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DRUM LOCATION AND SAMPLING OPERATION
QUINCY DRUM SITE
QUINCY, ILLINOIS

September 1989

EPA Work Assignment Number: 0-300
Weston Work Order Number: 3347-11-01-2300
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FINAL REPORT

ANALYTICAL REPORT

Quincy
Quincy, Illinois

September 15, 1989

EPA Work Assignment Number: 1-300
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SUBJECT: QUINCY ILLINOIS DRUM LOCATION AND SAMPLING OPERATION - TRIP REPORT WORK ASSIGNMENT NO. 2300

BACKGROUND

The Quincy Illinois Drum Site refers to a section of the Mississippi River approximately 50 meters (m) from a soybean processing barge dock in Quincy, Illinois (Figure 1). One group of approximately 12, 55-gallon drums were located by unidentified divers and sonar. The total area of drum coverage is unknown. Both the drums' contents and whether the drums are leaking substances into the sediments and/or the water column is unknown. Concern over the possibility that the drums might contain hazardous substances prompted local officials to contact the Environmental Protection Agency.

The US EPA Region V office contacted the EPA Environmental Response Team (ERT) to search for the drums, identify their contents and determine whether leakage of hazardous substances into the river has occurred. The Response Engineering Analytical Contract (REAC) received a work assignment to assist EPA/ERT in this effort. Other agencies involved included the Illinois Conservation Police (Department of Conservation), Army Corps of Engineers, The City Government of Quincy, and the Quincy Police Department.

OBSERVATIONS AND ACTIVITIES

Participating in the drum search, August 22, 23, and 24, 1989, were Walter Neid, EPA Region V On-Site Coordinator (OSC), David Charters, (EPA Work Assignment Manager), Harry Compton, and Alan Humphrey, EPA/ERT, Scott Ruhren, Sally Mayasich, and Richard Tobia, REAC, and Steven Bosko, TAT. Boats and personnel were provided by the Army Corps of Engineers and the Illinois Conservation Police. These boats were used for the deployment of the Remotely Operated Vehicle (ROV), proton magnetometer, buoy placement, sediment and water sampling, and water quality evaluation using the Hydrolab Surveyor II. A staging area was established on August 22 at a barge dock adjacent to the site on Front Street (Figure 2). The barge dock was an unpaved area with a ten foot steel bulwark facing the river. The area was heavily stained from fuel oil from trucks and barges used on the site. Boats were launched and loaded from the dock and at a boat launch downstream from the site.

The general location of the drums was previously determined by the Illinois Department of Conservation using sonar. An area of approximately 50 m x 100 m was designated as the drum search area. This area was examined during this phase of the project.

The proton magnetometer was deployed on August 23 to confirm the location of the drums. The use of this unit was terminated due to malfunctioning either from metal saturation of the site or faulty instrumentation.

The Remotely Operated Vehicle, television monitor, video cassette recorder, and ROV control unit were powered by a gas generator. The control unit was set up in the Adams County Arson Control van. The ROV was deployed from the Conservation Police boat on August 23 and the Army Corps of Engineer boat on August 24. It was lowered from the staging area into the boats which carried the ROV out into the river. Floats were placed on the ROV cable every 8-10 feet to 50 feet from the ROV. Two people were used to tend the cable for the shore and boat. Initial runs of the ROV were unsuccessful in locating drums. The visibility was poor and the current made navigation difficult. Also, the thrusters jammed frequently as they clogged with sediment. This resulted in fuse blowout and required the ROV to be removed from the water, the fuses replaced and a full inspection of the unit. Other methods were experimented with to stabilize the ROV. An attempt to drive a rigid aluminum pole into the river bottom for the purpose of attaching the ROV using a tether cable was conducted. This did not work as the pole could not be held steady and eventually snapped. A more effective alternative was developed. A tether cable was attached to the anchor line of the deployment boat. Fuses were still occasionally blown. No drums were identified during the sweeps. All underwater search activities were observed on the video monitor and recorded on video cassette tapes. The ROV was used on August 23, 1989 from 0700 to 1830 and August 24, 1989 from 0700 to 1100. The ROV was deployed for periods of 10-40 minutes. These deployment periods were dependent on unit functioning. David Charters operated the ROV throughout this project.

Sampling was accomplished on August 22 and 23 from a boat operated by the Conservation Police. Three sampling locations were established and marked with buoys. Area 1 (upstream) was approximately 25 meters offshore, beneath the Route 24 bridge. Area 2 was the drum location area and Area 3 (downstream) was approximately 30 meters off the boat launch area (Figure 2).

Eight water and four sediment samples were collected. The water samples were secured for analysis of priority pollutant volatile organics, base/neutral/acid extractables, pesticide/polychlorinated biphenyls (PCB), herbicides, and metals. An acrylic Kemmerer bottle was used to secure samples for metals analysis and all other samples were secured using a brass Kemmerer. Two sets of water samples were taken at each location; mid-depth and approximately three feet off the river bottom. Matrix spike samples and a full set of duplicates (water and sediment) were taken at location two (drum location).

Sediment samples were secured for analysis of priority pollutant volatile organics, base/neutral/acid extractables, pesticide/PCBs, herbicides, and metals. Sediments were taken from areas upstream, downstream, and immediately adjacent to the drum location. Samples were taken using a Ponar dredge. Grab samples were brought to the surface and thoroughly homogenized in a stainless steel bucket after samples for volatile organic analysis were collected. Samples were placed in jars, labeled, recorded, and preserved and then shipped to the ERT/REAC laboratory in Edison, New Jersey for analysis. Decontamination included soap water wash, deionized water rinse, nitric acid rinse, deionized water rinse, acetone rinse, air dry, and a final deionized water rinse. Sampling was completed in Level D protection.

In-situ water quality was determined at each sampling location with a Hydrolab Surveyor II. The instrument received a pre and post operation calibration, and was operated as per Hydrolab Corporation Surveyor II Operating Manual (Revision A, February 1985). Parameters measured included dissolved oxygen, conductivity, pH, oxidation reduction potential, temperature, and salinity. A fathometer mounted on the boat revealed a depth of 25-30 feet throughout the area. A storm event occurred at 0700 on August 23 and resulted in increased flow and turbidity.

CONCLUSIONS AND RECOMMENDATIONS

It is clear from this phase of the investigation that any leakage from the drums would be diluted and flow downstream. This will make it difficult to detect the contaminant source in the water samples. However, a distinct difference in contaminants between upstream and downstream stations would likely indicate a local source (i.e., drums). Examination of analytical data will reveal if the sediments are contaminated when compared to the reference (upstream) location.

The deployment of the ROV in future phases will require the anchor line method for flowing systems. Thruster jamming and blown fuses will need to be solved by the manufacturer. Due to the limited sight distance of approximately one meter, an extensive ROV survey will be necessary to locate and identify the drums.

Activities following this trip involve the analysis of samples and the preparation of a final report.

1.0 INTRODUCTION

1.1 Site Background

The Quincy, Illinois Drum Site refers to a section of the Mississippi River approximately 50 meters (m) from a soybean processing barge dock in Quincy, Illinois (Figure 1). One group of approximately 12, 55-gallon drums was located by unidentified divers and sonar. The total area of drum coverage is unknown. Both the drums' contents and whether the drums are leaking substances into the sediments and/or the water column is unknown. Concern over the possibility that the drums might contain hazardous substances prompted local officials to contact the U.S. Environmental Protection Agency.

The US EPA Region V office contacted the EPA Environmental Response Team (ERT) to search for the drums, identify their contents and determine whether leakage of hazardous substances into the river has occurred. The Response Engineering Analytical Contract (REAC) received a work assignment to assist EPA/ERT in this effort. Other agencies involved included the Illinois Conservation Police (Department of Conservation), Army Corps of Engineers, The City Government of Quincy, and the Quincy Police Department.

1.2 Site Description

The Quincy, Illinois Drum site is located on the east shore of the Mississippi River. The staging area was on a barge dock on Front Street between Jersey and York Streets at a soybean processing plant. The barge dock is an unpaved area with a ten foot steel bulwark facing the river. The area was heavily stained with fuel oil from trucks and barges used on the site. Boats were launched and loaded from the dock and at a boat launch downstream from the site.

The river is approximately 900 m wide, and up to 11 m deep in the study area. The river flows in a southerly direction. The substrate consists of silts and sands.

The general location of the drums was previously determined by the Illinois Department of Conservation using sonar. An area of approximately 50 m x 100 m was designated as the drum search area. This area was examined during this phase of the project.

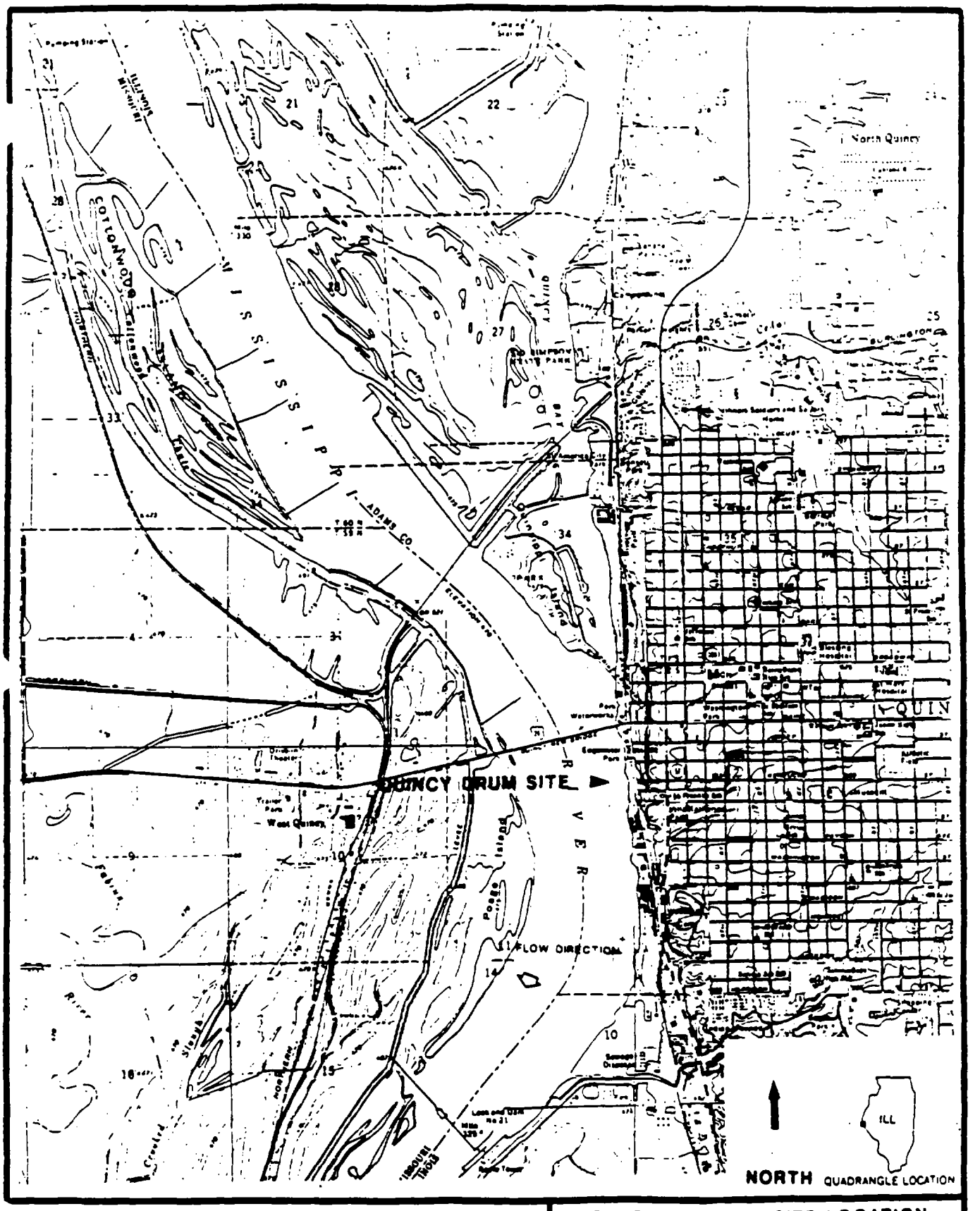
1.3 Objective

The objective of this investigation was to detect and locate drums in the Mississippi River and to obtain water and sediment samples. The samples were taken to determine if any hazardous substances had entered the river.

