U	1800	U	2300	U	2700
4,6-Dinitro-2-methylphenol	U	3900	U	2100	U	1800	U	2300	U	2700
N-Nitrosodiphenylamine	U	3900	U	2100	U	1800	U	2300	U	2700
4-Bromophenyl-phenylether	U	3900	U	2100	U	1800	U	2300	U	2700
Hexachlorobenzene	U	3900	U	2100	U	1800	U	2300	U	2700
Pentachlorophenol	U	3900	U	2100	U	1800	U	2300	U	2700
Phenanthrene	U	3900	530 J	2100	U	1800	U	2300	U	2700
Anthracene	U	3900	U	2100	U	1800	U	2300	U	2700
Carbazole	U	3900	U	2100	U	1800	U	2300	U	2700
Di-n-butylphthalate	U	3900	U	2100	U	1800	U	2300	U	2700
Fluoranthene	U	3900	600 J	2100	U	1800	U	2300	U	2700
Pyrene	U	3900	900 J	2100	U	1800	U	2300	U	2700
Butylbenzylphthalate	U	3900	U	2100	U	1800	U	2300	U	2700
Benzo(a)anthracene	U	3900	U	2100	U	1800	U	2300	U	2700
3,3'-Dichlorobenzidine	U	3900	U	2100	U	1800	U	2300	U	2700
Chrysene	U	3900	U	2100	U	1800	U	2300	U	2700
Bis(2-Ethylhexyl)phthalate	16000	3900	1300 J	2100	540 J	1800	U	2300	U	2700
Di-n-octylphthalate	U	3900	U	2100	U	1800	U	2300	U	2700
Benzo(b)fluoranthene	U	3900	U	2100	U	1800	U	2300	U	2700
Benzo(k)fluoranthene	U	3900	U	2100	U	1800	U	2300	U	2700
Benzo(a)pyrene	U	3900	U	2100	U	1800	460 J	2300	U	2700
Indeno(1,2,3-cd)pyrene	U	3900	U	2100	U	1800	U	2300	U	2700
Dibenzo(a,h)anthracene	U	3900	U	2100	U	1800	U	2300	U	2700
Benzo(g,h,i)perylene	U	3900	U	2100	U	1800	U	2300	U	2700

Introduction

REAC, in response to WA 3-439, provided analytical support for environmental samples collected from Lackawanna Foundry Site located in Lackawanna, NY as described in the following table. The support also included QA/QC, data review, and preparation of an analytical report containing a summary of the analytical methods, the results, and the QA/QC results.

The samples were treated with procedures consistent with those described in SOP # 1008 and are summarized in the following table:

COC #	Number of Samples	Sampling Date	Date Received	Matrix	Analysis	Laboratory
06908	7	4/14/99	4/15/99	Soil	BNA	REAC
06908	6	4/14/99	4/15/99	Soil	Metals	REAC
06909	7	4/14/99	4/15/99	Soil	BNA	REAC
06909	7	4/14/99	4/15/99	Soil	Metals	REAC
06910	2	4/14/99	4/15/99	Soil	BNA	REAC
06910	3	4/14/99	4/15/99	Soil	Metals	REAC
06911	7	4/14/99	4/15/99	Soil	BNA	REAC
06911	6	4/14/99	4/15/99	Soil	Metals	REAC
06912	7	4/14/99	4/15/99	Soil	BNA	REAC
06912	7	4/14/99	4/15/99	Soil	Metals	REAC
06913	1	4/14/99	4/15/99	Soil	Metals	REAC
06914	20	4/14/99	4/15/99	Soil	Cyanide	Accutest
06915	10	4/14/99	4/15/99	Soil	Cyanide	Accutest

Analyses requested on these chains of custody, but not presented in this report, will be given in a separate report.

ANALYTICAL REPORT

Prepared by
Roy F. Weston, Inc.

Lackawanna Foundry Site
Lackawanna, NY

May 1999

EPA Work Assignment No. 3-439
WESTON Work Order No. 03347-143-001-3439-01
EPA Contract No. 68-C4-0022

Submitted to
P. Campagna
EPA-ERTC

S. Eama — Date
Task Leader

V. Kansal — Date
Analytical Section Leader

E. Gilardi — 5/20/99 — Date
Program Manager

Analysis by:
REAC
Accutest

Prepared by:
G. Karustis

Reviewed by:
M. Barkley

APPENDIX D
FINAL ANALYTICAL REPORT
LACKAWANNA FOUNDRY SITE
LACKAWANNA, NEW YORK
MAY 1999

ANALYTICAL REPORT

Prepared by
Roy F. Weston, Inc.

Lackawanna Foundry Site
Lackawanna, NY

May 1999

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WESTON Work Order No. 03347-143-001-3439-01
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E. Gilardi — 5/20/99 — Date
Program Manager

Analysis by:
REAC
Accutest

Prepared by:
G. Karustis

Reviewed by:
M. Barkley

Table of Contents

Appendices will be furnished on request.

Introduction

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The samples were treated with procedures consistent with those described in SOP # 1008 and are summarized in the following table:

COC #	Number of Samples	Sampling Date	Date Received	Matrix	Analysis	Laboratory
06908	7	4/14/99	4/15/99	Soil	BNA	REAC
06908	6	4/14/99	4/15/99	Soil	Metals	REAC
06909	7	4/14/99	4/15/99	Soil	BNA	REAC
06909	7	4/14/99	4/15/99	Soil	Metals	REAC
06910	2	4/14/99	4/15/99	Soil	BNA	REAC
06910	3	4/14/99	4/15/99	Soil	Metals	REAC
06911	7	4/14/99	4/15/99	Soil	BNA	REAC
06911	6	4/14/99	4/15/99	Soil	Metals	REAC
06912	7	4/14/99	4/15/99	Soil	BNA	REAC
06912	7	4/14/99	4/15/99	Soil	Metals	REAC
06913	1	4/14/99	4/15/99	Soil	Metals	REAC
06914	20	4/14/99	4/15/99	Soil	Cyanide	Accutest
06915	10	4/14/99	4/15/99	Soil	Cyanide	Accutest

Analyses requested on these chains of custody, but not presented in this report, will be given in a separate report.

Case Narrative

The data in this report have been validated to two significant figures. Any other representation of the data is the responsibility of the user.

Metals in Soil Package I 171

The percent recoveries for C 16655 MS/MSD exceeded the acceptable QC limits for antimony (0%, 0%), copper (20%, 63%), lead (12%, 38%), selenium (42%, 54%) and arsenic C 16655 MSD (126%). The antimony results for samples C 16650, C 16651, C 16652, C 16653, C 16654, C 16655, C 16657, C 16658, C 16659, C 16660 should be regarded as unusable. The result for antimony in sample C 16656 should be regarded as estimated. The results for copper, lead, selenium and arsenic for samples C 16650, C 16651, C 16652, C 16653, C 16654, C 16655, C 16656, C 16657, C 16658, C 16659 and C 16660 should be regarded as estimated.

The percent recoveries for C 16661 MS/MSD exceeded the acceptable QC limits for antimony (64%, 58%), manganese (10%, 0%), zinc (44%, 26%) and thallium C 16661 MS (69%). The antimony, manganese, zinc and thallium results for samples C 16661, C 16662, C 16663, C 16664, C 16665, C 16666, C 16667 and C 16668 should be regarded as estimated.

The percent recoveries for C 16669 MS/MSD exceeded the acceptable QC limits for antimony (46%, 39%), chromium (219%, 139%), nickel (173%, 136%), selenium (43%, 45%), thallium (20%, 21%) and C 16669 MS for arsenic (145%) and vanadium (126%). The thallium results for samples C 16669, C 16670, C 16671, C 16672, C 16673, C 16674, C 16675, C 16676, C 16677, C 16678 and C 16679 should be regarded as unusable. The results for antimony, chromium, nickel, selenium, arsenic and vanadium for samples C 16669, C 16670, C 16671, C 16672, C 16673, C 16674, C 16675, C 16676, C 16677, C 16678 and C 16679 should be regarded as estimated.

Cyanide in Soil Package I 182

The data were examined and were found to be acceptable.

BNA in Soil Package I 190

In the continuing calibration check standard of 4/28 99, the acceptable QC limits were exceeded for bis (2-chloroisopropyl) ether (29%). The data are not affected because this analyte was not detected in the associated samples.

The acceptable QC limits were exceeded for the percent recoveries of one base/neutral surrogate for A 16652 MS. The data are not affected.

ANALYTICAL REPORT

Prepared by
Roy F. Weston, Inc.

Lackawanna Foundry Site
Lackawanna, NY

May 1999

EPA Work Assignment No. 3-439
WESTON Work Order No. 03347-143-001-3439-01
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Submitted to
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Task Leader
Date

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Analytical Section Leader
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E. Gilardi
Program Manager
5/20/99
Date

Analysis by:
REAC
Accutest

Prepared by:
G. Karustis

Reviewed by:
M. Barkley

Summary of Abbreviations

AA	Atomic Absorption
B	The analyte was found in the blank
BFB	Bromofluorobenzene
C	Centigrade
D	(Surrogate Table) this value is from a diluted sample and was not calculated (Result Table) this result was obtained from a diluted sample
Dioxin PCDD	denotes Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans and/or and PCDF
CLP	Contract Laboratory Protocol
COC	Chain of Custody
CONC	Concentration
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
DFTPP	Decafluorotriphenylphosphine
DL	Detection Limit
E	The value is greater than the highest linear standard and is estimated
EMPC	Estimated maximum possible concentration
ICAP	Inductively Coupled Argon Plasma
ISTD	Internal Standard
J	The value is below the method detection limit and is estimated
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDL	Method Detection Limit
MI	Matrix Interference
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MW	Molecular Weight
NA	either Not Applicable or Not Available
NC	Not Calculated
NR	Not Requested
NS	Not Spiked
% D	Percent Difference
% REC	Percent Recovery
PPB	Parts per billion
PPBV	Parts per billion by volume
PQL	Practical Quantitation Limit
QL	Quantitation Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SIM	Selected Ion Monitoring
TCLP	Toxic Characteristics Leaching Procedure
U	Denotes not detected
W	Weathered sample; the results should be regard as estimated

m^3	cubic meter	kg	kilogram	μg	microgram
L	liter	g	gram	pg	picogram
mL	milliliter	mg	milligram	ng	nanogram
μL	microliter				

*	denotes a value that exceeds the acceptable QC limit
	Abbreviations that are specific to a particular table are explained in footnotes on that table

Revision 7/23/98

Analytical Procedure for Metals in Soil

Sample Preparation

A representative 1-2 g (wet weight) sample, weighed to 0.01 g accuracy, was mixed with 10-mL 1:1 nitric acid, placed in a clean beaker and digested in nitric acid and hydrogen peroxide according to SW-846, Method 3050. The final reflux was either nitric acid or hydrochloric acid depending on the metals to be determined. After digestion , the samples were allowed to cool to room temperature and transferred to 100 mL volumetric flasks and diluted to volume with ASTM Type II water. The samples were analyzed for all metals, except mercury, by USEPA SW-846, Method 7000 (Atomic absorption) or Method 6010 (Inductively Coupled Argon Plasma-ICAP) procedures.

A representative 0.5-0.6 g (wet weight) sample, weighed to 0.01-g accuracy, was prepared and analyzed separately for mercury on a Varian SpectrAA-300 Atomic Absorption Spectrophotometer equipped with a Varian VGA-76 vapor gas analyzer according to SW-846, Method 7471.

A separate sample was used to determine total solids.

A reagent blank and a blank spike sample were carried through the sample preparation procedure for each batch of samples processed. One matrix spike (MS) and one matrix spike duplicate (MSD) were analyzed for each batch or for every ten samples.

Analysis and Calculations

The instruments were calibrated and operated according to SW-846, Method 7000/7471/6010 and the manufacturers operating instructions. After calibration, initial calibration verification (ICV), initial calibration blank (ICB) and quality control check standards were run to verify proper calibration. The continuing calibration verification (CCV) and continuing calibration blank (CCB) were run after every ten samples to assure proper operation during sample analysis.

The metal concentrations in solution , in micrograms per liter (µg/L) were taken from the read-out systems of the Atomic Absorption instruments. The results were converted to milligrams per kilogram (mg/kg) by correcting the reading for the sample weight and percent solids. The ICAP results (mg/kg) were corrected for sample weight prior to instrument read-out; the instrument read-out was then corrected for percent solids.
Final concentrations, based on wet weight are given by:

mg metal/kg sample = [(AxV)/W]xDFxCF

where:

A = Instrument read-out (µg/L, AA; mg/kg, ICA)
V = final volume of processed sample (mL, AA .00 ICAP)
W = weight of sample (g, AA; 1.00 ICAP)
DF = Dilution Factor (1.00 for no dilution)
CF = conversion factor (0.001, AA; 1.00, ICAP)

Summary of Abbreviations

AA	Atomic Absorption
B	The analyte was found in the blank
BFB	Bromofluorobenzene
C	Centigrade
D	(Surrogate Table) this value is from a diluted sample and was not calculated (Result Table) this result was obtained from a diluted sample
Dioxin	denotes Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans and/or
PCDD	and PCDF
CLP	Contract Laboratory Protocol
COC	Chain of Custody
CONC	Concentration
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
DFTPP	Decafluorotriphenylphosphine
DL	Detection Limit
E	The value is greater than the highest linear standard and is estimated
EMPC	Estimated maximum possible concentration
ICAP	Inductively Coupled Argon Plasma
ISTD	Internal Standard
J	The value is below the method detection limit and is estimated
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDL	Method Detection Limit
MI	Matrix Interference
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MW	Molecular Weight
NA	either Not Applicable or Not Available
NC	Not Calculated
NR	Not Requested
NS	Not Spiked
% D	Percent Difference
% REC	Percent Recovery
PPB	Parts per billion
PPBV	Parts per billion by volume
PQL	Practical Quantitation Limit
QL	Quantitation Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SIM	Selected Ion Monitoring
TCLP	Toxic Characteristics Leaching Procedure
U	Denotes not detected
W	Weathered sample; the results should be regard as estimated

m^3	cubic meter	kg	kilogram	μg	microgram
L	liter	g	gram	pg	picogram
mL	milliliter	mg	milligram	ng	nanogram
μL	microliter				

*	denotes a value that exceeds the acceptable QC limit
	Abbreviations that are specific to a particular table are explained in footnotes on that table

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Analytical Procedure for Metals in Soil

Sample Preparation

A representative 1-2 g (wet weight) sample, weighed to 0.01 g accuracy, was mixed with 10-mL 1:1 nitric acid, placed in a clean beaker and digested in nitric acid and hydrogen peroxide according to SW-846, Method 3050. The final reflux was either nitric acid or hydrochloric acid depending on the metals to be determined. After digestion , the samples were allowed to cool to room temperature and transferred to 100 mL volumetric flasks and diluted to volume with ASTM Type II water. The samples were analyzed for all metals, except mercury, by USEPA SW-846, Method 7000 (Atomic absorption) or Method 6010 (Inductively Coupled Argon Plasma-ICAP) procedures.

A representative 0.5-0.6 g (wet weight) sample, weighed to 0.01-g accuracy, was prepared and analyzed separately for mercury on a Varian SpectrAA-300 Atomic Absorption Spectrophotometer equipped with a Varian VGA-76 vapor gas analyzer according to SW-846, Method 7471.

A separate sample was used to determine total solids.

A reagent blank and a blank spike sample were carried through the sample preparation procedure for each batch of samples processed. One matrix spike (MS) and one matrix spike duplicate (MSD) were analyzed for each batch or for every ten samples.

Analysis and Calculations

The instruments were calibrated and operated according to SW-846, Method 7000/7471/6010 and the manufacturers operating instructions. After calibration, initial calibration verification (ICV), initial calibration blank (ICB) and quality control check standards were run to verify proper calibration. The continuing calibration verification (CCV) and continuing calibration blank (CCB) were run after every ten samples to assure proper operation during sample analysis.

The metal concentrations in solution , in micrograms per liter (µg/L) were taken from the read-out systems of the Atomic Absorption instruments. The results were converted to milligrams per kilogram (mg/kg) by correcting the reading for the sample weight and percent solids. The ICAP results (mg/kg) were corrected for sample weight prior to instrument read-out; the instrument read-out was then corrected for percent solids.
Final concentrations, based on wet weight are given by:

$$\text{mg metal/kg sample} = [(A \times V)/W] \times DF \times CF$$

where:

A = Instrument read-out (µg/L, AA; mg/kg, ICA)
V = final volume of processed sample (mL, AA .00 ICAP)
W = weight of sample (g, AA; 1.00 ICAP)
DF = Dilution Factor (1.00 for no dilution)
CF = conversion factor (0.001, AA; 1.00, ICAP)

For samples that required dilution to be within the instrument calibration range, DF is given by:

$$DF = (C+B)/C$$

where:

B = acid blank matrix used for dilution (mL)
C = sample blank aliquot (mL)

Final concentrations, based on dry weight, are given by:

$$mg/kg(dry) = [mg/kg\ (wet) \times 100] / S$$

where

S = percent solids

The results of the analysis are listed in Table 1.1.

Analytical Procedure for Cyanide in Soil

The subcontract laboratory determined the concentration of cyanide in the samples by analyzing them for cyanide by USEPA Method 9012 M found in SW-846. The results of both analyses are listed in Table 1.2.

The BNA results, based on dry weight, are listed in Table 1.3; the tentatively identified compounds are listed in Table 1.4. The concentration of the detected compounds was calculated using the following equation:

$$C_u = \frac{DF \times A_u \times I_{is} \times V_t}{A_{is} \times RF(\ or\ RF_{ave}) \times V_i \times W \times D}$$

where

C_u	=	Concentration of target analyte (µg/Kg)
DF	=	Dilution Factor
A_u	=	Area of target analyte
I_{is}	=	Mass of specific internal standard (ng)
V_t	=	Volume of extract (µL)
A_{is}	=	Area of specific internal standard
RF	=	Response Factor (unitless)
RF_{ave}	=	average Response Factor
V_i	=	Volume of extract injected (µL)
W	=	Weight of sample (g)
D	=	Decimal per cent solids

The RF_{ave} is used when a sample is associated with an initial calibration curve. The RF is used when a sample is associated with a continuing calibration.

Response Factor calculation:

The RF for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_c \times I_{is}}{A_{is} \times I_c}$$

where

RF	=	Response factor for a specific analyte
A_c	=	Area of the analyte in the standard
I_{is}	=	Mass of the specific internal standard
A_{is}	=	Area of the specific internal standard
I_c	=	Mass of the analyte in the standard

$$RF_{ave} = \frac{RF_1 + \ldots + RF_n}{n}$$

and

n = number of Samples

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Table 1.1 (Cont) Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		C16661		C16662		C16663		C16664		C16665		C16666	
Location		11		12		13		14		15		Location 16	
% Solids		85.56		81.01		89.86		78.52		94.98		91.68	
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg
Aluminum	ICAP	740	18	4200	12	4600	19	2300	15	2200	17	1300	17
Antimony	ICAP	U	5.9	U	4.2	13	6.3	U	4.8	U	5.6	U	5.7
Arsenic	AA-Fur	1.8	0.40	7.0	0.35	16	0.39	4.4	0.41	2.7	0.48	1.5	0.45
Barium	ICAP	14	0.98	84	0.69	100	1.0	39	0.81	50	0.93	15	0.96
Beryllium	ICAP	U	0.49	U	0.35	U	0.52	U	0.40	U	0.47	U	0.48
Cadmium	ICAP	4.2	0.49	2.0	0.35	3.4	0.52	0.92	0.40	0.48	0.47	U	0.48
Calcium	ICAP	1100	49	21000	35	1200	52	24000	40	1600	47	1200	48
Chromium	ICAP	13	0.49	100	0.35	79	0.52	86	0.40	14	0.47	6.1	0.48
Cobalt	ICAP	1.7	0.98	7.0	0.69	11	1.0	3.6	0.81	0.98	0.93	1.4	0.96
Copper	ICAP	33	0.98	270	0.69	370	1.0	93	0.81	100	0.93	44	0.96
Iron	ICAP	22000	9.8	56000	6.9	140000	53	39000	8.1	11000	9.3	16000	9.6
Lead	ICAP	48	3.9	150	2.8	540	4.2	110	3.2	58	3.7	58	3.8
Magnesium	ICAP	240	49	2400	35	480	52	3400	40	460	47	410	48
Manganese	ICAP	160	0.98	810	0.69	770	1.0	2500	0.81	120	0.93	210	0.96
Mercury	Cold Vapor	0.04	0.04	0.17	0.03	0.07	0.03	0.12	0.03	U	0.04	U	0.04
Nickel	ICAP	13	0.98	75	0.69	72	1.0	25	0.81	31	0.93	9.5	0.96
Potassium	ICAP	U	200	430	140	500	210	260	160	U	190	U	190
Selenium	AA-Fur	U	0.40	U	0.35	0.39	0.39	U	0.41	U	0.48	U	0.45
Silver	ICAP	U	0.49	U	0.35	U	0.52	U	0.40	U	0.47	U	0.48
Sodium	ICAP	U	49	210	35	200	52	92	40	72	47	U	48
Thallium	AA-Fur	U	0.40	U	0.35	U	0.39	U	0.41	U	0.48	U	0.45
Vanadium	ICAP	2.7	2.0	14	1.4	16	2.1	43	1.6	5.4	1.9	3.1	1.9
Zinc	ICAP	81	2.0	280	1.4	660	2.1	190	1.6	110	1.9	98	1.9

Table 1.1 (Cont) Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		C16667		C16668		C16669		C16670		C16671		C16672	
Location		Location 17		Location 18		Location 19		Location 20		Location 21		Location 22	
% Solids		90.83		92.93		95.49		88.29		51.93		78.77	
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg
Aluminum	ICAP	5900	17	790	17	1400	15	2400	17	12000	23	15000	20
Antimony	ICAP	6.5	5.8	U	5.6	U	5.0	U	5.7	U	7.8	U	6.7
Arsenic	AA-Fur	7.1	0.95	4.4	0.45	6.7	0.51	6.5	0.46	20	0.54	77	0.58
Barium	ICAP	180	0.97	9.0	0.94	29	0.83	130	0.94	200	1.3	170	1.1
Beryllium	ICAP	U	0.48	U	0.47	U	0.42	U	0.47	0.96	0.65	1.2	0.56
Cadmium	ICAP	U	0.48	U	0.47	0.59	0.42	2.3	0.47	13	0.65	2.3	0.56
Calcium	ICAP	130000	48	1200	47	850	42	3800	47	23000	65	34000	56
Chromium	ICAP	33	0.48	8.9	0.47	97	0.42	130	0.47	95	0.65	32	0.56
Cobalt	ICAP	47	0.97	U	0.94	4.4	0.83	12	0.94	15	1.3	11	1.1
Copper	ICAP	240	0.97	28	0.94	300	0.83	720	0.94	270	1.3	47	1.1
Iron	ICAP	25000	9.7	5800	9.4	58000	8.3	93000	9.4	110000	13	32000	11
Lead	ICAP	300	3.9	21	3.7	140	3.3	280	3.8	660	5.2	180	4.5
Magnesium	ICAP	19000	48	340	47	410	42	1000	47	4700	65	5900	56
Manganese	ICAP	840	0.97	75	0.94	760	0.83	690	0.94	1600	1.3	1200	1.1
Mercury	Cold Vapor	0.06	0.04	0.04	0.04	U	0.03	1.3	0.04	0.77	0.05	0.73	0.04
Nickel	ICAP	38	0.97	2.7	0.94	57	0.83	150	0.94	100	1.3	36	1.1
Potassium	ICAP	470	190	U	190	U	170	280	190	900	260	1500	220
Selenium	AA-Fur	U	0.47	U	0.45	U	0.51	U	0.46	1.0	0.54	U	0.58
Silver	ICAP	U	0.48	U	0.47	U	0.42	U	0.47	U	0.65	U	0.56
Sodium	ICAP	330	48	U	47	68	42	68	47	360	65	120	56
Thallium	AA-Fur	U	0.47	U	0.45	U	0.51	U	0.46	U	0.54	U	0.58
Vanadium	ICAP	11	1.9	2.6	1.9	14	1.7	21	1.9	36	2.6	27	2.2
Zinc	ICAP	1300	1.9	55	1.9	310	1.7	290	1.9	1000	2.6	1100	2.2

Table 1.1 (Cont) Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		C16667		C16668		C16669		C16670		C16671		C16672	
Location		Location 17		Location 18		Location 19		Location 20		Location 21		Location 22	
% Solids		90.83		92.93		95.49		88.29		51.93		78.77	
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg
Aluminum	ICAP	5900	17	790	17	1400	15	2400	17	12000	23	15000	20
Antimony	ICAP	6.5	5.8	U	5.6	U	5.0	U	5.7	U	7.8	U	6.7
Arsenic	AA-Fur	7.1	0.95	4.4	0.45	6.7	0.51	6.5	0.46	20	0.54	77	0.58
Barium	ICAP	180	0.97	9.0	0.94	29	0.83	130	0.94	200	1.3	170	1.1
Beryllium	ICAP	U	0.48	U	0.47	U	0.42	U	0.47	0.96	0.65	1.2	0.56
Cadmium	ICAP	U	0.48	U	0.47	0.59	0.42	2.3	0.47	13	0.65	2.3	0.56
Calcium	ICAP	130000	48	1200	47	850	42	3800	47	23000	65	34000	56
Chromium	ICAP	33	0.48	8.9	0.47	97	0.42	130	0.47	95	0.65	32	0.56
Cobalt	ICAP	47	0.97	U	0.94	4.4	0.83	12	0.94	15	1.3	11	1.1
Copper	ICAP	240	0.97	28	0.94	300	0.83	720	0.94	270	1.3	47	1.1
Iron	ICAP	25000	9.7	5800	9.4	58000	8.3	93000	9.4	110000	13	32000	11
Lead	ICAP	300	3.9	21	3.7	140	3.3	280	3.8	660	5.2	180	4.5
Magnesium	ICAP	19000	48	340	47	410	42	1000	47	4700	65	5900	56
Manganese	ICAP	840	0.97	75	0.94	760	0.83	690	0.94	1600	1.3	1200	1.1
Mercury	Cold Vapor	0.06	0.04	0.04	0.04	U	0.03	1.3	0.04	0.77	0.05	0.73	0.04
Nickel	ICAP	38	0.97	2.7	0.94	57	0.83	150	0.94	100	1.3	36	1.1
Potassium	ICAP	470	190	U	190	U	170	280	190	900	260	1500	220
Selenium	AA-Fur	U	0.47	U	0.45	U	0.51	U	0.46	1.0	0.54	U	0.58
Silver	ICAP	U	0.48	U	0.47	U	0.42	U	0.47	U	0.65	U	0.56
Sodium	ICAP	330	48	U	47	68	42	68	47	360	65	120	56
Thallium	AA-Fur	U	0.47	U	0.45	U	0.51	U	0.46	U	0.54	U	0.58
Vanadium	ICAP	11	1.9	2.6	1.9	14	1.7	21	1.9	36	2.6	27	2.2
Zinc	ICAP	1300	1.9	55	1.9	310	1.7	290	1.9	1000	2.6	1100	2.2

Table 1.1 (Cont) Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		C16673		C16674		C16675		C16676		C16677		C
Location		Location 23		Location 24		Location 25		Location 25-D		Location 26		Loca
% Solids		81.54		77.01		80.54		78.92		74.19		8
Parameter	Analysis Method	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg	Conc mg/kg
Aluminum	ICAP	9300	19	7300	19	12000	18	17000	21	14000	23	1400
Antimony	ICAP	U	6.5	U	6.5	U	6.1	U	7.0	U	7.6	
Arsenic	AA-Fur	8.4	0.46	5	0.98	21	0.49	25	0.50	66	0.53	4
Barium	ICAP	94	1.1	64	1.1	130	1.0	140	1.2	250	1.3	28
Beryllium	ICAP	0.66	0.54	U	0.54	0.73	0.50	0.97	0.59	1.3	0.64	0.6
Cadmium	ICAP	1.5	0.54	1.2	0.54	2.3	0.50	U	0.59	5.2	0.64	1.
Calcium	ICAP	12000	54	10000	54	39000	50	11000	59	53000	64	12000
Chromium	ICAP	24	0.54	18	0.54	31	0.50	25	0.59	51	0.64	2
Cobalt	ICAP	8.0	1.1	4.8	1.1	9.7	1.0	15	1.2	9.7	1.3	7
Copper	ICAP	52	1.1	49	1.1	65	1.0	27	1.2	110	1.3	3
Iron	ICAP	30000	11	25000	11	29000	10	32000	12	45000	13	2000
Lead	ICAP	160	4.3	130	4.3	230	4.0	40	4.7	740	5.1	10
Magnesium	ICAP	3600	54	3500	54	5400	50	5400	59	6300	64	730
Manganese	ICAP	560	1.1	390	1.1	710	1.0	610	1.2	1500	1.3	57
Mercury	Cold Vapor	0.13	0.04	0.13	0.04	0.17	0.04	0.08	0.04	1.6	0.04	0.1
Nickel	ICAP	28	1.1	18	1.1	38	1.0	41	1.2	39	1.3	2
Potassium	ICAP	1100	220	1100	220	1400	200	1500	230	1600	250	140
Selenium	AA-Fur	0.57	0.46	U	0.49	U	0.49	U	0.50	1.6	0.53	
Silver	ICAP	U	0.54	U	0.54	U	0.50	U	0.59	U	0.64	
Sodium	ICAP	130	54	250	54	170	50	U	59	190	64	19
Thallium	AA-Fur	U	0.46	U	0.49	U	0.49	U	0.50	U	0.53	
Vanadium	ICAP	19	2.2	14	2.2	23	2.0	27	2.3	29	2.5	2
Zinc	ICAP	660	2.2	350	2.2	760	2.0	150	2.3	1600	2.5	33

Table 1.1 (Cont) Results of the Analysis for Metals in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Client ID		C16679
Location		Location 27
% Solids		83.78

Parameter	Analysis Method	Conc mg/kg	MDL mg/kg
Aluminum	ICAP	2900	17
Antimony	ICAP	U	5.6
Arsenic	AA-Fur	19	0.34
Barium	ICAP	59	0.94
Beryllium	ICAP	U	0.47
Cadmium	ICAP	0.84	0.47
Calcium	ICAP	15000	47
Chromium	ICAP	95	0.47
Cobalt	ICAP	8.7	0.94
Copper	ICAP	280	0.94
Iron	ICAP	78000	9.4
Lead	ICAP	140	3.8
Magnesium	ICAP	2500	47
Manganese	ICAP	770	0.94
Mercury	Cold Vapor	0.09	0.04
Nickel	ICAP	89	0.94
Potassium	ICAP	320	190
Selenium	AA-Fur	U	0.34
Silver	ICAP	U	0.47
Sodium	ICAP	120	47
Thallium	AA-Fur	U	0.34
Vanadium	ICAP	15	1.9
Zinc	ICAP	250	1.9

Table 1.2 Results of the Analysis for Cyanide in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Sample ID	Location	% Solids	Cyanide	
			Conc mg/kg	MDL mg/kg
Method Blank	-	100	U	1.0
Method Blank	-	100	U	1.0
D16650	1	56.3	U	1.8
D16651	2	94.1	U	1.1
D16652	2-D	95.2	U	1.0
D16653	3	81.4	U	1.2
D16654	4	86.6	U	1.2
D16655	5	84.0	U	1.2
D16656	6	86.6	U	1.2
D16657	7	79.9	U	1.2
D16658	8	79.1	U	1.3
D16659	9	89.7	U	1.1
D16660	10	99.2	U	1.0
D16661	11	85.8	U	1.2
D16662	12	77.3	U	1.3
D16663	13	92.0	U	1.1
D16664	14	75.9	U	1.3
D16665	15	94.7	U	1.0
D16666	16	90.3	U	1.1
D16667	17	91.8	U	1.1
D16668	18	93.1	U	1.1
D16669	19	93.2	U	1.1
D16670	Location 20	90.8	U	1.1
D16671	21	43.8	U	2.3
D16672	22	81.8	U	1.2
D16673	23	84.0	U	1.2
D16674	24	81.4	U	1.2
D16675	25	87.5	U	1.1
D16676	25-D	78.2	U	1.3
D16677	26	76.7	U	1.3
D16678	26-D	75.2	U	1.3
D16679	27	84.7	U	1.2

Table 1.3 Results of the Analysis for BNA in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No	SBLK041599	A16650	A16651	A16652	A16653
Sample Location	Lab Blank	1 West Fence	2 Surface Middle	2D Middle	3 West Fence
GC/MS File Name	LFS002	LFS003	LFS004	LFS005	LFS008
Dilution Factor	1	10	1	5	10
% Solid	100	57	95	91	73

Compound Name	Conc. µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg
Phenol	U	330	U	5800	16000	350	23000	1800	U	4600
bis(-2-Chloroethyl)Ether	U	330	U	5800	U	350	U	1800	U	4600
2-Chlorophenol	U	330	U	5800	U	350	U	1800	U	4600
1,3-Dichlorobenzene	U	330	U	5800	U	350	U	1800	U	4600
1,4-Dichlorobenzene	U	330	U	5800	U	350	U	1800	U	4600
Benzyl alcohol	U	330	U	5800	U	350	U	1800	U	4600
1,2-Dichlorobenzene	U	330	U	5800	U	350	U	1800	U	4600
2-Methylphenol	U	330	U	5800	370	350	410 J	1800	U	4600
bis(2-Chloroisopropyl)ether	U	330	U	5800	U	350	U	1800	U	4600
4-Methylphenol	U	330	U	5800	U	350	U	1800	U	4600
N-Nitroso-Di-n-propylamine	U	330	U	5800	U	350	U	1800	U	4600
Hexachloroethane	U	330	U	5800	U	350	U	1800	U	4600
Nitrobenzene	U	330	U	5800	U	350	U	1800	U	4600
Isophorone	U	330	U	5800	U	350	U	1800	U	4600
2-Nitrophenol	U	330	U	5800	U	350	U	1800	U	4600
2,4-Dimethylphenol	U	330	U	5800	U	350	U	1800	U	4600
bis(2-Chloroethoxy)methane	U	330	U	5800	U	350	U	1800	U	4600
2,4-Dichlorophenol	U	330	U	5800	U	350	U	1800	U	4600
1,2,4-Trichlorobenzene	U	330	U	5800	U	350	U	1800	U	4600
Naphthalene	U	330	U	5800	970	350	960 J	1800	U	4600
4-Chloroaniline	U	330	U	5800	U	350	U	1800	U	4600
Hexachlorobutadiene	U	330	U	5800	U	350	U	1800	U	4600
4-Chloro-3-methylphenol	U	330	U	5800	U	350	U	1800	U	4600
2-Methylnaphthalene	U	330	U	5800	360	350	640 J	1800	U	4600
Hexachlorocyclopentadiene	U	330	U	5800	U	350	U	1800	U	4600
2,4,6-Trichlorophenol	U	330	U	5800	U	350	U	1800	U	4600
2,4,5-Trichlorophenol	U	330	U	5800	U	350	U	1800	U	4600
2-Chloronaphthalene	U	330	U	5800	U	350	U	1800	U	4600
2-Nitroaniline	U	330	U	5800	U	350	U	1800	U	4600
Dimethylphthalate	U	330	U	5800	U	350	U	1800	U	4600
Acenaphthylene	U	330	U	5800	U	350	U	1800	U	4600
2,6-Dinitrotoluene	U	330	U	5800	U	350	U	1800	U	4600
3-Nitroaniline	U	330	U	5800	U	350	U	1800	U	4600
Acenaphthene	U	330	U	5800	95 J	350	U	1800	U	4600
2,4-Dinitrophenol	U	330	U	5800	U	350	U	1800	U	4600
4-Nitrophenol	U	330	U	5800	U	350	U	1800	U	4600
Dibenzofuran	U	330	U	5800	100 J	350	U	1800	U	4600
2,4-Dinitrotoluene	U	330	U	5800	U	350	U	1800	U	4600
Diethylphthalate	U	330	U	5800	U	350	U	1800	U	4600
4-Chlorophenyl-phenylether	U	330	U	5800	U	350	U	1800	U	4600
Fluorene	U	330	U	5800	87 J	350	U	1800	U	4600
4-Nitroaniline	U	330	U	5800	U	350	U	1800	U	4600
4,6-Dinitro-2-methylphenol	U	330	U	5800	U	350	U	1800	U	4600
N-Nitrosodiphenylamine	U	330	U	5800	U	350	U	1800	U	4600
4-Bromophenyl-phenylether	U	330	U	5800	U	350	U	1800	U	4600
Hexachlorobenzene	U	330	U	5800	U	350	U	1800	U	4600
Pentachlorophenol	U	330	U	5800	U	350	U	1800	U	4600
Phenanthrene	U	330	U	5800	1400	350	U	1800	U	4600
Anthracene	U	330	U	5800	220 J	350	U	1800	U	4600
Carbazole	U	330	U	5800	190 J	350	U	1800	U	4600
Di-n-butylphthalate	U	330	U	5800	150 J	350	U	1800	U	4600
Fluoranthene	U	330	U	5800	2000	350	380 J	1800	1000 J	4600
Pyrene	U	330	U	5800	1500	350	U	1800	U	4600
Butylbenzylphthalate	U	330	U	5800	U	350	U	1800	U	4600
Benzo(a)anthracene	U	330	U	5800	800	350	U	1800	U	4600
3,3'-Dichlorobenzidine	U	330	U	5800	U	350	U	1800	U	4600
Chrysene	U	330	U	5800	920	350	U	1800	U	4600
Bis(2-Ethylhexyl)phthalate	U	330	U	5800	640	350	1300 J	1800	1000 J	4600
Di-n-octylphthalate	U	330	U	5800	U	350	U	1800	U	4600
Benzo(b)fluoranthene	U	330	U	5800	1100	350	U	1800	U	4600
Benzo(k)fluoranthene	U	330	U	5800	880	350	U	1800	U	4600
Benzo(a)pyrene	U	330	U	5800	1100	350	U	1800	U	4600
Indeno(1,2,3-cd)pyrene	U	330	U	5800	750	350	U	1800	U	4600
Dibenzo(a,h)anthracene	U	330	U	5800	300 J	350	U	1800	U	4600
Benzo(g,h,i)perylene	U	330	U	5800	890	350	U	1800	U	4600

Table 1.3 (cont.) Results of the Analysis for BNA in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No	SBLK041999	A16657	A16658	A16659	A16660
Sample Location	Lab Blank	7	8	9	10
GC/MS File Name	LFS023	LFS024	LFS025	LFS026	LFS027
Dilution Factor	1	10	10	10	5
% Solid	100	76	87	91	99

Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg
Phenol	U	330	1900	J	4400	1500	J	3800	4900		3700	1800		1700
bis(-2-Chloroethyl)Ether	U	330	U		4400	U		3800	U		3700	U		1700
2-Chlorophenol	U	330	U		4400	U		3800	U		3700	U		1700
1,3-Dichlorobenzene	U	330	U		4400	U		3800	U		3700	U		1700
1,4-Dichlorobenzene	U	330	U		4400	U		3800	U		3700	U		1700
Benzyl alcohol	U	330	U		4400	U		3800	U		3700	U		1700
1,2-Dichlorobenzene	U	330	U		4400	U		3800	U		3700	U		1700
2-Methylphenol	U	330	U		4400	U		3800	U		3700	570	J	1700
bis(2-Chloroisopropyl)ether	U	330	U		4400	U		3800	U		3700	U		1700
4-Methylphenol	U	330	U		4400	U		3800	U		3700	U		1700
N-Nitroso-Di-n-propylamine	U	330	U		4400	U		3800	U		3700	U		1700
Hexachloroethane	U	330	U		4400	U		3800	U		3700	U		1700
Nitrobenzene	U	330	U		4400	U		3800	U		3700	U		1700
Isophorone	U	330	U		4400	U		3800	U		3700	U		1700
2-Nitrophenol	U	330	U		4400	U		3800	U		3700	U		1700
2,4-Dimethylphenol	U	330	U		4400	U		3800	U		3700	U		1700
bis(2-Chloroethoxy)methane	U	330	U		4400	U		3800	U		3700	U		1700
2,4-Dichlorophenol	U	330	U		4400	U		3800	U		3700	U		1700
1,2,4-Trichlorobenzene	U	330	U		4400	U		3800	U		3700	U		1700
Naphthalene	U	330	U		4400	U		3800	U		3700	3100		1700
4-Chloroaniline	U	330	U		4400	U		3800	U		3700	U		1700
Hexachlorobutadiene	U	330	U		4400	U		3800	U		3700	U		1700
4-Chloro-3-methylphenol	U	330	U		4400	U		3800	U		3700	U		1700
2-Methylnaphthalene	U	330	U		4400	U		3800	U		3700	1500	J	1700
Hexachlorocyclopentadiene	U	330	U		4400	U		3800	U		3700	U		1700
2,4,6-Trichlorophenol	U	330	U		4400	U		3800	U		3700	U		1700
2,4,5-Trichlorophenol	U	330	U		4400	U		3800	U		3700	U		1700
2-Chloronaphthalene	U	330	U		4400	U		3800	U		3700	U		1700
2-Nitroaniline	U	330	U		4400	U		3800	U		3700	U		1700
Dimethylphthalate	U	330	U		4400	U		3800	U		3700	U		1700
Acenaphthylene	U	330	U		4400	U		3800	U		3700	U		1700
2,6-Dinitrotoluene	U	330	U		4400	U		3800	U		3700	U		1700
3-Nitroaniline	U	330	U		4400	U		3800	U		3700	U		1700
Acenaphthene	U	330	U		4400	U		3800	U		3700	U		1700
2,4-Dinitrophenol	U	330	U		4400	U		3800	U		3700	U		1700
4-Nitrophenol	U	330	U		4400	U		3800	U		3700	U		1700
Dibenzofuran	U	330	U		4400	U		3800	U		3700	U		1700
2,4-Dinitrotoluene	U	330	U		4400	U		3800	U		3700	U		1700
Diethylphthalate	U	330	U		4400	U		3800	U		3700	U		1700
4-Chlorophenyl-phenylether	U	330	U		4400	U		3800	U		3700	U		1700
Fluorene	U	330	U		4400	U		3800	U		3700	U		1700
4-Nitroaniline	U	330	U		4400	U		3800	U		3700	U		1700
4,6-Dinitro-2-methylphenol	U	330	U		4400	U		3800	U		3700	U		1700
N-Nitrosodiphenylamine	U	330	U		4400	U		3800	U		3700	U		1700
4-Bromophenyl-phenylether	U	330	U		4400	U		380	U		3700	U		1700
Hexachlorobenzene	U	330	U		4400	U		380	U		3700	U		1700
Pentachlorophenol	U	330	U		4400	U		380	U		3700	U		1700
Phenanthrene	U	330	U		4400	U		380	U		3700	680	J	1700
Anthracene	U	330	U		4400	U		380	U		3700	U		1700
Carbazole	U	330	U		4400	U		380	U		3700	U		1700
Di-n-butylphthalate	U	330	U		4400	U		380	U		3700	U		1700
Fluoranthene	U	330	2400	J	4400	1300	J	3800	1000	J	3700	U		1700
Pyrene	U	330	2200	J	4400	1200	J	3800	880	J	3700	U		1700
Butylbenzylphthalate	U	330	U		4400	U		3800	6000		3700	U		1700
Benzo(a)anthracene	U	330	1500	J	4400	U		3800	U		3700	U		1700
3,3'-Dichlorobenzidine	U	330	U		4400	U		3800	U		3700	U		1700
Chrysene	U	330	1900	J	4400	1000	J	3800	U		3700	U		1700
Bis(2-Ethylhexyl)phthalate	U	330	U		4400	8700		3800	1200	J	3700	1300	J	1700
Di-n-octylphthalate	U	330	U		4400	U		3800	U		3700	U		1700
Benzo(b)fluoranthene	U	330	3100	J	4400	1600	J	3800	940	J	3700	U		1700
Benzo(k)fluoranthene	U	330	2400	J	4400	1400	J	3800	830	J	3700	U		1700
Benzo(a)pyrene	U	330	3300	J	4400	1400	J	3800	920	J	3700	U		1700
Indeno(1,2,3-cd)pyrene	U	330	3200	J	4400	1700	J	3800	770	J	3700	U		1700
Dibenzo(a,h)anthracene	U	330	1200	J	4400	U		3800	U		3700	U		1700
Benzo(g,h,i)perylene	U	330	3600	J	4400	1900	J	3800	920	J	3700	U		1700

ANALYTICAL REPORT

Prepared by
Roy F. Weston, Inc.

Lackawanna Foundry Site
Lackawanna, NY

May 1999

EPA Work Assignment No. 3-439
WESTON Work Order No. 03347-143-001-3439-01
EPA Contract No. 68-C4-0022

Submitted to
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EPA-ERTC

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3439\DEL\AR\9905\REPORT

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Appendices will be furnished on request.

Introduction

REAC, in response to WA 3-439, provided analytical support for environmental samples collected from Lackawanna Foundry Site located in Lackawanna, NY as described in the following table. The support also included QA/QC, data review, and preparation of an analytical report containing a summary of the analytical methods, the results, and the QA/QC results.

The samples were treated with procedures consistent with those described in SOP # 1008 and are summarized in the following table:

COC #	Number of Samples	Sampling Date	Date Received	Matrix	Analysis	Laboratory
06505	16	4/14/99	4/19/99	Soil	VOC	Paragon
06507	16	4/14/99	4/19/99	Soil	VOC	Paragon
06908	-	4/14/99	4/15/99	Soil	Pest/PCB	REAC
06909	-	4/14/99	4/15/99	Soil	Pest/PCB	REAC
06910	2	4/14/99	4/15/99	Soil	Pest/PCB	REAC
06911	7	4/14/99	4/15/99	Soil	Pest/PCB	REAC
06912	-	4/14/99	4/15/99	Soil	Pest/PCB	REAC

Analyses requested on these chains of custody, but not presented in this report, were given in previous reports.

Case Narrative

The data in this report have been validated to two significant figures. Any other representation of the data is the responsibility of the user.

VOC in Soil Package 1 200

The method blank of 4/23/99 contained 1.5 µg/kg methylene chloride. The methylene chloride in samples 16650, 16651, 16652, 16653, 16655, 16656, 16657 and 16658 should be regarded as not detected because the concentration of methylene chloride in these samples is less than ten times as much as that of the method blank.

The method blank of 4/26/99 contained 2.1 µg/kg methylene chloride. The methylene chloride in samples 16654, 16661, 16662, 16664, 16660, 16659 and 16663 should be regarded as not detected because the concentration of methylene chloride in these samples is less than ten times as much as that of the method blank.

The method blank of 4/27/99 contained 3.6 µg/kg methylene chloride. The methylene chloride in samples 16666, 16667, 16665, 16668, 16669, 16670, 16671, 16675, 16676, 16677, 16679, 16680, 16678, 16672, 16673 and 16674 should be regarded as not detected because the concentration of methylene chloride in these samples is less than ten times as much as that of the method blank.

In the initial calibration of 4/21/99 the acceptable QC limits were exceeded by iodomethane (43%) and 2-chloroethyl vinyl ether (32%). The data are not affected because these compounds were not detected in the associated samples.

In the continuing calibration check standard of 4/22/99 the acceptable QC limits were exceeded by acetone (38%), iodomethane (57%), 2-butanone (34%), dibromomethane (30%), cis-1,3-dichloropropene (40%), 4-methyl-2-pentanone (27%), trans-1,3-dichloropropene (28%), 2-hexanone (41%), 1,2-dibromoethane (27%) and 1,2-dibromo-3-chloropropane (25.6%). The data for acetone, 2-butanone, dibromomethane, cis-1,3-dichloropropene, 4-methyl-2-pentanone, trans-1,3-dichloropropene, 2-hexanone, 1,2-dibromoethane and 1,2-dibromo-3-chloropropane in samples B 16650, B 16651, B 16652, B 16653, B 16655, B 16656, B 16657 and B 16658 are not affected The data for iodomethane in samples B 16650, B 16651, B 16652, B 16653, B 16655, B 16656, B 16657 and B 16658 should be regarded as estimated.

In the continuing calibration check standard of 4/26/99 the acceptable QC limits were exceeded by chloromethane (28%), iodomethane (53%), carbon tetrachloride (38%), cis-1,3-dichloropropene (53%), trans-1,3-dichloropropene (38%), 1,3-dichloropropane (28%), dibromochloromethane (33%) and 1,2-dibromoethane (37%). The data for chloromethane, carbon tetrachloride, trans-1,3-dichloropropene, 1,3-dichloropropane, dibromochloromethane and 1,2-dibromoethane in samples B 16654, B 16661, B 16662, B 16664, B 16659, B 16660 and B 16663 are not affected. The data for iodomethane and cis-1,3-dichloropropene in samples B 16654, B 16661, B 16662, B 16664, B 16659, B 16660 and B 16663 should be regarded as estimated.

In the continuing calibration check standard of 4/27/99 the acceptable QC limits were exceeded by iodomethane (68%), carbon tetrachloride (36%), cis-1,3-dichloropropene (49%), trans-1,3-dichloropropene (48%), 2-hexanone (27%), 1,3-dichloropropane (33%), dibromoethane (36%) and 1,2-dibromoethane (57%). The data for carbon tetrachloride, cis-1,3-dichloropropene, trans-1,3-dichloropropene, 2-hexanone, 1,3-dichloropropane, and dibromoethane (36%) in samples B 16666, B 16667, B 16665, B 16668, B 16669, B 16670, B 16671, B 16675, B 16676, B 16677, B 16679, B 16680, B 16678, B 16672, B 16673 and B 16674 are not affected. The data for iodomethane and 1,2-dibromoethane in samples B 16666, B 16667, B 16665, B 16668, B 16669, B 16670, B 16671, B 16675,

B 16676, B 16677, B 16679, B 16680, B 16678, B 16672, B 16673 and B 16674 should be regarded as estimated.

The percent recoveries of one or more surrogates exceeded the acceptable QC limits for samples B 16669, B 16670, B 16675, B 16673, B 16674 and B 16665 MS. All results should be regarded as estimated.

The areas of two or fewer internal standards exceeded the acceptable QC limits for samples B 16653, B 16656, B 16658, B 16661, B 16660, B 16671, B 16672 and B 16673. The data that were quantified under these internal standards should be regarded as estimated.

The areas of all four internal standards exceeded the acceptable QC limits for samples B 16675 and B 16677. The data that were quantified under these internal standards should be regarded as estimated.

Only one MS/MSD pair was analyzed. The subcontract laboratory did not analyze an additional MS/MSD pair as required.

Pesticides/PCBs in Soil Package I 194

In the continuing calibration check standard of 4/29/99, the acceptable QC limits were exceeded for one of the five peaks used for Aroclor 1260 (26%). The data are not affected because the average of the five peaks was 10.6%.

In the end of sequence check standard of 4/20/99, the acceptable QC limits were exceeded for heptachlor (44%), endosulfan II (29%), p,p'-DDT (94%), endrin aldehyde (44%), endosulfan sulfate (29%), methoxychlor (100%), endrin ketone (56%) and decachlorobiphenyl (69%). The data are not affected because this calibration was not used to quantify any analytes.

In the end of sequence check standard of 4/23/99, the acceptable QC limits were exceeded for δ-BHC (29%), p,p`-DDD (36%), p,p'-DDT (81%), methoxychlor (77%), endrin ketone (33%) and decachlorobiphenyl (53%). The data are not affected because this calibration was not used to quantify any analytes.

In the end of sequence check standard of 4/26/99, the acceptable QC limits were exceeded for β-BHC (30%), heptachlor (52%), γ-chlordane (28%), α-chlordane (29%), endosulfan I (28%), p,p'-DDE (34%), dieldrin (30%), endrin (46%), endosulfan II (39%), p,p'-DDT (92%), endrin aldehyde (45%), endosulfan sulfate (33%), methoxychlor (87%), endrin ketone (52%) and decachlorobiphenyl (59%). The data are not affected because this calibration was not used to quantify any analytes.

In the end of sequence check standard of 4/28/99, the acceptable QC limits were exceeded for the average of the five peaks used to quantify Aroclor 1254 (74%). The data are not affected because this calibration was not used to quantify Aroclor 1254 in any of the samples.

In the end of sequence check standard of 4/29/99, the acceptable QC limits were exceeded for the average of the five peaks used to quantify Aroclor 1260 (27.2%), specifically, peak 4 was 32% and peak 5 was 52%. The data are not affected because this calibration was not used to quantify Aroclor 1254 in any of the samples.

In the end of sequence check standard of 4/28/99, the acceptable QC limits were exceeded for peak 5 (26%) of Aroclor 1260. The data are not affected because this calibration was not used to quantify Aroclor 1260 in any of the samples and the average of the five peaks was 9.6%.

The acceptable percent recoveries were exceeded for both surrogates for samples A 16650 and A 16664. The data for these samples should be regarded as estimated.

The acceptable percent recoveries were exceeded for the surrogate decachlorobiphenyl for samples A 16652, A 16653, A 16653 MS, A 16653 MSD, A 16654, A 16655, A 16656, A 16658, A 16660, A 16661, A 16662, A 16663, A 16665, A 16665 MS, A 16665 MSD, A 16666, A 16667, A 16668, A 16672, A 16674, A 16675, A 16676, A 16677, A 16678, A 16679, A 16677 MS and A 16677 MSD. The data for these samples are not affected.

Additional Aroclors are likely to be present in various samples such as A 16672, A 16673, A 16674, A 16677, A 16679. The laboratory did not report these in the final results because their concentrations were below the detection limit and very low in comparison to the Aroclors that were reported.

Summary of Abbreviations

AA	Atomic Absorption
B	The analyte was found in the blank
BFB	Bromofluorobenzene
C	Centigrade
D	(Surrogate Table) this value is from a diluted sample and was not calculated (Result Table) this result was obtained from a diluted sample
Dioxin PCDD	denotes Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans and/or and PCDF
CLP	Contract Laboratory Protocol
COC	Chain of Custody
CONC	Concentration
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
DFTPP	Decafluorotriphenylphosphine
DL	Detection Limit
E	The value is greater than the highest linear standard and is estimated
EMPC	Estimated maximum possible concentration
ICAP	Inductively Coupled Argon Plasma
ISTD	Internal Standard
J	The value is below the method detection limit and is estimated
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDL	Method Detection Limit
MI	Matrix Interference
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MW	Molecular Weight
NA	either Not Applicable or Not Available
NC	Not Calculated
NR	Not Requested
NS	Not Spiked
% D	Percent Difference
% REC	Percent Recovery
PPB	Parts per billion
PPBV	Parts per billion by volume
PQL	Practical Quantitation Limit
QL	Quantitation Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SIM	Selected Ion Monitoring
TCLP	Toxic Characteristics Leaching Procedure
U	Denotes not detected
W	Weathered sample; the results should be regarded as estimated

m^3	cubic meter	kg	kilogram	μg	microgram
L	liter	g	gram	pg	picogram
mL	milliliter	mg	milligram	ng	nanogram
μL	microliter				

*	denotes a value that exceeds the acceptable QC limit
	Abbreviations that are specific to a particular table are explained in footnotes on that table

Revision 7/23/98

Analytical Procedure for VOC in Soil

The subcontract laboratory determined the concentration of volatile organic compounds in the samples by analyzing them by modified USEPA Method 8260 B found in SW-846. The results of the analyses are listed in Table 1.1.

Extraction Procedure

The soil samples were extracted by the Soxhlet method. A thirty gram aliquot was spiked with a surrogate solution consisting of tetrachloro-m-xylene and decachlorobiphenyl, mixed with 30 g anhydrous sodium sulfate and Soxhlet extracted for 16 hours with 300-mL hexane. The extract was concentrated to 5 mL.

Gas Chromatographic Analysis - Pesticide Quantitation and PCB Screening

The extract was analyzed for pesticides using simultaneous dual column injections. The analysis was done on an HP-6890, equipped with an HP-6890 automatic sampler, and controlled with an HP Chem-Station. The following conditions were employed:

First Column	DB-608, 30 meter, 0.32 mm fused silica capillary, 0.50 µm film thickness
Injector Temperature	200° C
Detector Temperature	325° C
Second Column	Rtx-CLPesticides, 30 meter, 0.53 mm fused silica capillary, 0.50 µm film thickness
Injector Temperature	200° C
Detector Temperature	325° C
Temperature Program-(both columns)	120 ° C for 1 minute 9 °C/min to 285°C, 10 min at 285°C
Injection Volume	1 µL

The gas chromatographs were calibrated using 5 pesticide standards at 20, 50, 100, 200, and 500 µg/L. The results from each mixture were used to calculate the response factor (RF) of each analyte and the average Response Factor was used to calculate the concentration of pesticide in the sample. Quantification was based on the DB-608 column (signal 1) and the identity of the analyte was confirmed using the Rtx-CLPesticides column (signal 2). A fingerprint chromatogram was run using seven Aroclors and toxaphene; calibration curves were run only if a particular Aroclor or toxaphene was found in the sample.

The pesticide results, listed in Table 1.2, are calculated by using the following formula:

$$C_u = \frac{DF \times A_u \times V_t}{RF_{ave} \times V_i \times W \times D}$$

where

C_u = Concentration of analyte (μg/kg)
DF = Dilution Factor
A_u = Area or peak height
V_t = Volume of sample (mL)
RF_{ave} = Average response factor
V_i = Volume of extract injected (μL)
W = Weight of sample (g)
D = Decimal percent solids

Response Factor calculation:

The RF for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_u}{total\ pg\ injected}$$

where

A_u = Area or peak height

and

$$RF_{ave} = \frac{RF_1 + \ldots + RF_n}{n}$$

where

n = number of samples

Revision 7/22/97

Table 1.1 Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	Method Blank		B16650		B16651		B16652		B16653	
Sample Location	4/23/99		1 West Fence		2D Surface Middle		2D Middle		3 West Fence	
% Solid	NA		65		93		92		76	
Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Dichlorodifluoromethane	U	10	U	15	U	11	U	11	U	13
Chloromethane	U	10	U	15	U	11	U	11	U	13
Vinyl chloride	U	10	U	15	U	11	U	11	U	13
Bromomethane	U	10	U	15	U	11	U	11	U	13
Chloroethane	U	10	U	15	U	11	U	11	U	13
Trichlorofluoromethane	U	5	U	7.7	U	5.4	U	5.4	U	6.6
Acrolein	U	50	U	77	U	54	U	54	U	66
1,1-Dichloroethylene	U	5	U	7.7	U	5.4	U	5.4	U	6.6
Trichlorotrifluoroethane	U	5	U	7.7	U	5.4	U	5.4	U	6.6
Acetone	U	20	U	31	U	21	U	21	U	26
Iodomethane	U	5	U	7.7	U	5.4	U	5.4	U	6.6
Carbon disulfide	U	5	U	7.7	U	5.4	U	5.4	U	6.6
Methylene chloride	1.5 J	5	1.9 JB	7.7	1.4 JB	5.4	1.2 JB	5.4	1.8 JB	6.6
trans-1,2-Dichloroethylene	U	5	U	7.7	U	5.4	U	5.4	U	6.6
Methyl t-butyl ether	U	5	U	7.7	U	5.4	U	5.4	U	6.6
Acrylonitrile	U	50	U	77	U	5.4	U	5.4	U	6.6
1,1-Dichloroethane	U	5	U	7.7	U	5.4	U	5.4	U	6.6
Vinyl acetate	U	20	U	31	U	21	U	21	U	26
cis-1,2-Dichloroethylene	U	5	U	7.7	U	5.4	U	5.4	U	6.6
2-Butanone	U	20	U	31	U	21	U	21	U	26
Bromochloromethane	U	5	U	7.7	U	5.4	U	5.4	U	6.6
Chloroform	U	5	U	7.7	U	5.4	U	5.4	U	6.6
1,1,1,-Trichloroethane	U	5	U	7.7	U	5.4	U	5.4	U	6.6
2,2-Dichloropropane	U	5	U	7.7	U	5.4	U	5.4	U	6.6
Carbon tetrachloride	U	5	U	7.7	U	5.4	U	5.4	U	6.6
1,1-Dichloropropene	U	5	U	7.7	U	5.4	U	5.4	U	6.6
1,2-Dichloroethane	U	5	U	7.7	U	5.4	U	5.4	U	6.6
Benzene	U	5	U	7.7	U	5.4	U	5.4	U	6.6
Trichloroethylene	U	5	U	7.7	U	5.4	U	5.4	U	6.6
1,2-Dichloropropane	U	5	U	7.7	U	5.4	U	5.4	U	6.6
Dibromomethane	U	5	U	7.7	U	5.4	U	5.4	U	6.6
Bromochloromethane	U	5	U	7.7	U	5.4	U	5.4	U	6.6
2-Chloroethyl vinyl ether	U	10	U	15	U	11	U	11	U	13
cis-1,3-Dichloropropylene	U	5	U	7.7	U	5.4	U	5.4	U	6.6
4-Methyl-2-pentanone	U	20	U	31	U	21	U	21	U	26
Toluene	U	5	U	7.7	U	5.4	U	5.4	U	6.6

Table 1.1 Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	Method Blank		B16650		B16651		B16652		B16653		
Sample Location	4/23/99		1 West Fence		2D Surface Middle		2D Middle		3 West Fence		
% Solid	NA		65		93		92		76		
Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg		MDL µg/kg
trans-1,3-Dichloropropylene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
1,1,2-Trichloroethane	U	5	U	7.7	U	5.4	U	5.4	U		6.6
2-Hexanone	U	20	U	31	U	21	U	21	U		26
Tetrachloroethylene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
1,3-Dichloropropane	U	5	U	7.7	U	5.4	U	5.4	U		6.6
Dibromochloromethane	U	5	U	7.7	U	5.4	U	5.4	U		6.6
1,2-Dibromoethane	U	5	U	7.7	U	5.4	U	5.4	U		6.6
1-Chlorohexane	U	5	U	7.7	U	5.4	U	5.4	U		6.6
Chlorobenzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
1,1,1,2-Tetrachloroethane	U	5	U	7.7	U	5.4	U	5.4	U		6.6
Ethyl benzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
mp- Xylene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
o- Xylene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
Styrene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
Bromoform	U	5	U	7.7	U	5.4	U	5.4	U		6.6
Isopropylbenzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
1,2,3-Trichloropropane	U	5	U	7.7	U	5.4	U	5.4	U		6.6
1,1,2,2-Tetrachloroethane	U	5	U	7.7	U	5.4	U	5.4	U		6.6
Bromobenzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
n-Propylbenzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
2-Chlorotoluene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
1,3,5-Trimethylbenzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
4-Chlorotoluene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
t-Butylbenzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
1,2,4-Trimethylbenzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
sec-Butylbenzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
1,3-Dichlorobenzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
p-Isopropyltoluene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
1,4-Dichlorobenzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
n-Butylbenzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
1,2-Dichlorobenzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
1,2-Dibromo-3-chloropropane	U	10	U	15	U	11	U	11	U		13
1,2,4-Trichlorobenzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
Hexachlorobutadiene	U	5	U	7.7	U	5.4	U	5.4	U		6.6
Naphthalene	U	5	U	7.7	U	5.4	U	5.4	1.1	J	6.6
1,2,3-Trichlorobenzene	U	5	U	7.7	U	5.4	U	5.4	U		6.6

Table 1.1 (Cont) Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	B16655			B16656			B16657			B16658		
Sample Location	5 West Fence			5 Rear Entrance			7			8		
% Solid	82			86			82			62		
Compound Name	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg
Dichlorodifluoromethane	U		12	U		12	U		12	U		16
Chloromethane	U		12	U		12	U		12	U		16
Vinyl chloride	U		12	U		12	U		12	U		16
Bromomethane	U		12	U		12	U		12	U		16
Chloroethane	U		12	U		12	U		12	U		16
Trichlorofluoromethane	U		6.1	U		5.8	U		6.1	U		8.1
Acrolein	U		61	U		58	U		61	U		81
1,1-Dichloroethylene	U		6.1	U		5.8	U		6.1	U		8.1
Trichlorotrifluoroethane	U		6.1	U		5.8	U		6.1	U		8.1
Acetone	U		24	U		23	U		24	U		32
Iodomethane	U		6.1	U		5.8	U		6.1	U		8.1
Carbon disulfide	U		6.1	U		5.8	U		6.1	U		8.1
Methylene chloride	1.6	JB	6.1	1.6	JB	5.8	1.4	JB	6.1	2.4	JB	8.1
trans-1,2-Dichloroethylene	U		6.1	U		5.8	U		6.1	U		8.1
Methyl t-butyl ether	U		6.1	U		5.8	U		6.1	U		8.1
Acrylonitrile	U		61	U		58	U		61	U		81
1,1-Dichloroethane	U		6.1	U		5.8	U		6.1	U		8.1
Vinyl acetate	U		24	U		23	U		24	U		32
cis-1,2-Dichloroethylene	U		6.1	U		5.8	U		6.1	U		8.1
2-Butanone	U		24	U		23	U		24	U		32
Bromochloromethane	U		6.1	U		5.8	U		6.1	U		8.1
Chloroform	U		6.1	U		5.8	U		6.1	U		8.1
1,1,1,-Trichloroethane	U		6.1	U		5.8	U		6.1	U		8.1
2,2-Dichloropropane	U		6.1	U		5.8	U		6.1	U		8.1
Carbon tetrachloride	U		6.1	U		5.8	U		6.1	U		8.1
1,1-Dichloropropene	U		6.1	U		5.8	U		6.1	U		8.1
1,2-Dichloroethane	U		6.1	U		5.8	U		6.1	U		8.1
Benzene	U		6.1	U		5.8	U		6.1	U		8.1
Trichloroethylene	U		6.1	U		5.8	U		6.1	U		8.1
1,2-Dichloropropane	U		6.1	U		5.8	U		6.1	U		8.1
Dibromomethane	U		6.1	U		5.8	U		6.1	U		8.1
Bromochloromethane	U		6.1	U		5.8	U		6.1	U		8.1
2-Chloroethyl vinyl ether	U		12	U		12	U		12	U		16
cis-1,3-Dichloropropylene	U		6.1	U		5.8	U		6.1	U		8.1
4-Methyl-2-pentanone	U		24	U		23	U		24	U		32
Toluene	U		6.1	4.0	J	5.8	U		6.1	U		8.1

Table 1.1 (Cont) Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	B16655		B16656		B16657		B16658	
Sample Location	5 West Fence		5 Rear Entrance		7		8	
% Solid	82		86		82		62	
Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
trans-1,3-Dichloropropylene	U	6.1	U	5.8	U	6.1	U	8.1
1,1,2-Trichloroethane	U	6.1	U	5.8	U	6.1	U	8.1
2-Hexanone	U	24	U	23	U	24	U	32
Tetrachloroethylene	U	6.1	U	5.8	U	6.1	U	8.1
1,3-Dichloropropane	U	6.1	U	5.8	U	6.1	U	8.1
Dibromochloromethane	U	6.1	U	5.8	U	6.1	U	8.1
1,2-Dibromoethane	U	6.1	U	5.8	U	6.1	U	8.1
1-Chlorohexane	U	6.1	U	5.8	U	6.1	U	8.1
Chlorobenzene	U	6.1	U	5.8	U	6.1	U	8.1
1,1,1,2-Tetrachloroethane	U	6.1	U	5.8	U	6.1	U	8.1
Ethyl benzene	U	6.1	U	5.8	U	6.1	U	8.1
mp- Xylene	U	6.1	1.8 J	5.8	U	6.1	U	8.1
o- Xylene	U	6.1	1.0 J	5.8	U	6.1	U	8.1
Styrene	U	6.1	U	5.8	U	6.1	U	8.1
Bromoform	U	6.1	U	5.8	U	6.1	U	8.1
Isopropylbenzene	U	6.1	U	5.8	U	6.1	U	8.1
1,2,3-Trichloropropane	U	6.1	U	5.8	U	6.1	U	8.1
1,1,2,2-Tetrachloroethane	U	6.1	U	5.8	U	6.1	U	8.1
Bromobenzene	U	6.1	U	5.8	U	6.1	U	8.1
n-Propylbenzene	U	6.1	U	5.8	U	6.1	U	8.1
2-Chlorotoluene	U	6.1	U	5.8	U	6.1	U	8.1
1,3,5-Trimethylbenzene	U	6.1	U	5.8	U	6.1	U	8.1
4-Chlorotoluene	U	6.1	U	5.8	U	6.1	U	8.1
t-Butylbenzene	U	6.1	U	5.8	U	6.1	U	8.1
1,2,4-Trimethylbenzene	U	6.1	U	5.8	U	6.1	U	8.1
sec-Butylbenzene	U	6.1	U	5.8	U	6.1	U	8.1
1,3-Dichlorobenzene	U	6.1	U	5.8	U	6.1	U	8.1
p-Isopropyltoluene	U	6.1	U	5.8	U	6.1	U	8.1
1,4-Dichlorobenzene	U	6.1	U	5.8	U	6.1	U	8.1
n-Butylbenzene	U	6.1	U	5.8	U	6.1	U	8.1
1,2-Dichlorobenzene	U	6.1	U	5.8	U	6.1	U	8.1
1,2-Dibromo-3-chloropropane	U	12	U	12	U	12	U	16
1,2,4-Trichlorobenzene	U	6.1	U	5.8	U	6.1	U	8.1
Hexachlorobutadiene	U	6.1	U	5.8	U	6.1	U	8.1
Naphthalene	U	6.1	U	5.8	U	6.1	U	8.1
1,2,3-Trichlorobenzene	U	6.1	U	5.8	U	6.1	U	8.1

Table 1.1 (Cont) Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	Method Blank			B16654			B16661			B16662			B16664		
Sample Location	4/26/99			4 West Fence			11			12			14		
% Solid	NA			87			84			83			82		
Compound Name	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg
Dichlorodifluoromethane	U		10	U		12	U		12	U		12	U		12
Chloromethane	U		10	U		12	U		12	U		12	U		12
Vinyl chloride	U		10	U		12	U		12	U		12	U		12
Bromomethane	U		10	U		12	U		12	U		12	U		12
Chloroethane	U		10	U		12	U		12	U		12	U		12
Trichlorofluoromethane	U		5	U		5.8	U		6	U		6	U		6.1
Acrolein	U		50	U		58	U		60	U		60	U		61
1,1-Dichloroethylene	U		5	U		5.8	U		6	U		6	U		6.1
Trichlorotrifluoroethane	U		5	U		5.8	U		6	U		6	U		6.1
Acetone	U		20	U		23	U		24	U		24	U		24
Iodomethane	U		5	U		5.8	U		6	U		6	U		6.1
Carbon disulfide	U		5	U		5.8	U		6	U		6	U		6.1
Methylene chloride	2.1	J	5	1.8	JB	5.8	7.7	B	6	3.9	JB	6	3.7	JB	6.1
trans-1,2-Dichloroethylene	U		5	U		5.8	U		6	U		6	U		6.1
Methyl t-butyl ether	U		5	U		5.8	U		6	U		6	U		6.1
Acrylonitrile	U		50	U		58	U		60	U		60	U		61
1,1-Dichloroethane	U		5	U		5.8	U		6	U		6	U		6.1
Vinyl acetate	U		20	U		23	U		24	U		24	U		24
cis-1,2-Dichloroethylene	U		5	U		5.8	U		6	U		6	U		6.1
2-Butanone	U		20	U		23	U		24	U		24	U		24
Bromochloromethane	U		5	U		5.8	U		6	U		6	U		6.1
Chloroform	U		5	U		5.8	U		6	U		6	U		6.1
1,1,1,-Trichloroethane	U		5	U		5.8	U		6	U		6	U		6.1
2,2-Dichloropropane	U		5	U		5.8	U		6	U		6	U		6.1
Carbon tetrachloride	U		5	U		5.8	U		6	U		6	U		6.1
1,1-Dichloropropene	U		5	U		5.8	U		6	U		6	U		6.1
1,2-Dichloroethane	U		5	U		5.8	U		6	U		6	U		6.1
Benzene	U		5	U		5.8	U		6	U		6	U		6.1
Trichloroethylene	U		5	U		5.8	U		6	U		6	U		6.1
1,2-Dichloropropane	U		5	U		5.8	U		6	U		6	U		6.1
Dibromomethane	U		5	U		5.8	U		6	U		6	U		6.1
Bromochloromethane	U		5	U		5.8	U		6	U		6	U		6.1
2-Chloroethyl vinyl ether	U		10	U		12	U		12	U		12	U		12
cis-1,3-Dichloropropylene	U		5	U		5.8	U		6	U		6	U		6.1
4-Methyl-2-pentanone	U		20	U		23	U		24	U		24	U		24
Toluene	U		5	U		5.8	U		6	U		6	U		6.1

Table 1.1 (Cont) Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	Method Blank		B16654		B16661		B16662		B16664	
Sample Location	4/26/99		4 West Fence		11		12		14	
% Solid	NA		87		84		83		82	
Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
trans-1,3-Dichloropropylene	U	5	U	5.8	U	6	U	6	U	6.1
1,1,2-Trichloroethane	U	5	U	5.8	U	6	U	6	U	6.1
2-Hexanone	U	20	U	23	U	24	U	24	U	24
Tetrachloroethylene	U	5	U	5.8	U	6	U	6	U	6.1
1,3-Dichloropropane	U	5	U	5.8	U	6	U	6	U	6.1
Dibromochloromethane	U	5	U	5.8	U	6	U	6	U	6.1
1,2-Dibromoethane	U	5	U	5.8	U	6	U	6	U	6.1
1-Chlorohexane	U	5	U	5.8	U	6	U	6	U	6.1
Chlorobenzene	U	5	U	5.8	U	6	U	6	U	6.1
1,1,1,2-Tetrachloroethane	U	5	U	5.8	U	6	U	6	U	6.1
Ethyl benzene	U	5	U	5.8	U	6	U	6	U	6.1
mp- Xylene	U	5	U	5.8	U	6	U	6	U	6.1
o- Xylene	U	5	U	5.8	U	6	U	6	U	6.1
Styrene	U	5	U	5.8	U	6	U	6	U	6.1
Bromoform	U	5	U	5.8	U	6	U	6	U	6.1
Isopropylbenzene	U	5	U	5.8	U	6	U	6	U	6.1
1,2,3-Trichloropropane	U	5	U	5.8	U	6	U	6	U	6.1
1,1,2,2-Tetrachloroethane	U	5	U	5.8	U	6	U	6	U	6.1
Bromobenzene	U	5	U	5.8	U	6	U	6	U	6.1
n-Propylbenzene	U	5	U	5.8	U	6	U	6	U	6.1
2-Chlorotoluene	U	5	U	5.8	U	6	U	6	U	6.1
1,3,5-Trimethylbenzene	U	5	U	5.8	U	6	U	6	U	6.1
4-Chlorotoluene	U	5	U	5.8	U	6	U	6	U	6.1
t-Butylbenzene	U	5	U	5.8	U	6	U	6	U	6.1
1,2,4-Trimethylbenzene	U	5	U	5.8	U	6	U	6	U	6.1
sec-Butylbenzene	U	5	U	5.8	U	6	U	6	U	6.1
1,3-Dichlorobenzene	U	5	U	5.8	U	6	U	6	U	6.1
p-Isopropyltoluene	U	5	U	5.8	U	6	U	6	U	6.1
1,4-Dichlorobenzene	U	5	U	5.8	U	6	U	6	U	6.1
n-Butylbenzene	U	5	U	5.8	U	6	U	6	U	6.1
1,2-Dichlorobenzene	U	5	U	5.8	U	6	U	6	U	6.1
1,2-Dibromo-3-chloropropane	U	10	U	12	U	12	U	12	U	12
1,2,4-Trichlorobenzene	U	5	U	5.8	U	6	U	6	U	6.1
Hexachlorobutadiene	U	5	U	5.8	U	6	U	6	U	6.1
Naphthalene	U	5	U	5.8	1.1 J	6	U	6	U	6.1
1,2,3-Trichlorobenzene	U	5	U	5.8	U	6	U	6	U	6.1

Table 1.1 (Cont) Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	B16659			B16660			B16663		
Sample Location	9			10			13		
% Solid	90			99			90		
Compound Name	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg
Dichlorodifluoromethane	U		11	U		10	U		11
Chloromethane	U		11	U		10	U		11
Vinyl chloride	U		11	U		10	U		11
Bromomethane	U		11	U		10	U		11
Chloroethane	U		11	U		10	U		11
Trichlorofluoromethane	U		5.6	U		5.1	U		5.5
Acrolein	U		56	U		51	U		55
1,1-Dichloroethylene	U		5.6	U		5.1	U		5.5
Trichlorotrifluoroethane	U		5.6	U		5.1	U		5.5
Acetone	U		22	U		20	U		22
Iodomethane	U		5.6	U		5.1	U		5.5
Carbon disulfide	U		5.6	U		5.1	U		5.5
Methylene chloride	4.2	JB	5.6	4.9	JB	5.1	2.8	JB	5.5
trans-1,2-Dichloroethylene	U		5.6	U		5.1	U		5.5
Methyl t-butyl ether	U		5.6	U		5.1	U		5.5
Acrylonitrile	U		56	U		51	U		55
1,1-Dichloroethane	U		5.6	U		5.1	U		5.5
Vinyl acetate	U		22	U		20	U		22
cis-1,2-Dichloroethylene	U		5.6	U		5.1	U		5.5
2-Butanone	U		22	U		20	U		22
Bromochloromethane	U		5.6	U		5.1	U		5.5
Chloroform	U		5.6	U		5.1	U		5.5
1,1,1,-Trichloroethane	U		5.6	U		5.1	U		5.5
2,2-Dichloropropane	U		5.6	U		5.1	U		5.5
Carbon tetrachloride	U		5.6	U		5.1	U		5.5
1,1-Dichloropropene	U		5.6	U		5.1	U		5.5
1,2-Dichloroethane	U		5.6	U		5.1	U		5.5
Benzene	U		5.6	0.6	J	5.1	U		5.5
Trichloroethylene	U		5.6	U		5.1	U		5.5
1,2-Dichloropropane	U		5.6	U		5.1	U		5.5
Dibromomethane	U		5.6	U		5.1	U		5.5
Bromochloromethane	U		5.6	U		5.1	U		5.5
2-Chloroethyl vinyl ether	U		11	U		10	U		11
cis-1,3-Dichloropropylene	U		5.6	U		5.1	U		5.5
4-Methyl-2-pentanone	U		22	U		20	U		22
Toluene	U		5.6	27		5.1	U		5.5