2.0 MATERIALS AND METHODS

2.1 Field Schedule and Personnel

Participating in the drum search, August 22, 23, and 24, 1989, were Walter Neid, EPA Region V On-Site Coordinator (OSC), David Charters, (EPA Work Assignment Manager), Harry Compton, and Alan Humphrey, EPA/ERT, Scott Ruhren, Sally Mayasich, and Richard Tobia, REAC, and Steven Bosko, EPA Region V TAT. Boats and personnel were provided by the Army Corps of Engineers and the Illinois Conservation Police. These boats were used for the deployment of the Remotely Operated Vehicle (ROV), proton magnetometer, buoy placement, sediment and water sampling, and water quality evaluation using the Hydrolab Surveyor II.



US EPA ENVIRONMENTAL RESPONSE TEAM

RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
68-03-3482

FIGURE 1	SITE LOCATION
W O # 3347-11-01-2300	QUINCY ILLINOIS

2.2 Drum Search

The proton magnetometer was deployed on August 23 to confirm the location of the drums. The use of this unit was terminated due to malfunctioning either from metal saturation of the site (interference) or faulty instrumentation.

The ROV was deployed from the Conservation Police boat on August 23 and the Army Corps of Engineer boat on August 24. Floats were placed on the ROV cable every 8-10 feet to 50 feet from the ROV. Two people were used to tend the cable from the shore and boat. The Remotely Operated Vehicle, television monitor, video cassette recorder, and ROV control unit were powered by a gas generator. The control unit was set up in the Adams County Arson Control van.

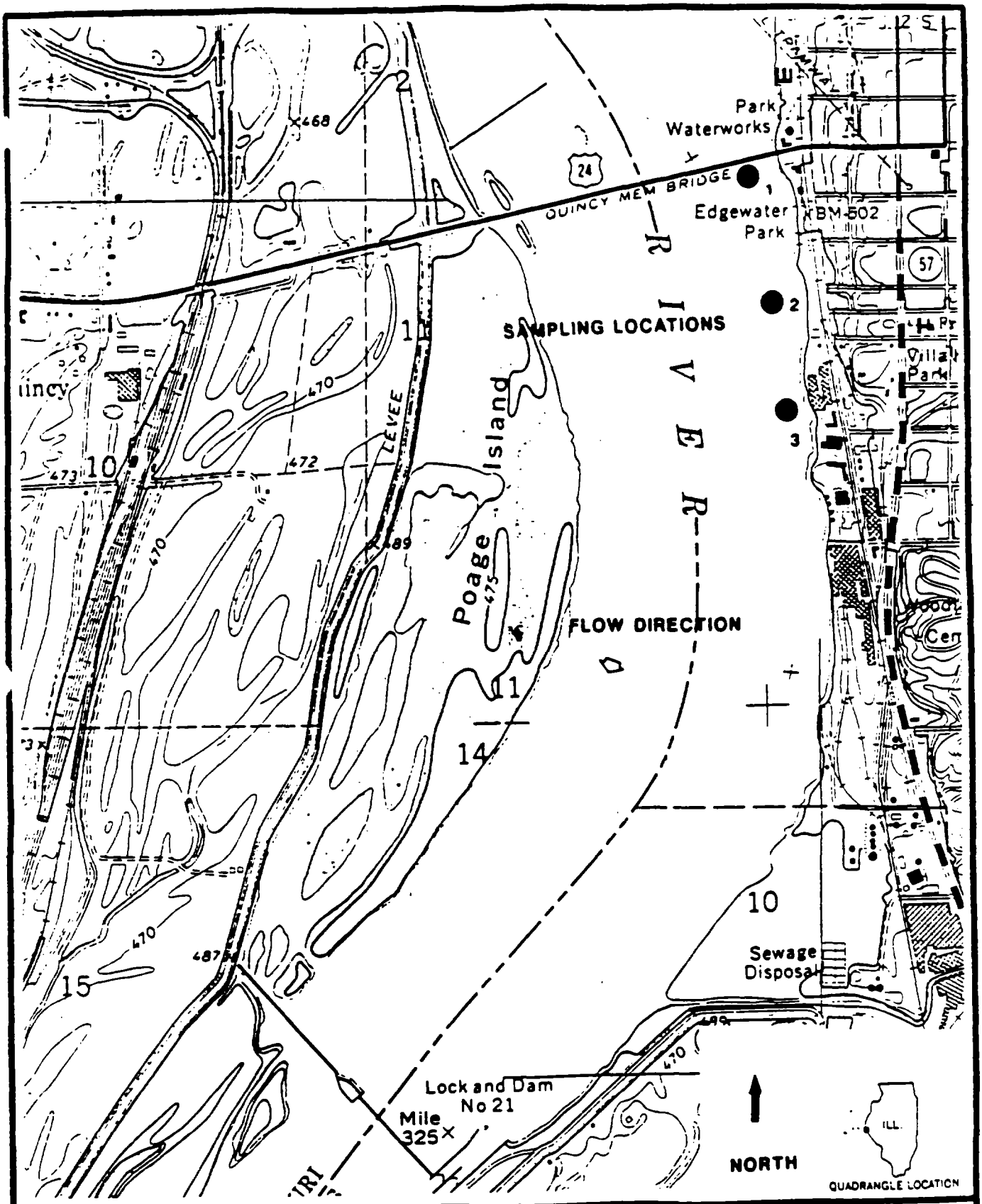
Initial runs of the ROV were unsuccessful in locating drums. The visibility was poor and the current made navigation difficult. Also, the thrusters jammed frequently as they clogged with gravel and sediment. This resulted in fuse blowout which necessitated ROV retrieval, inspection, and fuse replacement. Other methods were attempted to stabilize the ROV in the current. An attempt to drive a rigid aluminum pole into the river bottom for the purpose of attaching the ROV using a tether cable was conducted. This did not work as the pole could not be held steady and eventually snapped. A more effective alternative was developed. A tether cable was attached to the anchor line of the deployment boat which allowed the ROV to operate although the thrusters still occasionally clogged. No drums were identified during the subsequent sweeps. All underwater search activities were observed on the video monitor and recorded on video cassette tapes. The ROV was used on August 23, 1989 from 0700 to 1830 and August 24, 1989 from 0700 to 1100. The ROV was deployed for periods of 10-40 minutes. These deployment periods were dependent on unit functioning. David Charters operated the ROV throughout this project.

2.3 Water and Sediment Sampling

Water and sediment sampling were accomplished on August 22 and 23, from a boat operated by the Conservation Police. Sampling sites are located in Figure 2. The Site 1 water samples were taken at mid-depth and near bottom (approximately 30 feet). Sites 2 and 3 water samples were taken at similar depths. The duplicate and matrix spike duplicate samples were taken at 15 feet and 30 feet, respectively. Water samples were taken at Sites 1 to 3 using a brass Kemmerer bottle and analyzed for priority pollutant volatile organics, base/neutral/acid (BNA) extractables, pesticides/PCBs and herbicides. An acrylic Kemmerer bottle was used to secure samples for metals analysis. Sediment samples were secured for these parameters, and total organic carbon analysis, using an Ponar dredge at Sites 1, 2, and 3. Grab samples were emptied into a stainless steel bucket and thoroughly homogenized after sample collection for volatile organic analysis was completed but prior to filling containers for other analyses. Sampling equipment was thoroughly decontaminated using a soap water wash, deionized water rinse, nitric acid rinse, deionized water rinse, acetone rinse, and air dry. All samples were immediately preserved and shipped to the ERT/REAC lab via overnight delivery.

Samples were secured for shipping and analysis as follows:

	Container	Analysis	Preservative
Sediment	8 oz glass jar	BNAs	4°C
	8 oz glass jar	Metals	4°C
	8 oz glass jar	Pesticides/PCBs	4°C
	8 oz glass jar	Herbicides	4°C
	2 - 40 ml glass vials (VOA)	Volatile Organics	4°C



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RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
68-03-3482

FIGURE 2. SAMPLING LOCATONS

W O # 3347-11-01-2300 | QUINCY ILLINOIS

	Container	Analysis	Preservative
Water	2 - 1 l amber glass bottles	BNAs	4°C
	32 oz glass jar	Metals	HNO_3 4°C
	2 - 1 l amber glass bottles	Pesticides/PCBs	4°C
	2 - 1 l amber glass bottles	Herbicides	4°C
	3 - 40 ml glass vials (VOA)	Volatile Organics	4°C

2.4 Water Quality Evaluation

The Conservation Police boat was used for the in-situ water quality evaluation using a Hydrolab Surveyor II. The instrument was calibrated and operated according to Hydrolab Corporation Surveyor II Operating Manual (Revision A, February, 1985). Parameters measured included dissolved oxygen, conductivity, pH, oxidation/reduction potential (ORP), temperature and salinity. Readings were taken at the 3 locations shown in Figure 2 and these results are listed in Table 1. The details of the operation are included in the trip report (Appendix B).

3.0 RESULTS

3.1 Drum Search

No drums were sighted throughout the operation. All underwater search activities were observed on the video monitor and recorded on video cassette tapes.

3.2 Water and Sediment Analyses

Table 2 lists the analytical results for selected trace elements detected in the water. Aluminum, calcium, iron, lead, magnesium, manganese, nickel, potassium, and zinc were detected in the water taken from all three locations. Selected trace elements detected in the sediments are listed in Table 3. Aluminum, antimony, arsenic, calcium, iron, lead, magnesium, manganese, mercury, potassium sodium, vanadium, and zinc were detected in sediments taken from upstream and downstream locations as well as the alleged proximity of the drums.

Tables 4 and 5 list the analytical results for selected volatile organic compounds in water and sediment, respectively. Acetone was detected in all water samples ranging from a concentration of 5.7 ug/l in the Trip Blank to 343 ug/l at location 1. The compound 2-butanone was also detected at all sites but at concentrations below the method detection limit (MDL). Trichloroethene was detected only at sample location 1 at concentrations below the MDL. Acetone, carbon disulfide, 2-butanone, and trichloroethene were detected in the sediments at all 3 locations.

Benzyl alcohol and phthalates were detected in the BNA analysis of the water samples (Table 6). Benzyl alcohol was detected at sample locations 1 and 2, and in the equipment rinsate blank at concentrations below the MDL. Four phthalate compounds were detected with bis(2-Ethylhexyl)phthalate being predominant in terms of occurrence. The largest concentration of phthalate was detected in the rinsate blank indicating contamination from the field or lab.

BNA compounds detected in the sediment samples were predominantly polycyclic aromatic hydrocarbons (PAHs) from sample location 3. These were detected in concentrations below the MDL. Only di-n-butylphthalate was detected at sample location 2 at a concentration below the MDL.

No pesticides, PCBs, or herbicides were detected in the water and sediment samples (Appendix A).

3.3 Water Quality Evaluation

In-situ water quality data are listed in Table 1. Water temperature ranged from 25.47°C at 8.0 m to 27.20°C at the surface. All locations exhibited temperature decline with depth. Dissolved oxygen (DO) values varied with depth and location. Higher DO values were recorded at site 1 after a storm event. pH values ranged from 7.91 near the river bottom to 8.19 at the surface. Conductivity was fairly consistent as were the ORP values. Salinity was zero at all sites and depths.

Laboratory data sheets (Appendix D) listing raw and treated water quality analysis results for the period August 18 through August 22, 1989 were provided by the City of Quincy Water Department for their treatment plant.

3.4 General Observations

General biological and physical characteristics of the Mississippi River at Quincy, Illinois, include fish, birds, and benthic organisms from the Ponar dredge grabs. One Common carp (Cyprinus carpio), 18 adult mallard ducks (Anas platyrhynchos) and several empty mussel shells (Pelycypoda) were observed. The water depth was approximately 20 feet along the bulwark and sloped to 30 feet within the study area.

4.0 DISCUSSION

The ROV was utilized during this investigation to assist in locating reported submerged drums in the Mississippi River at Quincy, Illinois. No drums were observed during two days of operation. Local conditions, specifically visibility and current, reduced the efficiency of the ROV unit and reduced the probability of finding the drums.

The analysis of the water samples did not reveal any compounds at concentrations of concern. However, one compound found in excess of the method detection limit was acetone. This could have been introduced from the decontamination procedure in the field. Another compound reported above the detection limit was carbon disulfide at locations 2 and 3. The reported levels are not indicative of a significant contamination concern. Most volatile compounds were detected at all three stations indicating an upstream source.

Several phthalate compounds were detected in the water and sediment samples. These compounds are persistent in sediments of waterbodies used by man and are possible breakdown products of insecticides, dyes or resins. These also may be introduced in the laboratory or field. Of interest were the PAH compounds detected in concentrations below the MDL at sample location 3, downstream of the alleged location of the drums. These compounds were not detected upstream and may indicate a local source. However, PAH compounds are released into the environment in large quantities from the combustion of fossil fuels. Oil spills are another source of PAH compounds in an aquatic system, with sediments deposition being the ultimate fate of these compounds. The presence of these compounds could be related to the utilization of the nearby dock by barges and other vessels.

The metals detected were found at all of the sites. They are typically found in waterbodies used by man and may also be found in urban runoff. These levels are not considered elevated.

The water quality results were typical for a turbid, poor quality water source such as the Mississippi River in this area. The dissolved oxygen values were low even after a storm event when DO values normally rise (Table 1). The percent saturation of oxygen, is another indicator of the poor quality of the water. At the surface of Site 1 on August 22, 1989, the percentage saturation was 55%. This was the maximum recorded value. The same area before the storm on August 21, 1989, had an oxygen saturation of only 24%. The low dissolved oxygen values are also indicative of a high biochemical oxygen demand (BOD). Dissolved oxygen values less than 5 mg/l are generally considered stressful to fish, whereas values less than 2 mg/l may be lethal.

5.0 CONCLUSIONS

No drums were located at this site utilizing the Remotely Operated Vehicle. The general search location had been determined by the Illinois Conservation Police based on sport divers and sonar contacts. No difference in contaminant concentration could be ascertained between upstream and downstream stations in most cases. Concentrations of PAHs below the Method Detection Limit in sediments at sample Location 3 probably indicate a local source such as the barge dock. Most compounds detected were found at all locations and could be attributed to ambient conditions, usage by man, and urban runoff.

TABLE 1
IN-SITU WATER QUALITY DATA
MISSISSIPPI RIVER, QUINCY, ILLINOIS

August 21 - August 22, 1989

August 21, 1989

Site	Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	pH	Conductivity (mmhos/cm)(v)	ORP
1	0.0	26.28	1.85	8.19	0.442	0.166
	1.0	26.13	1.93	8.10	0.441	0.166
	2.0	26.10	1.95	8.10	0.442	0.166
	3.0	25.97	2.02	8.13	0.441	0.164
	4.0	25.89	2.04	8.14	0.441	0.165
	5.0	25.82	2.06	8.10	0.442	0.166
	6.0	25.75	2.03	8.05	0.442	0.167
	7.0	25.70	2.01	7.97	0.442	0.169
	8.0	25.47	2.01	7.95	0.442	0.169
	8.5	25.50	2.01	7.94	0.443	0.172
Bottom	8.6					

August 22, 1989, Following a Storm Event

Site						
1	0.0	25.68	4.42	8.03	0.446	0.112
	1.0	25.68	3.72	8.05	0.444	0.110
	2.0	25.67	3.32	8.04	0.445	0.110
	3.0	25.68	3.05	8.05	0.444	0.111
	4.0	25.66	2.92	8.04	0.445	0.111
	5.0	25.66	2.80	8.03	0.442	0.113
	6.0	25.61	2.60	7.98	0.439	0.117
	7.0	25.60	2.54	7.98	0.439	0.118
	8.0	25.57	2.46	7.91	0.438	0.118
Bottom	8.1					

Site						
2	0.0	27.20	2.98	8.20	0.447	0.113
	2.0	26.46	2.78	8.15	0.447	0.114
	4.0	25.90	2.58	8.02	0.450	0.121
	6.0	25.84	2.53	8.00	0.449	0.123
	8.0	25.82	2.49	7.99	0.449	0.123
	9.4	25.82	2.49	7.97	0.448	0.124
Bottom	10.0					

TABLE 1 (CONT'D)
IN-SITU WATER QUALITY DATA
MISSISSIPPI RIVER, QUINCY, ILLINOIS

August 21 - August 22, 1989

Site	Depth (m)	Temp. (°C)	Dissolved Oxygen (mg/L)	pH	Conductivity (mmhos/cm)(v)	ORP
Site 3	0.0	25.75	2.11	8.03	0.447	0.134
	1.0	25.72	2.03	8.04	0.446	0.133
	2.0	25.74	2.00	8.03	0.446	0.133
	3.0	25.71	2.05	8.02	0.446	0.133
	4.0	25.70	2.09	8.03	0.446	0.132
	5.0	25.71	2.15	8.03	0.446	0.132
	6.0	25.70	2.19	8.03	0.446	0.132
	7.0	25.70	2.21	8.03	0.446	0.132
	7.5	25.70	2.24	8.03	0.446	0.132
Bottom	8.0					

TABLE 2. CONCENTRATIONS (ug/kg) OF SELECTED TRACE ELEMENTS DETECTED IN THE SEDIMENT COLLECTED FROM THE MISSISSIPPI RIVER

QUINCY DRUM SITE
QUINCY, ILLINOIS

August 22-23, 1989

	Sample Number/Location/Description			
Parameter	4375 LOC 1 Upstream	4380 LOC 2 Drums, Dupe	4379 LOC 2 Drums	4377 LOC Downstream
Aluminum	3600000	2400000	1900000	2600000
Antimony	2700	1500	1200	2000
Arsenic	2200	3100	2000	2200
Calcium	2700000	1400000	1100000	1700000
Iron	6500000	8700000	5600000	6200000
Lead	6100	5400	3900	4500
Magnesium	1500000	1300000	1000000	750000
Manganese	380000	360000	210000	360000
Mercury	55	40u	45	49
Potassium	410000	200000	150000	280000
Sodium	180000	140000	150000	130000
Vanadium	16000	15000	10000	13000
Zinc	31000	22000	17000	20000

u - Denotes detection limit.

TABLE 3. CONCENTRATIONS (ug/l) OF SELECTED TRACE ELEMENTS DETECTED IN THE WATER COLLECTED FROM THE MISSISSIPPI RIVER

QUINCY DRUM SITE
QUINCY, ILLINOIS

August 22-23, 1989

Sample Number	4374	4375	4382	4383	4381	4376	4378
Location	1	1	2	2	2	3	3
Description	Upstream	Upstream	Drums	Drums	Drums	Downstream	Downstream
Depth (ft)	15	30	15	15	30	15	30
Aluminum	20000	17000	24000	13000	26000	11000	10000
Calcium	35000	33000	33000	34000	34000	34000	34000
Iron	550	570	320	370	290	620	310
Lead	13	22	5u	5u	20	5	5
Magnesium	21000	23000	20000	21000	22000	21000	21000
Manganese	110	150	98	96	110	100	89
Nickel	100	50u	50u	50u	73	50u	50u
Potassium	2900	2900	3000	3000	3000	3100	2900
Sodium	13000	16000	12000	15000	14000	15000	14000

u - Denotes detection limit.

TABLE 4. CONCENTRATIONS (ug/l) OF SELECTED VOLATILE ORGANIC COMPOUNDS DETECTED IN THE WATER COLLECTED FROM THE MISSISSIPPI RIVER

QUINCY DRUM SITE
QUINCY, ILLINOIS

August 22-23, 1989

	Sample #/Location/Description								
Compound	4374 LOC 1 15 feet	4375 LOC 1 30 feet	4382 LOC 2 15 feet	4383 LOC 2 15 feet	4381 LOC 2 30 feet	4376 LOC 3 15 feet	4378 LOC 3 30 feet	4387 Trip Blank	Method Detection Limit
Acetone	343	63	47	48	41	109	72	5.7	1.0
2-Butanone	ND	0.7JB	ND	0.4JB	0.1JB	0.5JB	0.1JB	0.4JB	1.0
Trichloroethene	0.4JB	0.3JB	ND	ND	ND	NDB	ND	ND	1.0

J - Indicates Below Method Detection
B - Indicates Compounds is blank subtracted.
ND - Indicates compound not detected.