Table 1.1 (Cont) Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	B16659		B16660		B16663	
Sample Location	9		10		13	
% Solid	90		99		90	
Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg	MDL µg/kg
trans-1,3-Dichloropropylene	U	5.6	U		5.1	U	5.5
1,1,2-Trichloroethane	U	5.6	U		5.1	U	5.5
2-Hexanone	U	22	U		20	U	22
Tetrachloroethylene	U	5.6	U		5.1	U	5.5
1,3-Dichloropropane	U	5.6	U		5.1	U	5.5
Dibromochloromethane	U	5.6	U		5.1	U	5.5
1,2-Dibromoethane	U	5.6	U		5.1	U	5.5
1-Chlorohexane	U	5.6	U		5.1	U	5.5
Chlorobenzene	U	5.6	U		5.1	U	5.5
1,1,1,2-Tetrachloroethane	U	5.6	U		5.1	U	5.5
Ethyl benzene	U	5.6	3.6	J	5.1	U	5.5
mp- Xylene	U	5.6	13	J	5.1	U	5.5
o- Xylene	U	5.6	4.7	J	5.1	U	5.5
Styrene	U	5.6	U		5.1	U	5.5
Bromoform	U	5.6	U		5.1	U	5.5
Isopropylbenzene	U	5.6	U		5.1	U	5.5
1,2,3-Trichloropropane	U	5.6	U		5.1	U	5.5
1,1,2,2-Tetrachloroethane	U	5.6	U		5.1	U	5.5
Bromobenzene	U	5.6	U		5.1	U	5.5
n-Propylbenzene	U	5.6	0.8	J	5.1	U	5.5
2-Chlorotoluene	U	5.6	U		5.1	U	5.5
1,3,5-Trimethylbenzene	U	5.6	3	J	5.1	U	5.5
4-Chlorotoluene	U	5.6	U		5.1	U	5.5
t-Butylbenzene	U	5.6	U		5.1	U	5.5
1,2,4-Trimethylbenzene	U	5.6	13		5.1	U	5.5
sec-Butylbenzene	U	5.6	U		5.1	U	5.5
1,3-Dichlorobenzene	U	5.6	U		5.1	U	5.5
p-Isopropyltoluene	U	5.6	U		5.1	U	5.5
1,4-Dichlorobenzene	U	5.6	U		5.1	U	5.5
n-Butylbenzene	U	5.6	1.0	J	5.1	U	5.5
1,2-Dichlorobenzene	U	5.6	U		5.1	U	5.5
1,2-Dibromo-3-chloropropane	U	11	U		10	U	11
1,2,4-Trichlorobenzene	U	5.6	U		5.1	U	5.5
Hexachlorobutadiene	U	5.6	U		5.1	U	5.5
Naphthalene	U	5.6	9.4		5.1	U	5.5
1,2,3-Trichlorobenzene	U	5.6	U		5.1	U	5.5

Table 1.1 (Cont) Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	Method Blank		B16666		B16667		B16665		B16668	
Sample Location	4/27/99		Location 16		Location 17		15		Location 18	
% Solid	NA		86		92		83		93	
Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Dichlorodifluoromethane	U	10	U	12	U	11	U	12	U	11
Chloromethane	U	10	U	12	U	11	U	12	U	11
Vinyl chloride	U	10	U	12	U	11	U	12	U	11
Bromomethane	U	10	U	12	U	11	U	12	U	11
Chloroethane	U	10	U	12	U	11	U	12	U	11
Trichlorofluoromethane	U	5	U	5.8	U	5.4	U	6	U	5.4
Acrolein	U	50	U	58	U	54	U	60	U	54
1,1-Dichloroethylene	U	5	U	5.8	U	5.4	U	6	U	5.4
Trichlorotrifluoroethane	U	5	U	5.8	U	5.4	U	6	U	5.4
Acetone	U	20	U	23	16 J	22	U	24	17 J	22
Iodomethane	U	5	U	5.8	U	5.4	U	6	U	5.4
Carbon disulfide	U	5	U	5.8	U	5.4	U	6	U	5.4
Methylene chloride	3.6 J	5	7.4 B	5.8	4.7 JB	5.4	6.3 B	6	3.2 JB	5.4
trans-1,2-Dichloroethylene	U	5	U	5.8	U	5.4	U	6	U	5.4
Methyl t-butyl ether	U	5	U	5.8	U	5.4	U	6	U	5.4
Acrylonitrile	U	50	U	58	U	54	U	60	U	54
1,1-Dichloroethane	U	5	U	5.8	U	5.4	U	6	U	5.4
Vinyl acetate	U	20	U	23	U	22	U	24	U	22
cis-1,2-Dichloroethylene	U	5	U	5.8	U	5.4	U	6	U	5.4
2-Butanone	U	20	U	23	U	22	U	24	U	22
Bromochloromethane	U	5	U	5.8	U	5.4	U	6	U	5.4
Chloroform	U	5	U	5.8	U	5.4	U	6	U	5.4
1,1,1,-Trichloroethane	U	5	U	5.8	U	5.4	U	6	U	5.4
2,2-Dichloropropane	U	5	U	5.8	U	5.4	U	6	U	5.4
Carbon tetrachloride	U	5	U	5.8	U	5.4	U	6	U	5.4
1,1-Dichloropropene	U	5	U	5.8	U	5.4	U	6	U	5.4
1,2-Dichloroethane	U	5	U	5.8	U	5.4	U	6	U	5.4
Benzene	U	5	U	5.8	U	5.4	U	6	U	5.4
Trichloroethylene	U	5	U	5.8	U	5.4	U	6	U	5.4
1,2-Dichloropropane	U	5	U	5.8	U	5.4	U	6	U	5.4
Dibromomethane	U	5	U	5.8	U	5.4	U	6	U	5.4
Bromochloromethane	U	5	U	5.8	U	5.4	U	6	U	5.4
2-Chloroethyl vinyl ether	U	10	U	12	U	11	U	12	U	11
cis-1,3-Dichloropropylene	U	5	U	5.8	U	5.4	U	6	U	5.4
4-Methyl-2-pentanone	U	20	U	23	U	22	U	24	U	22
Toluene	U	5	U	5.8	U	5.4	U	6	U	5.4

Table 1.1 (Cont) Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	Method Blank		B16666		B16667		B16665		B16668		
Sample Location	4/27/99		Location 16		Location 17		15		Location 18		
% Solid	NA		86		92		83		93		
Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc µg/kg	MDL µg/kg	Conc. µg/kg		MDL µg/kg
trans-1,3-Dichloropropylene	U	5	U	5.8	U	5.4	U	6	U		5.4
1,1,2-Trichloroethane	U	5	U	5.8	U	5.4	U	6	U		5.4
2-Hexanone	U	20	U	23	U	22	U	24	U		22
Tetrachloroethylene	U	5	U	5.8	U	5.4	U	6	U		5.4
1,3-Dichloropropane	U	5	U	5.8	U	5.4	U	6	U		5.4
Dibromochloromethane	U	5	U	5.8	U	5.4	U	6	U		5.4
1,2-Dibromoethane	U	5	U	5.8	U	5.4	U	6	U		5.4
1-Chlorohexane	U	5	U	5.8	U	5.4	U	6	U		5.4
Chlorobenzene	U	5	U	5.8	U	5.4	U	6	U		5.4
1,1,1,2-Tetrachloroethane	U	5	U	5.8	U	5.4	U	6	U		5.4
Ethyl benzene	U	5	U	5.8	U	5.4	U	6	U		5.4
mp- Xylene	U	5	U	5.8	U	5.4	U	6	U		5.4
o- Xylene	U	5	U	5.8	U	5.4	U	6	U		5.4
Styrene	U	5	U	5.8	U	5.4	U	6	U		5.4
Bromoform	U	5	U	5.8	U	5.4	U	6	U		5.4
Isopropylbenzene	U	5	U	5.8	U	5.4	U	6	U		5.4
1,2,3-Trichloropropane	U	5	U	5.8	U	5.4	U	6	U		5.4
1,1,2,2-Tetrachloroethane	U	5	U	5.8	U	5.4	U	6	U		5.4
Bromobenzene	U	5	U	5.8	U	5.4	U	6	U		5.4
n-Propylbenzene	U	5	U	5.8	U	5.4	U	6	U		5.4
2-Chlorotoluene	U	5	U	5.8	U	5.4	U	6	U		5.4
1,3,5-Trimethylbenzene	U	5	U	5.8	U	5.4	U	6	U		5.4
4-Chlorotoluene	U	5	U	5.8	U	5.4	U	6	U		5.4
t-Butylbenzene	U	5	U	5.8	U	5.4	U	6	U		5.4
1,2,4-Trimethylbenzene	U	5	U	5.8	U	5.4	U	6	U		5.4
sec-Butylbenzene	U	5	U	5.8	U	5.4	U	6	U		5.4
1,3-Dichlorobenzene	U	5	U	5.8	U	5.4	U	6	U		5.4
p-Isopropyltoluene	U	5	U	5.8	U	5.4	U	6	U		5.4
1,4-Dichlorobenzene	U	5	U	5.8	U	5.4	U	6	U		5.4
n-Butylbenzene	U	5	U	5.8	U	5.4	U	6	U		5.4
1,2-Dichlorobenzene	U	5	U	5.8	U	5.4	U	6	U		5.4
1,2-Dibromo-3-chloropropane	U	10	U	12	U	11	U	12	U		11
1,2,4-Trichlorobenzene	U	5	U	5.8	U	5.4	U	6	U		5.4
Hexachlorobutadiene	U	5	U	5.8	U	5.4	U	6	U		5.4
Naphthalene	U	5	U	5.8	U	5.4	U	6	0.9	J	5.4
1,2,3-Trichlorobenzene	U	5	U	5.8	U	5.4	U	6	U		5.4

Table 1.1 (Cont) Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	B16669		B16670		B16671		B16675		B16676	
Sample Location	Location 19		Location 20		Location 21		Location 25		Location 25-D	
% Solid	94		93		50		83		78	
Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
Dichlorodifluoromethane	U	11	U	11	U	20	U	12	U	13
Chloromethane	U	11	U	11	U	20	U	12	U	13
Vinyl chloride	U	11	U	11	U	20	U	12	U	13
Bromomethane	U	11	U	11	U	20	U	12	U	13
Chloroethane	U	11	U	11	U	20	U	12	U	13
Trichlorofluoromethane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Acrolein	U	53	U	54	U	100	U	61	U	64
1,1-Dichloroethylene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Trichlorotrifluoroethane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Acetone	U	21	U	22	37 J	40	U	24	19 J	26
Iodomethane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Carbon disulfide	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Methylene chloride	6.6 B	5.3	3.7 JB	5.4	11 B	10	18 B	6.1	2.9 JB	6.4
trans-1,2-Dichloroethylene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Methyl t-butyl ether	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Acrylonitrile	U	53	U	54	U	100	U	61	U	64
1,1-Dichloroethane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Vinyl acetate	U	21	U	22	U	40	U	24	U	26
cis-1,2-Dichloroethylene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
2-Butanone	U	21	U	22	U	40	U	24	U	26
Bromochloromethane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Chloroform	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,1,1,-Trichloroethane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
2,2-Dichloropropane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Carbon tetrachloride	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,1-Dichloropropene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,2-Dichloroethane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Benzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Trichloroethylene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,2-Dichloropropane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Dibromomethane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Bromochloromethane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
2-Chloroethyl vinyl ether	U	11	U	11	U	20	U	12	U	13
cis-1,3-Dichloropropylene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
4-Methyl-2-pentanone	U	21	U	22	U	40	U	24	U	26
Toluene	U	5.3	U	5.4	U	10	U	6.1	U	6.4

Table 1.1 (Cont) Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	B16669		B16670		B16671		B16675		B16676	
Sample Location	Location 19		Location 20		Location 21		Location 25		Location 25-D	
% Solid	94		93		50		83		78	
Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
trans-1,3-Dichloropropylene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,1,2-Trichloroethane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
2-Hexanone	U	21	U	22	U	40	U	24	U	26
Tetrachloroethylene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,3-Dichloropropane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Dibromochloromethane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,2-Dibromoethane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1-Chlorohexane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Chlorobenzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,1,1,2-Tetrachloroethane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Ethyl benzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
mp- Xylene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
o- Xylene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Styrene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Bromoform	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Isopropylbenzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,2,3-Trichloropropane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,1,2,2-Tetrachloroethane	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Bromobenzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
n-Propylbenzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
2-Chlorotoluene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,3,5-Trimethylbenzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
4-Chlorotoluene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
t-Butylbenzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,2,4-Trimethylbenzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
sec-Butylbenzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,3-Dichlorobenzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
p-Isopropyltoluene	U	5.3	U	5.4	100	10	U	6.1	U	6.4
1,4-Dichlorobenzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
n-Butylbenzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,2-Dichlorobenzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
1,2-Dibromo-3-chloropropane	U	11	U	11	U	20	U	12	U	13
1,2,4-Trichlorobenzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Hexachlorobutadiene	U	5.3	U	5.4	U	10	U	6.1	U	6.4
Naphthalene	U	5.3	1.1 J	5.4	3.2 J	10	6.4	6.1	U	6.4
1,2,3-Trichlorobenzene	U	5.3	U	5.4	U	10	U	6.1	U	6.4

Table 1.1 (Cont) Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	B16677			B16679		
Sample Location	Location 26			Location 27		
% Solid	72			86		
Compound Name	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg
Dichlorodifluoromethane	U		14	U		12
Chloromethane	U		14	U		12
Vinyl chloride	U		14	U		12
Bromomethane	U		14	U		12
Chloroethane	U		14	U		12
Trichlorofluoromethane	U		7	U		5.8
Acrolein	U		70	U		58
1,1-Dichloroethylene	U		7	U		5.8
Trichlorotrifluoroethane	U		7	U		5.8
Acetone	U		28	20	J	23
Iodomethane	U		7	U		5.8
Carbon disulfide	U		7	U		5.8
Methylene chloride	6.4	JB	7	3.1	JB	5.8
trans-1,2-Dichloroethylene	U		7	U		5.8
Methyl t-butyl ether	U		7	U		5.8
Acrylonitrile	U		70	U		58
1,1-Dichloroethane	U		7	U		5.8
Vinyl acetate	U		28	U		23
cis-1,2-Dichloroethylene	U		7	U		5.8
2-Butanone	U		28	U		23
Bromochloromethane	U		7	U		5.8
Chloroform	U		7	U		5.8
1,1,1,-Trichloroethane	U		7	U		5.8
2,2-Dichloropropane	U		7	U		5.8
Carbon tetrachloride	U		7	U		5.8
1,1-Dichloropropene	U		7	U		5.8
1,2-Dichloroethane	U		7	U		5.8
Benzene	U		7	U		5.8
Trichloroethylene	U		7	U		5.8
1,2-Dichloropropane	U		7	U		5.8
Dibromomethane	U		7	U		5.8
Bromochloromethane	U		7	U		5.8
2-Chloroethyl vinyl ether	U		14	U		12
cis-1,3-Dichloropropylene	U		7	U		5.8
4-Methyl-2-pentanone	U		28	U		23
Toluene	U		7	U		5.8

Table 1.1 (Cont) Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	B16677		B16679	
Sample Location	Location 26		Location 27	
% Solid	72		86	
Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
trans-1,3-Dichloropropylene	U	7	U	5.8
1,1,2-Trichloroethane	U	7	U	5.8
2-Hexanone	U	28	U	23
Tetrachloroethylene	U	7	U	5.8
1,3-Dichloropropane	U	7	U	5.8
Dibromochloromethane	U	7	U	5.8
1,2-Dibromoethane	U	7	U	5.8
1-Chlorohexane	U	7	U	5.8
Chlorobenzene	U	7	U	5.8
1,1,1,2-Tetrachloroethane	U	7	U	5.8
Ethyl benzene	U	7	U	5.8
mp- Xylene	U	7	U	5.8
o- Xylene	U	7	U	5.8
Styrene	U	7	U	5.8
Bromoform	U	7	U	5.8
Isopropylbenzene	U	7	U	5.8
1,2,3-Trichloropropane	U	7	U	5.8
1,1,2,2-Tetrachloroethane	U	7	U	5.8
Bromobenzene	U	7	U	5.8
n-Propylbenzene	U	7	U	5.8
2-Chlorotoluene	U	7	U	5.8
1,3,5-Trimethylbenzene	U	7	U	5.8
4-Chlorotoluene	U	7	U	5.8
t-Butylbenzene	U	7	U	5.8
1,2,4-Trimethylbenzene	U	7	U	5.8
sec-Butylbenzene	U	7	U	5.8
1,3-Dichlorobenzene	U	7	U	5.8
p-Isopropyltoluene	U	7	U	5.8
1,4-Dichlorobenzene	U	7	U	5.8
n-Butylbenzene	U	7	U	5.8
1,2-Dichlorobenzene	U	7	U	5.8
1,2-Dibromo-3-chloropropane	U	14	U	12
1,2,4-Trichlorobenzene	U	7	U	5.8
Hexachlorobutadiene	U	7	U	5.8
Naphthalene	U	7	U	5.8
1,2,3-Trichlorobenzene	U	7	U	5.8

Table 1.1 (Cont) Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	B16680			B16678			B16672			B16673		
Sample Location	Field Blank (VOC)			Location 26D			Location 22			Location 23		
% Solid	100			55			80			84		
Compound Name	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg	Conc. µg/kg		MDL µg/kg
Dichlorodifluoromethane	U		10	U		18	U		12	U		12
Chloromethane	U		10	U		18	U		12	U		12
Vinyl chloride	U		10	U		18	U		12	U		12
Bromomethane	U		10	U		18	U		12	U		12
Chloroethane	U		10	U		18	U		12	U		12
Trichlorofluoromethane	U		5	U		9	U		6.2	U		6
Acrolein	U		50	U		90	U		62	U		60
1,1-Dichloroethylene	U		5	U		9	U		6.2	U		6
Trichlorotrifluoroethane	U		5	U		9	U		6.2	U		6
Acetone	U		20	U		36	U		25	U		24
Iodomethane	U		5	U		9	U		6.2	U		6
Carbon disulfide	U		5	U		9	U		6.2	U		6
Methylene chloride	2.4	JB	5	4.1	JB	9	3.9	JB	6.2	3.6	JB	6
trans-1,2-Dichloroethylene	U		5	U		9	U		6.2	U		6
Methyl t-butyl ether	U		5	U		9	U		6.2	U		6
Acrylonitrile	U		50	U		90	U		62	U		60
1,1-Dichloroethane	U		5	U		9	U		6.2	U		6
Vinyl acetate	U		20	U		36	U		25	U		24
cis-1,2-Dichloroethylene	U		5	U		9	U		6.2	U		6
2-Butanone	U		20	U		36	U		25	U		24
Bromochloromethane	U		5	U		9	U		6.2	U		6
Chloroform	U		5	U		9	U		6.2	U		6
1,1,1,-Trichloroethane	U		5	U		9	U		6.2	U		6
2,2-Dichloropropane	U		5	U		9	U		6.2	U		6
Carbon tetrachloride	U		5	U		9	U		6.2	U		6
1,1-Dichloropropene	U		5	U		9	U		6.2	U		6
1,2-Dichloroethane	U		5	U		9	U		6.2	U		6
Benzene	U		5	U		9	U		6.2	U		6
Trichloroethylene	U		5	U		9	U		6.2	U		6
1,2-Dichloropropane	U		5	U		9	U		6.2	U		6
Dibromomethane	U		5	U		9	U		6.2	U		6
Bromochloromethane	U		5	U		9	U		6.2	U		6
2-Chloroethyl vinyl ether	U		10	U		18	U		12	U		12
cis-1,3-Dichloropropylene	U		5	U		9	U		6.2	U		6
4-Methyl-2-pentanone	U		20	U		36	U		25	U		24
Toluene	U		5	U		9	U		6.2	U		6

Table 1.1 (Cont) Results of the Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
(Results are Based on Dry Weight)

Sample No.	B16680		B16678		B16672		B16673	
Sample Location	Field Blank (VOC)		Location 26D		Location 22		Location 23	
% Solid	100		55		80		84	
Compound Name	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
trans-1,3-Dichloropropylene	U	5	U	9	U	6.2	U	6
1,1,2-Tnchloroethane	U	5	U	9	U	6.2	U	6
2-Hexanone	U	20	U	36	U	25	U	24
Tetrachloroethylene	U	5	U	9	U	6.2	U	6
1,3-Dichloropropane	U	5	U	9	U	6.2	U	6
Dibromochloromethane	U	5	U	9	U	6.2	U	6
1,2-Dibromoethane	U	5	U	9	U	6.2	U	6
1-Chlorohexane	U	5	U	9	U	6.2	U	6
Chlorobenzene	U	5	U	9	U	6.2	U	6
1,1,1,2-Tetrachloroethane	U	5	U	9	U	6.2	U	6
Ethyl benzene	U	5	U	9	U	6.2	U	6
mp- Xylene	U	5	U	9	U	6.2	U	6
o- Xylene	U	5	U	9	U	6.2	U	6
Styrene	U	5	U	9	U	6.2	U	6
Bromoform	U	5	U	9	U	6.2	U	6
Isopropylbenzene	U	5	U	9	U	6.2	U	6
1,2,3-Trichloropropane	U	5	U	9	U	6.2	U	6
1,1,2,2-Tetrachloroethane	U	5	U	9	U	6.2	U	6
Bromobenzene	U	5	U	9	U	6.2	U	6
n-Propylbenzene	U	5	U	9	U	6.2	U	6
2-Chlorotoluene	U	5	U	9	U	6.2	U	6
1,3,5-Trimethylbenzene	U	5	U	9	U	6.2	U	6
4-Chlorotoluene	U	5	U	9	U	6.2	U	6
t-Butylbenzene	U	5	U	9	U	6.2	U	6
1,2,4-Trimethylbenzene	U	5	U	9	U	6.2	U	6
sec-Butylbenzene	U	5	U	9	U	6.2	U	6
1,3-Dichlorobenzene	U	5	U	9	U	6.2	U	6
p-Isopropyltoluene	U	5	U	9	U	6.2	U	6
1,4-Dichlorobenzene	U	5	U	9	U	6.2	U	6
n-Butylbenzene	U	5	U	9	U	6.2	U	6
1,2-Dichlorobenzene	U	5	U	9	U	6.2	U	6
1,2-Dibromo-3-chloropropane	U	10	U	18	U	12	U	12
1,2,4-Trichlorobenzene	U	5	U	9	U	6.2	U	6
Hexachlorobutadiene	U	5	U	9	U	6.2	U	6
Naphthalene	U	5	U	9	U	6.2	U	6
1,2,3-Trichlorobenzene	U	5	U	9	U	6.2	U	6

Table 1.2 Results of the Analysis for Pesticide/PCBs in Soil
WA# 3-439 Lackawanna Foundry Site
Based on Dry Weight

Client ID	SBLK041599		A16650		A16651		A16652		A16653	
Location	-		1 West Fence		2 Surface Middle		2D Middle		3 West Fence	
Percent Solid	100		57		94.7		90.5		73.2	
Analyte	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
a-BHC	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
g-BHC	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
b-BHC	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
Heptachlor	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
d-BHC	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
Aldnn	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
Heptachlor Epoxide	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
g-Chlordane	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
a-Chlordane	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
Endosulfan (I)	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
p,p'-D D E	U	3.3	12	5.8	U	3.5	U	3.7	30	4.6
Dieldnn	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
Endnn	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
p,p'-D D D	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
Endosulfan (II)	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
p,p'-D D T	U	3.3	25	5.8	U	3.5	U	3.7	14	4.6
Endnn Aldehyde	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
Endosulfan Sulfate	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
Methoxychlor	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
Endnn Ketone	U	3.3	U	5.8	U	3.5	U	3.7	U	4.6
Toxaphene	U	83	U	150	U	88	U	92	U	110
Aroclor 1016	U	42	U	73	U	44	U	46	U	57
Aroclor 1221	U	83	U	150	U	88	U	92	U	110.
Aroclor 1232	U	42	U	73	U	44	U	46	U	57
Aroclor 1242	U	42	U	73	U	44	U	46	U	57
Aroclor 1248	U	42	U	73	560	44	2700	46	U	57
Aroclor 1254	U	42	U	73	U	44	U	46	25 J	57
Aroclor 1260	U	42	U	73	U	44	U	46	19 J	57
Aroclor 1268	U	42	U	73	U	44	U	46	U	57

Table 1.2 (Cont) Results of the Analysis for Pesticide/PCBs in Soil
WA# 3-439 Lackawanna Foundry Site
Based on Dry Weight

Client ID	A16654		A16655		A16656	
Location	4 West Fence		5 West Fence		6 Near Entrance	
Percent Solid	82.1		80.7		85	
Analyte	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
a-BHC	U	4.1	U	4.1	U	3.9
g-BHC	U	4.1	U	4.1	U	3.9
b-BHC	U	4.1	U	4.1	U	3.9
Heptachlor	U	4.1	U	4.1	U	3.9
d-BHC	U	4.1	U	4.1	U	3.9
Aldrin	U	4.1	U	4.1	U	3.9
Heptachlor Epoxide	U	4.1	U	4.1	U	3.9
g-Chlordane	U	4.1	U	4.1	U	3.9
a-Chlordane	U	4.1	U	4.1	U	3.9
Endosulfan (I)	U	4.1	U	4.1	U	3.9
p,p'-D D E	19	4.1	0.9 J	4.1	12	3.9
Dieldrin	U	4.1	U	4.1	U	3.9
Endrin	U	4.1	U	4.1	U	3.9
p,p'-D D D	6.9	4.1	U	4.1	U	3.9
Endosulfan (II)	U	4.1	U	4.1	U	3.9
p,p'-D D T	6.4	4.1	U	4.1	U	3.9
Endrin Aldehyde	U	4.1	U	4.1	U	3.9
Endosulfan Sulfate	U	4.1	U	4.1	U	3.9
Methoxychlor	U	4.1	U	4.1	U	3.9
Endrin Ketone	U	4.1	U	4.1	U	3.9
Toxaphene	U	100	U	100	U	98
Aroclor 1016	U	51	U	52	U	49
Aroclor 1221	U	100	U	100	U	98
Aroclor 1232	U	51	U	52	U	49
Aroclor 1242	U	51	U	52	U	49
Aroclor 1248	120	51	15 J	52	770	49
Aroclor 1254	81	51	16 JW	52	1100	49
Aroclor 1260	31 J	51	13 J	52	680	49
Aroclor 1268	U	51	U	52	U	49

Table 1.2 (Cont) Results of the Analysis for Pesticide/PCBs in Soil
WA# 3-439 Lackawanna Foundry Site
Based on Dry Weight

Client ID	SBLK041999		A16657		A16658		A16659		A16660	
Location	-		7 Near Entrance		8 Near Entrance		9 Near Entrance		10 Near Entrance	
Percent Solid	100		76.4		86.8		91.2		98.9	
Analyte	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
a-BHC	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
g-BHC	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
b-BHC	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
Heptachlor	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
d-BHC	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
Aldrin	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
Heptachlor Epoxide	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
g-Chlordane	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
a-Chlordane	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
Endosulfan (I)	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
p,p'-D D E	U	3.3	4.5	4.4	2.5 J	3.8	17	3.7	4.7	3.4
Dieldrin	U	3.3	2.9 J	4.4	2.0 J	3.8	U	3.7	2.7 J	3.4
Endrin	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
p,p'-D D D	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
Endosulfan (II)	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
p,p'-D D T	U	3.3	9.6	4.4	5.3	3.8	U	3.7	U	3.4
Endrin Aldehyde	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
Endosulfan Sulfate	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
Methoxychlor	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
Endrin Ketone	U	3.3	U	4.4	U	3.8	U	3.7	U	3.4
Toxaphene	U	83	U	110	U	96	U	91	U	84
Aroclor 1016	U	42	U	55	U	48	U	46	U	42
Aroclor 1221	U	83	U	110	U	96	U	91	U	84
Aroclor 1232	U	42	U	55	U	48	U	46	U	42
Aroclor 1242	U	42	U	55	U	48	U	46	6500	42
Aroclor 1248	U	42	590	55	68	48	3500	46	U	42
Aroclor 1254	U	42	200	55	68	48	1300	46	U	42
Aroclor 1260	U	42	67	55	32 J	48	320	46	U	42
Aroclor 1268	U	42	U	55	U	48	U	46	U	42

Table 1.2 (Cont) Results of the Analysis for Pesticide/PCBs in Soil
WA# 3-439 Lackawanna Foundry Site
Based on Dry Weight

Client ID	A16661		A16662		A16663		A16664		A16665	
Location	11 Near Entrance		12 Near Entrance		13 Near Entrance		14 Near Entrance		15 Near Entrance	
Percent Solid	84.5		79.6		91		73.5		62.4	
Analyte	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
a-BHC	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
g-BHC	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
b-BHC	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
Heptachlor	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
d-BHC	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
Aldrin	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
Heptachlor Epoxide	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
g-Chlordane	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
a-Chlordane	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
Endosulfan (I)	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
p,p'-D D E	3.9 J	3.9	28	4.2	13	3.7	9.3	4.5	U	5.3
Dieldrin	1.1 J	3.9	6.3	4.2	2.6 J	3.7	2.4 J	4.5	U	5.3
Endrin	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
p,p'-D D D	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
Endosulfan (II)	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
p,p'-D D T	5.2	3.9	U	4.2	U	3.7	U	4.5	U	5.3
Endrin Aldehyde	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
Endosulfan Sulfate	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
Methoxychlor	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
Endrin Ketone	U	3.9	U	4.2	U	3.7	U	4.5	U	5.3
Toxaphene	U	99	U	100	U	92	U	110	U	130
Aroclor 1016	U	49	U	52	U	46	U	57	U	67
Aroclor 1221	U	99	U	100	U	92	U	110	U	130
Aroclor 1232	U	49	U	52	U	46	U	57	U	67
Aroclor 1242	U	49	U	52	U	46	U	57	U	67
Aroclor 1248	1000	49	7400	52	3100	46	2800	57	42 J	67
Aroclor 1254	U	49	U	52	1300	46	U	57	U	67
Aroclor 1260	U	49	U	52	240	46	U	57	U	67
Aroclor 1268	U	49	U	52	U	46	U	57	U	67

Table 1.2 (Cont) Results of the Analysis for Pesticide/PCBs in Soil
WA# 3-439 Lackawanna Foundry Site
Based on Dry Weight

Client ID	A16666		A16667		A16668	
Location	Location 16		Location 17		Location 18	
Percent Solid	89.6		87.8		92.6	
Analyte	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
a-BHC	U	3.7	U	3.8	U	3.6
g-BHC	U	3.7	U	3.8	U	3.6
b-BHC	U	3.7	U	3.8	U	3.6
Heptachlor	U	3.7	U	3.8	U	3.6
d-BHC	U	3.7	U	3.8	U	3.6
Aldnn	U	3.7	U	3.8	U	3.6
Heptachlor Epoxide	U	3.7	U	3.8	U	3.6
g-Chlordane	U	3.7	U	3.8	U	3.6
a-Chlordane	U	3.7	U	3.8	U	3.6
Endosulfan (I)	U	3.7	U	3.8	U	3.6
p,p'-D D E	0.7 J	3.7	2.2 J	3.8	U	3.6
Dieldrin	U	3.7	0.6 J	3.8	U	3.6
Endnn	U	3.7	U	3.8	U	3.6
p,p'-D D D	U	3.7	U	3.8	U	3.6
Endosulfan (II)	U	3.7	U	3.8	U	3.6
p,p'-D D T	U	3.7	U	3.8	U	3.6
Endrin Aldehyde	U	3.7	U	3.8	U	3.6
Endosulfan Sulfate	U	3.7	U	3.8	U	3.6
Methoxychlor	U	3.7	U	3.8	U	3.6
Endrin Ketone	U	3.7	U	3.8	U	3.6
Toxaphene	U	93	U	95	U	90
Aroclor 1016	U	47	U	47	U	45
Aroclor 1221	U	93	U	95	U	90
Aroclor 1232	U	47	U	47	U	45
Aroclor 1242	340	47	U	47	U	45
Aroclor 1248	U	47	620	47	77	45
Aroclor 1254	U	47	U	47	33 J	45
Aroclor 1260	U	47	U	47	U	45
Aroclor 1268	U	47	U	47	U	45

Table 1.2 (Cont) Results of the Analysis for Pesticide/PCBs in Soil
WA# 3-439 Lackawanna Foundry Site
Based on Dry Weight

Client ID	SBLK042099		A16669		A16670		A16671		A16672	
Location	-		Location 19		Location 20		Location 21		Location 22	
Percent Solid	100		93.3		90.9		48.4		81.4	
Analyte	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
a-BHC	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
g-BHC	U	3.3	U	3.6	2.5 J	3.7	U	6.9	U	4.1
b-BHC	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
Heptachlor	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
d-BHC	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
Aldrin	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
Heptachlor Epoxide	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
g-Chlordane	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
a-Chlordane	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
Endosulfan (I)	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
p,p'-D D E	U	3.3	5.1	3.6	U	3.7	8.4	6.9	2.3 J	4.1
Dieldrin	U	3.3	2.2 J	3.6	U	3.7	21	6.9	U	4.1
Endrin	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
p,p'-D D D	U	3.3	U	3.6	U	3.7	U	6.9	1.6 J	4.1
Endosulfan (II)	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
p,p'-D D T	U	3.3	4.9	3.6	U	3.7	U	6.9	1.9 J	4.1
Endrin Aldehyde	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
Endosulfan Sulfate	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
Methoxychlor	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
Endrin Ketone	U	3.3	U	3.6	U	3.7	U	6.9	U	4.1
Toxaphene	U	83	U	89	U	92	U	170	U	100
Aroclor 1016	U	42	U	45	U	46	U	86	U	51
Aroclor 1221	U	83	U	89	U	92	U	170	U	100
Aroclor 1232	U	42	U	45	U	46	U	86	U	51
Aroclor 1242	U	42	2500	45	U	46	U	86	U	51
Aroclor 1248	U	42	U	45	U	46	320	86	11 W	51
Aroclor 1254	U	42	U	45	U	46	300	86	16 W	51
Aroclor 1260	U	42	U	45	3900	46	200	86	U	51
Aroclor 1268	U	42	U	45	U	46	U	86	U	51

Table 1.2 (Cont) Results of the Analysis for Pesticide/PCBs in Soil
WA# 3-439 Lackawanna Foundry Site
Based on Dry Weight

Client ID	A16673		A16674		A16675		A16376		A16677	
Location	Location 23		Location 24		Location 25		Location 25-D		Location 26	
Percent Solid	82.2		75.4		82.9		77.2		69.5	
Analyte	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
a-BHC	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
g-BHC	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
b-BHC	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
Heptachlor	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
d-BHC	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
Aldrin	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
Heptachlor Epoxide	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
g-Chlordane	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
a-Chlordane	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
Endosulfan (I)	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
p,p'-D D E	2.5 J	4.1	1.9 J	4.4	3.3 J	4.0	U	4.3	11	4.8
Dieldrin	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
Endrin	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
p,p'-D D D	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
Endosulfan (II)	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
p,p'-D D T	U	4.1	U	4.4	U	4.0	U	4.3	18	4.8
Endrin Aldehyde	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
Endosulfan Sulfate	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
Methoxychlor	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
Endrin Ketone	U	4.1	U	4.4	U	4.0	U	4.3	U	4.8
Toxaphene	U	100	U	110	U	100	U	110	U	120
Aroclor 1016	U	51	U	55	U	50	U	54	U	60
Aroclor 1221	U	100	U	110	U	100	U	110	U	120
Aroclor 1232	U	51	U	55	U	50	U	54	U	60
Aroclor 1242	U	51	U	55	U	50	U	54	U	60
Aroclor 1248	110	51	120	55	270	50	U	54	170	60
Aroclor 1254	U	51	U	55	83	50	U	54	U	60
Aroclor 1260	14 J	51	10 J	55	U	50	U	54	42 J	60
Aroclor 1268	U	51	U	55	U	50	U	54	U	60

Table 1.2 (Cont) Results of the Analysis for Pesticide/PCBs in Soil
WA# 3-439 Lackawanna Foundry Site
Based on Dry Weight

Client ID	A16678		A16679	
Location	Location 26-D		Location 27	
Percent Solid	76.5		83.2	
Analyte	Conc µg/kg	MDL µg/kg	Conc. µg/kg	MDL µg/kg
a-BHC	U	4.4	U	4.0
g-BHC	U	4.4	U	4.0
b-BHC	U	4.4	U	4.0
Heptachlor	U	4.4	U	4.0
d-BHC	U	4.4	U	4.0
Aldrin	U	4.4	U	4.0
Heptachlor Epoxide	U	4.4	U	4.0
g-Chlordane	U	4.4	U	4.0
a-Chlordane	U	4.4	U	4.0
Endosulfan (I)	U	4.4	U	4.0
p,p'-D D E	U	4.4	U	4.0
Dieldrin	U	4.4	U	4.0
Endrin	U	4.4	U	4.0
p,p'-D D D	U	4.4	U	4.0
Endosulfan (II)	U	4.4	U	4.0
p,p'-D D T	U	4.4	U	4.0
Endrin Aldehyde	U	4.4	U	4.0
Endosulfan Sulfate	U	4.4	U	4.0
Methoxychlor	U	4.4	U	4.0
Endrin Ketone	U	4.4	U	4.0
Toxaphene	U	110	U	100
Aroclor 1016	U	54	U	50
Aroclor 1221	U	110	U	100
Aroclor 1232	U	54	U	50
Aroclor 1242	U	54	U	50
Aroclor 1248	U	54	39000	50
Aroclor 1254	U	54	U	50
Aroclor 1260	U	54	U	50
Aroclor 1268	U	54	U	50

Results of the Surrogate Percent Recoveries for VOC in Soil

Each sample was spiked with a three component mixture of CLP surrogate standards consisting of dibromofluoromethane, toluene-d_8 and 4-bromofluorobenzene. The surrogate percent recoveries, listed in Table 2.1, ranged from 65 to 156. One hundred and ten out of one hundred and twenty values were within the acceptable QC limits.

Results of the LCS/LCSD Analysis for VOC in Soil

A laboratory control sample was analyzed in duplicate. The percent recoveries, ranging from 102 to 119, are listed in Table 2.2. All ten values were within the acceptable QC limits. The relative percent differences, also listed in Table 2.2, ranged from 5 to 12, and all five values were within the acceptable QC limits.

Results of the LCS Analysis for VOC in Soil

Two laboratory control samples were analyzed. The percent recoveries, ranging from 92 to 112, are listed in Table 2.3. All ten values were within the acceptable QC limits.

Results of the MS/MSD Analysis for VOC in Soil

Sample B 16665 was chosen for the matrix spike/matrix spike duplicate (MS/MSD) analyses. The percent recoveries, ranging from 65 to 100, are listed in Table 2.4. Eight out of ten values were within the acceptable QC limits. The relative percent differences, also listed in Table 2.4, ranged from 11 to 17, and all five were within the acceptable QC limits.

Table 2.1 Results of the Surrogate Recoveries
for VOC in Soil
WA # 3-439 Lackawanna Foundry Site

Sample ID	S1 (DBFM)	S2 (TOL)	S3 (BFB)	Total Out
B16650	86	89	88	0
B16651	98	112	105	0
B16652	91	101	91	0
B16653	100	100	110	0
B16655	88	86	75	0
B16656	91	92	99	0
B16657	89	88	94	0
B16658	104	98	108	0
Method Blank (4/23/99)	92	110	90	0
LCSD (4/23/99)	106	111	101	0
LCS (4/23/99)	103	114	104	0
B16659	84	85	81	0
B16660	113	105	113	0
B16661	91	87	104	0
B16662	90	85	80	0
B16663	101	114	98	0
B16664	86	86	83	0
B16654	84	87	82	0
Method Blank (4/26/99)	102	111	100	0
LCS (4/26/99)	90	107	92	0
B16665 MSD	100	102	106	0
B16665	105	103	98	0
B16665 MS	90	75 *	74	1
B16666	105	102	106	0
B16667	90	89	79	0
B16668	101	106	103	0
B16669	89	80 *	65 *	2
B16670	93	75 *	68 *	2
B16671	112	85	114	0
B16672	110	97	99	0
B16673	107	74 *	89	1
B16674	142 *	117 *	156 *	3
B16675	124	69 *	96	1
B16676	104	103	97	0
B16677	120	99	117	0
B16678	94	93	75	0
B16679	109	99	106	0
B16680	110	112	99	0
Method Blank (4/27/99)	98	104	86	0
LCS (4/27/99)	99	106	94	0

	QC Limits
S1 (DBFM) = Dibromofluoromethane	76-127
S3 (TOL) = Toluene-d8	83-115
S2 (BFB) = Bromofluorobenzene	74-134

Table 2.2 Results of the LCS/LCSD Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site

Date of Analysis 4/23/99

Analyte	Sample Conc µg/kg	LCS Spike Added µg/kg	LCS Conc µg/kg	LCS % Rec	LCSD Spike Added µg/kg	LCSD Conc µg/kg	LCSD % Rec	RPD	Recommended QC Limits %Rec	RPD
1,1-Dichloroethene	U	20	21.2	106	20	23.9	119	12	59-136	25
Benzene	U	20	20.9	105	20	22.0	110	5	76-123	23
Trichloroethene	U	20	21.5	108	20	22.7	114	5	74-127	25
Toluene	U	20	22.3	112	20	23.4	117	5	75-124	24
Chlorobenzene	U	20	20.4	102	20	21.5	108	5	75-124	24

Table 2.3 Results of the LCS Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site

Date of Analysis 4/26/99

Analyte	Spike Conc µg/kg	Rec Conc µg/kg	% Rec	QC Limits % Rec
1,1-Dichloroethene	20	19.2	96	59-136
Benzene	20	19.9	99	76-123
Trichloroethene	20	19.9	99	74-127
Toluene	20	20.7	103	75-124
Chlorobenzene	20	19.7	99	75-124

Date of Analysis 4/27/99

Analyte	Spike Conc µg/kg	Rec Conc µg/kg	% Rec	QC Limits % Rec
1,1-Dichloroethene	20	21.4	107	59-136
Benzene	20	20.7	103	76-123
Trichloroethene	20	21.0	105	74-127
Toluene	20	22.3	112	75-124
Chlorobenzene	20	18.3	92	75-124

Table 2.4 Results of the MS/MSD Analysis for VOC in Soil
WA # 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Sample ID B 16665

Analyte	Sample Conc µg/kg	MS Spike Added µg/kg	MS Conc µg/kg	MS % Rec	MSD Spike Added µg/kg	MSD Conc µg/kg	MSD % Rec		RPD	Recommended QC Limits %Rec	RPD
1,1-Dichloroethene	U	24.1	24.2	100	24.1	21.2	88		13	59-136	25
Benzene	U	24.1	24	100	24.1	21.6	90		11	76-123	23
Trichloroethene	U	24.1	20.2	84	24.1	17.4	72	*	15	74-127	25
Toluene	U	24.1	21.9	91	24.1	19.7	82		11	75-124	24
Chlorobenzene	U	24.1	18.7	78	24.1	15.7	65	*	17	75-124	24

Results of the Surrogate Recoveries for Pesticides/PCBs in Soil

Before extraction, each sample was spiked with a two component mixture of CLP surrogate standards consisting of tetrachloro-m-xylene and dichlorobiphenyl The surrogate percent recoveries, listed in Table 2.5, ranged from 21 to 128. Forty-seven out of seventy-eight values were within the acceptable QC limits.

Results of the MS/MSD Analysis for Pesticides/PCBs in Soil

Samples A 16653, A 16665 and A 16677 were chosen for the matrix spike/matrix spike duplicate (MS/MSD) analyses. The percent recoveries, ranging from 1.0 to 111, are listed in Table 2.6. Twenty-eight out of thirty-six values were within the acceptable QC limits. The relative percent differences, also listed in Table 2.6, ranged from 1 to 100 and fourteen out of eighteen values were within the acceptable QC limits.

Table 2.5 Results of the Surrogate Recoveries
for Pesticides/PCBs in Soil
WA# 3-439 Lackawanna Foundry Site

Sample ID	Percent Recovery TCMX	DCBP
SBLK041599	89	86
A16650	59 *	36 *
A16651	88	72
A16652	71	21 *
A16653	83	49 *
A16653MS	91	43 *
A16653MSD	85	33 *
A16654	85	28 *
A16655	79	24 *
A16656	77	27 *
SBLK041999	99	95
A16657	75	68
A16658	81	52 *
A16659	101	77
A16660	74	45 *
A16661	74	43 *
A16662	86	55 *
A16663	79	43 *
A16664	58 *	31 *
A16665	87	43 *
A16665MS	91	37 *
A16665MSD	96	53 *
A16666	67	31 *
A16667	81	39 *
A16668	70	42 *
SBLK042099	86	80
A16669	90	80
A16670	89	90
A16671	84	76
A16672	87	50 *
A16673	83	128
A16674	68	40 *
A16675	78	54 *
A16676	75	46 *
A16677	84	52 *
A16677MS	72	30 *
A16677MSD	75	34 *
A16678	62	29 *
A16679	63	36 *

TCMX denotes Tetrachloro-m-xylene
DCBP denotes Decachlorobiphenyl

	Advisory QC Limits
TCMX	60-150
DCBP	60-150

Table 2.6 Results of the MS/MSD Analysis for Pesticide/PCB in Soil
WA# 3-439 Lackawanna Foundry Site
Results Based on Dry Weight

Sample ID: A16653

Compound	Sample Conc µg/kg	MS Spike Added µg/kg	MS Conc µg/kg	MS % Rec		MSD Spike Added µg/kg	MSD Conc µg/kg	MSD % Rec		RPD		Advisory QC Limits % Rec	RPD
g-BHC	U	28.461	3.198	11	*	28.461	8.142	29	*	90	*	46-127	50
Heptachlor	U	28.461	26.281	92		28.461	21.596	76		19		35-130	31
Aldrin	U	28.461	25.157	88		28.461	24.236	85		3		34-132	43
Dieldrin	U	56.922	54.380	96		56.922	49.607	87		10		31-134	38
Endrin	U	56.922	58.717	103		56.922	52.604	92		11		42-139	45
p,p'-DDT	13.718	56.922	15.537	3.0	*	56.922	16.418	5.0	*	50		23-134	50

Sample ID: A16665

Compound	Sample Conc µg/kg	MS Spike Added µg/kg	MS Conc µg/kg	MS % Rec		MSD Spike Added µg/kg	MSD Conc µg/kg	MSD % Rec		RPD		Advisory QC Limits % Rec	RPD
g-BHC	U	33.387	31.949	96		33.387	31.775	95		1		46-127	50
Heptachlor	U	33.387	28.996	87		33.387	32.089	96		10		35-130	31
Aldrin	U	33.387	33.104	99		33.387	34.538	103		4		34-132	43
Dieldrin	U	66.774	65.005	97		66.774	71.198	107		10		31-134	38
Endrin	U	66.774	68.919	103		66.774	74.270	111		7		42-139	45
p,p'-DDT	U	66.774	13.065	20	*	66.774	23.275	35		55	*	23-134	50

Sample ID: A16677

Compound	Sample Conc µg/kg	MS Spike Added µg/kg	MS Conc µg/kg	MS % Rec		MSD Spike Added µg/kg	MSD Conc µg/kg	MSD % Rec		RPD		Advisory QC Limits % Rec	RPD
g-BHC	U	29.976	6.866	23	*	29.976	14.024	47		69	*	46-127	50
Heptachlor	U	29.976	15.589	52		29.976	15.338	51		2		35-130	31
Aldrin	U	29.976	21.583	72		29.976	21.936	73		1		34-132	43
Dieldrin	U	59.952	42.495	71		59.952	41.038	68		4		31-134	38
Endrin	U	59.952	36.742	61		59.952	36.041	60		2		42-139	45
p,p'-DDT	17.538	59.952	19.274	3.0	*	59.952	17.846	1.0	*	100	*	23-134	50

Roy F. Weston, Inc.
GSA Raritan Depot
Bldg. 209 Annex (Bay F)
2890 Woodbridge Avenue
Edison, New Jersey 08837-3679
732-321-4200 • Fax 732-494-4021

Paragon Analytics, Inc.
225 Commerce Drive
Fort Collins, CO 80524

Attn: Claudia Clark

20 April 1999

Project # 3347-143-001-3439 Lackawanna Foundry Site

As per Weston REAC Purchase Order number 102755, please analyze samples according to the following parameters:

Analysis/Method	Matrix	# of samples
VOA 5030\ SW-846-8260B	Soil	32
Data package: Package with Diskette Deliverable		

Samples are expected to arrive at your laboratory on April 20, 1999. **All applicable QA/QC (MS/MSD) analysis as per method, will be performed on our sample matrix.** Preliminary sample and QC result tables plus a signed copy of our Chain of Custody must be faxed to REAC 10 business days after receipt of the last samples. The complete data package is due 21 business days after receipt of last batch of samples. The complete data package must include all items on the deliverables checklist. **Expect all samples to be difficult matrix and all raw data must be included in final analytical report.**

All sample and QC results(ie: MS/MSD, LCS, Duplicates, and Blanks) must be summarized in a ExCel diskette deliverable.

Please submit all reports and technical questions concerning this project to **John Johnson at (732) 321-4248 or fax to (732) 494-4020**. Any contractual question, please call Cynthia Lentini at (732) 321-4296.

Sincerely,

Misty Barkley
Data Validation and Report Writing Group Leader
Roy F. Weston, Inc. / REAC Project

MB:jj Attachments

cc. R. Singhvi
P. Campagna
3439\non\mem\9904\sub\3439Con2
V. Kansal
Subcontracting File
D. Angwenyi
C. Lentini
S. Fama
M. Barkley

Lackawanna Foundry VOA List

Dichlorodifluoromethane
Chloromethane
Vinyl Chloride
Bromomethane
Chloroethane
Trichlorofluoromethane
Acetone
1,1-Dichloroethene
Carbon Disulfide
Methylene Chloride
Methyl-tertiary-butylether
trans-1,2-Dichloroethene
1,1-Dichloroethane
2-Butanone
2,2-Dichloropropane
cis-1,2-Dichloroethene
Chloroform
1,1-Dichloropropene
1,2-Dichloroethane
1,1,1-Trichloroethane
Carbon Tetrachloride
Benzene
Trichloroethene
1,2-Dichloropropane
Dibromomethane
Bromodichloromethane
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
1,1,2-Trichloroethane
1,3-Dichloropropane
Dibromochloromethane
1,2-Dibromoethane
Bromoform
4-Methyl-2-Pentanone
Toluene
2-Hexanone
Tetrachloroethene
Chlorobenzene
1,1,1,2-Tetrachloroethane
Ethylbenzene
p & m-Xylene
o-Xylene
Styrene
Isopropylbenzene
1,1,2,2-Tetrachloroethane
1,2,3-Trichloropropane
Bromobenzene
n-Propylbenzene
2-Chlorotoluene
4-Chlorotoluene
1,3,5-Trimethylbenzene
tert-Butylbenzene
1,2,4-Trimethylbenzene
sec-Butylbenzene
1,3-Dichlorobenzene
p-Isopropyltoluene
1,4-Dichlorobenzene
1,2-Dichlorobenzene
n-Butylbenzene
1,2-Dibromo-3-Chloropropane
1,2,4-Trichlorobenzene
Naphthalene
Hexachlorobutadiene
1,2,3-Trichlorobenzene

REAC, L ...on, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHA ...OF CUSTODY RECORD

Project Name: Lackawanna Foundry Site
Project Number: 03347-143-001-3439-01
RFW Contact: Johnson/Fama Phone: (732)421-4200

No: 06505

SHEET NO. 1 OF 2

9904134

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	VOC
01 755	B16650	1 West Fence	S	4/14/99	1	40mL / 4°C	X
02 758	B16651	2 Surface Middle					
03 761	B16652	2 Middle					
04 764	B16653	3 West Fence					
05 767	B16654	4 West Fence					
06 770	B16655	5 West Fence					
07 773	B16656	5 rear Entrance					
08 776	B16657	7					
09 779	B16658	8					
10 782	B16659	9					
11 785	B16660	10					
12 788	B16661	11					
13 791	B16662	12					
14 794	B16663	13					
15 797*	B16664	14					
16 800	B16665	15					

OK

OK

OK

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions:
Lab to Select MS/MSD

SUB OUT TO:
Paragon Analytics, Inc
4/19/99

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY # 06908, 06909, 06910

Items/Reason	Relinquished By	Date	Received By	Date	Time
ALL/ANALYSIS	[signature] FedEx	4/19/99	David Angweni	4/19/99	1350
			[signature] 4/20/99		

Items/Reason	Relinquished By	Date	Received By	Date	Time
ALL/Analysis	David Angweni FedEx	4/19/99			

FORM #4

8/94

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

9904134

CHAIN OF CUSTODY RECORD

Project Name: Lackawanna Foundry Site
Project Number: 03347-143-001-01
RFW Contact: Johnson/Farra Phone: (732)421-4200

No: 065107

SHEET NO. 1 OF 2

Sample Identification

Analyses Requested

	REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	VOC
17	803	B16666	Location 16	S	4/14/99	1	40ml/4°C	X
18	806	B16667	Location 17					
19	809	B16668	Location 18					
20	812	B16669	Location 19					
21	815	B16670 DA	Location 20					
22	818	B16671	Location 21					
23	821	B16672	Location 22					
24	824	B16673	Location 23					
25	827	B16674	Location 24					
26	830	B16675	Location 25					
27	833	B16676	Location 25-D					
28	836	B16677	Location 26					
29	839	B16678	Location 26 D					
30	842	B16679	Location 27					
31	844	B16680	Field Blank (VOC)					
32	845	B16680	Field Blank (VOC)	↓	↓	↓2	↓	↓

DA

DA

DA

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions:

Lab to Select MS/MSD

SUB-OUT TO: Paragon Analytics, Inc 4/19/99

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY # 06911, 06912, 06913

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
ALL/ANALYSIS	[signature]	4/19/99	David Angweny	4/19/99	1350	ALL/Analysis	David Angweny	4/19/99	[signature]		
	[signature]		[signature]	4/20/99	9a						

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: Lackawanna Landfill Site
Project Number: 03347-143-00-3439-01
RFW Contact: Jensen / Fama Phone: 732-321-4200

No: 05908

SHEET NO. 1 OF 3

041549-

Sample Identification / Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA, PEST, PCB	VOC	TAL Metals	
-754	A16650	1 west Fence	S	4/14/99	1	8oz / 4°C	✓			
-755	B16650	1 west Fence	S	4/14/99	1	40ml / 4°C		✓		
-756	C16650	1 west Fence	S	4/14/99	1	4oz / 4°C			✓	
-757	A16651	2 Surface Middle	S	4/14/99	1	8oz / 4°C	✓			
-758	B16651	2 Surface Middle	S	4/14/99	1	40ml / 4°C		✓		
-759	C16651	2 Surface Middle	S	4/14/99	1	4oz / 4°C			✓	
-760	A16652	2D Middle	S	4/14/99	1	8oz / 4°C	✓			
-761	B16652	2D Middle				40ml / 4°C		✓		
-762	C16652	2D Middle				4oz / 4°C			✓	
-763	A16653	3 west Fence				8oz / 4°C	✓			
-764	B16653	3 west Fence				40ml / 4°C		✓		
-765	C16653	3 west Fence				4oz / 4°C			✓	
-766	A16654	4 west Fence				8oz / 4°C	✓			
-767	B16654 (MS)	4 west Fence				40ml / 4°C		✓		
-768	C16654	4 west Fence				4oz / 4°C			✓	
-769	A16655	5 west Fence				8oz / 4°C	✓			
-770 (MSD)	B16655	5 west Fence				40ml / 4°C		✓		
-771	C16655	5 west Fence				4oz / 4°C			✓	
-772	A16656	6 Near Entrance				8oz / 4°C	✓			
-773	B16656	6 Near Entrance				40ml / 4°C		✓		

Matrix:
SD - Sediment; DS - Drum Solids; DL - Drum Liquids; X - Other
PW - Potable Water; GW - Groundwater; SW - Surface Water; SL - Sludge
S - Soil; W - Water; O - Oil; A - Air

Special Instructions: Lab to choose MS/MSD
oz - ounce
BNA - Base Neutral/Acid extractables
Pest - Pesticides
PCB - Polychlorinated biphenyls

VOC - volatile organic compounds
ml - milliliter

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
all Analysis	[signature]	4/14/99	David Angweni	4/15/99	10:30am	All Analysis	David Angweni	4/15/99	T. Evans	4/16/99	11:25
						ORG Analysis	David Angweni	4/15/99	M. Young	4/15/99	01:40pm

8/94

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: Lackawanna Foundry Site
Project Number: 03347-143-001-3439-01
RFW Contact: Johnson/Fama Phone: 732-321-4200

No: 116903

SHEET NO. 2 OF 3

041599.

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA, PEST, PCB	VOC	TAL Metals	
-774	C16656	6 MAIR ENTRANCE	S	4/14/99	1	4oz/4°C			✓	
-775	A16657	7				8oz/4°C	✓			
-776	B16657	7				40ml/4°C		✓		
-777	C16657	7				4oz/4°C			✓	
-778	A16658	8				8oz/4°C	✓			
-779	B16658	8				40ml/4°C		✓		
-780	C16658	8				4oz/4°C			✓	
-781	A16659	9				8oz/4°C	✓			
-782	B16659	9				40ml/4°C		✓		
-783	C16659	9				4oz/4°C			✓	
-784	A16660	10				8oz/4°C	✓			
-785 (MS) B	A16660	10				40ml/4°C		✓		
-786	C16660	10				4oz/4°C			✓	
-787	A16661	11				8oz/4°C	✓			
-788	B16661	11				40ml/4°C		✓		
-789	C16661	11				4oz/4°C			✓	
-790	A16662	12				8oz/4°C	✓			
-791	B16662	12				40ml/4°C		✓		
-792	C16662	12				4oz/4°C			✓	
-793	A16663	13	↓	↓	↓	8oz/4°C	✓			

Matrix:
D - Sediment
S - Drum Solids
L - Drum Liquids
- Other
PW - Potable Water
GW - Groundwater
SW - Surface Water
SL - Sludge
S - Soil
W - Water
O - Oil
A - Air

Special Instructions: Lab to select MS/MSD
BNA - Base neutral/acid extractable
PEST - pesticides
PCB - Polychlorinated biphenyls
VOC - volatile organic compounds

oz - ounce
ml - milliliter
oC - degrees celcius

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
all/Analysis	[signature]	4/15/99	David Anyweeyi	4/15/99	1045am	All/Analysis	David Anyweeyi	4/15/99	[signature]	4/15/99	1125
						All/Analysis	David Anyweeyi	4/15/99	M. Young	4/15/99	1140

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: Lackawanna Foundry Site
Project Number: 03747-143-001-3439-01
RFW Contact: Jim Sun, Fang Phone: 732-321-4200

No: 06910

SHEET NO. 3 OF 3

041594-

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA/PEST/PCB	VOC	TAL Metals
-794	B16663	13	S	4/14/99	1	40ml/4°C		✓	
-795	C16663	13				4oz/4°C			✓
-796	A16664	14				8oz/4°C	✓		
-797	B16664	14				40ml/4°C		✓	
-798	C16664	14				4oz/4°C			✓
-799	A16665	15				8oz/4°C	✓		
-800	B16665	15				40ml/4°C		✓	
-801	C16665	15				4oz/4°C			✓

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

VOC- volatile organic compounds

Special Instructions: Add to select MS/MSD
BNA- Base neutral/Acid extractable
PEST- Pesticides
PCB- poly chlorinated biphenyls
ml- milliliters
oz- ounces

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time
all/anal, SIs	Jat Fang	4/14/99	David Angwenyi	4/15/99	1045am

Items/Reason	Relinquished By	Date	Received By	Date	Time
All Analysis	David Angwenyi	4/15/99	Y. Cramer	4/15/99	11 25
All Analysis	David Angwenyi	4/15/99	M. Young	4/15/99	11 40 Am

R/01

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: LIPARI LANDFILL
Project Number: 03347-143-001-3487-01
RFW Contact: Salvatore Fumo Phone: 732 321 4200

No: 06911

SHEET NO. 1 OF 5

04154-1-

Sample Identification / Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA/PEST/PCBS	VOC	Metals
-802	A166666	LOCATION 16	S	14-APR-99	1	8 oz glass / Ice	✓		
-803	B166666	↓			1	40 ml glass / ICE		✓	
-804	C166666	↓			1	4 oz glass / Ice			✓
-805	A166667	LOCATION 17			1	8 oz / ICE	✓		
-806	B166667	↓			1	40 ml / ICE		✓	
-807	C166667	↓			1	4 oz / ICE			✓
-808	A166668	LOCATION 18			1	8 oz / ICE	✓		
-809	B166668	↓			1	4oml / ICE		✓	
-810	C166668	↓			1	4 oz / ICE			✓
-811	A166669	LOCATION 19			1	8 oz / Ice	✓		
-812	B166669	↓			1	40 ml / Ice		✓	
-813	C166669	↓			1	4 oz / Ice			✓
-814	A166670	LOCATION 20			1	8 oz / Ice	✓		
-815	B166670	↓			1	40ml / Ice		✓	
-816	C166670	↓			1	4 oz / Ice			✓
-817	A166671	LOCATION 21			1	8 oz / Ice	✓		
-818	B166671	↓			1	40 ml / Ice		✓	
-819	C166671	↓			1	4 oz / Ice			✓
-820	A166672	LOCATION 22			1	8 oz / Ice	✓		
-821	B166672	↓	↓	↓	1	40 ml / Ice		✓	

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions: LAB to choose MS/MSD

oz-ounce
ml-milliliter
BNA-Base neutral/acid extractables
Pest-pesticides
PCB-polychlorinated biphenyls
VOC-volatile organic compounds

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
All/analysis	Sal Fumo	4/14/99	David Angwafo	4/15/99	1100	All/Analysis	David Angwafo	4/15/99	Y. Ennine	4/15/99	1110
						All/Analysis	David Angwafo	4/15/99	M. Younis	4/15/99	1140

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: LAKAWANNA FOUNDRY
Project Number: 03347 143 001 3439 01
RFW Contact: SALVATORE FAMA Phone: 732 321 4200

No: 06912

SHEET NO 2 OF 3

041599 -

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA/PEST/PCB	VOAs	METALS	
-822	C16672	LOCATION 22	S	14-APR-99	1	4 oz glass/ICE			✓	
-823	A16673	LOCATION 23			1	8oz glass/	✓			
-824	B16673	↓			1	40ml glass/		✓		
-825	C16673	↓			1	4 oz glass/			✓	
-826	A16674	LOCATION 24			1	8 oz /	✓			
-827	B16674	↓			1	40 ml /		✓		
-828	C16674	↓			1	4 oz /			✓	
-829	A16675	LOCATION 25			1	8 oz /	✓			
-830	B16675	↓			1	40 ml /		✓		
-831	C16675	↓			1	4 oz /			✓	MS
-832	A16676	LOCATION 25-D			1	8oz /	✓			
-833	B16676	↓			1	40 ml /		✓		
-834	C16676	↓			1	4 oz /			✓	
-835	A16677	LOCATION 26			1	8 oz /	✓			
-836	B16677	↓			1	40 ml /		✓		
-837	C16677	↓			1	4 oz /			✓	
-838	A16678	LOCATION 26D			1	8 oz /	✓			
-839	B16678	↓			1	40 ml /		✓		
-840	C16678	↓			1	4 oz /			✓	
-841	A16679	LOCATION 27	↓	↓	1	8oz ↓	✓			

Matrix:

SD -	Sediment	PW -	Potable Water	(S) -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

Special Instructions: Lab to select MS/MSD

OZ - ounce
ML - milliliter
BNA - Base neutral/acid extractables
VOC - volatile organic compounds
PCB - Polychlorinated biphenyls

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
all/analysis	Sal Fama	4/14/99	David Angevine	4/15/99	1100	ALL/Analysis	David Angevine	4/15/99	Y. C[illegible]	4/15/99	1125
						ALL/Analysis	David Angevine	4/15/99	M. Davis	4/15/99	1140

8/91

REFERENCE NO. 7

October 14, 1999

Mr. Kevin Matheis
U.S. Environmental Protection Agency
Response and Prevention Branch
2890 Woodbridge Avenue
Edison, NJ 08837

EPA CONTRACT NO: 68-W5-0019
TDD NO: 02-99-09-0025
DOCUMENT CONTROL NO: START-02-F-
SUBJECT: QUALITY ASSURANCE PROJECT PLAN - LACKAWANNA FOUNDRY SITE

Dear Mr.Matheis:

Enclosed please find the site Quality Assurance Project Plan (QAPP) for the Lackawanna Foundry Site located in Lackawanna, New York.

If you have any questions, please do not hesitate to call me at (908) 225-6116.

Very truly yours,

ROY F. WESTON, INC.

James Kearns
Project Manager

Enclosure

cc: TDD File
Joseph M. Soroka, QAO

SITE QUALITY ASSURANCE PROJECT PLAN

LACKAWANNA FOUNDRY SITE
Lackawanna, Erie County, New York

Prepared by

Superfund Technical Assessment and Response Team
Roy F. Weston, Inc.
Federal Programs Division
Edison, New Jersey 08837

Prepared for

U.S. Environmental Protection Agency
Region II - Response and Prevention Branch
Edison, New Jersey 08837

DCN #: START-02-F-
TDD #: 02-99-09-0025
EPA Contract No.: 68-W5-0019

Approved by:

START

_____ Date:_____
James Kearns
Project Manager

START

_____ Date:_____
Joseph M. Soroka, START
Quality Assurance Officer

EPA

_____ Date:_____
Kevin Matheis
Task Monitor

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The following elements are provided in the START Generic Quality Assurance Project Plan (QAPP) and are included by reference:

QA REPORTS TO MANAGEMENT
PREVENTIVE MAINTENANCE PROCEDURES AND SCHEDULES
RECORDS MANAGEMENT SYSTEM
LOGBOOK PROGRAM
QUALITY-RELATED DOCUMENTS
INSPECTION/ACCEPTANCE REQUIREMENTS FOR SUPPLIES AND CONSUMABLES

LIST OF ATTACHMENTS

ATTACHMENT A:	Site Map
ATTACHMENT B:	EPA/ERT Soil Sampling SOP #2012 and EPA/ERT Sampling Equipment Decontamination SOP#2006

1.0 INT RODUCTION

Presented herein is the site Quality Assurance Project Plan (QAPP) for the sampling event to be conducted at the Lackawanna Foundry Site by the Region II Superfund Technical Assessment and Response Team (START). The site QAPP has been developed at the request of the United States Environmental Protection Agency (U.S. EPA) in accordance with the START Generic Quality Assurance Project Plan (QAPP).

This plan is based on information currently available and may be modified on site in light of field screening results and other acquired information. All deviations from the QAPP will be noted in the Sampling Trip Report.

2.0 PROJECT DESCRIPTION

The Lackawanna Foundry Removal Action Site is located at 2 Elm Street, Lackawanna, Erie County, New York. The Site is located in a mixed residential and heavily industrialized area adjacent to Smokes Creek, a direct tributary to Lake Erie. The residential neighborhood immediately adjacent to the Site consists of twelve residences with over 100 residences being located within 1/8 mile to site. The population of the area within ½ mile of the Site consists of nearly 1,000 people.

The Site has been the location of a cast-iron foundry since the early 1900's. The current owner of the Site inherited the business from his father whom operated the foundry at this location for more than 30 years. Over the past five years, the current owner has operated a marginal business and has ceased operations since approximately 1997.

On December 22, 1998, the New York State Department of Environmental Conservation (NYSDEC) requested that U.S. Environmental Protection Agency (EPA) evaluate the site and perform a removal action, as appropriate, to address the threats at the Site from drums, PCB transformers, and PCB contaminated soil. Included in the referral was a drum inventory performed by the site owner that showed the presence of over 223 drums of various foundry raw materials and waste.

On March 19, 1999, the Acting Division Director of the Emergency and Remedial Response Division granted verbal authorization for the EPA to undertake emergency stabilization activities at the site to include fencing the perimeter of the Site, securing the buildings, moving drums into a secure location and stabilizing leaking containers. This stabilization action was initiated on March 22, 1999.

Two primary areas of contamination have been identified on Site to this date. One area being the On-Site Buildings which have PCB contamination, Laboratory chemicals, compressed gas cylinders, paint cans, and a couple of hundred drums.

The second area of contamination, the area of concern for this sampling event, is a recreational area owned by the City of Lackawanna and is located adjacent to the Site. The recreational area is a grassy area that Lackawanna maintains by frequent grass and weed cuttings. The arsenic contamination adjacent to the Site in the recreational area appears to be in the location of a bag-house dust collection system used during foundry operations. The contamination was caused by either airborne deposition or run-off from the baghouse collection area. Analytical data from an ERT mobilization in April of 1999 showed levels of arsenic contamination in this second area of contamination were as high as 77 parts per million (ppm).

3.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The EPA Task Monitor (TM), Kevin Matheis, will provide overall direction to the staff concerning project sampling needs, objectives, and schedule. The Project Manager (PM), Jim Kearns, will be the primary point of contact with the TM. The PM is responsible for the development and completion of the Sampling QA/QC Plan, project team organization, and supervision of all project tasks, including reporting and deliverables. The Site QC Coordinator will be responsible for ensuring field adherence to the Sampling QA/QC Plan and recording of any deviations. The START Analytical Services Coordinator, Smita Sumbaly, will be the primary project team site contact with the subcontracted laboratory, if necessary.

START will arrange for the laboratory analyses. START personnel will transfer custody of the soil samples for shipment to the appropriate laboratory. The raw analytical data from the laboratory will be provided to the START Analytical Services Group for data validation.

The following sampling personnel will work on this project:

Personnel	Responsibility
James Kearns	Project Manager, Field Coordinator Sampling, Shipping Site QA/QC

The following laboratories will provide the following analyses:

Lab Name/Location	Sample Type	Parameters
To be determined	Soil	Arsenic

A standard two week verbal and three week written results turnaround time has been requested by the TM.

4.0 DATA USE OBJECTIVES

The objective of this sampling event is to confirm and delineate the extent of arsenic contamination near the Lackawanna Foundry building. This sampling event will help in the remediation efforts at the site by helping delineate the extent of soil contamination. The data from this sampling event will be reviewed using the Site cleanup levels for the Lackawanna Foundry site of 20 ppm for arsenic.

4.1 Quality Assurance Objectives

The overall Quality Assurance (QA) objective for chemical measurement data associated with this sampling event is to provide analytical results that are legally defensible in a court of law. The QA program will incorporate Quality Control (QC) procedures for field sampling, chain of custody, laboratory analyses, and reporting to assure generation of sound analytical results.

The EPA Task Monitor (TM) has specified a critical level of QA *of* QA-2 for the Site. Details of this QA level are provided below.

The QA Protocols for a Level 2 QA objective sampling event are applicable to all sample matrices and include:

1. Sample documentation in the form of field logbooks, appropriate field data sheets, and chain of custody records (chain of custody records are optional for field screening locations).

2. Calibration of all monitoring and/or field-portable analytical equipment prior to collection and analyses of samples with results and/or performance check procedures/methods summarized and documented in a field, personal, and/or instrument

log notebook.

3. Field or laboratory determined method detection limits (MDLs) will be recorded along with corresponding analytical sample results, where appropriate.

4. Analytical holding times as determined from the time of sample collection through analysis. These will be documented in the field logbook or by the laboratory in the final data deliverable package.

5. Initial and continuous instrument calibration data.

6. QC blank results (rinsate, trip, method, preparation, instrument, etc.), as applicable.

7. Collection and analysis of blind field duplicate and MS/MSD QC samples to provide a quantitative measure of the analytical precision and accuracy, as applicable.

8. Use of the following QC procedure for QC analyses and data validation:

   Definitive identification - confirm the identification of analytes on 100% of the "critical" samples, via an EPA-approved method; provide documentation such as gas chromatograms, mass spectra, etc.

The objective of this project/event applies to the following parameters:

Table 1: Quality Assurance Objectives

QA Parameters	Matrix	Intended Use of Data	QA Objective
TAL metals	Soil	Delineate extent of soil contamination	QA-2

A Field Sampling Summary is attached in Table 2 and a QA/QC Analysis and Objectives Summary is attached in Table 3. Section 5.1, Sampling Design, provides information on analyses to be performed on the individual soil samples.

TABLE 2:

FIELD SAMPLING SUMMARY

lytical meters	Matrix	Container Size	Preservative	Holding Time[1]	Subtotal Samples	Rinsate Blanks[2]	Duplicate Samples[3]	MS/MSD Samples[3]	Total Field Samples
ls-(arsenic)	Soil	1 - 8 oz glass	Cool to 4°C	6 months, 28 days for Hg					
ls-(arsenic)	Aqueous	1 - 1 Liter glass or polyethylene	Cool to 4°C, HNO3 to pH < 2	6 months, 28 days for Hg	2	2			2

[1] Holding time from date of sampling.
[2] Only required if non-dedicated sampling equipment to be used. NR - not required, dedicated sampling equipment to be used.
[3] Not required for QA-1 (screening)

Please refer to Attachment B for a list of EPA/ERT SOPs to be used:

TABLE 3

QA/QC Analysis and Objectives Summary

Analytical Parameters	Matrix	Analytical Method Reference	QA/QC Quantitation Limits	QA Objective
etals-(arsenic)	Soil	SW846 Method 5000 or CLP ILMO 4.0	As per method	QA-2

Analytical Parameters	Matrix	Analytical Method Reference	QA/QC Quantitation Limits	QA Objective
etals-(arsenic)	Aqueous	SW846 Method 5000 or CLP ILMO 4.0	As per method	QA-2

Note: CLP-format deliverables required for all data packages.

5.0 APPROACH AND SAMPLING PROCEDURES

The following sampling activities will be conducted at the Lackawanna Foundry Site:

- Soil Sampling of area adjacent to recreational facility located near the Foundry building.

5.1 Sampling Design

The field program will include the collection of soil samples. All sampling activities will be performed by the Region II START, under the direction of the EPA Task Monitor (TM). All samples will be sent to the procured laboratory.

A maximum of 16 surface soil samples and 16 depth soil samples will be collected with dedicated scoops and analyzed for PCBs. Prior to the sample collection, gravel, debris, or foliage will be removed from the sampling point. Surface soil samples will be collected from 0-6 inches in depth. The depth samples will be collected from 18-24 inches in depth. A grid will be set up ahead of time so that all samples will be spaced out equally over the entire sampling area. Depth samples will be collected from the same locations as the surface samples and will be collected by first using a power auger to reach the proper depth then a decontaminated hand auger will be used to retrieve the sample.

5.2 Schedule of Activities

Proposed Start Date	Activity	End Date
October 18, 1999	Soil Sampling	October 20, 1999

5.3 Sampling Equipment

In order to avoid cross-contamination, all samples will be collected with dedicated, disposable sampling equipment or decontaminated stainless steel scoops.

For subsurface samples, decontaminated stainless steel augers and trowels will be used.

5.4 Sample Identification System

Each sample collected by Region II START will be designated by a code which will identify the site. The code will be a site-specific project tracking number. The code for the Recreational Area of the Lackawanna Foundry Site is "RA". The media type will follow the numeric code. A hyphen will separate the site code and media type. Specific media types are as follows:

S - Surface Soil
SS - Subsurface Soil
RIN - Rinsate Blank

After the media type, the sequential sample numbers will be listed; sample numbers will be identified as to their location area on the site location and/or the location on the x and y coordinates of the sampling grid. A duplicate sample will be identified in the same manner as other samples and will be distinguished and documented in the field logbook.

5.5 Standard Operating Procedures (SOPs)

5.5.1 Sample Documentation

All sample documents will be completed legibly, in ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialing the error.

FIELD LOGBOOK

The field logbook is essentially a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed in the writer's absence. All entries will be dated and signed by the individuals making the entries, and should include (at a minimum) the following:

1. Site name and project number.
2. Name(s) of personnel on site.
3. Dates and times of all entries (military time preferred).
4. Descriptions of all site activities, site entry and exit times.
5. Noteworthy events and discussions.
6. Weather conditions.

7.Site observations.
8.Sample and sample location identification and description*.
9.Subcontractor information and names of on-site personnel.
10.Date and time of sample collections, along with chain of custody information.
11.Record of photographs.
12.Site sketches.

The description of the sample location will be noted in such a manner as to allow the reader to reproduce the location in the field at a later date.

SAMPLE LABELS

Sample labels will clearly identify the particular sample, and should include the following:

1. Site/project number.
2.Sample identification number.
3. Sample collection date and time.
4.Designation of sample (grab or composite).
5.Sample preservation.
6.Analytical parameters.
7.Name of sampler.

Sample labels will be written in indelible ink and securely affixed to the sample container. Tie-on labels can be used if properly secured.

CUSTODY SEALS

Custody seals demonstrate that a sample container has not been tampered with, or opened. The individual in possession of the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the sample packaging, will be noted in the field logbook.

5.5.2 Sampling SOPs

The following Sampling SOPs will be used for this project:

Soil Sampling EPA/ERT SOP# 2012
Sampling Equipment Decontamination EPA/ERT SOP# 2006

Please refer to Attachment B for a list of EPA/ERT sampling SOPS.

Decontamination

All stainless steel equipment involved in field sampling activities will be decontaminated in accordance to EPA/ERT SOP #2006 prior to and subsequent to sampling. Decontamination of sampling equipment will be kept to a minimum in the field; whenever possible dedicated sampling equipment, will be used. Decontamination of sampling equipment, including stainless steel augers and bowls, will be conducted as follows:

1) Alconox detergent and potable water scrub,
2) Potable water rinse,
3) A 10% nitric acid rinse (ultra pure grade) when sampling for inorganic parameters,
4) Distilled or potable water rinse,
5) Deionized water rinse,
6) Air dry (sufficient time will be allowed for the equipment to completely dry), and
7) Wrap or cover exposed ends of sampling equipment with aluminum foil (shiny side out) for transport and handling.

SOIL SAMPLING

Soil sampling activities will be conducted in accordance with guidelines outlined in EPA/ERT Soil Sampling SOP #2012 (Attachment B).

5.5.3 Sample Handling and Shipment

Each of the sample bottles will be sealed and labeled according to the following protocol. Caps will be secured with custody seals. Bottle labels will contain all required information including site/project code and sample number, time and date of collection, analyses requested, and preservative used. Sealed bottles will be placed in large metal or plastic coolers, and padded with an absorbent material such as vermiculite. All packaging will conform to IATA Transportation regulations for overnight carriers.

All sample documents will be sealed in a plastic bag and affixed to the underside of each cooler lid. The lid will be sealed and affixed on at least two sides with custody seals so that any sign of tampering is easily visible.

5.6 Sample Containers

All sample containers will meet the QA/QC specifications in OSWER Directive 9240.0-05A, "Specifications and Guidance for Contaminant Free Sample Containers".

5.7 Disposal of PPE and contaminated sampling materials

All used PPE and disposable sampling equipment will be left on site for disposal during the on-going removal action.

6.0 CHAIN OF CUSTODY RECORD

A chain of custody record will be maintained from the time the sample is taken to its final deposition. Every transfer of custody must be noted and signed for, and a copy of this record kept by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they must be stored in a locked container sealed with a custody seal. Specific information regarding custody of the samples projected to be collected on the weekend will be noted in the field logbook.

The chain of custody record should include (at minimum) the following:

1. Sample identification number.
2. Sample information.
3. Sample location.
4. Sample date.
5. Name(s) and signature(s) of sampler(s).
6. Signature(s) of any individual(s) with control over samples.

A separate chain of custody form must accompany each cooler for each daily shipment. The chain of custody form must address all samples in that cooler, but not address samples in any other cooler. This practice maintains the chain of custody for all samples in case of mis-shipment.

7.0 FIELD INSTRUMENT CALIBRATION AND PREVENTIVE MAINTENANCE

The sampling team is responsible for assuring that a calibration/maintenance log will be brought into the field and maintained for each measuring device. Each log will include at a minimum, where applicable:

- name of device and/or instrument calibrated
- device/instrument serial and/or ID number
- frequency of calibration
- date of calibration
- results of calibration
- name of person performing the calibration
- identification of the calibrant (PID, FID, pH meter)

Equipment to be used each day will be calibrated prior to the commencement of daily

activities.

8.0 ANALYTICAL METHODS

Analytical methods to be utilized in the analyses of samples collected during this sampling event are detailed in Table 3.

9.0 DATA REDUCTION, VALIDATION AND REPORTING

9.1 Deliverables

The START PM, James Kearns, will maintain contact with the EPA TM, Kevin Matheis, to keep him informed about the technical and financial progress of this project. This communication will commence with the issuance of the work assignment and project scoping meeting. Activities under this project will be reported in status and trip reports and other deliverables (e.g., analytical reports, final reports) described herein. Activities will also be summarized in appropriate format for inclusion in monthly and annual reports.

The following deliverables will be provided under this project:

TRIP REPORT

A trip report will be prepared to provide a detailed accounting of what occurred during each sampling mobilization. The trip report will be prepared within one week of the last day of each sampling mobilization. Information will be provided on time of major events, dates, and personnel on site (including affiliations).

MAPS/FIGURES

Maps depicting site layout, contaminant source areas, and sample locations will be included in the trip report, as appropriate.

ANALYTICAL REPORT

An analytical report will be prepared for samples analyzed under this plan. Information regarding the analytical methods or procedures employed, sample results, QA/QC results, chain of custody documentation, laboratory correspondence, and raw data will be provided within this deliverable.

DATA REVIEW

A review of the data generated under this plan will be undertaken. The assessment of data acceptability or useability will be provided separately, or as part of the analytical report.

9.2 Data Validation

Data generated under this QA/QC Sampling Plan will be evaluated according to criteria contained in the Removal Program Data Validation Procedures that accompany OSWER Directive number 9360.4-1 and in accordance with Region 2 guidelines.

Laboratory analytical results will be assessed by the data reviewer for compliance with required precision, accuracy, completeness, representativeness, and sensitivity.

10.0 FIELD QA/QC CHECK SAMPLES AND FREQUENCY

This section details the Quality Assurance/Quality Control (QA/QC) requirements for field activities performed during the sampling effort.

QA/QC samples will include the collection of one field duplicate and one matrix spike/matrix spike duplicate sample for each matrix (soil/sediment) at a ratio of 1 per 20 samples. Extra sample volume will be submitted to allow the laboratory to perform matrix spike sample analysis. This analysis provides information about the effect of sample matrix on digestion and measurement methodology. Field duplicate samples provide an indication of analytical variability and analytical error and will not be identified to the laboratory.

Field Rinsate Blanks will be collected when non-dedicated sampling equipment is used. A field rinsate blank will consist of distilled deionized (DI), demonstrated analyte-free water that has been poured over decontaminated sampling equipment. The field rinsate blank analytical results will be utilized in evaluation of potential cross contamination resulting from inadequate decontamination only if non-dedicated sampling equipment is used. The frequency of field rinsate blank collection is one blank per decontamination event per type of equipment, not to exceed more than one per day. Blanks will be collected for all parameters of interest (excluding physical parameters) and shipped with the samples collected the same day. Field rinsate blanks will be collected by Region II START.

Field rinsate blanks will be collected in accordance with the procedure listed below:

1) Decontaminate sampling equipment using the procedure specified in Section 3.3 of this plan.

2) Pour DI water over the sampling device and collect the rinsate in the appropriate sample containers.

11.0 SYSTEM AUDIT

The Field QA/QC Officer will observe sampling operations and review subsequent analytical results to ensure compliance with the QA/QC requirements of the project/sampling event.

12.0 CORRECTIVE ACTION

All provisions will be taken in the field and laboratory to ensure that any problems that may develop will be dealt with as quickly as possible to ensure the continuity of the project/ sampling events. Any deviations from this sampling plan will be noted in the final report.

ATTACHMENT A

SITE MAPS

ATTACHMENT B

EPA/ERT SAMPLING SOPS

REFERENCE NO. 8

November 5, 1999

Mr. Kevin Matheis
U.S. Environmental Protection Agency
Removal Action Branch
2890 Woodbridge Avenue
Edison, NJ 08837

EPA CONTRACT NO: 68-W5-0019
TDD NO: 02-99-09-0025
DOCUMENT CONTROL NO: START-02-F-03897
SUBJECT: SAMPLING TRIP REPORT- LACKAWANNA FOUNDRY

Dear Mr. Matheis:

Enclosed please find the Sampling Trip Report for the Lackawanna Foundry Site located at 2 Elm Street, Lackawanna, Erie County, New York. This Trip Report pertains to the soil sampling event for that occurred on October 18-20, 1999.

If you have any questions, do not hesitate to call me at (732) 225-6116.

Very truly yours,

ROY F. WESTON, INC.

James Kearns
Project Manager

Enclosure

cc: TDD File
Joseph M. Soroka

SAMPLING TRIP REPORT

SITE NAME: Lackawanna Foundry Site
DCN #: START-02-F-03897
TDD #: 02-99-09-0025

SAMPLING DATES:

1. Site Location: 2 Elm Street, Lackawanna, Erie County, New York

2. Sample Locations: Rear of Lackawanna Foundry building adjacent to recreational area owned by the City of Lackawanna (See Attachment A).

3. Sample Descriptions: Samples were taken from a grid that was set up to run along the south side of the Lackawanna Foundry building (the site) encompassing the area between the foundry building and the recreational area located south of the site. The recreational area which includes a baseball field and an indoor boccie ball court is owned by the City of Lackawanna. Samples were taken at 20 ft. northerly intervals and 35 ft. easterly intervals. All sample identification numbers reflect their distance from point N0-E0, the origin. Therefore, if a sample identification number was N20-E70, this meant that the location was 20 ft. north and 70 ft. east of the origin. The origin (N0-E0) was located 70 ft. from the Lackawanna Foundry building and 31 ft. from a utility pole located at the west end of the sampling grid.

4. Laboratories Receiving Samples:

Sample Type	Name and Address of Laboratory
Soil	STL Inc. Suite 106 10 Hazelwood Drive Amherst, New York 14228

5. Sample Dispatch Data:

On October 20, 1999, 35 samples (including 2 duplicate samples and 1 equipment blank) were hand delivered to the STL Inc. laboratory for arsenic analysis.

6. Sampling Personnel

Name	Company	Duties on Site
James Kearns	Region II START	Project Manager
Patrick Austin	Region II START	Sample Management Officer
Alex Steele	Roy F. Weston- Corporate Office	Sampling
John Leeks	Roy F. Weston- Corporate Office	Sampling

7. Additional Comments:

On October 19, 1999, START performed soil sampling on the south side of the Lackawanna Foundry building near the recreational area owned by the City of Lackawanna which includes a baseball field and an indoor boccie ball court. Sampling included both surface and subsurface samples that were analyzed for arsenic contamination. Eleven samples were collected at various depths and 23 samples were taken at the surface. The original sampling plan called for 16 surface and 16 subsurface samples but refusal was encountered at several locations. The refusal area appeared to be a cement pad with slag beneath the pad. A gas powered two man auger was used in areas where the manual hand augers hit refusal. Even after using the gas powered auger there were still several locations that encountered refusal. Therefore, after discussing the situation with the EPA Task Monitor, the decision was made to collect the depth samples if a depth of one foot or greater could be reached before encountering refusal and if this depth could not be reached then extending the grid and increasing the amount of surface samples would occur. The sampling grid was extended and several additional surface samples were collected. Please refer to Table 1 and Table 2 for further sample information including information for sampling depths of each sample.

At sample location N20 E70 a hydrocarbon odor was detected between a depth of one to one and a half feet. Sampling was immediately halted and air monitoring with a Photovac Microtip showed readings at approximately 10 parts per million (ppm). Therefore, it was assumed that the soil was contaminated with volatiles. Breathing zone readings on the Microtip showed no readings. At the request of the EPA Task Monitor (TM) a sample of the contaminated soil was collected and given to the ERRS contractor for laboratory analysis.

An error occurred on the Chain of Custody form. Sample S20 E105 was incorrectly labeled as S20 135 and sample S20 E140 was incorrectly labeled as S20 140. The error was amended on the attached Chain of Custody form. Copies of the Chain of Custody records are presented in Attachment B.

Photo documentation is presented in Attachment C.

Table 1: Lackawanna Foundry Soil Sampling for Arsenic- Surface Samples

Sample #	Sample Date	Sample Time	Additional Information
*N0 E0	10/19/99	0900	Surface sample located at the Origin of the sampling grid (31' east of utility pole located on west end of sampling area and 70' south of Lackawanna Foundry building).
N0 E0-1	10/19/99	0905	Duplicate sample of (N0 E0).
*N20 E0	10/19/99	0907	Surface sample located 20' north of origin.
N20 E0-1	10/19/99	0908	Duplicate sample of (N20 E0). Sample located 20' north of origin.
N20 E35	10/19/99	0910	Surface sample located 20' north and 35' east of origin.
N0 E35	10/19/99	0915	Surface sample located 35' east of origin.
N40 E0	10/19/99	0915	Surface sample located 40' north of origin.
N40 E105	10/19/99	0925	Surface sample located 40' north and 105' east of origin.
N20 E70	10/19/99	0922	Surface sample located 20' north and 70' east of the origin.
N20 E105	10/19/99	0930	Surface sample located 20' north and 105' east of the origin.
N40 E35	10/19/99	0930	Surface sample located 40' north and 35' east of the origin.
N0 E70	10/19/99	0930	Surface sample located 70' east of the origin.
N20 E140	10/19/99	0938	Sample located 20' north and 140' east of the origin.
N0 E105	10/19/99	0940	Sample located 105' east of the origin.
N0 E140	10/19/99	0945	Sample located 140' east of the origin.
N40 E70	10/19/99	0950	Sample located 40' north and 70' east of the origin.
N0 E175	10/19/99	0955	Sample collected 175' east of the origin.
N20 E175	10/19/99	0935	Sample collected 20' north and 175' east of the origin.
N60 E0	10/19/99	1555	Sample collected 60' north of origin.
S20 E35	10/19/99	1205	Sample collected 20' south and 35' east of the origin.
S20 E70	10/19/99	1200	Sample collected 20' south and 70' east of the origin.
S20 E105	10/19/99	1215	Sample collected 20' south and 105' east of the origin.
S20 E140	10/19/99	1210	Sample collected 20' south and 140' east of the origin.

*- Extra volume for MS/MSD analysis was provided for these samples.

Table 2: Lackawanna Foundry Soil Sampling for Arsenic- Depth Samples

Sample #	Sample Date	Sample Time	Sample Depth	Additional Information
N0 E0-D	10/19/99	11:40	12"	Sample location was at the origin of the sampling grid.
N20 E0-D	10/19/99	11:45	12"	Sample location was 20' north of the origin.
N40 E0-D	10/19/99	11:50	24"	Sample location was 40' north of the origin.
N0 E35-D	10/19/99	12:50	12"-18"	Sample location was 35' east of the origin.
N20 E35-D	10/19/99	15:00	18"	Sample location was 20' north and 35' east of the origin.
N40 E35-D	10/19/99	11:55	24"	Sample location was 40' north and 35' east of the origin.
N40 E70-D	10/19/99	13:00	18"-24"	Sample location was 40' north and 70' east of the origin.
N20 E70-D	10/19/99	13:50	15"-18"	Sample location was 20' north and 70' east of the origin.
N40 E105-D	10/19/99	15:15	21"-24"	Sample location was 40' north and 105' east of the origin.
N0 E140-D	10/19/99	15:15	12"-15"	Sample location was 140' east of the origin.
N0 E175-D	10/19/99	15:40	12"-18"	Sample location was 175' east of the origin.

8. Report Prepared by: _____ Date: _____
James Kearns, START PM

9. Report Approved by: _____ Date: _____
Dan Crouse, START QC

ATTACHMENT A
SITE LOCATION AND SAMPLING LOCATION MAPS

ATTACHMENT C
PHOTO DOCUMENTATION

ghhg

REFERENCE NO. 9

Roy F. Weston, Inc.
Federal Programs Division
Suite 201
1090 King Georges Post Road
Edison, New Jersey 08837-3703
732-225-6116 • Fax 732-225-7037
SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019

June 30, 2000

Mr. Kevin Matheis
U.S. Environmental Protection Agency
Removal Action Branch
2890 Woodbridge Avenue
Edison, NJ 08837

EPA CONTRACT NO: 68-W5-0019
TDD NO: 02-00-03-0032
DOCUMENT CONTROL NO: START-02-F-04350
SUBJECT: SAMPLING FINAL TRIP REPORT- LACKAWANNA FOUNDRY

Dear Mr. Matheis:

Enclosed please find the Final PCB Sampling Trip Report for the Lackawanna Foundry Site located at 2 Elm Street, Lackawanna, Erie County, New York. This Trip Report pertains to the soil sampling event for that occurred between May 3-5, 2000.

If you have any questions, do not hesitate to call me at (732) 225-6116.

Very truly yours,

ROY F. WESTON, INC.

David L. Adams
Project Manager

Enclosure

cc: TDD File
Joseph M. Soroka

SAMPLING TRIP REPORT

SITE NAME: Lackawanna Foundry Site
DCN #: START-02-F-04350
TDD #: 02-00-03-0032

SAMPLING DATES:

1. Site Location: 2 Elm Street, Lackawanna, Erie County, New York

2. Sample Locations: Rear of Lackawanna Foundry building adjacent to recreational area owned by the City of Lackawanna (Attachment A).

3. Sample Descriptions: Two samples and a duplicate sample were collected for PCB analysis, on May 3, 2000. Sample LW-SS-03 is a duplicate of sample LW-SS-02. (Please refer to Table 1 for further sample information). Grab samples were collected from surface soil of locations selected by the OSC (Attachment A).

   At the request of the EPA Task Monitor (TM) all samples were collected and given to the ERRS contractor for laboratory analysis. Copies of chains of custody can be found in Attachment B.

4. Laboratories Receiving Samples:

Sample Type	Name and Address of Laboratory
Soil	Upstate Laboratories 6034 Corporate Drive East Syracuse, New York 13057

5. Sample Dispatch Data:

   On May 3, 2000, 3 samples (including 1 duplicate sample) were hand delivered to Vernon Wilson, Earth Tech Response Manager, for delivery to Upstate Laboratories for PCB analysis.

6. Sampling Personnel

Name	Company	Duties on Site
David L. Adams	Region II START	Project Manager/ Sampler

7. Additional Comments:

On December 20, 1999, Earth Tech collected PCB confirmation samples in the excavation (Attachment A). Analytical data can be found in Attachment F.

On April 11, 2000, START performed soil sampling on the south side of the Lackawanna Foundry building near the recreational area owned by the City of Lackawanna which includes a baseball field and an indoor boccie ball court. Sampling included surface samples that were analyzed for arsenic contamination. Five samples were collected at the surface. START performed a PCB immunoassay test (Strategic Diagnostics Inc.) on suspect PCB contaminated soil, on the concrete pad located in the east end of the property (Attachment A). The screening was used to determine where the PCB samples would be collected. As a result, sample point X11 was used for PCB screening only (Attachment A). Please refer to Table 3 for further sample information.

On May 3, 2000, analytical results for the arsenic and PCB sampling event in April were received, all samples were below the cleanup levels for arsenic(Table 2). PCB results are detailed in Table 3. Analytical data can be found in Attachment C and D.

Analytical results for the backfill soil can be found in Attachment E.

Sample N20EO data (Attachment C), Attachment G details additional information obtained by the lab on the sample.

On May 18, 2000, analytical results for the PCB sampling event on May 3 were received, all samples were below the cleanup levels for PCBs(Table 1). Final analytical results can be found in Attachment H.

On May 18, 2000, analytical results for the topsoil were received. A copy of the report and the chain of custody can be found in Attachment I.

Results of the wetlands soil testing were received from Severn Trent Laboratories and can found in Attachment J.

8. Report Prepared by: _____ Date: 6/30/00
David L. Adams, START PM

9. Report Approved by: _____ Date: 7/3/00
Joseph M. Soroka, START QCO

Table 1: Lackawanna Foundry Soil Sampling for PCB

Sample#	Sample Date	Sample Time	Analytical Results	Additional Information
LW-SS-01	5/3/00	0940	.134 ppm	Brown sand/soil
LW-SS-02	5/3/00	1000	5.8 ppm	Tan clay
LW-SS-03	5/3/00	1000	13 ppm	Tan clay

Table 2: Lackawanna Foundry Soil Sampling for Arsenic Results

Sample #	Sample Date	Sample Time	Analytical Results
N20 E0	4/12/00	0955	14 ppm
N60 E0	4/12/00	0959	2.5 ppm
ARConf(3)	4/12/00	1000	0.3 ppm
ARConf(4)	4/12/00	1000	1.6 ppm
ARConf(6) *	4/12/00	1010	1.0 ppm

* Triple volume taken for MS/MSD.

Table 3: Lackawanna Foundry Soil Sampling for PCBs Screening and Analytical Results

Sample #	Sample Date	Sample Time	Sample Depth	Immunoassay Screen Results	Analytical Results
X1*	4/11/00	0955	0-3"	<10ppm on PCB screening	12 ppm
X4	4/11/00	1010	0-3"	>10ppm on PCB screening	33 ppm
X5	4/11/00	1015	0-3"	>10ppm on PCB screening	62 ppm
X6	4/11/00	1020	0-3"	>10ppm on PCB screening	16 ppm
X7	4/11/00	1025	0-3"	>10ppm on PCB screening	11 ppm
X10	4/11/00	1035	0-3"	>10ppm on PCB screening	9 ppm
X99	4/11/00	1035	0-3"	>10ppm on PCB screening, Duplicate of X10	7 ppm
X12	4/11/00	1415	0-3"	>10ppm on PCB screening	19 ppm

* Triple volume taken for MS/MSD.

ATTACHMENT A

ATTACHMENT B

ROY F. WESTON START FAX:732-225-7037 APR 12 2000 12:25 P.02

ACE No.:

PO No.:

CHAIN OF CUSTODY RECORD

WESTON
MANAGERS OF ENVIRONMENTAL TASTE

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019
Phone: 908-225-6116 Fax: 908-225-7037

MATRIX BOX NO.	PRESERVATIVE BOX NO.
1. Surface Water	1. HCl
2. Ground Water	2. HNO3
3. Leachate	3. Na2SO4
4. Rinsate	4. H2SO4
5. Soil/Sediment	5. Other (Specify)
6. Oil	6. Ice Only
7. Waste	N. Not Preserved
8. Other (Specify)	

Send verbal and written results to: Roy F. Weston, Inc., USEPA Region II START
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703
Attention: Smita Sumbaly, START Analytical Coordinator

Sample Number	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L, Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #)	RAS ANALYSES: TCL	BNA	PEST	PCBs	TAL	CN	SCRA ANALYSES: RIN	COR	REAC	Full TCLP	OTHER
LW-SS-01	4/03/00 0940	5	L	G					X							24 hr TAT
LW-SS-02	4/03/00 1000	5	L	G					X							
LW-SS-03	4/03/00 1005	5	L	G					X							Fax Results
																To
																Kevin Matheis
																@716-827-3037
																Mail Hard copy
																To USEPA
																Kevin Matheis
																3 Elm St
																Lackawanna, NY
																14218

Person Assuming Responsibility for Sample: DAVID L ADAMS — Time: 0940 — Date (MM/DD/YY): 4/3/00

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
All	David L Adams	1030	4/3/00	[signature]	Shipment To Lab.

Roy F. Weston, Inc.
FEDERAL PROGRAMS DIVISION
In Association with Resource Applications, Inc., E.E. Services Associates, PRC Environmental Management, C.C. Johnson & Malhotra, P.C., and GRB Environmental Services, Inc.

ATTACHMENT C

DATE: / /

Upstate Laboratories, Inc.
Analysis Results
Report Number: 10800063
Client I.D.: EARTH TECH

APPROVAL:
QC:
Lab I.D.: 10170
Sampled by: Client

ID:10800063 Mat:Soil N20EO 0955H 04/12/00 G

	PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	71%	04/18/00		WC9891
Total	Arsenic by furnace method	14mg/kg dw	04/21/00		ME2754

ID:10800064 Mat:Soil N60EO 0959H 04/12/00 G

	PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	76%	04/18/00		WC9891
Total	Arsenic by furnace method	2.5mg/kg dw	04/21/00		ME2754

ID:10800065 Mat:Soil ARCONF(3) 1000H 04/12/00 G

	PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	73%	04/18/00		WC9891
Total	Arsenic by furnace method	0.30mg/kg dw	04/21/00		ME2754

ID:10800066 Mat:Soil ARCONF(4) 1005H 04/12/00 G

	PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	89%	04/18/00		WC989
Total	Arsenic by furnace method	1.6mg/kg dw	04/21/00		ME2754

ID:10800067 Mat:Soil ARCOF(6) 1010H 04/12/00 G

	PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	84%	04/18/00		WC9891
Total	Arsenic by furnace method	1.0mg/kg dw	04/21/00		ME2754

dw = Dry weight

ATTACHMENT D

DATE: / /

Upstate Laboratories, Inc.
Analysis Results
Report Number: 10800055
Client I.D.: EARTH TECH

APPROVAL: _ _ _ _
QC: _ _ _ _ _ _ _
Lab I.D.: 10170
Sampled by: Client

ID:10800055 Mat:Soil X1 0955H 04/11/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	85%	04/18/00		WC9891
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1221	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1232	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1242	12,000ug/kg dw	04/27/00		GA0038
Aroclor 1248	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1254	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1260	<170ug/kg dw	04/27/00	05	GA0038
Total PCB	12,000ug/kg dw	04/27/00		GA0038

ID:10800056 Mat:Soil X4 1010H 04/11/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	85%	04/18/00		WC9891
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<170ug/kg dw	04/27/00	05	GA0
Aroclor 1221	<170ug/kg dw	04/27/00	05	GA0
Aroclor 1232	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1242	33,000ug/kg dw	04/27/00		GA0038
Aroclor 1248	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1254	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1260	<170ug/kg dw	04/27/00	05	GA0038
Total PCB	33,000ug/kg dw	04/27/00		GA0038

ID:10800057 Mat:Soil X5 1015H 04/11/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	86%	04/18/00		WC9891
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<860ug/kg dw	04/27/00	05	GA0038
Aroclor 1221	<860ug/kg dw	04/27/00	05	GA0038
Aroclor 1232	<860ug/kg dw	04/27/00	05	GA0038
Aroclor 1242	62,000ug/kg dw	04/27/00		GA0038
Aroclor 1248	<860ug/kg dw	04/27/00	05	GA0038
Aroclor 1254	<860ug/kg dw	04/27/00	05	GA0038
Aroclor 1260	<860ug/kg dw	04/27/00	05	GA0038
Total PCB	62,000ug/kg dw	04/27/00		GA0038

dw = Dry weight

DATE: / /

Upstate Laboratories, Inc.
Analysis Results
port Number: 10800055
ient I.D.: EARTH TECH

APPROVAL: _ _ _ _
QC: _ _ _ _ _ _
Lab I.D.: 10170
Sampled by: Client

ID:10800056 Mat:Soil X6 1020H 04/11/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	81%	04/18/00		WC9891
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1221	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1232	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1242	16,000ug/kg dw	04/27/00		GA0038
Aroclor 1248	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1254	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1260	<170ug/kg dw	04/27/00	05	GA0038
Total PCB	16,000ug/kg dw	04/27/00		GA0038

ID:10800059 Mat:Soil X7 1025H 04/11/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	78%	04/18/00		WC9891
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1221	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1232	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1242	11,000ug/kg dw	04/27/00		GA0038
Aroclor 1248	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1254	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1260	<170ug/kg dw	04/27/00	05	GA0038
Total PCB	11,000ug/kg dw	04/27/00		GA0038

ID:10800060 Mat:Soil X10 1035H 04/12/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	86%	04/18/00		WC9891
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1221	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1232	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1242	9000ug/kg dw	04/27/00		GA0038
Aroclor 1248	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1254	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1260	<170ug/kg dw	04/27/00	05	GA0038
Total PCB	9000ug/kg dw	04/27/00		GA0038

dw = Dry weight

DATE: / /

Upstate Laboratories, Inc.
Analysis Results
Report Number: 10800055
Client I.D.: EARTH TECH

APPROVAL:_ _ _ _
QC:_ _ _ _ _ _ _
Lab I.D.: 10170
Sampled by: Client

ID:10800061 Mat:Soil X9$ 1040H 04/12/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	98%	04/18/00		WC9891
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1221	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1232	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1242	7000ug/kg dw	04/27/00		GA0038
Aroclor 1248	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1254	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1260	<170ug/kg dw	04/27/00	05	GA0038
Total PCB	7000ug/kg dw	04/27/00		GA0038

ID:10800062 Mat:Soil X12 1415H 04/12/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	90%	04/18/00		WC9891
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1221	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1232	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1242	19,000ug/kg dw	04/27/00		GA0038
Aroclor 1248	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1254	<170ug/kg dw	04/27/00	05	GA0038
Aroclor 1260	<170ug/kg dw	04/27/00	05	GA0038
Total PCB	19,000ug/kg dw	04/27/00		GA0038

dw = Dry weight

ATTACHMENT E

DATE: 11/19/99

Upstate Laboratories, Inc.
Analysis Results
Report Number: 30299001
Client I.D.: EARTH TECH
Sampled by: Client

APPROVAL: CJS
QC: JD CJ
Lab I.D.: 10170
3467401 LACKAWANNA
PIT PILE-PILE 1 AM 10/28/99 C
Backfill Material + Sub topsoil

ULI I.D.: 30299002
Matrix: Soil

	PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Corrosivity				
	pH	7.9SU	11/03/99		WC8007
	Density	1.20g/ml	11/10/99		WC8111
	Flash Point	>60degC	11/11/99		WC8125
	Percent Solids	97%	10/29/99		WC7966
	TOC	14,138mg/kg	11/04/99		SC0001
	RCRA Reactivity				
	Reactive Sulfide	<50mg/kg	10/29/99		WC7978
	Reactive Cyanide	<1.0mg/kg	11/10/99		WC8048
Total	Aluminum	1900mg/kg dw	11/03/99		ME2404
Total	Antimony	<0.4mg/kg dw	11/03/99		ME2404
Total	Arsenic by furnace method	5.5mg/kg dw	11/03/99		ME2404
Total	Barium	42mg/kg dw	11/03/99		ME2404
Total	Beryllium	0.62mg/kg dw	11/03/99		ME2404
Total	Cadmium	1.6mg/kg dw	11/03/99		ME2404
Total	Calcium	5000mg/kg dw	11/10/99		ME2413
Total	Chromium	20mg/kg dw	11/03/99		ME2404
Total	Cobalt	<5.1mg/kg dw	11/03/99		ME2404
Total	Copper	83mg/kg dw	11/03/99		ME2404
Total	Iron	19000mg/kg dw	11/03/99		ME2404
Total	Lead	82mg/kg dw	11/03/99		ME2404
Total	Magnesium	930mg/kg dw	11/10/99		ME2413
Total	Manganese	670mg/kg dw	11/03/99		ME2404
Total	Mercury	0.23mg/kg dw	11/09/99		MB1662
Total	Nickel	18mg/kg dw	11/03/99		ME2404
Total	Potassium	240mg/kg dw	11/10/99		ME2413
Total	Selenium by furnace method	<0.2mg/kg dw	11/03/99		ME2404
Total	Silver	<5.1mg/kg dw	11/03/99		ME2404
Total	Sodium	280mg/kg dw	11/10/99		ME2413
Total	Thallium by furnace method	<0.4mg/kg dw	11/03/99		ME2404
Total	Vanadium	<31mg/kg dw	11/03/99		ME2404
Total	Zinc	160mg/kg dw	11/03/99		ME2404
TCLP	Arsenic	0.26mg/l	11/10/99		ME2415
TCLP	Barium	0.4mg/l	11/10/99		ME2415
TCLP	Cadmium	0.014mg/l	11/10/99		ME2415
TCLP	Chromium	<0.05mg/l	11/10/99		ME2415
TCLP	Lead	<0.1mg/l	11/10/99		ME2415
TCLP	Mercury	<0.0004mg/l	11/09/99		MB1662

dw = Dry weight

DATE: 11/19/99

Upstate Laboratories, Inc.
Analysis Results
Report Number: 30299001
Client I.D.: EARTH TECH
Sampled by: Client

APPROVAL: CJS
QC: JP
Lab I.D.: 10170
3467401 LACKAWANNA
PIT PILE-PILE 1 AM 10/28/99 C

ULI I.D.: 30299002 Matrix: Soil

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
TCLP Selenium	<0.5mg/l	11/10/99		ME2415
TCLP Silver	<0.05mg/l	11/10/99		ME2415
TCL Volatiles by EPA Method 8260				
Chloromethane	<3ug/kg	11/08/99		VM2659
Bromomethane	<3ug/kg	11/08/99		VM2659
Vinyl Chloride	<2ug/kg	11/08/99		VM2659
Chloroethane	<3ug/kg	11/08/99		VM2659
Methylene Chloride	100ug/kg	11/08/99		VM2659
Acetone	<10ug/kg	11/08/99		VM2659
Carbon Disulfide	<3ug/kg	11/08/99		VM2659
1,1-Dichloroethene	<3ug/kg	11/08/99		VM2659
1,1-Dichloroethane	<3ug/kg	11/08/99		VM2659
trans-1,2-Dichloroethene	<3ug/kg	11/08/99		VM2659
cis-1,2-Dichloroethene	<3ug/kg	11/08/99		VM2659
Chloroform	3ug/kg	11/08/99		VM2659
1,2-Dichloroethane	<3ug/kg	11/08/99		VM2659
2-Butanone	<10ug/kg	11/08/99		VM2659
1,1,1-Trichloroethane	<3ug/kg	11/08/99		VM2659
Carbon Tetrachloride	<3ug/kg	11/08/99		VM2659
Bromodichloromethane	<3ug/kg	11/08/99		VM2659
1,2-Dichloropropane	<3ug/kg	11/08/99		VM2659
cis-1,3-Dichloropropene	<3ug/kg	11/08/99		VM2659
Trichloroethene	<3ug/kg	11/08/99		VM2659
Dibromochloromethane	<3ug/kg	11/08/99		VM2659
1,1,2-Trichloroethane	<3ug/kg	11/08/99		VM2659
Benzene	<3ug/kg	11/08/99		VM2659
trans-1,3-Dichloropropene	<3ug/kg	11/08/99		VM2659
Bromoform	<3ug/kg	11/08/99		VM2659
4-Methyl-2-pentanone	<10ug/kg	11/08/99		VM2659
2-Hexanone	<10ug/kg	11/08/99		VM2659
Tetrachloroethene	<3ug/kg	11/08/99		VM2659
1,1,2,2-Tetrachloroethane	<3ug/kg	11/08/99		VM2659
Toluene	<3ug/kg	11/08/99		VM2659
Chlorobenzene	<3ug/kg	11/08/99		VM2659
Ethylbenzene	<3ug/kg	11/08/99		VM2659
Styrene	<3ug/kg	11/08/99		VM2659
m-Xylene and p-Xylene	<3ug/kg	11/08/99		VM2659
o-Xylene	<3ug/kg	11/08/99		VM2659

dw = Dry weight

DATE: 11/19/99

Upstate Laboratories, Inc.
Analysis Results
Report Number: 30299001
Client I.D.: EARTH TECH
Sampled by: Client

APPROVAL: AJS
QC: SP
Lab I.D.: 10170
3467401 LACKAWANNA
PIT PILE-PILE 1 AM 10/28/99 C

ULI I.D.: 30299002
Matrix: Soil

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
TCLP Volatile Organic Compounds by 8260				
TCLP Benzene	<0.03mg/l	11/08/99		VM2659
TCLP Carbon Tetrachloride	<0.03mg/l	11/08/99		VM2659
TCLP Chlorobenzene	<0.03mg/l	11/08/99		VM2659
TCLP Chloroform	<0.03mg/l	11/08/99		VM2659
TCLP 1,4-Dichlorobenzene	<0.03mg/l	11/08/99		VM2659
TCLP 1,2-Dichloroethane	<0.03mg/l	11/08/99		VM2659
TCLP 1,1-Dichloroethene	<0.03mg/l	11/08/99		VM2659
TCLP Methyl Ethyl Ketone	<0.1mg/l	11/08/99		VM2659
TCLP Tetrachloroethene	<0.03mg/l	11/08/99		VM2659
TCLP Trichloroethene	<0.03mg/l	11/08/99		VM2659
TCLP Vinyl Chloride	<0.02mg/l	11/08/99		VM2659
TCL Semivolatiles by EPA Method 8270				
Phenol	8700ug/kg dw	11/11/99		SA2200
bis(2-Chloroethyl)ether	<3400ug/kg dw	11/11/99		SA2200
2-Chlorophenol	<3400ug/kg dw	11/11/99		SA2200
1,3-Dichlorobenzene	<3400ug/kg dw	11/11/99		SA2200
1,4-Dichlorobenzene	<3400ug/kg dw	11/11/99		SA2200
1,2-Dichlorobenzene	<3400ug/kg dw	11/11/99		SA2200
2-Methylphenol	<3400ug/kg dw	11/11/99		SA2200
2,2'-Oxybis(1-Chloropropane)	<3400ug/kg dw	11/11/99		SA2200
4-Methylphenol	<3400ug/kg dw	11/11/99		SA2200
n-Nitrosodi-n-propylamine	<3400ug/kg dw	11/11/99		SA2200
Hexachloroethane	<3400ug/kg dw	11/11/99		SA2200
Nitrobenzene	<3400ug/kg dw	11/11/99		SA2200
Isophorone	<3400ug/kg dw	11/11/99		SA2200
2-Nitrophenol	<3400ug/kg dw	11/11/99		SA2200
2,4-Dimethylphenol	<3400ug/kg dw	11/11/99		SA2200
bis(2-Chloroethoxy)methane	<3400ug/kg dw	11/11/99		SA2200
2,4-Dichlorophenol	<3400ug/kg dw	11/11/99		SA2200
1,2,4-Trichlorobenzene	<3400ug/kg dw	11/11/99		SA2200
Naphthalene	<3400ug/kg dw	11/11/99		SA2200
4-Chloroaniline	<3400ug/kg dw	11/11/99		SA2200
Hexachlorobutadiene	<3400ug/kg dw	11/11/99		SA2200
4-Chloro-3-methylphenol	<3400ug/kg dw	11/11/99		SA2200
2-Methylnaphthalene	<3400ug/kg dw	11/11/99		SA2200
Hexachlorocyclopentadiene	<3400ug/kg dw	11/11/99		SA2200
2,4,6-Trichlorophenol	<3400ug/kg dw	11/11/99		SA2200

dw = Dry weight

DATE: 11/19/99

Upstate Laboratories, Inc.
Analysis Results
Report Number: 30299001
Client I.D.: EARTH TECH
Sampled by: Client

APPROVAL: _____
QC: _____
Lab I.D.: 10170
3467401 LACKAWANNA
PIT PILE-PILE 1 AM 10/28/99 C

ULI I.D.: 30299002
Matrix: Soil

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
2,4,5-Trichlorophenol	<3400ug/kg dw	11/11/99		SA2200
2-Chloronaphthalene	<3400ug/kg dw	11/11/99		SA2200
2-Nitroaniline	<34,000ug/kg dw	11/11/99		SA2200
Dimethylphthalate	<3400ug/kg dw	11/11/99		SA2200
Acenaphthylene	<3400ug/kg dw	11/11/99		SA2200
2,6-Dinitrotoluene	<3400ug/kg dw	11/11/99		SA2200
3-Nitroaniline	<34,000ug/kg dw	11/11/99		SA2200
Acenaphthene	<3400ug/kg dw	11/11/99		SA2200
2,4-Dinitrophenol	<34,000ug/kg dw	11/11/99		SA2200
4-Nitrophenol	<34,000ug/kg dw	11/11/99		SA2200
Dibenzofuran	<3400ug/kg dw	11/11/99		SA2200
2,4-Dinitrotoluene	<3400ug/kg dw	11/11/99		SA2200
Diethylphthalate	<3400ug/kg dw	11/11/99		SA2200
4-Chlorophenylphenylether	<3400ug/kg dw	11/11/99		SA2200
Fluorene	<3400ug/kg dw	11/11/99		SA2200
4-Nitroaniline	<34,000ug/kg dw	11/11/99		SA2200
2-Methyl-4,6-dinitrophenol	<34,000ug/kg dw	11/11/99		SA2200
n-Nitrosodiphenylamine	<3400ug/kg dw	11/11/99		SA2200
4-Bromophenylphenylether	<3400ug/kg dw	11/11/99		SA2200
Hexachlorobenzene	<3400ug/kg dw	11/11/99		SA2200
Pentachlorophenol	<690ug/kg dw	11/11/99		SA2200
Phenanthrene	<3400ug/kg dw	11/11/99		SA2200
Anthracene	<3400ug/kg dw	11/11/99		SA2200
Carbazole	<3400ug/kg dw	11/11/99		SA2200
di-n-butylphthalate	<3400ug/kg dw	11/11/99		SA2200
Fluoranthene	<3400ug/kg dw	11/11/99		SA2200
Pyrene	<3400ug/kg dw	11/11/99		SA2200
Butylbenzylphthalate	<3400ug/kg dw	11/11/99		SA2200
3,3'-Dichlorobenzidine	<3400ug/kg dw	11/11/99		SA2200
Benzo(a)anthracene	<3400ug/kg dw	11/11/99		SA2200
Chrysene	<3400ug/kg dw	11/11/99		SA2200
bis(2-Ethylhexyl)phthalate	<3400ug/kg dw	11/11/99		SA2200
di-n-octylphthalate	<3400ug/kg dw	11/11/99		SA2200
Benzo(b)fluoranthene	<3400ug/kg dw	11/11/99		SA2200
Benzo(k)fluoranthene	<3400ug/kg dw	11/11/99		SA2200
Benzo(a)pyrene	<3400ug/kg dw	11/11/99		SA2200
Indeno(1,2,3-cd)pyrene	<690ug/kg dw	11/11/99		SA2200
Dibenzo(a,h)anthracene	<690ug/kg dw	11/11/99		SA2200
Benzo(ghi)perylene	<690ug/kg dw	11/11/99		SA2200

dw = Dry weight

DATE: 11/19/99

Upstate Laboratories, Inc.
Analysis Results
Report Number: 30299001
Client I.D.: EARTH TECH
Sampled by: Client

APPROVAL: GS
QC: JD JJ
Lab I.D.: 10170
3467401 LACKAWANNA
PIT PILE-PILE 1 AM 10/28/99 C

ULI I.D.: 30299002 Matrix: Soil

	PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	TCLP Semivolatile Compounds by 8270				
TCLP	Cresol, Total	<0.05mg/l	11/11/99		SA2207
TCLP	2,4-Dinitrotoluene	<0.05mg/l	11/11/99		SA2207
TCLP	Hexachlorobenzene	<0.05mg/l	11/11/99		SA2207
TCLP	Hexachlorobutadiene	<0.05mg/l	11/11/99		SA2207
TCLP	Hexachloroethane	<0.05mg/l	11/11/99		SA2207
TCLP	Nitrobenzene	<0.05mg/l	11/11/99		SA2207
TCLP	Pentachlorophenol	<0.10mg/l	11/11/99		SA2207
TCLP	Pyridine	<0.05mg/l	11/11/99		SA2207
TCLP	2,4,5-Trichlorophenol	<0.05mg/l	11/11/99		SA2207
TCLP	2,4,6-Trichlorophenol	<0.05mg/l	11/11/99		SA2207
	PCB (Aroclors) by EPA Method 8082				
	Aroclor 1016	<0.08mg/kg dw	11/17/99		PA5354
	Aroclor 1221	<0.08mg/kg dw	11/17/99		PA5354
	Aroclor 1232	<0.08mg/kg dw	11/17/99		PA5354
	Aroclor 1242	<0.08mg/kg dw	11/17/99		PA 4
	Aroclor 1248	<0.08mg/kg dw	11/17/99		PA 4
	Aroclor 1254	<0.08mg/kg dw	11/17/99		PA5354
	Aroclor 1260	<0.08mg/kg dw	11/17/99		PA5354
	Total PCB	<0.08mg/kg dw	11/17/99		PA5354

dw = Dry weight

PARAMETER	SO27	PILE 1
Arsenic	<0.5mg/l	0.26mg/l
Barium	<0.3mg/l	0.4mg/l
Cadmium	0.018mg/l	0.014mg/l
Chromium	<0.05mg/l	<0.05mg/l
Copper	0.21mg/l	
Lead	<0.1mg/l	<0.1mg/l
Mercury	<0.0004mg/l	<0.0004mg/l
Selenium	<0.5mg/l	<0.5mg/l
Silver	<0.05mg/l	<0.05mg/l
Zinc	1.3mg/l	
pH		7.9SU
Density		1.20g/ml
Flash Point		>60degC
Percent Solids		97%
TOC		14,138mg/kg
Reactive Sulfide		<50mg/kg
Reactive Cyanide		<1.0mg/kg
Total Aluminum		1900mg/kg dw
Total Antimony		<0.4mg/kg dw
Total Arsenic by furnace method		5.5mg/kg dw
Total Barium		42mg/kg dw
Total Beryllium		0.62mg/kg dw
Total Cadmium		1.6mg/kg dw
Total Calcium		5000mg/kg dw
Total Chromium		20mg/kg dw
Total Cobalt		<5.1mg/kg dw
Total Copper		83mg/kg dw
Total Iron		19000mg/kg dw
Total Lead		82mg/kg dw
Total Magnesium		930mg/kg dw
Total Manganese		670mg/kg dw
Total Mercury		0.23mg/kg dw
Total Nickel		18mg/kg dw
Total Potassium		240mg/kg dw
Total Selenium by furnace method		<0.2mg/kg dw
Total Silver		<5.1mg/kg dw
Total Sodium		280mg/kg dw

PARAMETER	SO27	PILE 1
Total Thallium by furnace method		<0.4mg/kg dw
Total Vanadium		<31mg/kg dw
Total Zinc		160mg/kg dw
Chloromethane		<3ug/kg
Bromomethane		<3ug/kg
Vinyl Chloride		<2ug/kg
Chloroethane		<3ug/kg
Methylene Chloride		100ug/kg
Acetone		<10ug/kg
Carbon Disulfide		<3ug/kg
1,1-Dichloroethene		<3ug/kg
1,1-Dichloroethane		<3ug/kg
trans-1,2-Dichloroethene		<3ug/kg
cis-1,2-Dichloroethene		<3ug/kg
Chloroform		3ug/kg
1,2-Dichloroethane		<3ug/kg
2-Butanone		<10ug/kg
1,1,1-Trichloroethane		<3ug/kg
Carbon Tetrachloride		<3ug/kg
Bromodichloromethane		<3ug/kg
1,2-Dichloropropane		<3ug/kg
cis-1,3-Dichloropropene		<3ug/kg
Trichloroethene		<3ug/kg
Dibromochloromethane		<3ug/kg
1,1,2-Trichloroethane		<3ug/kg
Benzene		<3ug/kg
trans-1,3-Dichloropropene		<3ug/kg
Bromoform		<3ug/kg
4-Methyl-2-pentanone		<10ug/kg
2-Hexanone		<10ug/kg
Tetrachloroethene		<3ug/kg
1,1,2,2-Tetrachloroethane		<3ug/kg
Toluene		<3ug/kg
Chlorobenzene		<3ug/kg
Ethylbenzene		<3ug/kg
Styrene		<3ug/kg
m-Xyle and p-Xylene		<3ug/kg

PARAMETER	SO27	PILE 1
o–Xylene		<3ug/kg
Benzene		<0.03mg/l
Carbon Tetrachloride		<0.03mg/l
Chlorobenzene		<0.03mg/l
Chloroform		<0.03mg/l
1,4–Dichlorobenzene		<0.03mg/l
1,2–Dichloroethane		<0.03mg/l
1,1–Dichloroethene		<0.03mg/l
Methyl Ethyl Ketone		<0.1mg/l
Tetrachloroethene		<0.03mg/l
Trichloroethene		<0.03mg/l
Vinyl Chloride		<0.02mg/l
Phenol		8700ug/kg dw
bis(2–Chloroethyl)ether		<3400ug/kg dw
2–Chlorophenol		<3400ug/kg dw
1,3–Dichlorobenzene		<3400ug/kg dw
1,4–Dichlorobenzene		<3400ug/kg dw
1,2–Dichlorobenzene		<3400ug/kg dw
2–Methylphenol		<3400ug/kg dw
2,2'–Oxybis(1–Chloropropane)		<3400ug/kg dw
4–Methylphenol		<3400ug/kg dw
n–Nitrosodi–n–propylamine		<3400ug/kg dw
Hexachloroethane		<3400ug/kg dw
Nitrobenzene		<3400ug/kg dw
Isophorone		<3400ug/kg dw
2–Nitrophenol		<3400ug/kg dw
2,4–Dimethylphenol		<3400ug/kg dw
bis(2–Chloroethoxy)methane		<3400ug/kg dw
2,4–Dichlorophenol		<3400ug/kg dw
1,2,4–Trichlorobenzene		<3400ug/kg dw
Naphthalene		<3400ug/kg dw
4–Chloroaniline		<3400ug/kg dw
Hexachlorobutadiene		<3400ug/kg dw
4–Chloro–3–methylphenol		<3400ug/kg dw
2–Methylnaphthalene		<3400ug/kg dw
Hexachlorocyclopentadiene		<3400ug/kg dw
2,4,6–Trichlorophenol		<3400ug/kg dw

PARAMETER	SO27	PILE 1
2,4,5–Trichlorophenol		<3400ug/kg dw
2–Chloronaphthalene		<3400ug/kg dw
2–Nitroaniline		<34,000ug/kg dw
Dimethylphthalate		<3400ug/kg dw
Acenaphthylene		<3400ug/kg dw
2,6–Dinitrotoluene		<3400ug/kg dw
3–Nitroaniline		<34,000ug/kg dw
Acenaphthene		<3400ug/kg dw
2,4–Dinitrophenol		<34,000ug/kg dw
4–Nitrophenol		<34,000ug/kg dw
Dibenzofuran		<3400ug/kg dw
2,4–Dinitrotoluene		<3400ug/kg dw
Diethylphthalate		<3400ug/kg dw
4–Chlorophenylphenylether		<3400ug/kg dw
Fluorene		<3400ug/kg dw
4–Nitroaniline		<34,000ug/kg dw
2–Methyl–4,6–dinitrophenol		<34,000ug/kg dw
n–Nitrosodiphenylamine		<3400ug/kg dw
4–Bromophenylphenylether		<3400ug/kg dw
Hexachlorobenzene		<3400ug/kg dw
Pentachlorophenol		<690ug/kg dw
Phenanthrene		<3400ug/kg dw
Anthracene		<3400ug/kg dw
Carbazole		<3400ug/kg dw
di–n–butylphthalate		<3400ug/kg dw
Fluoranthene		<3400ug/kg dw
Pyrene		<3400ug/kg dw
Butylbenzylphthalate		<3400ug/kg dw
3,3'–Dichlorobenzidine		<3400ug/kg dw
Benzo(a)anthracene		<3400ug/kg dw
Chrysene		<3400ug/kg dw
bis(2–Ethylhexyl)phthalate		<3400ug/kg dw
di–n–octylphthalate		<3400ug/kg dw
Benzo(b)fluoranthene		<3400ug/kg dw
Benzo(k)fluoranthene		<3400ug/kg dw
Benzo(a)pyrene		<3400ug/kg dw
Indeno(1,2,3–cd)pyrene		<690ug/kg dw

PARAMETER	SO27	PILE 1
Dibenzo(a,h)anthracene		<690ug/kg dw
Benzo(ghi)perylene		<690ug/kg dw
Cresol, Total		<0.05mg/l
2,4–Dinitrotoluene		<0.05mg/l
Hexachlorobenzene		<0.05mg/l
Hexachlorobutadiene		<0.05mg/l
Hexachloroethane		<0.05mg/l
Nitrobenzene		<0.05mg/l
Pentachlorophenol		<0.10mg/l
Pyridine		<0.05mg/l
2,4,5–Trichlorophenol		<0.05mg/l
2,4,6–Trichlorophenol		<0.05mg/l
Aroclor 1016		<0.08mg/kg dw
Aroclor 1221		<0.08mg/kg dw
Aroclor 1232		<0.08mg/kg dw
Aroclor 1242		<0.08mg/kg dw
Aroclor 1248		<0.08mg/kg dw
Aroclor 1254		<0.08mg/kg dw
Aroclor 1260		<0.08mg/kg dw
Total PCB		<0.08mg/kg dw

30299001 - 2

№ 0083

Earth Tech
2229 Tomlynn Street
Richmond, Virginia 23230
(804) 358-5400

CHAIN OF CUSTODY RECORD

PROJ. NO. 30299001 | PROJECT NAME Lackawanna

SAMPLERS: (Signature) Lane Acton Kenneth

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCLP Metals	TCLP VOCs	TCLP SVOCs	PCBs	TAL Metals	TCL VOCs	TCL SVOCs	Typ. Ables	Cyanide	REMARKS
~~SO27~~	~~4/28~~	~~4pm~~	X		~~Flat Pile SO27~~ *	1	~									dd=11/3 wpa!
*1 Pile 1	4/28	4pm	X		Pit Pile - Pile 1	1	~	~	~	~	~	~	~	~	~	(X) dd=11/11 HDO!
					SO27											IFB 3460403
				*	3 day TAT*											10 Day TAT
																Earth Tech
																Contact Lane Acton
																Phone (716) 827 7180
																Fax (716) 827-3230

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	10/28/04			10/29/04 1730	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
			10/29/04 0740		

ATTACHMENT F

Upstate Laboratories Inc.

Shipping: 6034 Corporate Dr. • E. Syracuse, NY 13057-1017 • (315) 437-0255 • Fax (315) 437-1209
Mailing: Box 289 • Syracuse, NY 13206
Albany (518) 459-3134
Binghamton (607) 724-0478
Buffalo (716) 649-2533
Rochester (716) 436-9070
New Jersey (201) 703-1324

February 9, 2000

Ms. Lane Aulick
Earth Tech, Inc.
7870 Villa Park Dr.
Suite 400
Richmond, VA 23228

Re: Analysis Report #35599012 - 38340 Lackawanna Foundry

Dear Ms. Aulick:

Please find enclosed the results for your samples which were picked up by ULI personnel on December 20, 1999.

We have included the Chain of Custody Record as part of your report. You may need to reference this form for a more detailed explanation of your sample. Samples will be disposed of approximately one month from final report date.

Should you have any questions, please feel free to give us a call.

Thank you for your patronage.

Sincerely,

UPSTATE LABORATORIES, INC.

Anthony J. Scala

Anthony J. Scala
Director

AJS/lw

Enclosures: report, spreadsheets, disk

cc/encs: N. Scala, ULI
file
M. Kromis, Earth Tech (category B deliverables to follow)

Note: Faxed results were given to your office on 12/20/99. AJS

Disclaimer: The test results and procedures utilized, and laboratory interpretations of data obtained by ULI as contained in this report are believed by ULI to be accurate and reliable for sample(s) tested. In accepting this report, the customer agrees that the full extent of any and all liability for actual and consequential damages of ULI for the services performed shall be equal to the fee charged to the customer for the services as liquidated damages.

DATE: 02/09/00

Upstate Laboratories, Inc.
Analysis Results
Report Number: 35599012
Client I.D.: EARTH TECH

APPROVAL: QS
QC: GD
Lab I.D.: 10170
Sampled by: Client

ID:35599012 Mat:Soil 38340 LACKAWANNA FOUNDRY CONF 7 SUB-SOIL PCB/ 1000H 12/20/99 G TRANSFORMER AREA

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	59%	12/22/99		WC8615
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<0.14ug/kg dw	01/06/00		PA5467
Aroclor 1221	<0.14ug/kg dw	01/06/00		PA5467
Aroclor 1232	<0.14ug/kg dw	01/06/00		PA5467
Aroclor 1242	<0.14ug/kg dw	01/06/00		PA5467
Aroclor 1248	<0.14ug/kg dw	01/06/00		PA5467
Aroclor 1254	<0.14ug/kg dw	01/06/00		PA5467
Aroclor 1260	<0.14ug/kg dw	01/06/00		PA5467
Total PCB	<0.14ug/kg dw	01/06/00		PA5467

ID:35599013 Mat:Soil 38340 LACKAWANNA FOUNDRY CONF 8 SUB-SOIL PCB/ 1000H 12/20/99 G TRANSFORMER AREA

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	70%	12/22/99		WC8615
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<0.11ug/kg dw	01/06/00		PA5467
Aroclor 1221	<0.11ug/kg dw	01/06/00		PA5467
Aroclor 1232	<0.11ug/kg dw	01/06/00		PA5467
Aroclor 1242	1400ug/kg dw	01/06/00		PA5467
Aroclor 1248	<0.11ug/kg dw	01/06/00		PA5467
Aroclor 1254	<0.11ug/kg dw	01/06/00		PA5467
Aroclor 1260	<0.11ug/kg dw	01/06/00		PA5467
Total PCB	1400ug/kg dw	01/06/00		PA5467

ID:35599014 Mat:Soil 38340 LACKAWANNA FOUNDRY CONF 9 SUB-SOIL PCB/ 1000H 12/20/99 G TRANSFORMER AREA

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	66%	12/22/99		WC8615
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<0.12ug/kg dw	01/06/00		PA5467
Aroclor 1221	<0.12ug/kg dw	01/06/00		PA5467
Aroclor 1232	<0.12ug/kg dw	01/06/00		PA5467
Aroclor 1242	<0.12ug/kg dw	01/06/00		PA5467
Aroclor 1248	<0.12ug/kg dw	01/06/00		PA5467
Aroclor 1254	<0.12ug/kg dw	01/06/00		PA5467
Aroclor 1260	<0.12ug/kg dw	01/06/00		PA5467
Total PCB	<0.12ug/kg dw	01/06/00		PA5467

dw = Dry weight

DATE: 02/09/00

Upstate Laboratories, Inc.
Analysis Results
Report Number: 35599012
Client I.D.: EARTH TECH

APPROVAL: _____
QC: _____ Lab I.D.: 10170
Sampled by: Client

ID:35599015 Mat:Soil 38340 LACKAWANNA FOUNDRY CONF 10 SUB-SOIL PCB/ 1000H 12/20/99 G TRANSFORMER AREA

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	74%	12/22/99		WC8615
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<54ug/kg dw	01/06/00	05	PA5467
Aroclor 1221	<54ug/kg dw	01/06/00	05	PA5467
Aroclor 1232	<54ug/kg dw	01/06/00	05	PA5467
Aroclor 1242	<54ug/kg dw	01/06/00	05	PA5467
Aroclor 1248	<54ug/kg dw	01/06/00	05	PA5467
Aroclor 1254	<54ug/kg dw	01/06/00	05	PA5467
Aroclor 1260	<54ug/kg dw	01/06/00	05	PA5467
Total PCB	<54ug/kg dw	01/06/00	05	PA5467

dw = Dry weight

KEY PAGE

1 MATRIX INTERFERENCE PRECLUDES LOWER DETECTION LIMITS
2 MATRIX INTERFERENCE
3 PRESENT IN BLANK
4 ANALYSIS NOT PERFORMED BECAUSE OF INSUFFICIENT SAMPLE
5 THE PRESENCE OF OTHER TARGET ANALYTE(S) PRECLUDES LOWER DETECTION LIMITS
6 BLANK CORRECTED
7 HEAD SPACE PRESENT IN SAMPLE
8 QUANTITATION LIMIT IS GREATER THAN THE CALCULATED REGULATORY LEVEL. THE QUANTITATION LIMIT THEREFORE BECOMES THE REGULATORY LEVEL.
9 THE OIL WAS TREATED AS A SOLID AND LEACHED WITH EXTRACTION FLUID
10 ADL(AVERAGE DETECTION LIMITS)
11 PQL(PRACTICAL QUANTITATION LIMITS)
12 SAMPLE ANALYZED OVER HOLDING TIME
13 DISSOLVED VALUE MAY BE HIGHER THAN TOTAL DUE TO CONTAMINATION FROM THE FILTERING PROCEDURE
14 SAMPLED BY ULI
15 DISSOLVED VALUE MAY BE HIGHER THAN TOTAL; HOWEVER, THE VALUES ARE WITHIN EXPERIMENTAL ERROR
16 AN INHIBITORY FACTOR WAS OBSERVED IN THIS ANALYSIS
17 PARAMETER NOT ANALYZED WITHIN 15 MINUTES OF SAMPLING
18 THE SERIAL DILUTION OF THIS SAMPLE SUGGESTS A POSSIBLE PHYSICAL AND/OR CHEMICAL INTERFERENT IN THIS DETERMINATION. THE DATA MAY BE BIASED EITHER HIGH OR LOW.
19 CALCULATION BASED ON DRY WEIGHT
20 INDICATES AN ESTIMATED VALUE, DETECTED BUT BELOW THE PRACTICAL QUANTITATION LIMITS
21 UG/KG AS REC.D / UG/KG DRY WT
22 MG/KG AS REC.D / MG/KG DRY WT
23 INSUFFICIENT SAMPLE PRECLUDES LOWER DETECTION LIMITS
24 SAMPLE DILUTED/BLANK CORRECTED
25 ND(NON-DETECTED)
26 MATRIX INTERFERENCE PRECLUDES LOWER DETECTION LIMITS/BLANK CORRECTED
27 SPIKE RECOVERY ABNORMALLY HIGH/LOW DUE TO MATRIX INTERFERENCE
28 POST-DIGESTION SPIKE FOR FURNACE AA ANALYSIS IS OUTSIDE OF THE CONTROL LIMITS (85-115%); HOWEVER, THE SAMPLE CONCENTRATION IS BELOW THE PQL
29 ANALYZED BY METHOD OF STANDARD ADDITIONS
30 METHOD PERFORMANCE STUDY HAS NOT BEEN COMPLETED/ND(NON-DETECTED)
31 FIELD MEASURED PARAMETER TAKEN BY CLIENT
32 TARGET ANALYTE IS BIODEGRADED AND/OR ENVIRONMENTALLY WEATHERED
33 NON-POTABLE WATER SOURCE
34 VOLATILE ASP CODES

(B)POSSIBLE/PROBABLE BLANK CONTAMINATION (D)ALL COMPOUNDS IDENTIFIED AT A SECONDARY DILUTION FACTOR (J)ESTIMATED VALUE
35 THE HYDROCARBONS DETECTED IN THE SAMPLE DID NOT CROSS-MATCH WITH COMMON PETROLEUM DISTILLATES
36 MATRIX INTERFERENCE CAUSING SPIKES TO RESULT IN LESS THAN 50.0% RECOVERY
37 MILLIGRAMS PER LITER (MG/L) / POUNDS (LBS) PER DAY
38 MILLIGRAMS PER LITER (MG/L) OF RESIDUAL CHLORINE (CL2) / POUNDS (LBS) PER DAY OF CL2
39 MICROGRAMS PER LITER (UG/L) / POUNDS (LBS) PER DAY
40 MILLIGRAMS PER LITER (MG/L) LINEAR ALKYL SULFONATE (LAS) / POUNDS (LBS) PER DAY LAS
41 RESULTS ARE REPORTED ON AN AS REC.D BASIS
42 THE SAMPLE WAS ANALYZED ON A TOTAL BASIS; THE TEST RESULT CAN BE COMPARED TO THE TCLP REGULATORY CRITERIA BY DIVIDING THE TEST RESULT BY 20, CREATING A THEORETICAL TCLP VALUE
43 METAL BY CONCENTRATION PROCEDURE
44 POSSIBLE CONTAMINATION FROM FIELD/LABORATORY

PARAMETER	CONF–7	CONF–8	CONF–9	CONF–10
Percent Solids	59%	70%	66%	74%
Aroclor 1016	<0.14ug/kg dw	<0.11ug/kg dw	<0.12ug/kg dw	<54ug/kg dw
Aroclor 1221	<0.14ug/kg dw	<0.11ug/kg dw	<0.12ug/kg dw	<54ug/kg dw
Aroclor 1232	<0.14ug/kg dw	<0.11ug/kg dw	<0.12ug/kg dw	<54ug/kg dw
Aroclor 1242	<0.14ug/kg dw	1400ug/kg dw	<0.12ug/kg dw	<54ug/kg dw
Aroclor 1248	<0.14ug/kg dw	<0.11ug/kg dw	<0.12ug/kg dw	<54ug/kg dw
Aroclor 1254	<0.14ug/kg dw	<0.11ug/kg dw	<0.12ug/kg dw	<54ug/kg dw
Aroclor 1260	<0.14ug/kg dw	<0.11ug/kg dw	<0.12ug/kg dw	<54ug/kg dw
Total PCB	<0.14ug/kg dw	1400ug/kg dw	<0.12ug/kg dw	<54ug/kg dw

#6 47

3559901Z - 015

№ 0083

1/6 hard

Earth Tech
2229 Tomlynn Street
Richmond, Virginia 23230
(804) 358-5400

CHAIN OF CUSTODY RECORD

PROJ. NO. 38340 | PROJECT NAME: Lackawanna Foundry

SAMPLERS: (Signature) J. Vernon J. Fitz

	STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	PCB (Volatiles)			REMARKS
012	Conf 7	12/20	1000		X	Sub-Soil PCB Trans	3 3202	X	(X)	(1)	(Soils)
013	Conf 8	12/20	1000		X	Furnace Area	3202	X	(X)	(1)	24 Hr TAT
014	Conf 9	12/20	1000		X	↓	3202	X	(X)	(1)	
015	Conf 10	12/20	1000		X		3202	X	(X)	(1)	

Fax Results To
Lance Aulick @
804-515-8307

Thank you

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	12/20 1100	[signature]			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		[signature]	12/21 0800		

ATTACHMENT G

May 15, 2000

To: Kevin Matheis, OSC
USEPA-Region II
Lackawanna Foundry Site
Lackawanna, New York

From: Mike Ingle, Field Chemist
Earth Tech

Cc: Lane Aulick, Disposal Coordinator
Vernon Wilson, Response Manager
Mark Kromis, QA/QC Manager
Earth Tech

Re: Suspect Arsenic Data at the Lackawanna Foundry Site

Various samples received from The Lackawanna Foundry Site at Upstate Laboratories on April 14, 2000 were analyzed for Trace Arsenic. One of these results was 14 mg/kg, which was near the site established action level of 20 mg/kg. The quality control (QC) parameters for the samples was low, therefore suggesting that the actual samples result might be biased high. After discussions with site T&D coordinator Lane Aulick, it was decided that a re-digestion and analysis of this sample, which is site sample designated as N20E0, would be appropriate to determine whether further site action is necessary for this sample designation. A sample aliquot was digested and analyzed on May 9, 2000 and produced results of 34 mg/kg and 27 mg/kg, respectively. Additional reruns of the digested aliquot on May 10, 2000 produced results of 34 mg/kg, 30 mg/kg, 26 mg/kg, respectively. After a review of the data with Mark Kromis, Earth Tech's QA/QC Manager, it was decided that the laboratory re-digest 3 separate sample aliquots in order to determine some statistical comparisons. These samples were analyzed on May 12, 2000 and produced results of 20 mg kg, 27 mg/kg, and 11 mg/kg, respectively. Using all the results listed with the exception of the original value of 14 mg/kg, an average value of 26.1 mg/kg was calculated with 29.2 %RSD between all the numbers.

ATTACHMENT H

Upstate Laboratories inc.

Shipping: 6034 Corporate Dr. • E. Syracuse, NY 13057-1017 • (315) 437-0255 • Fax (315) 437-1209
Mailing: Box 289 • Syracuse, NY 13206
Albany (518) 459-3134
Binghamton (607) 724-0478
Buffalo (716) 649-2533
Rochester (716) 436-9070
New Jersey (201) 703-1324

May 18, 2000

Ms. Lane Aulick
Earth Tech
7870 Villa Park Dr.
Suite 400
Richmond, VA 23228

Re: Analysis Report #12500017 - Lackawanna Foundry

Dear Ms. Aulick:

Please find enclosed the results for your samples which were picked up by ULI personnel on May 3, 2000.

We have included the Chain of Custody Record as part of your report. You may need to reference this form for a more detailed explanation of your sample. Samples will be disposed of approximately one month from final report date.

Should you have any questions, please feel free to give us a call.

Thank you for your patronage.

Sincerely,

UPSTATE LABORATORIES, INC.

Anthony J. Scala
Director

AJS/lw

Enclosures: report, spreadsheets, disk

cc/encs: N. Scala, ULI
file
M. Kromis, Earth Tech (category B deliverables sent on 5/10/00)

Note: Faxed results were given to your office and K. Matheis on 5/5/00. AJS

Disclaimer: The test results and procedures utilized, and laboratory interpretations of data obtained by ULI as contained in this report are believed by ULI to be accurate and reliable for sample(s) tested. In accepting this report, the customer agrees that the full extent of any and all liability for actual and consequential damages of ULI for the services performed shall be equal to the fee charged to the customer for the services as liquidated damages.

DATE: 05/18/00

Upstate Laboratories, Inc.
Analysis Results
Report Number: 12500017
Client I.D.: EARTH TECH

APPROVAL: QSD
QC: JD
Lab I.D.: 10170
Sampled by: Client

ID:12500017 Mat:Soil LACKAWANNA FOUNDRY LW-SS-01 0940H 05/03/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	95%	05/04/00		WD0102
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<1.7ug/kg dw	05/04/00		GA0057
Aroclor 1221	<1.7ug/kg dw	05/04/00		GA0057
Aroclor 1232	<1.7ug/kg dw	05/04/00		GA0057
Aroclor 1242	134ug/kg dw	05/04/00		GA0057
Aroclor 1248	<1.7ug/kg dw	05/04/00		GA0057
Aroclor 1254	<1.7ug/kg dw	05/04/00		GA0057
Aroclor 1260	<1.7ug/kg dw	05/04/00		GA0057
Total PCB	134ug/kg dw	05/04/00		GA0057

ID:12500018 Mat:Soil LACKAWANNA FOUNDRY LW-SS-02 1000H 05/03/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	69%	05/04/00		WD0102
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<170ug/kg dw	05/05/00	05	GA0057
Aroclor 1221	<170ug/kg dw	05/05/00	05	GA0057
Aroclor 1232	<170ug/kg dw	05/05/00	05	GA0057
Aroclor 1242	5800ug/kg dw	05/05/00		GA0057
Aroclor 1248	<170ug/kg dw	05/05/00	05	GA0057
Aroclor 1254	<170ug/kg dw	05/05/00	05	GA0057
Aroclor 1260	<170ug/kg dw	05/05/00	05	GA0057
Total PCB	5800ug/kg dw	05/05/00		GA0057

ID:12500019 Mat:Soil LACKAWANNA FOUNDRY LW-SS-03 1005H 05/03/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	68%	05/04/00		WD0102
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<170ug/kg dw	05/04/00	05	GA0057
Aroclor 1221	<170ug/kg dw	05/04/00	05	GA0057
Aroclor 1232	<170ug/kg dw	05/04/00	05	GA0057
Aroclor 1242	13,000ug/kg dw	05/04/00		GA0057
Aroclor 1248	<170ug/kg dw	05/04/00	05	GA0057
Aroclor 1254	<170ug/kg dw	05/04/00	05	GA0057
Aroclor 1260	<170ug/kg dw	05/04/00	05	GA0057
Total PCB	13,000ug/kg dw	05/04/00		GA0057

dw = Dry weight

KEY PAGE

1 MATRIX INTERFERENCE PRECLUDES LOWER DETECTION LIMITS
2 MATRIX INTERFERENCE
3 PRESENT IN BLANK
4 ANALYSIS NOT PERFORMED BECAUSE OF INSUFFICIENT SAMPLE
5 THE PRESENCE OF OTHER TARGET ANALYTE(S) PRECLUDES LOWER DETECTION LIMITS
6 BLANK CORRECTED
7 HEAD SPACE PRESENT IN SAMPLE
8 QUANTITATION LIMIT IS GREATER THAN THE CALCULATED REGULATORY LEVEL. THE QUANTITATION LIMIT THEREFORE BECOMES THE REGULATORY LEVEL.
9 THE OIL WAS TREATED AS A SOLID AND LEACHED WITH EXTRACTION FLUID
10 ADL(AVERAGE DETECTION LIMITS)
11 PQL(PRACTICAL QUANTITATION LIMITS)
12 SAMPLE ANALYZED OVER HOLDING TIME
13 DISSOLVED VALUE MAY BE HIGHER THAN TOTAL DUE TO CONTAMINATION FROM THE FILTERING PROCEDURE
14 SAMPLED BY ULI
15 DISSOLVED VALUE MAY BE HIGHER THAN TOTAL; HOWEVER, THE VALUES ARE WITHIN EXPERIMENTAL ERROR
16 AN INHIBITORY FACTOR WAS OBSERVED IN THIS ANALYSIS
17 PARAMETER NOT ANALYZED WITHIN 15 MINUTES OF SAMPLING
18 THE SERIAL DILUTION OF THIS SAMPLE SUGGESTS A POSSIBLE PHYSICAL AND/OR CHEMICAL INTERFERENT IN THIS DETERMINATION. THE DATA MAY BE BIASED EITHER HIGH OR LOW.
19 CALCULATION BASED ON DRY WEIGHT
20 INDICATES AN ESTIMATED VALUE, DETECTED BUT BELOW THE PRACTICAL QUANTITATION LIMITS
21 UG/KG AS REC.D / UG/KG DRY WT
22 MG/KG AS REC.D / MG/KG DRY WT
23 INSUFFICIENT SAMPLE PRECLUDES LOWER DETECTION LIMITS
24 SAMPLE DILUTED/BLANK CORRECTED
25 ND(NON-DETECTED)
26 MATRIX INTERFERENCE PRECLUDES LOWER DETECTION LIMITS/BLANK CORRECTED
27 SPIKE RECOVERY ABNORMALLY HIGH/LOW DUE TO MATRIX INTERFERENCE
28 POST-DIGESTION SPIKE FOR FURNACE AA ANALYSIS IS OUTSIDE OF THE CONTROL LIMITS (85-115%); HOWEVER, THE SAMPLE CONCENTRATION IS BELOW THE PQL
29 ANALYZED BY METHOD OF STANDARD ADDITIONS
30 METHOD PERFORMANCE STUDY HAS NOT BEEN COMPLETED/ND(NON-DETECTED)
31 FIELD MEASURED PARAMETER TAKEN BY CLIENT
32 TARGET ANALYTE IS BIODEGRADED AND/OR ENVIRONMENTALLY WEATHERED
33 NON-POTABLE WATER SOURCE
34 VOLATILE ASP CODES

(B)POSSIBLE/PROBABLE BLANK CONTAMINATION (D)ALL COMPOUNDS IDENTIFIED AT A SECONDARY DILUTION FACTOR (J)DETECTED BELOW THE CRQL
35 THE HYDROCARBONS DETECTED IN THE SAMPLE DID NOT CROSS-MATCH WITH COMMON PETROLEUM DISTILLATES
36 MATRIX INTERFERENCE CAUSING SPIKES TO RESULT IN LESS THAN 50.0% RECOVERY
37 MILLIGRAMS PER LITER (MG/L) / POUNDS (LBS) PER DAY
38 MILLIGRAMS PER LITER (MG/L) OF RESIDUAL CHLORINE (CL2) / POUNDS (LBS) PER DAY OF CL2
39 MICROGRAMS PER LITER (UG/L) / POUNDS (LBS) PER DAY
40 MILLIGRAMS PER LITER (MG/L) LINEAR ALKYL SULFONATE (LAS) / POUNDS (LBS) PER DAY LAS
41 RESULTS ARE REPORTED ON AN AS REC.D BASIS
42 THE SAMPLE WAS ANALYZED ON A TOTAL BASIS; THE TEST RESULT CAN BE COMPARED TO THE TCLP REGULATORY CRITERIA BY DIVIDING THE TEST RESULT BY 20, CREATING A THEORETICAL TCLP VALUE
43 METAL BY CONCENTRATION PROCEDURE
44 POSSIBLE CONTAMINATION FROM FIELD/LABORATORY

PARAMETER	LW-SS-01	LW-SS-02	LW-SS-03
Percent Solids	95%	69%	68%
Aroclor 1016	<1.7ug/kg dw	<170ug/kg dw	<170ug/kg dw
Aroclor 1221	<1.7ug/kg dw	<170ug/kg dw	<170ug/kg dw
Aroclor 1232	<1.7ug/kg dw	<170ug/kg dw	<170ug/kg dw
Aroclor 1242	134ug/kg dw	5800ug/kg dw	13,000ug/kg dw
Aroclor 1248	<1.7ug/kg dw	<170ug/kg dw	<170ug/kg dw
Aroclor 1254	<1.7ug/kg dw	<170ug/kg dw	<170ug/kg dw
Aroclor 1260	<1.7ug/kg dw	<170ug/kg dw	<170ug/kg dw
Total PCB	134ug/kg dw	5800ug/kg dw	13,000ug/kg dw

ACE No.:

PO No.:

125CC017-19

WESTON
MANAGERS ENGINEERS/CONSULTANTS

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019
Phone: 908-225-6116 Fax: 908-225-7037

MATRIX BOX NO.	PRESERVATIVE BOX NO.
1. Surface Water	1. HCl
2. Ground Water	2. HNO3
3. Leachate	3. Na2SO4
4. Rinsate	4. H2SO4
5. Soil/Sediment	5. Other (Specify)
6. Oil	6. Ice Only
7. Waste	N. Not Preserved
8. Other (Specify)	

5/5 HDD

Send verbal and written results to: Roy F. Weston, Inc., USEPA Region II START
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703
Attention: Smita Sumbaly, START Analytical Coordinator

Sample Number	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #)	RAS ANALYSIS VOA	BNA	PEST	PCBs	TAL	CN	RCRA ANALYSIS KIN	COR	REAC	Full TCLP % Solids	OTHER
1 LW-SS-01	4/03/00 0940	5	L	G				(1)	X						(x)	24 hr TAT
2 LW-SS-02	4/03/00 1000	5	L	G				(1)	X						(x)	
3 LW-SS-03	4/03/00 1005	5	L	G				(1)	X						(x)	Fax Results
																To
																Kevin Matheis
																(716-827-3036
																Mail Hard copy
																To USEPA
																Kevin Matheis
																3 Elm St
																Lackawanna, NY
																14218

Person Assuming Responsibility for Sample: DAVID L ADAMS — Time: 0940 — Date (MM/DD/YY): 4/3/00

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
All	David L Adams	1030	4/3/00	[signature]	Shipment To Lab.
Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
				[signature]	
Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
	[signature]	1730	5/3/00	[signature]	

CDL 5/4/00 0750

Roy F. Weston, Inc.
FEDERAL PROGRAMS DIVISION
In Association with Resource Applications, Inc., E.E. Sanitas Associates, PRC Environmental Management, C.C. Johnson & Malhotra, P.C., and GRB Environmental Services, Inc.

ATTACHMENT I

Upstate Laboratories inc.

Shipping: 6034 Corporate Dr. • E. Syracuse, NY 13057-1017 • (315) 437-0255 • Fax (315) 437-1209
Mailing: Box 289 • Syracuse, NY 13206
Albany (518) 459-3134
Binghamton (607) 724-0478
Buffalo (716) 649-2533
Rochester (716) 436-9070
New Jersey (201) 703-1324

May 18, 2000

1st Topsoil sample

Ms. Lane Aulick
Earth Tech
7870 Villa Park Dr.
Suite 400
Richmond, VA 23228

Re: Analysis Report #13100037 - 38340 Lackawanna Foundry

Dear Ms. Aulick:

Please find enclosed the results for your sample which was received on May 10, 2000.

We have included the Chain of Custody Record as part of your report. You may need to reference this form for a more detailed explanation of your sample. Samples will be disposed of approximately one month from final report date.

Should you have any questions, please feel free to give us a call.

Thank you for your patronage.

Sincerely,

UPSTATE LABORATORIES, INC.