TABLE 5. CONCENTRATIONS (ug/kg) OF SELECTED VOLATILE ORGANIC COMPOUNDS DETECTED IN THE SEDIMENT FROM THE MISSISSIPPI RIVER

QUINCY DRUM SITE
QUINCY, ILLINOIS

August 22-23, 1989

	Sample #/Location/Description			
Compound	4375 LOC 1 Upstream	4379 LOC 2 Drums	4380 LOC 2 Drums	4377 LOC 3 Downstream
Acetone	30B	5.9B	6.3B	16B
Carbon Disulfide	0.9J	4.2	8.0	1.1
2-Butanone	7.8B	3.0B	0.5B	3.6B
Trichloroethene	0.4JB	0.4JB	0.2JB	0.3JB

J - Indicates Below Method Detection.
B - Indicates compound is blank subtracted.

TABLE 6. CONCENTRATIONS (ug/l) OF BASE/NEUTRAL/ACID EXTRACTABLE COMPOUNDS DETECTED IN THE WATER COLLECTED FROM THE MISSISSIPPI RIVER

QUINCY DRUM SITE
QUINCY, ILLINOIS

August 22-23, 1989

	Sample#/Location/Description								
Compound	4374 Loc 1 15 Feet	4375 Loc 1 30 Feet	4382 Loc 2 15 Feet	4383 Loc 2 15 Feet	4381 Loc 2 30 Feet	4376 Loc 3 15 Feet	4378 Loc 3 30 Feet	4386 Rinsate Blank	Method Detection Limit
Benzyl alcohol	4J	ND	ND	ND	2J	ND	ND	7J	10
Di-n-butylphthalate	ND	ND	ND	1J	ND	1J	1J	ND	10
Bis(2-Ethylhexyl) phthalate	9J	ND	4J	ND	2J	2J	3J	23	10
Butylbenzylphthalate	ND	ND	ND	ND	ND	ND	ND	2J	10
Di-n-octylphthalate	ND	ND	ND	ND	ND	ND	ND	2J	10

J - Indicates compound concentration found below Method Detection Limit.
ND - Indicates compound not detected.

TABLE 7. CONCENTRATIONS (ug/kg) OF BASE/NEUTRAL/ACID EXTRACTABLES COMPOUNDS DETECTED IN THE SEDIMENT COLLECTED FROM THE MISSISSIPPI RIVER

QUINCY DRUM SITE
QUINCY, ILLINOIS

August 22-23, 1989

	Sample#/Location/Description			
Compound	4375 Loc 1 Upstream	4379 Loc 2 Drums	4380 Loc 2 Drums	4377 Loc 3 Downstream
Phenanthrene	1356u	1179u	1179u	97J
Di-n-butylphthalate	1356u	1179u	192J	1320u
Fluoranthene	1356u	1179u	1179u	492J
Pyrene	1356u	1179u	1179u	328J
Bis(2-Ethylhexyl)phthalate*	1356u	1179u	1179u	529J
Chrysene	1356u	1179u	1179u	266J
Benzo(a)pyrene	1356u	1179u	1179u	128J

* - Also detected in lab blank at 304 ug/kg.
J - Indicates compound concentration found below Method Detection Limit (MDL).
u - Indicates compound was not detected at indicated MDL.

APPENDIX A - ANALYTICAL TESTING RESULTS

QUINCY DRUM SITE
QUINCY, ILLINOIS

ANALYTICAL REPORT

Quincy
Quincy, IL

Sept. 15, 1989

EPA Work Assignment No. 1-300
Project No. 3347-11-01-2300
EPA Contract No. 68-03-3482

Submitted to
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EPA-ERT

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FROM: A. Lo Surdo S&A Section Chief

SUBJECT: DOCUMENT TRANSMITTAL UNDER WORK ASSIGNMENT # 1-300

Attached please find the following document prepared under this work assignment:

Quincy

Central File WA# 1-300 (w/attachment)
W. Scott Butterfield
B. Cibulskis
D. Charters Work Assignment Manager

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Appendices will be furnished on request

Introduction

On August 1, 1989 eight water and four soil samples were received from the Quincy Site in Quincy, IL. Requested were VOA, BNA, herbicide, pesticide, PCB, and metals analyses. All analyses were done by REAC, Edison, NJ.

Case Narrative

All samples were analysed within the holding times.

Pages B112 through B126 and B197 through B205 are blank.

An unnumbered page exists after D2.

ANALYTICAL PROCEDURES for VOA (WATER)

A modified 524.2 method for the analysis of Volatile Organic Compounds in water and soil was used. Samples were purged, trapped, and desorbed to a GC/MS system. The following conditions and parameters were utilized:

1) Purge and Trap Unit: A Tekmar concentrator (LSC 2000) equipped with an autosampler (ALS2016) was utilized.

Purge and Trap parameters:

Purge - 10 min at 25° C
Desorb 4 min at 240° C
Purge Flow Rate - 40 ml/min
Dry Purge - 3 min at 25° C
Bake - 6 min at 260° C

Trap - A two part trap containing Supelco Carbopack B (200 mg) and Carbosieve S-III (50 mg) was used.

2) GC/MS System: A Hewlett Packard 5995A GC/MS equipped with RTE/6VM data system was used.

GC/MS parameters:

GC Column - 60 meter x 0.53mm ID, RTx-Volatiles (Restek Corp.) column with 2.0 um thickness.

GC Temperature - 5 min at 10° C; 6°/min to 160° C
Hold 4 min at 160° C.

GC Flow Rate - Helium at 10 ml/min

GC/MS Interface - Glass lined jet separator with 15 ml/min helium make-up gas at 250° C.

Mass Spectrometer - Electron Impact Ionization at a nominal electron energy of 70 eV, scanning from 35-300 amu at one scan/sec.

Computer - Preprogrammed to plot Extracted Ion Current Profile (EICP); capable of integrating ions and plotting abundances vs time or scan number. A library search (NBS-Wiley) for tentatively identified compounds was performed on samples. To examine the mass spectral data, 50ng of p-bromofluorobenzene was injected to ensure the correct ionization pattern of the mass spectra.

The concentrations of the analytes were calculated using the following equation:

$$C_u = \frac{A_x \times I_{is}}{A_{is} \times RF \times V_o}$$

where

C_u = concentration of the analyte (ug/L)
A_x = Area of the analyte
I_{is} = ng of internal standard
A_{is} = Area of the internal standard
RF = Response Factor, derived from the calibration standards for each unknown analyte
V_o = volume of sample purged, taking into account dilutions (ml)

The results are listed in Table 1.1 and the Tentatively Identified Compounds are listed in Table 1.2.

ANALYTICAL PROCEDURES for VOA (SOIL)

A modified 524.2 method for the analysis of Volatile Organic Compounds in water and soil was used. Samples were purged, trapped, and desorbed to a GC/MS system. The following conditions and parameters were utilized:

1) Purge and Trap Unit: A Tekmar concentrator (LSC 2000) equipped with an autosampler (ALS2016) was utilized.

Purge and Trap parameters:

Purge - 11 min at 25° C
Desorb 4 min at 220° C
Purge Flow Rate - 40 ml/min
Dry Purge - 9 min at 25° C
Bake - 6 min at 240° C

Trap - A two part trap containing Supelco Carbopack B (200 mg) and Carbosieve S-III (50 mg) was used.

2) GC/MS System: A Hewlett Packard 5995A GC/MS equipped with RTE/6VM data system was used.

GC/MS parameters:

GC Column - 30 meter x 0.53mm ID, DB-624 Megabore (J&W Scientific, Inc.) column with 3um thickness.

GC Temperature - 5 min at 10° C; 6°/min to 160° C
Hold 4 min at 160° C.

GC Flow Rate - Helium at 10 ml/min

GC/MS Interface - Glass lined jet separator with 15 ml make-up gas at 250° C.

Mass Spectrometer - Electron Impact Ionization at a nominal electron energy of 70 eV, scanning from 35-300 amu at one scan/sec.

Computer - Preprogrammed to plot Extracted Ion Current Profile (EICP); capable of integrating ions and plotting abundances vs time or scan number. A library search (NBS-Wiley) for tentatively identified compounds was performed on samples. To examine the mass spectral data, 50ng of p-bromofluorobenzene was injected to ensure the correct ionization pattern of the mass spectra.

The high level soil samples were analyzed by extracting 5.0 g soil with 10 ml methanol, diluting 100uL of the extract with 5 ml water, (dilution factor = 100), and analysing this solution by the purge and trap method. Results, based on wet weight, are listed in Table 1.3. Tentatively Identified Compounds are listed in Table 1.4.

The concentrations of the analytes were calculated using the following equation:

$$C_u = \frac{DF \times A_x \times I_{is}}{A_{is} \times RF \times W_s}$$

where

C_u = Concentration of Analyte (ug/kg)
DF = Dilution Factor
A_x = Area of the analyte in the gas chromatogram
I_{is} = mass of internal standard (ng)
A_{is} = Area of the internal standard in the gas chromatogram
RF = Response Factor
W_s = Weight of sample (g)

ANALYTICAL PROCEDURE FOR BNA IN WATER

Extraction Procedure

Approximately 1 liter aliquots of sample were extracted, after addition of a BNA surrogate mixture, according to Method 625, Section 10, as outlined in the Federal Register Vol. 49, #209, Friday, Oct. 26, 1984. The extracts were combined, concentrated to 1 ml, an internal standards mixture added, and analysed.

Analytical Procedure

An HP 5995C Gas Chromatograph/Mass Spectrometer (GC/MS), equipped with a 7673A autosampler and controlled by an HP-1000 RTE-6/VM computer was used to analyze the samples.

The instrument conditions were:

Column	Restek Rtx-5 (crossbonded SE-54) 30 meter x 0.32mm ID, 0.50 um film thickness
Injection Temperature	290° C
Transfer Temperature	290° C
Source Temperature	220° C
Analyzer Temperature	220° C
Temperature Program	30°C for 3 min 15°C/min to 70° C hold for 0.2 min 8° C to 295° C hold for 12 min
Splitless Injection	Split time = 60 sec
Injection Volume	2 uL

The GC/MS system was calibrated using 5 BNA standards at 20, 50, 80, 120, and 160 ug/ml. The calibration range was validated by evaluating the System Performance Check Compounds (SPCC), and Calibration Check Compounds (CCC), as outlined in the CLP protocol. Before analysis each day, the system was tuned to DFTPP and passed a continuing calibration check when analysing a 50 ug/ml standard mixture in which the responses of the SPCC and CCC compounds were evaluated by comparison to the average response of the calibration curve.

Results are listed in Table 1.5. The concentration of the detected compounds was calculated using the following equation:

$$C_u = \frac{A_u}{A_{is}} \times \frac{I_{is}}{RF} \times \frac{V_t}{V_i} \times \frac{1}{V_o}$$

where

RF = Response Factor (unitless)
A_u = Area of analyte
A_{is} = Area of internal standard
I_{is} = Mass of internal standard (ng)
C_u = Concentration of analyte (ug/L)
V_t = Volume of extract (uL)
V_i = Volume of extract injected (uL)
V_o = Volume of sample (ml)

ANALYTICAL PROCEDURE FOR BNA IN SOIL

Extraction Procedure

Approximately 10 g of sample was spiked with a CLP BNA surrogate mixture, mixed with 30 g anhydrous sodium sulfate, and extracted three times with 60 ml portions of methylene chloride. The extracts were combined, and concentrated to 1 ml final extract volume before analysis.