Anthony J. Scala
Director

AJS/lw

Enclosures: report, spreadsheets, disk

cc/encs: N. Scala, ULI
file
M. Kromis, Earth Tech (category B deliverables to follow)

Note: Faxed results were given to your office and K. Matheis on 5/16 and 5/17/00. AJS

DATE: 05/18/00

Upstate Laboratories, Inc.
Analysis Results
Report Number: 13100037
Client I.D.: EARTH TECH
Sampled by:

APPROVAL: QSD
QC: AD
Lab I.D.: 10170
38340 LACKAWANNA
FOUNDRY 1ST STA MAIN ENTRANCE 05/09/00 G

ULI I.D.: 13100037
Matrix: Soil

	PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	87%	05/10/00		WD0174
Total	Aluminum	5400mg/kg dw	05/15/00		ME2805
Total	Antimony	<2mg/kg dw	05/15/00		ME2805
Total	Arsenic by furnace method	<2mg/kg dw	05/15/00		ME2805
Total	Barium	56mg/kg dw	05/15/00		ME2805
Total	Beryllium	<0.4mg/kg dw	05/15/00		ME2805
Total	Cadmium	1.3mg/kg dw	05/15/00		ME2805
Total	Calcium	2900mg/kg dw	05/15/00		ME2805
Total	Chromium	8.8mg/kg dw	05/15/00		ME2805
Total	Cobalt	3.0mg/kg dw	05/15/00		ME2805
Total	Copper	5.3mg/kg dw	05/15/00		ME2805
Total	Iron	10,000mg/kg dw	05/15/00		ME2805
Total	Lead	8.8mg/kg dw	05/15/00		ME2805
Total	Magnesium	1200mg/kg dw	05/15/00		ME2805
Total	Manganese	93mg/kg dw	05/15/00		ME2805
Total	Mercury	<0.3mg/kg dw	05/11/00		MB2123
Total	Nickel	7.8mg/kg dw	05/15/00		ME2805
Total	Potassium	490mg/kg dw	05/15/00		ME2805
Total	Selenium by furnace method	<0.6mg/kg dw	05/16/00		ME2807
Total	Silver	<2mg/kg dw	05/16/00		ME2[illegible]
Total	Sodium	230mg/kg dw	05/15/00		ME28[illegible]
Total	Thallium by furnace method	<2mg/kg dw	05/15/00		ME2805
Total	Vanadium	14mg/kg dw	05/15/00		ME2805
Total	Zinc	35mg/kg dw	05/15/00		ME2805
	TCL Volatiles by EPA Method 8260				
	Chloromethane	<3ug/kg dw	05/12/00		VM2880
	Bromomethane	<3ug/kg dw	05/12/00		VM2880
	Vinyl Chloride	<2ug/kg dw	05/12/00		VM2880
	Chloroethane	<3ug/kg dw	05/12/00		VM2880
	Methylene Chloride	19ug/kg dw	05/12/00	44	VM2880
	Acetone	<11ug/kg dw	05/12/00		VM2880
	Carbon Disulfide	<3ug/kg dw	05/12/00		VM2880
	1,1-Dichloroethene	<3ug/kg dw	05/12/00		VM2880
	1,1-Dichloroethane	<3ug/kg dw	05/12/00		VM2880
	trans-1,2-Dichloroethene	<3ug/kg dw	05/12/00		VM2880
	cis-1,2-Dichloroethene	<3ug/kg dw	05/12/00		VM2880
	Chloroform	<3ug/kg dw	05/12/00		VM2880
	1,2-Dichloroethane	<3ug/kg dw	05/12/00		VM2880
	2-Butanone	<11ug/kg dw	05/12/00		VM2880

dw = Dry weight

DATE: 05/18/00

Upstate Laboratories, Inc.
Analysis Results
Report Number: 13100037
Client I.D.: EARTH TECH
Sampled by:

APPROVAL: QD
QC: JD
Lab I.D.: 10170
38340 LACKAWANNA
FOUNDRY 1ST STA MAIN ENTRANCE 05/09/00 G

ULI I.D.: 13100037 Matrix: Soil

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
1,1,1-Trichloroethane	<3ug/kg dw	05/12/00		VM2880
Carbon Tetrachloride	<3ug/kg dw	05/12/00		VM2880
Bromodichloromethane	<3ug/kg dw	05/12/00		VM2880
1,2-Dichloropropane	<3ug/kg dw	05/12/00		VM2880
cis-1,3-Dichloropropene	<3ug/kg dw	05/12/00		VM2880
Trichloroethene	<3ug/kg dw	05/12/00		VM2880
Dibromochloromethane	<3ug/kg dw	05/12/00		VM2880
1,1,2-Trichloroethane	<3ug/kg dw	05/12/00		VM2880
Benzene	<3ug/kg dw	05/12/00		VM2880
trans-1,3-Dichloropropene	<3ug/kg dw	05/12/00		VM2880
Bromoform	<3ug/kg dw	05/12/00		VM2880
4-Methyl-2-pentanone	<11ug/kg dw	05/12/00		VM2880
2-Hexanone	<11ug/kg dw	05/12/00		VM2880
Tetrachloroethene	<3ug/kg dw	05/12/00		VM2880
1,1,2,2-Tetrachloroethane	<3ug/kg dw	05/12/00		VM2880
Toluene	<3ug/kg dw	05/12/00		VM2880
Chlorobenzene	<3ug/kg dw	05/12/00		VM2880
Ethylbenzene	<3ug/kg dw	05/12/00		VM2880
Styrene	<3ug/kg dw	05/12/00		VM2880
m-Xylene and p-Xylene	<3ug/kg dw	05/12/00		VM2880
o-Xylene	<3ug/kg dw	05/12/00		VM2880
TCL Semivolatiles by EPA Method 8270				
Phenol	<380ug/kg dw	05/16/00		SA2409
bis(2-Chloroethyl)ether	<380ug/kg dw	05/16/00		SA2409
2-Chlorophenol	<380ug/kg dw	05/16/00		SA2409
1,3-Dichlorobenzene	<380ug/kg dw	05/16/00		SA2409
1,4-Dichlorobenzene	<380ug/kg dw	05/16/00		SA2409
1,2-Dichlorobenzene	<380ug/kg dw	05/16/00		SA2409
2-Methylphenol	<380ug/kg dw	05/16/00		SA2409
2,2'-Oxybis(1-Chloropropane)	<380ug/kg dw	05/16/00		SA2409
4-Methylphenol	<380ug/kg dw	05/16/00		SA2409
n-Nitrosodi-n-propylamine	<380ug/kg dw	05/16/00		SA2409
Hexachloroethane	<380ug/kg dw	05/16/00		SA2409
Nitrobenzene	<380ug/kg dw	05/16/00		SA2409
Isophorone	<380ug/kg dw	05/16/00		SA2409
2-Nitrophenol	<380ug/kg dw	05/16/00		SA2409
2,4-Dimethylphenol	<380ug/kg dw	05/16/00		SA2409
bis(2-Chloroethoxy)methane	<380ug/kg dw	05/16/00		SA2409
2,4-Dichlorophenol	<380ug/kg dw	05/16/00		SA2409

dw = Dry weight

DATE: 05/18/00

Upstate Laboratories, Inc.
Analysis Results
Report Number: 13100037
Client I.D.: EARTH TECH
Sampled by:

APPROVAL: QS
QC: JD
Lab I.D.: 10170
38340 LACKAWANNA
FOUNDRY 1ST STA MAIN ENTRANCE 05/09/00 G

ULI I.D.: 13100037 Matrix: Soil

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
1,2,4-Trichlorobenzene	<380ug/kg dw	05/16/00		SA2409
Naphthalene	<380ug/kg dw	05/16/00		SA2409
4-Chloroaniline	<380ug/kg dw	05/16/00		SA2409
Hexachlorobutadiene	<380ug/kg dw	05/16/00		SA2409
4-Chloro-3-methylphenol	<380ug/kg dw	05/16/00		SA2409
2-Methylnaphthalene	<380ug/kg dw	05/16/00		SA2409
Hexachlorocyclopentadiene	<380ug/kg dw	05/16/00		SA2409
2,4,6-Trichlorophenol	<380ug/kg dw	05/16/00		SA2409
2,4,5-Trichlorophenol	<380ug/kg dw	05/16/00		SA2409
2-Chloronaphthalene	<380ug/kg dw	05/16/00		SA2409
2-Nitroaniline	<3800ug/kg dw	05/16/00		SA2409
Dimethylphthalate	<380ug/kg dw	05/16/00		SA2409
Acenaphthylene	<380ug/kg dw	05/16/00		SA2409
2,6-Dinitrotoluene	<380ug/kg dw	05/16/00		SA2409
3-Nitroaniline	<3800ug/kg dw	05/16/00		SA2409
Acenaphthene	<380ug/kg dw	05/16/00		SA2409
2,4-Dinitrophenol	<3800ug/kg dw	05/16/00		SA2409
4-Nitrophenol	<3800ug/kg dw	05/16/00		SA2409
Dibenzofuran	<380ug/kg dw	05/16/00		SA2409
2,4-Dinitrotoluene	<380ug/kg dw	05/16/00		SA2
Diethylphthalate	<380ug/kg dw	05/16/00		SA2409
4-Chlorophenylphenylether	<380ug/kg dw	05/16/00		SA2409
Fluorene	<380ug/kg dw	05/16/00		SA2409
4-Nitroaniline	<3800ug/kg dw	05/16/00		SA2409
2-Methyl-4,6-dinitrophenol	<3800ug/kg dw	05/16/00		SA2409
n-Nitrosodiphenylamine	<380ug/kg dw	05/16/00		SA2409
4-Bromophenylphenylether	<380ug/kg dw	05/16/00		SA2409
Hexachlorobenzene	<380ug/kg dw	05/16/00		SA2409
Pentachlorophenol	<760ug/kg dw	05/16/00		SA2409
Phenanthrene	<380ug/kg dw	05/16/00		SA2409
Anthracene	<380ug/kg dw	05/16/00		SA2409
Carbazole	<380ug/kg dw	05/16/00		SA2409
di-n-butylphthalate	<380ug/kg dw	05/16/00		SA2409
Fluoranthene	<380ug/kg dw	05/16/00		SA2409
Pyrene	<380ug/kg dw	05/16/00		SA2409
Butylbenzylphthalate	<380ug/kg dw	05/16/00		SA2409
3,3'-Dichlorobenzidine	<380ug/kg dw	05/16/00		SA2409
Benzo(a)anthracene	<380ug/kg dw	05/16/00		SA2409
Chrysene	<380ug/kg dw	05/16/00		SA2409
bis(2-Ethylhexyl)phthalate	<380ug/kg dw	05/16/00		SA2409

dw = Dry weight

DATE: 05/18/00

Upstate Laboratories, Inc.
Analysis Results
Report Number: 13100037
Client I.D.: EARTH TECH
Sampled by:

APPROVAL: QS
QC: JD
Lab I.D.: 10170
38340 LACKAWANNA
FOUNDRY 1ST STA MAIN ENTRANCE 05/09/00 G

ULI I.D.: 13100037 Matrix: Soil

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
di-n-octylphthalate	<380ug/kg dw	05/16/00		SA2409
Benzo(b)fluoranthene	<380ug/kg dw	05/16/00		SA2409
Benzo(k)fluoranthene	<380ug/kg dw	05/16/00		SA2409
Benzo(a)pyrene	<380ug/kg dw	05/16/00		SA2409
Indeno(1,2,3-cd)pyrene	<380ug/kg dw	05/16/00		SA2409
Dibenzo(a,h)anthracene	<380ug/kg dw	05/16/00		SA2409
Benzo(ghi)perylene	<380ug/kg dw	05/16/00		SA2409
TCL Pesticides by EPA Method 8080				
BHC (a-isomer)	<2.0ug/kg dw	05/17/00		GA0077
BHC (b-isomer)	<2.0ug/kg dw	05/17/00		GA0077
BHC (d-isomer)	<2.0ug/kg dw	05/17/00		GA0077
BHC (g-isomer)	<2.0ug/kg dw	05/17/00		GA0077
Heptachlor	<2.0ug/kg dw	05/17/00		GA0077
Aldrin	<2.0ug/kg dw	05/17/00		GA0077
Heptachlor Epoxide	<2.0ug/kg dw	05/17/00		GA0077
Endosulfan I	<2.0ug/kg dw	05/17/00		GA0077
Dieldrin	<3.8ug/kg dw	05/17/00		GA0077
4,4'-DDE	<3.8ug/kg dw	05/17/00		GA0077
Endrin	<3.8ug/kg dw	05/17/00		GA0077
Endosulfan II	<3.8ug/kg dw	05/17/00		GA0077
4,4'-DDD	<3.8ug/kg dw	05/17/00		GA0077
Endosulfan Sulfate	<3.8ug/kg dw	05/17/00		GA0077
4,4'-DDT	<3.8ug/kg dw	05/17/00		GA0077
Methoxychlor	<20ug/kg dw	05/17/00		GA0077
Endrin Ketone	<3.8ug/kg dw	05/17/00		GA0077
Endrin Aldehyde	<3.8ug/kg dw	05/17/00		GA0077
alpha-Chlordane	<2.0ug/kg dw	05/17/00		GA0077
gamma-Chlordane	<2.0ug/kg dw	05/17/00		GA0077
Toxaphene	<195ug/kg dw	05/17/00		GA0077

dw = Dry weight

KEY PAGE

1 MATRIX INTERFERENCE PRECLUDES LOWER DETECTION LIMITS
2 MATRIX INTERFERENCE
3 PRESENT IN BLANK
4 ANALYSIS NOT PERFORMED BECAUSE OF INSUFFICIENT SAMPLE
5 THE PRESENCE OF OTHER TARGET ANALYTE(S) PRECLUDES LOWER DETECTION LIMITS
6 BLANK CORRECTED
7 HEAD SPACE PRESENT IN SAMPLE
8 QUANTITATION LIMIT IS GREATER THAN THE CALCULATED REGULATORY LEVEL. THE QUANTITATION LIMIT THEREFORE BECOMES THE REGULATORY LEVEL.
9 THE OIL WAS TREATED AS A SOLID AND LEACHED WITH EXTRACTION FLUID
10 ADL(AVERAGE DETECTION LIMITS)
11 PQL(PRACTICAL QUANTITATION LIMITS)
12 SAMPLE ANALYZED OVER HOLDING TIME
13 DISSOLVED VALUE MAY BE HIGHER THAN TOTAL DUE TO CONTAMINATION FROM THE FILTERING PROCEDURE
14 SAMPLED BY ULI
15 DISSOLVED VALUE MAY BE HIGHER THAN TOTAL; HOWEVER, THE VALUES ARE WITHIN EXPERIMENTAL ERROR
16 AN INHIBITORY FACTOR WAS OBSERVED IN THIS ANALYSIS
17 PARAMETER NOT ANALYZED WITHIN 15 MINUTES OF SAMPLING
18 THE SERIAL DILUTION OF THIS SAMPLE SUGGESTS A POSSIBLE PHYSICAL AND/OR CHEMICAL INTERFERENT IN THIS DETERMINATION. THE DATA MAY BE BIASED EITHER HIGH OR LOW.
19 CALCULATION BASED ON DRY WEIGHT
20 INDICATES AN ESTIMATED VALUE, DETECTED BUT BELOW THE PRACTICAL QUANTITATION LIMITS
21 UG/KG AS REC.D / UG/KG DRY WT
22 MG/KG AS REC.D / MG/KG DRY WT
23 INSUFFICIENT SAMPLE PRECLUDES LOWER DETECTION LIMITS
24 SAMPLE DILUTED/BLANK CORRECTED
25 ND(NON-DETECTED)
26 MATRIX INTERFERENCE PRECLUDES LOWER DETECTION LIMITS/BLANK CORRECTED
27 SPIKE RECOVERY ABNORMALLY HIGH/LOW DUE TO MATRIX INTERFERENCE
28 POST-DIGESTION SPIKE FOR FURNACE AA ANALYSIS IS OUTSIDE OF THE CONTROL LIMITS (85-115%); HOWEVER, THE SAMPLE CONCENTRATION IS BELOW THE PQL
29 ANALYZED BY METHOD OF STANDARD ADDITIONS
30 METHOD PERFORMANCE STUDY HAS NOT BEEN COMPLETED/ND(NON-DETECTED)
31 FIELD MEASURED PARAMETER TAKEN BY CLIENT
32 TARGET ANALYTE IS BIODEGRADED AND/OR ENVIRONMENTALLY WEATHERED
33 NON-POTABLE WATER SOURCE
34 VOLATILE ASP CODES

(B)POSSIBLE/PROBABLE BLANK CONTAMINATION (D)ALL COMPOUNDS IDENTIFIED AT A SECONDARY DILUTION FACTOR (J)DETECTED BELOW THE CRQL
35 THE HYDROCARBONS DETECTED IN THE SAMPLE DID NOT CROSS-MATCH WITH COMMON PETROLEUM DISTILLATES
36 MATRIX INTERFERENCE CAUSING SPIKES TO RESULT IN LESS THAN 50.0% RECOVERY
37 MILLIGRAMS PER LITER (MG/L) / POUNDS (LBS) PER DAY
38 MILLIGRAMS PER LITER (MG/L) OF RESIDUAL CHLORINE (CL2) / POUNDS (LBS) PER DAY OF CL2
39 MICROGRAMS PER LITER (UG/L) / POUNDS (LBS) PER DAY
40 MILLIGRAMS PER LITER (MG/L) LINEAR ALKYL SULFONATE (LAS) / POUNDS (LBS) PER DAY LAS
41 RESULTS ARE REPORTED ON AN AS REC.D BASIS
42 THE SAMPLE WAS ANALYZED ON A TOTAL BASIS; THE TEST RESULT CAN BE COMPARED TO THE TCLP REGULATORY CRITERIA BY DIVIDING THE TEST RESULT BY 20, CREATING A THEORETICAL TCLP VALUE
43 METAL BY CONCENTRATION PROCEDURE
44 POSSIBLE CONTAMINATION FROM FIELD/LABORATORY

PARAMETER	1st Station Main Entrance
Percent Solids	87%
Total Aluminum	5400mg/kg dw
Total Antimony	<2mg/kg dw
Total Arsenic by furnace method	<2mg/kg dw
Total Barium	56mg/kg dw
Total Beryllium	<0.4mg/kg dw
Total Cadmium	1.3mg/kg dw
Total Calcium	2900mg/kg dw
Total Chromium	8.8mg/kg dw
Total Cobalt	3.0mg/kg dw
Total Copper	5.3mg/kg dw
Total Iron	10,000mg/kg dw
Total Lead	8.8mg/kg dw
Total Magnesium	1200mg/kg dw
Total Manganese	93mg/kg dw
Total Mercury	<0.3mg/kg dw
Total Nickel	7.8mg/kg dw
Total Potassium	490mg/kg dw
Total Selenium by furnace method	<0.6mg/kg dw
Total Silver	<2mg/kg dw
Total Sodium	230mg/kg dw
Total Thallium by furnace method	<2mg/kg dw
Total Vanadium	14mg/kg dw
Total Zinc	35mg/kg dw
Chloromethane	<3ug/kg dw
Bromomethane	<3ug/kg dw
Vinyl Chloride	<2ug/kg dw
Chloroethane	<3ug/kg dw
Methylene Chloride	19ug/kg dw
Acetone	<11ug/kg dw
Carbon Disulfide	<3ug/kg dw
1,1–Dichloroethene	<3ug/kg dw
1,1–Dichloroethane	<3ug/kg dw
trans–1,2–Dichloroethene	<3ug/kg dw
cis–1,2–Dichloroethene	<3ug/kg dw
Chloroform	<3ug/kg dw
1,2–Dichloroethane	<3ug/kg dw

PARAMETER	1st Station Main Entrance
2–Butanone	<11ug/kg dw
1,1,1–Trichloroethane	<3ug/kg dw
Carbon Tetrachloride	<3ug/kg dw
Bromodichloromethane	<3ug/kg dw
1,2–Dichloropropane	<3ug/kg dw
cis–1,3–Dichloropropene	<3ug/kg dw
Trichloroethene	<3ug/kg dw
Dibromochloromethane	<3ug/kg dw
1,1,2–Trichloroethane	<3ug/kg dw
Benzene	<3ug/kg dw
trans–1,3–Dichloropropene	<3ug/kg dw
Bromoform	<3ug/kg dw
4–Methyl–2–pentanone	<11ug/kg dw
2–Hexanone	<11ug/kg dw
Tetrachloroethene	<3ug/kg dw
1,1,2,2–Tetrachloroethane	<3ug/kg dw
Toluene	<3ug/kg dw
Chlorobenzene	<3ug/kg dw
Ethylbenzene	<3ug/kg dw
Styrene	<3ug/kg dw
m–Xylene and p–Xylene	<3ug/kg dw
o–Xylene	<3ug/kg dw
Phenol	<380ug/kg dw
bis(2–Chloroethyl)ether	<380ug/kg dw
2–Chlorophenol	<380ug/kg dw
1,3–Dichlorobenzene	<380ug/kg dw
1,4–Dichlorobenzene	<380ug/kg dw
1,2–Dichlorobenzene	<380ug/kg dw
2–Methylphenol	<380ug/kg dw
2,2'–Oxybis(1–Chloropropane)	<380ug/kg dw
4–Methylphenol	<380ug/kg dw
n–Nitrosodi–n–propylamine	<380ug/kg dw
Hexachloroethane	<380ug/kg dw
Nitrobenzene	<380ug/kg dw
Isophorone	<380ug/kg dw
2–Nitrophenol	<380ug/kg dw
2,4–D(thylphenol	<380ug/kg dw

PARAMETER	1st Station Main Entrance
bis(2–Chloroethoxy)methane	<380ug/kg dw
2,4–Dichlorophenol	<380ug/kg dw
1,2,4–Trichlorobenzene	<380ug/kg dw
Naphthalene	<380ug/kg dw
4–Chloroaniline	<380ug/kg dw
Hexachlorobutadiene	<380ug/kg dw
4–Chloro–3–methylphenol	<380ug/kg dw
2–Methylnaphthalene	<380ug/kg dw
Hexachlorocyclopentadiene	<380ug/kg dw
2,4,6–Trichlorophenol	<380ug/kg dw
2,4,5–Trichlorophenol	<380ug/kg dw
2–Chloronaphthalene	<380ug/kg dw
2–Nitroaniline	<3800ug/kg dw
Dimethylphthalate	<380ug/kg dw
Acenaphthylene	<380ug/kg dw
2,6–Dinitrotoluene	<380ug/kg dw
3–Nitroaniline	<3800ug/kg dw
Acenaphthene	<380ug/kg dw
2,4–Dinitrophenol	<3800ug/kg dw
4–Nitrophenol	<3800ug/kg dw
Dibenzofuran	<380ug/kg dw
2,4–Dinitrotoluene	<380ug/kg dw
Diethylphthalate	<380ug/kg dw
4–Chlorophenylphenylether	<380ug/kg dw
Fluorene	<380ug/kg dw
4–Nitroaniline	<3800ug/kg dw
2–Methyl–4,6–dinitrophenol	<3800ug/kg dw
n–Nitrosodiphenylamine	<380ug/kg dw
4–Bromophenylphenylether	<380ug/kg dw
Hexachlorobenzene	<380ug/kg dw
Pentachlorophenol	<760ug/kg dw
Phenanthrene	<380ug/kg dw
Anthracene	<380ug/kg dw
Carbazole	<380ug/kg dw
di–n–butylphthalate	<380ug/kg dw
Fluoranthene	<380ug/kg dw
Pyrene	<380ug/kg dw

PARAMETER	1st Station Main Entrance
Butylbenzylphthalate	<380ug/kg dw
3,3'-Dichlorobenzidine	<380ug/kg dw
Benzo(a)anthracene	<380ug/kg dw
Chrysene	<380ug/kg dw
bis(2-Ethylhexyl)phthalate	<380ug/kg dw
di-n-octylphthalate	<380ug/kg dw
Benzo(b)fluoranthene	<380ug/kg dw
Benzo(k)fluoranthene	<380ug/kg dw
Benzo(a)pyrene	<380ug/kg dw
Indeno(1,2,3-cd)pyrene	<380ug/kg dw
Dibenzo(a,h)anthracene	<380ug/kg dw
Benzo(ghi)perylene	<380ug/kg dw
BHC (a-isomer)	<2.0ug/kg dw
BHC (b-isomer)	<2.0ug/kg dw
BHC (d-isomer)	<2.0ug/kg dw
BHC (g-isomer)	<2.0ug/kg dw
Heptachlor	<2.0ug/kg dw
Aldrin	<2.0ug/kg dw
Heptachlor Epoxide	<2.0ug/kg dw
Endosulfan I	<2.0ug/kg dw
Dieldrin	<3.8ug/kg dw
4,4'-DDE	<3.8ug/kg dw
Endrin	<3.8ug/kg dw
Endosulfan II	<3.8ug/kg dw
4,4'-DDD	<3.8ug/kg dw
Endosulfan Sulfate	<3.8ug/kg dw
4,4'-DDT	<3.8ug/kg dw
Methoxychlor	<20ug/kg dw
Endrin Ketone	<3.8ug/kg dw
Endrin Aldehyde	<3.8ug/kg dw
alpha-Chlordane	<2.0ug/kg dw
gamma-Chlordane	<2.0ug/kg dw
Toxaphene	<195ug/kg dw

13100031

№ 5/16 HDD

Earth Tech
2229 Tomlynn Street
Richmond, Virginia 23230
(804) 358-5400

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
38340	Lackawanna Foundry

SAMPLERS: *(Signature)* [signature]

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	Total metal	Total organic	Total Pesticide	% Solids		REMARKS
Top soil	5/9/00			X	1st station, main entrance	(4)	X	X	X	X		72 hour TAT
												Fax Results
												TB
												716-827-3036
												Kevin Mathis

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
[signature]	5/9/00 5:00pm				
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)* K. Crump	Date / Time 5/10/00 1030	Remarks	

Upstate Laboratories inc.

Shipping: 6034 Corporate Dr. • E. Syracuse, NY 13057-1017 • (315) 437-0255 • Fax (315) 437-1209
Mailing: Box 289 • Syracuse, NY 13206
Albany (518) 459-3134
Binghamton (607) 724-0478
Buffalo (716) 649-2533
Rochester (716) 436-9070
New Jersey (201) 703-1324

June 28, 2000

Ms. Lane Aulick
Earth Tech
7870 Villa Park Dr.
Suite 400
Richmond, VA 23228

2nd Back Fill/
Topsoil Sample

Re: Analysis Report #16400197 - 38340 Lackawanna Foundry

Dear Ms. Aulick:

Please find enclosed the results for your sample which was picked up by ULI personnel on June 9, 2000.

We have included the Chain of Custody Record as part of your report. You may need to reference this form for a more detailed explanation of your sample. Samples will be disposed of approximately one month from final report date.

Should you have any questions, please feel free to give us a call.

Thank you for your patronage.

Sincerely,

UPSTATE LABORATORIES, INC.

Anthony J. Scala
Director

AJS/lw

Enclosures: report, spreadsheets, disk

cc/encs: N. Scala, ULI
file
K. Matheis, USEPA-Region 2 (copy report, copy spreadsheets)
M. Kromis, Earth Tech (data deliverables to follow)

Note: Faxed results were given to your office and K. Matheis, USEPA-Region 2 previous to this report. AJS

Disclaimer: The test results and procedures utilized, and laboratory interpretations of data obtained by ULI as contained in this report are believed by ULI to be accurate and reliable for sample(s) tested. In accepting this report, the customer agrees that the full extent of any and all liability for actual and consequential damages of ULI for the services performed shall be equal to the fee charged to the customer for the services as liquidated damages.

DATE: 06/28/00

Upstate Laboratories, Inc.
Analysis Results
Report Number: 16400197
Client I.D.: EARTH TECH
Sampled by:

APPROVAL: QD
QC: JD
Lab I.D.: 10170
38340 LACKAWANNA
FOUNDRY PARISOS TOP SOIL BACK 1430H 05/24/00 C

ULI I.D.: 16400197 Matrix: Soil

	PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	85%	06/13/00		WD0579
Total	Aluminum	5000mg/kg dw	06/20/00		ME2883
Total	Antimony	<36mg/kg dw	06/20/00		ME2883
Total	Arsenic by furnace method	<1.2mg/kg dw	06/20/00		ME2883
Total	Barium	60mg/kg dw	06/20/00		ME2883
Total	Beryllium	<0.59mg/kg dw	06/20/00		ME2883
Total	Cadmium	0.74mg/kg dw	06/20/00		ME2883
Total	Calcium	5100mg/kg dw	06/20/00		ME2883
Total	Chromium	7.3mg/kg dw	06/20/00		ME2883
Total	Cobalt	<5.9mg/kg dw	06/20/00		ME2883
Total	Copper	6.9mg/kg dw	06/20/00		ME2883
Total	Iron	6900mg/kg dw	06/20/00		ME2883
Total	Lead	<12mg/kg dw	06/20/00		ME2883
Total	Magnesium	1800mg/kg dw	06/20/00		ME2883
Total	Manganese	120mg/kg dw	06/20/00		ME2883
Total	Mercury	<0.3mg/kg dw	06/20/00		MB2494
Total	Nickel	7.6mg/kg dw	06/20/00		ME2883
Total	Potassium	730mg/kg dw	06/20/00		ME2883
Total	Selenium by furnace method	5.7mg/kg dw	06/20/00		ME2883
Total	Silver	<6.0mg/kg dw	06/20/00		ME2883
Total	Sodium	240mg/kg dw	06/20/00		ME2883
Total	Thallium by furnace method	<0.35mg/kg dw	06/20/00		ME2883
Total	Vanadium	<36mg/kg dw	06/20/00		ME2883
Total	Zinc	38mg/kg dw	06/20/00		ME2883
	PCB (Aroclors) by EPA Method 8080				
	Aroclor 1016	<2.0ug/kg dw	06/13/00		GA0136
	Aroclor 1221	<2.0ug/kg dw	06/13/00		GA0136
	Aroclor 1232	<2.0ug/kg dw	06/13/00		GA0136
	Aroclor 1242	<2.0ug/kg dw	06/13/00		GA0136
	Aroclor 1248	<2.0ug/kg dw	06/13/00		GA0136
	Aroclor 1254	<2.0ug/kg dw	06/13/00		GA0136
	Aroclor 1260	<2.0ug/kg dw	06/13/00		GA0136
	Total PCB	<2.0ug/kg dw	06/13/00		GA0136
	TCL Pesticides by EPA Method 8080				
	BHC (a-isomer)	<2.0ug/kg dw	06/13/00		GA0136
	BHC (b-isomer)	<2.0ug/kg dw	06/13/00		GA0136
	BHC (d-isomer)	<2.0ug/kg dw	06/13/00		GA0136
	BHC (g-isomer)	<2.0ug/kg dw	06/13/00		GA0136

dw = Dry weight

DATE: 06/28/00

Upstate Laboratories, Inc.
Analysis Results
Report Number: 16400197
Client I.D.: EARTH TECH
Sampled by:

APPROVAL:
QC:
Lab I.D.: 10170
38340 LACKAWANNA
FOUNDRY PARISOS TOP SOIL BACK 1430H 05/24/00 C

ULI I.D.: 16400197 Matrix: Soil

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Heptachlor	<2.0ug/kg dw	06/13/00		GA0136
Aldrin	<2.0ug/kg dw	06/13/00		GA0136
Heptachlor Epoxide	<2.0ug/kg dw	06/13/00		GA0136
Endosulfan I	<2.0ug/kg dw	06/13/00		GA0136
Dieldrin	<3.9ug/kg dw	06/13/00		GA0136
4,4'-DDE	8.9ug/kg dw	06/13/00		GA0136
Endrin	<3.9ug/kg dw	06/13/00		GA0136
Endosulfan II	<3.9ug/kg dw	06/13/00		GA0136
4,4'-DDD	<3.9ug/kg dw	06/13/00		GA0136
Endosulfan Sulfate	<3.9ug/kg dw	06/13/00		GA0136
4,4'-DDT	6.4ug/kg dw	06/13/00		GA0136
Methoxychlor	<20ug/kg dw	06/13/00		GA0136
Endrin Ketone	<3.9ug/kg dw	06/13/00		GA0136
Endrin Aldehyde	<3.9ug/kg dw	06/13/00		GA0136
alpha-Chlordane	<2.0ug/kg dw	06/13/00		GA0136
gamma-Chlordane	<2.0ug/kg dw	06/13/00		GA0136
Toxaphene	<200ug/kg dw	06/13/00		GA0136

dw = Dry weight

PARAMETER	TS-001 Parisos Top Soil Backup
Percent Solids	85%
Total Aluminum	5000mg/kg dw
Total Antimony	<36mg/kg dw
Total Arsenic by furnace method	<1.2mg/kg dw
Total Barium	60mg/kg dw
Total Beryllium	<0.59mg/kg dw
Total Cadmium	0.74mg/kg dw
Total Calcium	5100mg/kg dw
Total Chromium	7.3mg/kg dw
Total Cobalt	<5.9mg/kg dw
Total Copper	6.9mg/kg dw
Total Iron	6900mg/kg dw
Total Lead	<12mg/kg dw
Total Magnesium	1800mg/kg dw
Total Manganese	120mg/kg dw
Total Mercury	<0.3mg/kg dw
Total Nickel	7.6mg/kg dw
Total Potassium	730mg/kg dw
Total Selenium by furnace method	5.7mg/kg dw
Total Silver	<6.0mg/kg dw
Total Sodium	240mg/kg dw
Total Thallium by furnace method	<0.35mg/kg dw
Total Vanadium	<36mg/kg dw
Total Zinc	38mg/kg dw
Aroclor 1016	<2.0ug/kg dw
Aroclor 1221	<2.0ug/kg dw
Aroclor 1232	<2.0ug/kg dw
Aroclor 1242	<2.0ug/kg dw
Aroclor 1248	<2.0ug/kg dw
Aroclor 1254	<2.0ug/kg dw
Aroclor 1260	<2.0ug/kg dw
Total PCB	<2.0ug/kg dw
BHC (a-isomer)	<2.0ug/kg dw
BHC (b-isomer)	<2.0ug/kg dw
BHC (d-isomer)	<2.0ug/kg dw
BHC (g-isomer)	<2.0ug/kg dw
Heptachlor	<2.0ug/kg dw

PARAMETER	TS–001 Parisos Top Soil Backup
Aldrin	<2.0ug/kg dw
Heptachlor Epoxide	<2.0ug/kg dw
Endosulfan I	<2.0ug/kg dw
Dieldrin	<3.9ug/kg dw
4,4'–DDE	8.9ug/kg dw
Endrin	<3.9ug/kg dw
Endosulfan II	<3.9ug/kg dw
4,4'–DDD	<3.9ug/kg dw
Endosulfan Sulfate	<3.9ug/kg dw
4,4'–DDT	6.4ug/kg dw
Methoxychlor	<20ug/kg dw
Endrin Ketone	<3.9ug/kg dw
Endrin Aldehyde	<3.9ug/kg dw
alpha–Chlordane	<2.0ug/kg dw
gamma–Chlordane	<2.0ug/kg dw
Toxaphene	<200ug/kg dw

1640011 1 | 6/20 | № TS-003

Earth Tech
2229 Tomlynn Street
Richmond, Virginia 23230
(804) 358-5400

CHAIN OF CUSTODY RECORD

PROJ. NO. 38340 | PROJECT NAME: LackAwanna FoundDry

SAMPLERS: (Signature) J. Kevin Mathers

STA NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	Total Metals	BCB	Total Pesticides	% Solids	REMARKS
197 TS-001	5/24/00	1430	X		Parsons Dp Soil Backup	(1)	X	X	X	(X)	7 day TAT
											Please fax the Results To Kevin Mathers @ 716-827-3036 & Lane Aulick @ 804-379-8207
					After June 16th Mail The Hard copy To USEPA Reg II With Kevin Mathers 1114 W Huron St Room 1114 Buffalo NY 14202						Fax To 716-551-9744
											Mail a hard copy To USEPA Reg II attn Kevin Mathers 3 Elm St Lackawanna NY 14218

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
J. Kevin Mathers	6/9/00 0730			6/9/00 1000	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) K Crump	Date / Time 6/9/00 1610	Remarks	

ATTACHMENT J

The Haseley Companies
10315 LOCKPORT ROAD
P.O. BOX 212 L.P.O.
NIAGARA FALLS N.Y. 14304
[redacted]

LETTER OF TRANSMITTAL

DATE:	13-May-00	JOB NO.:	9901
ATTENTION:	Mr. Vernon Wilson		
RE:	Gratwick - Riverside Park		
	Hydric Soil		

TO Earth Tech, Inc.
3 Elm Street
Lackawana, N.Y. 14218

☐ HASELEY TRUCKING CO.
■ HASELEY CONSTRUCTION CO.
☐ HASELEY CONSULTANTS/CONSTRUCTORS

GENTLEMEN:

WE ARE SENDING YOU ■ Attached ☐ Under separate cover via _____ the following items

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ Reports ☐ Permits ■ Test Results

COPIES	DATE	NO.	DESCRIPTION
1			ANALYTICAL TEST DATA (BUCKHORN HYDRIC SOIL)

THESE ARE TRANSMITTED as checked below

☐ For Approval ☐ Approved as submitted ☐ Resubmit_____copies for approval
■ For your use ☐ Approved as noted ☐ Submit_____copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review ☐ _____

☐ FOR BIDS DUE_____19____

REMARKS:

PLEASE CONTACT ME @ 694-4755 IF YOU HAVE ANY QUESTIONS

COPY TO: JOB BOOK / TRANSLTR.

SIGNED:

WILLIAM L. BEY
PROJECT ENGINEER

CHEMICAL ANALYSIS
HYDRIC SOIL
(EPA TEST)

Committed To *Your* Success

Severn Trent Laboratories
10 Hazelwood Drive
Suite 106
Amherst, New York 14228-2298

Tel: (716) 691-2600
Fax: (716) 691-7991

July 31, 1999

Mr. David Birch
GZA GeoEnvironmental
364 Nagel Drive
Buffalo, New York 14225

RE: Analytical Results

Dear Mr. Birch:

Enclosed are analytical results concerning the samples recently submitted. The pertinent information regarding these analyses is listed below:

Quote #:	NY99-237
Project:	HYDRIX SOIL Samples
Matrix:	Soil; Water
Samples Received:	07/02/99
Sample Date:	06/02/99

If you have any questions concerning this data, please contact me at (716) 691-2600 and refer to the I.D. number listed below. It has been our pleasure to provide GZA GeoEnvironmental with environmental testing services. We look forward to serving you in the future.

Sincerely,

Severn Trent Laboratories, Inc

Kenneth P. Kinecki
Program Manager

DOCUMENT APPROVAL / REVIEW
☑ APPROVED
☐ APPROVED AS NOTED
☐ NOT APPROVED
☐ REVISE AND RESUBMIT
☐ REVIEWED FOR CONCEPT
BY
DATE 11/22/99

KPK/rtv
Enclosure

I.D. #A99-4287
#NY9A8465

This report contains 11 pages which are individually numbered.

STL
Committed To *Your* Success

ANALYTICAL RESULTS

Prepared For:

GZA GeoEnvironmental
364 Nagel Drive
Buffalo, New York 14225

Prepared By:

Severn Trent Laboratories, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14228-2298

METHODOLOGY

The specific methodology employed in obtaining the enclosed analytical results is indicated on the specific data table. The method number presented refers to the following U.S. Environmental Protection Agency reference:

- "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods" (SW-846), Third Edition, September 1994, U.S. Environmental Protection Agency Office of Solid Waste.

COMMENTS

Comments pertain to data on one or all pages of this report.

The enclosed data has been reported utilizing data qualifiers (Q) as defined on the Organic and Inorganic Data Comment Pages.

METHOD 8260 DATA

The VBLK19 exhibited positive results for Methylene chloride. Affected samples are flagged with "B" qualifiers

No other deviations from protocol were encountered during the analytical procedures.

METHOD 8270 DATA

The Method Blank exhibited positive results for Bis(2-ethylhexyl) phthalate. Affected samples are flagged with "B" qualifiers

Sample 07029-1A was analyzed at a dilution factor of 5 due to matrix interference.

No other deviations from protocol were encountered during the analytical procedures.

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METHOD 8081 DATA

Sample 07029-1A was analyzed at a dilution factor of 4 due to high levels of target compounds.

No other deviations from protocol were encountered during the analytical procedures.

METHOD 8082 DATA

No deviations from protocol were encountered during the analytical procedures.

METALS DATA

The Method Blank (A9B0622401) exhibited results for Mercury. However, all sample results were greater than ten (10) times that of the Method Blank.

The Method Blank (A9B0631702) exhibited results for Lead, Calcium, Manganese, and Zinc. However, all sample results were greater than ten (10) times that of the Method Blank.

Sample 07029-1A exhibited spike recovery results outside quality control limits for Aluminum, Antimony, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Nickel, Selenium, Silver, Thallium, Vanadium, and Zinc. The samples were redigested and reanlayzed, and exhibited similar spike recoveries. This suggests matrix interference.

No other deviations from protocol were encountered during the analytical procedures.

WET CHEMISTRY DATA

No deviations from protocol were encountered during the analytical procedures.

ORGANIC DATA COMMENT PAGE

Laboratory Name: SEVERN TRENT LABORATORIES INC.

USEPA Defined Organic Data Qualifiers:

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimate value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as in the sample.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

T - This flag is used when the analyte is found in the associated TCLP extraction blank as well as in the sample.

N - Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

P - This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form I and flagged with a "P".

A - This flag indicates that a TIC is a suspected aldol-condensation product.

INORGANIC DATA COMMENT PAGE

Laboratory Name: SEVERN TRENT LABORATORIES, INC.

USEPA Defined Inorganic Data Qualifiers:

B	-	Indicates a value greater than or equal to the instrument detection limit, but less than the contract required detection limit.
U	-	Indicates compound was analyzed for but not detected. Report with the detection limit value (e.g., 100).
N	-	Indicates spike sample recovery is not within the control limits.
K	-	Indicates the post digestion spike recovery is not within the control limits.
*	-	Indicates duplicate analysis is not within the control limits.
S	-	Indicates value determined by the Method of Standard Addition.
+	-	Indicates the correlation coefficient for the Method of Standard Addition is less than 0.995.
M	-	Indicates duplicate injection results exceeded control limits.
W	-	Post digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
E	-	Indicates a value estimated or not reported due to the presence of interference.

Sample Data Package

Sample ID: 07029-1A
Lab ID: A9428701
Date Collected: 07/02/1999
Time Collected: 16:00

Date Received: 07/02/1999
Project No: NY9A8465
Client No: L11085
Site No:

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analys
Naphthalene	ND		390	UG/KG	8270	07/21/99 13:49	RCS
2-Nitroaniline	ND		1600	UG/KG	8270	07/21/99 13:49	RCS
3-Nitroaniline	ND		1600	UG/KG	8270	07/21/99 13:49	RCS
4-Nitroaniline	ND		1600	UG/KG	8270	07/21/99 13:49	RCS
Nitrobenzene	ND		390	UG/KG	8270	07/21/99 13:49	RCS
2-Nitrophenol	ND		780	UG/KG	8270	07/21/99 13:49	RCS
4-Nitrophenol	ND		1600	UG/KG	8270	07/21/99 13:49	RCS
N-nitrosodiphenylamine	ND		390	UG/KG	8270	07/21/99 13:49	RCS
N-Nitroso-Di-n-propylamine	ND		390	UG/KG	8270	07/21/99 13:49	RCS
Pentachlorophenol	ND		1600	UG/KG	8270	07/21/99 13:49	RCS
Phenanthrene	ND		390	UG/KG	8270	07/21/99 13:49	RCS
Phenol	ND		390	UG/KG	8270	07/21/99 13:49	RCS
Pyrene	ND		390	UG/KG	8270	07/21/99 13:49	RCS
1,2,4-Trichlorobenzene	ND		390	UG/KG	8270	07/21/99 13:49	RCS
2,4,5-Trichlorophenol	ND		800	UG/KG	8270	07/21/99 13:49	RCS
2,4,6-Trichlorophenol	ND		780	UG/KG	8270	07/21/99 13:49	RCS
SOIL-SW8463 8260 - TCL VOLATILES							
Acetone	ND		10	UG/KG	8260	07/08/99 17:24	
Benzene	ND		5	UG/KG	8260	07/08/99 17:24	
Bromodichloromethane	ND		5	UG/KG	8260	07/08/99 17:24	
Bromoform	ND		5	UG/KG	8260	07/08/99 17:24	
Bromomethane	ND		10	UG/KG	8260	07/08/99 17:24	
2-Butanone	ND		10	UG/KG	8260	07/08/99 17:24	
Carbon Disulfide	ND		5	UG/KG	8260	07/08/99 17:24	
Carbon Tetrachloride	ND		5	UG/KG	8260	07/08/99 17:24	
Chlorobenzene	ND		5	UG/KG	8260	07/08/99 17:24	
Chloroethane	ND		10	UG/KG	8260	07/08/99 17:24	
Chloroform	ND		5	UG/KG	8260	07/08/99 17:24	
Chloromethane	ND		10	UG/KG	8260	07/08/99 17:24	
Dibromochloromethane	ND		5	UG/KG	8260	07/08/99 17:24	
1,1-Dichloroethane	ND		5	UG/KG	8260	07/08/99 17:24	
1,2-Dichloroethane	ND		5	UG/KG	8260	07/08/99 17:24	
1,1-Dichloroethene	ND		5	UG/KG	8260	07/08/99 17:24	
1,2-Dichloroethene (Total)	ND		10	UG/KG	8260	07/08/99 17:24	
1,2-Dichloropropane	ND		5	UG/KG	8260	07/08/99 17:24	
cis-1,3-Dichloropropene	ND		5	UG/KG	8260	07/08/99 17:24	
trans-1,3-Dichloropropene	ND		5	UG/KG	8260	07/08/99 17:24	
Ethylbenzene	ND		5	UG/KG	8260	07/08/99 17:24	
2-Hexanone	ND		10	UG/KG	8260	07/08/99 17:24	
Methylene chloride	17	B	5	UG/KG	8260	07/08/99 17:24	
4-Methyl-2-pentanone	ND		10	UG/KG	8260	07/08/99 17:24	
Styrene	ND		5	UG/KG	8260	07/08/99 17:24	
1,1,2,2-Tetrachloroethane	ND		5	UG/KG	8260	07/08/99 17:24	
Tetrachloroethene	ND		5	UG/KG	8260	07/08/99 17:24	
Toluene	ND		5	UG/KG	8260	07/08/99 17:24	
1,1,1-Trichloroethane	ND		5	UG/KG	8260	07/08/99 17:24	
1,1,2-Trichloroethane	ND		5	UG/KG	8260	07/08/99 17:24	
Trichloroethene	ND		5	UG/KG	8260	07/08/99 17:24	
Vinyl acetate	ND		10	UG/KG	8260	07/08/99 17:24	

Sample ID: 07029-1A
Lab ID: A9428701
Date Collected: 07/02/1999
Time Collected: 16:00

Date Received: 07/02/1999
Project No: NY9A8465
Client No: L11085
Site No:

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analys
Vinyl chloride	ND		10	UG/KG	8260	07/08/99 17:24	
Total Xylenes	ND		15	UG/KG	8260	07/08/99 17:24	
SOIL-SW8463 8082 - PCBS							
Aroclor 1016	ND		40	UG/KG	8082	07/10/99 12:01	BJ
Aroclor 1221	ND		80	UG/KG	8082	07/10/99 12:01	BJ
Aroclor 1232	ND		40	UG/KG	8082	07/10/99 12:01	BJ
Aroclor 1242	ND		40	UG/KG	8082	07/10/99 12:01	BJ
Aroclor 1248	ND		40	UG/KG	8082	07/10/99 12:01	BJ
Aroclor 1254	4.0	J	40	UG/KG	8082	07/10/99 12:01	BJ
Aroclor 1260	ND		40	UG/KG	8082	07/10/99 12:01	BJ
SOIL-SW8463 8081 - TCL PESTICIDES							
Aldrin	ND		8.0	UG/KG	8081	07/23/99 06:43	KEA
alpha-BHC	ND		8.0	UG/KG	8081	07/23/99 06:43	KEA
beta-BHC	ND		8.0	UG/KG	8081	07/23/99 06:43	KEA
gamma-BHC (Lindane)	ND		8.0	UG/KG	8081	07/23/99 06:43	KEA
delta-BHC	ND		8.0	UG/KG	8081	07/23/99 06:43	KEA
Chlordane	ND		80	UG/KG	8081	07/23/99 06:43	KEA
4,4'-DDD	ND		16	UG/KG	8081	07/23/99 06:43	KEA
4,4'-DDE	ND		16	UG/KG	8081	07/23/99 06:43	KEA
4,4'-DDT	ND		16	UG/KG	8081	07/23/99 06:43	KEA
Dieldrin	ND		16	UG/KG	8081	07/23/99 06:43	KE
Endosulfan I	ND		16	UG/KG	8081	07/23/99 06:43	KE
Endosulfan II	ND		16	UG/KG	8081	07/23/99 06:43	KE
Endosulfan Sulfate	ND		16	UG/KG	8081	07/23/99 06:43	KE
Endrin	ND		16	UG/KG	8081	07/23/99 06:43	KE
Endrin aldehyde	ND		32	UG/KG	8081	07/23/99 06:43	KE
Heptachlor	ND		8.0	UG/KG	8081	07/23/99 06:43	KE
Heptachlor epoxide	ND		8.0	UG/KG	8081	07/23/99 06:43	KE
Methoxychlor	ND		80	UG/KG	8081	07/23/99 06:43	KE
Toxaphene	ND		160	UG/KG	8081	07/23/99 06:43	KE
Metals Analysis							
Aluminum - Total	4620		2.3	MG/KG	6010	07/16/99 18:53	JI
Antimony - Total	ND		0.47	MG/KG	6010	07/16/99 18:53	JI
Arsenic - Total	3.1		0.29	MG/KG	6010	07/16/99 18:53	JI
Barium - Total	23.0		0.12	MG/KG	6010	07/16/99 18:53	JI
Beryllium - Total	0.42		0.12	MG/KG	6010	07/16/99 18:53	JI
Cadmium - Total	0.093		0.058	MG/KG	6010	07/16/99 18:53	JI
Calcium - Total	10400		2.3	MG/KG	6010	07/16/99 18:53	JI
Chromium - Total	6.6		0.14	MG/KG	6010	07/16/99 18:53	JI
Cobalt - Total	4.9		0.12	MG/KG	6010	07/16/99 18:53	JI
Copper - Total	11.8		0.17	MG/KG	6010	07/16/99 18:53	JI
Iron - Total	9880		2.3	MG/KG	6010	07/16/99 18:53	J
Lead - Total	7.4		0.19	MG/KG	6010	07/16/99 18:53	J
Magnesium - Total	5770		2.3	MG/KG	6010	07/16/99 18:53	J
Manganese - Total	129		0.12	MG/KG	6010	07/16/99 18:53	J
Mercury - Total	ND		0.040	MG/KG	7471	07/13/99 13:00	M
Nickel - Total	12.3		0.15	MG/KG	6010	07/16/99 18:53	J

00000

Sample ID: 07029-1A
Lab ID: A9428701
Date Collected: 07/02/1999
Time Collected: 16:00

Date Received: 07/02/1999
Project No: NY9A8465
Client No: L11085
Site No:

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analys
Potassium - Total	691		17.5	MG/KG	6010	07/16/99 18:53	JWT
Selenium - Total	ND		0.47	MG/KG	6010	07/16/99 18:53	JWT
Silver - Total	ND		0.17	MG/KG	6010	07/16/99 18:53	JWT
Sodium - Total	82.8		29.1	MG/KG	6010	07/16/99 18:53	JWT
Thallium - Total	1.4		0.62	MG/KG	6010	07/16/99 18:53	JWT
Vanadium - Total	9.0		0.14	MG/KG	6010	07/16/99 18:53	JWT
Zinc - Total	41.6		0.12	MG/KG	6010	07/16/99 18:53	JWT
Wet Chemistry Analysis							
Leachable Phosphorous	ND		0.20	UG/G	365.2	07/13/99	MA
Leachable pH	7.66		0.00000	S.U.	9045	07/09/99	TB
Leachable Total Organic Carbon	718		200	UG/G	9060	07/20/99	PGE
SHAKE EXTRACTION OF SOLID WASTE WITH WATER	ND		0	INVALID	D 3987-85	07/13/99	KMS

Sample ID: 07029-1A (L)
Lab ID: A9428702
Date Collected: 07/02/1999
Time Collected: 16:00

Date Received: 07/02/1999
Project No: NY9A8465
Client No: L11085
Site No:

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analys
Wet Chemistry Analysis							
Nitrate	2.6		0.050	MG N/L	9200	07/14/99	DPA
Redox Potential	205		0	M.VOLTS	D-1498-76	07/16/99	PGE

Chronology and QC Summary Package

Date: 07/31/1999
Time: 10:40:50

Rept: AN0326

HYDRIX SOIL Samples
METHOD 8260 - TCL VOLATILE ORGANICS

Client ID		VBLK19							
Job No	Lab ID	A99-4287	A9428703						
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acetone	UG/KG	ND	10	NA		NA		NA	
Benzene	UG/KG	ND	5	NA		NA		NA	
Bromodichloromethane	UG/KG	ND	5	NA		NA		NA	
Bromoform	UG/KG	ND	5	NA		NA		NA	
Bromomethane	UG/KG	ND	10	NA		NA		NA	
2-Butanone	UG/KG	ND	10	NA		NA		NA	
Carbon Disulfide	UG/KG	ND	5	NA		NA		NA	
Carbon Tetrachloride	UG/KG	ND	5	NA		NA		NA	
Chlorobenzene	UG/KG	ND	5	NA		NA		NA	
Chloroethane	UG/KG	ND	10	NA		NA		NA	
Chloroform	UG/KG	ND	5	NA		NA		NA	
Chloromethane	UG/KG	ND	10	NA		NA		NA	
Dibromochloromethane	UG/KG	ND	5	NA		NA		NA	
1,1-Dichloroethane	UG/KG	ND	5	NA		NA		NA	
1,2-Dichloroethane	UG/KG	ND	5	NA		NA		NA	
1,1-Dichloroethene	UG/KG	ND	5	NA		NA		NA	
1,2-Dichloroethene (Total)	UG/KG	ND	10	NA		NA		NA	
1,2-Dichloropropane	UG/KG	ND	5	NA		NA		NA	
cis-1,3-Dichloropropene	UG/KG	ND	5	NA		NA		NA	
trans-1,3-Dichloropropene	UG/KG	ND	5	NA		NA		NA	
Ethylbenzene	UG/KG	ND	5	NA		NA		NA	
2-Hexanone	UG/KG	ND	10	NA		NA		NA	
Methylene chloride	UG/KG	4 .	5	NA		NA		NA	
4-Methyl-2-pentanone	UG/KG	ND	10	NA		NA		NA	
Styrene	UG/KG	ND	5	NA		NA		NA	
1,1,2,2-Tetrachloroethane	UG/KG	ND	5	NA		NA		NA	
Tetrachloroethene	UG/KG	ND	5	NA		NA		NA	
Toluene	UG/KG	ND	5	NA		NA		NA	
1,1,1-Trichloroethane	UG/KG	ND	5	NA		NA		NA	
1,1,2-Trichloroethane	UG/KG	ND	5	NA		NA		NA	
Trichloroethene	UG/KG	ND	5	NA		NA		NA	
Vinyl acetate	UG/KG	ND	10	NA		NA		NA	
Vinyl chloride	UG/KG	ND	10	NA		NA		NA	
Total Xylenes	UG/KG	ND	15	NA		NA		NA	
IS/SURROGATE(S)									
Chlorobenzene-D5	%	94	50-200	NA		NA		NA	
1,4-Difluorobenzene	%	91	50-200	NA		NA		NA	
1,4-Dichlorobenzene-D4	%	75	50-200	NA		NA		NA	
Toluene-D8	%	98	72-116	NA		NA		NA	
p-Bromofluorobenzene	%	89	72-121	NA		NA		NA	
1,2-Dichloroethane-D4	%	113	52-157	NA		NA		NA	

Date: 07/31/1990
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HYDRIX SOIL Samples
METHOD 8270 - TCL SEMI-VOLATILE ORGANICS

Client ID		Method Blank							
Job No	Lab ID	A99-4287	A9B0610902						
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acenaphthene	UG/KG	ND	330	NA		NA		NA	
Acenaphthylene	UG/KG	ND	330	NA		NA		NA	
Anthracene	UG/KG	ND	330	NA		NA		NA	
Benzo(a)anthracene	UG/KG	ND	330	NA		NA		NA	
Benzo(b)fluoranthene	UG/KG	ND	330	NA		NA		NA	
Benzo(k)fluoranthene	UG/KG	ND	330	NA		NA		NA	
Benzo(ghi)perylene	UG/KG	ND	330	NA		NA		NA	
Benzo(a)pyrene	UG/KG	ND	330	NA		NA		NA	
Benzoic acid	UG/KG	ND	1600	NA		NA		NA	
Benzyl alcohol	UG/KG	ND	330	NA		NA		NA	
Bis(2-chloroethoxy) methane	UG/KG	ND	330	NA		NA		NA	
Bis(2-chloroethyl) ether	UG/KG	ND	330	NA		NA		NA	
2,2'-Oxybis(1-chloropropane)	UG/KG	ND	330	NA		NA		NA	
Bis(2-ethylhexyl) phthalate	UG/KG	22 J	330	NA		NA		NA	
4-Bromophenyl phenyl ether	UG/KG	ND	330	NA		NA		NA	
Butyl benzyl phthalate	UG/KG	ND	330	NA		NA		NA	
4-Chloroaniline	UG/KG	ND	330	NA		NA		NA	
4-Chloro-3-methylphenol	UG/KG	ND	330	NA		NA		NA	
2-Chloronaphthalene	UG/KG	ND	330	NA		NA		NA	
2-Chlorophenol	UG/KG	ND	330	NA		NA		NA	
4-Chlorophenyl phenyl ether	UG/KG	ND	330	NA		NA		NA	
Chrysene	UG/KG	ND	330	NA		NA		NA	
Dibenzo(a,h)anthracene	UG/KG	ND	330	NA		NA		NA	
Dibenzofuran	UG/KG	ND	330	NA		NA		NA	
Di-n-butyl phthalate	UG/KG	ND	330	NA		NA		NA	
1,2-Dichlorobenzene	UG/KG	ND	330	NA		NA		NA	
1,3-Dichlorobenzene	UG/KG	ND	330	NA		NA		NA	
1,4-Dichlorobenzene	UG/KG	ND	330	NA		NA		NA	
3,3'-Dichlorobenzidine	UG/KG	ND	660	NA		NA		NA	
2,4-Dichlorophenol	UG/KG	ND	330	NA		NA		NA	
Diethyl phthalate	UG/KG	ND	330	NA		NA		NA	
2,4-Dimethylphenol	UG/KG	ND	330	NA		NA		NA	
Dimethyl phthalate	UG/KG	ND	330	NA		NA		NA	
4,6-Dinitro-2-methylphenol	UG/KG	ND	1600	NA		NA		NA	
2,4-Dinitrophenol	UG/KG	ND	1600	NA		NA		NA	
2,4-Dinitrotoluene	UG/KG	ND	330	NA		NA		NA	
2,6-Dinitrotoluene	UG/KG	ND	330	NA		NA		NA	
Di-n-octyl phthalate	UG/KG	ND	330	NA		NA		NA	
Fluoranthene	UG/KG	ND	330	NA		NA		NA	
Fluorene	UG/KG	ND	330	NA		NA		NA	
Hexachlorobenzene	UG/KG	ND	330	NA		NA		NA	
Hexachlorobutadiene	UG/KG	ND	330	NA		NA		NA	
Hexachlorocyclopentadiene	UG/KG	ND	330	NA		NA		NA	

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HYDRIX SOIL Samples
METHOD 8270 - TCL SEMI-VOLATILE ORGANICS

Client ID Job No Lab ID Sample Date		Method Blank A99-4287 A9B0610902							
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Hexachloroethane	UG/KG	ND	330	NA		NA		NA	
Indeno(1,2,3-cd)pyrene	UG/KG	ND	330	NA		NA		NA	
Isophorone	UG/KG	ND	330	NA		NA		NA	
2-Methylnaphthalene	UG/KG	ND	330	NA		NA		NA	
2-Methylphenol	UG/KG	ND	330	NA		NA		NA	
4-Methylphenol	UG/KG	ND	330	NA		NA		NA	
Naphthalene	UG/KG	ND	330	NA		NA		NA	
2-Nitroaniline	UG/KG	ND	1600	NA		NA		NA	
3-Nitroaniline	UG/KG	ND	1600	NA		NA		NA	
4-Nitroaniline	UG/KG	ND	1600	NA		NA		NA	
Nitrobenzene	UG/KG	ND	330	NA		NA		NA	
2-Nitrophenol	UG/KG	ND	330	NA		NA		NA	
4-Nitrophenol	UG/KG	ND	1600	NA		NA		NA	
N-Nitrosodiphenylamine	UG/KG	ND	330	NA		NA		NA	
N-Nitroso-Di-n-propylamine	UG/KG	ND	330	NA		NA		NA	
Pentachlorophenol	UG/KG	ND	1600	NA		NA		NA	
Phenanthrene	UG/KG	ND	330	NA		NA		NA	
Phenol	UG/KG	ND	330	NA		NA		NA	
Pyrene	UG/KG	ND	330	NA		NA		NA	
1,2,4-Trichlorobenzene	UG/KG	ND	330	NA		NA		NA	
2,4,5-Trichlorophenol	UG/KG	ND	800	NA		NA		NA	
2,4,6-Trichlorophenol	UG/KG	ND	330	NA		NA		NA	
SURROGATE RECOVERIES/SURROGATE(S)									
1,4-Dichlorobenzene-D4	%	115	50-200	NA		NA		NA	
Naphthalene-D8	%	122	50-200	NA		NA		NA	
Acenaphthene-D10	%	112	50-200	NA		NA		NA	
Phenanthrene-D10	%	107	50-200	NA		NA		NA	
Chrysene-D12	%	114	50-200	NA		NA		NA	
Perylene-D12	%	92	50-200	NA		NA		NA	
Nitrobenzene-D5	%	69	20-114	NA		NA		NA	
Terphenyl-D14	%	78	31-125	NA		NA		NA	
2-Fluorobiphenyl	%	70	38-116	NA		NA		NA	
2-Fluorophenol	%	34	23-105	NA		NA		NA	
Phenol-D5	%	26	18-105	NA		NA		NA	
2,4,6-Tribromophenol	%	98	25-122	NA		NA		NA	

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HYDRIX SOIL Samples
METHOD 8082 - POLYCHLORINATED BIPHENYLS

Client ID Job No Sample Date	Lab ID	Method Blank A99-4287	A980610302						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aroclor 1016	UG/KG	ND	40	NA		NA		NA	
Aroclor 1221	UG/KG	ND	80	NA		NA		NA	
Aroclor 1232	UG/KG	ND	40	NA		NA		NA	
Aroclor 1242	UG/KG	ND	40	NA		NA		NA	
Aroclor 1248	UG/KG	ND	40	NA		NA		NA	
Aroclor 1254	UG/KG	ND	40	NA		NA		NA	
Aroclor 1260	UG/KG	ND	40	NA		NA		NA	
SURROGATE(S)									
Tetrachloro-m-xylene	%	80	53-137	NA		NA		NA	
Decachlorobiphenyl	%	96	50-150	NA		NA		NA	

STL Buff

00001500

Date: 07/31/1999
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HYDRIX SOIL Samples
METHOD 8081 - TCL PESTICIDES

Client ID Job No Sample Date	Lab ID	Method Blank A99-4287	A980626603						
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aldrin	UG/KG	ND	8.0	NA		NA		NA	
alpha-BHC	UG/KG	ND	8.0	NA		NA		NA	
beta-BHC	UG/KG	ND	8.0	NA		NA		NA	
gamma-BHC (Lindane)	UG/KG	ND	8.0	NA		NA		NA	
delta-BHC	UG/KG	ND	8.0	NA		NA		NA	
Chlordane	UG/KG	ND	80	NA		NA		NA	
4,4'-DDD	UG/KG	ND	16	NA		NA		NA	
4,4'-DDE	UG/KG	ND	16	NA		NA		NA	
4,4'-DDT	UG/KG	ND	16	NA		NA		NA	
Dieldrin	UG/KG	ND	16	NA		NA		NA	
Endosulfan I	UG/KG	ND	16	NA		NA		NA	
Endosulfan II	UG/KG	ND	16	NA		NA		NA	
Endosulfan Sulfate	UG/KG	ND	16	NA		NA		NA	
Endrin	UG/KG	ND	16	NA		NA		NA	
Endrin aldehyde	UG/KG	ND	32	NA		NA		NA	
Heptachlor	UG/KG	ND	8.0	NA		NA		NA	
Heptachlor epoxide	UG/KG	ND	8.0	NA		NA		NA	
Methoxychlor	UG/KG	ND	80	NA		NA		NA	
Toxaphene	UG/KG	ND	160	NA		NA		NA	
SURROGATE(S)									
Tetrachloro-m-xylene	%	78	30-130	NA		NA		NA	
Decachlorobiphenyl	%	91	21-169	NA		NA		NA	

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HYDRIX SOIL Samples
GZA-SW8463 - TAL METALS

Client ID Job No Sample Date	Lab ID	Method Blank A99-4287	A9B0622401	Method Blank A99-4287 07/15/1999	A9B0631702				
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aluminum - Total	MG/KG	NA		ND	2.0	NA		NA	
Antimony - Total	MG/KG	NA		ND	0.40	NA		NA	
Iron - Total	MG/KG	NA		ND	2.0	NA		NA	
Magnesium - Total	MG/KG	NA		ND	2.0	NA		NA	
Potassium - Total	MG/KG	NA		ND	15.0	NA		NA	
Sodium - Total	MG/KG	NA		ND	25.0	NA		NA	
Vanadium - Total	MG/KG	NA		ND	0.12	NA		NA	
Thallium - Total	MG/KG	NA		ND	0.53	NA		NA	
Lead - Total	MG/KG	NA		0.24	0.16	NA		NA	
Calcium - Total	MG/KG	NA		6.3	2.0	NA		NA	
Barium - Total	MG/KG	NA		ND	0.10	NA		NA	
Arsenic - Total	MG/KG	NA		ND	0.25	NA		NA	
Beryllium - Total	MG/KG	NA		ND	0.10	NA		NA	
Cobalt - Total	MG/KG	NA		ND	0.10	NA		NA	
Manganese - Total	MG/KG	NA		5.4	0.10	NA		NA	
Mercury - Total	MG/KG	ND	0.033	NA		NA		NA	
Nickel - Total	MG/KG	NA		ND	0.13	NA		NA	
Selenium - Total	MG/KG	NA		ND	0.40	NA		NA	
Silver - Total	MG/KG	NA		ND	0.15	NA		NA	
Zinc - Total	MG/KG	NA		1.6	0.10	NA		NA	

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HYDRIX SOIL Samples
GZA-SW8463 - TAL METALS

Client ID		07029-1A		07029-1A		LCS		LCS CLP Soils	
Job No	Lab ID	A99-4287	A9428701MD	A99-4287	A9428701MS	A99-4287	A9B0622402	A99-4287	A9B0631701
Sample Date		07/02/1999		07/02/1999				07/15/1999	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Aluminum - Total	MG/KG	4970	2.4	5200	2.3	NA		3000	2.0
Antimony - Total	MG/KG	ND	0.49	21.5	0.46	NA		21.4	0.40
Arsenic - Total	MG/KG	3.3	0.30	42.6	0.29	NA		110	0.25
Barium - Total	MG/KG	23.9	0.12	69.1	0.11	NA		136	0.099
Beryllium - Total	MG/KG	0.44	0.12	39.8	0.11	NA		52.5	0.099
Cadmium - Total	MG/KG	0.11	0.061	40.5	0.057	NA		NA	
Calcium - Total	MG/KG	11400	2.4	20700	2.3	NA		768	2.0
Chromium - Total	MG/KG	7.4	0.15	44.7	0.14	NA		NA	
Cobalt - Total	MG/KG	5.3	0.12	43.6	0.11	NA		47.8	0.099
Copper - Total	MG/KG	12.8	0.18	53.6	0.17	NA		NA	
Iron - Total	MG/KG	10600	2.4	10300	2.3	NA		4510	2.0
Lead - Total	MG/KG	7.4	0.19	45.9	0.18	NA		45.4	0.16
Magnesium - Total	MG/KG	6180	2.4	13400	2.3	NA		697	2.0
Manganese - Total	MG/KG	136	0.12	199	0.11	NA		169	0.099
Mercury - Total	MG/KG	ND	0.040	0.77	0.040	2.3	0.32	NA	
Nickel - Total	MG/KG	12.6	0.16	49.6	0.15	NA		42.9	0.13
Potassium - Total	MG/KG	687	18.2	3080	17.2	NA		910	14.8
Selenium - Total	MG/KG	ND	0.49	35.7	0.46	NA		77.2	0.40
Silver - Total	MG/KG	ND	0.18	42.0	0.17	NA		36.8	0.15
Sodium - Total	MG/KG	98.2	30.4	2500	28.7	NA		840	24.7
Thallium - Total	MG/KG	1.6	0.64	42.2	0.61	NA		60.7	0.52
Vanadium - Total	MG/KG	9.8	0.15	49.4	0.14	NA		61.0	0.12
Zinc - Total	MG/KG	40.9	0.12	73.9	0.11	NA		125	0.15

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HYDRIX SOIL Samples
WET CHEMISTRY ANALYSIS

Client ID Job No Lab ID Sample Date		Method Blank A99-4287 A9B0624804		Method Blank A99-4287 A9B0630504		Method Blank A99-4287 A9B0652504			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Leachable Phosphorous	UG/G	ND	0.20	NA		NA		NA	
Nitrate	MG N/L	NA		ND	0.050	NA		NA	
Leachable Total Organic Carbon	UG/G	NA		NA		ND	200	NA	

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HYDRIX SOIL Samples
WET CHEMISTRY ANALYSIS

Client ID		LCS		LCS		LCS		LCS	
Job No	Lab ID	A99-4287	A9B0614501	A99-4287	A9B0624801	A99-4287	A9B0630501	A99-4287	A9B0635201
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Leachable pH	S.U.	7.03	0.00000	NA		NA		NA	
Leachable Phosphorous	UG/G	NA		16.2	0.20	NA		NA	
Nitrate	MG N/L	NA		NA		2.4	0.050	NA	
Redox Potential	M.VOLTS	NA		NA		NA		228	0

Client ID		LCS		Matrix Spike B		Matrix Spike B		Matrix Spike B	
Job No	Lab ID	A99-4287	A9B0652501	A99-4287	A9B0624802	A99-4287	A9B0630502	A99-4287	A9B0652502
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Leachable Total Organic Carbon	UG/G	11400	200	NA		NA		1940	200
Leachable Phosphorous	UG/G	NA		9.6	0.20	NA		NA	
Nitrate	MG N/L	NA		NA		1.0	0.050	NA	

Client ID		Matrix Spike B		Matrix Spike B		Matrix Spike B			
Job No	Lab ID	A99-4287	A9B0624803	A99-4287	A9B0630503	A99-4287	A9B0652503		
Sample Date									
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Leachable Phosphorous	UG/G	10.6	0.20	NA		NA		NA	
Nitrate	MG N/L	NA		1.0	0.050	NA		NA	
Leachable Total Organic Carbon	UG/G	NA		NA		1920	200	NA	

SDG: HYDRIX

Client Sample ID:	VBLK19	MSB19
Lab Sample ID:	A9428703	A9428704

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
METHOD 8260 - TCL VOLATILE ORGANICS					
1,1-Dichloroethene	UG/KG	60.9	50.0	122	64-147
Trichloroethene	UG/KG	47.1	50.0	94	66-126
Benzene	UG/KG	54.0	50.0	108	66-129
Toluene	UG/KG	48.9	50.0	98	61-124
Chlorobenzene	UG/KG	49.5	50.0	99	65-117

* Indicates result is outside QC Limits

SDG: HYDRIX

Client Sample ID: Method Blank
Lab Sample ID: A9B0610902

Matrix Spike Blank
A9B0610901

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
METHOD 8270 - TCL SEMI-VOLATILE ORGANICS					
Phenol	UG/KG	2031	3311	61	40-114
2-Chlorophenol	UG/KG	2205	3311	66	40-115
1,4-Dichlorobenzene	UG/KG	1923	3311	58	28-104
N-Nitroso-Di-n-propylamine	UG/KG	2541	3311	77	47-104
1,2,4-Trichlorobenzene	UG/KG	2156	3311	65	49-107
4-Chloro-3-methylphenol	UG/KG	2417	3311	73	51-129
Acenaphthene	UG/KG	2385	3311	72	52-104
4-Nitrophenol	UG/KG	2780	3311	84	47-114
2,4-Dinitrotoluene	UG/KG	2672	3311	81	60-114
Pentachlorophenol	UG/KG	2872	3311	87	57-141
Pyrene	UG/KG	2767	3311	84	59-128

* Indicates Result is outside QC Limits

SDG: HYDRIX
Client Sample ID: Method Blank
Lab Sample ID: A9B0610302

Matrix Spike Blank
A9B0610301

Analyte	Units of Measure	Concentration Blank Spike	Spike Amount	% Recovery Blank Spike	QC LIMITS
METHOD 8082 - POLYCHLORINATED BIPHENYLS					
Aroclor 1254	UG/KG	162	164	99	57-134

* Indicates Result is outside QC Limits

SDG: HYDRIX

Client Sample ID: Method Blank | Matrix Spike Blank | Matrix Spike Blk Dup
Lab Sample ID: A9B0626603 | A9B0626601 | A9B0626602

Analyte	Units of Measure	Concentration		Spike Amount		% Recovery			%	QC LIMITS	
		Spike Blank	Spike Blank Dup	SB	SBD	SB	SBD	Avg	RPD	RPD	REC.
METHOD 8081 - TCL PESTICIDES											
Aldrin	UG/KG	32.9	26.3	32.8	32.5	100	81	91	21	30.0	48-128
alpha-BHC	UG/KG	31.9	25.4	32.8	32.5	97	78	88	22	30.0	47-123
beta-BHC	UG/KG	33.3	27.0	32.8	32.5	101	83	92	20	30.0	56-129
delta-BHC	UG/KG	31.9	25.3	32.8	32.5	97	78	88	22	30.0	52-127
gamma-BHC (Lindane)	UG/KG	32.6	26.1	32.8	32.5	99	80	90	21	30.0	47-124
4,4'-DDD	UG/KG	34.8	27.7	32.8	32.5	106	85	96	22	30.0	52-133
4,4'-DDE	UG/KG	34.4	27.3	32.8	32.5	105	84	95	22	30.0	54-136
4,4'-DDT	UG/KG	34.6	27.4	32.8	32.5	105	84	95	22	30.0	59-148
Dieldrin	UG/KG	35.7	28.4	32.8	32.5	109	88	99	21	30.0	51-132
Endosulfan I	UG/KG	32.0	25.8	32.8	32.5	98	80	89	20	30.0	52-132
Endosulfan II	UG/KG	34.9	27.9	32.8	32.5	106	86	96	21	30.0	54-135
Endosulfan Sulfate	UG/KG	33.7	27.0	32.8	32.5	103	83	93	22	30.0	52-136
Endrin aldehde	UG/KG	30.9	25.3	32.8	32.5	94	78	86	19	30.0	37-123
Endrin	UG/KG	35.3	28.1	32.8	32.5	108	86	97	23	30.0	61-132
Heptachlor	UG/KG	33.2	26.9	32.8	32.5	101	83	92	20	30.0	53-127
Heptachlor epoxide	UG/KG	34.4	27.8	32.8	32.5	105	86	96	20	30.0	55-128
Methoxychlor	UG/KG	36.0	29.2	32.8	32.5	110	90	100	20	30.0	72-180

* Indicates Result is outside QC Limits

GZA GEOENVIRONMENTAL, INC. SOIL ANALYSES
SAMPLE DATE 07/02/99

SDG: HYDRIX
Client Sample ID: 07029-1A 07029-1A
Lab Sample ID: A9428701 A9428701MS

Analyte	Units of Measure	Concentration Sample	Concentration Matrix Spike	Spike Amount	% Recovery MS	QC LIMITS
GZA-SW8463 - TAL METALS						
TOTAL ANTIMONY	MG/KG	0	21.47	57.5	37 *	80-120
TOTAL ARSENIC	MG/KG	3.08	42.62	57.5	68 *	80-120
TOTAL BARIUM	MG/KG	22.99	69.06	57.5	80	80-120
TOTAL BERYLLIUM	MG/KG	0.419	39.81	57.5	68 *	80-120
TOTAL CADMIUM	MG/KG	0.0932	40.54	57.5	70 *	80-120
TOTAL CHROMIUM	MG/KG	6.59	44.69	57.5	66 *	80-120
TOTAL COBALT	MG/KG	4.87	43.63	57.5	67 *	80-120
TOTAL COPPER	MG/KG	11.80	53.65	57.5	72 *	80-120
TOTAL LEAD	MG/KG	7.35	45.88	57.5	67 *	80-120
TOTAL MANGANESE	MG/KG	129.2	198.6	57.5	120 *	80-120
TOTAL MERCURY	MG/KG	U	0.773	0.80	96	80-120
TOTAL NICKEL	MG/KG	2.31	49.56	57.5	64 *	80-120
TOTAL SELENIUM	MG/KG	0	35.66	57.5	62 *	80-120
TOTAL SILVER	MG/KG	0.0349	41.97	57.5	72 *	80-120
TOTAL THALLIUM	MG/KG	1.44	42.19	57.5	70 *	80-120
TOTAL VANADIUM	MG/KG	9.01	49.40	57.5	70 *	80-120
TOTAL ZINC	MG/KG	41.56	73.94	57.5	56 *	80-120

* Indicates [illegible] is outside QC Limits
NC = Not Calculated ND = Not Calculated