Analysis Procedure

An HP 5995C Gas Chromatograph/Mass Spectrometer (GC/MS), equipped with a 7673A autosampler and controlled by an HP-1000 RTE-6/VM computer was used to analyze the samples.

The instrument conditions were:

Column	Restek RTx-5 (crossbonded SE-54) 30 meter x 0.32mm ID, 0.50 um film thickness
Injection Temperature	290° C
Transfer Temperature	290° C
Source Temperature	240° C
Analyzer Temperature	240° C
Temperature Program	30°C for 3 min 15°C/min to 70° C hold for 0.2 min 8° C/min to 295° C hold for 12 min
Splitless Injection	Split time = 60 sec
Injection Volume	2 uL

The GC/MS system was calibrated using 5 BNA standard mixtures at 20, 50, 80, 120, and 160 ug/ml. The calibration range was validated by evaluating the System Performance Check Compounds (SPCC) and Calibration Check Compounds (CCC) as outlined in the CLP protocol. Before analysis each day, the system was tuned to DFTPP and passed a continuing calibration check when analysing a 50 ug/ml standard mixture in which the responses of the SPCC and CCC compounds were evaluated by comparison to the average response of the calibration curve.

The data are listed in Tables 1-4.

The concentration of the detected compounds was calculated using the following equation:

$$C_u = \frac{A_u}{A_{is}} \times \frac{I_{is}}{RF} \times \frac{V_t}{V_i} \times \frac{1}{W} \times \frac{1}{D}$$

where

- RF = Response Factor (unitless)
- A_u = Area of analyte
- A_{is} = Area of internal standard
- I_{is} = Mass of internal standard (ng)
- C_u = Concentration of analyte (ug/Kg)
- V_t = Volume of extract (uL)
- V_i = Volume of extract injected (uL)
- W = Weight of sample (g)
- D = Decimal per cent solids

ANALYTICAL PROCEDURE FOR PESTICIDES AND PCBs IN WATER

Extraction Procedure

After addition of a pesticide surrogate solution (dibutyl chlorendate), 1 liter of sample was extracted three times with methylene chloride according to USEPA Method 608. The combined extracts were filtered through anhydrous sodium sulfate, added to a Kuderna-Danish concentrator, concentrated to 10 ml, and solvent exchanged with 50 ml hexane. The hexane solution was cleaned by column chromatography through Florisil and concentrated to a final volume of 1 ml prior to analysis.

Gas Chromatographic Analysis

The extract was analysed for herbicides using simultaneous dual on-column injections. The analysis was done on an HP 5890 GC/ECD system, equipped with an HP 7673A automatic sampler, and controlled with an HP-CHEM STATION. The following conditions were employed:

First Column	Rtx-5, 30 meter, 0.53mm fused silica capillary, 0.50 um film thickness
Injector Temperature	225° C
Detector Temperature	325° C
Temperature Program	180°C for 7.5 minutes 10°C/min to 250°C Final time 11.5 min
Second Column	DB-608, 30 meter, 0.53mm fused silica capillary, 0.83 um film thickness
Injector Temperature	225° C
Detector Temperature	325° C
Temperature Program	180° C for 7.5 minutes 10°C/min to 250°C Final time 11.5

The gas chromatographs were calibrated using 5 pesticide/PCB standards at 20, 50, 100, 200, and 400 ug/L. The results from each mixture were fit to a straight line, and the coefficients of this line were used to calculate the concentrations of the pesticides in the sample extracts. Quantification was based on the second column (signal 2), and identity of the analyte was confirmed using the first column (signal 1). A fingerprint gas chromatogram was run using each of the seven Aroclor mixtures, chlordane, or toxaphene; calibration curves were run only if a particular Aroclor, chlordane or Toxaphene was found in the sample.

The results, listed in Table 1.7, were calculated from the following formula:

$$C_{ug/L} = \frac{(T-Y)V_h \times DF}{S \times V_s}$$

where

T	=	Response from the Chromatograph
Y	=	Intercept of the fitted line
V_h	=	Volume of Extract (ml)
S	=	Slope of the fitted line
V_s	=	Volume of Sample used (ml)
DF	=	Dilution Factor

ANALYTICAL PROCEDURE FOR PESTICIDES AND PCBs IN SOIL

Extraction Procedure

The soil samples were extracted by the sonication method. A ten gram aliquot was mixed with the surrogate mixture,and 30 g anhydrous sodium sulfate and was sonicated with 100 ml 1:1 methylene chloride: acetone for about ten minutes. The extraction was repeated two more times with 100 ml portions of solvent. After filtration, the extraction solvent was solvent exchanged with 50 ml hexane. The hexane was cleaned by column chromatography through Florisil, and concentrated to 1 ml prior to analysis.

Gas Chromatographic Analysis

The sample extracts were analysed for pesticides and PCBs using simultaneous dual on-column injections. The analysis was done on an HP 5890 GC/ECD system, equipped with an HP 7673A automatic sampler, and controlled with an *HP-CHEM STATION*. The following conditions were employed:

Primary Column	DB-608, 30 meter, 0.53mm fused silica capillary, 0.83 um film thickness
Injector Temperature	275° C
Detector Temperature	325° C
Temperature Program	180°C for 2 minutes 5°C/min to 225°C 2°/min to 250° C Final time 11.5 min
Secondary Column	Rtx-5, 30 meter, 0.53mm fused silica capillary, 0.50 um film thickness
Injector Temperature	275° C
Detector Temperature	325° C
Temperature Program	180° C for 2 minutes 5°C/min to 225°C 2°/min to 250° C Final time 11.5 min

The gas chromatographs were calibrated using 5 pesticide/PCB standards at 20, 50, 100, 200, and 400 ug/L. The results from each mixture were fit to a straight line, and the coefficients of this line were used to calculate the concentrations of the pesticides in the sample extracts. Quantification was based on the primary column (signal 1) and identity of the analyte was confirmed using the secondary column (signal 2). A fingerprint gas chromatogram was run using each of the seven Aroclor mixtures; calibration curves were run only if a particular Aroclor was found in the sample.

The results, listed in Table 1.8, are calculated from the following formula:

$$C_{ug/Kg} \quad \frac{(T-Y)V_h \times DF}{S \times W_s \times D}$$

where

T	=	Response from the Chromatograph
Y	=	Intercept of the fitted line
V_h	=	Volume of Extract (ml)
S	=	Slope of the fitted line
W_s	=	Weight of Sample (g)
D	=	Decimal percent solids
DF	=	Dilution Factor

ANALYTICAL PROCEDURE FOR HERBICIDES IN WATER

Extraction Procedure

After addition of a herbicide surrogate solution, 1 liter aliquots of sample was extracted three times with ether according to USEPA Method 515.

Gas Chromatographic Analysis

The extract was analysed for herbicides using simultaneous dual on-column injections. The analysis was done on an HP 5890 GC/ECD system, equipped with an HP 7673A automatic sampler, and controlled with an HP-CHEM STATION. The following conditions were employed:

First Column	Rtx-5, 30 meter, 0.53mm fused silica capillary, 0.50 um film thickness
Injector Temperature	225° C
Detector Temperature	325° C
Temperature Program	180°C for 7.5 minutes 10°C/min to 250°C Final time 11.5 min
Second Column	DB-608, 30 meter, 0.53mm fused silica capillary, 0.83 um film thickness
Injector Temperature	225° C
Detector Temperature	325° C
Temperature Program	180° C for 7.5 minutes 10°C/min to 250°C Final time 11.5

The gas chromatographs were calibrated using 6 herbicide standards at 20, 50, 100, 200, 400, and 1000 ug/L. The results from each mixture were fit to a straight line, and the coefficients of this line were used to calculate the concentrations of the herbicides in the sample extracts. Quantification was based on the DB-608 column (signal 2), unless otherwise indicated.

The results, listed in Table , were calculated from the following formula:

$$C_{ug/L} = \frac{(T-Y)V_h \times DF}{S \times V_s}$$

where

T	=	Response from the Chromatograph
Y	=	Intercept of the fitted line
V_h	=	Volume of Extract (ml)
S	=	Slope of the fitted line
V_s	=	Volume of Sample used (ml)
DF	=	Dilution Factor

ANALYTICAL PROCEDURE FOR HERBICIDES IN SOIL

Extraction Procedure

Approximately ten grams of sample, weighed to 0.1 gram accuracy, in 50 ml of 1:1 acetone:ether was sonicated three times for ten minutes. The extracts were combined and treated according to method 515, beginning after step 1.

Gas Chromatographic Analysis

The extract was analysed for herbicides using simultaneous dual on-column injections. The analysis was done on an HP 5890 GC/ECD system, equipped with an HP 7673A automatic sampler, and controlled with an HP-CHEM STATION. The following conditions were employed:

Primary Column	DB-608, 30 meter, 0.53mm fused silica capillary, 0.83 um film thickness
Injector Temperature	225° C
Detector Temperature	325° C
Temperature Program	180°C for 7.5 minutes 10°C/min to 250°C Final time 6 min
Secondary Column	Rtx-5, 30 meter, 0.53mm fused silica capillary, 0.50 um film thickness
Injector Temperature	225° C
Detector Temperature	325° C
Temperature Program	180° C for 7.5 minutes 10°C/min to 250°C Final time 6 min

The gas chromatographs were calibrated using 6 herbicide standards at 20, 50, 100, 200, 400, and 1000 ug/L. The results from each mixture were fit to a straight line, and the coefficients of this line were used to calculate the concentrations of the herbicides in the sample extracts. Quantification was based on the secondary column (signal 2).

The results, listed in Table 1.10, are calculated from the following formulas:

$$C_{ug/Kg} \quad \frac{(T-Y)V_h \times DF}{S \times W_s \times D}$$

where

T	=	Response from the Chromatograph
Y	=	Intercept of the fitted line
V_h	=	Volume of Extract (ml)
S	=	Slope of the fitted line
W_s	=	Weight of Sample (g)
D	=	Decimal percent solids
DF	=	Dilution Factor

ANALYTICAL PROCEDURE FOR METALS IN WATER

A 75 ml aliquot of sample was mixed with 5 ml concentrated nitric acid, placed in an acid rinsed Teflon container, capped with a Teflon lined cap, and digested in a CEM MDS-81D microwave oven at full power for 30 minutes. After digestion, the sample was diluted to 80 ml with ASTM Type II water and analysed for all metals, except mercury, by USEPA SW-846 procedures. The metals analyses were done on either a Varian SpectrAA-20, -300, or -400Z Atomic Absorption Spectrophotometer.