Date : 07/31/99 10:44
Job No: A99-4287

Rept: AN0364

GZA GEOENVIRONMENTAL, INC. SOIL ANALYSES

SDG: HYDRIX

Client Sample ID: Method Blank | Matrix Spike Blank | Matrix Spike Blk Dup
Lab Sample ID: A9B0624804 | A9B0624802 | A9B0624803

Analyte	Units of Measure	Concentration		Spike Amount		% Recovery			% RPD	QC LIMITS RPD	QC LIMITS REC.
		Spike Blank	Spike Blank Dup	SB	SBD	SB	SBD	Avg			
WET CHEMISTRY ANALYSIS											
METHOD 365.2 - LEACHABLE PHOSPHORUS	UG/G	9.60	10.60	10	10	96	106	101	10	20.0	89-124

* Indicates Result is outside QC Limits

000026

STL Buffalo

SDG: HYDRIX

Client Sample ID:	Method Blank	Matrix Spike Blank	Matrix Spike Blk Dup
Lab Sample ID:	A9B0630504	A9B0630502	A9B0630503

Analyte	Units of Measure	Concentration		Spike Amount		% Recovery			% RPD	QC LIMITS	
		Spike Blank	Spike Blank Dup	SB	SBD	SB	SBD	Avg		RPD	REC.
WET CHEMISTRY ANALYSIS											
METHOD 9200 NITRATE	MG N/L	1.00	1.00	1.0	1.0	100	100	100	0	20.0	74-122

* Indicates result is outside QC Limits

SDG: HYDRIX

	Method Blank	Matrix Spike Blank	Matrix Spike Blk Dup
Client Sample ID:	Method Blank	Matrix Spike Blank	Matrix Spike Blk Dup
Lab Sample ID:	A9B0652504	A9B0652502	A9B0652503

Analyte	Units of Measure	Concentration		Spike Amount		% Recovery			% RPD	QC LIMITS	
		Spike Blank	Spike Blank Dup	SB	SBD	SB	SBD	Avg		RPD	REC.
WET CHEMISTRY WALYSIS											
METHOD 9060 - LEACHABLE TOTAL ORGANIC	UG/G	1940	1920	2000	2000	97	96	97	1	20.0	81-117

* Indicates Result is outside QC Limits

METHOD 8260 - ICL VOLATILE ORGANICS

Client Sample ID Job No & Lab Sample ID	07029-1A A99-4287 A9428701				
Sample Date	07/02/99	16:00			
Received Date	07/02/99	16:40			
Extraction Date	-				
Analysis Date	07/08/99	17:24			
Extraction HT Met?	-				
Analytical HT Met?	YES				
Sample Matrix	SOIL	LOW			
Dilution Factor	1.0				
Sample wt/vol	5.15	GRAMS			
% Dry	81.69				

620029

METHOD 8260 - TCL VOLATILE ORGANICS

Client Sample ID	VBLK19				
Job No & Lab Sample ID	A99-4287 A9428703				
Sample Date					
Received Date					
Extraction Date	-				
Analysis Date	07/08/99 12:22				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	5.0 GRAMS				
% Dry	100.00				

000030

METHOD 8260 - TCL VOLATILE ORGANICS

Client Sample ID Job No & Lab Sample ID	MSB19 A99-4287 A9428704				
Sample Date					
Received Date					
Extraction Date	-				
Analysis Date	07/08/99 11:15				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	5.0 GRAMS				
% Dry	100.00				

METHOD 8270 - TCL SEMI-VOLATILE ORGANICS

ClientSample ID Job No & LabSample ID	07029-1A A99-4287 A9428701				
Sample Date	07/02/99	16:00			
Received Date	07/02/99	16:40			
Extraction Date	07/12/99	07:00			
Analysis Date	07/21/99	13:49			
Extraction HT Met?	YES				
Analytical HT Met?	YES				
Sample Matrix	SOIL	LOW			
Dilution Factor	5.0				
Sample wt/vol	30.84	GRAMS			
% Dry	83.15				

000032

METHOD 8270 - TCL SEMI-VOLATILE ORGANICS

Client Sample ID Job No & Lab Sample ID	Method Blank A99-4287 A9B0610902				
Sample Date					
Received Date					
Extraction Date	07/12/99 07:00				
Analysis Date	07/21/99 10:44				
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	SOIL	LOW			
Dilution Factor	1.0				
Sample wt/vol	30.39	GRAMS			
% Dry	100.00				

METHOD 8270 - TCL SEMI-VOLATILE ORGANICS

Client Sample ID Job No & Lab Sample ID	Matrix Spike Blank A99-4287 A980610901				
Sample Date					
Received Date					
Extraction Date	07/12/99	07:00			
Analysis Date	07/21/99	14:56			
Extraction HT Met?	-				
Analytical HT Met?	-				
Sample Matrix	SOIL	LOW			
Dilution Factor	1.0				
Sample wt/vol	30.2	GRAMS			
% Dry	100.00				

000034

NA = Not Applicable

METHOD 8081 - TCL PESTICIDES

Client Sample ID	07029-1A				
Job No & Lab Sample ID	A99-4287 A9428701				
Sample Date	07/02/99 16:00				
Received Date	07/02/99 16:40				
Extraction Date	07/14/99 07:00				
Analysis Date	07/23/99 06:43				
Extraction HT Met?	YES				
Analytical HT Met?	YES				
Sample Matrix	SOIL LOW				
Dilution Factor	4.0				
Sample wt/vol	30.37 GRAMS				
% Dry	83.15				

METHOD 8082 - POLYCHLORINATED BIPHENYLS

Client Sample ID	07029-1A				
Job No & Lab Sample ID	A99-4287 A9428701				
Sample Date	07/02/99 16:00				
Received Date	07/02/99 16:40				
Extraction Date	07/09/99 07:00				
Analysis Date	07/10/99 12:01				
Extraction HT Met?	YES				
Analytical HT Met?	YES				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	30.81 GRAMS				
% Dry	65.05				

Date: 07/31/99 10:44
Jobno: A99-423

GZA GEOENVIRONMENTAL
QC CHRONOLOGY

Rept: AN0369

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A9B0631702	Method Blank	MG/KG	Antimony - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Arsenic - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Barium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Beryllium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Calcium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Cobalt - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Iron - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Lead - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Magnesium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Manganese - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Nickel - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Potassium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Selenium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Silver - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Sodium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Thallium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Vanadium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Zinc - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
A9B0622402	LCS	MG/KG	Mercury - Total	7471	1.00		- 16:40	NA	NA	07/13	Yes	SOIL
A9B0631701	LCS CLP Soils	MG/KG	Aluminum - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Antimony - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Arsenic - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Barium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Beryllium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Calcium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Cobalt - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Iron - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Lead - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Magnesium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Manganese - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Nickel - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Potassium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Selenium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Silver - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Sodium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Thallium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Vanadium - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Zinc - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL

AHT = Analy olding Time Met
THT = TCLP Holding Time Met

Date: 07/31/99 10:44
Jobno: A99-4287

GZA GEOENVIRONMENTAL
SAMPLE CHRONOLOGY

Rept: AN0369

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A9428701	0709-1A	MG/KG	Aluminum - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Antimony - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Arsenic - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Barium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Beryllium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Cadmium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Calcium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Chromium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Cobalt - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Copper - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Iron - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Lead - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Magnesium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Manganese - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Mercury - Total	7471	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Nickel - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Potassium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Selenium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Silver - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Sodium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Thallium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Vanadium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Zinc - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met

STL Buffalo

METHOD 8081 - TCL PESTICIDES

Client Sample ID Job No & Lab Sample ID	Method Blank A99-4287 A9B0610302	Method Blank A99-4287 A9B0626603			
Sample Date		-			
Received Date					
Extraction Date		07/14/99 07:00			
Analysis Date		07/23/99 04:38			
Extraction HT Met?	NA	-			
Analytical HT Met?		-			
Sample Matrix		SOIL LOW			
Dilution Factor		1.0			
Sample wt/vol		30.3 GRAMS			
% Dry		100.00			

METHOD 8082 - POLYCHLORINATED BIPHENYLS

Client Sample ID Job No & Lab Sample ID	Method Blank A99-4287 A9B0610302	Method Blank A99-4287 A9B0626603			
Sample Date					
Received Date					
Extraction Date	07/09/99 07:00				
Analysis Date	07/10/99 11:14				
Extraction HT Met?	-	NA			
Analytical HT Met?	-				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	30.8 GRAMS				
% Dry	100.00				

000036

NA = Not Applicable

METHOD 8081 - TCL PESTICIDES

Client Sample ID / Job No & Lab Sample ID	Matrix Spike Blank A99-4287 A9B0610301	Matrix Spike Blank A99-4287 A9B0626601	Matrix Spike Blk Dup A99-4287 A9B0626602		
Sample Date					
Received Date					
Extraction Date		07/14/99 07:00	07/14/99 07:00		
Analysis Date		07/23/99 03:15	07/23/99 03:57		
Extraction HT Met?	NA	-	-		
Analytical HT Met?		-	-		
Sample Matrix		SOIL LOW	SOIL LOW		
Dilution Factor		1.0	1.0		
Sample wt/vol		30.43 GRAMS	30.74 GRAMS		
% Dry		100.00	100.00		

METHOD 8082 - POLYCHLORINATED BIPHENYLS

Client Sample ID / Job No & Lab Sample ID	Matrix Spike Blank A99-4287 A9B0610301	Matrix Spike Blank A99-4287 A9B0626601	Matrix Spike Blk Dup A99-4287 A9B0626602		
Sample Date					
Received Date					
Extraction Date	07/09/99 07:00				
Analysis Date	07/10/99 11:38				
Extraction HT Met?	-	NA	NA		
Analytical HT Met?	-				
Sample Matrix	SOIL LOW				
Dilution Factor	1.0				
Sample wt/vol	30.41 GRAMS				
% Dry	100.00				

Date: 07/31/99 10:44
Jobno: A99-427

GZA GEOENVIRONMENTAL
QC CHRONOLOGY

Rept: AN0369

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A9428701MD	0729-1A	MG/KG	Aluminum - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Antimony - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Arsenic - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Barium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Beryllium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Cadmium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Calcium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Chromium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Cobalt - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Copper - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Iron - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Lead - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Magnesium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Manganese - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Mercury - Total	7471	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/13	Yes	SOIL
		MG/KG	Nickel - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Potassium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Selenium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Silver - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Sodium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Thallium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Vanadium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Zinc - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
A9428701MS	0729-1A	MG/KG	Aluminum - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Antimony - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Arsenic - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Barium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Beryllium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Cadmium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Calcium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Chromium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Cobalt - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Copper - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Iron - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Lead - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Magnesium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Manganese - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Mercury - Total	7471	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/13	Yes	SOIL
		MG/KG	Nickel - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Potassium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Selenium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Silver - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Sodium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Thallium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Vanadium - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
		MG/KG	Zinc - Total	6010	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	SOIL
A980622401	Method Blank	MG/KG	Mercury - Total	7471	1.00		- 16:40	NA	NA	07/13	Yes	SOIL
A980631702	Method Blank	MG/KG	Aluminum - Total	6010	1.00	07/15/99 08:00	07/15 16:40	NA	NA	07/16	Yes	SOIL

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

Date: 07/31/99 10:44
Jobno: A99-4287

GZA GEOENVIRONMENTAL
SAMPLE CHRONOLOGY

Rept: AN0369

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A9428701	07029-1A	UG/G	Leachable Phosphorous	365.2	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/13	Yes	SOIL
		S.U.	Leachable pH	9045	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/09	Yes	SOIL
		UG/G	Leachable Total Organic Carbon	9060	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/20	Yes	SOIL
		INVALID	SHAKE EXTRACTION OF SOLID WASTE WITH WATER	D 3987-85	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/13	Yes	SOIL
A9428702	07029-1A (L)	MG N/L	Nitrate	9200	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/14	No	WATER
		M.VOLTS	Redox Potential	D-1498-76	1.00	07/02/99 16:00	07/02 16:40	NA	NA	07/16	Yes	WATER

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

STL Buffalo

Date: 07/31/99 10:44
Jobno: A99-4287

GZA GEOENVIRONMENTAL
QC CHRONOLOGY

Rept: AN0369

Lab ID	Sample ID	Units	Analyte	Method	Dilution Factor	Sample Date	Receive Date	TCLP Date	THT	Analysis Date	AHT	Matrix
A9B0624802	Matrix Spike Blank	UG/G	Leachable Phosphorous	365.2	1.00		- 16:40	NA	NA	07/13	Yes	SOIL
A9B0630502	Matrix Spike Blank	MG N/L	Nitrate	9200	1.00		- 16:40	NA	NA	07/14	Yes	WATER
A9B0652502	Matrix Spike Blank	UG/G	Leachable Total Organic Carbon	9060	1.00		- 16:40	NA	NA	07/20	Yes	SOIL
A9B0624803	Matrix Spike Blk Dup	UG/G	Leachable Phosphorous	365.2	1.00		- 16:40	NA	NA	07/13	Yes	SOIL
A9B0630503	Matrix Spike Blk Dup	MG N/L	Nitrate	9200	1.00		- 16:40	NA	NA	07/14	Yes	WATER
A9B0652503	Matrix Spike Blk Dup	UG/G	Leachable Total Organic Carbon	9060	1.00		- 16:40	NA	NA	07/20	Yes	SOIL
A9B0630504	Method Blank	MG N/L	Nitrate	9200	1.00		- 16:40	NA	NA	07/14	Yes	WATER
A9B0652504	Method Blank	UG/G	Leachable Total Organic Carbon	9060	1.00		- 16:40	NA	NA	07/20	Yes	SOIL
A9B0614501	LCS	S.U.	Leachable pH	9045	1.00		- 16:40	NA	NA	07/09	Yes	SOIL
A9B0624801	LCS	UG/G	Leachable Phosphorous	365.2	1.00		- 16:40	NA	NA	07/13	Yes	SOIL
A9B0630501	LCS	MG N/L	Nitrate	9200	1.00		- 16:40	NA	NA	07/14	Yes	WATER
A9B0635201	LCS	M.VOLTS	Redox Potential	D-1498-76	1.00		- 16:40	NA	NA	07/16	Yes	WATER
A9B0652501	LCS	UG/G	Leachable Total Organic Carbon	9060	1.00		- 16:40	NA	NA	07/20	Yes	SOIL
A9B0624804	Method Blank	UG/G	Leachable Phosphorous	365.2	1.00		- 16:40	NA	NA	07/13	Yes	SOIL

AHT = Analysis Holding Time Met
THT = TCLP Holding Time Met
NA = Not Applicable

STL Buffalo

Chain of Custody

STL
Committed To *You* Success

Report To:
Contact: ~~DAVID~~ DAVID BIRCH
Company: GZA GEOENVIRONMENTAL
Address: 364 NAGEL DR.
BUFFALO N.Y. 14225
Phone: 685-2300
Fax: 685-3629
E-Mail: BUFFALO@GZA.COM

Bill To:
Contact: DAVE BIRCH
Company: GZA GEOENVIRONMENTAL
Address: 364 NAGER DRIVE
BUFFALO N.Y 14225
Phone: 685-2300
Fax: 685-3629
PO: _____ Quote: _____

Internal Use Only

Sampler Name: DANIEL E. WOLF
Signature: Daniel E. Wolf
Project Name: NIAGARA COUNTY LANDFILL
Project Number: 55285.00
Project Location: WILSON FIELD N.Y.
Date Required: ASAP

STL Sample No.	Client Sample ID	Sampling Date	Sampling Time	MATRIX	COMP / GRAB	9045	9060	8260	8270	8081	6010/7000	D1498-76	9200	365.1	Additional Analyses / Remarks
	02029-1A	6/2/99	16:00	S	G	X	X	X	X	X	X	X	X	X	3 JARS OF SAMPLE

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
Daniel E. Wolf	GZA	7/2/99	16:40	[illegible]	STL	7-2-99	1640

Matrix Key
WW = Wastewater
W = Water
S = Soil
SL = Sludge
MS = Miscellaneous Slids
OL = Oil
A = Air
O = _____

Container Key
1. Plastic
2. VOA Vial
3. Sterile Plastic
4. Amber Glass
5. Widemouth Glass
6. Other
—

Preservative Key
1. HCl, Cool to 4°
2. H2SO4, Cool to 4°
3. HNO3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn Acetate, Cool to 4°
6. Cool to 4°
7. None

COMMENTS:

Courier:

Bill of Lading:

00014

DATE: / /

Upstate Laboratories, Inc.
Analysis Results
Report Number: 28199058
Client I.D.: GZA

APPROVAL: _ _ _ _
QC: _ _ _ _
Lab I.D.: 10170
Sampled by: Client

ID:28199058 Mat:Soil 55350/GRATWICK PARK S-1 1015H 10/07/99 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	79%	10/08/99		WC7698
EPA Method 8150				
2,4-D	<420ug/kg dw	10/21/99		PA5287
2,4,5-T	<42ug/kg dw	10/21/99		PA5287
2,4,5-TP (Silvex)	<42ug/kg dw	10/21/99		PA5287
Dinoseb	<42ug/kg dw	10/21/99		PA5287

dw = Dry weight

REFERENCE NO. 10

21 November 2000

Mr. Dennis Munhall
U.S. Environmental Protection Agency
290 Broadway - 18th Floor
New York, NY 10007-1866

DOCUMENT CONTROL NO: SAT-1002.014
SUBJECT: SAMPLING TRIP REPORT - LACKAWANNA FOUNDRY

Dear Mr. Munhall:

Enclosed please find the Sampling Trip Report for samples collected during the Brownfields investigation conducted at the Lackawanna Foundry site on 7 November 2000. The samples were collected under Case No. 28706.

If you have any questions, do not hesitate to call me at (732) 417-5806.

Very truly yours,

ROY F. WESTON, INC.

Donna Janda

Donna Janda
Project Manager

enclosure

cc: J. Bulich, Lockheed ESAT
W.S. Butterfield, SAT Program Manager, w/o enclosure
SAT TDD file

SAMPLING TRIP REPORT

SITE NAME: Lackawanna Foundry
DCN #: SAT-1002.014
CASE NO.: 28706

EPA I.D. NO.: NYSFN0204209

SAMPLING DATE: November 7, 2000

1. Site Location: Refer to Figure 1

2. Sample Locations: Refer to Figure 2

3. Sample Descriptions: Refer to Table 1

4. Laboratories Receiving Samples:

Sample Type	Name and Address of Laboratory
Target Compound List (TCL) Organics	American Analytical & Technical Services, Inc. 11950 Industriplex Boulevard Baton Rouge, LA 70809
Target Analyte List (TAL) Inorganics	Chemtech Consulting Group Raritan Center 205 Campus Plaza 1 Edison, NJ 08837

5. Sample Dispatch Data:

Fourteen soil samples and one aqueous samples for TCL volatiles, BNA and Pesticides/PCB analysis, were shipped to American Analytical & Technical Services, Inc., on 11/07/00 at 1900 hours via Federal Express (Airbill Nos. 4955287293 and 4955287304).

Fourteen soil samples and one aqueous samples for TAL inorganics analysis were shipped to Chemtech Consulting Group on 11/07/00 at 1900 hours via Federal Express (Airbill Nos. 4955287234 and 4955287245).

6. On-Site Personnel:

Name	Company	Duties on Site
Donna Janda	Region II SAT	Project Manager, Sampler
David Lewitt	Region II SAT	Site Health and Safety Officer, Sampler
Jess Anderson	Region II SAT	Sample Management Officer, Sampler

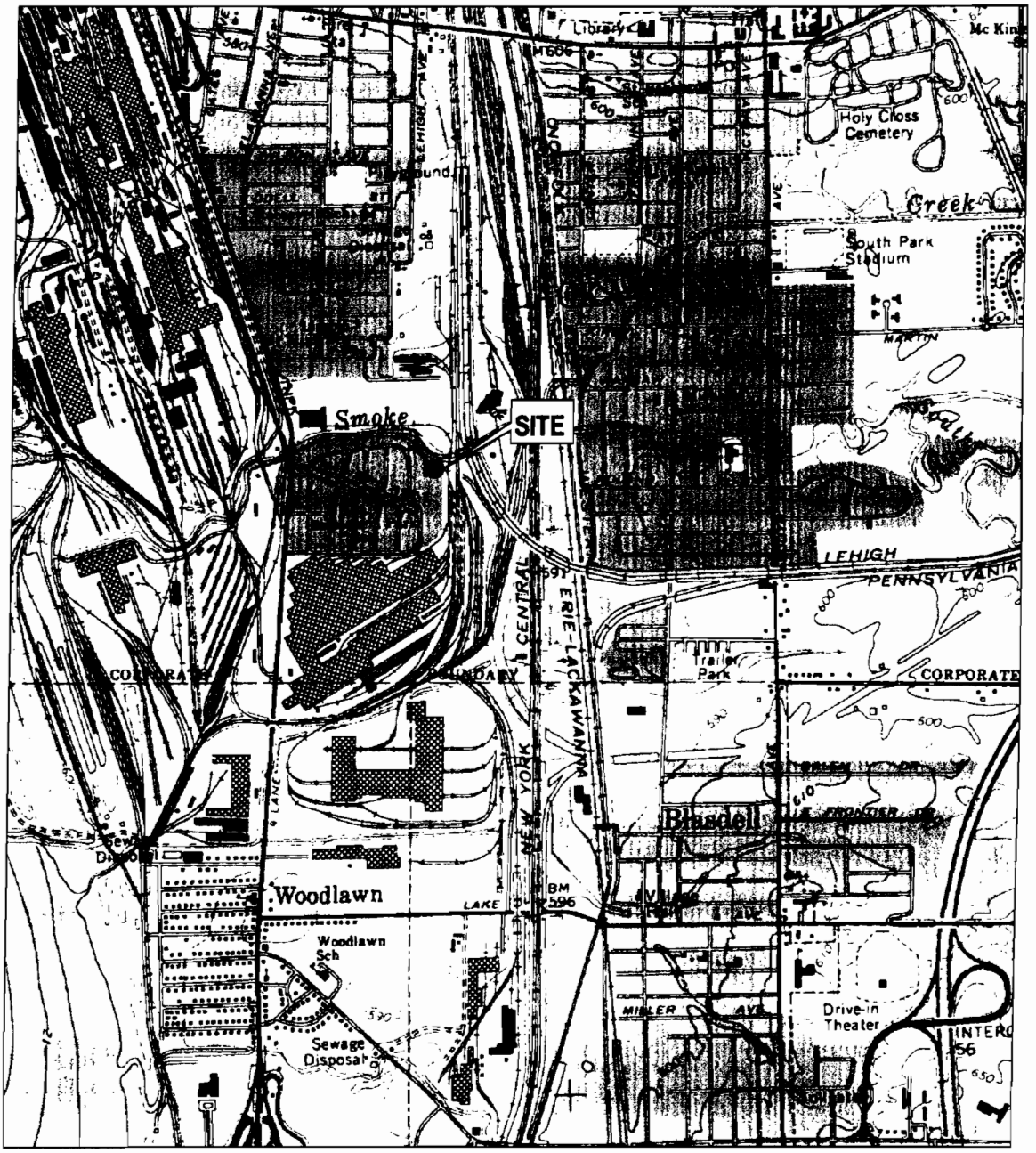
7. Additional Comments:

On November 7, 2000, the Region II Site Assessment Team (SAT) collected subsurface soil samples from the Lackawanna Foundry site. These samples were collected as part of a Brownfields investigation conducted on site. All samples collected by Region II SAT were analyzed for Target Compound List (TCL) and Target Analyte List (TAL), parameters through the U.S. EPA Contract Laboratory Program. Organic and Inorganic Traffic Reports are presented in Attachment 1.

8. Report Prepared by: Donna Janda Date: 11/21/00
Donna Janda

9. Report Approved by: W. S. Butterfield, CHMM Date: 11/21/00
W. S. Butterfield, CHMM

SITE LOCATION AND SAMPLE LOCATION MAPS



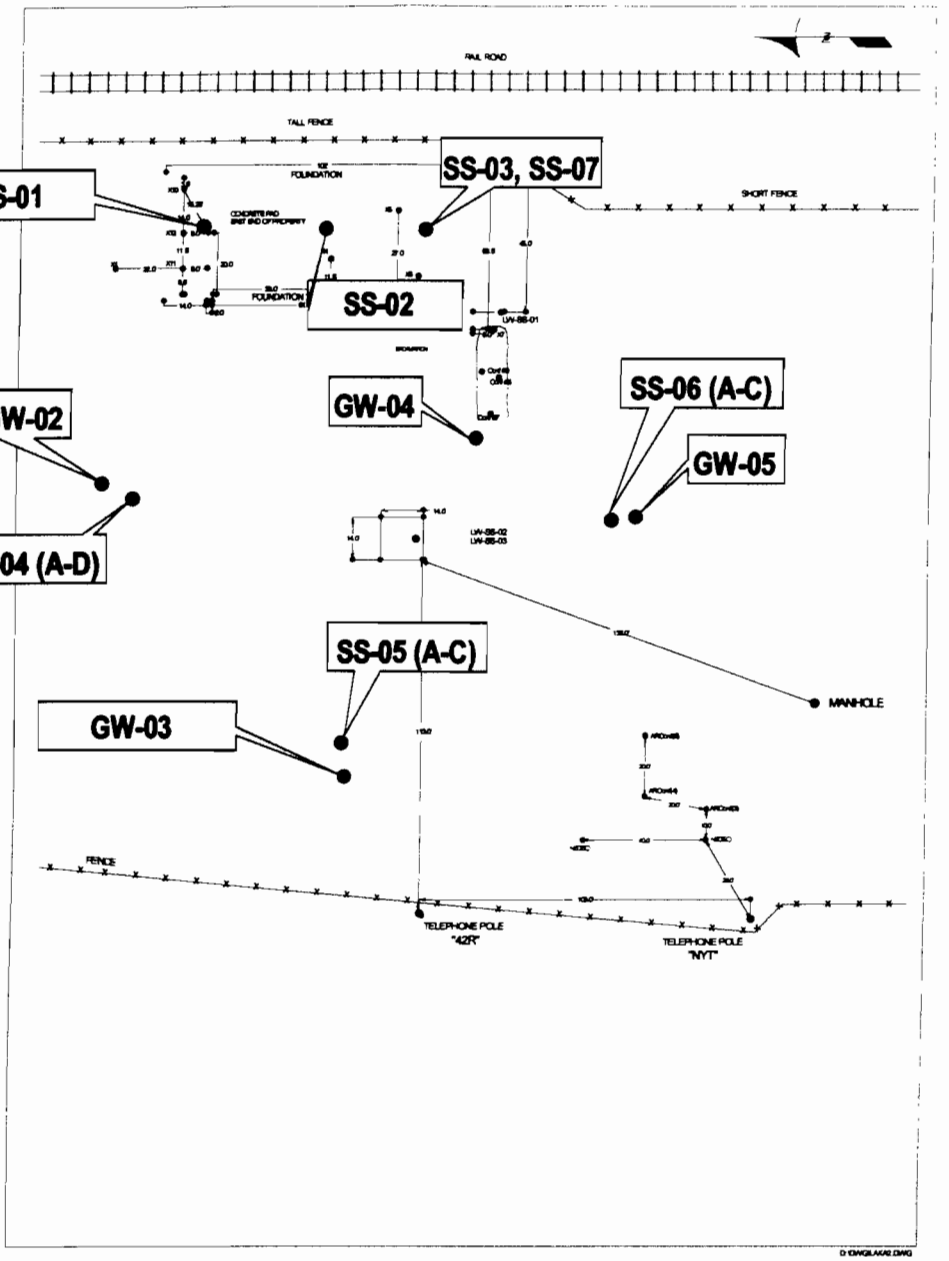
U.S. Geological Survey
7.5 Minute Series Topographical Map
Buffalo Southeast, NY Quadrangle
1948, Revised 1965

1000 0 1000 2000 Feet

N

NW SW Quad

WESTON FEDERAL PROGRAMS DIVISION	Lackawanna Foundry Site Lackawanna, Erie Co., NY Figure 1 Site Location Map	● Site Location



● Proposed ground-water sample location

● Proposed subsurface soil sample location

● Historical sample location

A = Depth of 2-4 feet
B = Depth of 4-6 feet
C = Depth of 6-8 feet
D = Depth of 8-10 feet

WESTON FEDERAL PROGRAMS DIVISION

Figure 2
Sample Location Map

Lackawanna Foundry Site
Lackawanna, Erie Co., NY

TABLE 1
SAMPLE DESCRIPTIONS
LACKAWANNA FOUNDRY
LACKAWANNA, ERIE COUNTY, NEW YORK

SAMPLE NUMBER 1002-	ORGANIC CLP NO.	INORGANIC CLP NO.	DATE	TIME	COMMENTS
SS-01	BNP05	MBNJ51	11/07/00	1005	Subsurface soil sample collected beneath concrete pad at 7-9 foot depth.
SS-02	BNP06	MBNJ52	11/07/00	1055	Subsurface soil sample collected beneath concrete pad at 6-8 foot depth.
SS-03	BNP07	MBNJ53	11/07/00	1125	Subsurface soil sample collected beneath concrete pad at 6-8 foot depth.
SS-04A	BNP08	MBNJ54	11/07/00	1440	Subsurface soil sample collected from north section of site at 2-4 foot depth.
SS-04B	BNP09	MBNJ55	11/07/00	1450	Subsurface soil sample collected from north section of site at 4-6 foot depth.
SS-04C	BNP10	MBNJ56	11/07/00	1455	Subsurface soil sample collected from north section of site at 6-8 foot depth.
SS-04D	BNP11	MBNJ57	11/07/00	1515	Subsurface soil sample collected from north section of site at 8-10 foot depth.
SS-05A	BNP12	MBNJ58	11/07/00	1335	Subsurface soil sample collected from west section of site at 2-4 foot depth.
SS-05B	BNP13	MBNJ59	11/07/00	1340	Subsurface soil sample collected from west section of site at 4-6 foot depth.
SS-05C	BNQ85	MBNJ60	11/07/00	1345	Subsurface soil sample collected from west section of site at 6-8 foot depth.
SS-06A	BNQ87	MBNJ62	11/07/00	1300	Subsurface soil sample collected from south section of site at 2-4 foot depth.
SS-06B	BNQ88	MBNJ63	11/07/00	1305	Subsurface soil sample collected from south section of site at 4-6 foot depth.
SS-06C	BNQ89	MBNJ64	11/07/00	1310	Subsurface soil sample collected from south section of site at 6-8 foot depth.
SS-07	BNQ91	MBNJ66	11/07/00	1135	Duplicate sample of 1002-SS-03.
RB-01	BNQ92	MBNJ67	11/07/00	1225	Rinsate blank collected from split spoon and stainless steel bowl and trowel.

ATTACHMENT 1

TRAFFIC REPORTS/CHAIN OF CUSTODY RECORDS

Organic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program
(For Organic CLP Analysis)

Case No. 28706

1. Project Code: 1002	2. Region No.: 2	Sampling Co.: Roy F Weston	4. Date Shipped: 11/7/00	Carrier: FedEx
Account Code:	Sampler (Name): Donna Jinda		Airbill Number: 995528730 4	
Site Name: Lackawanna Foundry ~~Lackawanna, NY~~	Sampler Signature: Donna Jinda		5. Ship To: American Analytical + Technical Serv. Inc 11950 Industriplex Blvd. Baton Rouge, LA 70809	
City, State: Lackawanna, NY	Site Spill ID:	Op Unit: 000	3. Purpose** Lead: [ ] SF [ ] PRP [ ] ST [ ] FED [X] BZ; Early Action: [ ] IA [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI; Long-Term Action: [ ] RIFS [ ] RD [ ] RA [ ] O&M	ATTN:

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. PE-water 7. PE-soil 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. CH3OH 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 (21) VOA	E TA (circle one) PR* 7 14 (21) BNA	E TA (circle one) PR* 7 14 (21) Pest/ PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spike D = Field Duplicate R = Rinsate PE = Perform Eval.)
BNP05	5	X	Comp	N	X	X	X	Tag Nos. 78 77-79	1002-SS-01	11/7/00 1005	MBNJ51		
BNP06	5	X	Comp	N	X	X	X	Tag Nos. 81-83	1002-SS-02	11/7/00 1055	MBNJ52		
BNP07	5	X	Comp	N	X	X	X	Tag Nos. 85-87	1002-SS-03	11/7/00 1125	MBNJ53		D
BNQ91	5	X	Comp	N	X	X	X	Tag Nos. 137-139	1002-SS-07	11/7/00 1135	MBNJ66		D
BNP08	5	X	Comp	N	X	X	X	Tag Nos. 89-91	1002-SS-04A	11/7/00 1440	MBNJ54		
BNP09	5	X	Comp	N	X	X	X	Tag Nos. 93-95	1002-SS-04B	11/7/00 1450	MBNJ55		
BNP10	5	X	Comp	N	X	X	X	Tag Nos. 97-99	1002-SS-04C	11/7/00 1455	MBNJ56		
BNP11	5	X	Comp	N	X	X	X	Tag Nos. 101-103	1002-SS-04D	11/7/00 1515	MBNJ57		
BNQ87	5	X	Comp	N	X	X	X	Tag Nos. 121-123	1002-SS-06A	11/7/00 1300	MBNJ62		
BNQ88	5	X	Comp	N	X	X	X	Tag Nos. 125-127	1002-SS-06B	11/7/00 1305	MBNJ63		

Shipment for Case Complete? (Y/N): Y

Page: 1 of 2

VOA MS/MSD Required? (Y/N) Sample #: BNP05
BNA MS/MSD Required? (Y/N) Sample #: BNP05
Pest/PCB MS/MSD Required? (Y/N) Sample #: BNP05

Additional Sampler Signatures:

Chain of Custody Seal Number(s):

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Donna Jinda	11/7/00 1730				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-001

Organic Traffic Report & Chain of Custody Record

(For Organic CLP Analysis)

United States Environmental Protection Agency
Contract Laboratory Program

Case No. 28706

1. Project Code: 1002	2. Region No.: 2	Sampling Co.: Roy F. Weston	4. Date Shipped: 11/7/00
Account Code	Sampler (Name): Donna Jurda		Carrier: Fed Ex
Site Name: Lackawanna Foundry	Sampler Signature: Donna Jurda		Airbill Number: 495528730 4
City, State: Lackawanna, NY	Site Spill ID	Op Unit: OK	3. Purpose**: Lead [ ] SF [ ] PRP [ ] ST [ ] FED [X] BZ; Early Action [ ] IA [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI; Long-Term Action [ ] RIFS [ ] RD [ ] RA [ ] O&M

5. Ship To:
American Analytical + Technical Services, Inc.
11450 Industrial Blvd
Baton Rouge, LA 70809
ATTN:

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. PE-water
7. PE-soil
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. CH3OH
7. Other (specify in Column D)
N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 — VOA	E TA (circle one) PR* 7 14 21 — BNA	E TA (circle one) PR* 7 14 21 — Pest/PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field Spik D = Field Duplicate R = Rinsate PE = Perform Eval.)
BNQ89	5	Low	Comp.	N	X	X	X	Tag Nos. 129-131	1002-SS-06C	11/7/00 1310	MBNJ64	DD	
BNP12	5	Low	Comp.	N	X	X	X	Tag Nos. 105-107	1002-SS-05A	11/7/00 1355	MBNJ58	DD	
BNP13	5	Low	Comp.	N	X	X	X	Tag Nos. 109-111	1002-SS-05B	11/7/00 1340	MBNJ59	DD	
BNQ85	5	Low	Comp.	N	X	X	X	Tag Nos. 113-115	1002-SS-05C	11/7/00 1345	MBNJ60	DD	

Shipment for Case Complete? (Y/N): Y

Page 1 of 2

VOA MS/MSD Required? Y/N: N Sample #:
BNA MS/MSD Required? Y/N: N Sample #:
Pest/PCB MS/MSD Required? Y/N: N Sample #:

Additional Sampler Signatures

Chain of Custody Seal Number(s)

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Donna Jurda	11/7/00 1730				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Definitions

A Form 9110-2 (2/99)

CLASS-99-001

Organic Traffic Report & Chain of Custody Record

EPA United States Environmental Protection Agency
Contract Laboratory Program

(For Organic CLP Analysis)

Case No. 28706

1. Project Code: 1002	2. Region No.: 2	Sampling Co.: Roy F Weston	4. Date Shipped: 11/7/00	Carrier: Fed Ex
Account Code	Sampler (Name): Dona Jenkins		Airbill Number: 495528 7793	
Site Name: Lackawanna Foundry	Sampler Signature: Dona Jenkins		5. Ship To: American Analytical Technologies, Inc. 11950 Industriplex Blvd Baton Rouge, LA 70809	
City, State: Lackawanna, NY	Site Spill ID	Op Unit: 00	3. Purpose**: Lead [ ] SF [ ] PRP [ ] ST [ ] FED [ ] BZ; Early Action [ ] IA [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI; Long-Term Action [ ] RIFS [ ] RD [ ] RA [ ] O&M	ATTN:

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. PE-water 7. PE-soil 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. CH3OH 7. Other (specify in Column D) N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E RAS Analysis TA (circle one) PR* 7 14 21 — VOA	E TA (circle one) PR* 7 14 21 — BNA	E TA (circle one) PR* 7 14 21 — Pest/PCB	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Field S k D = Field Duplicate R = Rinsate PE = Perform Eval)
BNJ92	4	Low	Grab	1	X			Tag Nos. 141+55	1002-RB-01	11/7/00 1225	MBNJ67	DJ	R
BJ492	4	Low	Grab	N		X	X	Tag Nos. 142-145	1002-RB-01	11/7/00 1225	MBNJ67	DJ	R

Shipment for Case Complete? (Y/N): Y

Page 1 of 1

VOA MS/MSD Required? Y/N Sample #:
BNA MS/MSD Required? Y/N Sample #:
Pest/PCB MS/MSD Required? Y/N Sample #:

Additional Sampler Signatures

Chain of Custody Seal Number(s)

*PR provides 7-day data turnaround in addition to preliminary results. Requests for preliminary results will increase analytical costs.

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Dona Jenkins	11/7/00 17:30				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to SMO; Pink - SMO Copy; Yellow - Lab Copy for Return to Region

See Reverse for Additional Standard Instructions
**See Reverse for Purpose Code Definitions

EPA Form 9110-2 (2/99)

CLASS-99-00

9110

EPA — Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No. 28706

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
1002		2	Roy F. Weston	11/7/00	FedEx

Regional Information	Sampler (Name)	Airbill Number
	Donna Jarda	4955287234

Non-Superfund Program	Sampler Signature	5. Ship To
	Donna Jarda	Chemtech Consulting Group Lantan Center 205 Campus Plaza 1 Edison, NJ 08837

Site Name	3. Purpose*	Early Action	Long-Term Action
Lackawanna Foundry	Lead: SF, PRP, ST, FED	CLEM, PA, REM, RI, SI, ESI	FS, RD, RA, O&M, NPLD

City, State	Site Spill ID	ATTN:
Lackawanna NY		

6. Matrix *(Enter in Column A)*
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other *(specify in Column A)*

7. Preservative *(Enter in Column D)*
1. HCl
2. HNO_3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other *(specify in Column D)*

N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) / Other	B Conc.: Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) / Other	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B Blank, S Spike, D Duplicate, R Rinsate, PE Perform Eval, — Not a QC Sample)
MBNJ51	5	Low	Comp.	N		X	X					Tag No. 80	1002-SS-01	11/7/00 1035	BNP05	KJ	
MBNJ52	5	Low	Comp	N		X	X					Tag No. 84	1002-SS-02	11/7/00 1055	BNP06	KJ	
MBNJ53	5	Low	Comp	N		X	X					Tag No. 88	1002-SS-03	11/7/00 1125	BNP07	KJ	D
MBNJ66	5	Low	Comp	N		X	X					Tag No. 140	1002-SS-07	11/7/00 1135	BNQ41	KJ	D
MBNJ54	5	Low	Comp	N		X	X					Tag No. 92	1002-SS-04	11/7/00 1410	BNP08	KJ	
MBNJ55	5	Low	Comp	N		X	X					Tag No. 96	1002-SS-04B	11/7/00 1450	BNP09	KJ	
MBNJ56	5	Low	Comp	N		X	X					Tag No. 100	1002-SS-04C	11/7/00 1455	BNP10	KJ	
MBNJ57	5	Low	Comp.	N		X	X					Tag No. 104	1002-SS-04D	11/7/00 1515	BNP11	KJ	
MBNJ62	5	Low	Comp	N		X	X					Tag No. 124	1002-SS-06A	11/7/00 1300	BNQ37	KJ	
MBNJ63	5	Low	Comp	N		X	X					Tag No. 128	1002-SS-06B	11/7/00 1305	BNQ38	KJ	

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y	1 of 2	MBNJ51		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Donna Jarda	11/7/00 1730				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUTION: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (2/98)

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

200570

Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No. 28706

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
1002		2	Ray Fullerton	11/7/00	Fed Ex

Regional Information

Sampler (Name): Donna Jacka

Airbill Number: 4455287234

Non-Superfund Program

Sampler Signature: Donna Jacka

5. Ship To: Chemtech Consulting Group, Kaufman Center, 205 Campus Plaza I, Edison, NJ 08837, ATTN:

Site Name: Lackawanna Foundry

3. Purpose*: Lead — [ ] SF [ ] PRP [ ] ST [ ] FED; Early Action — [ ] CLEM [ ] PA [ ] REM [ ] RI [X] SI [ ] ESI; Long-Term Action — [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

City, State: Lackawanna, NY

Site Spill ID

6. Matrix (Enter in Column A): 1. Surface Water; 2. Ground Water; 3. Leachate; 4. Field QC; 5. Soil/Sediment; 6. Oil (High only); 7. Waste (High only); 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl; 2. HNO3; 3. NaOH; 4. H_2SO_4; 5. $K_2CR_2O_7$; 6. Ice only; 7. Other (specify in Column D); N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) / Other:	B Conc.: Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) / Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. — = Not a QC Sample)
MBNJ64	5	Low	Comp	N		X	X					Tag No. 132	1002-SS-05C	11/7/00 1310	BNQ84	DJ	
MBNJ68	5	Low	Comp	N		X	X					Tag No. 108	1002-SS-05A	11/7/00 1335	BNP12	DJ	
MBNJ59	5	Low	Comp	N		X	X					Tag No. 112	1002-SS-05B	11/7/00 1340	BNP13	DJ	
MBNJ60	5	Low	Comp	N		X	X					Tag No. 116	1002-SS-05C	11/07/00 1345	BNQ85	DJ	

Shipment for Case Complete? (Y/N): Y

Page: 2 of 2

Sample(s) to be Used for Laboratory QC

Additional Sampler Signatures

Chain of Custody Seal Number(s)

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Donna Jacka	11/7/00 1730				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

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*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

A21-012-13 REV

282500

EPA — Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No. 28706

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
1002		2	Roy F Weston		Fed Ex

Regional Information

Sampler (Name): Donna Jurdan

Airbill Number: 495528745

Non-Superfund Program

Sampler Signature:

Site Name: Lackawanna Foundry

City, State: Lackawanna, NY

Site Spill ID

3. Purpose*

Lead: ☐ SF ☐ PRP ☐ ST ☐ FED

Early Action: ☐ CLEM ☐ PA ☐ REM ☐ RI ☒ SI ☐ ESI

Long-Term Action: ☐ FS ☐ RD ☐ RA ☐ O&M ☐ NPLD

5. Ship To: Chemtech Consulting Group
Plaza Center
2235 Route 1
Edison, NJ 08837
ATTN:

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) / Other:	B Conc.: Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) / Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval – = Not a QC Sample)
MSNJ67	4	Low	Grab	2		X						Tag No. 146	1002-RB-01	11/7/00 1035	BNQ92	KO	R
MSNJ67	4	Low	Grab	3			X					Tag No. 147	1002-RB-01	11/7/00 1225	BNQ92	KO	R

Shipment for Case Complete? (Y/N): Y

Page: 1 of 1

Sample(s) to be Used for Laboratory QC

Additional Sampler Signatures

Chain of Custody Seal Number(s)

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Donna Jurdan	11/7/00 1730				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

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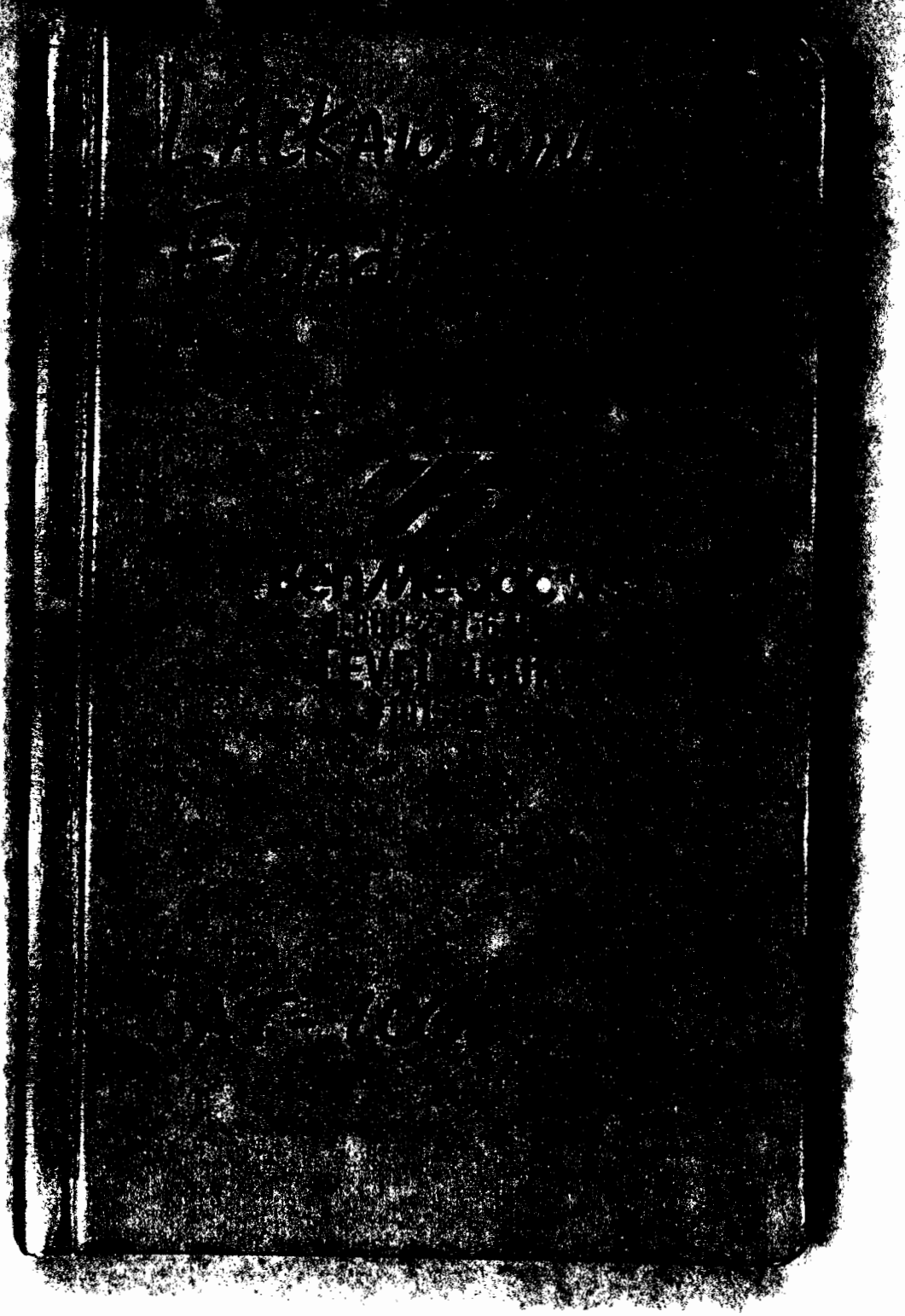
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

A21 012-13 PT

P.13

REFERENCE NO. 11



CONTENTS

PAGE NO.	REFERENCE	DATE

1

11/7/00

0700 Weston on site: J. Anderson, D. Lent, D. Janka, weather overcast - 50°

0830 Drillers arrive at site. SJB Services Inc. One CME-75 drill rig, two operators, one foreman.

0910 Drillers leave site to pick up small sampling augers for soil borings. Will collect three samples beneath buried concrete slab (4 to 5 feet) and three continuous samples (8 to 10 feet) around perimeter of concrete pad.

0930 Drill operators return. Ken Scott, foreman Frank. Kevin Mathis (Buffalo field office). K. Mathis & D. Janka walk site to determine exact locations for soil borings.

0940 OSC Mathis leaves site

0945 Driller set up on first soil boring thru concrete pad (SS01).

1005 Core taken at 7.9'. Brownish-gray silty clay. Take VOAs, Semis, metals. Wood chips present. Fill material. Blow count 1,2,2,2, 2.2 ft recovery.

1030 Drillers set up on second soil boring thru concrete pad (SS02). Calibrate OVM model 580 B.

1036 OVM reading 0.0 at borehole.

1040 Hit concrete pad at 3½ ft. Possibly back to rubble.

[signature]

11/7/00

1025 Core taken at 6-8'. Blow count = 1, 1, 2, 1
Recovery = 1.5 of 2 feet. OVM reading 0.0.
Silty clay with reddish brown soils. VOA's, semis, metals
1105 Drillers set up on third boring location (SSO3). ——— JR
1115 OVM reading 0.0 at borehole. ——— JR
1125 Core taken at 6.5 to 8.5'. Blow count =
1, 4, 5, 7. Recovery 2 of 2 feet. OVM
reading 0.0 Duplicate core taken at 1125.
6.5 to 8.5'. Recovery 1.5 of 2 feet. OVM
reading 0.0 Firm, grayish brown clay Take
VOA's, semis, metals + 2 samples - SSO3 + SSO7
All samples managed with COC CPM protocol.
Physics → Edison, NJ. Inorganics →
Baton Rouge, LA. ——— JR
1130 Lunch. Drillers prepare to steam clean
augers + spoons. Will collect rinsate blank after
cleaning. ——— JR
1225 Rinsate blank collected. 2 VOA vials,
4 ambers for semis, 1 poly for metals, 1 for CN,
VOA's preserved w HCl. Metals preserved
w HNO3 to pH < 2. CN - NaOH pH > 12. ——— JR
1245 Drillers set up on boring for continuous
SSOC sample ——— JR

11/7/00

1300 Core taken 2-4'. Blow count = 5, 5, 4, 3. Recovery
= 1 of 2 feet. OVM reading 0.0. Silty clay
brownish ——— JR
1305 Core taken 4-6'. Blow count = 1, 3, 3, 3.
Recovery = 0 of 2 feet. ——— JR
1310 Core taken 6-8'. Blow count = 6, 6, 5, 3.
Recovery 2 of 2 feet. Will use top 1' as 4-6 and
bottom 1' as 6-8'. Brownish, gray clay
1315 Core taken 8-10'. Very little recovery (~ 2")
and hit water. No sample taken. Mostly clayey
silt. ——— JR
1330 Drillers set up on continuous boring for SSO5.
1335 Core taken 2-4'. Blow count = 2, 3, 4, 6
Recovery = 2 of 2'. OVM reading 0.0
Brownish, firm clay. ——— JR
1340 Core taken 4-6'. Blow count = 4, 4, 3, 3.
Recovery = 1 of 2'. OVM reading 0.0
Brown clay. ——— JR
1345 Core taken 6-8'. Blow count = 3, 4, 5, 5
Recovery = 1.5 of 2'. OVM reading 0.0.
Gray, soft clay ———
1355 Core taken 8-10'. 0 of 2' recovery. No
sample taken ———
1415 Drillers set up on boring for continuous
sample SSO4. To be deep bedrock well.

11/7/00

1440 Core taken at 2-4'. Blow count = 1, 3, 4. Recovery = 1 of 2'. OVM reading 0.0. Silty sand. Black and tan in color.

1450 Core taken at 4-6'. Blow count = 3, 1, 1, 2. Recovery = .5 of 2'. OVM reading 0.0. Brown, black silty sand.

1455 Core taken at 6-8'. Blow count = 7, 5, 7, 9. Recovery = 2 of 2'. OVM reading 0.0. Grey, silty clay.

1515 Core taken at 8-10'. Blow count = 1, 2, 7, 10. Recovery = 1.5 of 2'. OVM reading 0.0. Grey, silty clay

1545 Continue augering w 8" auger to reach bedrock

1115 30' of auger drilled - no bedrock reached. Drillers have no more 5' augers on truck. Will continue to count bedrock tomorrow.

1645 Drillers leave site

1705 D. Leavitt, J. Anderson, D. Tanka leave site. Bring samples to local FedEx for shipment to labs

Took six soil/boring (3 continuous sampling) for VOA, Semi, metals. Samples shipped to EPA CLP labs. Augers sunk to 31' in prep for bedrock well installation.

11/8/00 weather: overcast ~45°

0750 Weston onsite. D. Leavitt / J. Anderson

0800 SJB (drillers) onsite. Ken + Scott Fuller

0815 Resume drilling for top of bedrock. Already at 30' w 8" augers. Location is the sample SS04. Cuttings are 100% clay after 10 feet of depth.

0850 Rock hit at 38 feet. Soft, black shale. Augers advanced ~ 2' into bedrock. Borehole at 40' total depth. Will sluk spoon down borehole to test rock competency.

0945 Spoon from 40-42' feet containing weathered bedrock. Unconsolidated gravel, sand, + black shale. Will continue augering to reach more competent rock. Try to set steel casing at least 3' into competent bedrock.

0945 Drillers leave to pick up additional augers from office

1010 Drillers return w 2 augers (8" x 5') Resume drilling from 40'.

1020 Auger hitting firmer resistance at ~42 feet. Result slower advancement.

1056 HS auger stopped at 43'. Attached roller bit to core into bedrock.

1115 EPA OSC K. Matheis + Region II EPA coordinator D. Marshall onsite

6

11/8/00

1130 Weston + EPA walk site and discuss progress + future plans, ie. sampling on 11/7, well installations. Finish bedrock well today and grout. Get set for deep bedrock boring tomorrow. Begin installation of shallow wells today. Drillers off-site to pick up connector for air compressor line. —— JR

1145 EPA OSC Matheis leaves site to meet with students. Will conduct demonstration with students using this site as example of environmental remediation. —— JR

1205 Drillers return to site. —— JR

1230 Resume EPA OSC Matheis leaves site

1245 Resume coring of bedrock borehole w roller bit and air compression —— JR

All drill cuttings drummed in 55g steel drums.

1320 Problem with air compressor. Air not completely flowing to bottom of borehole. Drill bit may be stuck in auger casing. —— JR

1350 Resume coring w roller bit. —— JR

1430 Auger bit stuck in borehole again. Running sand problems. Sand pouring into auger casing and filling borehole. —— JR

1515 Resume coring from 93'. Using longer rods for more torque + air flow.

JR

7

11/8/00

1600 Rotk bit augered to 95'. Appx. 6 feet below augers into bedrock. Will sink steel casing tomorrow and grout. Advance set will core to ~69' (20 feet further into bedrock) to obtain usable water production from bedrock aquifer

1630 Weston + drillers leave site

Completed bedrock cored at 93'. Roller bit cored to 95' for installation of steel casing.

JR

11/4/00 weather: overcast, rain ~ 50°

0755 Weston D. Lewis & SJB drillers on site. Begin blasting standing water out of bedrock well with compressed air. well is producing water + overnight rain.

0840 Begin sinking steel casing into well to depth of 49'

2 sections of 21' each to be welded together + additional length

0900 Steel casing sunk to 49' bgs. Begin prep of grout

0935 Begin grouting steel casing of bedrock well

0945 Borehole grouted - begin pulling augers. Adding more grout as augers are pulled up

1045 Borehole grouted to top around steel casing. All augers pulled. Waiting for grout to settle

1105 Preparation for steam cleaning augers

1120 Add more grout to bedrock well (GW01)

1215 Finish steam clean of augers + truck

1230 Drillers set up on GW03 - overburden well

1340 Begin augering at GW03 - 7" augers Soil cuttings at 10' are gray clay. All cuttings being placed in SJB drums.

11/5/00

0900 Well at 20' depth. Cuttings are gray/black clay. Drill driller knows site to pick up 10 slot screen + riser

1350 10' of screen + riser in place. Begin sand filter packing. PVC SCH schedule, 10 slot screen.

1430 2 feet of bentonite seal in place

1500 Bentonite - cement grout in place. GW03 well completed. Will let grout set until development. GW03 20' deep, 10 feet screen - 10 feet riser, sand pack to 2 feet above screen (0 sand), 2 feet bentonite seal, grout to surface

1530 Begin setup on overburden well GW05. Augering to 8" auger depth at 20'. Soil cuttings are brown clay.

1600 Soil cuttings are gray clay at ≥10'. Rain coming down hard for last hour.

1615 Well at 20'. Drillers install 10' of 10 slot screen + 10 feet of riser - schedule 40 PVC.

1630 Sand filter (0 sand) installed to 1 foot above screen. Bentonite seal poured (2') Will grout tomorrow

1640 Weston + drillers leave site

11/9/00 weather: overcast, very windy ~ 45°
0900 Weston & Smith + STS drillers onsite
0930 Finish grouting GW05 - set for development on Monday
0945 Drillers set up on bedrock well GW01. Will core through bedrock with roller-bit from 49' until water is reached. First clear well of standing water w/ air compressor
0955 Begin coring into bedrock - roller bit + compressed air
0930 Well producing water after 4' of coring. (Total depth = 53') —
1000 Continue roller bit coring into bedrock
1035 Boring into bedrock completed. Final well depth = 67'. 24' total feet into bedrock. Well producing water (~ 1 g/min) since 53'
1045 Begin pulling up rods + roller bit from well
1100 Set up drilling on GW02 - overburden well. Begin augering to depth of 20'.
1130 Drill cuttings are brown clay and after 12' gray clay
1145 Well at 20' depth
1159 Lunch
1230 Resume work on GW02. Slot 10' of 10 slot screen, 10 feet riser - 40 schedule

11/10/00
1300 Sand filter (0 sand) up to 1 foot above screen
1315 GW02 complete. 11 feet of 0 sand filter pack, 6" 00 sand choke, 2 feet bentonite seal, 6" 00 sand choke, grout to grade
1400 Drillers set up on overburden well GW04.
1405 Begin augering to depth of 20'
1425 Soil cuttings are brown clay. After 10' cuttings become gray clay
1445 Well at 20' depth
1500 10' of 10 slot screen, 10' riser installed in well - 40 schedule PVC.
1505 Begin pouring 0 sand filter pack to 1 foot above screen. Pulling augers as sand is poured
1515 Well GW04 completed. 11 feet of sand filter pack, 6" 00 sand choke, 2' bentonite seal, 6" 00 sand choke, grout to grade
1600 Drillers begin cleanup. Will develop shallow wells, install curb boxes, + drum remaining soil cuttings Monday 11/13
1630 Weston + drillers leave site
Cored bedrock well to 67', installed two overburden wells to 20' each

11/13/00 weather: overcast ~ 35°

0730 Weston D. Leavitt on site. Awaiting SJB drillers

0820 SJB on site. Scott + Ken Fuller

0830 Drillers set up on GW03. Only a few inches of water in well. Can not develop

0940 Remaining soil cuttings are drummed

0900 Set up on GW05. ~ 6' of water in well

0910 Begin development of GW05.

0630 Water clears up after ~ 15 minutes. Pumping volume decreasing. Shut off pump to allow well to recover. Already purged ~ 3 well volumes.

0945 Soil cuttings completely drummed

1000 GW06 brought to grade w/ cement. Cover installed 11/10. Still developing well & waiting for cement to harden.

1020 GW03 brought to grade w/ cement and cover installed

1030 Stop development on GW05 (pumped ~ 60g for 1 hour 15 min). Water slightly turbid probably from clay

1040 Set up on GW04. Approximately 6 feet of water in well. Begin development and drumming of soil cuttings.

11/12/00

1100 Stop development on GW04. Pumped ~ 70g water onto ground. Still slightly turbid. GW04 brought to grade w/ cement. Cover installed. All soil cuttings drummed.

1145 Set up on GW02. Very little water in well.

1200 Curb box installed on GW01 + GW02

1430 GW01 + GW02 brought to grade w/ cement. Curb boxes installed. All soil cuttings placed in 55g drums

1630 Drillers clean up rest of their material on site and leave. Weston leaves site + locks up gate

Installed 5 curb boxes and cemented to grade all wells GW01 - GW05. All soil cuttings placed in 55g drums on site for future disposal. GW02 + GW03 are too dry to develop. GW04 + GW05 each developed for 1 hour + 15 minutes.

14

12/5/00 weather snow + windy ~ 32°

0730 Weston: E. Salazar + D. [illegible] onsite

0745 Well GW-03 static water level taken 9.45 ft.

0800 Get gas for generator + begin set up on GW03 for GW sampling

	Water	pH	Cond	DO	Temp	ORP	Turb
0835	11.95	6.3	72.7	[illegible]	12.8	0.7	20.8
0840	12.[illegible]	6.3	76.1	.39	13.1	-20	[illegible]
0845	13.[illegible]	6.3	76.3	.25	13.3	.225	[illegible]
0850	13.30	6.3	78.5	.37	13.2	-35	2.6

0855 Collect sample GW-03

0925 Set up on GW05

Static water level: [illegible] ft.

	Water	pH	Cond	DO	Temp	ORP	Turb
0930	8.75	6.9	72.2	.34	13.2	-35	[illegible]
0935	9.72	6.4	72.7	.21	12.2	-73	576
0940	7.79	6.[illegible]	73.4	.20	12.3	-115	49.5
0945	9.92	6.[illegible]	73.[illegible]	[illegible]	[illegible]	-126	65.8
0950	9.[illegible]	6.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Collect sample GW05

[illegible] Set up on GW04

Static water level = 8.98 ft

BLIZZARD!

[illegible]

15

12/6/00	Water	pH	Cond	DO	Temp	ORP	Turb
1025	10.54	6.1	62.8	.60	11.45	-97	95.0
1035	11.04	6.4	62.6	6.1	12.37	-103	90.[illegible]
1040	11.14	6.1	62.7	5.2	12.31	-10[illegible]	[illegible]
1045	11.24	6.[illegible]	63.[illegible]	4.7	12.03	-1[illegible]	[illegible]
1050	11.29	6.4	63.[illegible]	3.8	12.03	-107	36.[illegible]
1100	11.40	6.5	63.2	3.3	12.[illegible]	-109	30.3

1100 Collect sample GW04

1120 Lunch

1220 Set up on GW01

Static water level = 17.81 ft

	Water	pH	Cond	DO	Temp	ORP	Turb
1255	18.8	6.7	407	[illegible]	[illegible]	[illegible]	—
1300	14.3	6.7	474	.[illegible]	[illegible]	24	

1300 Well ran dry. Will let recharge for a while to collect sample later

1315 Set up on GW01 [illegible] reading 36 [illegible] strong smell of petroleum on well opening

Static water level = 12.81 ft

	Water	pH	Cond	DO	Temp	ORP	Turb
1325	13.71	[illegible]	2.9	[illegible]	11.1	3	—
1330	13.71	[illegible]	1	.[illegible]	[illegible]	[illegible]	—
1345	13.81	6.7	.67	.22	11.[illegible]	-7[illegible]	—
1355	13.85	6.7	.55	.21	11.1	-77	—
1400	13.[illegible]	6.7	.[illegible]	[illegible]	11.1	[illegible]	—

[illegible]

16
12/6/00

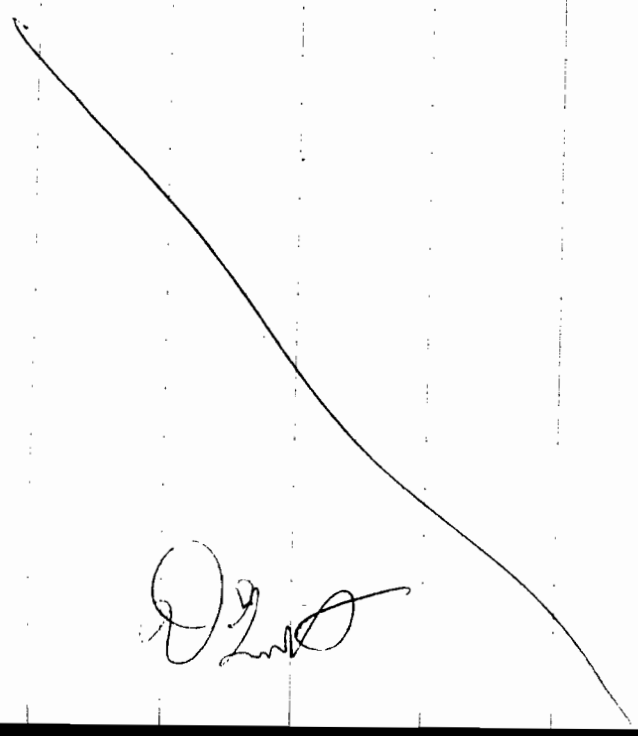
1100 Collect sample GW01, MS-MSD, + Dup. GW06 ——— DL

1120 GW02 did not recharge enough to collect GW samples from GW02 ——— DL

1200 Collect Equipment Blank EB06 ——— DL

1430 Clean up + lock wells. D. Lewis + E. Salazar leave site ——— DL

7 shallow wells + 1 bedrock well sampled for TCL + TAL compounds. PCB/Pest + CN, included. GW02 not sampled due to well dry-up ——— DL



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REFERENCE NO. 12

APPENDIX A of TAGM #4046

TABLE 1
Recommended soil cleanup objectives (mg/kg or ppm)
Volatile Organic Contaminants

Shortcut to TAGM 4046 Tables for SVOCs | Pesticides/PCBs | Heavy Metals

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin-ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Acetone	2.2	50	0.0011	0.11	N/A	8,000	10	0.2
Benzene	83	0.7	0.0006	0.06	24	N/A	5	0.06
Benzoic Acid	54 *	50	0.027	2.7	N/A	300,000	5	2.7
2-Butanone	4.5 *	50	0.003	0.3	N/A	4,000	10	0.3
Carbon Disulfide	54 *	50	0.027	2.7	N/A	8,000	5	2.7
Carbon Tetrachloride	110 *	5	0.006	0.6	5.4	60	5	0.6
Chlorobenzene	330	5	0.017	1.7	N/A	2,000	5	1.7
Chloroethane	37 *	50	0.019	1.9	N/A	N/A	10	1.9
Chloroform	31	7	0.003	0.30	114	800	5	0.3
Dibromochloromethane	N/A	50	N/A	N/A	N/A	N/A	5	N/A
1,2-Dichlorobenzene	1,700	4.7	0.079	7.9	N/A	N/A	330	7.9
1,3-Dichlorobenzene	310 *	5	0.0155	1.55	N/A	N/A	330	1.6
1,4-Dichlorobenzene	1,700	5	0.085	8.5	N/A	N/A	330	8.5
1,1-Dichloroethane	30	5	0.002	0.2	N/A	N/A	5	0.2
1,2-Dichloroethane	14	5	0.001	0.1	7.7	N/A	5	0.1
1,1-Dichloroethene	65	5	0.004	0.4	12	700	5	0.4
1,2-Dichloroethene (trans)	59	5	0.003	0.3	N/A	2,000	5	0.3
1-3 dichloropropane	51	5	0.003	0.3	N/A	N/A	5	0.3
Ethylbenzene	1,100	5	0.055	5.5	N/A	8,000	5	5.5
113 Freon (1,1,2 Trichloro-1,2,2 Trifluoroethane)	1,230 *	5	0.060	6.0	N/A	200,000	5	6.0
Methylene chloride	21	5	0.001	0.1	93	5,000	5	0.1
4-Methyl-2-Pentanone	19 *	50	0.01	1.0	N/A	N/A	10	1.0
Tetrachloroethene	277	5	0.014	1.4	14	800	5	1.4
1,1,1-Trichloroethane	152	5	0.0076	0.76	N/A	7,000	5	0.8

1,1,1-Trichloroethane	132	5	0.0076	0.76	N/A	7,000	5	0.8
1,1,2,2-Tetrachloroethane	118	5	0.006	0.6	35	N/A	5	0.6
1,2,3-trichloropropane	68	5	0.0034	0.34	N/A	80	5	0.4
1,2,4-trichlorobenzene	670 *	5	0.034	3.4	N/A	N/A	330	3.4
Toluene	300	5	0.015	1.5	N/A	20,000	5	1.5
Trichloroethene	126	5	0.007	0.70	64	N/A	5	0.7
Vinyl chloride	57	2	0.0012	0.12	N/A	N/A	10	0.2
Xylenes	240	5	0.012	1.2	N/A	200,000	--	1.2

a. Allowable Soil Concentration Cs = f x Cw x Koc
b. Soil cleanup objective = Cs x Correction Factor (CF)
N/A is not available

* Partition coefficient is calculated by using the following equation:
log Koc = -0.55 log S + 3.64, where S is solubility in water in ppm.
All other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1%, and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX A of TAGM #4046

TABLE 2
Recommended soil cleanup objectives (mg/kg or ppm)
Semi-Volatile Organic Contaminants

Shortcut to TAGM 4046 Tables for VOCs | Pesticides/PCBs | Heavy Metals

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin-ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Acenaphthene	4,600	20	0.9	90.0	N/A	5,000	330	50.0 ***
Acenaphthylene	2,056 *	20	0.41	41.0	N/A	N/A	330	41.0
Aniline	13.8	5	0.001	0.1	123	N/A	330	0.1
Anthracene	14,000	50	7.00	700.0	N/A	20,000	330	50.0 ***
Benzo(a)anthracene	1,380,000	0.002	0.03	3.0	0.224	N/A	330	0.224 or MDL
Benzo (a) pyrene	5,500,000	0.002 (ND)	0.110	11.0	0.0609	N/A	330	0.061 or MDL
Benzo (b) fluoranthene	550,000	0.002	0.011	1.1	N/A	N/A	330	1.1
Benzo (g,h,i) perylene	1,600,000	5	8.0	800	N/A	N/A	330	50.0 ***
Benzo (k) fluoranthene	550,000	0.002	0.011	1.1	N/A	N/A	330	1.1
bis(2-ethylhexyl) phthalate	8,706 *	50	4.35	435.0	50	2,000	330	50.0 ***
Butylbenzylphthlate	2,430	50	1.215	122.0	N/A	20,000	330	50.0 ***
Chrysene	200,000	0.002	0.004	0.4	N/A	N/A	330	0.4
4- Chloroaniline	43 ****	5	0.0022	0.22	200	300	330	0.220 or MDL
4-Chloro-3-methylphenol	47	5	0.0024	0.24	N/A	N/A	330	0.240 or MDL
2-Chlorophenol	15 *	50	0.008	0.8	N/A	400	330	0.8

Dibenzofuran	1,230 *	5	0.062	6.2	N/A	N/A	330	6.2
Dibenzo(a,h) anthracene	33,000,000	50	1,650	165,000	0.0143	N/A	330	0.014 or MDL
3,3'-Dichlorobenzidine	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dichlorophenol	380	1	0.004	0.4	N/A	200	330	0.4
2,4-Dinitrophenol	38	5	0.002	0.2	N/A	200	1,600	0.200 or MDL
2,6 Dinitrotoluene	198*	5	0.01	1.0	1.03	N/A	330	1.0
Diethylphthlate	142	50	0.071	7.1	N/A	60,000	330	7.1
Dimethylphthlate	40	50	0.020	2.0	N/A	80,000	330	2.0
Di-n-butyl phthalate	162*	50	0.081	8.1	N/A	8,000	330	8.1
Di-n-octyl phthlate	2,346 *	50	1.2	120.0	N/A	2,000	330	50.0 ***
Fluoranthene	38,000	50	19	1900.0	N/A	3,000	330	50.0 ***
Fluorene	7,300	50	3.5	350.0	N/A	3,000	330	50.0 ***
Hexachlorobenzene	3,900	0.35	0.014	1.4	0.41	60	330	0.41
Indeno (1,2,3-cd) pyrene	1,600,000	0.002	0.032	3.2	N/A	N/A	330	3.2
Isophorone	88.31 *	50	0.044	4.40	1,707	20,000	330	4.40
2-methylnaphthalene	727 *	50	0.364	36.4	N/A	N/A	330	36.4
2-Methylphenol	15	5	0.001	0.1	N/A	N/A	330	0.100 or MDL
4-Methylphenol	17	50	0.009	0.9	N/A	4,000	330	0.9
Naphthalene	1,300	10	0.130	13.0	N/A	300	330	13.0
Nitrobenzene	36	5	0.002	0.2	N/A	40	330	0.200 or MDL
2-Nitroaniline	86	5	0.0043	0.43	N/A	N/A	1,600	0.430 or MDL
2-Nitrophenol	65	5	0.0033	0.33	N/A	N/A	330	0.330 or MDL
4-Nitrophenol	21	5	0.001	0.1	N/A	N/A	1,600	0.100 or MDL
3-Nitroaniline	93 ~~89~~	5	0.005	0.5	N/A	N/A	1,600	0.500 or MDL

3-Methylphenol			0.005	0.5	N/A	N/A	1,000	or MDL
Pentachlorophenol	1,022	1	0.01	1.0	N/A	2,000	1,600	1.0 or MDL
Phenanthrene	4,365 *	50	2.20	220.0	N/A	N/A	330	50.0 ***
Phenol	27	1	0.0003	0.03	N/A	50,000	330	0.03 or MDL
Pyrene	13,295 *	50	6.65	665.0	N/A	2,000	330	50.0 ***
2,4,5-Trichlorophenol	89 *	1	0.001	0.1	N/A	8,000	330	0.1

a. Allowable Soil Concentration Cs = f x Cw x Koc
b. Soil cleanup objective = Cs x Correction Factor (CF)
N/A is not available
MDL is Method Detection Limit

* Partition coefficient is calculated by using the following equation:
log Koc = -0.55 log S + 3.64, where S is solubility in water in ppm.
Other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm., Total Semi- VOCs < 500ppm. and Individual Semi-VOCs < 50 ppm.

**** Koc is derived from the correlation Koc = 0.63 Kow (Determining Soil Response Action Levels..... EPA/540/2-89/057). Kow is obtained from the USEPA computer database 'MAIN'.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1%, and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX A of TAGM #4046

TABLE 3
Recommended soil cleanup objectives (mg/kg or ppm)
Organic Pesticides / Herbicides and PCBs

Shortcut to TAGM 4046 Tables for VOCs | SVOCs | Heavy Metals

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin-ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Aldrin	96,000	ND (<0.01)	0.005	0.5	0.041	2	8	0.041
alpha- BHC	3,800	ND (<0.05)	0.002	0.2	0.111	N/A	8	0.11
beta - BHC	3,800	ND (<0.05)	0.002	0.2	3.89	N/A	8	0.2
delta - BHC	6,600	ND (<0.05)	0.003	0.3	N/A	N/A	8	0.3
Chlordane	21,305 *	0.1	0.02	2.0	0.54	50	80	0.54
2,4-D	104 *	4.4	0.005	0.5	N/A	800	800	0.5
4,4'- DDD	770,000 *	ND (<0.01)	0.077	7.7	2.9	N/A	16	2.9
4,4'-DDE	440,000 *	ND (<0.01)	0.0440	4.4	2.1	N/A	16	2.1
4,4'-DDT	243,000 *	ND (<0.01)	0.025	2.5	2.1	40	16	2.1
Dibenzo-P-dioxins (PCDD) 2,3,7,8 TCDD	1709800	0.000035	0.0006	0.06	N/A	N/A	N/A	N/A
Dieldrin	10,700 *	ND (< 0.01)	0.0010	0.1	0.044	4	16	0.044
Endosulfan I	8,168 *	0.1	0.009	0.9	N/A	N/A	16	0.9
Endosulfan II	8,031 *	0.1	0.009	0.9	N/A	N/A	16	0.9
Endosulfan Sulfate	10,038 *	0.1	0.01	1.0	N/A	N/A	16	1.0
Endrin	9,157 *	ND (<0.01)	0.001	0.1	N/A	20	8	0.10
Endrin keytone	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
gamma - BHC		ND						

gamma-BHC (Lindane)	1,080	ND (<0.05)	0.0006	0.06	5.4	20	8	0.06
gamma - chlordane	140,000	0.1	0.14	14.0	0.54	5	80	0.54
Heptachlor	12,000	ND (<0.01)	0.0010	0.1	0.16	40	8	0.10
Heptachlor epoxide	220	ND (<0.01)	0.0002	0.02	0.077	0.8	8	0.02
Methoxychlor	25,637	35.0	9.0	900	N/A	400	80	***
Mitotane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Parathion	760	1.5	0.012	1.2	N/A	500	8	1.2
PCBs	17,510 *	0.1	0.1	10.0	1.0	N/A	160	1.0 (Surface) 10 (sub-surf)
Polychlorinated dibenzo-furans (PCDF)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silvex	2,600	0.26	0.007	0.7	N/A	600	330	0.7
2,4,5-T	53	35	0.019	1.9	N/A	200	330	1.9

a. Allowable Soil Concentration Cs = f x Cw x Koc
b. Soil cleanup objective = Cs x Correction Factor (CF)
N/A is not available

* Partition coefficient is calculated by using the following equation:
log Koc = -0.55 log S + 3.64, where S is solubility in water in ppm.
All other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1% (5% for PCBs as per PCB Guidance Document), and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX A of TAGM #4046

TABLE 4
Recommended soil cleanup objectives (mg/kg or ppm)
Heavy Metals

Shortcut to TAGM 4046 Tables for VOCs | SVOCs | Pesticides / PCBs

Contaminants	Protect Water Quality (ppm)	Eastern USA Background (ppm)	* CRDL (mg/kg or ppm)	***** Rec. Soil Cleanup Objective (ppm)
Aluminum	N/A	33,000	2.0	SB
Antimony	N/A	N/A	0.6	SB
Arsenic	N/A	3-12 **	0.1	7.5 or SB
Barium	N/A	15-600	2.0	300 or SB
Beryllium	N/A	0-1.75	0.05	0.16 (HEAST) or SB
Cadmium	N/A	0.1-1	0.05	1 or SB
Calcium	N/A	130 - 35,000 ***	50.0	SB
Chromium	N/A	1.5 - 40 **	0.1	10 or SB
Cobalt	N/A	2.5 - 60 **	0.5	30 or SB
Copper	N/A	1 - 50	0.25	25 or SB
Cyanide	N/A	N/A	0.1	***
Iron	N/A	2,000 - 550,000	1.0	2,000 or SB
Lead	N/A	****	0.03	SB ****
Magnesium	N/A	100 - 5,000	50.0	SB
Manganese	N/A	50 - 5,000	0.15	SB
Mercury	N/A	0.001 - 0.2	0.002	0.1
Nickel	N/A	0.5 -25	0.4	13 or SB
Potassium	N/A	8,500 - 43,000 **	50.0	SB
Selenium	N/A	0.1 - 3.9	0.05	2 or SB
Silver	N/A	N/A	0.1	SB
Sodium	N/A	6,000 - 8,000	50.0	SB
Thallium	N/A	N/A	0.1	SB
Vanadium	N/A	1-300	0.5	150 or SB
Zinc	N/A	9-50	0.2	20 or SB

Note: Some forms of metal salts such as Aluminum Phosphide, Calcium Cyanide, Potassium Cyanide, Copper cyanide, Silver cyanide, Sodium cyanide, Zinc phosphide, Thallium salts, Vanadium pentoxide and Chromium (VI) compounds are more toxic in nature. Please refer to the USEPA HEASTs database to find cleanup objectives if such metals are present in soil.

SB is site background
N/A is not available

* CRDL is contract required detection limit which is approx. 10 times the CRDL for water.

** New York State background

*** Some forms of Cyanide are complex and very stable while other forms are pH dependent and hence are very unstable. Site-specific form(s) of Cyanide should be taken into consideration when establishing soil cleanup objective.

**** Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.

***** Recommended soil cleanup objectives are average background concentrations as reported in a 1984 survey of reference material by E. Carol McGovern, NYSDEC.

REFERENCE NO. 13

RECORD OF COMMUNICATION

TO: Yunru Yang

FROM: *JANET TROTTER*
Region 2, ESAT/RSCC

DATE: Feb. 5, 2001

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) LACKAWANNA FOUNDRY 28706 AATSLA ORG 14 S/IW

REPLY BY: _____

SIGNATURE: [signature] DATE: 2/6/01

DATE RECEIVED BY RSCC: _____

REV: 1/5/00

RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER

DATE: DEC. 1, 2000
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: George Karras, Hazardous Waste Support Section

JAN 10 2001

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

SITE	LACKAWANNA FOUNDRY	CASE#	28706
CONTRACTOR	SAT (WESTON)	#SAMPLES	MATRIX
PHASE	BZ	14	SOIL
LAB	AATSLA	1	WATER
TURN-AROUND-TIME	21 DAYS	FRACTION	FULL TCL
CERCLIS ID #	NYSFN0204209	SITE SPILL #	MY

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
		John Bulich	11-30-00
John Bulich	12-1-00	Andy Panayiotou	01-03-01
Andy Panayiotou	01-09-01	D Karras	01/10/01
D Karras	01/10/01	J. Trotter	1/10/01

(over for instructions) revised 3/99

p. 2

Functional Guidelines for Evaluating Organic Analysis

CASE No.: 28706 SDG No.: BNP05
LABORATORY: AATSLA SITE: LACKAWANNA FOUNDRY

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: January 9, 2001

Verified By: S Karras Date: 01/10/~~2000~~ 2001

SDG#BNP05

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.

All samples met both Technical and Contractual Holding Times for all fractions.

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.

VOA:

DC-35: The following volatile samples have system monitoring compound recoveries above the upper limit of the criteria window.
Hits are qualified "J" and non-detects are not flagged.

BNP05MS

BNA/PEST:
No problems for this criterion.

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 is performed based on MS/MSD recovery.

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 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:

DC-031: The following volatile samples have analyte concentrations reported **above** the CRQL and less than or equal to ten times (10X) the associated method blank concentration.
Hits are qualified "U" and non-detects are not flagged.

BNP05, P05MSD, P12
Acetone

DC-200: The following volatile samples have analyte concentrations reported **below** the CRQL and less than or equal to ten times (10X) the associated method blank concentration. Reported sample concentrations have been elevated to the CRQL.
Hits are qualified "U" and non-detects are not flagged.

BNP05, NP05MS, NP05MSD, NP06, NP07, NP08, NP09
BNP10, NP11, NP12, NP13, BNQ85, Q88, Q89, Q91
Methylene chloride

BNP07, NP08, NP09, NP11, BNQ87, Q88, Q89, Q91
Acetone

DC-236: The following pesticide samples have analyte concentrations reported **below** the CRQL and less than or equal to five times (5X) the associated method blank concentration. Reported sample concentrations have been elevated to the CRQL.
Hits are qualified "U" and non-detects are not flagged.

BNP05
gamma-BHC (Lindane), Endrin, Methoxychlor

BNP05MS
Methoxychlor, Endrin aldehyde

BNP05MSD
Methoxychlor, Endrin aldehyde

BNP06
4,4'-DDT, Methoxychlor, Endrin aldehyde

BNP07
Endrin, Methoxychlor, Endrin aldehyde

BNP08
4,4'-DDT, Methoxychlor, Endrin ketone, Endrin aldehyde

BNP10
Methoxychlor, Endrin aldehyde

BNP11
Methoxychlor

BNP12
4,4'-DDT

BNP13
4,4'-DDT

BNQ85
Endrin, 4,4'-DDT, Endrin ketone
Endrin aldehyde

BNQ87
Methoxychlor, Endrin aldehyde

BNQ88
Methoxychlor, Endrin aldehyde

BNQ89
Methoxychlor, Endrin ketone

BNQ91
4,4'-DDT, Methoxychlor

B) Field or rinse blank contamination:
VOA:

No contamination in the associated field blank.

BNA/PEST:

No qualification performed based on field blank contamination.

C) Trip blank contamination for VOA aqueous samples:

Not Applicable.

D) Storage Blank associated with VOA samples only

DC-XXX: The following volatile samples have analyte concentrations reported **above** the CRQL and less than or equal to ten times (10X) the associated **Storage** blank concentration.

Hits are qualified "U" and non-detects are not flagged.

BNP06, NP13, NP05MS
Acetone

E) Tics "R" rejected

VOA:

The following TIC's are qualified "R". They have been identified as column bleed and Siloxane peaks.

BNP07, P08, P12, P13, BNQ85, Q88
Unknown Siloxanes

BNA:

The following TIC's are qualified "R". They have been identified as Aldol condensation products.

BNP06, P07, Q87, Q88
2-Pentanone, 4-Hydroxy-4-Methyl

The following TIC's are qualified "R". Their concentration is five times (5X) less than their associated method blank concentration.

BNP05, P06, P07, P08, P09, P10, P11, P12, P13, Q85
BNQ87, Q88, Q89, Q91
Unknown at various Retention times

The following TIC's are qualified "R". They have been identified as target compounds.

BNP09, P09DL
Benzo(k)fluoranthene

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 Decafluorotriphenyl-phosphine (DFTPP).

If the mass calibration is in error, all associated data will be classified as unusable "R".

No problems found for this qualification.

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:

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".

BNP05, P05MS, P05MSD, P06, P07, P08, P09, SBLKFD
Benzaldehyde

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.

No problems with this criterion.

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.

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".

Analytes qualified "J".

BNP05
gamma-BHC

BNP05, P12
gamma-Chlordane

BNP12
Endrin

BNP12, P05MSD
Endrin ketone

BNP13
Heptachlor, Endosulfan I, Methoxychlor, Endrin Aldehyde

BNQ85
Endosulfan II

BNP05MS
4,4'-DDD

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".

Analytes qualified "JN".

BNP09
Endrin ketone

BNP12
Endrin Aldehyde

Analytes qualified "R"

BNP06
beta-BHC

Analytes qualified "U".

BNP06, P08, P11, P12, P13, BNQ88
alpha-BHC

BNP11, P13, BNQ85, Q87, Q88, Q91, Q92
beta-BHC

BNP05, P12, Q87
Heptachlor

BNP05, P05MS, P05MSD, P08, P09, P11, P13
BNQ85, Q87, Q88
Heptachlor epoxide

BNP08, P09, P10, P12, P13
Dieldrin

BNP05MS, P05MSD, P08, P09, P12, P13
4,4'-DDE

BNP08, P13
Endrin

BNP08, P09, P12, Q88
Endosulfan II

BNP06, P08, P09, P10, Q88, Q92
4,4'-DDD

BNP05, P05MSD, P08, P09, Q85
Endosulfan sulfate

BNP13
Endrin ketone

BNP09
Endrin Aldehyde

BNP08, P09, Q88
alpha-Chlordane

BNP06, P07, P08, P09, P11
gamma-Chlordane

10. CONTRACT PROBLEMS NON-COMPLIANCE:

BNA:
BNP08DL, P09DL - Analytes were diluted below the upper half of the calibration range. As per OLM04.2, sec. 10.6.5.3, p. D-43/SVOA, "The dilution factor chosen should keep the response of the largest peak for a target compound in the upper half of the calibration range of the Instrument."

11. FIELD DOCUMENTATION:

As per the Traffic reports , none of the field blanks collected required a volatile analysis.

12. OTHER PROBLEMS

13. This package contains reextractions, reanalyses or dilutions. Upon reviewing the QA results, the following Form 1(s) are identified not to be used.

BNA:
BNP08DL, P09DL

DPO: []ACTION [X]FYI REGION__2_

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO._28706__ **LABORATORY____AATSLA_____**

SDG NO. B04AN _ **DATA USER___EPA/Region II_____**

SOW_OLM04.2 _____ **REVIEW COMPLETION DATE_January 9, 2001_**

NO. OF SAMPLES___1___WATER ___14____SOIL _____OTHER

REVIEWER: [] ESD [x] ESAT [] OTHER, CONTRACTOR_____

QC ITEM	VOA	BNA	PEST		
HOLDING TIMES	O	O	O		
GC-MS PERFORMANCE	O	O	F		
INITIAL CALIBRATIONS	O	O	O		
CONTINUING CALIBRATIONS	O	X	O		
FIELD BLANKS(F = N/A)	O	O	O		
LABORATORY BLANKS	O	O	O		
SURROGATES	X	O	O		
MATRIX SPIKE/DUPLICATES	O	O	O		
% MOISTURE	O	O	O		
INTERNAL STANDARDS	O	O	F		
COMPOUND IDENTIFICATION	O	O	X		
COMPOUND QUANTITATION	O	O	O		
SYSTEM PERFORMANCE	O	O	O		
OVERALL ASSESSMENT	O	O	O		

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 : January 9, 2001 Case : 28706, SDG# BNP05
Site Name: Zschiegner Refining Lab Name: AATSLA Reviewer"s Initial : AP
Number of Samples: 1 Waters, 14 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	0	0	0	0	0	22	0	1056	0
AE(14)	0	0	0	0	0	0	0	21	0	294	0
BN(51)	0	0	0	0	0	0	0	21	0	1071	0
PEST(21)	0	0	0	0	1	0	0	19	1	399	0
PCB(7)	0	0	0	0	0	0	0	19	0	133	0

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)	9	0	0	0	0	0	0	22	9	1056	1
AE(14)	0	0	0	0	0	0	0	21	0	294	0
BN(51)	0	0	8	0	0	0	0	21	8	1071	1
PEST(21)	0	0	0	0	14	0	0	19	14	399	4
PCB(7)	0	0	0	0	0	0	0	19	0	133	0

*** % MOISTURE**

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 28706 **LABORATORY:** GATSLA

SITE NAME: Lackawanna Foundry **SDG Number(s):** BVF05

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/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 28706 **LABORATORY:** GATSLA

SITE NAME: Lackawanna Foundry **SDG Number(s):** BVF05

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/A

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.

	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?	[✓]	___	___
# 1 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.

c1. Most of package is in the proper order except for the chromatograms. They are placed after the Quant reports while ~~it~~ they should be placed in front instead.

YES NO N/A

PART A: VOA ANALYSES

..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? ___ N ___

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 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.

.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ N ___

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? MS not required	[ ]	✓	___
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.

	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	4 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	0 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? [✓] ___ ___

		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?	[✓]	___	___

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.

		YES	NO	N/A
	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-48/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)? ___ [✓] ___

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 ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5× blank value.	Sample conc. is < CRQL and ≤ 5× blank value.	Sample conc. is > CRQL and > 5× 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".

	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 96, 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 Target Compound List (TCL) Analytes (FORM I VOA)

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 range in the original analysis by crossing out

YES NO N/A

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 analyte "R" (unusable) and positive hits "J".

	YES	NO	N/A

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-59/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.) ___ [✓] ___

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? [✓] ___ ___

YES NO N/A

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? ___ N ___

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? ___ N ___

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

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.) ___ ✓ ___

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 outside the upper or lower limit, flag with "J" all positive results quantitated with this

YES NO N/A

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.

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:

	YES	NO	N/A
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:

	YES	NO	N/A
a. Low Water?	[✓]	___	___
b. Low Soil?	[✓]	___	___

	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.

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	Soils
N/A out of 22	0 out of ~~22~~ 18

YES NO N/A

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
N/A out of 11	0 out of 9

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.

YES NO N/A

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 (5×) 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 ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5× blank value.	Sample conc. is < CRQL and ≤ 5× blank value.	Sample conc. is > CRQL and > 5× 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

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).

	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/A

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.) ___ [✓] ___

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/A

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? ✓ [ ] ___

0,48

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? [ ] ___ [✓]

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.

	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.

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 > 10^0 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 reliability of the data and the effects of

YES NO N/A

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 Surrocate 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.

2. When one surrogate on one column was outside (either above or below) the contract limits but above 10%.

3. When the same surrogate on both columns is above the contract limit.

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.

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".

YES NO N/A

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? Field Blk [ ] ___ [√]

	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 B-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.			
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/A

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 ≤ 5× blank.	Sample conc. < CRQL & is ≤ 5× blank value.	Sample conc. > CRQL & > 5× 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.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 Calibration and GC Performance

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.

7.3 Are Forms VI PEST 1-7 present and complete for each column and each analytical sequence?	[✓]	___	___

ACTION: If no, take action as specified in 3.2 above.

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.

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 B-52)? ✓ ___ ___

	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?	✓		
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/A

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 last in-control standard, 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%? [✓] ___ ___

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)

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.

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.

	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.

	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.

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.

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.

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:

YES NO N/A

% Difference	Qualifier
0 - 25%	None
25 - 70%	"J"
70 - 100%	"JN"
> 100% (No interference)	"R"
100 - 200% (Interference detected)*	"JN"
> 50% (Pesticide value is < CRQL)**	"U"
> 200%	"R"

* 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? [✓] ___ ___

	YES	NO	N/A
c. Blanks?	[✓]		
d. Instrument Blanks (per column & analysis)?	[✓]		
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?	[✓]		
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

	YES	NO	N/A
12.1 Are there any transcription/calculation errors in Form I results? Check at least two positive results. Were any errors found?		[✓]	

YES NO N/A

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.

	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.

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000001

SDG NARRATIVE

Laboratory Name: **AATSLA**, Baton Rouge, LA
Case No.: 28706
SDG No.: BNP05
Contract: 68-W0-0081

Samples were received November 8th, 2000, for organic analyses following the USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) OLM04.2 and the terms of contract 68W00081. The samples are as listed below in Table I. Also included in this table are pH values obtained from water sample volatile containers measured just following the analysis of each sample (where applicable).

TABLE I

EPA Sample ID:
BNP05
BNP05MS
BNP05MSD
BNP06
BNP07
BNP08
BNP09
BNP10
BNP11
BNP12
BNP13
BNQ85
BNQ87
BNQ88
BNQ89
BNQ91
BNQ92

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000002

General: The samples of this SDG were received intact and on ice. The temperature of the samples at receipt was recorded as 5 to 6°C as determined by a non contact thermometer (Raytek Raynger model ST-2). Cooler temperature indicators were not supplied with the coolers. No problems were recorded with the receipt of the samples.

Volatile Organic Analysis:

All calibration, surrogate, and internal standard control criteria were within contractual limits with the exception of a surrogate for the MS of sample BNP05. A reanalysis is not required for a matrix spike sample. Recovery outliers were also observed for the MS/MSD set of sample BNP05. All volatile holding times were met.

No additional billables are submitted for VOAs:

A 75m x 0.53mm ID, 3μm film DB-624 J&W Bonded, fused silica capillary column was utilized for analysis. Also a 30.5 cm Supelco Purge Trap "I" (VOCARB 4000) consisting of Carbopack C & B/Carboxen 1000 & 1001

Semi-Volatile Organic Analysis:

All calibration, internal standard, matrix spike, and surrogate control criteria were within normal limits. All semivolatile holding times were met.

Two (2) additional billables are submitted for BNAs as follows:

BNP08DL (Dilution)
BNP09DL (Dilution)

Dilutions were necessary for these two samples to bring target analyte(s) into the instrument calibration range. The original is submitted for added value.

Column used for semivolatile analysis:
Restek XTI-5 (Bonded fused silica, 5% Phenyl, 95% Methyl silicone), 0.25mm internal diameter, 0.25μm film thickness, 30m length.

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000003

Pesticide Organic Analysis:

The Columns used for Pesticide analysis are:

a. CLPESTICII - Restek Proprietary 0.53 mm ID, 30 m length.
b. CLPESTIC - Restek Proprietary 0.53 mm ID, 30 m length

Qualifications:
Volatile and semivolatile target analytes were evaluated and reported to a quantification report limit of 1.0. Compounds that were detected below this level were assessed only if they otherwise were detected as a TIC.

Note that results for xylenes as presented on quantitation reports are not calculated in accordance to the requirements of the SOW. Corrections in compliance with the SOW are manually generated and are documented on applicable quantitation reports.

Dilutions are generally performed to bring target analytes into instrument calibration range. A second level of dilution may have been reported (if performed) to provide added value. Dilutions performed for other reasons are explained elsewhere in this narrative.

Volatile soil samples analyzed using the Method 5035 technique are indicated by the word "Encore" (or like notation) on the header of the quantification report. Those performed using soil from a jar are those generally analyzed with exact sample weights of 5.0g and the word "jar" written on the quantification report header.

Quantification limits for Encore samples containing more than 5.0 grams are arbitrarily cut off at the CRQL of 10 as required by the SOW.

Manual integrations, if necessary, were performed to correct errors of automated software routines. They are represented by an "m" flag on the quantification reports and are each accompanied by hardcopy graphic displays initialed and dated by the analyst or reviewer performing the manual integration.

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000004

"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."

John Troost
GC/MS Supervisor
November 28th, 2000
JT/jj

AATSLA
GC/MS LABORATORY : ALKANE REPORT

REPORT DATE: 11/27/00 DATA FILE: 319F08.D

SAMPLE ID: BNP05 MATRIX: SOIL
LAB ID: 45798.01 DATE ANALYZED: 11/14/00

	CAS #	COMPOUND	RT	EST. CONC (UG/KG)
1)	000112-95-8	EICOSANE	12.02	175
2)	000112-95-8	EICOSANE	12.76	212

AATSLA
GC/MS LABORATORY : ALKANE REPORT

REPORT DATE: 11/27/00 DATA FILE: 319F11.D

SAMPLE ID: BNP06 MATRIX: SOIL
LAB ID: 45798.04 DATE ANALYZED: 11/14/00

	CAS #	COMPOUND	RT	EST. CONC (UG/KG)
1)	000112-95-8	EICOSANE	12.03	181
2)	000630-07-9	PENTATRIACONTANE	12.76	208

AATSLA
GC/MS LABORATORY : ALKANE REPORT

REPORT DATE: 11/27/00 DATA FILE: 319F14.D

SAMPLE ID: BNP09 MATRIX: SOIL
LAB ID: 45798.07 DATE ANALYZED: 11/14/00

	CAS #	COMPOUND	RT	EST. CONC (UG/KG)
1)	000544-76-3	HEXADECANE	5.67	146
2)	055045-07-3	DODECANE, 2-METHYL-8-PROPYL-	5.96	93
3)	000629-97-0	DOCOSANE	9.02	104
4)	000638-67-5	TRICOSANE	9.50	149
5)	000646-31-1	TETRACOSANE	9.98	233
6)	000630-06-8	HEXATRIACONTANE	10.43	401
7)	000629-94-7	HENEICOSANE	10.86	642
8)	000629-78-7	HEPTADECANE	11.27	570
9)	000630-01-3	HEXACOSANE	11.68	563
10)	000629-92-5	NONADECANE	12.06	591
11)	000112-95-8	EICOSANE	12.79	411
12)	013475-77-9	EICOSANE, 9-OCTYL-	13.14	355
13)	000629-94-7	HENEICOSANE	13.50	217
*)	000593-49-7	HEPTACOSANE	14.33	90

AATSLA
GC/MS LABORATORY : ALKANE REPORT

REPORT DATE: 11/27/00 DATA FILE: 322F04.D

SAMPLE ID: BNP09DL MATRIX: SOIL
LAB ID: 45798.07DL DATE ANALYZED: 11/17/00

	CAS #	COMPOUND	RT	EST. CONC (UG/KG)
1)	000646-31-1	TETRACOSANE	9.94	504
2)	013475-75-7	PENTADECANE, 8-HEXYL-	10.39	895
3)	000629-97-0	DOCOSANE	10.82	1381
4)	000629-78-7	HEPTADECANE	11.24	1222
5)	000629-94-7	HENEICOSANE	11.64	1282
6)	000593-45-3	OCTADECANE	12.03	1498
7)	000630-06-8	HEXATRIACONTANE	12.77	1054
8)	000112-95-8	EICOSANE	13.12	841
9)	000112-95-8	EICOSANE	13.47	570

AATSLA
GC/MS LABORATORY : ALKANE REPORT

REPORT DATE: 11/27/00 DATA FILE: 322F05.D

SAMPLE ID: BNP13 MATRIX: SOIL
LAB ID: 45798.11 DATE ANALYZED: 11/17/00

	CAS #	COMPOUND	RT	EST. CONC (UG/KG)
1)	017301-33-6	UNDECANE, 4,8-DIMETHYL-	4.86	100

AATSLA

Sample Delivery Group (SDG)
Cover Sheet

SDG Number: BNP05

Laboratory Name: American Analytical & Technical Services, Incorporated Laboratory Code: AATSLA

Contract No.: 68-W0-0081 Case No.: 28706

Analysis Price: SDG Turnaround: 21 Days

EPA Sample Numbers in SDG (Listed in Numberical Order)

1)	BNP05	7)	BNP11	13)	BNQ89	19)	
2)	BNP06	8)	BNP12	14)	BNQ91	20)	
3)	BNP07	9)	BNP13	15)	BNQ92	21)	
4)	BNP08	10)	BNQ85	16)		22)	
5)	BNP09	11)	BNQ87	17)		23)	
6)	BNP10	12)	BNQ88	18)		24)	

BNP05	BNQ92
First Sample in SDG	Last Sample in SDG
11/08/00	11/08/00
First Sample Receipt Date	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 Nancy LeBlanc Date 11/09/00

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP05

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.01

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A10.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 27 Date Analyzed: 11/10/00

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	24	U ~~B~~
75-15-0	Carbon Disulfide	2	J
79-20-9	Methyl Acetate	14	U
75-09-2	Methylene Chloride	14 ~~2~~	U ~~BJ~~
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	11	J
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.

BNP05

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.01

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A10.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 27 Date Analyzed: 11/10/00

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	
108-10-1	4-Methyl-2-Pentanone	14	
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.

BNP05

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.01

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A10.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 27 Date Analyzed: 11/10/00

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.					
5.					
6.					
7.					
8.					
9.					
10.					
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21.					
22.					
23.					
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28.					
29.					
30.					

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP06

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.04

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A11.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 28 Date Analyzed: 11/10/00

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	
75-69-4	Trichlorofluoromethane	14	
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	59	U ~~B~~
75-15-0	Carbon Disulfide	14	U
79-20-9	Methyl Acetate	14	U
75-09-2	Methylene Chloride	14 ~~2~~	U ~~BJ~~
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	29	
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

P.56

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP06

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.04

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A11.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 28 Date Analyzed: 11/10/00

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

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1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BNP06

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.04

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A11.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 28 Date Analyzed: 11/10/00

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.					
5.					
6.					
7.					
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9.					
10.					
11.					
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP07

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.05

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A12.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 21 ✓ Date Analyzed: 11/10/00

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 ~~4~~	V ~~BJ~~
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13 ~~3~~	V ~~BJ~~
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.

BNP07

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.05

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A12.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 21 Date Analyzed: 11/10/00

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	
108-10-1	4-Methyl-2-Pentanone	13	
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

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNP07

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.05

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A12.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 21 Date Analyzed: 11/10/00

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.	556-67-2	CYCLOTETRASILOXANE, OCTAMETH	14.11	~~10~~	JN
2.		UNKNOWN	16.75	10	J
3.					
4.					
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP08

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.06

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A13.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 3 Date Analyzed: 11/10/00

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	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	~~2~~ 10	~~BJ~~ U
75-15-0	Carbon Disulfide	10	U
79-20-9	Methyl Acetate	10	U
75-09-2	Methylene Chloride	~~1~~ 10	~~BJ~~ 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	10	U
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

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP08

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.06

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A13.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 3 Date Analyzed: 11/10/00

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	10	U
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	10	U
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)	10	U
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	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BNP08

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.06

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A13.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 3 Date Analyzed: 11/10/00

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 4 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	556-67-2	CYCLOTETRASILOXANE, OCTAMETH	14.10	~~29~~	~~JN~~
2.	526-73-8	BENZENE, 1,2,3-TRIMETHYL-	14.30	7	JN
3.	95-63-6	BENZENE, 1,2,4-TRIMETHYL-	14.82	10	JN
4.		UNKNOWN	16.73	7	
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
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29.					
30.					

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP09

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.07

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A14.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 10 ✓ Date Analyzed: 11/10/00

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	11	U
74-87-3	Chloromethane	11	U
75-01-4	Vinyl Chloride	11	U
74-83-9	Bromomethane	11	U
75-00-3	Chloroethane	11	U
75-69-4	Trichlorofluoromethane	11	U
75-35-4	1,1-Dichloroethene	11	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	11	U
67-64-1	Acetone	11 ~~3~~	U ~~BJ~~
75-15-0	Carbon Disulfide	11	U
79-20-9	Methyl Acetate	11	U
75-09-2	Methylene Chloride	11 ~~3~~	U ~~BJ~~
156-60-5	trans-1,2-Dichloroethene	11	U
1634-04-4	Methyl tert-Butyl Ether	11	U
75-34-3	1,1-Dichloroethane	11	U
156-59-2	cis-1,2-Dichloroethene	11	U
78-93-3	2-Butanone	11	U
67-66-3	Chloroform	11	U
71-55-6	1,1,1-Trichloroethane	11	U
110-82-7	Cyclohexane	11	U
56-23-5	Carbon Tetrachloride	11	U
71-43-2	Benzene	11	U
107-06-2	1,2-Dichloroethane	11	U

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1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP09

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.07

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A14.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 10 Date Analyzed: 11/10/00

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	11	U
108-87-2	Methylcyclohexane	11	U
78-87-5	1,2-Dichloropropane	11	U
75-27-4	Bromodichloromethane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	
108-10-1	4-Methyl-2-Pentanone	11	
108-88-3	Toluene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
79-00-5	1,1,2-Trichloroethane	11	U
127-18-4	Tetrachloroethene	11	U
591-78-6	2-Hexanone	11	U
124-48-1	Dibromochloromethane	11	U
106-93-4	1,2-Dibromoethane	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
1330-20-7	Xylene (total)	11	U
100-42-5	Styrene	11	U
75-25-2	Bromoform	11	U
98-82-8	Isopropylbenzene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
541-73-1	1,3-Dichlorobenzene	11	U
106-46-7	1,4-Dichlorobenzene	11	U
95-50-1	1,2-Dichlorobenzene	11	U
96-12-8	1,2-Dibromo-3-chloropropane	11	U
120-82-1	1,2,4-Trichlorobenzene	11	U

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1F
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BNP09

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.07

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A14.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 10 Date Analyzed: 11/10/00

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 4 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	14.11	88	J
2.	95-63-6	BENZENE, 1,2,4-TRIMETHYL-	14.32	10	JN
3.	526-73-8	BENZENE, 1,2,3-TRIMETHYL-	14.83	15	JN
4.		UNKNOWN	16.75	23	J
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP10

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.08

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A15.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 19 Date Analyzed: 11/10/00

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	
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 ~~3~~	U ~~BU~~
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.

BNP10

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.08

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A15.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 19 Date Analyzed: 11/10/00

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

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BNP10

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.08

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A15.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 19 Date Analyzed: 11/10/00

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	14.10	20	J
2.		UNKNOWN	16.74	14	J
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
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28.					
29.					
30.					

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP11

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.09

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A16.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 20 Date Analyzed: 11/10/00

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 ~~3~~	U ~~BJ~~
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13 ~~3~~	U ~~BJ~~
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.

BNP11

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.09

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A16.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 20 Date Analyzed: 11/10/00

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

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNP11

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.09

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A16.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 20 Date Analyzed: 11/10/00

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.					
5.					
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP12

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.10

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A17.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 21 Date Analyzed: 11/10/00

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	
75-69-4	Trichlorofluoromethane	13	
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	27	U ~~B~~
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13 ~~2~~	U ~~BJ~~
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	9	J
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.

BNP12

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.10

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A17.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 21 Date Analyzed: 11/10/00

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.

BNP12

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.10

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A17.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 21 Date Analyzed: 11/10/00

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.	541-05-9	CYCLOTRISILOXANE, HEXAMETHYL	11.04	~~7~~	~~JN~~
2.	556-67-2	CYCLOTETRASILOXANE, OCTAMETH	14.10	~~7~~	~~JN~~
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
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27.					
28.					
29.					
30.					

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP13

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.11

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 319A10.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 24 Date Analyzed: 11/14/00

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	61	U ~~B~~
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13 ~~2~~	U ~~BJ~~
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	
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.

BNP13

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.11

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 319A10.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 24 Date Analyzed: 11/14/00

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.

BNP13

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.11

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 319A10.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 24 Date Analyzed: 11/14/00

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.	556-67-2	CYCLOTETRASILOXANE, OCTAMETH	14.12	~~20~~	~~BJN~~
2.		UNKNOWN	16.76	19	J
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
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30.					

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ85

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.12

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A19.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 25 Date Analyzed: 11/10/00

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	23	U B
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	~~1~~ 13	U ~~BJ~~
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	8	J
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.

BNQ85

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.12

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A19.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 25 Date Analyzed: 11/10/00

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

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNQ85

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.12

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A19.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 25 Date Analyzed: 11/10/00

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.	541-05-9	CYCLOTRISILOXANE, HEXAMETHYL	11.04	~~8~~	~~JN~~
2.					
3.					
4.					
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ87

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.13

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A20.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 27 ✓ Date Analyzed: 11/10/00

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 ~~13~~	U ~~BJ~~
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	5	J
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.

BNQ87

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.13

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A20.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 27 Date Analyzed: 11/10/00

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	
108-88-3	Toluene	14	
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

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNQ87

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.13

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A20.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 27 Date Analyzed: 11/10/00

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	14.08	8	J
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BNQ88

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.14

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A21.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 20 Date Analyzed: 11/10/00

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 ~~5~~	U ~~BJ~~
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13 ~~2~~	U ~~BJ~~
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.

BNQ88

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.14

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A21.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 20 Date Analyzed: 11/10/00

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.
BNQ88

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.14

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A21.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 20 Date Analyzed: 11/10/00

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 4 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	11.06	7	J
2.	556-67-2	CYCLOTETRASILOXANE, OCTAMETH	14.11	~~11~~	~~JN~~
3.		UNKNOWN	16.75	30	J
4.		UNKNOWN	20.01	6	J
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
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29.					
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ89

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.15

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A22.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 22 Date Analyzed: 11/10/00

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 ~~4~~	U ~~BJ~~
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13 ~~1~~	U ~~BJ~~
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.

BNQ89

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.15

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A22.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 22 Date Analyzed: 11/10/00

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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1F

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNQ89

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.15

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A22.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 22 Date Analyzed: 11/10/00

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	14.11	8	J
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ91

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.16

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A23.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 22 Date Analyzed: 11/10/00

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	
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 ~~4~~	U ~~BJ~~
75-15-0	Carbon Disulfide	13	U
79-20-9	Methyl Acetate	13	U
75-09-2	Methylene Chloride	13 ~~2~~	U ~~BJ~~
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	1	J
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

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1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ91

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.16

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A23.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 22 Date Analyzed: 11/10/00

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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1F

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNQ91

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.16

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 315A23.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. 22 Date Analyzed: 11/10/00

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.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
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28.					
29.					
30.					

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ92 FB

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) WATER Lab Sample ID: 45798.17

Sample wt/vol: 5 (g/mL) ML Lab File ID: 318B23.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. _____ Date Analyzed: 11/13/00

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
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	10	U
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	10	U
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

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ92 FB

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) WATER Lab Sample ID: 45798.17

Sample wt/vol: 5 (g/mL) ML Lab File ID: 318B23.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. _____ Date Analyzed: 11/13/00

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	10	U
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	10	
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)	10	U
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	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1F

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNQ92

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) WATER Lab Sample ID: 45798.17

Sample wt/vol: 5 (g/mL) ML Lab File ID: 318B23.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: not dec. _____ Date Analyzed: 11/13/00

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/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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000278

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP05

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

SS-01

Matrix: (soil/water) SOIL ✓ Lab Sample ID: 45798.01

Sample wt/vol: ✓ 30.0 (g/mL) G Lab File ID: 319F08.D

Level: (low/med) LOW Date Received: 11/08/00 ✓

% Moisture: 27 ✓ decanted: (Y/N) N Date Extracted: 11/08/00 ✓

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y ✓ pH: 4.2 ✓ 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	450	U
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	450	U
99-09-2	3-Nitroaniline	1100	U
83-32-9	Acenaphthene	450	U

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BNP05
SS-01

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.01

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 319F08.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 27 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 4.2 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	450	U
121-14-2	2,4-Dinitrotoluene	450	U
84-66-2	Diethylphthalate	450	U
86-73-7	Fluorene	450	U
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	450	U
120-12-7	Anthracene	450	U
86-74-8	Carbazole	450	U
84-74-2	Di-n-butylphthalate	450	U
206-44-0	Fluoranthene	450	U
129-00-0	Pyrene	450	U
85-68-7	Butylbenzylphthalate	450	U
91-94-1	3,3'-Dichlorobenzidine	450	U
56-55-3	Benzo(a)anthracene	450	U
218-01-9	Chrysene	450	U
117-81-7	bis(2-Ethylhexyl)phthalate	450	U
117-84-0	Di-n-octylphthalate	450	U
205-99-2	Benzo(b)fluoranthene	450	U
207-08-9	Benzo(k)fluoranthene	450	U
50-32-8	Benzo(a)pyrene	170	J
193-39-5	Indeno(1,2,3-cd)pyrene	450	U
53-70-3	Dibenz(a,h)anthracene	450	U
191-24-2	Benzo(g,h,i)perylene	450	U

(1) Cannot be seperated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNP05 SS-01

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.01

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 319F08.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 27 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 4.2 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	3.19	~~150~~	~~BJ~~	R
2.		UNKNOWN	8.01	96	J	
3.		UNKNOWN	10.06	~~640~~	~~BJ~~	R
4.	6624-79-9	1-DOTRIACONTANOL	10.38	200	JN	
5.		UNKNOWN	10.50	170	J	
6.	1599-67-3	1-DOCOSENE	11.26	150	JN	
7.	629-96-9	1-EICOSANOL	12.06	100	JN	
8.		UNKNOWN	12.87	95	J	
9.		UNKNOWN	13.71	200	J	
10.		UNKNOWN	13.91	370	J	
11.	127-22-0	TARAXEROL	14.07	200	JN	
12.		UNKNOWN	14.15	210	J	
13.		UNKNOWN	14.28	370	J	
14.		UNKNOWN	14.43	690	J	
15.		UNKNOWN	14.49	110	J	
16.		UNKNOWN	14.58	740	J	
17.		UNKNOWN	14.76	96	J	
18.		UNKNOWN	14.99	200	J	
19.		UNKNOWN	15.15	1600	J	
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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP06 SS-06

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 319F11.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 28 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.4 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	460	U
108-95-2	Phenol	460	U
111-44-4	bis(2-Chloroethyl)ether	460	U
95-57-8	2-Chlorophenol	460	U
95-48-7	2-Methylphenol	460	U
108-60-1	2,2'-oxybis(1-Chloropropane)	460	U
98-86-2	Acetophenone	460	U
106-44-5	4-Methylphenol	460	U
621-64-7	N-Nitroso-di-n-propylamine	460	U
67-72-1	Hexachloroethane	460	U
98-95-3	Nitrobenzene	460	U
78-59-1	Isophorone	460	U
88-75-5	2-Nitrophenol	460	U
105-67-9	2,4-Dimethylphenol	460	U
111-91-1	bis(2-Chloroethoxy)methane	460	U
120-83-2	2,4-Dichlorophenol	460	U
91-20-3	Naphthalene	460	U
106-47-8	4-Chloroaniline	460	U
87-68-3	Hexachlorobutadiene	460	U
105-60-2	Caprolactam	460	U
59-50-7	4-Chloro-3-methylphenol	460	U
91-57-6	2-Methylnaphthalene	460	U
77-47-4	Hexachlorocyclopentadiene	460	U
88-06-2	2,4,6-Trichlorophenol	460	U
95-95-4	2,4,5-Trichlorophenol	1200	U
92-52-4	1,1'-Biphenyl	460	U
91-58-7	2-Chloronaphthalene	460	U
88-74-4	2-Nitroaniline	1200	U
131-11-3	Dimethylphthalate	460	U
606-20-2	2,6-Dinitrotoluene	460	U
208-96-8	Acenaphthylene	460	U
99-09-2	3-Nitroaniline	1200	U
83-32-9	Acenaphthene	460	U

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BNP06 SS-02

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 319F11.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 28 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.4 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1200	U
100-02-7	4-Nitrophenol	1200	U
132-64-9	Dibenzofuran	460	U
121-14-2	2,4-Dinitrotoluene	460	U
84-66-2	Diethylphthalate	460	U
86-73-7	Fluorene	460	U
7005-72-3	4-Chlorophenyl-phenylether	460	U
100-01-6	4-Nitroaniline	1200	U
534-52-1	4,6-Dinitro-2-methylphenol	1200	U
86-30-6	N-Nitrosodiphenylamine (1)	460	U
101-55-3	4-Bromophenyl-phenylether	460	U
118-74-1	Hexachlorobenzene	460	U
1912-24-9	Atrazine	460	U
87-86-5	Pentachlorophenol	1200	U
85-01-8	Phenanthrene	460	U
120-12-7	Anthracene	460	U
86-74-8	Carbazole	460	U
84-74-2	Di-n-butylphthalate	460	U
206-44-0	Fluoranthene	460	U
129-00-0	Pyrene	460	U
85-68-7	Butylbenzylphthalate	460	U
91-94-1	3,3'-Dichlorobenzidine	460	U
56-55-3	Benzo(a)anthracene	460	U
218-01-9	Chrysene	460	U
117-81-7	bis(2-Ethylhexyl)phthalate	60	J
117-84-0	Di-n-octylphthalate	460	U
205-99-2	Benzo(b)fluoranthene	460	U
207-08-9	Benzo(k)fluoranthene	460	U
50-32-8	Benzo(a)pyrene	230	J
193-39-5	Indeno(1,2,3-cd)pyrene	460	U
53-70-3	Dibenz(a,h)anthracene	460	U
191-24-2	Benzo(g,h,i)perylene	460	U

(1) Cannot be seperated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNP06 SS-02

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 319F11.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 28 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.4 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.	541-02-6	CYCLOPENTASILOXANE, DECAMETH	3.19	~~98~~	~~JN~~	R
2.		UNKNOWN	9.95	190	J	
3.		UNKNOWN	10.06	~~110~~	~~BJ~~	R
4.	6624-79-9	1-DOTRIACONTANOL	10.39	290	JN	
5.		UNKNOWN	11.26	230	J	
6.	629-96-9	1-EICOSANOL	12.07	96	JN	
7.		UNKNOWN	13.91	200	J	
8.	514-07-8	D-FRIEDOOLEAN-14-EN-3-ONE	13.94	300	JN	
9.	127-22-0	TARAXEROL	14.07	200	JN	
10.		UNKNOWN	14.16	130	J	
11.	22611-26-3	D:C-FRIEDOOLEAN-8-EN-3-ONE	14.25	180	JN	
12.	58801-23-3	HOP-22(29)-EN-3.BETA.-OL	14.37	260	JN	
13.		UNKNOWN	14.42	180	J	
14.		UNKNOWN	14.49	100	J	
15.		UNKNOWN	14.58	400	J	
16.		UNKNOWN	14.99	220	J	
17.		UNKNOWN	15.16	1900	J	
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP07 SS-03

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.05

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 319F12.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 21 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 4.7 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	420	UJ
108-95-2	Phenol	420	U
111-44-4	bis(2-Chloroethyl)ether	420	U
95-57-8	2-Chlorophenol	420	U
95-48-7	2-Methylphenol	420	U
108-60-1	2,2'-oxybis(1-Chloropropane)	420	U
98-86-2	Acetophenone	420	U
106-44-5	4-Methylphenol	420	U
621-64-7	N-Nitroso-di-n-propylamine	420	U
67-72-1	Hexachloroethane	420	U
98-95-3	Nitrobenzene	420	U
78-59-1	Isophorone	420	U
88-75-5	2-Nitrophenol	420	U
105-67-9	2,4-Dimethylphenol	420	U
111-91-1	bis(2-Chloroethoxy)methane	420	U
120-83-2	2,4-Dichlorophenol	420	U
91-20-3	Naphthalene	420	U
106-47-8	4-Chloroaniline	420	U
87-68-3	Hexachlorobutadiene	420	U
105-60-2	Caprolactam	420	U
59-50-7	4-Chloro-3-methylphenol	420	U
91-57-6	2-Methylnaphthalene	420	U
77-47-4	Hexachlorocyclopentadiene	420	U
88-06-2	2,4,6-Trichlorophenol	420	U
95-95-4	2,4,5-Trichlorophenol	1100	U
92-52-4	1,1'-Biphenyl	420	U
91-58-7	2-Chloronaphthalene	420	U
88-74-4	2-Nitroaniline	1100	U
131-11-3	Dimethylphthalate	420	U
606-20-2	2,6-Dinitrotoluene	420	U
208-96-8	Acenaphthylene	420	U
99-09-2	3-Nitroaniline	1100	U
83-32-9	Acenaphthene	420	U

000331

1D

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BNP07 SS-05

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.05

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 319F12.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 21 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 4.7 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	420	U
121-14-2	2,4-Dinitrotoluene	420	U
84-66-2	Diethylphthalate	420	U
86-73-7	Fluorene	420	U
7005-72-3	4-Chlorophenyl-phenylether	420	U
100-01-6	4-Nitroaniline	1100	U
534-52-1	4,6-Dinitro-2-methylphenol	1100	U
86-30-6	N-Nitrosodiphenylamine (1)	420	U
101-55-3	4-Bromophenyl-phenylether	420	U
118-74-1	Hexachlorobenzene	420	U
1912-24-9	Atrazine	420	U
87-86-5	Pentachlorophenol	1100	U
85-01-8	Phenanthrene	420	U
120-12-7	Anthracene	420	U
86-74-8	Carbazole	420	U
84-74-2	Di-n-butylphthalate	420	U
206-44-0	Fluoranthene	420	U
129-00-0	Pyrene	420	U
85-68-7	Butylbenzylphthalate	420	U
91-94-1	3,3'-Dichlorobenzidine	420	U
56-55-3	Benzo(a)anthracene	420	U
218-01-9	Chrysene	420	U
117-81-7	bis(2-Ethylhexyl)phthalate	380	J
117-84-0	Di-n-octylphthalate	420	U
205-99-2	Benzo(b)fluoranthene	420	U
207-08-9	Benzo(k)fluoranthene	420	U
50-32-8	Benzo(a)pyrene	420	U
193-39-5	Indeno(1,2,3-cd)pyrene	420	U
53-70-3	Dibenz(a,h)anthracene	420	U
191-24-2	Benzo(g,h,i)perylene	420	U

(1) Cannot be seperated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNP07 SS-03

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.05

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 319F12.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 21 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 4.7 Extraction: (Type) SONC

Number TICs found: 6 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.		UNKNOWN	2.37	120	J	
2.	541-02-6	CYCLOPENTASILOXANE, DECAMETH	3.19	~~89~~	~~JN~~	R
3.		UNKNOWN	9.84	99	J	
4.		UNKNOWN	10.06	~~85~~	~~BJ~~	R
5.		UNKNOWN	11.10	200	J	
6.		UNKNOWN	12.23	310	J	
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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BNP08

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL

Lab Sample ID: 45798.06

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: 319F13.D

Level: (low/med) LOW

Date Received: 11/08/00

% Moisture: 3 decanted: (Y/N) N

Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL)

Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.0

Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	340	UJ
108-95-2	Phenol	7900 * ~~16000~~	E
111-44-4	bis(2-Chloroethyl)ether	340	U
95-57-8	2-Chlorophenol	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
98-86-2	Acetophenone	830	
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-di-n-propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
91-20-3	Naphthalene	1100	
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
105-60-2	Caprolactam	340	U
59-50-7	4-Chloro-3-methylphenol	340	U
91-57-6	2-Methylnaphthalene	130	J
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	860	U
92-52-4	1,1'-Biphenyl	340	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	860	U
131-11-3	Dimethylphthalate	340	U
606-20-2	2,6-Dinitrotoluene	340	U
208-96-8	Acenaphthylene	340	U
99-09-2	3-Nitroaniline	860	U
83-32-9	Acenaphthene	340	U

* Value transferred from dilution run.

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP08

SS-04A

ab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.06

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 319F13.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 3 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.0 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	860	U
100-02-7	4-Nitrophenol	860	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
86-73-7	Fluorene	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
100-01-6	4-Nitroaniline	860	U
534-52-1	4,6-Dinitro-2-methylphenol	860	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
1912-24-9	Atrazine	340	U
87-86-5	Pentachlorophenol	860	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-butylphthalate	58	J
206-44-0	Fluoranthene	67	J
129-00-0	Pyrene	59	J
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)anthracene	340	U
218-01-9	Chrysene	41	J
117-81-7	bis(2-Ethylhexyl)phthalate	520	
117-84-0	Di-n-octylphthalate	340	U
205-99-2	Benzo(b)fluoranthene	340	U
207-08-9	Benzo(k)fluoranthene	340	U
50-32-8	Benzo(a)pyrene	340	U
193-39-5	Indeno(1,2,3-cd)pyrene	340	U
53-70-3	Dibenz(a,h)anthracene	340	U
191-24-2	Benzo(g,h,i)perylene	340	U

(1) Cannot be seperated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BNP08

SS-04A

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.06

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 319F13.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 3 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.0 Extraction: (Type) SONC

Number TICs found: 24

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	103-65-1	BENZENE, PROPYL-	2.41	240	JN
2.	622-96-8	BENZENE, 1-ETHYL-4-METHYL-	2.45	1600	JN
3.	95-36-3	1,2,4-TRIMETHYLBENZENE	2.48	3500	JN
4.		UNKNOWN	3.00	12000	J
5.	2870-04-4	BENZENE, 2-ETHYL-1,3-DIMETHY	3.12	100	JN
6.	934-80-5	BENZENE, 4-ETHYL-1,2-DIMETHY	3.16	280	JN
7.	95-93-2	BENZENE, 1,2,4,5-TETRAMETHYL	3.18	350	JN
8.		UNKNOWN	3.20	~~170~~	~~BJ~~ R
9.		UNKNOWN	3.24	85	BJ
10.	933-98-2	BENZENE, 1-ETHYL-2,3-DIMETHY	3.26	450	JN
11.		UNKNOWN	3.30	73	J
12.		UNKNOWN	3.35	660	J
13.	5161-04-6	BENZENE, 1-METHYL-4-(2-METHY	3.39	180	JN
14.	2049-95-8	BENZENE, (1,1-DIMETHYLPROPYL	3.42	120	JN
15.	627-93-0	HEXANEDIOIC ACID, DIMETHYL E	3.71	270	JN
16.		UNKNOWN	3.96	690	J
17.		UNKNOWN	4.64	220	J
18.		UNKNOWN	6.81	950	J
19.	84-69-5	1,2-BENZENEDICARBOXYLIC ACID	7.37	4900	JN
20.		UNKNOWN	7.68	150	J
21.		UNKNOWN	8.28	260	J
22.		UNKNOWN	8.42	280	J
23.	101-68-8	BENZENE, 1,1'-METHYLENEBIS[4	8.68	1600	JN
24.	1058-61-3	STIGMAST-4-EN-3-ONE	14.57	130	JN
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP09

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

SS 04B

Matrix: (soil/water) SOIL Lab Sample ID: 45798.07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 319F14.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 10 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.2 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	370	U J
108-95-2	Phenol	3500 # ~~5900~~	~~E~~
111-44-4	bis(2-Chloroethyl)ether	370	U
95-57-8	2-Chlorophenol	370	U
95-48-7	2-Methylphenol	370	U
108-60-1	2,2'-oxybis(1-Chloropropane)	370	U
98-86-2	Acetophenone	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-di-n-propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
88-75-5	2-Nitrophenol	370	U
105-67-9	2,4-Dimethylphenol	370	U
111-91-1	bis(2-Chloroethoxy)methane	370	U
120-83-2	2,4-Dichlorophenol	370	U
91-20-3	Naphthalene	380	
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
105-60-2	Caprolactam	370	U
59-50-7	4-Chloro-3-methylphenol	370	U
91-57-6	2-Methylnaphthalene	150	J
77-47-4	Hexachlorocyclopentadiene	370	U
88-06-2	2,4,6-Trichlorophenol	370	U
95-95-4	2,4,5-Trichlorophenol	920	U
92-52-4	1,1'-Biphenyl	370	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	920	U
131-11-3	Dimethylphthalate	370	U
606-20-2	2,6-Dinitrotoluene	370	U
208-96-8	Acenaphthylene	370	U
99-09-2	3-Nitroaniline	920	U
83-32-9	Acenaphthene	300	J

values transferred from dilution run.

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BNP09

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 319F14.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 10 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.2 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	920	U
100-02-7	4-Nitrophenol	920	U
132-64-9	Dibenzofuran	170	J
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
86-73-7	Fluorene	260	J
7005-72-3	4-Chlorophenyl-phenylether	370	U
100-01-6	4-Nitroaniline	920	U
534-52-1	4,6-Dinitro-2-methylphenol	920	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
1912-24-9	Atrazine	370	U
87-86-5	Pentachlorophenol	920	U
85-01-8	Phenanthrene	3700 * ~~5300~~	~~E~~
120-12-7	Anthracene	600	
86-74-8	Carbazole	370	U
84-74-2	Di-n-butylphthalate	61	J
206-44-0	Fluoranthene	4600 * ~~6900~~	~~E~~
129-00-0	Pyrene	4000 * ~~4800~~	~~E~~
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(a)anthracene	2400	
218-01-9	Chrysene	2800	
117-81-7	bis(2-Ethylhexyl)phthalate	870	
117-84-0	Di-n-octylphthalate	370	U
205-99-2	Benzo(b)fluoranthene	2100 * ~~3400~~	~~E~~
207-08-9	Benzo(k)fluoranthene	760	
50-32-8	Benzo(a)pyrene	2100	
193-39-5	Indeno(1,2,3-cd)pyrene	1300	
53-70-3	Dibenz(a,h)anthracene	530	
191-24-2	Benzo(g,h,i)perylene	1300	

(1) Cannot be seperated from Diphenylamine

* Values transferred from dilution run.

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EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNP09

SS-04 C

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 319F14.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 10 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/14/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.2 Extraction: (Type) SONC

Number TICs found: 23 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.	103-65-1	BENZENE, PROPYL-	2.41	160	JN	
2.	620-14-4	BENZENE, 1-ETHYL-3-METHYL-	2.45	790	JN	
3.	526-73-8	BENZENE, 1,2,3-TRIMETHYL-	2.47	1400	JN	
4.	933-98-2	BENZENE, 1-ETHYL-2,3-DIMETHY	2.88	950	JN	
5.		UNKNOWN	2.98	4000	J	
6.	933-98-2	BENZENE, 1-ETHYL-2,3-DIMETHY	3.11	80	JN	
7.	95-93-2	BENZENE, 1,2,4,5-TETRAMETHYL	3.15	170	JN	
8.	934-74-7	BENZENE, 1-ETHYL-3,5-DIMETHY	3.18	250	JN	
9.		UNKNOWN	3.20	~~200~~	~~BJ~~	R
10.	2050-24-0	BENZENE, 1,3-DIETHYL-5-METHY	3.26	270	JN	
11.	1005-64-7	(E)-1-PHENYL-1-BUTENE	3.34	370	JN	
12.		UNKNOWN	3.39	100	J	
13.		UNKNOWN	3.41	87	J	
14.	627-93-0	HEXANEDIOIC ACID, DIMETHYL E	3.70	150	JN	
15.		UNKNOWN	3.94	330	J	
16.		UNKNOWN	6.82	77	J	
17.		UNKNOWN	7.82	82	J	
18.	101-68-8	BENZENE, 1,1'-METHYLENEBIS[4	8.70	170	JN	
19.		UNKNOWN	10.10	100	BJ	
20.	239-35-0	BENZO[B]NAPHTHO[2,1-D]THIOPH	10.24	85	JN	
21.		UNKNOWN	10.39	240	J	
22.	205-99-2	BENZ[E]ACEPHENANTHRYLENE	12.09	140	JN	
23.	207-08-9	BENZO[K]FLUORANTHENE	12.30	~~340~~	~~JN~~	R
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BNP10
SS-04C

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F04.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 19 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	410	U
108-95-2	Phenol	410	U
111-44-4	bis(2-Chloroethyl)ether	410	U
95-57-8	2-Chlorophenol	410	U
95-48-7	2-Methylphenol	410	U
108-60-1	2,2'-oxybis(1-Chloropropane)	410	U
98-86-2	Acetophenone	410	U
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-di-n-propylamine	410	U
67-72-1	Hexachloroethane	410	U
98-95-3	Nitrobenzene	410	U
78-59-1	Isophorone	410	U
88-75-5	2-Nitrophenol	410	U
105-67-9	2,4-Dimethylphenol	410	U
111-91-1	bis(2-Chloroethoxy)methane	410	U
120-83-2	2,4-Dichlorophenol	410	U
91-20-3	Naphthalene	410	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	410	U
105-60-2	Caprolactam	410	U
59-50-7	4-Chloro-3-methylphenol	410	U
91-57-6	2-Methylnaphthalene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
88-06-2	2,4,6-Trichlorophenol	410	U
95-95-4	2,4,5-Trichlorophenol	1000	U
92-52-4	1,1'-Biphenyl	410	U
91-58-7	2-Chloronaphthalene	410	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethylphthalate	410	U
606-20-2	2,6-Dinitrotoluene	410	U
208-96-8	Acenaphthylene	410	U
99-09-2	3-Nitroaniline	1000	U
83-32-9	Acenaphthene	410	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP10

Lab Name: AATSLA Contract: 68-W0-0081

SS-04C

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F04.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 19 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1000	U
100-02-7	4-Nitrophenol	1000	U
132-64-9	Dibenzofuran	410	U
121-14-2	2,4-Dinitrotoluene	410	U
84-66-2	Diethylphthalate	410	U
86-73-7	Fluorene	410	U
7005-72-3	4-Chlorophenyl-phenylether	410	U
100-01-6	4-Nitroaniline	1000	U
534-52-1	4,6-Dinitro-2-methylphenol	1000	U
86-30-6	N-Nitrosodiphenylamine (1)	410	U
101-55-3	4-Bromophenyl-phenylether	410	U
118-74-1	Hexachlorobenzene	410	U
1912-24-9	Atrazine	410	U
87-86-5	Pentachlorophenol	1000	U
85-01-8	Phenanthrene	410	U
120-12-7	Anthracene	410	U
86-74-8	Carbazole	410	U
84-74-2	Di-n-butylphthalate	410	U
206-44-0	Fluoranthene	410	U
129-00-0	Pyrene	410	U
85-68-7	Butylbenzylphthalate	410	U
91-94-1	3,3'-Dichlorobenzidine	410	U
56-55-3	Benzo(a)anthracene	410	U
218-01-9	Chrysene	410	U
117-81-7	bis(2-Ethylhexyl)phthalate	94	J
117-84-0	Di-n-octylphthalate	410	U
205-99-2	Benzo(b)fluoranthene	410	U
207-08-9	Benzo(k)fluoranthene	410	U
50-32-8	Benzo(a)pyrene	410	U
193-39-5	Indeno(1,2,3-cd)pyrene	410	U
53-70-3	Dibenz(a,h)anthracene	410	U
191-24-2	Benzo(g,h,i)perylene	410	U

(1) Cannot be seperated from Diphenylamine

p.144

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNP10

SS-04C

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F04.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 19 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3 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	2.37	130	J	
2.		UNKNOWN	3.19	~~170~~	~~BJ~~	R
3.		UNKNOWN	10.08	~~95~~	~~BJ~~	R
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP11

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

55-04 D

Matrix: (soil/water) SOIL Lab Sample ID: 45798.09

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F05.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 20 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	410	U
108-95-2	Phenol	410	U
111-44-4	bis(2-Chloroethyl)ether	410	U
95-57-8	2-Chlorophenol	410	U
95-48-7	2-Methylphenol	410	U
108-60-1	2,2'-oxybis(1-Chloropropane)	410	U
98-86-2	Acetophenone	410	U
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-di-n-propylamine	410	U
67-72-1	Hexachloroethane	410	U
98-95-3	Nitrobenzene	410	U
78-59-1	Isophorone	410	U
88-75-5	2-Nitrophenol	410	U
105-67-9	2,4-Dimethylphenol	410	U
111-91-1	bis(2-Chloroethoxy)methane	410	U
120-83-2	2,4-Dichlorophenol	410	U
91-20-3	Naphthalene	410	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	410	U
105-60-2	Caprolactam	410	U
59-50-7	4-Chloro-3-methylphenol	410	U
91-57-6	2-Methylnaphthalene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
88-06-2	2,4,6-Trichlorophenol	410	U
95-95-4	2,4,5-Trichlorophenol	1000	U
92-52-4	1,1'-Biphenyl	410	U
91-58-7	2-Chloronaphthalene	410	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethylphthalate	410	U
606-20-2	2,6-Dinitrotoluene	410	U
208-96-8	Acenaphthylene	410	U
99-09-2	3-Nitroaniline	1000	U
83-32-9	Acenaphthene	410	U

1D

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BNP11

55-04D

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.09

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F05.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 20 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1000	U
100-02-7	4-Nitrophenol	1000	U
132-64-9	Dibenzofuran	410	U
121-14-2	2,4-Dinitrotoluene	410	U
84-66-2	Diethylphthalate	410	U
86-73-7	Fluorene	410	U
7005-72-3	4-Chlorophenyl-phenylether	410	U
100-01-6	4-Nitroaniline	1000	U
534-52-1	4,6-Dinitro-2-methylphenol	1000	U
86-30-6	N-Nitrosodiphenylamine (1)	410	U
101-55-3	4-Bromophenyl-phenylether	410	U
118-74-1	Hexachlorobenzene	410	U
1912-24-9	Atrazine	410	U
87-86-5	Pentachlorophenol	1000	U
85-01-8	Phenanthrene	410	U
120-12-7	Anthracene	410	U
86-74-8	Carbazole	410	U
84-74-2	Di-n-butylphthalate	410	U
206-44-0	Fluoranthene	410	U
129-00-0	Pyrene	410	U
85-68-7	Butylbenzylphthalate	410	U
91-94-1	3,3'-Dichlorobenzidine	410	U
56-55-3	Benzo(a)anthracene	410	U
218-01-9	Chrysene	410	U
117-81-7	bis(2-Ethylhexyl)phthalate	240	J
117-84-0	Di-n-octylphthalate	410	U
205-99-2	Benzo(b)fluoranthene	410	U
207-08-9	Benzo(k)fluoranthene	410	U
50-32-8	Benzo(a)pyrene	410	U
193-39-5	Indeno(1,2,3-cd)pyrene	410	U
53-70-3	Dibenz(a,h)anthracene	410	U
191-24-2	Benzo(g,h,i)perylene	410	U

(1) Cannot be seperated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNP11

SS-04 D

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.09

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F05.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 20 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0 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	2.37	120	J	
2.		UNKNOWN	3.19	~~160~~	~~BJ~~	R
3.		UNKNOWN	10.08	~~120~~	~~BJ~~	R
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP12

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05 SS-05A

Matrix: (soil/water) SOIL Lab Sample ID: 45798.10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F06.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 21 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	420	U
108-95-2	Phenol	420	U
111-44-4	bis(2-Chloroethyl)ether	420	U
95-57-8	2-Chlorophenol	420	U
95-48-7	2-Methylphenol	420	U
108-60-1	2,2'-oxybis(1-Chloropropane)	420	U
98-86-2	Acetophenone	420	U
106-44-5	4-Methylphenol	420	U
621-64-7	N-Nitroso-di-n-propylamine	420	U
67-72-1	Hexachloroethane	420	U
98-95-3	Nitrobenzene	420	U
78-59-1	Isophorone	420	U
88-75-5	2-Nitrophenol	420	U
105-67-9	2,4-Dimethylphenol	420	U
111-91-1	bis(2-Chloroethoxy)methane	420	U
120-83-2	2,4-Dichlorophenol	420	U
91-20-3	Naphthalene	420	U
106-47-8	4-Chloroaniline	420	U
87-68-3	Hexachlorobutadiene	420	U
105-60-2	Caprolactam	420	U
59-50-7	4-Chloro-3-methylphenol	420	U
91-57-6	2-Methylnaphthalene	420	U
77-47-4	Hexachlorocyclopentadiene	420	U
88-06-2	2,4,6-Trichlorophenol	420	U
95-95-4	2,4,5-Trichlorophenol	1100	U
92-52-4	1,1'-Biphenyl	420	U
91-58-7	2-Chloronaphthalene	420	U
88-74-4	2-Nitroaniline	1100	U
131-11-3	Dimethylphthalate	420	U
606-20-2	2,6-Dinitrotoluene	420	U
208-96-8	Acenaphthylene	420	U
99-09-2	3-Nitroaniline	1100	U
83-32-9	Acenaphthene	420	U

000505

1D

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BNP12

SS-05A

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F06.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 21 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 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	420	U
121-14-2	2,4-Dinitrotoluene	420	U
84-66-2	Diethylphthalate	420	U
86-73-7	Fluorene	420	U
7005-72-3	4-Chlorophenyl-phenylether	420	U
100-01-6	4-Nitroaniline	1100	U
534-52-1	4,6-Dinitro-2-methylphenol	1100	U
86-30-6	N-Nitrosodiphenylamine (1)	420	U
101-55-3	4-Bromophenyl-phenylether	420	U
118-74-1	Hexachlorobenzene	420	U
1912-24-9	Atrazine	420	U
87-86-5	Pentachlorophenol	1100	U
85-01-8	Phenanthrene	420	U
120-12-7	Anthracene	420	U
86-74-8	Carbazole	420	U
84-74-2	Di-n-butylphthalate	420	U
206-44-0	Fluoranthene	420	U
129-00-0	Pyrene	130	J
85-68-7	Butylbenzylphthalate	420	U
91-94-1	3,3'-Dichlorobenzidine	420	U
56-55-3	Benzo(a)anthracene	420	U
218-01-9	Chrysene	420	U
117-81-7	bis(2-Ethylhexyl)phthalate	59	J
117-84-0	Di-n-octylphthalate	120	J
205-99-2	Benzo(b)fluoranthene	420	U
207-08-9	Benzo(k)fluoranthene	420	U
50-32-8	Benzo(a)pyrene	420	U
193-39-5	Indeno(1,2,3-cd)pyrene	420	U
53-70-3	Dibenz(a,h)anthracene	420	U
191-24-2	Benzo(g,h,i)perylene	420	U

(1) Cannot be seperated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BNP12

SS-05A

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F06.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 21 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 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	2.35	140	J
2.		UNKNOWN	3.19	~~190~~	~~BJ~~ R
3.		UNKNOWN	4.82	130	J
4.		UNKNOWN	5.04	290	J
5.		UNKNOWN	5.31	86	J
6.		UNKNOWN	5.54	200	J
7.		UNKNOWN	5.58	110	J
8.		UNKNOWN	5.62	340	J
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP13

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 322F05.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 24 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/17/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	430	U
108-95-2	Phenol	430	U
111-44-4	bis(2-Chloroethyl)ether	430	U
95-57-8	2-Chlorophenol	430	U
95-48-7	2-Methylphenol	430	U
108-60-1	2,2'-oxybis(1-Chloropropane)	430	U
98-86-2	Acetophenone	430	U
106-44-5	4-Methylphenol	430	U
621-64-7	N-Nitroso-di-n-propylamine	430	U
67-72-1	Hexachloroethane	430	U
98-95-3	Nitrobenzene	430	U
78-59-1	Isophorone	430	U
88-75-5	2-Nitrophenol	430	U
105-67-9	2,4-Dimethylphenol	430	U
111-91-1	bis(2-Chloroethoxy)methane	430	U
120-83-2	2,4-Dichlorophenol	430	U
91-20-3	Naphthalene	430	U
106-47-8	4-Chloroaniline	430	U
87-68-3	Hexachlorobutadiene	430	U
105-60-2	Caprolactam	430	U
59-50-7	4-Chloro-3-methylphenol	430	U
91-57-6	2-Methylnaphthalene	430	U
77-47-4	Hexachlorocyclopentadiene	430	U
88-06-2	2,4,6-Trichlorophenol	430	U
95-95-4	2,4,5-Trichlorophenol	1100	U
92-52-4	1,1'-Biphenyl	430	U
91-58-7	2-Chloronaphthalene	430	U
88-74-4	2-Nitroaniline	1100	U
131-11-3	Dimethylphthalate	430	U
606-20-2	2,6-Dinitrotoluene	430	U
208-96-8	Acenaphthylene	430	U
99-09-2	3-Nitroaniline	1100	U
83-32-9	Acenaphthene	430	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP13

SS-05 G

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 322F05.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 24 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/17/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 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	430	U
121-14-2	2,4-Dinitrotoluene	430	U
84-66-2	Diethylphthalate	430	U
86-73-7	Fluorene	430	U
7005-72-3	4-Chlorophenyl-phenylether	430	U
100-01-6	4-Nitroaniline	1100	U
534-52-1	4,6-Dinitro-2-methylphenol	1100	U
86-30-6	N-Nitrosodiphenylamine (1)	430	U
101-55-3	4-Bromophenyl-phenylether	430	U
118-74-1	Hexachlorobenzene	430	U
1912-24-9	Atrazine	430	U
87-86-5	Pentachlorophenol	1100	U
85-01-8	Phenanthrene	150	J
120-12-7	Anthracene	430	U
86-74-8	Carbazole	430	U
84-74-2	Di-n-butylphthalate	430	U
206-44-0	Fluoranthene	430	U
129-00-0	Pyrene	430	U
85-68-7	Butylbenzylphthalate	430	U
91-94-1	3,3'-Dichlorobenzidine	430	U
56-55-3	Benzo(a)anthracene	430	U
218-01-9	Chrysene	430	U
117-81-7	bis(2-Ethylhexyl)phthalate	430	U
117-84-0	Di-n-octylphthalate	430	U
205-99-2	Benzo(b)fluoranthene	430	U
207-08-9	Benzo(k)fluoranthene	430	U
50-32-8	Benzo(a)pyrene	430	U
193-39-5	Indeno(1,2,3-cd)pyrene	430	U
53-70-3	Dibenz(a,h)anthracene	430	U
191-24-2	Benzo(g,h,i)perylene	430	U

(1) Cannot be seperated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNP13

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05 SS-05B

Matrix: (soil/water) SOIL Lab Sample ID: 45798.11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 322F05.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 24 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/17/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Extraction: (Type) SONC

Number TICs found: 7 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	3.19	~~240~~	~~BJ~~ R
2.		UNKNOWN	4.82	200	J
3.		UNKNOWN	4.99	99	J
4.		DECAHYDRO-4,4,8,9,10-PENTAME	5.03	330	JN
5.		UNKNOWN	5.53	270	J
6.		UNKNOWN	5.62	340	J
7.		UNKNOWN	6.33	260	J
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ85

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.12

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F08.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 25 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	440	U
108-95-2	Phenol	440	U
111-44-4	bis(2-Chloroethyl)ether	440	U
95-57-8	2-Chlorophenol	440	U
95-48-7	2-Methylphenol	440	U
108-60-1	2,2'-oxybis(1-Chloropropane)	440	U
98-86-2	Acetophenone	440	U
106-44-5	4-Methylphenol	440	U
621-64-7	N-Nitroso-di-n-propylamine	440	U
67-72-1	Hexachloroethane	440	U
98-95-3	Nitrobenzene	440	U
78-59-1	Isophorone	440	U
88-75-5	2-Nitrophenol	440	U
105-67-9	2,4-Dimethylphenol	440	U
111-91-1	bis(2-Chloroethoxy)methane	440	U
120-83-2	2,4-Dichlorophenol	440	U
91-20-3	Naphthalene	440	U
106-47-8	4-Chloroaniline	440	U
87-68-3	Hexachlorobutadiene	440	U
105-60-2	Caprolactam	440	U
59-50-7	4-Chloro-3-methylphenol	440	U
91-57-6	2-Methylnaphthalene	440	U
77-47-4	Hexachlorocyclopentadiene	440	U
88-06-2	2,4,6-Trichlorophenol	440	U
95-95-4	2,4,5-Trichlorophenol	1100	U
92-52-4	1,1'-Biphenyl	440	U
91-58-7	2-Chloronaphthalene	440	U
88-74-4	2-Nitroaniline	1100	U
131-11-3	Dimethylphthalate	440	U
606-20-2	2,6-Dinitrotoluene	440	U
208-96-8	Acenaphthylene	440	U
99-09-2	3-Nitroaniline	1100	U
83-32-9	Acenaphthene	440	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ85

Lab Name: AATSLA Contract: 68-W0-0081

SS-05C

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.12

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F08.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 25 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0 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	440	U
121-14-2	2,4-Dinitrotoluene	440	U
84-66-2	Diethylphthalate	440	U
86-73-7	Fluorene	440	U
7005-72-3	4-Chlorophenyl-phenylether	440	U
100-01-6	4-Nitroaniline	1100	U
534-52-1	4,6-Dinitro-2-methylphenol	1100	U
86-30-6	N-Nitrosodiphenylamine (1)	440	U
101-55-3	4-Bromophenyl-phenylether	440	U
118-74-1	Hexachlorobenzene	440	U
1912-24-9	Atrazine	440	U
87-86-5	Pentachlorophenol	1100	U
85-01-8	Phenanthrene	440	U
120-12-7	Anthracene	440	U
86-74-8	Carbazole	440	U
84-74-2	Di-n-butylphthalate	440	U
206-44-0	Fluoranthene	440	U
129-00-0	Pyrene	440	U
85-68-7	Butylbenzylphthalate	440	U
91-94-1	3,3'-Dichlorobenzidine	440	U
56-55-3	Benzo(a)anthracene	440	U
218-01-9	Chrysene	440	U
117-81-7	bis(2-Ethylhexyl)phthalate	78	J
117-84-0	Di-n-octylphthalate	440	U
205-99-2	Benzo(b)fluoranthene	440	U
207-08-9	Benzo(k)fluoranthene	440	U
50-32-8	Benzo(a)pyrene	440	U
193-39-5	Indeno(1,2,3-cd)pyrene	440	U
53-70-3	Dibenz(a,h)anthracene	440	U
191-24-2	Benzo(g,h,i)perylene	440	U

(1) Cannot be seperated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNQ85

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.12

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F08.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 25 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0 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	2.36	120	J
2.		UNKNOWN	3.20	~~200~~	~~BJ~~ R
3.		UNKNOWN	6.87	260	J
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ87

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05 SS-06 A

Matrix: (soil/water) SOIL Lab Sample ID: 45798.13

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F09.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 27 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 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	450	U
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	450	U
99-09-2	3-Nitroaniline	1100	U
83-32-9	Acenaphthene	450	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ87

SS-06A

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.13

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F09.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 27 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 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	450	U
121-14-2	2,4-Dinitrotoluene	450	U
84-66-2	Diethylphthalate	450	U
86-73-7	Fluorene	450	U
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	450	U
120-12-7	Anthracene	450	U
86-74-8	Carbazole	450	U
84-74-2	Di-n-butylphthalate	450	U
206-44-0	Fluoranthene	450	U
129-00-0	Pyrene	450	U
85-68-7	Butylbenzylphthalate	450	U
91-94-1	3,3'-Dichlorobenzidine	450	U
56-55-3	Benzo(a)anthracene	450	U
218-01-9	Chrysene	450	U
117-81-7	bis(2-Ethylhexyl)phthalate	450	U
117-84-0	Di-n-octylphthalate	450	U
205-99-2	Benzo(b)fluoranthene	450	U
207-08-9	Benzo(k)fluoranthene	450	U
50-32-8	Benzo(a)pyrene	190	J
193-39-5	Indeno(1,2,3-cd)pyrene	450	U
53-70-3	Dibenz(a,h)anthracene	450	U
191-24-2	Benzo(g,h,i)perylene	450	U

(1) Cannot be seperated from Diphenylamine

1G

EPA SAMPLE NO.