Mercury was analyzed separately on a Varian SpectrAA-300 Atomic Absorption Spectrophotometer equipped with a Varian VGA-76 vapor gas analyser using modified method 7470 as given by "Test Method for Evaluating Solid Waste, Sept. 1986," USEPA SW-846. The modification consisted of using an initial sample volume of 50 ml and a final volume of 100 ml.

Results of the analyses are listed in Table 1.11.

ANALYTICAL PROCEDURE FOR METALS IN SOIL

Approximately 1 g of sample, weighed to 0.01 g accuracy, was thoroughly mixed with 10 ml 1:1 nitric acid, digested and analysed according to SW-846, Method 3050 . Results of the analysis are listed in Table 1.

Mercury was analyzed separately on a Varian SpectrAA-300 Atomic Absorption Spectrophotometer equipped with a Varian VGA-76 vapor gas analyser using method 7471 as given by "Test Method for Evaluating Solid Waste, Sept. 1986," USEPA SW-846.

Results of the analyses are listed in Table 1.12.

Table 1.1

VOLATILE ORGANIC COMPOUNDS ANALYSIS

PROJECT # :	Quincy Ill,#1300				
SAMPLE # :	Lab Blank	4387	4374	4375	4376
LOCATION :		Trip Blank	Site 1	Site 2	Site 3
COLLECTED :		08/23/89	08/22/89	08/23/89	08/23/89
ANALYZED :	08/27/89	08/27/89	08/27/89	08/27/89	08/27/89
FILE # :	^A2039	^A2040	^A2041	^A2042	^A2043
DIL. FACT.:	1	1	1	1	1
UNIT :	ug/L	ug/L	ug/L	ug/L	ug/L

COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
Dichlorodifluoromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Chloromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Vinylchloride	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromomethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Chloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Trichlorofluoromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1-Dichloroethene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Methylene Chloride	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
trans-1,2-Dichloroethene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1-Dichloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
2,2-Dichloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
cis-1,2-Dichloroethene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Chloroform	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromochloromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1,1-Trichloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Carbon Tetrachloride	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1-Dichloropropene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Benzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2-Dichloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Trichloroethene	0.4 J	1.0	ND	1.0	0.4 JB	1.0	0.3 JB	1.0	ND B	1.0
1,2-Dichloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Dibromomethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromodichloromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
trans-1,3-Dichloropropene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
cis-1,3-Dichloropropene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Toluene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1,2-Trichloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Tetrachloroethene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,3-Dichloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Dibromochloromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2-Dibromoethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Chlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1,1,2-Tetrachloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Ethylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0

B Indicates results are blank subtracted
J Indicates below Method Detection limit
ND Indicates compound Not Detected.

Table 1.1

VOLATILE ORGANIC COMPOUNDS ANALYSIS

PROJECT # :	Quincy Ill,01300									
SAMPLE # :	Lab Blank		4387		4374		4375		4376	
LOCATION :			Trip Blank		Site 1		Site 2		Site 3	
COLLECTED :			08/23/89		08/22/89		08/23/89		08/23/89	
ANALYZED :	08/27/89		08/27/89		08/27/89		08/27/89		08/27/89	
FILE :	^A2039		^A2040		^A2041		^A2042		^A2043	
DIL. FACT.:	1		1		1		1		1	
UNIT :	ug/L		ug/L		ug/L		ug/L		ug/L	
COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
p & m-Xylene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
o-Xylene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Styrene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromoform	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Isopropylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2,3-Trichloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
n-Propylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
2-Chlorotoluene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,3,5-Trimethylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
4-Chlorotoluene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
tert-Butylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2,4-Trimethylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
sec-Butylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
p-Isopropyltoluene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,3-Dichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,4-Dichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2-Dichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
n-Butylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2-Dibromo-3-Chloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2,4-Trichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Hexachlorobutadiene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Naphthalene	0.3 J	1.0	ND B	1.0	ND B	1.0	ND B	1.0	ND B	1.0
1,2,3-Trichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Acetone	ND	1.0	9.7	1.0	343	10.0	63	1.0	189	1.0
Carbon Disulfide	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
2-Butanone	1.1	1.0	0.4 JB	1.0	ND	1.0	0.7 JB	1.0	0.5 JB	1.0
Vinyl Acetate	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
4-Methyl-2-Pentanone	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
2-Hexanone	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0

B Indicates compound is blank subtracted
J Indicates below Method Detection
ND Indicates compound Not Detected

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Table 1.1

VOLATILE ORGANIC COMPOUNDS ANALYSIS

PROJECT # :	Quincy III,#1300				
SAMPLE # :	Lab Blank	4378	4381	4382	4383
LOCATION :		Site 4	Site 8	Site 7	Site 7
COLLECTED :		08/23/89	08/23/89	08/23/89	08/23/89
ANALYZED :	08/27/89	08/27/89	08/27/89	08/27/89	08/27/89
FILE # :	^A2039	^A2044	^A2045	^A2046	^A2047
DIL. FACT.:	1	1	1	1	1
UNIT :	ug/L	ug/L	ug/L	ug/L	ug/L

COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
Dichlorodifluoromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Chloromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Vinylchloride	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromomethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Chloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Trichlorofluoromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1-Dichloroethene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Methylene Chloride	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
trans-1,2-Dichloroethene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1-Dichloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
2,2-Dichloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
cis-1,2-Dichloroethene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Chloroform	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromochloromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1,1-Trichloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Carbon Tetrachloride	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1-Dichloropropene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Benzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2-Dichloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Trichloroethene	8.4 J	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2-Dichloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Dibromomethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromodichloromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
trans-1,3-Dichloropropene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
cis-1,3-Dichloropropene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Toluene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1,2-Trichloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Tetrachloroethene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,3-Dichloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Dibromochloromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2-Dibromoethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Chlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1,1,2-Tetrachloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Ethylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0

B Indicates results are blank subtracted
J Indicates below Method Detection limit
ND Indicates compound Not Detected.

Table 1.1

VOLATILE ORGANIC COMPOUNDS ANALYSIS

PROJECT # :	Quincy Ill,#1300				
SAMPLE # :	Lab Blank	4378	4381	4382	4383
LOCATION :		Site 4	Site 8	Site 7	Site 7
COLLECTED :		08/23/89	08/23/89	08/23/89	08/23/89
ANALYZED :	08/27/89	08/27/89	08/27/89	08/27/89	08/27/89
FILE :	^A2039	^A2044	^A2045	^A2046	^A2047
DIL. FACT.:	1	1	1	1	1
UNIT :	ug/L	ug/L	ug/L	ug/L	ug/L

COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
p & m-Xylene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
o-Xylene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Styrene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromoform	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Isopropylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2,3-Trichloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
n-Propylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
2-Chlorotoluene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,3,5-Trimethylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
4-Chlorotoluene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
tert-Butylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2,4-Trimethylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
sec-Butylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
p-Isopropyltoluene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,3-Dichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,4-Dichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2-Dichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
n-Butylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2-Dibromo-3-Chloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2,4-Trichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Hexachlorobutadiene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Naphthalene	0.3 J	1.0	ND	1.0	ND B	1.0	ND	1.0	ND B	1.0
1,2,3-Trichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Acetone	ND	1.0	72	1.0	41	1.0	47	1.0	48	1.0
Carbon Disulfide	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
2-Butanone	1.1	1.0	0.1 JB	1.0	0.1 JB	1.0	ND B	1.0	0.4 JB	1.0
Vinyl Acetate	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
4-Methyl-2-Pentanone	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
2-Hexanone	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0

B Indicates compound is blank subtracted
J Indicates below Method Detection
ND Indicates compound Not Detected

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Table 1.2

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT #	: Quincy ,#1300	FILE #	: >A2040
SAMPLE #	: 4387	CONC LEVEL	: Low
LOCATION	: Trip Blank	DIL. FACT	: 1.0
COLLECTED	: 08/23/89	MATRIX	: WATER
ANALYZED	: 08/27/89	UNITS	: ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	None Found			
2.				
3.				
4.				
5.				
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Table 1.2

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT # [redacted]uincy ,#1300
SAMPLE # [redacted]374
LOCATION [redacted]ite 1
COLLECTED : 08/22/89
ANALYZED : 08/27/89

FILE # : >A2041
CONC LEVEL: Low
DIL. FACT : 1.0
MATRIX : WATER
UNITS : ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	None Found			
2.				
3.				
4.				
5.				
6.				
7.				
8.				
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Table 1.2

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT # [redacted]uincy ,01300
SAMPLE # [redacted]375
LOCATION : Site 2
COLLECTED : 08/23/89
ANALYZED : 08/27/89

FILE # : >A2042
CONC LEVEL: Low
DIL. FACT : 1.0
MATRIX : WATER
UNITS : ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	None Found			
2.				
3.				
4.				
5.				
6.				
7.				
8.				
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12.				
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Table 1.2

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT # Quincy ,#1300
SAMPLE # 4376
LOCATION : Site 3
COLLECTED : 08/23/89
ANALYZED : 08/27/89

FILE # : >A2043
CONC LEVEL: Low
DIL. FACT : 1.0
MATRIX : WATER
UNITS : ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	None Found			
2.				
3.				
4.				
5.				
6.				
7.				
8.				
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Table 1.2

.CLATILE CRGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT [illegible] Quincy ,#1300
SAMPLE # [illegible]4378
LOCATION [illegible] Site 4
COLLECTED : 08/23/89
ANALYZED : 08/27/89

FILE # : >A2044
CONC LEVEL: Low
DIL. FACT : 1.0
MATRIX : WATER
UNITS : ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	None Found			
2.				
3.				
4.				
5.				
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Table 1.2

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT #	: Quincy ,#1300	FILE #	: >A2045
SAMPLE #	: 4381	CONC LEVEL	: Low
LOCATION	: Site 8	DIL. FACT	: 1.0
COLLECTED	: 08/23/89	MATRIX	: WATER
ANALYZED	: 08/27/89	UNITS	: ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	None Found			
2.				
3.				
4.				
5.				
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Table 1.2

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT # : Quincy ,#1300
SAMPLE # : 4382
LOCATION : Site 8
COLLECTED : 08/23/89
ANALYZED : 08/27/89

FILE # : >A2046
CONC LEVEL: Low
DIL. FACT : 1.0
MATRIX : WATER
UNITS : ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	None Found			
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
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12.				
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Table 1.2

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT # : Quincy ,#1300
SAMPLE # : 4383
LOCATION : Site 7
COLLECTED : 08/23/89
ANALYZED : 08/27/89

FILE # : >A2047
CONC LEVEL: Low
DIL. FACT : 1.0
MATRIX : WATER
UNITS : ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	None Found			
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
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Table 1.2

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT # : Quincy ,#1300
SAMPLE # : Lab Blank
LOCATION :
COLLECTED :
ANALYZED : 08/27/89