BNQ87

SS-06A

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.13

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F09.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 27 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 Extraction: (Type) SONC

Number TICs found: 6 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.		UNKNOWN	2.37	180	J	
2.		UNKNOWN	3.20	~~220~~	~~BJ~~	R
3.	540-97-6	CYCLOHEXASILOXANE, DODECAMET	4.04	~~93~~	~~JN~~	R
4.		UNKNOWN	6.86	420	J	
5.		UNKNOWN	10.09	~~160~~	~~BJ~~	R
6.		UNKNOWN	15.18	95	J	
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p. 160

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BNQ88

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

SS-06 B

Matrix: (soil/water) SOIL Lab Sample ID: 45798.14

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F10.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 20 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	410	U
108-95-2	Phenol	410	U
111-44-4	bis(2-Chloroethyl)ether	410	U
95-57-8	2-Chlorophenol	410	U
95-48-7	2-Methylphenol	410	U
108-60-1	2,2'-oxybis(1-Chloropropane)	410	U
98-86-2	Acetophenone	410	U
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-di-n-propylamine	410	U
67-72-1	Hexachloroethane	410	U
98-95-3	Nitrobenzene	410	U
78-59-1	Isophorone	410	U
88-75-5	2-Nitrophenol	410	U
105-67-9	2,4-Dimethylphenol	410	U
111-91-1	bis(2-Chloroethoxy)methane	410	U
120-83-2	2,4-Dichlorophenol	410	U
91-20-3	Naphthalene	410	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	410	U
105-60-2	Caprolactam	410	U
59-50-7	4-Chloro-3-methylphenol	410	U
91-57-6	2-Methylnaphthalene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
88-06-2	2,4,6-Trichlorophenol	410	U
95-95-4	2,4,5-Trichlorophenol	1000	U
92-52-4	1,1'-Biphenyl	410	U
91-58-7	2-Chloronaphthalene	410	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethylphthalate	410	U
606-20-2	2,6-Dinitrotoluene	410	U
208-96-8	Acenaphthylene	410	U
99-09-2	3-Nitroaniline	1000	U
83-32-9	Acenaphthene	410	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ88

SS-06 B

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.14

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F10.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 20 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1000	U
100-02-7	4-Nitrophenol	1000	U
132-64-9	Dibenzofuran	410	U
121-14-2	2,4-Dinitrotoluene	410	U
84-66-2	Diethylphthalate	410	U
86-73-7	Fluorene	410	U
7005-72-3	4-Chlorophenyl-phenylether	410	U
100-01-6	4-Nitroaniline	1000	U
534-52-1	4,6-Dinitro-2-methylphenol	1000	U
86-30-6	N-Nitrosodiphenylamine (1)	410	U
101-55-3	4-Bromophenyl-phenylether	410	U
118-74-1	Hexachlorobenzene	410	U
1912-24-9	Atrazine	410	U
87-86-5	Pentachlorophenol	1000	U
85-01-8	Phenanthrene	410	U
120-12-7	Anthracene	410	U
86-74-8	Carbazole	410	U
84-74-2	Di-n-butylphthalate	410	U
206-44-0	Fluoranthene	410	U
129-00-0	Pyrene	410	U
85-68-7	Butylbenzylphthalate	410	U
91-94-1	3,3'-Dichlorobenzidine	410	U
56-55-3	Benzo(a)anthracene	410	U
218-01-9	Chrysene	410	U
117-81-7	bis(2-Ethylhexyl)phthalate	100	J
117-84-0	Di-n-octylphthalate	410	U
205-99-2	Benzo(b)fluoranthene	410	U
207-08-9	Benzo(k)fluoranthene	410	U
50-32-8	Benzo(a)pyrene	410	U
193-39-5	Indeno(1,2,3-cd)pyrene	410	U
53-70-3	Dibenz(a,h)anthracene	410	U
191-24-2	Benzo(g,h,i)perylene	410	U

(1) Cannot be seperated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNQ88

55-06 B

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.14

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F10.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 20 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5 Extraction: (Type) SONC

Number TICs found: 4 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	2.36	95	J
2.	541-02-6	CYCLOPENTASILOXANE, DECAMETH	3.20	~~170~~	~~JN~~ R
3.	2057-49-0	PYRIDINE, 4-(3-PHENYLPROPYL)	6.86	170	JN
4.		UNKNOWN	10.08	~~90~~	~~BJ~~
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ89

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F11.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 22 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	420	U
108-95-2	Phenol	420	U
111-44-4	bis(2-Chloroethyl)ether	420	U
95-57-8	2-Chlorophenol	420	U
95-48-7	2-Methylphenol	420	U
108-60-1	2,2'-oxybis(1-Chloropropane)	420	U
98-86-2	Acetophenone	420	U
106-44-5	4-Methylphenol	420	U
621-64-7	N-Nitroso-di-n-propylamine	420	U
67-72-1	Hexachloroethane	420	U
98-95-3	Nitrobenzene	420	U
78-59-1	Isophorone	420	U
88-75-5	2-Nitrophenol	420	U
105-67-9	2,4-Dimethylphenol	420	U
111-91-1	bis(2-Chloroethoxy)methane	420	U
120-83-2	2,4-Dichlorophenol	420	U
91-20-3	Naphthalene	420	U
106-47-8	4-Chloroaniline	420	U
87-68-3	Hexachlorobutadiene	420	U
105-60-2	Caprolactam	420	U
59-50-7	4-Chloro-3-methylphenol	420	U
91-57-6	2-Methylnaphthalene	420	U
77-47-4	Hexachlorocyclopentadiene	420	U
88-06-2	2,4,6-Trichlorophenol	420	U
95-95-4	2,4,5-Trichlorophenol	1100	U
92-52-4	1,1'-Biphenyl	420	U
91-58-7	2-Chloronaphthalene	420	U
88-74-4	2-Nitroaniline	1100	U
131-11-3	Dimethylphthalate	420	U
606-20-2	2,6-Dinitrotoluene	420	U
208-96-8	Acenaphthylene	420	U
99-09-2	3-Nitroaniline	1100	U
83-32-9	Acenaphthene	420	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ89

SS-06C

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F11.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 22 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 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	420	U
121-14-2	2,4-Dinitrotoluene	420	U
84-66-2	Diethylphthalate	420	U
86-73-7	Fluorene	420	U
7005-72-3	4-Chlorophenyl-phenylether	420	U
100-01-6	4-Nitroaniline	1100	U
534-52-1	4,6-Dinitro-2-methylphenol	1100	U
86-30-6	N-Nitrosodiphenylamine (1)	420	U
101-55-3	4-Bromophenyl-phenylether	420	U
118-74-1	Hexachlorobenzene	420	U
1912-24-9	Atrazine	420	U
87-86-5	Pentachlorophenol	1100	U
85-01-8	Phenanthrene	420	U
120-12-7	Anthracene	420	U
86-74-8	Carbazole	420	U
84-74-2	Di-n-butylphthalate	420	U
206-44-0	Fluoranthene	420	U
129-00-0	Pyrene	420	U
85-68-7	Butylbenzylphthalate	420	U
91-94-1	3,3'-Dichlorobenzidine	420	U
56-55-3	Benzo(a)anthracene	420	U
218-01-9	Chrysene	420	U
117-81-7	bis(2-Ethylhexyl)phthalate	81	J
117-84-0	Di-n-octylphthalate	420	U
205-99-2	Benzo(b)fluoranthene	420	U
207-08-9	Benzo(k)fluoranthene	420	U
50-32-8	Benzo(a)pyrene	420	U
193-39-5	Indeno(1,2,3-cd)pyrene	420	U
53-70-3	Dibenz(a,h)anthracene	420	U
191-24-2	Benzo(g,h,i)perylene	420	U

(1) Cannot be seperated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BNQ89

SS-06 C

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F11.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 22 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Extraction: (Type) SONC

Number TICs found: 4 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.		UNKNOWN	2.36	120	J	
2.		UNKNOWN	3.20	~~170~~	~~BJ~~	R
3.		UNKNOWN	6.86	130	J	
4.		UNKNOWN	10.08	~~97~~	~~BJ~~	R
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ91

SS-03 (Dup)

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.16

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F12.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 22 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 Extraction: (Type) SONC

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-52-7	Benzaldehyde	420	U
108-95-2	Phenol	420	U
111-44-4	bis(2-Chloroethyl)ether	420	U
95-57-8	2-Chlorophenol	420	U
95-48-7	2-Methylphenol	420	U
108-60-1	2,2'-oxybis(1-Chloropropane)	420	U
98-86-2	Acetophenone	420	U
106-44-5	4-Methylphenol	420	U
621-64-7	N-Nitroso-di-n-propylamine	420	U
67-72-1	Hexachloroethane	420	U
98-95-3	Nitrobenzene	420	U
78-59-1	Isophorone	420	U
88-75-5	2-Nitrophenol	420	U
105-67-9	2,4-Dimethylphenol	420	U
111-91-1	bis(2-Chloroethoxy)methane	420	U
120-83-2	2,4-Dichlorophenol	420	U
91-20-3	Naphthalene	420	U
106-47-8	4-Chloroaniline	420	U
87-68-3	Hexachlorobutadiene	420	U
105-60-2	Caprolactam	420	U
59-50-7	4-Chloro-3-methylphenol	420	U
91-57-6	2-Methylnaphthalene	420	U
77-47-4	Hexachlorocyclopentadiene	420	U
88-06-2	2,4,6-Trichlorophenol	420	U
95-95-4	2,4,5-Trichlorophenol	1100	U
92-52-4	1,1'-Biphenyl	420	U
91-58-7	2-Chloronaphthalene	420	U
88-74-4	2-Nitroaniline	1100	U
131-11-3	Dimethylphthalate	420	U
606-20-2	2,6-Dinitrotoluene	420	U
208-96-8	Acenaphthylene	420	U
99-09-2	3-Nitroaniline	1100	U
83-32-9	Acenaphthene	420	U

1D
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ91

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

SS-03 (Dup)

Matrix: (soil/water) SOIL Lab Sample ID: 45798.16

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F12.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 22 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 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	420	U
121-14-2	2,4-Dinitrotoluene	420	U
84-66-2	Diethylphthalate	420	U
86-73-7	Fluorene	420	U
7005-72-3	4-Chlorophenyl-phenylether	420	U
100-01-6	4-Nitroaniline	1100	U
534-52-1	4,6-Dinitro-2-methylphenol	1100	U
86-30-6	N-Nitrosodiphenylamine (1)	420	U
101-55-3	4-Bromophenyl-phenylether	420	U
118-74-1	Hexachlorobenzene	420	U
1912-24-9	Atrazine	420	U
87-86-5	Pentachlorophenol	1100	U
85-01-8	Phenanthrene	420	U
120-12-7	Anthracene	420	U
86-74-8	Carbazole	420	U
84-74-2	Di-n-butylphthalate	420	U
206-44-0	Fluoranthene	420	U
129-00-0	Pyrene	420	U
85-68-7	Butylbenzylphthalate	420	U
91-94-1	3,3'-Dichlorobenzidine	420	U
56-55-3	Benzo(a)anthracene	420	U
218-01-9	Chrysene	420	U
117-81-7	bis(2-Ethylhexyl)phthalate	83	J
117-84-0	Di-n-octylphthalate	420	U
205-99-2	Benzo(b)fluoranthene	420	U
207-08-9	Benzo(k)fluoranthene	420	U
50-32-8	Benzo(a)pyrene	420	U
193-39-5	Indeno(1,2,3-cd)pyrene	420	U
53-70-3	Dibenz(a,h)anthracene	420	U
191-24-2	Benzo(g,h,i)perylene	420	U

(1) Cannot be seperated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BNQ91

SS-03 (Dup)

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.16

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 320F12.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: 22 decanted: (Y/N) N Date Extracted: 11/08/00

Concentrated Extract Volume: 500 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 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	2.36	98	J	
2.		UNKNOWN	3.20	~~190~~	~~BJ~~	R
3.		UNKNOWN	10.08	~~230~~	~~BJ~~	R
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BNQ92 FB

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05 RB-01

Matrix: (soil/water) WATER Lab Sample ID: 45798.17

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 320F15.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: _____ decanted: (Y/N) N Date Extracted: 11/13/00

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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.
BNQ92
RB-01

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) WATER Lab Sample ID: 45798.17

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 320F15.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: _____ decanted: (Y/N) N Date Extracted: 11/13/00

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 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	2	J
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	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) Cannot be seperated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BNQ92

RB-01

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) WATER Lab Sample ID: 45798.17

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 320F15.D

Level: (low/med) LOW Date Received: 11/08/00

% Moisture: _____ decanted: (Y/N) N Date Extracted: 11/13/00

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/15/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Extraction: (Type) CONT

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	2.32	9	~~BJ~~
2.	21400-25-9	1-PROPENE, 1,1,2-TRICHLORO-	2.37	9	~~BJN~~
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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP05

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.01

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 27 Decanted: (Y/N) N Date Received: 11/08/00

Extraction: (Type) SONC Date Extracted: 11/08/00

Concentrated Extract Volume: 5000(uL) Date Analyzed: 11/15/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 4.2 Sulfur Cleanup: (Y/N) N

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	~~0.15~~	~~PJB~~ U
76-44-8	Heptachlor	2.3	~~0.27~~	~~PJ~~ U
309-00-2	Aldrin		2.3	U
1024-57-3	Heptachlor epoxide	2.3	~~0.17~~	~~PJ~~ U
959-98-8	Endosulfan I		2.3	U
60-57-1	Dieldrin		0.68	J
72-55-9	4,4'-DDE		4.5	U
72-20-8	Endrin	4.5	~~0.42~~	U ~~JB~~
33213-65-9	Endosulfan II		4.5	U
72-54-8	4,4'-DDD		4.5	U
1031-07-8	Endosulfan sulfate	4.5	~~0.26~~	U ~~PJ~~
50-29-3	4,4'-DDT		4.5	U
72-43-5	Methoxychlor	23	~~1.1~~	~~PJB~~ 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		0.27	J ~~PJ~~
8001-35-2	Toxaphene		230	U
12674-11-2	Aroclor-1016		45	U
11104-28-2	Aroclor-1221		92	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		45	U

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP06

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 28 Decanted: (Y/N) N Date Received: 11/08/00

Extraction: (Type) SONC Date Extracted: 11/08/00

Concentrated Extract Volume: 5000(uL) Date Analyzed: 11/17/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
319-84-6	alpha-BHC	2.4	~~0.42~~	~~PJ~~ U
319-85-7	beta-BHC		4.0	~~PB~~ R
319-86-8	delta-BHC		2.4	U
58-89-9	gamma-BHC (Lindane)		2.4	U
76-44-8	Heptachlor		2.4	U
309-00-2	Aldrin		2.4	U
1024-57-3	Heptachlor epoxide		4.6	
959-98-8	Endosulfan I		2.4	U
60-57-1	Dieldrin		4.6	U
72-55-9	4,4'-DDE		4.6	U
72-20-8	Endrin		4.6	U
33213-65-9	Endosulfan II		2.5	J
72-54-8	4,4'-DDD	4.6	~~1.5~~	~~PJ~~ U
1031-07-8	Endosulfan sulfate		4.6	U
50-29-3	4,4'-DDT	4.6	~~0.79~~	~~PJB~~ U
72-43-5	Methoxychlor	24	~~0.91~~	~~JB~~ U
53494-70-5	Endrin ketone		4.6	U
7421-93-4	Endrin aldehyde	4.6	~~1.0~~	~~PJB~~ U
5103-71-9	alpha-Chlordane		2.4	U
5103-74-2	gamma-Chlordane	2.4	~~0.52~~	~~PJ~~ U
8001-35-2	Toxaphene		240	U
12674-11-2	Aroclor-1016		46	U
11104-28-2	Aroclor-1221		93	U
11141-16-5	Aroclor-1232		46	U
53469-21-9	Aroclor-1242		46	U
12672-29-6	Aroclor-1248		46	U
11097-69-1	Aroclor-1254		46	U
11096-82-5	Aroclor-1260		46	U

P177

1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP07

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.05

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 21 Decanted: (Y/N) N Date Received: 11/08/00

Extraction: (Type) SONC Date Extracted: 11/08/00

Concentrated Extract Volume: 5000(uL) Date Analyzed: 11/15/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 4.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
319-84-6	alpha-BHC		0.38	J
319-85-7	beta-BHC		2.2	U
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		2.2	U
1024-57-3	Heptachlor epoxide		0.77	J
959-98-8	Endosulfan I		2.2	U
60-57-1	Dieldrin		4.2	U
72-55-9	4,4'-DDE		4.2	U
72-20-8	Endrin	4.2	~~0.13~~	~~PJB~~ U
33213-65-9	Endosulfan II		4.2	U
72-54-8	4,4'-DDD		4.2	U
1031-07-8	Endosulfan sulfate		4.2	U
50-29-3	4,4'-DDT		4.2	U
72-43-5	Methoxychlor	22	~~0.43~~	~~PJB~~ U
53494-70-5	Endrin ketone		4.2	U
7421-93-4	Endrin aldehyde	4.2	~~0.13~~	~~PJB~~ U
5103-71-9	alpha-Chlordane		2.2	U
5103-74-2	gamma-Chlordane	2.2	~~0.14~~	~~PJ~~ U
8001-35-2	Toxaphene		220	U
12674-11-2	Aroclor-1016		42	U
11104-28-2	Aroclor-1221		85	U
11141-16-5	Aroclor-1232		42	U
53469-21-9	Aroclor-1242		42	U
12672-29-6	Aroclor-1248		42	U
11097-69-1	Aroclor-1254		42	U
11096-82-5	Aroclor-1260		42	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP08

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.06

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 3 Decanted: (Y/N) N Date Received: 11/08/00

Extraction: (Type) SONC Date Extracted: 11/08/00

Concentrated Extract Volume: 5000(uL) Date Analyzed: 11/15/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
319-84-6	alpha-BHC	1.8	~~0.38~~	~~PJ~~ U
319-85-7	beta-BHC		1.8	U
319-86-8	delta-BHC		1.8	U
58-89-9	gamma-BHC (Lindane)		1.8	U
76-44-8	Heptachlor		1.8	U
309-00-2	Aldrin		1.8	U
1024-57-3	Heptachlor epoxide	1.8	~~1.2~~	~~PJ~~ U
959-98-8	Endosulfan I		1.8	U
60-57-1	Dieldrin	3.4	~~1.5~~	~~PJ~~ U
72-55-9	4,4'-DDE	3.4	~~1.1~~	~~PJ~~ U
72-20-8	Endrin	3.4	~~0.37~~	~~PJB~~ U
33213-65-9	Endosulfan II	3.4	~~0.86~~	~~PJ~~ U
72-54-8	4,4'-DDD	3.4	~~0.46~~	~~PJ~~ U
1031-07-8	Endosulfan sulfate	3.4	~~0.68~~	~~PJ~~ U
50-29-3	4,4'-DDT	3.4	~~0.44~~	~~PJB~~ U
72-43-5	Methoxychlor	18	~~1.5~~	~~PJB~~ U
53494-70-5	Endrin ketone	3.4	~~0.38~~	~~PJB~~ U
7421-93-4	Endrin aldehyde	3.4	~~0.87~~	~~PJB~~ U
5103-71-9	alpha-Chlordane	1.8	~~1.4~~	~~PJ~~ U
5103-74-2	gamma-Chlordane	1.8	~~0.71~~	~~PJ~~ U
8001-35-2	Toxaphene		180	U
12674-11-2	Aroclor-1016		34	U
11104-28-2	Aroclor-1221		69	U
11141-16-5	Aroclor-1232		34	U
53469-21-9	Aroclor-1242		34	U
12672-29-6	Aroclor-1248		170	
11097-69-1	Aroclor-1254		34	U
11096-82-5	Aroclor-1260		34	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP09

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 10 Decanted: (Y/N) N Date Received: 11/08/00

Extraction: (Type) SONC Date Extracted: 11/08/00

Concentrated Extract Volume: 5000(uL) Date Analyzed: 11/16/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
319-84-6	alpha-BHC		1.9	U
319-85-7	beta-BHC		1.9	U
319-86-8	delta-BHC		1.9	U
58-89-9	gamma-BHC (Lindane)		1.9	U
76-44-8	Heptachlor		1.9	U
309-00-2	Aldrin		1.9	U
1024-57-3	Heptachlor epoxide	1.9	~~0.75~~	~~PJ~~ U
959-98-8	Endosulfan I		1.9	U
60-57-1	Dieldrin	3.7	~~0.61~~	~~PJ~~ U
72-55-9	4,4'-DDE	3.7	~~1.7~~	~~PJ~~ U
72-20-8	Endrin		3.7	U
33213-65-9	Endosulfan II	3.7	~~0.32~~	~~PJ~~ U
72-54-8	4,4'-DDD	3.7	~~0.34~~	~~PJ~~ U
1031-07-8	Endosulfan sulfate	3.7	~~1.3~~	~~PJ~~ U
50-29-3	4,4'-DDT		3.7	U
72-43-5	Methoxychlor		19	U
53494-70-5	Endrin ketone		3.8	~~PB~~ JN
7421-93-4	Endrin aldehyde	3.7	~~2.3~~	~~PJB~~ U
5103-71-9	alpha-Chlordane	1.9	~~0.51~~	~~PJ~~ U
5103-74-2	gamma-Chlordane	1.9	~~0.43~~	~~PJ~~ U
8001-35-2	Toxaphene		190	U
12674-11-2	Aroclor-1016		37	U
11104-28-2	Aroclor-1221		74	U
11141-16-5	Aroclor-1232		37	U
53469-21-9	Aroclor-1242		37	U
12672-29-6	Aroclor-1248		210	
11097-69-1	Aroclor-1254		37	U
11096-82-5	Aroclor-1260		37	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BNP10

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 19 Decanted: (Y/N) N Date Received: 11/08/00

Extraction: (Type) SONC Date Extracted: 11/08/00

Concentrated Extract Volume: 5000(uL) Date Analyzed: 11/15/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
319-84-6	alpha-BHC		0.34	J
319-85-7	beta-BHC		2.7	~~B~~
319-86-8	delta-BHC		2.1	U
58-89-9	gamma-BHC (Lindane)		2.1	U
76-44-8	Heptachlor		2.1	U
309-00-2	Aldrin		2.1	U
1024-57-3	Heptachlor epoxide		2.1	U
959-98-8	Endosulfan I		2.1	U
60-57-1	Dieldrin	2.1	~~0.12~~	~~PJ~~ U
72-55-9	4,4'-DDE		4.1	U
72-20-8	Endrin		4.1	U
33213-65-9	Endosulfan II		4.1	U
72-54-8	4,4'-DDD	4.1	~~0.10~~	~~PJ~~ U
1031-07-8	Endosulfan sulfate		4.1	U
50-29-3	4,4'-DDT		4.1	U
72-43-5	Methoxychlor	21	~~0.23~~	~~PJB~~ U
53494-70-5	Endrin ketone		4.1	U
7421-93-4	Endrin aldehyde	4.1	~~0.17~~	~~PJB~~ U
5103-71-9	alpha-Chlordane		2.1	U
5103-74-2	gamma-Chlordane		2.1	U
8001-35-2	Toxaphene		210	U
12674-11-2	Aroclor-1016		41	U
11104-28-2	Aroclor-1221		83	U
11141-16-5	Aroclor-1232		41	U
53469-21-9	Aroclor-1242		41	U
12672-29-6	Aroclor-1248		41	U
11097-69-1	Aroclor-1254		41	U
11096-82-5	Aroclor-1260		41	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP11

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.09

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 20 Decanted: (Y/N) N Date Received: 11/08/00

Extraction: (Type) SONC Date Extracted: 11/08/00

Concentrated Extract Volume: 5000(uL) Date Analyzed: 11/15/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
319-84-6	alpha-BHC	2.1	~~0.25~~	~~PJ~~ U
319-85-7	beta-BHC	2.1	~~0.90~~	~~PJB~~ U
319-86-8	delta-BHC		2.1	U
58-89-9	gamma-BHC (Lindane)		2.1	U
76-44-8	Heptachlor		2.1	U
309-00-2	Aldrin		2.1	U
1024-57-3	Heptachlor epoxide	2.1	~~0.67~~	~~PJ~~ U
959-98-8	Endosulfan I		2.1	U
60-57-1	Dieldrin		4.1	U
72-55-9	4,4'-DDE		4.1	U
72-20-8	Endrin		4.1	U
33213-65-9	Endosulfan II		4.1	U
72-54-8	4,4'-DDD		4.1	U
1031-07-8	Endosulfan sulfate		4.1	U
50-29-3	4,4'-DDT		4.1	U
72-43-5	Methoxychlor	21	~~0.35~~	~~PJB~~ U
53494-70-5	Endrin ketone		4.1	U
7421-93-4	Endrin aldehyde		4.1	U
5103-71-9	alpha-Chlordane		2.1	U
5103-74-2	gamma-Chlordane	2.1	~~0.13~~	~~PJ~~ U
8001-35-2	Toxaphene		210	U
12674-11-2	Aroclor-1016		41	U
11104-28-2	Aroclor-1221		84	U
11141-16-5	Aroclor-1232		41	U
53469-21-9	Aroclor-1242		41	U
12672-29-6	Aroclor-1248		41	U
11097-69-1	Aroclor-1254		41	U
11096-82-5	Aroclor-1260		41	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP12

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 21 Decanted: (Y/N) N Date Received: 11/08/00

Extraction: (Type) SONC Date Extracted: 11/08/00

Concentrated Extract Volume: 5000(uL) Date Analyzed: 11/15/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
319-84-6	alpha-BHC	2.2	~~0.14~~	~~PJ~~ U
319-85-7	beta-BHC		2.2	U
319-86-8	delta-BHC		2.2	U
58-89-9	gamma-BHC (Lindane)		2.2	U
76-44-8	Heptachlor	2.2	~~0.11~~	~~PJ~~ U
309-00-2	Aldrin		2.2	U
1024-57-3	Heptachlor epoxide		0.79	J
959-98-8	Endosulfan I		0.64	J
60-57-1	Dieldrin	4.4	~~0.41~~	~~PJ~~ U
72-55-9	4,4'-DDE	4.4	~~0.66~~	~~PJ~~ U
72-20-8	Endrin		2.3	~~PJB~~ U
33213-65-9	Endosulfan II	4.4	~~1.1~~	~~PJ~~ U
72-54-8	4,4'-DDD		1.8	J
1031-07-8	Endosulfan sulfate		6.1	
50-29-3	4,4'-DDT	4.4	~~1.2~~	~~PJB~~ U
72-43-5	Methoxychlor		9.1	JB
53494-70-5	Endrin ketone		4.1	~~PJB~~ U
7421-93-4	Endrin aldehyde		7.7	~~PB~~ U
5103-71-9	alpha-Chlordane		2.2	U
5103-74-2	gamma-Chlordane		0.36	~~PJ~~ U
8001-35-2	Toxaphene		220	U
12674-11-2	Aroclor-1016		42	U
11104-28-2	Aroclor-1221		85	U
11141-16-5	Aroclor-1232		42	U
53469-21-9	Aroclor-1242		42	U
12672-29-6	Aroclor-1248		42	U
11097-69-1	Aroclor-1254		42	U
11096-82-5	Aroclor-1260		42	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNP13

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 24 Decanted: (Y/N) N Date Received: 11/08/00

Extraction: (Type) SONC Date Extracted: 11/08/00

Concentrated Extract Volume: 5000(uL) Date Analyzed: 11/15/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
319-84-6	alpha-BHC	2.2	~~0.15~~	~~PJ~~ U
319-85-7	beta-BHC	2.2	~~0.17~~	~~PJB~~ U
319-86-8	delta-BHC		2.2	U
58-89-9	gamma-BHC (Lindane)		2.2	U
76-44-8	Heptachlor		0.32	~~PJ~~ J
309-00-2	Aldrin		2.2	U
1024-57-3	Heptachlor epoxide	4.3	~~0.36~~	~~PJ~~ U
959-98-8	Endosulfan I		0.26	~~PJ~~ J
60-57-1	Dieldrin	4.3	~~0.23~~	~~PJ~~ U
72-55-9	4,4'-DDE	4.3	~~0.39~~	~~PJ~~ U
72-20-8	Endrin	4.3	~~0.97~~	~~PJB~~ U
33213-65-9	Endosulfan II		4.3	U
72-54-8	4,4'-DDD		0.97	J
1031-07-8	Endosulfan sulfate		4.3	U
50-29-3	4,4'-DDT	4.3	~~1.2~~	~~PJB~~ U
72-43-5	Methoxychlor		7.0	~~PJB~~ J
53494-70-5	Endrin ketone	4.3	~~1.9~~	~~PJB~~ U
7421-93-4	Endrin aldehyde		5.0	~~PB~~ J
5103-71-9	alpha-Chlordane		2.2	U
5103-74-2	gamma-Chlordane		0.35	J
8001-35-2	Toxaphene		220	U
12674-11-2	Aroclor-1016		43	U
11104-28-2	Aroclor-1221		88	U
11141-16-5	Aroclor-1232		43	U
53469-21-9	Aroclor-1242		43	U
12672-29-6	Aroclor-1248		43	U
11097-69-1	Aroclor-1254		43	U
11096-82-5	Aroclor-1260		43	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ85

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.12

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 25 Decanted: (Y/N) N Date Received: 11/08/00

Extraction: (Type) SONC Date Extracted: 11/08/00

Concentrated Extract Volume: 5000(uL) Date Analyzed: 11/15/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0 Sulfur Cleanup: (Y/N) N

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 ~~0.89~~	~~PJB~~ 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	2.3 ~~0.34~~	~~PJ~~ U
959-98-8	Endosulfan I	2.3	U
60-57-1	Dieldrin	4.4	U
72-55-9	4,4'-DDE	4.4	U
72-20-8	Endrin	~~4.4~~ ~~0.18~~	~~PJB~~ U
33213-65-9	Endosulfan II	0.14	~~PJ~~ J
72-54-8	4,4'-DDD	4.4	U
1031-07-8	Endosulfan sulfate	~~4.4~~ ~~0.22~~	~~PJ~~ U
50-29-3	4,4'-DDT	~~4.4~~ ~~0.20~~	~~PJB~~ U
72-43-5	Methoxychlor	23	U
53494-70-5	Endrin ketone	~~4.4~~ ~~0.28~~	~~PJB~~ U
7421-93-4	Endrin aldehyde	~~4.4~~ ~~0.47~~	~~JB~~ U
5103-71-9	alpha-Chlordane	2.3	U
5103-74-2	gamma-Chlordane	2.3	U
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	44	U
12672-29-6	Aroclor-1248	44	U
11097-69-1	Aroclor-1254	44	U
11096-82-5	Aroclor-1260	44	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ87

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.13

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 27 Decanted: (Y/N) N Date Received: 11/08/00

Extraction: (Type) SONC Date Extracted: 11/08/00

Concentrated Extract Volume: 5000(uL) Date Analyzed: 11/15/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

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	~~0.46~~	~~PJB~~ U
319-86-8	delta-BHC		2.3	U
58-89-9	gamma-BHC (Lindane)		2.3	U
76-44-8	Heptachlor	2.3	~~0.20~~	~~PJ~~ U
309-00-2	Aldrin		2.3	U
1024-57-3	Heptachlor epoxide	2.3	~~0.44~~	~~PJ~~ U
959-98-8	Endosulfan I		2.3	U
60-57-1	Dieldrin		4.5	U
72-55-9	4,4'-DDE		4.5	U
72-20-8	Endrin		4.5	U
33213-65-9	Endosulfan II		4.5	U
72-54-8	4,4'-DDD		4.5	U
1031-07-8	Endosulfan sulfate		4.5	U
50-29-3	4,4'-DDT		4.5	U
72-43-5	Methoxychlor	23	~~0.44~~	~~PJB~~ U
53494-70-5	Endrin ketone		4.5	U
7421-93-4	Endrin aldehyde	4.5	~~0.37~~	~~JB~~ U
5103-71-9	alpha-Chlordane		2.3	U
5103-74-2	gamma-Chlordane		2.3	U
8001-35-2	Toxaphene		230	U
12674-11-2	Aroclor-1016		45	U
11104-28-2	Aroclor-1221		92	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		45	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ88

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.14

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 20 Decanted: (Y/N) N Date Received: 11/08/00

Extraction: (Type) SONC Date Extracted: 11/08/00

Concentrated Extract Volume: 5000(uL) Date Analyzed: 11/15/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
319-84-6	alpha-BHC	2.1	~~0.20~~	~~PJ~~ U
319-85-7	beta-BHC	2.1	~~1.9~~	~~PJB~~ U
319-86-8	delta-BHC		2.1	U
58-89-9	gamma-BHC (Lindane)		2.1	U
76-44-8	Heptachlor		2.1	U
309-00-2	Aldrin		2.1	U
1024-57-3	Heptachlor epoxide	2.1	~~0.36~~	~~PJ~~ U
959-98-8	Endosulfan I		2.1	U
60-57-1	Dieldrin		4.1	U
72-55-9	4,4'-DDE		4.1	U
72-20-8	Endrin		4.1	U
33213-65-9	Endosulfan II	4.1	~~0.16~~	~~PJ~~ U
72-54-8	4,4'-DDD	4.1	~~0.20~~	~~PJ~~ U
1031-07-8	Endosulfan sulfate		0.13	J
50-29-3	4,4'-DDT		4.1	U
72-43-5	Methoxychlor	21	~~0.74~~	~~PJB~~ U
53494-70-5	Endrin ketone		4.1	U
7421-93-4	Endrin aldehyde	4.1	~~0.30~~	~~PJB~~ U
5103-71-9	alpha-Chlordane	2.1	~~0.11~~	~~PJ~~ U
5103-74-2	gamma-Chlordane		2.1	U
8001-35-2	Toxaphene		210	U
12674-11-2	Aroclor-1016		41	U
11104-28-2	Aroclor-1221		84	U
11141-16-5	Aroclor-1232		41	U
53469-21-9	Aroclor-1242		41	U
12672-29-6	Aroclor-1248		41	U
11097-69-1	Aroclor-1254		41	U
11096-82-5	Aroclor-1260		41	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ89

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 22 Decanted: (Y/N) N Date Received: 11/08/00

Extraction: (Type) SONC Date Extracted: 11/08/00

Concentrated Extract Volume: 5000(uL) Date Analyzed: 11/15/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

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	2.2	U
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	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.2	U
72-55-9	4,4'-DDE	4.2	U
72-20-8	Endrin	4.2	U
33213-65-9	Endosulfan II	4.2	U
72-54-8	4,4'-DDD	4.2	U
1031-07-8	Endosulfan sulfate	4.2	U
50-29-3	4,4'-DDT	4.2	U
72-43-5	Methoxychlor	22 ~~0.23~~	~~PJB~~ U
53494-70-5	Endrin ketone	4.2 ~~0.034~~	~~PJB~~ U
7421-93-4	Endrin aldehyde	4.2	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	42	U
11104-28-2	Aroclor-1221	86	U
11141-16-5	Aroclor-1232	42	U
53469-21-9	Aroclor-1242	42	U
12672-29-6	Aroclor-1248	42	U
11097-69-1	Aroclor-1254	42	U
11096-82-5	Aroclor-1260	42	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ91

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) SOIL Lab Sample ID: 45798.16

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 22 Decanted: (Y/N) N Date Received: 11/08/00

Extraction: (Type) SONC Date Extracted: 11/08/00

Concentrated Extract Volume: 5000(uL) Date Analyzed: 11/15/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

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	2.2 ~~0.41~~	~~PJB~~ U
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	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.2	U
72-55-9	4,4'-DDE	4.2	U
72-20-8	Endrin	4.2	U
33213-65-9	Endosulfan II	4.2	U
72-54-8	4,4'-DDD	4.2	U
1031-07-8	Endosulfan sulfate	4.2	U
50-29-3	4,4'-DDT	4.2 ~~0.074~~	~~PJB~~ U
72-43-5	Methoxychlor	22 ~~0.47~~	~~PJB~~ U
53494-70-5	Endrin ketone	4.2	U
7421-93-4	Endrin aldehyde	4.2	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	42	U
11104-28-2	Aroclor-1221	86	U
11141-16-5	Aroclor-1232	42	U
53469-21-9	Aroclor-1242	42	U
12672-29-6	Aroclor-1248	42	U
11097-69-1	Aroclor-1254	42	U
11096-82-5	Aroclor-1260	42	U

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1E

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BNQ92 FC

Lab Name: AATSLA Contract: 68-W0-0081

Lab Code: AATSLA Case No.: 28706 SAS No.: SDG No.: BNP05

Matrix: (soil/water) WATER Lab Sample ID: 45798.17

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ Decanted: (Y/N) __ Date Received: 11/08/00

Extraction: (Type) CONT Date Extracted: 11/13/00

Concentrated Extract Volume: 10000(uL) Date Analyzed: 11/17/00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

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	~~0.012~~	~~PJB~~ 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	~~0.0026~~	~~PJ~~ U
1031-07-8	Endosulfan sulfate		0.10	U
50-29-3	4,4'-DDT		0.10	U
72-43-5	Methoxychlor		0.014	J
53494-70-5	Endrin ketone		0.10	U
7421-93-4	Endrin aldehyde		0.032	J
5103-71-9	alpha-Chlordane		0.0052	J
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

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REFERENCE NO. 14

RECORD OF COMMUNICATION

TO: YUNRU YANG

FROM: *JANET TROTTER*
Region 2, ESAT/RSCC

DATE: Feb. 21, 2001

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) LACKAWANNA FOUNDRY 28706 Chemed Inorg 14S/1W

REPLY BY: _____

SIGNATURE: _____ DATE: 2/22/01

DATE RECEIVED BY RSCC: _____

REV: 1/5/00

RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER

DATE: Nov. 24, 2000
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: Hanif Sheikh, Hazardous Waste Support Section

FEB 02 2001

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

SITE LACKAWANNA FOUNDRY	CASE# 28706	
SAMPLER SAT	#SAMPLES	MATRIX
PHASE BZ	14	SOIL
LAB CHEMED	1	WATER
TURN-AROUND-TIME 21 DAYS	FRACTION TAL & CN	
CERCLIS ID # NYSFN0204209	SITE SPILL # MY	

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
		John Bulich	11-22-00
John Bulich	11-24-00	CM Alaimo	01/29/01
CM Alaimo	1-31-01	J Bulich	1-31-01
J Bulich	1-31-01	Hanif Shiekh	01-31-01
Hanif Shiekh	02-02-01	J Bulich	2-2-01

(over for instructions) revised 7/00

USEPA DATA TRANSFER LOG INSTRUCTIONS

The DATA TRANSFER LOG FORM is to be used to document the CUSTODY of original documents transferred to EPA contractors for data validation. Anytime original documents are transferred from one individual to another, the transfer must be documented on the DATA TRANSFER LOG FORM. The completion of this form will assure that a history of the samples is maintained from the time they were collected to the time when the data is presented as evidence in court proceedings.

The documents are considered to be under custody if:

1. They are in your possession, or
2. They are in your view, after being in your possession, or
3. They were in your possession and you locked them up, or
4. They are in a designated secure area.

PLEASE COMPLETE THE FORM IN THE FOLLOWING MANNER:

The DATA TRANSFER LOG is to be completed in the same manner a chain of custody record is completed. Indelible ink must be used for each entry.

The person who initially opens the package containing the data must print their name, sign their name, and enter the date and time received in the "Received By" column. When the data is transferred to another individual, the "Relinquished By" column must also be completed by the individual who originally had possession of the documents. The individual receiving the documents must complete the next line in the "Received By" column. Each individual involved in the transfer of the data must enter their information on the form.

Case #	28706	Site:	LACKAWANA FOUNDRY	Soil:	14
SDG #	MBNJ51	Lab:	CHEMED	Water:	01
Contractor:	SAT/BZ/MY	Reviewer:	C.M. Alaimo/ESAT	Other:	0

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 package consists of fourteen (14) soil and one (01) aqueous samples collected from the Lackawana Foundry site on 11/07/00 for AL metals plus CN analysis. All holding times were met. QC was performed on sample MBNJ51. No trip report was available, field QC could not be determined.

SDG #MBNJ51

CRDL

For both Hg runs, the CRA's % (125.0%) recoveries were between 121–150% requiring estimation of all positive results within the effected range.

J—>Hg in MBNJ54 & MBNJ55.

ICP SERIAL DILUTION

For Cu & K, the %D were greater than 10% when the initial sample values were greater than 10xIDL, therefore all associated data greater than or equal to the CRDL (or ≥ 10xIDL when 10xIDL > CRDL).

J—>Cu in MBNJ51–>60, MBNJ62, MBNJ63, MBNJ64 & MBNJ66
J—>K in MBNJ59, MBNJ60, MBNJ62, MBJN63 & MBNJ66.

A.2.3. Contract-Problems/Non-Compliance

For field blank MBNJ67, the lead result was reported without a concentration qualifier. According to the raw data, the value was less than the CRDL and required a "B" qualifier. The validator made the necessary corrections.

MMB Reviewer: HS **Date:** 02/01/01
Signature

Contractor Reviewer: C M Alaimo **Date:** 01/30/01
Signature

Verified by: _____ **Date:** _____
Signature

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CLP DATA ASSESSMENT SUMMARY FORM

TYPE OF REVIEW: INORGANIC **DATE:** 01/30/01 **CASE #:**28706

SITE: Lackawana Foundry **LAB NAME:** CHEMED

REVIEWER'S INITIALS: CMA **NUMBER OF SAMPLES:** WATER 01
SOIL 14

ANALYTES REJECTED DUE TO EXCEEDING REVIEW CRITERIA:*

	Holding Time	CRDL	Prep Blank	Field Blank	Inter-ference	Spike Recov.	Tot/ Disso.	LCS	Serial Dil.	% TS	Total Analytes	Rejections
ICP											330	0
Flame AA												
Furnace AA												
Mercury											15	0
Cyanide											15	0
Total											360	0

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

	Holding Time	CRDL	Prep Blan	Tot/ Diss	Preser vation	Spike Recov.	Dup Lab	Dup Field	Det. Lim it	LCS	Seri al Dilu tion	%TS	Total Analytes	Estimation
ICP		2									19		330	21
Flame AA														
Furnace AA														
Mercury													15	0
Cyanide													15	0
Total		2									19		360	21

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

Region II
INORGANIC REGIONAL DATA ASSESSMENT

CASE NO.: 28706 SITE: LACKAWANA FOUNDRY

LABORATORY: CHEMED NO. OF SAMPLES/MATRIX: 01 WATER, 14 SOIL

SDG#:MBNJ51 REVIEWER (IF NOT ESD):

SOW#: ILM04.1 REVIEWER'S NAME: C. ALAIMO

DPO: ACTION FYI COMPLETION DATE: 01/30/01

DATA ASSESSMENT SUMMARY

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

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.3: Contract Non-Compliance (SMO Report)

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

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO. 28706

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:
SMO Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. 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

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

Comments: N/A

CMA
Reviewer's Initial

01/30/07
Date

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.4: Mailing List for Data Reviewers

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

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 Analysts, York,
E3I, Skinner, TMA

2. USEPA Region II ESD
Woodbridge Avenue
Edison, NJ 08837
Lisa Gatton Vidulich
(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Nanco
ETC, Gadson, EMS, Galson, ICM

3. USEPA Region III (CRL)
839 Bestgate Road
Annapolis, MD 21401
Chuck Sands
(301) 266-9180
DE, MD, PA, VA, WV, DC
Centec, Hitman, JTC, MACK, VERSAR,
ITAS, Weston, MMES, EA Engineering,
Subject Tech., KEYPA

4. USEPA Region IV (ESD)
Analytical Support Branch
College Station Road
Athens, GA 30613
Tom Bennett, Jr.
(404) 546-3112
AL, FL, GA, KY, MS, NC, SC, TN
CompuChem, EPS, ESE, PBS&J,
Triangle Labs

5. USEPA Region V (ESD)
536 South Clark Street
Tenth Floor, CRL
Chicago, IL 60605
Pat Churilla
(312) 353-9087
IL, IN, MI, MN, OH, WI
NLE, TAI/ENG

6. USEPA Region VI (ESD)
Monterey Park Plaza, Bldg. C
6608 Hornwood Drive
Houston, TX 77074
David Stockton
(713) 953-3425
AR, LA, NM, TX, OK
ANACON, RADIAN, SPECS, EIS, Glochem
Research, Inc., SPL Inc., SWRI,
Allied, KEYTX, EIRA

7. USEPA Region VII Laboratory
25 Funston Road
Kansas City, KS 66115
Debra Morey
(913) 236-3881
IO, KS, NB, MO
Wilson, Kansas City Scientific
Enterprises, Eagle Picher

8. USEPA Region VIII Laboratory
Box 25366
Denver Federal Center
Lakewood, CO 80225
Eva Hoffman
(303) 236-7371
CO, ND, SD, UT, WY, MT
ACCU, CSMRI, RMAL, Data Chem., Cenref

9. USEPA Region XI (ESD)
QA Management Section
215 Fremont Street
San Francisco, CA 94105
Kent Kitchingman
(415) 974-0924
AZ, CA, HI, NV, American Samoa,
Guam Trust Territories of Pacific
Islands, Wake Island
ALI, 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
Laucks 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
Viar and Company
P.O. Box 818
Alexandria, VA 22313

Case# ~~280~~ 28106
SDG: MDNJ51

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

based on

SOW. 3/90

(SOP Revision XI)

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

APPROVED BY: _____ DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1/30/92
Robert Runyon, Chief
Monitoring Management Branch

Title: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
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1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

2.0 Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a total review:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1). The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2) The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3) This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 CLP Data Assessment Summary Forms

2.1.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

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 EPA 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
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	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.			

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

Date: Jan. 1992
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A.1.6 Form I to IX	Yes	No	N/A
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 and cyanides analyses?	[✓]	___	___
	ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".			

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

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		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?	[/]	___	___

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	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?	[/]	___	___
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.			
A.1.14.4	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%?		[ ]	/

		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.

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		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 E-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?	[✓]	___	___

	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:			
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: 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.

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.

NOV 22 2000

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

SOW No.: ILM04.1

EPA SAMPLE NO.	Lab Sample ID.
MBNJ51	R1115-01S
MBNJ51D	R1115-01S2
MBNJ51S	R1115-01MS
MBNJ52	R1115-02S
MBNJ53	R1115-03S
MBNJ54	R1115-05S
MBNJ55	R1115-06S
MBNJ56	R1115-07S
MBNJ57	R1115-08S
MBNJ58	R1115-12S
MBNJ59	R1115-13S
MBNJ60	R1115-14S
MBNJ62	R1115-09S
MBNJ63	R1115-10S
MBNJ64	R1115-11S
MBNJ66	R1115-04S
MBNJ67	R1115-15S

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" qualifiers on Form I and IX for Copper and Potassium 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: THOMAS J MANCUSO Title: LAB MANAGER Date: 11/17/00

CHEMTECH

SDG NARRATIVE

USEPA
SDG # MBNJ51
Case # 28706
Contract # 68-W00088
LAB CODE: CHEMED
Chemtech Project # R1115

A. Number of Samples and Date of Receipt
1 Aqueous plus 15 Soil Samples were delivered to the laboratory intact on 11/08/00.

B. Parameters
Test requested was Metals. This data package contains results for Metals.

C. Cooler Temp
Indicator Bottle: **Presence**/Absence
Cooler Temp: 4.0

D. Detail Documentation (related to Sample Handling Shipping, Analytical Problem, Temp of Cooler etc):

E. Corrective Action taken for above:
No Corrective Action was taken at this time

F. Analytical Techniques:
The analysis of Metals is based on CLP Methodology. Mercury by Method ILM4.0 and Cyanide by Method 335.

G. QA/ QC
Calibrations met requirements. Blank analyses did not indicate the presence of contamination. Interference Check Sample, Laboratory Control Sample were within Control Limits. Spike Sample recovery met requirements. Serial Dilution met requirements except for the followings: Arsenic, Beryllium, Copper, Potassium, Selenium and Sodium. Duplicate analyses met requirements except for the Selenium.

I certify that the 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 hard copy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Signature Mildred V. Reyes Name: Mildred V. Reyes

Date 11/17/00 Title: QA/QC

002
MVR 11/17/00

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBNJ51

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): SOIL Lab Sample ID: R1115-01S

Level (low/med): LOW Date Received: 11/08/00

% Solids: 66.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6770			P
7440-36-0	Antimony	1.8	U		P
7440-38-2	Arsenic	2.9	B		P
7440-39-3	Barium	67.3			P
7440-41-7	Beryllium	0.45	B		P
7440-43-9	Cadmium	0.60	U		P
7440-70-2	Calcium	2140			P
7440-47-3	Chromium	11.5			P
7440-48-4	Cobalt	9.1	B		P
7440-50-8	Copper	19.7		E	P
7439-89-6	Iron	12100			P
7439-92-1	Lead	12.6			P
7439-95-4	Magnesium	2630			P
7439-96-5	Manganese	117			P
7439-97-6	Mercury	0.14	U		CV
7440-02-0	Nickel	27.0			P
7440-09-7	Potassium	639	B	E	P
7782-49-2	Selenium	1.3	B		P
7440-22-4	Silver	0.48	U		P
7440-23-5	Sodium	161	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	12.8	B		P
7440-66-6	Zinc	71.4			P
	Cyanide	0.22	U		CA

J

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBNJ52

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): SOIL Lab Sample ID: R1115-02S

Level (low/med): LOW Date Received: 11/08/00

% Solids: 66.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8590			P
7440-36-0	Antimony	1.8	U		P
7440-38-2	Arsenic	1.7	U		P
7440-39-3	Barium	97.3			P
7440-41-7	Beryllium	0.72	B		P
7440-43-9	Cadmium	0.60	U		P
7440-70-2	Calcium	3220			P
7440-47-3	Chromium	14.7			P
7440-48-4	Cobalt	9.7	B		P
7440-50-8	Copper	20.0		E	P
7439-89-6	Iron	16200			P
7439-92-1	Lead	15.3			P
7439-95-4	Magnesium	3390			P
7439-96-5	Manganese	138			P
7439-97-6	Mercury	0.15	U		CV
7440-02-0	Nickel	27.3			P
7440-09-7	Potassium	938	B	E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	0.48	U		P
7440-23-5	Sodium	77.5	U		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	14.4	B		P
7440-66-6	Zinc	72.1			P
	Cyanide	0.22	U		CA

J

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

0.39

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBNJ53

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): SOIL Lab Sample ID: R1115-03S

Level (low/med): LOW Date Received: 11/08/00

% Solids: 79.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15900			P
7440-36-0	Antimony	1.5	U		P
7440-38-2	Arsenic	4.1			P
7440-39-3	Barium	187			P
7440-41-7	Beryllium	0.73	B		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2640			P
7440-47-3	Chromium	26.2			P
7440-48-4	Cobalt	20.3			P
7440-50-8	Copper	21.0		E	P
7439-89-6	Iron	30100			P
7439-92-1	Lead	21.6			P
7439-95-4	Magnesium	5510			P
7439-96-5	Manganese	1050			P
7439-97-6	Mercury	0.13	U		CV
7440-02-0	Nickel	48.7			P
7440-09-7	Potassium	1080	B	E	P
7782-49-2	Selenium	0.99	U		P
7440-22-4	Silver	0.88	B		P
7440-23-5	Sodium	64.2	U		P
7440-28-0	Thallium	0.92	U		P
7440-62-2	Vanadium	24.0			P
7440-66-6	Zinc	128			P
	Cyanide	0.18	U		CA

J

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

0.40

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBNJ54

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): SOIL Lab Sample ID: R1115-05S

Level (low/med): LOW Date Received: 11/08/00

% Solids: 96.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	686			P	
7440-36-0	Antimony	1.2	U		P	
7440-38-2	Arsenic	1.1	U		P	
7440-39-3	Barium	9.4	B		P	
7440-41-7	Beryllium	0.22	U		P	
7440-43-9	Cadmium	0.40	U		P	
7440-70-2	Calcium	936	B		P	
7440-47-3	Chromium	6.2			P	
7440-48-4	Cobalt	0.99	B		P	
7440-50-8	Copper	12.5		E	P	J
7439-89-6	Iron	7390			P	
7439-92-1	Lead	15.2			P	
7439-95-4	Magnesium	244	B		P	
7439-96-5	Manganese	56.1			P	
7439-97-6	Mercury	0.09			CV	J
7440-02-0	Nickel	3.6	B		P	
7440-09-7	Potassium	90.1	B	E	P	
7782-49-2	Selenium	0.80	U		P	
7440-22-4	Silver	0.32	U		P	
7440-23-5	Sodium	52.0	U		P	
7440-28-0	Thallium	0.74	U		P	
7440-62-2	Vanadium	3.0	B		P	
7440-66-6	Zinc	23.8			P	
	Cyanide	0.15	U		CA	

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

p. 1/1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBNJ55

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): SOIL Lab Sample ID: R1115-06S

Level (low/med): LOW Date Received: 11/08/00

% Solids: 90.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4170			P
7440-36-0	Antimony	1.3	U		P
7440-38-2	Arsenic	1.8	B		P
7440-39-3	Barium	35.1	B		P
7440-41-7	Beryllium	0.24	U		P
7440-43-9	Cadmium	0.44	U		P
7440-70-2	Calcium	60300			P
7440-47-3	Chromium	8.0			P
7440-48-4	Cobalt	2.4	B		P
7440-50-8	Copper	14.3		E	P
7439-89-6	Iron	9500			P
7439-92-1	Lead	24.6			P
7439-95-4	Magnesium	2490			P
7439-96-5	Manganese	145			P
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel	7.7	B		P
7440-09-7	Potassium	425	B	E	P
7782-49-2	Selenium	0.89	U		P
7440-22-4	Silver	0.36	U		P
7440-23-5	Sodium	88.4	B		P
7440-28-0	Thallium	0.82	U		P
7440-62-2	Vanadium	6.0	B		P
7440-66-6	Zinc	46.4			P
	Cyanide	0.16	U		CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBNJ56

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): SOIL Lab Sample ID: R1115-07S

Level (low/med): LOW Date Received: 11/08/00

% 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	12300			P
7440-36-0	Antimony	1.4	U		P
7440-38-2	Arsenic	4.2			P
7440-39-3	Barium	110			P
7440-41-7	Beryllium	0.66	B		P
7440-43-9	Cadmium	0.46	U		P
7440-70-2	Calcium	1900			P
7440-47-3	Chromium	18.9			P
7440-48-4	Cobalt	10.1	B		P
7440-50-8	Copper	21.3		E	P
7439-89-6	Iron	24800			P
7439-92-1	Lead	18.4			P
7439-95-4	Magnesium	4430			P
7439-96-5	Manganese	217			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	34.5			P
7440-09-7	Potassium	847	B	E	P
7782-49-2	Selenium	0.92	U		P
7440-22-4	Silver	0.53	B		P
7440-23-5	Sodium	228	B		P
7440-28-0	Thallium	0.86	U		P
7440-62-2	Vanadium	19.7			P
7440-66-6	Zinc	91.0			P
	Cyanide	0.17	U		CA

J

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBNJ57

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): SOIL Lab Sample ID: R1115-08S

Level (low/med): LOW Date Received: 11/08/00

% Solids: 80.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15100			P
7440-36-0	Antimony	1.5	U		P
7440-38-2	Arsenic	16.9			P
7440-39-3	Barium	166			P
7440-41-7	Beryllium	1.0	B		P
7440-43-9	Cadmium	0.49	U		P
7440-70-2	Calcium	2630			P
7440-47-3	Chromium	23.7			P
7440-48-4	Cobalt	12.7			P
7440-50-8	Copper	41.9		E	P
7439-89-6	Iron	52800			P
7439-92-1	Lead	25.2			P
7439-95-4	Magnesium	5450			P
7439-96-5	Manganese	197			P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	48.9			P
7440-09-7	Potassium	1030	B	E	P
7782-49-2	Selenium	0.98	U		P
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	63.2	U		P
7440-28-0	Thallium	0.90	U		P
7440-62-2	Vanadium	24.0			P
7440-66-6	Zinc	127			P
	Cyanide	0.18	U		CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBNJ58

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): SOIL Lab Sample ID: R1115-12S

Level (low/med): LOW Date Received: 11/08/00

% Solids: 78.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13800			P
7440-36-0	Antimony	1.5	U		P
7440-38-2	Arsenic	5.4			P
7440-39-3	Barium	129			P
7440-41-7	Beryllium	0.72	B		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2210			P
7440-47-3	Chromium	20.4			P
7440-48-4	Cobalt	12.6			P
7440-50-8	Copper	23.4		E	P
7439-89-6	Iron	26700			P
7439-92-1	Lead	19.5			P
7439-95-4	Magnesium	4730			P
7439-96-5	Manganese	364			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	38.8			P
7440-09-7	Potassium	1200	B	E	P
7782-49-2	Selenium	1.8			P
7440-22-4	Silver	0.56	B		P
7440-23-5	Sodium	64.3	U		P
7440-28-0	Thallium	2.3	B		P
7440-62-2	Vanadium	20.6			P
7440-66-6	Zinc	108			P
	Cyanide	0.19	U		CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBNJ59

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): SOIL Lab Sample ID: R1115-13S

Level (low/med): LOW Date Received: 11/08/00

% Solids: 74.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16200			P
7440-36-0	Antimony	1.6	U		P
7440-38-2	Arsenic	4.8			P
7440-39-3	Barium	157			P
7440-41-7	Beryllium	0.84	B		P
7440-43-9	Cadmium	0.53	U		P
7440-70-2	Calcium	2260			P
7440-47-3	Chromium	24.0			P
7440-48-4	Cobalt	14.9			P
7440-50-8	Copper	25.1		E	P
7439-89-6	Iron	31000			P
7439-92-1	Lead	28.8			P
7439-95-4	Magnesium	5190			P
7439-96-5	Manganese	391			P
7439-97-6	Mercury	0.14	U		CV
7440-02-0	Nickel	42.2			P
7440-09-7	Potassium	1420		E	P
7782-49-2	Selenium	1.5			P
7440-22-4	Silver	0.73	B		P
7440-23-5	Sodium	138	B		P
7440-28-0	Thallium	0.98	U		P
7440-62-2	Vanadium	24.0			P
7440-66-6	Zinc	134			P
	Cyanide	0.20	U		CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBNJ60

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): SOIL Lab Sample ID: R1115-14S

Level (low/med): LOW Date Received: 11/08/00

% Solids: 76.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	18300			P	
7440-36-0	Antimony	1.6	U		P	
7440-38-2	Arsenic	1.9	B		P	
7440-39-3	Barium	179			P	
7440-41-7	Beryllium	0.89	B		P	
7440-43-9	Cadmium	0.52	U		P	
7440-70-2	Calcium	2250			P	
7440-47-3	Chromium	26.1			P	
7440-48-4	Cobalt	11.0	B		P	
7440-50-8	Copper	19.9		E	P	4
7439-89-6	Iron	27300			P	
7439-92-1	Lead	17.8			P	
7439-95-4	Magnesium	5830			P	
7439-96-5	Manganese	261			P	
7439-97-6	Mercury	0.12	U		CV	
7440-02-0	Nickel	45.9			P	
7440-09-7	Potassium	1940		E	P	4
7782-49-2	Selenium	1.8			P	
7440-22-4	Silver	0.43	B		P	
7440-23-5	Sodium	161	B		P	
7440-28-0	Thallium	1.2	B		P	
7440-62-2	Vanadium	24.7			P	
7440-66-6	Zinc	134			P	
	Cyanide	0.19	U		CA	

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBNJ62

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): SOIL Lab Sample ID: R1115-09S

Level (low/med): LOW Date Received: 11/08/00

% 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	15400			P	
7440-36-0	Antimony	1.5	U		P	
7440-38-2	Arsenic	4.3			P	
7440-39-3	Barium	182			P	
7440-41-7	Beryllium	0.85	B		P	
7440-43-9	Cadmium	0.51	U		P	
7440-70-2	Calcium	5220			P	
7440-47-3	Chromium	21.8			P	
7440-48-4	Cobalt	13.2			P	
7440-50-8	Copper	34.4		E	P	J
7439-89-6	Iron	26000			P	
7439-92-1	Lead	24.0			P	
7439-95-4	Magnesium	4810			P	
7439-96-5	Manganese	484			P	
7439-97-6	Mercury	0.13	U		CV	
7440-02-0	Nickel	44.8			P	
7440-09-7	Potassium	1870		E	P	J
7782-49-2	Selenium	1.4			P	
7440-22-4	Silver	0.42	B		P	
7440-23-5	Sodium	66.6	U		P	
7440-28-0	Thallium	0.95	U		P	
7440-62-2	Vanadium	23.8			P	
7440-66-6	Zinc	139			P	
	Cyanide	0.19	U		CA	

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBNJ63

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): SOIL Lab Sample ID: R1115-10S

Level (low/med): LOW Date Received: 11/08/00

% Solids: 78.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	13500			P	
7440-36-0	Antimony	1.5	U		P	
7440-38-2	Arsenic	6.9			P	
7440-39-3	Barium	114			P	
7440-41-7	Beryllium	0.76	B		P	
7440-43-9	Cadmium	0.51	U		P	
7440-70-2	Calcium	2450			P	
7440-47-3	Chromium	19.2			P	
7440-48-4	Cobalt	15.2			P	
7440-50-8	Copper	23.9		E	P	J
7439-89-6	Iron	29800			P	
7439-92-1	Lead	18.8			P	
7439-95-4	Magnesium	4250			P	
7439-96-5	Manganese	427			P	
7439-97-6	Mercury	0.12	U		CV	
7440-02-0	Nickel	36.5			P	
7440-09-7	Potassium	1420		E	P	J
7782-49-2	Selenium	2.3			P	
7440-22-4	Silver	0.58	B		P	
7440-23-5	Sodium	108	B		P	
7440-28-0	Thallium	0.94	U		P	
7440-62-2	Vanadium	21.8			P	
7440-66-6	Zinc	96.9			P	
	Cyanide	0.19	U		CA	

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBNJ64

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): SOIL Lab Sample ID: R1115-11S

Level (low/med): LOW Date Received: 11/08/00

% Solids: 79.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12200			P
7440-36-0	Antimony	1.5	U		P
7440-38-2	Arsenic	8.0			P
7440-39-3	Barium	89.8			P
7440-41-7	Beryllium	0.58	B		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2000			P
7440-47-3	Chromium	17.6			P
7440-48-4	Cobalt	13.0			P
7440-50-8	Copper	22.0		E	P
7439-89-6	Iron	28300			P
7439-92-1	Lead	14.1			P
7439-95-4	Magnesium	4000			P
7439-96-5	Manganese	457			P
7439-97-6	Mercury	0.13	U		CV
7440-02-0	Nickel	32.5			P
7440-09-7	Potassium	1140	B	E	P
7782-49-2	Selenium	2.2			P
7440-22-4	Silver	0.50	B		P
7440-23-5	Sodium	92.9	B		P
7440-28-0	Thallium	2.2	B		P
7440-62-2	Vanadium	18.5			P
7440-66-6	Zinc	88.5			P
	Cyanide	0.18	U		CA

J

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBNJ66

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): SOIL Lab Sample ID: R1115-04S

Level (low/med): LOW Date Received: 11/08/00

% Solids: 78.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	18500			P	
7440-36-0	Antimony	1.5	U		P	
7440-38-2	Arsenic	2.2	B		P	
7440-39-3	Barium	200			P	
7440-41-7	Beryllium	0.76	B		P	
7440-43-9	Cadmium	0.50	U		P	
7440-70-2	Calcium	2940			P	
7440-47-3	Chromium	27.2			P	
7440-48-4	Cobalt	14.6			P	
7440-50-8	Copper	22.7		E	P	J
7439-89-6	Iron	27700			P	
7439-92-1	Lead	18.1			P	
7439-95-4	Magnesium	5910			P	
7439-96-5	Manganese	754			P	
7439-97-6	Mercury	0.12	U		CV	
7440-02-0	Nickel	47.4			P	
7440-09-7	Potassium	1630		E	P	J
7782-49-2	Selenium	1.0	U		P	
7440-22-4	Silver	0.63	B		P	
7440-23-5	Sodium	65.0	U		P	
7440-28-0	Thallium	0.94	B		P	
7440-62-2	Vanadium	23.6			P	
7440-66-6	Zinc	136			P	
	Cyanide	0.18	U		CA	

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
Field Blank
MBNJ67

Lab Name: CHEMTECH EDISON Contract: 68-W00-088

Lab Code: CHEMED Case No.: 28706 SAS No.: SDG No.: MBNJ51

Matrix (soil/water): WATER Lab Sample ID: R1115-15S

Level (low/med): LOW Date Received: 11/08/00

% 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	34.8	U		P
7440-36-0	Antimony	6.0	U		P
7440-38-2	Arsenic	5.7	U		P
7440-39-3	Barium	1.4	U		P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	2.0	U		P
7440-70-2	Calcium	21.1	U		P
7440-47-3	Chromium	3.7	U		P
7440-48-4	Cobalt	2.3	U		P
7440-50-8	Copper	1.0	U		P
7439-89-6	Iron	17.4	U		P
7439-92-1	Lead	3.0	U		P
7439-95-4	Magnesium	26.5	U		P
7439-96-5	Manganese	0.70	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	4.1	U		P
7440-09-7	Potassium	17.8	U		P
7782-49-2	Selenium	4.0	U		P
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	259	U		P
7440-28-0	Thallium	6.1	B		P
7440-62-2	Vanadium	3.6	U		P
7440-66-6	Zinc	2.5	U		P
	Cyanide	2.9	U		CA

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 EDISON Contract No.: 68-W00-088

Lab Code: CHEMED Case No.: 28706

Full Sample Analysis Price in Contract: _____

SDG No./First Sample in SDG. MBNJ51 Sample Receipt Date: 11/08/00
(Lowest EPA Sample Number in first shipment of samples received under SDG.) (MM/DD/YY)

Last Sample in SDG: MBNJ67 Sample Receipt Date: 11/08/00
(Highest EPA Sample Number in last shipment of samples received under SDG.) (MM/DD/YY)

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	MBNJ51	12	MBNJ63
2	MBNJ52	13	MBNJ64
3	MBNJ53	14	MBNJ66
4	MBNJ54	15	MBNJ67
5	MBNJ55	16	
6	MBNJ56	17	
7	MBNJ57	18	
8	MBNJ58	19	
9	MBNJ59	20	
10	MBNJ60	21	
11	MBNJ62	22	

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).

Sunny Patel
Signature

11/08/00.
Date

REFERENCE NO. 15

Roy F. Weston, Inc.
Raritan Plaza III, Suite 2B
101 Fieldcrest Avenue
Edison, New Jersey 08837-3622
732-417-5800 • Fax 732-417-5801
www.rfweston.com

8 January 2000

Mr. Dennis Munhall
U.S. Environmental Protection Agency
290 Broadway - 18th Floor
New York, NY 10007-1866

DOCUMENT CONTROL NO: SAT-1002.19
SUBJECT: SAMPLING TRIP REPORT - LACKAWANNA FOUNDRY

Dear Mr. Munhall:

Enclosed please find the Sampling Trip Report for samples collected during the Brownfields investigation conducted at the Lackawanna Foundry site on 5 December 2000.

If you have any questions, do not hesitate to call me at (732) 417-5806.

Very truly yours,

ROY F. WESTON, INC.

Donna Janda
Project Manager

enclosure

cc: [illegible] Bulich, Lockwood [illegible]

SAMPLING TRIP REPORT

SITE NAME: Lackawanna Foundry
DCN #: SAT-1002.19

EPA I.D. NO.: NYSFN0204209

SAMPLING DATE: December 5, 2000

1. Site Location: Refer to Figure 1

2. Sample Locations: Refer to Figure 2

3. Sample Descriptions: Refer to Table 1

4. Laboratories Receiving Samples:

Sample Type	Name and Address of Laboratory
Target Compound List (TCL) Organics	U.S. EPA DESA Laboratory 2890 Woodbridge Avenue, Bldg 209 Edison, NJ
Target Analyte List (TAL)	Same as above

5. Sample Dispatch Data:

Six aqueous samples for TCL volatiles, BNA, pesticide/PCB, and TAL inorganics analyses and one aqueous sample for volatile organic analysis only were hand delivered to the EPA DESAlaboratory in Edison, NJ on 12/07/00.

6. On-Site Personnel:

Name	Company	Duties on Site
David Lewitt	Region II SAT	Site Health and Safety Officer, Sampler
Ernie Salazar	Region II SAT	Sample Management Officer, Sampler

7. Additional Comments:

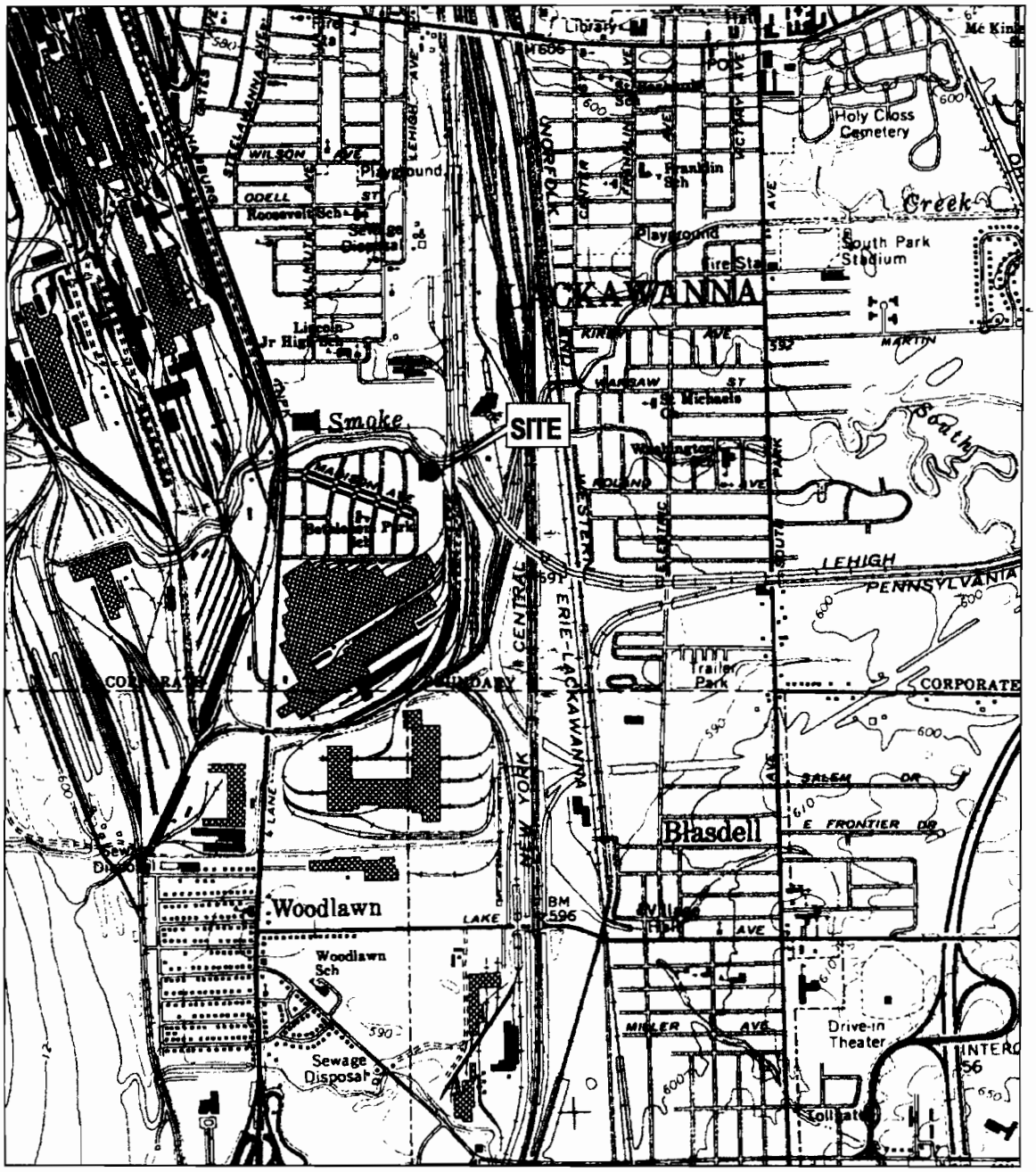
On December 5, 2000, the Region II Site Assessment Team (SAT) collected groundwater samples from five on-site monitoring wells at the Lackawanna Foundry site. These samples were collected as part of a Brownfields investigation conducted on site. All samples collected by Region II SAT

were analyzed for Target Compound List (TCL) and Target Analyte List (TAL), parameters by the U.S. EPA Region II Division of Environmental Science Assessment (DESA) Laboratory. The U.S. EPA Region 2 Laboratory Chain of Custody/Field Data Form is presented in Attachment 1.

8. Report Prepared by: _____ Date: 1/3/01
Donna Janda

9. Report Approved by: _____ Date: 1/8/01 .
W. S. Butterfield, CHMM

SITE LOCATION AND SAMPLE LOCATION MAPS



U.S. Geological Survey
7.5 Minute Series Topographical Map
Buffalo Southeast, NY Quadrangle
1948, Revised 1965

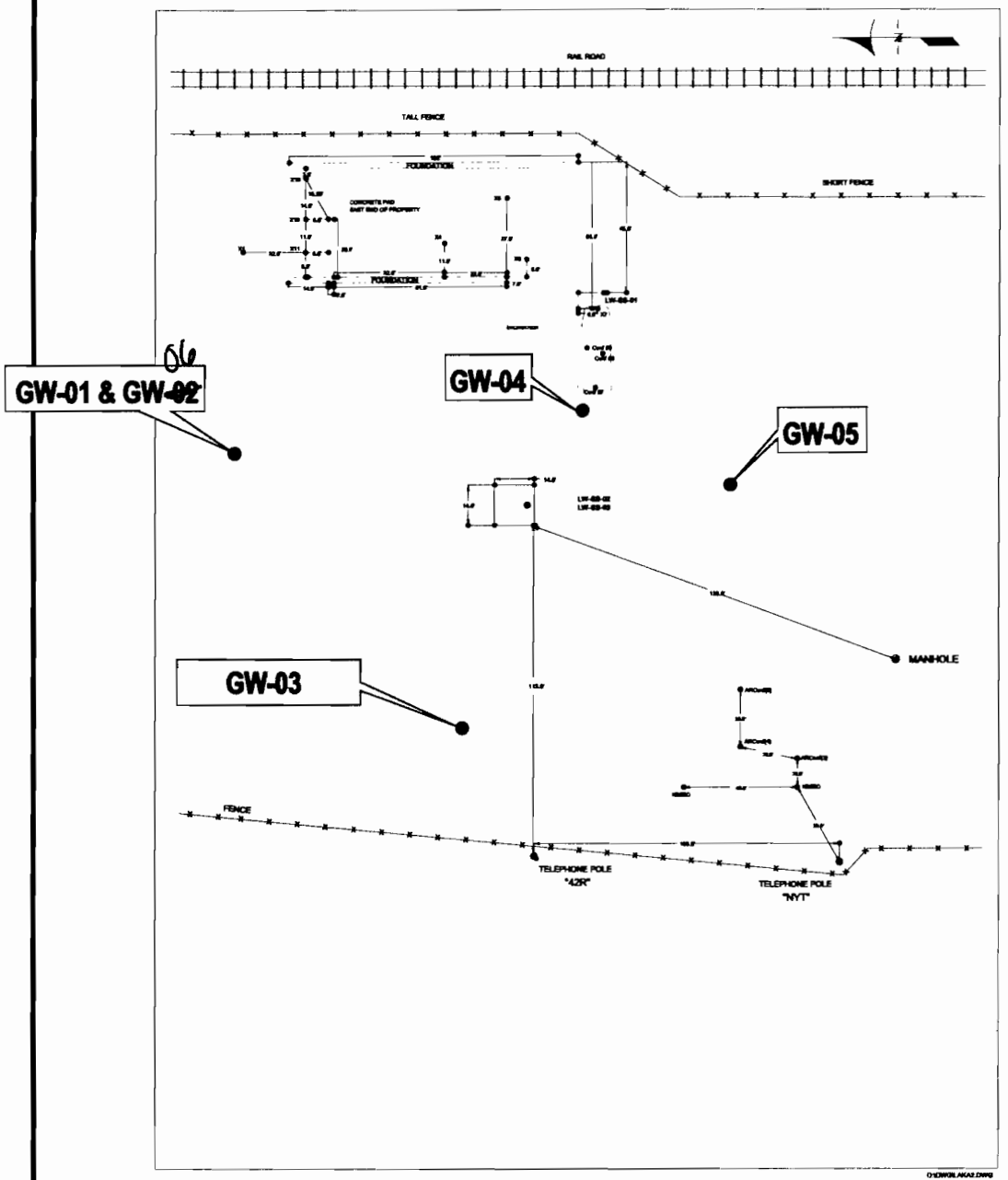
1000 0 1000 2000 Feet

N

WESTON FEDERAL PROGRAMS DIVISION

Lackawanna Foundry Site
Lackawanna, Erie Co., NY
Figure 1
Site Location Map

● Site Location



● Ground-water sample location

● Historical sample location

WESTON MANAGERS DESIGN/RESPONSIBLE TANTS FEDERAL PROGRAMS DIVISION

Figure 2
Sample Location Map

Lackawanna Foundry Site
Lackawanna, Erie Co., NY

TABLE 1
SAMPLE DESCRIPTIONS
LACKAWANNA FOUNDRY
LACKAWANNA, ERIE COUNTY, NEW YORK

SAMPLE NUMBER 1002-	DATE	TIME	COMMENTS
GW01	12/05/00	1400	Groundwater sample collected from monitoring well MW-01. MS/MSD collected also.
GW03	12/05/00	0855	Groundwater sample collected from monitoring well MW-03.
GW04	12/05/00	1100	Groundwater sample collected from monitoring well MW-04.
GW05	12/05/00	0955	Groundwater sample collected from monitoring well MW-05.
GW06	12/05/00	1400	Duplicate sample of GW01.
RB02	12/05/00	1500	Rinsate blank collected from decontaminated sampling pump (QA/QC sample).
TB01	12/04/00	NA	Trip blank (QA/QC sample).

ATTACHMENT 1

TRAFFIC REPORTS/CHAIN OF CUSTODY RECORDS

US EPA REGION 2 LABORATORY

Page 1 of 1 pages

CHAIN OF CUSTODY/ FIELD DATA FORM

SURVEY NAME & LOCALITY Lackawanna Foundry, Lackawanna, NY PROJECT LEADER Penna Tarlo

PROGRAM: SF ☐ : SITE ID _____ OPERABLE UNIT _____ PROGRAM RESULTS CODE _____

Permit # _____ RCRA ☐ NPDES ☐ SDWA ☐ AM ☐ CAA ☐ TSCA ☐ ENFORCEMENT: CRIMINAL ☐ CIVIL ☐

LAB ID/ FIELD ID	# OF CONTERS	MATRIX	SPECIAL REQUIREMENTS?	DESCRIPTION & INSTRUCTIONS INCLUDING LOCATION, ESTIMATED CONCENTRATIONS, SPECIAL REPORTING LIMITS, SPECIAL TEST REQUIREMENTS & ALIQUOTING	Preservative (circle)	Collection Time (24hr clock) Begin	Collection Time (24hr clock) End	Collection Date mm/dd/yy
002-GW01	24	A	☐	VOA, BNA, PCB/Pest, Total Metals, Cyanide, TCLP	1 2 3 4 5 6 7 8 9	1400	1405	12/5/00
002-GW03	8	A	☐	VOA, BNA, PCB/Pest, Total Metals Cyanide	1 2 3 4 5 6 7 8 9	0855	0900	12/5/00
002-GW04	8	A	☐	VOA, BNA, PCB/Pest, Total Metals, Cyanide	1 2 3 4 5 6 7 8 9	1100	1105	12/5/00
002-GW05	8	A	☐	VOA, BNA, PCB/Pest, Total Metals, Cyanide	1 2 3 4 5 6 7 8 9	0955	1000	12/5/00
002-GW06	8	A	☐	VOA, BNA, PCB/Pest, Total Metals, Cyanide	1 2 3 4 5 6 7 8 9	1400	1405	12/5/00
002-RB02	8	A	☐	VOA, BNA, PCB/Pest, Total Metals, Cyanide	1 2 3 4 5 6 7 8 9	1500	1505	12/5/00
002-TB01	2	A	☐	VOA	1 2 3 4 5 6 7 8 9	N/A	N/A	12/4/00
			☐		1 2 3 4 5 6 7 8 9			
			☐		1 2 3 4 5 6 7 8 9			
			☐		1 2 3 4 5 6 7 8 9			

COMMENTS:

Roy F. Weston

Preservative

1=ice
2=H2SO4 pH<2
3=HNO3 pH<2
4=HCl pH<2
5=Na2S2O3
6=NaOH pH>9
7=Ascorbic Acid
8 = FAS
9=ZnAc

	Time	Date
Person Assuming Responsibility for Sample(s):		
Relinquished By: / Received By:		
Relinquished By: / Received By:		
Relinquished By: / Received By:		

Matrix:

aqueous
aqueous (chlorinated)
soil
sediment
sludge
F=multiphasic
G=solvent
H=biota
I=oil
J=other

Survey Complete? Y ☑ N ☐

REFERENCE NO. 16

Technical & Operational Guidance Series (TOGS)

The documents listed on this page are in Adobe Acrobat PDF format. Viewing these PDF files requires that you have Adobe Acrobat Reader software (available at no cost from Adobe) installed on your computer. If you need a paper copy of these documents, call (518) 457-7464 or follow the Ordering Information at the bottom of this page.

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REFERENCE NO. 17

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON, NEW JERSEY 08837

3 0 JAN 2001

Roy F. Weston Inc.
Raritan Plaza 3, Suite 2B
101 Fieldcrest Avenue
Edison, NJ 08837
Attn: Donna Janda

JAN 3 1 2001

Dear Ms. Janda:

Enclosed are the results of the Lackawanna Foundry sampling survey conducted by your firm during the week of December 4, 2000. These data include the results of seven aqueous samples for metals, cyanide and volatile and non-volatile organic analyses . Any correspondence concerning these results should refer to our internal project numbers, 00120005 and 00120006, to uniquely identify the data. Please refer to the first page of each report for a description of any remark codes used as data qualifiers. It should be noted that all data are considered to be EPA-validated.

If you have any questions you can contact me by phone at (732) 906-6886, by fax at (732) 321-6613 or via the Internet at "birri.john@epa.gov".

Sincerely,

John Birri
Special Projects Coordinator
Laboratory Branch

Enclosure

U.S. Environmental Protection Agency
Region 2 Laboratory

Data Report: Lackawanna Foundry

Project Number: 00120005

Program: Y206

Project Leader: Donna Janda

Codes	Explanation
B	RESULTS BASED UPON COLONY COUNTS OUTSIDE ACCEPTABLE RANGE
J	ESTIMATED VALUE
K	ACTUAL VALUE KNOWN TO BE LESS THAN VALUE GIVEN
L	ACTUAL VALUE KNOWN TO BE GREATER THAN VALUE GIVEN
N	SEE NARRATIVE COMMENTS
V	SAMPLE RECEIVED BUT NOT ANALYZED DUE TO LAB ACCIDENT
U	REPORTING LIMIT
QD	ACCURACY CHECK SAMPLE ABOVE UPPER ACCEPTANCE LIMIT
QE	ACCURACY CHECK SAMPLE BELOW LOWER ACCEPTANCE LIMIT
QF	PRECISION OF CALIBRATION CURVE LESS THAN ACCEPTANCE CRITERIA
QJ	REPORTING LIMIT ESTIMATED DUE TO INTERFERENCE
QG	CONTINUING CALIBRATION CHECK DOES NOT MEET ACCEPTANCE CRITERIA
QS	SPIKE RECOVERIES ABOVE UPPER ACCEPTANCE LIMIT
QR	SPIKE RECOVERIES BELOW LOWER ACCEPTANCE LIMIT
QP	SAMPLE REPLICATE PRECISION DOES NOT MEET ACCEPTANCE CRITERIA
QH	RECOMMENDED HOLDING TIME EXCEEDED
QT	TENTATIVELY IDENTIFIED COMPOUND
QM	PRESENCE OF MATERIAL VERIFIED BUT NOT QUANTIFIED
QB	BLANK CONTAMINATED WITH ANALYTE IN EXCESS OF ACCEPTANCE CRITERIA
QQ	SAMPLE IMPROPERLY MAINTAINED

Report Date: 1/25/01

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample ID

AB03259 Field/Station ID: 1002-GW01
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 14:05
Collection Begin Date/Time: 12/05/00 14:00

Analysis Type: VOA TCL GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000074873	CHLOROMETHANE	10	ug/L	U
000075014	VINYL CHLORIDE	10	ug/L	U
000074839	BROMOMETHANE	10	ug/L	U
000075003	CHLOROETHANE	10	ug/L	U
000075354	1,1-DICHLOROETHENE	10	ug/L	U
000075150	CARBON DISULFIDE	10	ug/L	U
000067641	ACETONE	10	ug/L	U
000075092	METHYLENE CHLORIDE	10	ug/L	U
000156605	TRANS-1,2-DICHLOROETHENE	10	ug/L	U
000156592	CIS-1,2-DICHLOROETHENE	10	ug/L	U
000075343	1,1-DICHLOROETHANE	10	ug/L	U
000078933	2-BUTANONE	10	ug/L	U
000067663	CHLOROFORM	10	ug/L	U
000107062	1,2-DICHLOROETHANE	10	ug/L	U
000071556	1,1,1-TRICHLOROETHANE	10	ug/L	U
000056235	CARBON TETRACHLORIDE	10	ug/L	U
000071432	BENZENE	10	ug/L	U
025323891	TRICHLOROETHENE	10	ug/L	U
000078875	1,2-DICHLOROPROPANE	10	ug/L	U
000074975	BROMODICHLOROMETHANE	10	ug/L	U
010061015	CIS-1,3-DICHLOROPROPENE	10	ug/L	U
010061026	TRANS-1,3-DICHLOROPROPENE	10	ug/L	U
000079005	1,1,2-TRICHLOROETHANE	10	ug/L	U
000124481	DIBROMOCHLOROMETHANE	10	ug/L	U
000075252	BROMOFORM	10	ug/L	U
000108101	4-METHYL-2-PENTANONE	10	ug/L	U
000108883	TOLUENE	10	ug/L	U
000127184	TETRACHLOROETHENE	10	ug/L	U
000591786	2-HEXANONE	10	ug/L	U
000108907	CHLOROBENZENE	10	ug/L	U
000100414	ETHYLBENZENE	10	ug/L	U
001330207	M,P-XYLENE	10	ug/L	U
000095476	O-XYLENE	10	ug/L	U
000100425	STYRENE	10	ug/L	U
000079345	1,1,2,2-TETRACHLOROETHANE	10	ug/L	U
	UNKNOWN HYDROCARBON ,RT =3.04	19	ug/L	J QT
	UNKNOWN HYDROCARBON ,RT =3.48	27	ug/L	J QT
	BUTANE, 2-METHYL- ,RT =4.63	31	ug/L	J QT
	PENTANE ,RT =5.14	6.0	ug/L	J QT
	BUTANE, 2,3-DIMETHYL- ,RT =6.73	9.0	ug/L	J QT
	UNKNOWN ,RT =7.23	6.0	ug/L	J QT

NV = Not Validated; Inc = Result not entered

Report Date: 1/25/01

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sampl

AB03259 Field/Station ID: 1002-GW01
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 14:05
Collection Begin Date/Time: 12/05/00 14:00

Analysis Type: VOA TCL GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
	UNKNOWN ,RT =8.59	5.0	ug/L	J QT

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000108952	PHENOL	4.0	ug/L	U
000111444	BIS(2-CHLOROETHYL)ETHER	4.0	ug/L	U
000095578	2-CHLOROPHENOL	4.0	ug/L	U
000541731	1,3-DICHLOROBENZENE	4.0	ug/L	U
000106467	1,4-DICHLOROBENZENE	4.0	ug/L	U
000095501	1,2-DICHLOROBENZENE	4.0	ug/L	U
000100516	BENZYL ALCOHOL	10	ug/L	U
000095487	2-METHYLPHENOL	4.0	ug/L	U
000108601	BIS(2-CHLOROISOPROPYL)ETHER	4.0	ug/L	U
000106445	4-METHYLPHENOL	4.0	ug/L	U
000621647	N-NITROSO-DI-N-PROPYLAMINE	4.0	ug/L	U
000067721	HEXACHLOROETHANE	4.0	ug/L	
000098953	NITROBENZENE	4.0	ug/L	U
000078591	ISOPHORONE	4.0	ug/L	U
000088755	2-NITROPHENOL	4.0	ug/L	U
000105679	2,4-DIMETHYLPHENOL	4.0	ug/L	U
000111911	BIS(2-CHLOROETHOXY)METHANE	4.0	ug/L	U
000120832	2,4-DICHLOROPHENOL	4.0	ug/L	U
000120821	1,2,4-TRICHLOROBENZENE	4.0	ug/L	U
000065850	BENZOIC ACID	49	ug/L	U
000091203	NAPHTHALENE	4.0	ug/L	U
000106478	4-CHLOROANILINE	49	ug/L	U
000087683	HEXACHLOROBUTADIENE	4.0	ug/L	U
000059507	4-CHLORO-3-METHYLPHENOL	4.0	ug/L	U
000091576	2-METHYL NAPHTHALENE	4.0	ug/L	U
000077474	HEXACHLOROCYCLOPENTADIENE	4.0	ug/L	U
000088062	2,4,6-TRICHLOROPHENOL	4.0	ug/L	U
000095954	2,4,5-TRICHLOROPHENOL	4.0	ug/L	U
000091587	2-CHLORONAPHTHALENE	4.0	ug/L	U
000088744	2-NITROANILINE	4.0	ug/L	U
000131113	DIMETHYL PHTHALATE	4.0	ug/L	U
000208968	ACENAPHTHYLENE	4.0	ug/L	U
000606202	2,6-DINITROTOLUENE	4.0	ug/L	U
000099092	3-NITROANILINE	49	ug/L	U
000083329	ACENAPHTHENE	4.0	ug/L	
000051285	2,4-DINITROPHENOL	10	ug/L	U
000100027	4-NITROPHENOL	4.0	ug/L	U
000132649	DIBENZOFURAN	4.0	ug/L	U

Report Date: 1.25.01

NV = Not Validated: **Inc** = Result not entered

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample ID

AB03259 Field/Station ID: 1002-GW01
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 14:05
Collection Begin Date/Time: 12/05/00 14:00

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000121142	2,4-DINITROTOLUENE	4.0	ug/L	U
000086737	FLUORENE	4.0	ug/L	U
000084662	DIETHYLPHTHALATE	4.0	ug/L	U
007005723	4-CHLOROPHENYL PHENYL ETHER	4.0	ug/L	U
000100016	4-NITROANILINE	4.0	ug/L	U
000534521	4,6-DINITRO-2-METHYLPHENOL	4.0	ug/L	U
000086306	N-NITROSODIPHENYLAMINE	4.0	ug/L	U
000103333	DIAZENE, DIPHENYL	4.0	ug/L	U
000101553	4-BROMOPHENYL PHENYL ETHER	4.0	ug/L	U
000118741	HEXACHLOROBENZENE	4.0	ug/L	U
000087865	PENTACHLOROPHENOL	10	ug/L	U
000085018	PHENANTHRENE	4.0	ug/L	U
000120127	ANTHRACENE	4.0	ug/L	U
000084742	DI-N-BUTYL PHTHALATE	4.0	ug/L	U
000206440	FLUORANTHENE	4.0	ug/L	U
000129000	PYRENE	4.0	ug/L	U
000085687	BUTYL BENZYL PHTHALATE	4.0	ug/L	U
000056553	BENZO(A)ANTHRACENE	4.0	ug/L	U
000218019	CHRYSENE	4.0	ug/L	U
000117817	BIS(2-ETHYLHEXYL)PHTHALATE	4.0	ug/L	U
000117840	DI-N-OCTYL PHTHALATE	4.0	ug/L	U
000205992	BENZO(B)FLUORANTHENE	4.0	ug/L	U
000207089	BENZO(K)FLUORANTHENE	4.0	ug/L	U
000050328	BENZO(A)PYRENE	4.0	ug/L	U
000193395	INDENO(1,2,3-CD)PYRENE	4.0	ug/L	U
000053703	DIBENZO(A,H)ANTHRACENE	4.0	ug/L	U
000191242	BENZO(G,H,I)PERYLENE	4.0	ug/L	U
	CYCLOHEXANOL, 1-METHYL- ,RT =7.44	3.0	ug/L	J QT
	UNKNOWN ,RT =8.45	4.0	ug/L	J QT
	UNKNOWN ,RT =8.95	4.0	ug/L	J QT
	UNKNOWN SUBSTITUTED BENZENE ,RT =9.48	2.0	ug/L	J QT
	UNKNOWN ,RT =9.53	2.0	ug/L	J QT

Analysis Type: PESTICIDES TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
319846	ALPHA-BHC	0.010	ug/L	U
58899	GAMMA-BHC	0.010	ug/L	U
319857	BETA-BHC	0.010	ug/L	U
319868	DELTA-BHC	0.010	ug/L	U
76448	HEPTACHLOR	0.010	ug/L	U
309002	ALDRIN	0.010	ug/L	U
1024573	HEPTACHLOR EPOXIDE	0.010	ug/L	U

Report Date: 1/25/01

NV = Not Validated: **Inc** = Result not entered

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sampl

AB03259 Field/Station ID: 1002-GW01
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 14:05
Collection Begin Date/Time: 12/05/00 14:00

Analysis Type: PESTICIDES TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
5566347	GAMMA-CHLORDANE	0.010	ug/L	U
5103719	ALPHA-CHLORDANE	0.010	ug/L	U
115297	ENDOSULFAN I	0.010	ug/L	U
72559	4,4'-DDE	0.010	ug/L	U
60571	DIELDRIN	0.010	ug/L	U
72208	ENDRIN	0.010	ug/L	U
72548	4,4'-DDD	0.010	ug/L	U
33213659	ENDOSULFAN II	0.010	ug/L	U
50293	4,4'-DDT	0.010	ug/L	U
7421934	ENDRIN ALDEHYDE	0.010	ug/L	U
72435	METHOXYCHLOR	0.050	ug/L	U
1031078	ENDOSULFAN SULFATE	0.010	ug/L	U
53494705	ENDRIN KETONE	0.010	ug/L	U
57749	CHLORDANE	0.10	ug/L	U
8001352	TOXAPHENE	0.10	ug/L	U

Analysis Type: PCBS TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
12674-11-2	AROCLOR 1016	0.10	ug/L	U
011104282	AROCLOR 1221	0.20	ug/L	U
011141165	AROCLOR 1232	0.10	ug/L	U
53469-21-9	AROCLOR 1242	0.10	ug/L	U
012672296	AROCLOR 1248	0.10	ug/L	U
11097-69-1	AROCLOR 1254	0.10	ug/L	U
11096-82-5	AROCLOR 1260	0.10	ug/L	U

Analysis Type: METALS TAL ICP AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
007440224	SILVER	10	ug/L	U
007429905	ALUMINUM	200	ug/L	U
007440393	BARIUM	380	ug/L	
007440417	BERYLLIUM	5.0	ug/L	U
007440702	CALCIUM	250,000	ug/L	
007440439	CADMIUM	5.0	ug/L	U
007440484	COBALT	50	ug/L	U
007440473	CHROMIUM	10	ug/L	U
007440508	COPPER	25	ug/L	U
007439896	IRON	13,000	ug/L	
007440097	POTASSIUM	8,100	ug/L	
007439954	MAGNESIUM	130,000	ug/L	
007439965	MANGANESE	300	ug/L	
007440235	SODIUM	540,000	ug/L	
007440020	NICKEL	40	ug/L	U

Report Date: 1/25/01

NV = Not Validated; **Inc** = Result not entered

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample ID

AB03259 Field/Station ID: 1002-GW01 Coll. Ending Date/Time: 12/5/00 14:05
Matrix: Aqueous Collection Begin Date/Time: 12/05/00 14:00
Sample Description:

Analysis Type: METALS TAL ICP AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
007440360	ANTIMONY	60	ug/L	U
007440622	VANADIUM	50	ug/L	U
007440666	ZINC	20	ug/L	U

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
7440-38-2	ARSENIC	10	ug/L	U
7439-92-1	LEAD	3.0	ug/L	U
7782-49-2	SELENIUM	5.0	ug/L	U
7440-28-0	THALLIUM	10	ug/L	U QR

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
007439976	MERCURY (ESAT)	0.20	ug/L	U QR

AB03260 Field/Station ID: 1002-GW03 Coll. Ending Date/Time: 12/5/00 09:00
Matrix: Aqueous Collection Begin Date/Time: 12/05/00 08:55
Sample Description:

Analysis Type: VOA TCL GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000074873	CHLOROMETHANE	10	ug/L	U
000075014	VINYL CHLORIDE	10	ug/L	U
000074839	BROMOMETHANE	10	ug/L	U
000075003	CHLOROETHANE	10	ug/L	U
000075354	1,1-DICHLOROETHENE	10	ug/L	U
000075150	CARBON DISULFIDE	10	ug/L	U
000067641	ACETONE	11	ug/L	
000075092	METHYLENE CHLORIDE	10	ug/L	U
000156605	TRANS-1,2-DICHLOROETHENE	10	ug/L	U
000156592	CIS-1,2-DICHLOROETHENE	10	ug/L	U
000075343	1,1-DICHLOROETHANE	10	ug/L	U
000078933	2-BUTANONE	10	ug/L	U
000067663	CHLOROFORM	10	ug/L	U
000107062	1,2-DICHLOROETHANE	10	ug/L	U
000071556	1,1,1-TRICHLOROETHANE	10	ug/L	U
000056235	CARBON TETRACHLORIDE	10	ug/L	U
000071432	BENZENE	10	ug/L	U
025323891	TRICHLOROETHENE	10	ug/L	U
000078875	1,2-DICHLOROPROPANE	10	ug/L	U
000074975	BROMODICHLOROMETHANE	10	ug/L	U
010061015	CIS-1,3-DICHLOROPROPENE	10	ug/L	U
010061026	TRANS-1,3-DICHLOROPROPENE	10	ug/L	U

NV = Not Validated; Inc = Result not entered

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sampl

AB03260 Field/Station ID: 1002-GW03
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 09:00
Collection Begin Date/Time: 12/05/00 08:55

Analysis Type: VOA TCL GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000079005	1,1,2-TRICHLOROETHANE	10	ug/L	U
000124481	DIBROMOCHLOROMETHANE	10	ug/L	U
000075252	BROMOFORM	10	ug/L	U
000108101	4-METHYL-2-PENTANONE	10	ug/L	U
000108883	TOLUENE	10	ug/L	U
000127184	TETRACHLOROETHENE	10	ug/L	U
000591786	2-HEXANONE	10	ug/L	U
000108907	CHLOROBENZENE	10	ug/L	U
000100414	ETHYLBENZENE	10	ug/L	U
001330207	M,P-XYLENE	10	ug/L	U
000095476	O-XYLENE	10	ug/L	U
000100425	STYRENE	10	ug/L	U
000079345	1,1,2,2-TETRACHLOROETHANE	10	ug/L	U

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Co
000108952	PHENOL	4.0	ug/L	U
000111444	BIS(2-CHLOROETHYL)ETHER	4.0	ug/L	U
000095578	2-CHLOROPHENOL	4.0	ug/L	U
000541731	1,3-DICHLOROBENZENE	4.0	ug/L	U
000106467	1,4-DICHLOROBENZENE	4.0	ug/L	U
000095501	1,2-DICHLOROBENZENE	4.0	ug/L	U
000100516	BENZYL ALCOHOL	10	ug/L	U
000095487	2-METHYLPHENOL	4.0	ug/L	U
000108601	BIS(2-CHLOROISOPROPYL)ETHER	4.0	ug/L	U
000106445	4-METHYLPHENOL	4.0	ug/L	U
000621647	N-NITROSO-DI-N-PROPYLAMINE	4.0	ug/L	U
000067721	HEXACHLOROETHANE	4.0	ug/L	U
000098953	NITROBENZENE	4.0	ug/L	U
000078591	ISOPHORONE	4.0	ug/L	U
000088755	2-NITROPHENOL	4.0	ug/L	U
000105679	2,4-DIMETHYLPHENOL	4.0	ug/L	U
000111911	BIS(2-CHLOROETHOXY)METHANE	4.0	ug/L	U
000120832	2,4-DICHLOROPHENOL	4.0	ug/L	U
000120821	1,2,4-TRICHLOROBENZENE	4.0	ug/L	U
000065850	BENZOIC ACID	48	ug/L	U
000091203	NAPHTHALENE	4.0	ug/L	U
000106478	4-CHLOROANILINE	48	ug/L	U
000087683	HEXACHLOROBUTADIENE	4.0	ug/L	U
000059507	4-CHLORO-3-METHYLPHENOL	4.0	ug/L	U
000091576	2-METHYL NAPHTHALENE	4.0	ug/L	U
000077474	HEXACHLOROCYCLOPENTADIENE	4.0	ug/L	U

NV = Not Validated; **Inc** = Result not entered

Report Date: 1/25/01

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample ID

AB03260 Field/Station ID: 1002-GW03
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 09:00
Collection Begin Date/Time: 12/05/00 08:55

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000088062	2,4,6-TRICHLOROPHENOL	4.0	ug/L	U
000095954	2,4,5-TRICHLOROPHENOL	4.0	ug/L	U
000091587	2-CHLORONAPHTHALENE	4.0	ug/L	U
000088744	2-NITROANILINE	4.0	ug/L	U
000131113	DIMETHYL PHTHALATE	4.0	ug/L	U
000208968	ACENAPHTHYLENE	4.0	ug/L	U
000606202	2,6-DINITROTOLUENE	4.0	ug/L	U
000099092	3-NITROANILINE	48	ug/L	U
000083329	ACENAPHTHENE	4.0	ug/L	U
000051285	2,4-DINITROPHENOL	10	ug/L	U
000100027	4-NITROPHENOL	4.0	ug/L	U
000132649	DIBENZOFURAN	4.0	ug/L	U
000121142	2,4-DINITROTOLUENE	4.0	ug/L	U
000086737	FLUORENE	4.0	ug/L	U
000084662	DIETHYLPHTHALATE	4.0	ug/L	U
007005723	4-CHLOROPHENYL PHENYL ETHER	4.0	ug/L	U
000100016	4-NITROANILINE	4.0	ug/L	U
000534521	4,6-DINITRO-2-METHYLPHENOL	4.0	ug/L	U
000086306	N-NITROSODIPHENYLAMINE	4.0	ug/L	U
000103333	DIAZENE, DIPHENYL	4.0	ug/L	U
000101553	4-BROMOPHENYL PHENYL ETHER	4.0	ug/L	U
000118741	HEXACHLOROBENZENE	4.0	ug/L	U
000087865	PENTACHLOROPHENOL	10	ug/L	U
000085018	PHENANTHRENE	4.0	ug/L	U
000120127	ANTHRACENE	4.0	ug/L	U
000084742	DI-N-BUTYL PHTHALATE	4.0	ug/L	U
000206440	FLUORANTHENE	4.0	ug/L	U
000129000	PYRENE	4.0	ug/L	U
000085687	BUTYL BENZYL PHTHALATE	4.0	ug/L	U
000056553	BENZO(A)ANTHRACENE	4.0	ug/L	U
000218019	CHRYSENE	4.0	ug/L	U
000117817	BIS(2-ETHYLHEXYL)PHTHALATE	4.0	ug/L	U
000117840	DI-N-OCTYL PHTHALATE	4.0	ug/L	U
000205992	BENZO(B)FLUORANTHENE	4.0	ug/L	U
000207089	BENZO(K)FLUORANTHENE	4.0	ug/L	U
000050328	BENZO(A)PYRENE	4.0	ug/L	U
000193395	INDENO(1,2,3-CD)PYRENE	4.0	ug/L	U
000053703	DIBENZO(A,H)ANTHRACENE	4.0	ug/L	U
000191242	BENZO(G,H,I)PERYLENE	4.0	ug/L	U
	UNKNOWN SUBSTITUTED ACID ,RT =14.5	7.0	ug/L	J QT
	UNKNOWN ,RT =15.92	2.0	ug/L	J QT

NV = Not Validated; **Inc** = Result not entered

Report Date: 1/25/01

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sampl

AB03260 Field/Station ID: 1002-GW03
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 09:00
Collection Begin Date/Time: 12/05/00 08:55

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
	UNKNOWN SUBSTITUTED BENZENE ,RT =17.49	3.0	ug/L	J QT
	2,5-CYCLOHEXADIENE-1,4-DIONE, 2, ,RT =18	3.0	ug/L	J QT
	UNKNOWN ,RT =18.78	3.0	ug/L	J QT

Analysis Type: PESTICIDES TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
319846	ALPHA-BHC	0.010	ug/L	U
58899	GAMMA-BHC	0.010	ug/L	U
319857	BETA-BHC	0.010	ug/L	U
319868	DELTA-BHC	0.010	ug/L	U
76448	HEPTACHLOR	0.010	ug/L	U
309002	ALDRIN	0.010	ug/L	U
1024573	HEPTACHLOR EPOXIDE	0.010	ug/L	U
5566347	GAMMA-CHLORDANE	0.010	ug/L	U
5103719	ALPHA-CHLORDANE	0.010	ug/L	U
115297	ENDOSULFAN I	0.010	ug/L	
72559	4,4'-DDE	0.010	ug/L	U
60571	DIELDRIN	0.010	ug/L	U
72208	ENDRIN	0.010	ug/L	U
72548	4,4'-DDD	0.010	ug/L	U
33213659	ENDOSULFAN II	0.010	ug/L	U
50293	4,4'-DDT	0.010	ug/L	U
7421934	ENDRIN ALDEHYDE	0.010	ug/L	U
72435	METHOXYCHLOR	0.050	ug/L	U
1031078	ENDOSULFAN SULFATE	0.010	ug/L	U
53494705	ENDRIN KETONE	0.010	ug/L	U
57749	CHLORDANE	0.10	ug/L	U
8001352	TOXAPHENE	0.10	ug/L	U

Analysis Type: PCBS TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
12674-11-2	AROCLOR 1016	0.10	ug/L	U
011104282	AROCLOR 1221	0.20	ug/L	U
011141165	AROCLOR 1232	0.10	ug/L	U
53469-21-9	AROCLOR 1242	0.10	ug/L	U
012672296	AROCLOR 1248	0.10	ug/L	U
11097-69-1	AROCLOR 1254	0.10	ug/L	U
11096-82-5	AROCLOR 1260	0.10	ug/L	U

ysis Type: METALS TAL ICP AQUEOUS

CAS Number	Analyte Name	Result	Units	Rem Co
007440224	SILVER	10	ug/L	U
007429905	ALUMINUM	200	ug/L	U

NV = Not Validated; **Inc** = Result not entered

Report Date: 1/25/01

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample ID

AB03260 Field/Station ID: 1002-GW03 Coll. Ending Date/Time: 12/5/00 09:00
Matrix: Aqueous Collection Begin Date/Time: 12/05/00 08:55
Sample Description:

Analysis Type: METALS TAL ICP AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
007440393	BARIUM	240	ug/L	
007440417	BERYLLIUM	5.0	ug/L	U
007440702	CALCIUM	100,000	ug/L	
007440439	CADMIUM	5.0	ug/L	U
007440484	COBALT	50	ug/L	U
007440473	CHROMIUM	10	ug/L	U
007440508	COPPER	25	ug/L	U
007439896	IRON	6,200	ug/L	
007440097	POTASSIUM	5,000	ug/L	U
007439954	MAGNESIUM	22,000	ug/L	
007439965	MANGANESE	1,700	ug/L	
007440235	SODIUM	22,000	ug/L	
007440020	NICKEL	40	ug/L	U
007440360	ANTIMONY	60	ug/L	U
007440622	VANADIUM	50	ug/L	U
007440666	ZINC	33	ug/L	

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
7440-38-2	ARSENIC	10	ug/L	U
7439-92-1	LEAD	3.0	ug/L	U
7782-49-2	SELENIUM	5.0	ug/L	U
7440-28-0	THALLIUM	10	ug/L	U

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
007439976	MERCURY (ESAT)	0.20	ug/L	U

AB03261 Field/Station ID: 1002-GW04 Coll. Ending Date/Time: 12/5/00 11:05
Matrix: Aqueous Collection Begin Date/Time: 12/05/00 11:00
Sample Description:

Analysis Type: VOA TCL GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000074873	CHLOROMETHANE	10	ug/L	U
000075014	VINYL CHLORIDE	10	ug/L	U
000074839	BROMOMETHANE	10	ug/L	U
000075003	CHLOROETHANE	10	ug/L	U
000075354	1,1-DICHLOROETHENE	10	ug/L	U
000075150	CARBON DISULFIDE	10	ug/L	U
000067641	ACETONE	9.0	ug/L	J QM
000075092	METHYLENE CHLORIDE	10	ug/L	U
000156605	TRANS-1,2-DICHLOROETHENE	10	ug/L	U

Report Date: 1/25/01

NV = Not Validated; Inc = Result not entered

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sampl

AB03261 Field/Station ID: 1002-GW04
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 11:05
Collection Begin Date/Time: 12/05/00 11:00

Analysis Type: VOA TCL GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000156592	CIS-1,2-DICHLOROETHENE	10	ug/L	U
000075343	1,1-DICHLOROETHANE	10	ug/L	U
000078933	2-BUTANONE	10	ug/L	U
000067663	CHLOROFORM	10	ug/L	U
000107062	1,2-DICHLOROETHANE	10	ug/L	U
000071556	1,1,1-TRICHLOROETHANE	10	ug/L	U
000056235	CARBON TETRACHLORIDE	10	ug/L	U
000071432	BENZENE	10	ug/L	U
025323891	TRICHLOROETHENE	10	ug/L	U
000078875	1,2-DICHLOROPROPANE	10	ug/L	U
000074975	BROMODICHLOROMETHANE	10	ug/L	U
010061015	CIS-1,3-DICHLOROPROPENE	10	ug/L	U
010061026	TRANS-1,3-DICHLOROPROPENE	10	ug/L	U
000079005	1,1,2-TRICHLOROETHANE	10	ug/L	U
000124481	DIBROMOCHLOROMETHANE	10	ug/L	U
000075252	BROMOFORM	10	ug/L	U
000108101	4-METHYL-2-PENTANONE	10	ug/L	U
000108883	TOLUENE	10	ug/L	U
000127184	TETRACHLOROETHENE	10	ug/L	U
000591786	2-HEXANONE	10	ug/L	U
000108907	CHLOROBENZENE	10	ug/L	U
000100414	ETHYLBENZENE	10	ug/L	U
001330207	M,P-XYLENE	10	ug/L	U
000095476	O-XYLENE	10	ug/L	U
000100425	STYRENE	10	ug/L	U
000079345	1,1,2,2-TETRACHLOROETHANE	10	ug/L	U

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000108952	PHENOL	4.0	ug/L	U
000111444	BIS(2-CHLOROETHYL)ETHER	4.0	ug/L	U
000095578	2-CHLOROPHENOL	4.0	ug/L	U
000541731	1,3-DICHLOROBENZENE	4.0	ug/L	U
000106467	1,4-DICHLOROBENZENE	4.0	ug/L	U
000095501	1,2-DICHLOROBENZENE	4.0	ug/L	U
000100516	BENZYL ALCOHOL	10	ug/L	U
000095487	2-METHYLPHENOL	4.0	ug/L	U
000108601	BIS(2-CHLOROISOPROPYL)ETHER	4.0	ug/L	U
000106445	4-METHYLPHENOL	4.0	ug/L	U
000621647	N-NITROSO-DI-N-PROPYLAMINE	4.0	ug/L	U
000067721	HEXACHLOROETHANE	4.0	ug/L	U
000098953	NITROBENZENE	4.0	ug/L	U

Report Date: 1.25.01

NV = Not Validated; **Inc** = Result not entered

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample ID

AB03261 Field/Station ID: 1002-GW04
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 11:05
Collection Begin Date/Time: 12/05/00 11:00

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000078591	ISOPHORONE	4.0	ug/L	U
000088755	2-NITROPHENOL	4.0	ug/L	U
000105679	2,4-DIMETHYLPHENOL	4.0	ug/L	U
000111911	BIS(2-CHLOROETHOXY)METHANE	4.0	ug/L	U
000120832	2,4-DICHLOROPHENOL	4.0	ug/L	U
000120821	1,2,4-TRICHLOROBENZENE	4.0	ug/L	U
000065850	BENZOIC ACID	50	ug/L	U
000091203	NAPHTHALENE	4.0	ug/L	U
000106478	4-CHLOROANILINE	50	ug/L	U
000087683	HEXACHLOROBUTADIENE	4.0	ug/L	U
000059507	4-CHLORO-3-METHYLPHENOL	4.0	ug/L	U
000091576	2-METHYL NAPHTHALENE	4.0	ug/L	U
000077474	HEXACHLOROCYCLOPENTADIENE	4.0	ug/L	U
000088062	2,4,6-TRICHLOROPHENOL	4.0	ug/L	U
000095954	2,4,5-TRICHLOROPHENOL	4.0	ug/L	U
000091587	2-CHLORONAPHTHALENE	4.0	ug/L	U
000088744	2-NITROANILINE	4.0	ug/L	U
000131113	DIMETHYL PHTHALATE	4.0	ug/L	U
000208968	ACENAPHTHYLENE	4.0	ug/L	U
000606202	2,6-DINITROTOLUENE	4.0	ug/L	U
000099092	3-NITROANILINE	50	ug/L	U
000083329	ACENAPHTHENE	4.0	ug/L	U
000051285	2,4-DINITROPHENOL	10	ug/L	U
000100027	4-NITROPHENOL	4.0	ug/L	U
000132649	DIBENZOFURAN	4.0	ug/L	U
000121142	2,4-DINITROTOLUENE	4.0	ug/L	U
000086737	FLUORENE	4.0	ug/L	U
000084662	DIETHYLPHTHALATE	4.0	ug/L	U
007005723	4-CHLOROPHENYL PHENYL ETHER	4.0	ug/L	U
000100016	4-NITROANILINE	4.0	ug/L	U
000534521	4,6-DINITRO-2-METHYLPHENOL	4.0	ug/L	U
000086306	N-NITROSODIPHENYLAMINE	4.0	ug/L	U
000103333	DIAZENE, DIPHENYL	4.0	ug/L	U
000101553	4-BROMOPHENYL PHENYL ETHER	4.0	ug/L	U
000118741	HEXACHLOROBENZENE	4.0	ug/L	U
000087865	PENTACHLOROPHENOL	10	ug/L	U
000085018	PHENANTHRENE	4.0	ug/L	U
000120127	ANTHRACENE	4.0	ug/L	U
000084742	DI-N-BUTYL PHTHALATE	4.0	ug/L	U
000206440	FLUORANTHENE	4.0	ug/L	U
000129000	PYRENE	4.0	ug/L	U

Report Date: 1/25/01

NV = Not Validated; **Inc** = Result not entered

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample

AB03261 Field/Station ID: 1002-GW04
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 11:05
Collection Begin Date/Time: 12/05/00 11:00

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000085687	BUTYL BENZYL PHTHALATE	4.0	ug/L	U
000056553	BENZO(A)ANTHRACENE	4.0	ug/L	U
000218019	CHRYSENE	4.0	ug/L	U
000117817	BIS(2-ETHYLHEXYL)PHTHALATE	4.0	ug/L	U
000117840	DI-N-OCTYL PHTHALATE	4.0	ug/L	U
000205992	BENZO(B)FLUORANTHENE	4.0	ug/L	U
000207089	BENZO(K)FLUORANTHENE	4.0	ug/L	U
000050328	BENZO(A)PYRENE	4.0	ug/L	U
000193395	INDENO(1,2,3-CD)PYRENE	4.0	ug/L	U
000053703	DIBENZO(A,H)ANTHRACENE	4.0	ug/L	U
000191242	BENZO(G,H,I)PERYLENE	4.0	ug/L	U
	UNKNOWN ,RT =13.55	2.0	ug/L	J QT

Analysis Type: PESTICIDES TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
319846	ALPHA-BHC	0.010	ug/L	U
58899	GAMMA-BHC	0.010	ug/L	U
319857	BETA-BHC	0.010	ug/L	U
319868	DELTA-BHC	0.010	ug/L	U
76448	HEPTACHLOR	0.010	ug/L	U
309002	ALDRIN	0.010	ug/L	U
1024573	HEPTACHLOR EPOXIDE	0.010	ug/L	U
5566347	GAMMA-CHLORDANE	0.010	ug/L	U
5103719	ALPHA-CHLORDANE	0.010	ug/L	U
115297	ENDOSULFAN I	0.010	ug/L	U
72559	4,4'-DDE	0.010	ug/L	U
60571	DIELDRIN	0.010	ug/L	U
72208	ENDRIN	0.010	ug/L	U
72548	4,4'-DDD	0.010	ug/L	U
33213659	ENDOSULFAN II	0.010	ug/L	U
50293	4,4'-DDT	0.010	ug/L	U
7421934	ENDRIN ALDEHYDE	0.010	ug/L	U
72435	METHOXYCHLOR	0.050	ug/L	U
1031078	ENDOSULFAN SULFATE	0.010	ug/L	U
53494705	ENDRIN KETONE	0.010	ug/L	U
57749	CHLORDANE	0.10	ug/L	U
8001352	TOXAPHENE	0.10	ug/L	U

Analysis Type: PCBS TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
12674-11-2	AROCLOR 1016	0.10	ug/L	U
011104282	AROCLOR 1221	0.20	ug/L	U
011141165	AROCLOR 1232	0.10	ug/L	U

NV = Not Validated; **Inc** = Result not entered

Report Date: 1/25/01

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample ID

AB03261 Field/Station ID: 1002-GW04
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 11:05
Collection Begin Date/Time: 12/05/00 11:00

Analysis Type: PCBS TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
53469-21-9	AROCLOR 1242	0.10	ug/L	U
012672296	AROCLOR 1248	0.10	ug/L	U
11097-69-1	AROCLOR 1254	0.10	ug/L	U
11096-82-5	AROCLOR 1260	0.10	ug/L	U

Analysis Type: METALS TAL ICP AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
007440224	SILVER	10	ug/L	U
007429905	ALUMINUM	3,500	ug/L	
007440393	BARIUM	220	ug/L	
007440417	BERYLLIUM	5.0	ug/L	U
007440702	CALCIUM	60,000	ug/L	
007440439	CADMIUM	5.0	ug/L	U
007440484	COBALT	50	ug/L	U
007440473	CHROMIUM	10	ug/L	U
007440508	COPPER	25	ug/L	U
007439896	IRON	42,000	ug/L	
007440097	POTASSIUM	5,000	ug/L	U
007439954	MAGNESIUM	14,000	ug/L	
007439965	MANGANESE	1,700	ug/L	
007440235	SODIUM	25,000	ug/L	
007440020	NICKEL	40	ug/L	U
007440360	ANTIMONY	60	ug/L	U
007440622	VANADIUM	50	ug/L	U
007440666	ZINC	76	ug/L	

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
7440-38-2	ARSENIC	13	ug/L	
7439-92-1	LEAD	3.0	ug/L	U
7782-49-2	SELENIUM	5.0	ug/L	U
7440-28-0	THALLIUM	10	ug/L	U

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
007439976	MERCURY (ESAT)	0.20	ug/L	U

AB03262 Field/Station ID: 1002-GW05
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 10:00
Collection Begin Date/Time: 12/05/00 09:55

Analysis Type: VOA TCL GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000074873	CHLOROMETHANE	10	ug/L	U

NV = Not Validated; **Inc** = Result not entered

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sampl

AB03262 Field/Station ID: 1002-GW05
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 10:00
Collection Begin Date/Time: 12/05/00 09:55

Analysis Type: VOA TCL GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000075014	VINYL CHLORIDE	10	ug/L	U
000074839	BROMOMETHANE	10	ug/L	U
000075003	CHLOROETHANE	10	ug/L	U
000075354	1,1-DICHLOROETHENE	10	ug/L	U
000075150	CARBON DISULFIDE	10	ug/L	U
000067641	ACETONE	6.0	ug/L	J QM
000075092	METHYLENE CHLORIDE	10	ug/L	U
000156605	TRANS-1,2-DICHLOROETHENE	10	ug/L	U
000156592	CIS-1,2-DICHLOROETHENE	10	ug/L	U
000075343	1,1-DICHLOROETHANE	10	ug/L	U
000078933	2-BUTANONE	10	ug/L	U
000067663	CHLOROFORM	10	ug/L	U
000107062	1,2-DICHLOROETHANE	10	ug/L	U
000071556	1,1,1-TRICHLOROETHANE	10	ug/L	U
000056235	CARBON TETRACHLORIDE	10	ug/L	U
000071432	BENZENE	10	ug/L	U
025323891	TRICHLOROETHENE	10	ug/L	U
000078875	1,2-DICHLOROPROPANE	10	ug/L	U
000074975	BROMODICHLOROMETHANE	10	ug/L	U
010061015	CIS-1,3-DICHLOROPROPENE	10	ug/L	U
010061026	TRANS-1,3-DICHLOROPROPENE	10	ug/L	U
000079005	1,1,2-TRICHLOROETHANE	10	ug/L	U
000124481	DIBROMOCHLOROMETHANE	10	ug/L	U
000075252	BROMOFORM	10	ug/L	U
000108101	4-METHYL-2-PENTANONE	10	ug/L	U
000108883	TOLUENE	10	ug/L	U
000127184	TETRACHLOROETHENE	10	ug/L	U
000591786	2-HEXANONE	10	ug/L	U
000108907	CHLOROBENZENE	10	ug/L	U
000100414	ETHYLBENZENE	10	ug/L	U
001330207	M,P-XYLENE	10	ug/L	U
000095476	O-XYLENE	10	ug/L	U
000100425	STYRENE	10	ug/L	U
000079345	1,1,2,2-TETRACHLOROETHANE	10	ug/L	U

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000108952	PHENOL	4.0	ug/L	U
000111444	BIS(2-CHLOROETHYL)ETHER	4.0	ug/L	U
000095578	2-CHLOROPHENOL	4.0	ug/L	U
000541731	1,3-DICHLOROBENZENE	4.0	ug/L	U
000106467	1,4-DICHLOROBENZENE	4.0	ug/L	U

NV = Not Validated; **Inc** = Result not entered

Report Date: 1/25/01

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample ID

AB03262 Field/Station ID: 1002-GW05
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 10:00
Collection Begin Date/Time: 12/05/00 09:55

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000095501	1,2-DICHLOROBENZENE	4.0	ug/L	U
000100516	BENZYL ALCOHOL	10	ug/L	U
000095487	2-METHYLPHENOL	4.0	ug/L	U
000108601	BIS(2-CHLOROISOPROPYL)ETHER	4.0	ug/L	U
000106445	4-METHYLPHENOL	4.0	ug/L	U
000621647	N-NITROSO-DI-N-PROPYLAMINE	4.0	ug/L	U
000067721	HEXACHLOROETHANE	4.0	ug/L	U
000098953	NITROBENZENE	4.0	ug/L	U
000078591	ISOPHORONE	4.0	ug/L	U
000088755	2-NITROPHENOL	4.0	ug/L	U
000105679	2,4-DIMETHYLPHENOL	4.0	ug/L	U
000111911	BIS(2-CHLOROETHOXY)METHANE	4.0	ug/L	U
000120832	2,4-DICHLOROPHENOL	4.0	ug/L	U
000120821	1,2,4-TRICHLOROBENZENE	4.0	ug/L	U
000065850	BENZOIC ACID	48	ug/L	U
000091203	NAPHTHALENE	4.0	ug/L	U
000106478	4-CHLOROANILINE	48	ug/L	U
000087683	HEXACHLOROBUTADIENE	4.0	ug/L	U
000059507	4-CHLORO-3-METHYLPHENOL	4.0	ug/L	U
000091576	2-METHYL NAPHTHALENE	4.0	ug/L	U
000077474	HEXACHLOROCYCLOPENTADIENE	4.0	ug/L	U
000088062	2,4,6-TRICHLOROPHENOL	4.0	ug/L	U
000095954	2,4,5-TRICHLOROPHENOL	4.0	ug/L	U
000091587	2-CHLORONAPHTHALENE	4.0	ug/L	U
000088744	2-NITROANILINE	4.0	ug/L	U
000131113	DIMETHYL PHTHALATE	4.0	ug/L	U
000208968	ACENAPHTHYLENE	4.0	ug/L	U
000606202	2,6-DINITROTOLUENE	4.0	ug/L	U
000099092	3-NITROANILINE	48	ug/L	U
000083329	ACENAPHTHENE	4.0	ug/L	U
000051285	2,4-DINITROPHENOL	10	ug/L	U
000100027	4-NITROPHENOL	4.0	ug/L	U
000132649	DIBENZOFURAN	4.0	ug/L	U
000121142	2,4-DINITROTOLUENE	4.0	ug/L	U
000086737	FLUORENE	4.0	ug/L	U
000084662	DIETHYLPHTHALATE	4.0	ug/L	U
007005723	4-CHLOROPHENYL PHENYL ETHER	4.0	ug/L	U
000100016	4-NITROANILINE	4.0	ug/L	U
000534521	4,6-DINITRO-2-METHYLPHENOL	4.0	ug/L	U
000086306	N-NITROSODIPHENYLAMINE	4.0	ug/L	U
000103333	DIAZENE, DIPHENYL	4.0	ug/L	U

Report Date: 1/25/01

NV = Not Validated; **Inc** = Result not entered

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sampl

AB03262 Field/Station ID: 1002-GW05
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 10:00
Collection Begin Date/Time: 12/05/00 09:55

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000101553	4-BROMOPHENYL PHENYL ETHER	4.0	ug/L	U
000118741	HEXACHLOROBENZENE	4.0	ug/L	U
000087865	PENTACHLOROPHENOL	10	ug/L	U
000085018	PHENANTHRENE	4.0	ug/L	U
000120127	ANTHRACENE	4.0	ug/L	U
000084742	DI-N-BUTYL PHTHALATE	4.0	ug/L	U
000206440	FLUORANTHENE	4.0	ug/L	U
000129000	PYRENE	4.0	ug/L	U
000085687	BUTYL BENZYL PHTHALATE	4.0	ug/L	U
000056553	BENZO(A)ANTHRACENE	4.0	ug/L	U
000218019	CHRYSENE	4.0	ug/L	U
000117817	BIS(2-ETHYLHEXYL)PHTHALATE	4.0	ug/L	U
000117840	DI-N-OCTYL PHTHALATE	4.0	ug/L	U
000205992	BENZO(B)FLUORANTHENE	4.0	ug/L	U
000207089	BENZO(K)FLUORANTHENE	4.0	ug/L	U
000050328	BENZO(A)PYRENE	4.0	ug/L	U
000193395	INDENO(1,2,3-CD)PYRENE	4.0	ug/L	U
000053703	DIBENZO(A,H)ANTHRACENE	4.0	ug/L	U
000191242	BENZO(G,H,I)PERYLENE	4.0	ug/L	U

Analysis Type: PESTICIDES TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
319846	ALPHA-BHC	0.010	ug/L	U
58899	GAMMA-BHC	0.010	ug/L	U
319857	BETA-BHC	0.010	ug/L	U
319868	DELTA-BHC	0.010	ug/L	U
76448	HEPTACHLOR	0.010	ug/L	U
309002	ALDRIN	0.010	ug/L	U
1024573	HEPTACHLOR EPOXIDE	0.010	ug/L	U
5566347	GAMMA-CHLORDANE	0.010	ug/L	U
5103719	ALPHA-CHLORDANE	0.010	ug/L	U
115297	ENDOSULFAN I	0.010	ug/L	U
72559	4,4'-DDE	0.010	ug/L	U
60571	DIELDRIN	0.010	ug/L	U
72208	ENDRIN	0.010	ug/L	U
72548	4,4'-DDD	0.010	ug/L	U
33213659	ENDOSULFAN II	0.010	ug/L	U
50293	4,4'-DDT	0.010	ug/L	U
7421934	ENDRIN ALDEHYDE	0.010	ug/L	U
72435	METHOXYCHLOR	0.050	ug/L	U
1031078	ENDOSULFAN SULFATE	0.010	ug/L	U
53494705	ENDRIN KETONE	0.010	ug/L	U

NV = Not Validated; **Inc** = Result not entered

Report Date: 1 25 01

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample ID

AB03262 Field/Station ID: 1002-GW05
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 10:00
Collection Begin Date/Time: 12/05/00 09:55

Analysis Type: PESTICIDES TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
57749	CHLORDANE	0.10	ug/L	U
8001352	TOXAPHENE	0.10	ug/L	U

Analysis Type: PCBS TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
12674-11-2	AROCLOR 1016	0.10	ug/L	U
011104282	AROCLOR 1221	0.20	ug/L	U
011141165	AROCLOR 1232	0.10	ug/L	U
53469-21-9	AROCLOR 1242	0.10	ug/L	U
012672296	AROCLOR 1248	0.10	ug/L	U
11097-69-1	AROCLOR 1254	0.10	ug/L	U
11096-82-5	AROCLOR 1260	0.10	ug/L	U

Analysis Type: METALS TAL ICP AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
007440224	SILVER	10	ug/L	U
007429905	ALUMINUM	2,500	ug/L	
007440393	BARIUM	300	ug/L	
007440417	BERYLLIUM	5.0	ug/L	U
007440702	CALCIUM	87,000	ug/L	
007440439	CADMIUM	5.0	ug/L	U
007440484	COBALT	50	ug/L	U
007440473	CHROMIUM	23	ug/L	
007440508	COPPER	25	ug/L	U
007439896	IRON	34,000	ug/L	
007440097	POTASSIUM	5,000	ug/L	U
007439954	MAGNESIUM	22,000	ug/L	
007439965	MANGANESE	2,200	ug/L	
007440235	SODIUM	20,000	ug/L	
007440020	NICKEL	40	ug/L	U
007440360	ANTIMONY	60	ug/L	U
007440622	VANADIUM	50	ug/L	U
007440666	ZINC	20	ug/L	U

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
7440-38-2	ARSENIC	12	ug/L	
7439-92-1	LEAD	3.4	ug/L	
7782-49-2	SELENIUM	5.0	ug/L	U
7440-28-0	THALLIUM	10	ug/L	U

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
007439976	MERCURY (ESAT)	0.20	ug/L	U

NV = Not Validated; **Inc** = Result not entered

Report Date: 1/25/01

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sampl

AB03263 Field/Station ID: 1002-GW06
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 14:05
Collection Begin Date/Time: 12/05/00 14:00

Analysis Type: VOA TCL GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000074873	CHLOROMETHANE	10	ug/L	U
000075014	VINYL CHLORIDE	10	ug/L	U
000074839	BROMOMETHANE	10	ug/L	U
000075003	CHLOROETHANE	10	ug/L	U
000075354	1,1-DICHLOROETHENE	10	ug/L	U
000075150	CARBON DISULFIDE	10	ug/L	U
000067641	ACETONE	10	ug/L	U
000075092	METHYLENE CHLORIDE	10	ug/L	U
000156605	TRANS-1,2-DICHLOROETHENE	10	ug/L	U
000156592	CIS-1,2-DICHLOROETHENE	10	ug/L	U
000075343	1,1-DICHLOROETHANE	10	ug/L	U
000078933	2-BUTANONE	10	ug/L	U
000067663	CHLOROFORM	10	ug/L	U
000107062	1,2-DICHLOROETHANE	10	ug/L	U
000071556	1,1,1-TRICHLOROETHANE	10	ug/L	U
000056235	CARBON TETRACHLORIDE	10	ug/L	U
000071432	BENZENE	10	ug/L	U
025323891	TRICHLOROETHENE	10	ug/L	U
000078875	1,2-DICHLOROPROPANE	10	ug/L	U
000074975	BROMODICHLOROMETHANE	10	ug/L	U
010061015	CIS-1,3-DICHLOROPROPENE	10	ug/L	U
010061026	TRANS-1,3-DICHLOROPROPENE	10	ug/L	U
000079005	1,1,2-TRICHLOROETHANE	10	ug/L	U
000124481	DIBROMOCHLOROMETHANE	10	ug/L	U
000075252	BROMOFORM	10	ug/L	U
000108101	4-METHYL-2-PENTANONE	10	ug/L	U
000108883	TOLUENE	10	ug/L	U
000127184	TETRACHLOROETHENE	10	ug/L	U
000591786	2-HEXANONE	10	ug/L	U
000108907	CHLOROBENZENE	10	ug/L	U
000100414	ETHYLBENZENE	10	ug/L	U
001330207	M,P-XYLENE	10	ug/L	U
000095476	O-XYLENE	10	ug/L	U
000100425	STYRENE	10	ug/L	U
000079345	1,1,2,2-TETRACHLOROETHANE	10	ug/L	U
	UNKNOWN HYDROCARBON ,RT =3.03	16	ug/L	J QT
	UNKNOWN HYDROCARBON ,RT =3.47	28	ug/L	J QT
	BUTANE, 2-METHYL- ,RT =4.61	29	ug/L	J QT
	PENTANE ,RT =5.13	5.0	ug/L	J
	BUTANE, 2,3-DIMETHYL- ,RT =6.71	9.0	ug/L	J QT
	UNKNOWN HYDROCARBON ,RT =11.57	5.0	ug/L	J QT

NV = Not Validated; **Inc** = Result not entered

Report Date: 1/25/01

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample ID

AB03263 Field/Station ID: 1002-GW06
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 14:05
Collection Begin Date/Time: 12/05/00 14:00

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000108952	PHENOL	4.0	ug/L	U
000111444	BIS(2-CHLOROETHYL)ETHER	4.0	ug/L	U
000095578	2-CHLOROPHENOL	4.0	ug/L	U
000541731	1,3-DICHLOROBENZENE	4.0	ug/L	U
000106467	1,4-DICHLOROBENZENE	4.0	ug/L	U
000095501	1,2-DICHLOROBENZENE	4.0	ug/L	U
000100516	BENZYL ALCOHOL	10	ug/L	U
000095487	2-METHYLPHENOL	4.0	ug/L	U
000108601	BIS(2-CHLOROISOPROPYL)ETHER	4.0	ug/L	U
000106445	4-METHYLPHENOL	4.0	ug/L	U
000621647	N-NITROSO-DI-N-PROPYLAMINE	4.0	ug/L	U
000067721	HEXACHLOROETHANE	4.0	ug/L	U
000098953	NITROBENZENE	4.0	ug/L	U
000078591	ISOPHORONE	4.0	ug/L	U
000088755	2-NITROPHENOL	4.0	ug/L	U
000105679	2,4-DIMETHYLPHENOL	4.0	ug/L	U
000111911	BIS(2-CHLOROETHOXY)METHANE	4.0	ug/L	U
000120832	2,4-DICHLOROPHENOL	4.0	ug/L	U
000120821	1,2,4-TRICHLOROBENZENE	4.0	ug/L	U
000065850	BENZOIC ACID	49	ug/L	U
000091203	NAPHTHALENE	4.0	ug/L	U
000106478	4-CHLOROANILINE	49	ug/L	U
000087683	HEXACHLOROBUTADIENE	4.0	ug/L	U
000059507	4-CHLORO-3-METHYLPHENOL	4.0	ug/L	U
000091576	2-METHYL NAPHTHALENE	4.0	ug/L	U
000077474	HEXACHLOROCYCLOPENTADIENE	4.0	ug/L	U
000088062	2,4,6-TRICHLOROPHENOL	4.0	ug/L	U
000095954	2,4,5-TRICHLOROPHENOL	4.0	ug/L	U
000091587	2-CHLORONAPHTHALENE	4.0	ug/L	U
000088744	2-NITROANILINE	4.0	ug/L	U
000131113	DIMETHYL PHTHALATE	4.0	ug/L	U
000208968	ACENAPHTHYLENE	4.0	ug/L	U
000606202	2,6-DINITROTOLUENE	4.0	ug/L	U
000099092	3-NITROANILINE	49	ug/L	U
000083329	ACENAPHTHENE	4.0	ug/L	U
000051285	2,4-DINITROPHENOL	10	ug/L	U
000100027	4-NITROPHENOL	4.0	ug/L	U
000132649	DIBENZOFURAN	4.0	ug/L	U
000121142	2,4-DINITROTOLUENE	4.0	ug/L	U
000086737	FLUORENE	4.0	ug/L	U
000084662	DIETHYLPHTHALATE	4.0	ug/L	U
007005723	4-CHLOROPHENYL PHENYL ETHER	4.0	ug/L	U

Report Date: 1/25/01

NV = Not Validated; Inc = Result not entered

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sampl

AB03263 Field/Station ID: 1002-GW06
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 14:05
Collection Begin Date/Time: 12/05/00 14:00

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000100016	4-NITROANILINE	4.0	ug/L	U
000534521	4,6-DINITRO-2-METHYLPHENOL	4.0	ug/L	U
000086306	N-NITROSODIPHENYLAMINE	4.0	ug/L	U
000103333	DIAZENE, DIPHENYL	4.0	ug/L	U
000101553	4-BROMOPHENYL PHENYL ETHER	4.0	ug/L	U
000118741	HEXACHLOROBENZENE	4.0	ug/L	U
000087865	PENTACHLOROPHENOL	10	ug/L	U
000085018	PHENANTHRENE	4.0	ug/L	U
000120127	ANTHRACENE	4.0	ug/L	U
000084742	DI-N-BUTYL PHTHALATE	4.0	ug/L	U
000206440	FLUORANTHENE	4.0	ug/L	U
000129000	PYRENE	4.0	ug/L	U
000085687	BUTYL BENZYL PHTHALATE	4.0	ug/L	U
000056553	BENZO(A)ANTHRACENE	4.0	ug/L	U
000218019	CHRYSENE	4.0	ug/L	
000117817	BIS(2-ETHYLHEXYL)PHTHALATE	4.0	ug/L	U
000117840	DI-N-OCTYL PHTHALATE	4.0	ug/L	U
000205992	BENZO(B)FLUORANTHENE	4.0	ug/L	U
000207089	BENZO(K)FLUORANTHENE	4.0	ug/L	U
000050328	BENZO(A)PYRENE	4.0	ug/L	U
000193395	INDENO(1,2,3-CD)PYRENE	4.0	ug/L	U
000053703	DIBENZO(A,H)ANTHRACENE	4.0	ug/L	U
000191242	BENZO(G,H,I)PERYLENE	4.0	ug/L	U
	CYCLOHEXANOL, 1-METHYL- ,RT =7.44	3.0	ug/L	J QT
	UNKNOWN ,RT =8.45	4.0	ug/L	J QT
	UNKNOWN ,RT =8.95	4.0	ug/L	J QT
	UNKNOWN ,RT =9.53	2.0	ug/L	J QT

Analysis Type: PESTICIDES TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
319846	ALPHA-BHC	0.010	ug/L	U
58899	GAMMA-BHC	0.010	ug/L	U
319857	BETA-BHC	0.010	ug/L	U
319868	DELTA-BHC	0.010	ug/L	U
76448	HEPTACHLOR	0.010	ug/L	U
309002	ALDRIN	0.010	ug/L	U
1024573	HEPTACHLOR EPOXIDE	0.010	ug/L	U
5566347	GAMMA-CHLORDANE	0.010	ug/L	U
5103719	ALPHA-CHLORDANE	0.010	ug/L	
115297	ENDOSULFAN I	0.010	ug/L	U
72559	4,4'-DDE	0.010	ug/L	U
60571	DIELDRIN	0.010	ug/L	U

NV = Not Validated; **Inc** = Result not entered

Report Date: 1/25/01

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample ID

AB03263 Field/Station ID: 1002-GW06
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 14:05
Collection Begin Date/Time: 12/05/00 14:00

Analysis Type: PESTICIDES TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
72208	ENDRIN	0.010	ug/L	U
72548	4,4'-DDD	0.010	ug/L	U
33213659	ENDOSULFAN II	0.010	ug/L	U
50293	4,4'-DDT	0.010	ug/L	U
7421934	ENDRIN ALDEHYDE	0.010	ug/L	U
72435	METHOXYCHLOR	0.050	ug/L	U
1031078	ENDOSULFAN SULFATE	0.010	ug/L	U
53494705	ENDRIN KETONE	0.010	ug/L	U
57749	CHLORDANE	0.10	ug/L	U
8001352	TOXAPHENE	0.10	ug/L	U

Analysis Type: PCBS TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
12674-11-2	AROCLOR 1016	0.10	ug/L	U
011104282	AROCLOR 1221	0.20	ug/L	U
011141165	AROCLOR 1232	0.10	ug/L	U
53469-21-9	AROCLOR 1242	0.10	ug/L	U
012672296	AROCLOR 1248	0.10	ug/L	U
11097-69-1	AROCLOR 1254	0.10	ug/L	U
11096-82-5	AROCLOR 1260	0.10	ug/L	U

Analysis Type: METALS TAL ICP AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
007440224	SILVER	10	ug/L	U
007429905	ALUMINUM	200	ug/L	U
007440393	BARIUM	380	ug/L	
007440417	BERYLLIUM	5.0	ug/L	U
007440702	CALCIUM	250,000	ug/L	
007440439	CADMIUM	5.0	ug/L	U
007440484	COBALT	50	ug/L	U
007440473	CHROMIUM	10	ug/L	U
007440508	COPPER	25	ug/L	U
007439896	IRON	13,000	ug/L	
007440097	POTASSIUM	8,000	ug/L	
007439954	MAGNESIUM	120,000	ug/L	
007439965	MANGANESE	300	ug/L	
007440235	SODIUM	550,000	ug/L	
007440020	NICKEL	40	ug/L	U
007440360	ANTIMONY	60	ug/L	U
007440622	VANADIUM	50	ug/L	U
007440666	ZINC	20	ug/L	U

NV = Not Validated; Inc = Result not entered

Report Date: 1/25/01

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sampl

AB03263 Field/Station ID: 1002-GW06 Coll. Ending Date/Time: 12/5/00 14:05
Matrix: Aqueous Collection Begin Date/Time: 12/05/00 14:00
Sample Description:

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
7440-38-2	ARSENIC	10	ug/L	U
7439-92-1	LEAD	3.0	ug/L	U
7782-49-2	SELENIUM	5.0	ug/L	U
7440-28-0	THALLIUM	10	ug/L	U QR

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
007439976	MERCURY (ESAT)	0.20	ug/L	U

AB03264 Field/Station ID: 1002-RB02 Coll. Ending Date/Time: 12/5/00 15:05
Matrix: Aqueous Collection Begin Date/Time: 12/05/00 15:00
Sample Description:

Analysis Type: VOA TCL GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000074873	CHLOROMETHANE	10	ug/L	U
000075014	VINYL CHLORIDE	10	ug/L	
000074839	BROMOMETHANE	10	ug/L	U
000075003	CHLOROETHANE	10	ug/L	U
000075354	1,1-DICHLOROETHENE	10	ug/L	U
000075150	CARBON DISULFIDE	10	ug/L	U
000067641	ACETONE	10	ug/L	U
000075092	METHYLENE CHLORIDE	10	ug/L	U
000156605	TRANS-1,2-DICHLOROETHENE	10	ug/L	U
000156592	CIS-1,2-DICHLOROETHENE	10	ug/L	U
000075343	1,1-DICHLOROETHANE	10	ug/L	U
000078933	2-BUTANONE	10	ug/L	U
000067663	CHLOROFORM	10	ug/L	U
000107062	1,2-DICHLOROETHANE	10	ug/L	U
000071556	1,1,1-TRICHLOROETHANE	10	ug/L	U
000056235	CARBON TETRACHLORIDE	10	ug/L	U
000071432	BENZENE	10	ug/L	U
025323891	TRICHLOROETHENE	10	ug/L	U
000078875	1,2-DICHLOROPROPANE	10	ug/L	U
000074975	BROMODICHLOROMETHANE	10	ug/L	U
010061015	CIS-1,3-DICHLOROPROPENE	10	ug/L	U
010061026	TRANS-1,3-DICHLOROPROPENE	10	ug/L	U
000079005	1,1,2-TRICHLOROETHANE	10	ug/L	U
000124481	DIBROMOCHLOROMETHANE	10	ug/L	U
000075252	BROMOFORM	10	ug/L	
000108101	4-METHYL-2-PENTANONE	10	ug/L	U
000108883	TOLUENE	10	ug/L	U
000127184	TETRACHLOROETHENE	10	ug/L	U

NV = Not Validated; **Inc** = Result not entered

Report Date: 1/25/01

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample ID

AB03264 Field/Station ID: 1002-RB02
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 15:05
Collection Begin Date/Time: 12/05/00 15:00

Analysis Type: VOA TCL GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000591786	2-HEXANONE	10	ug/L	U
000108907	CHLOROBENZENE	10	ug/L	U
000100414	ETHYLBENZENE	10	ug/L	U
001330207	M,P-XYLENE	10	ug/L	U
000095476	O-XYLENE	10	ug/L	U
000100425	STYRENE	10	ug/L	U
000079345	1,1,2,2-TETRACHLOROETHANE	10	ug/L	U

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000108952	PHENOL	4.0	ug/L	U
000111444	BIS(2-CHLOROETHYL)ETHER	4.0	ug/L	U
000095578	2-CHLOROPHENOL	4.0	ug/L	U
000541731	1,3-DICHLOROBENZENE	4.0	ug/L	U
000106467	1,4-DICHLOROBENZENE	4.0	ug/L	U
000095501	1,2-DICHLOROBENZENE	4.0	ug/L	U
000100516	BENZYL ALCOHOL	10	ug/L	U
000095487	2-METHYLPHENOL	4.0	ug/L	U
000108601	BIS(2-CHLOROISOPROPYL)ETHER	4.0	ug/L	U
000106445	4-METHYLPHENOL	4.0	ug/L	U
000621647	N-NITROSO-DI-N-PROPYLAMINE	4.0	ug/L	U
000067721	HEXACHLOROETHANE	4.0	ug/L	U
000098953	NITROBENZENE	4.0	ug/L	U
000078591	ISOPHORONE	4.0	ug/L	U
000088755	2-NITROPHENOL	4.0	ug/L	U
000105679	2,4-DIMETHYLPHENOL	4.0	ug/L	U
000111911	BIS(2-CHLOROETHOXY)METHANE	4.0	ug/L	U
000120832	2,4-DICHLOROPHENOL	4.0	ug/L	U
000120821	1,2,4-TRICHLOROBENZENE	4.0	ug/L	U
000065850	BENZOIC ACID	48	ug/L	U
000091203	NAPHTHALENE	4.0	ug/L	U
000106478	4-CHLOROANILINE	48	ug/L	U
000087683	HEXACHLOROBUTADIENE	4.0	ug/L	U
000059507	4-CHLORO-3-METHYLPHENOL	4.0	ug/L	U
000091576	2-METHYL NAPHTHALENE	4.0	ug/L	U
000077474	HEXACHLOROCYCLOPENTADIENE	4.0	ug/L	U
000088062	2,4,6-TRICHLOROPHENOL	4.0	ug/L	U
000095954	2,4,5-TRICHLOROPHENOL	4.0	ug/L	U
000091587	2-CHLORONAPHTHALENE	4.0	ug/L	U
000088744	2-NITROANILINE	4.0	ug/L	U
000131113	DIMETHYL PHTHALATE	4.0	ug/L	U
000208968	ACENAPHTHYLENE	4.0	ug/L	U

Report Date: 1/25/01

NV = Not Validated; Inc = Result not entered

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sampl

AB03264 Field/Station ID: 1002-RB02
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 15:05
Collection Begin Date/Time: 12/05/00 15:00

Analysis Type: NVOA GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000606202	2,6-DINITROTOLUENE	4.0	ug/L	U
000099092	3-NITROANILINE	48	ug/L	U
000083329	ACENAPHTHENE	4.0	ug/L	U
000051285	2,4-DINITROPHENOL	10	ug/L	U
000100027	4-NITROPHENOL	4.0	ug/L	U
000132649	DIBENZOFURAN	4.0	ug/L	U
000121142	2,4-DINITROTOLUENE	4.0	ug/L	U
000086737	FLUORENE	4.0	ug/L	U
000084662	DIETHYLPHTHALATE	4.0	ug/L	U
007005723	4-CHLOROPHENYL PHENYL ETHER	4.0	ug/L	U
000100016	4-NITROANILINE	4.0	ug/L	U
000534521	4,6-DINITRO-2-METHYLPHENOL	4.0	ug/L	U
000086306	N-NITROSODIPHENYLAMINE	4.0	ug/L	U
000103333	DIAZENE, DIPHENYL	4.0	ug/L	U
000101553	4-BROMOPHENYL PHENYL ETHER	4.0	ug/L	U
000118741	HEXACHLOROBENZENE	4.0	ug/L	U
000087865	PENTACHLOROPHENOL	10	ug/L	U
000085018	PHENANTHRENE	4.0	ug/L	U
000120127	ANTHRACENE	4.0	ug/L	U
000084742	DI-N-BUTYL PHTHALATE	4.0	ug/L	U
000206440	FLUORANTHENE	4.0	ug/L	U
000129000	PYRENE	4.0	ug/L	U
000085687	BUTYL BENZYL PHTHALATE	4.0	ug/L	U
000056553	BENZO(A)ANTHRACENE	4.0	ug/L	U
000218019	CHRYSENE	4.0	ug/L	U
000117817	BIS(2-ETHYLHEXYL)PHTHALATE	4.0	ug/L	U
000117840	DI-N-OCTYL PHTHALATE	4.0	ug/L	U
000205992	BENZO(B)FLUORANTHENE	4.0	ug/L	U
000207089	BENZO(K)FLUORANTHENE	4.0	ug/L	U
000050328	BENZO(A)PYRENE	4.0	ug/L	U
000193395	INDENO(1,2,3-CD)PYRENE	4.0	ug/L	U
000053703	DIBENZO(A,H)ANTHRACENE	4.0	ug/L	U
000191242	BENZO(G,H,I)PERYLENE	4.0	ug/L	U
	UNKNOWN ,RT =12.24	2.0	ug/L	J QT

Analysis Type: PESTICIDES TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
319846	ALPHA-BHC	0.010	ug/L	U
58899	GAMMA-BHC	0.010	ug/L	U
319857	BETA-BHC	0.010	ug/L	U
319868	DELTA-BHC	0.010	ug/L	U
76448	HEPTACHLOR	0.010	ug/L	U

Report Date: 1/25/01

NV = Not Validated; **Inc** = Result not entered

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample ID

AB03264 Field/Station ID: 1002-RB02
Matrix: Aqueous
Sample Description:

Coll. Ending Date/Time: 12/5/00 15:05
Collection Begin Date/Time: 12/05/00 15:00

Analysis Type: PESTICIDES TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
309002	ALDRIN	0.010	ug/L	U
1024573	HEPTACHLOR EPOXIDE	0.010	ug/L	U
5566347	GAMMA-CHLORDANE	0.010	ug/L	U
5103719	ALPHA-CHLORDANE	0.010	ug/L	U
115297	ENDOSULFAN I	0.010	ug/L	U
72559	4,4'-DDE	0.010	ug/L	U
60571	DIELDRIN	0.010	ug/L	U
72208	ENDRIN	0.010	ug/L	U
72548	4,4'-DDD	0.010	ug/L	U
33213659	ENDOSULFAN II	0.010	ug/L	U
50293	4,4'-DDT	0.010	ug/L	U
7421934	ENDRIN ALDEHYDE	0.010	ug/L	U
72435	METHOXYCHLOR	0.050	ug/L	U
1031078	ENDOSULFAN SULFATE	0.010	ug/L	U
53494705	ENDRIN KETONE	0.010	ug/L	U
57749	CHLORDANE	0.10	ug/L	U
8001352	TOXAPHENE	0.10	ug/L	U

Analysis Type: PCBS TCL GC AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
12674-11-2	AROCLOR 1016	0.10	ug/L	U
011104282	AROCLOR 1221	0.20	ug/L	U
011141165	AROCLOR 1232	0.10	ug/L	U
53469-21-9	AROCLOR 1242	0.10	ug/L	U
012672296	AROCLOR 1248	0.10	ug/L	U
11097-69-1	AROCLOR 1254	0.10	ug/L	U
11096-82-5	AROCLOR 1260	0.10	ug/L	U

Analysis Type: METALS TAL ICP AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
007440224	SILVER	10	ug/L	U
007429905	ALUMINUM	200	ug/L	U
007440393	BARIUM	200	ug/L	U
007440417	BERYLLIUM	5.0	ug/L	U
007440702	CALCIUM	5,000	ug/L	U
007440439	CADMIUM	5.0	ug/L	U
007440484	COBALT	50	ug/L	U
007440473	CHROMIUM	10	ug/L	U
007440508	COPPER	25	ug/L	U
007439896	IRON	100	ug/L	U
007440097	POTASSIUM	5,000	ug/L	U
007439954	MAGNESIUM	5,000	ug/L	U
007439965	MANGANESE	15	ug/L	U

NV = Not Validated; **Inc** = Result not entered

Report Date: 1/25/01

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample

AB03264 Field/Station ID: 1002-RB02 Coll. Ending Date/Time: 12/5/00 15:05
Matrix: Aqueous Collection Begin Date/Time: 12/05/00 15:00
Sample Description:

Analysis Type: METALS TAL ICP AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
007440235	SODIUM	5,000	ug/L	U
007440020	NICKEL	40	ug/L	U
007440360	ANTIMONY	60	ug/L	U
007440622	VANADIUM	50	ug/L	U
007440666	ZINC	20	ug/L	U

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
7440-38-2	ARSENIC	10	ug/L	U
7439-92-1	LEAD	3.0	ug/L	U
7782-49-2	SELENIUM	5.0	ug/L	U
7440-28-0	THALLIUM	10	ug/L	U

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
007439976	MERCURY (ESAT)	0.20	ug/L	U

AB03265 Field/Station ID: 1002-TB01 Coll. Ending Date/Time: 12/4/00 00:00
Matrix: Aqueous
Sample Description:

Analysis Type: VOA TCL GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
000074873	CHLOROMETHANE	10	ug/L	U
000075014	VINYL CHLORIDE	10	ug/L	U
000074839	BROMOMETHANE	10	ug/L	U
000075003	CHLOROETHANE	10	ug/L	U
000075354	1,1-DICHLOROETHENE	10	ug/L	U
000075150	CARBON DISULFIDE	10	ug/L	U
000067641	ACETONE	10	ug/L	U
000075092	METHYLENE CHLORIDE	10	ug/L	U
000156605	TRANS-1,2-DICHLOROETHENE	10	ug/L	U
000156592	CIS-1,2-DICHLOROETHENE	10	ug/L	U
000075343	1,1-DICHLOROETHANE	10	ug/L	U
000078933	2-BUTANONE	10	ug/L	U
000067663	CHLOROFORM	10	ug/L	U
000107062	1,2-DICHLOROETHANE	10	ug/L	U
000071556	1,1,1-TRICHLOROETHANE	10	ug/L	U
000056235	CARBON TETRACHLORIDE	10	ug/L	U
000071432	BENZENE	10	ug/L	U
025323891	TRICHLOROETHENE	10	ug/L	U
000078875	1,2-DICHLOROPROPANE	10	ug/L	U
000074975	BROMODICHLOROMETHANE	10	ug/L	U

NV = Not Validated; **Inc** = Result not entered

Report Date: 1/25/01

U.S. EPA Region 2 Laboratory
Data Report

Survey Name: Lackawanna Foundry

Project Number: 00120005

*Sorted By Sample ID

AB03265 Field/Station ID: 1002-TB01 Coll. Ending Date/Time: 12/4/00 00:00

Matrix: Aqueous

Sample Description:

Analysis Type: VOA TCL GCMS AQUEOUS

CAS Number	Analyte Name	Result	Units	Remark Codes
010061015	CIS-1,3-DICHLOROPROPENE	10	ug/L	U
010061026	TRANS-1,3-DICHLOROPROPENE	10	ug/L	U
000079005	1,1,2-TRICHLOROETHANE	10	ug/L	U
000124481	DIBROMOCHLOROMETHANE	10	ug/L	U
000075252	BROMOFORM	10	ug/L	U
000108101	4-METHYL-2-PENTANONE	10	ug/L	U
000108883	TOLUENE	10	ug/L	U
000127184	TETRACHLOROETHENE	10	ug/L	U
000591786	2-HEXANONE	10	ug/L	U
000108907	CHLOROBENZENE	10	ug/L	U
000100414	ETHYLBENZENE	10	ug/L	U
001330207	M,P-XYLENE	10	ug/L	U
000095476	O-XYLENE	10	ug/L	U
000100425	STYRENE	10	ug/L	U
000079345	1,1,2,2-TETRACHLOROETHANE	10	ug/L	U

Project Approval: Kevin W. Kubik **Date:** 1/26/01

NV = Not Validated; Inc = Result not entered

Report Date: 1/25/01

U.S. Environmental Protection Agency
Region 2 Laboratory

Data Report: Lackawanna Foundry

Project Number: 00120006

Program: Y206

Project Leader: Donna Janda

Codes	Explanation
B	RESULTS BASED UPON COLONY COUNTS OUTSIDE ACCEPTABLE RANGE
J	ESTIMATED VALUE
K	ACTUAL VALUE KNOWN TO BE LESS THAN VALUE GIVEN
L	ACTUAL VALUE KNOWN TO BE GREATER THAN VALUE GIVEN
N	SEE NARRATIVE COMMENTS
V	SAMPLE RECEIVED BUT NOT ANALYZED DUE TO LAB ACCIDENT
U	REPORTING LIMIT
QD	ACCURACY CHECK SAMPLE ABOVE UPPER ACCEPTANCE LIMIT
QF	ACCURACY CHECK SAMPLE BELOW LOWER ACCEPTANCE LIMIT
QF	PRECISION OF CALIBRATION CURVE LESS THAN ACCEPTANCE CRITERIA
QJ	REPORTING LIMIT ESTIMATED DUE TO INTERFERENCE
QG	CONTINUING CALIBRATION CHECK DOES NOT MEET ACCEPTANCE CRITERIA
QS	SPIKE RECOVERIES ABOVE UPPER ACCEPTANCE LIMIT
QR	SPIKE RECOVERIES BELOW LOWER ACCEPTANCE LIMIT
QP	SAMPLE REPLICATE PRECISION DOES NOT MEET ACCEPTANCE CRITERIA
QH	RECOMMENDED HOLDING TIME EXCEEDED
QT	TENTATIVELY IDENTIFIED COMPOUND
QM	PRESENCE OF MATERIAL VERIFIED BUT NOT QUANTIFIED
QB	BLANK CONTAMINATED WITH ANALYTE IN EXCESS OF ACCEPTANCE CRITERIA
QQ	SAMPLE IMPROPERLY MAINTAINED

Report Date: 01/03/01

U.S. EPA Region 2 Laboratory
Data Report
test

Survey Name: Lackawanna Foundry

Project Number: 00120006

*Sorted By Sample ID

AB03266 Field/Station ID: 1002-GW01
Matrix: Aqueous
Sample Description:
Coll. Ending Date/Time: 12/05/00 14:05
Collection Begin Date/Time: 12/05/00 14:00

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
57-12-5	CYANIDE TOTAL	10	ug/L	U

AB03267 Field/Station ID: 1002-GW03
Matrix: Aqueous
Sample Description:
Coll. Ending Date/Time: 12/05/00 09:00
Collection Begin Date/Time: 12/05/00 08:55

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
57-12-5	CYANIDE TOTAL	12	ug/L	

AB03268 Field/Station ID: 1002-GW04
Matrix: Aqueous
Sample Description:
Coll. Ending Date/Time: 12/05/00 11:05
Collection Begin Date/Time: 12/05/00 11:00

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
57-12-5	CYANIDE TOTAL	10	ug/L	U

AB03269 Field/Station ID: 1002-GW05
Matrix: Aqueous
Sample Description:
Coll. Ending Date/Time: 12/05/00 10:00
Collection Begin Date/Time: 12/05/00 09:55

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
57-12-5	CYANIDE TOTAL	10	ug/L	U

AB03270 Field/Station ID: 1002-GW06
Matrix: Aqueous
Sample Description:
Coll. Ending Date/Time: 12/05/00 14:05
Collection Begin Date/Time: 12/05/00 14:00

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
57-12-5	CYANIDE TOTAL	10	ug/L	U

AB03271 Field/Station ID: 1002-RB02
Matrix: Aqueous
Sample Description:
Coll. Ending Date/Time: 12/05/00 15:05
Collection Begin Date/Time: 12/05/00 15:00

Single Component Analyses

CAS Number	Analyte Name	Result	Units	Remark Codes
57-12-5	CYANIDE TOTAL	10	ug/L	U

Project Approval: Kevin W. Kubik **Date:** 1/24/01

NV = Not Validated; Inc = Result not entered

Report Date: 01/03/01