FILE # : >A2039
CONC LEVEL: Low
DIL. FACT : 1.0
MATRIX : WATER
UNITS : ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	None Found			
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
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FORM I VOA-TIC 4/89 Re

Table 1.3

VOLATILE ORGANIC COMPOUNDS ANALYSIS

PROJECT # :	Quincy Ill,61300				
SAMPLE # :	Lab Blank	4375	4377	4379	4380
LOCATION :		Site 5	Site 4	Site 9	Site 9
COLLECTED :		08/23/89	08/23/89	08/23/89	08/23/89
ANALYZED :	08/28/89	08/28/89	08/28/89	08/28/89	08/28/89
FILE # :	*A2052	*A2054	*A2055	*A2056	*A2057
DIL. FACT.:	1	1	1	1	1
UNIT :	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg

COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
Dichlorodifluoromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Chloromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Vinylchloride	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromomethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Chloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Trichlorofluoromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1-Dichloroethene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Methylene Chloride	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
trans-1,2-Dichloroethene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1-Dichloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
2,2-Dichloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
cis-1,2-Dichloroethene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Chloroform	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromochloromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1,1-Trichloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Carbon Tetrachloride	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1-Dichloropropene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Benzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2-Dichloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Trichloroethene	0.4 J	1.0	0.4 JB	1.0	0.3 JB	1.0	0.4 JB	1.0	0.2 JB	1.0
1,2-Dichloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Dibromomethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromodichloromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
trans-1,3-Dichloropropene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
cis-1,3-Dichloropropene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Toluene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1,2-Trichloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Tetrachloroethene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,3-Dichloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Dibromochloromethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2-Dibromoethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Chlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1,1,2-Tetrachloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Ethylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0

B Indicates results are blank subtracted
J Indicates below Method Detection limit
ND Indicates compound Not Detected.

Table 1.3

VOLATILE ORGANIC COMPOUNDS ANALYSIS

PROJECT # :	Quincy Ill,#1300				
SAMPLE # :	Lab Blank	4375	4377	4379	4380
LOCATION :		Site 5	Site 4	Site 9	Site 9
COLLECTED :		08/23/89	08/23/89	08/23/89	08/23/89
ANALYZED :	08/28/89	08/28/89	08/28/89	08/28/89	08/28/89
FILE :	*02052	*02054	*02055	*02056	*02057
DIL. FACT.:	1	1	1	1	1
UNIT :	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg

COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
p & m-Xylene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
o-Xylene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Styrene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromoform	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Isopropylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Bromobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2,3-Trichloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
n-Propylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
2-Chlorotoluene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,3,5-Trimethylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
4-Chlorotoluene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
tert-Butylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2,4-Trimethylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
sec-Butylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
p-Isopropyltoluene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,3-Dichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,4-Dichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2-Dichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
n-Butylbenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2-Dibromo-3-Chloropropane	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
1,2,4-Trichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Hexachlorobutadiene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Naphthalene	0.5 J	1.0	ND B	1.0	ND B	1.0	ND B	1.0	ND	1.0
1,2,3-Trichlorobenzene	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Acetone	2.5	1.0	38 B	1.0	16 B	1.0	5.9 B	1.0	6.3 B	1.0
Carbon Disulfide	ND	1.0	0.9 J	1.0	1.1	1.0	4.2	1.0	0.8	1.0
2-Butanone	1.4	1.0	7.8 B	1.0	3.6 B	1.0	3.8 B	1.0	0.5 JB	1.0
Vinyl Acetate	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
4-Methyl-2-Pentanone	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
2-Hexanone	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0

B Indicates compound is blank subtracted
J Indicates below Method Detection
ND Indicates compound Not Detected

Rev. 2/89

Table 1.4

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT # : Quincy ,#1300
SAMPLE # : 4375
LOCATION : Site 5
COLLECTED : 08/23/89
ANALYZED : 08/29/89

FILE # : >A2054
CONC LEVEL: Low
DIL. FACT : 1.0
MATRIX : SOIL
UNITS : ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	None Found			
2.				
3.				
4.				
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FORM I VOA-TIC

4/89 Rev

Table 1.4

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT #	: Quincy ,#1300	FILE #	: >A2055
SAMPLE #	: 4377	CONC LEVEL	: Low
LOCATION	: Site 4	DIL. FACT	: 1.0
COLLECTED	: 08/23/89	MATRIX	: SOIL
ANALYZED	: 08/29/89	UNITS	: ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	None Found			
2.				
3.				
4.				
5.				
6.				
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FORM I VOA-TIC 4/89 Re

Table 1.4

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT #	: Quincy ,#1300	FILE #	: >A2056
SAMPLE #	: 4379	CONC LEVEL	: Low
LOCATION	: Site 9	DIL. FACT	: 1.0
COLLECTED	: 08/23/89	MATRIX	: SOIL
ANALYZED	: 09/28/89	UNITS	: ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	1.	None Found			
	2.				
	3.				
	4.				
	5.				
	6.				
	7.				
	8.				
	9.				
	10.				
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	29.				
	30.				

FORM I VOA-TIC 4/89 R

Table 1.4

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT # : Quincy ,#1300
SAMPLE # : 4380
LOCATION : Site 8
COLLECTED : 08/23/89
ANALYZED : 08/29/89

FILE # : >A2057
CONC LEVEL: Low
DIL. FACT : 1.0
MATRIX : SOIL
UNITS : ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	None Found			
2.				
3.				
4.				
5.				
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FORM I VOA-TIC 4/89 R

Table 1.4

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT #	: Quincy ,#1300	FILE #	: >A2052
SAMPLE #	: Lab Blank	CONC LEVEL	: Low
LOCATION	:	DIL. FACT	: 1.0
COLLECTED	:	MATRIX	: SOIL
ANALYZED	: 09/29/89	UNITS	: ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	None Found			
2.				
3.				
4.				
5.				
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7.				
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9.				
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Table 1.5

RESULTS OF BASE NEUTRAL/ACID EXTRACTABLES ANALYSIS

CLIENT ID :	BLANK	4375 #234	4376 #235	4378 #236	4381 #237
FILE :	^QU020	^QU021	^QU022	^QU023	^QU024
MATRIX :	WATER	WATER	WATER	WATER	WATER
DIL. FACT.:	1.0	1.0	1.0	1.0	1.0
UNITS :	ug/L	ug/L	ug/L	ug/L	ug/L

COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
Phenol	ND	10	ND	10	ND	10	ND	10	ND	10
bis(-2-Chloroethyl)Ether	ND	10	ND	10	ND	10	ND	10	ND	10
2-Chlorophenol	ND	10	ND	10	ND	10	ND	10	ND	10
1,3-Dichlorobenzene	ND	10	ND	10	ND	10	ND	10	ND	10
1,4-Dichlorobenzene	ND	10	ND	10	ND	10	ND	10	ND	10
Benzyl alcohol	ND	10	ND	10	ND	10	ND	10	2(J)	10
1,2-Dichlorobenzene	ND	10	ND	10	ND	10	ND	10	ND	10
2-Methylphenol	ND	10	ND	10	ND	10	ND	10	ND	10
bis(2-Chloroisopropyl)ether	ND	10	ND	10	ND	10	ND	10	ND	10
4-Methylphenol	ND	10	ND	10	ND	10	ND	10	ND	10
N-Nitroso-Di-n-propylamine	ND	10	ND	10	ND	10	ND	10	ND	10
Hexachloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
Nitrobenzene	ND	10	ND	10	ND	10	ND	10	ND	10
Isophorone	ND	10	ND	10	ND	10	ND	10	ND	10
2-Nitrophenol	ND	10	ND	10	ND	10	ND	10	ND	10
2,4-Dimethylphenol	ND	10	ND	10	ND	10	ND	10	ND	10
Benzoic acid	ND	10	ND	10	ND	10	ND	10	ND	10
bis(2-Chloroethoxy)methane	ND	10	ND	10	ND	10	ND	10	ND	10
2,4-Dichlorophenol	ND	10	ND	10	ND	10	ND	10	ND	10
1,2,4-Trichlorobenzene	ND	10	ND	10	ND	10	ND	10	ND	10
Naphthalene	ND	10	ND	10	ND	10	ND	10	ND	10
4-Chloroaniline	ND	10	ND	10	ND	10	ND	10	ND	10
Hexachlorobutadiene	ND	10	ND	10	ND	10	ND	10	ND	10
4-Chloro-3-methylphenol	ND	10	ND	10	ND	10	ND	10	ND	10
2-Methylnaphthalene	ND	10	ND	10	ND	10	ND	10	ND	10
Hexachlorocyclopentadiene	ND	10	ND	10	ND	10	ND	10	ND	10
2,4,6-Trichlorophenol	ND	10	ND	10	ND	10	ND	10	ND	10
2,4,5-Trichlorophenol	ND	10	ND	10	ND	10	ND	10	ND	10
2-Chloronaphthalene	ND	10	ND	10	ND	10	ND	10	ND	10
2-Nitroaniline	ND	10	ND	10	ND	10	ND	10	ND	10
Dimethylphthalate	ND	10	ND	10	ND	10	ND	10	ND	10
Acenaphthylene	ND	10	ND	10	ND	10	ND	10	ND	10
3-Nitroaniline	ND	10	ND	10	ND	10	ND	10	ND	10
Acenaphthene	ND	10	ND	10	ND	10	ND	10	ND	10
2,4-Dinitrophenol	ND	10	ND	10	ND	10	ND	10	ND	10
4-Nitrophenol	ND	10	ND	10	ND	10	ND	10	ND	10
Dibenzofuran	ND	10	ND	10	ND	10	ND	10	ND	10
2,6-Dinitrotoluene	ND	10	ND	10	ND	10	ND	10	ND	10
2,4-Dinitrotoluene	ND	10	ND	10	ND	10	ND	10	ND	10
Diethylphthalate	ND	10	ND	10	ND	10	ND	10	ND	10
4-Chlorophenyl-phenylether	ND	10	ND	10	ND	10	ND	10	ND	10
Fluorene	ND	10	ND	10	ND	10	ND	10	ND	10

(J) Indicates compound concentration found below MDL.
ND Indicates compound Not Detected.

Table 1.5

RESULTS OF BASE NEUTRAL/ACID EXTRACTABLES ANALYSIS

CLIENT ID :	BLANK	4375 #234	4376 #235	4378 #236	4381 #237
FILE :	^2U020	^2U021	^2U022	^2U023	^2U024
MATRIX :	WATER	WATER	WATER	WATER	WATER
DIL. FACT.:	1.0	1.0	1.0	1.0	1.0
UNITS :	ug/L	ug/L	ug/L	ug/L	ug/L

COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
4-Nitroaniline	ND	10	ND	10	ND	10	ND	10	ND	10
4,6-Dinitro-2-methylphenol	ND	10	ND	10	ND	10	ND	10	ND	10
N-Nitrosodiphenylamine	ND	10	ND	10	ND	10	ND	10	ND	10
4-Bromophenyl-phenylether	ND	10	ND	10	ND	10	ND	10	ND	10
Hexachlorobenzene	ND	10	ND	10	ND	10	ND	10	ND	10
Pentachlorophenol	ND	10	ND	10	ND	10	ND	10	ND	10
Phenanthrene	ND	10	ND	10	ND	10	ND	10	ND	10
Anthracene	ND	10	ND	10	ND	10	ND	10	ND	10
Di-n-butylphthalate	1(J)	10	ND	10	1(J)	10	1(J)	10	ND	10
Fluoranthene	ND	10	ND	10	ND	10	ND	10	ND	10
Pyrene	ND	10	ND	10	ND	10	ND	10	ND	10
Butylbenzylphthalate	ND	10	ND	10	ND	10	ND	10	ND	10
3,3'-Dichlorobenzidine	ND	10	ND	10	ND	10	ND	10	ND	10
Benzo(a)anthracene	ND	10	ND	10	ND	10	ND	10	ND	10
Bis(2-Ethylhexyl)phthalate	10	10	ND	10	2(J)	10	3(J)	10	2(J)	10
Chrysene	ND	10	ND	10	ND	10	ND	10	ND	10
Di-n-octylphthalate	ND	10	ND	10	ND	10	ND	10	ND	10
Benzo(b)fluoranthene	ND	10	ND	10	ND	10	ND	10	ND	10
Benzo(k)fluoranthene	ND	10	ND	10	ND	10	ND	10	ND	10
Benzo(a)pyrene	ND	10	ND	10	ND	10	ND	10	ND	10
Indeno(1,2,3-cd)pyrene	ND	10	ND	10	ND	10	ND	10	ND	10
Dibenzo(a,h)anthracene	ND	10	ND	10	ND	10	ND	10	ND	10
Benzo(g,h,i)perylene	ND	10	ND	10	ND	10	ND	10	ND	10

(J) Indicates compound concentration found below MDL.
ND Indicates compound Not Detected

Table 1.5

RESULTS OF BASE NEUTRAL ACID EXTRACTABLES ANALYSIS

CLIENT ID :	4382 #238		4383 #239		4385 #240		4386 #241		4374 #233	
FILE :	^QU025		^QU026		^QU027		^QU030		^QU031	
MATRIX :	WATER		WATER		WATER		WATER		WATER	
DIL. FACT.:	1.0		1.0		1.0		1.0		1.0	
UNITS :	ug/L		ug/L		ug/L		ug/L		ug/L	
COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
Phenol	ND	10	ND	10	ND	10	ND	10	ND	10
bis(-2-Chloroethyl)Ether	ND	10	ND	10	ND	10	ND	10	ND	10
2-Chlorophenol	ND	10	ND	10	ND	10	ND	10	ND	10
1,3-Dichlorobenzene	ND	10	ND	10	ND	10	ND	10	ND	10
1,4-Dichlorobenzene	ND	10	ND	10	ND	10	ND	10	ND	10
Benzyl alcohol	ND	10	ND	10	5(J)	10	7(J)	10	4(J)	10
1,2-Dichlorobenzene	ND	10	ND	10	ND	10	ND	10	ND	10
2-Methylphenol	ND	10	ND	10	ND	10	ND	10	ND	10
bis(2-Chloroisopropyl)ether	ND	10	ND	10	ND	10	ND	10	ND	10
4-Methylphenol	ND	10	ND	10	ND	10	ND	10	ND	10
N-Nitroso-Di-n-propylamine	ND	10	ND	10	ND	10	ND	10	ND	10
Hexachloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
Nitrobenzene	ND	10	ND	10	ND	10	ND	10	ND	10
Isophorone	ND	10	ND	10	ND	10	ND	10	ND	10
2-Nitrophenol	ND	10	ND	10	ND	10	ND	10	ND	10
2,4-Dimethylphenol	ND	10	ND	10	ND	10	ND	10	ND	10
Benzoic acid	ND	10	ND	10	ND	10	ND	10	ND	10
bis(2-Chloroethoxy)methane	ND	10	ND	10	ND	10	ND	10	ND	10
2,4-Dichlorophenol	ND	10	ND	10	ND	10	ND	10	ND	10
1,2,4-Trichlorobenzene	ND	10	ND	10	ND	10	ND	10	ND	10
Naphthalene	ND	10	ND	10	ND	10	ND	10	ND	10
4-Chloroaniline	ND	10	ND	10	ND	10	ND	10	ND	10
Hexachlorobutadiene	ND	10	ND	10	ND	10	ND	10	ND	10
4-Chloro-3-methylphenol	ND	10	ND	10	ND	10	ND	10	ND	10
2-Methylnaphthalene	ND	10	ND	10	ND	10	ND	10	ND	10
Hexachlorocyclopentadiene	ND	10	ND	10	ND	10	ND	10	ND	10
2,4,6-Trichlorophenol	ND	10	ND	10	ND	10	ND	10	ND	10
2,4,5-Trichlorophenol	ND	10	ND	10	ND	10	ND	10	ND	10
2-Chloronaphthalene	ND	10	ND	10	ND	10	ND	10	ND	10
2-Nitroaniline	ND	10	ND	10	ND	10	ND	10	ND	10
Dimethylphthalate	ND	10	ND	10	ND	10	ND	10	ND	10
Acenaphthylene	ND	10	ND	10	ND	10	ND	10	ND	10
3-Nitroaniline	ND	10	ND	10	ND	10	ND	10	ND	10
Acenaphthene	ND	10	ND	10	ND	10	ND	10	ND	10
2,4-Dinitrophenol	ND	10	ND	10	ND	10	ND	10	ND	10
4-Nitrophenol	ND	10	ND	10	ND	10	ND	10	ND	10
Dibenzofuran	ND	10	ND	10	ND	10	ND	10	ND	10
2,6-Dinitrotoluene	ND	10	ND	10	ND	10	ND	10	ND	10
2,4-Dinitrotoluene	ND	10	ND	10	ND	10	ND	10	ND	10
Diethylphthalate	ND	10	ND	10	ND	10	ND	10	ND	10
4-Chlorophenyl-phenylether	ND	10	ND	10	ND	10	ND	10	ND	10
Fluorene	ND	10	ND	10	ND	10	ND	10	ND	10

(J) Indicates compound concentration found below MDL.
ND Indicates compound Not Detected.

Table 1.5

RESULTS OF BASE NEUTRAL ACID EXTRACTABLES ANALYSIS

CLIENT ID :	4382 #238	4383 #239	4385 #240	4386 #241	4374 #233
FILE :	2U025	2U026	2U027	2U030	2U031
MATRIX :	WATER	WATER	WATER	WATER	WATER
DIL. FACT.:	1.0	1.0	1.0	1.0	1.0
UNITS :	ug/L	ug/L	ug/L	ug/L	ug/L

COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
3-Nitroaniline	ND	10	ND	10	ND	10	ND	10	ND	10
4,6-Dinitro-2-methylphenol	ND	10	ND	10	ND	10	ND	10	ND	10
N-Nitrosodiphenylamine	ND	10	ND	10	ND	10	ND	10	ND	10
4-Bromophenyl-phenylether	ND	10	ND	10	ND	10	ND	10	ND	10
Hexachlorobenzene	ND	10	ND	10	ND	10	ND	10	ND	10
Pentachlorophenol	ND	10	ND	10	ND	10	ND	10	ND	10
Phenanthrene	ND	10	ND	10	ND	10	ND	10	ND	10
Anthracene	ND	10	ND	10	ND	10	ND	10	ND	10
Di-n-butylphthalate	ND	10	1(J)	10	1(J)	10	ND	10	ND	10
Fluoranthene	ND	10	ND	10	ND	10	ND	10	ND	10
Pyrene	ND	10	ND	10	ND	10	ND	10	ND	10
Butylbenzylphthalate	ND	10	ND	10	ND	10	2(J)	10	ND	10
3,3'-Dichlorobenzidine	ND	10	ND	10	ND	10	ND	10	ND	10
Benzo(a)anthracene	ND	10	ND	10	ND	10	ND	10	ND	10
Bis(2-Ethylhexyl)phthalate	4(J)	10	ND	10	6(J)	10	23	10	9(J)	10
Chrysene	ND	10	ND	10	ND	10	ND	10	ND	10
Di-n-octylphthalate	ND	10	ND	10	ND	10	2(J)	10	ND	10
Benzo(b)fluoranthene	ND	10	ND	10	ND	10	ND	10	ND	10
Benzo(k)fluoranthene	ND	10	ND	10	ND	10	ND	10	ND	10
Benzo(a)pyrene	ND	10	ND	10	ND	10	ND	10	ND	10
Indeno(1,2,3-cd)pyrene	ND	10	ND	10	ND	10	ND	10	ND	10
Dibenzo(a,h)anthracene	ND	10	ND	10	ND	10	ND	10	ND	10
Benzo(g,h,i)perylene	ND	10	ND	10	ND	10	ND	10	ND	10

(J) Indicates compound concentration found below MDL.
ND Indicates compound Not Detected

Table 1.6

RESULTS OF BASE NEUTRAL/ACID EXTRACTABLES ANALYSIS

CLIENT ID :	Blank	4377 #242	4379 #245	4380 #244	4375 #243
FILE :	^QL002	^QL003	^QL004	^QL005	^QL007
MATRIX :	SOIL	SOIL	SOIL	SOIL	SOIL
DIL. FACT.:	1.0	1.0	1.0	1.0	1.0
% SOLID :	100	75	84	84	73
UNITS :	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg

COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
Phenol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
bis(-2-Chloroethyl)Ether	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
2-Chlorophenol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
1,3-Dichlorobenzene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
1,4-Dichlorobenzene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Benzyl alcohol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
1,2-Dichlorobenzene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
2-Methylphenol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
bis(2-Chloroisopropyl)ether	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
4-Methylphenol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
N-Nitroso-Di-n-propylamine	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Hexachloroethane	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Nitrobenzene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Isophorone	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
2-Nitrophenol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
2,4-Dimethylphenol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Benzoic acid	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
bis(2-Chloroethoxy)methane	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
2,4-Dichlorophenol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
1,2,4-Trichlorobenzene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Naphthalene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
4-Chloroaniline	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Hexachlorobutadiene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
4-Chloro-3-methylphenol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
2-Methylnaphthalene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Hexachlorocyclopentadiene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
2,4,6-Trichlorophenol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
2,4,5-Trichlorophenol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
2-Chloronaphthalene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
2-Nitroaniline	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Dimethylphthalate	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Acenaphthylene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
3-Nitroaniline	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Acenaphthene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
2,4-Dinitrophenol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
4-Nitrophenol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Dibenzofuran	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
2,6-Dinitrotoluene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
2,4-Dinitrotoluene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Diethylphthalate	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
4-Chlorophenyl-phenylether	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Fluorene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356

(J) Indicates compound concentration found below MDL.
ND Indicates compound Not Detected.

TABLE [illegible]

RESULTS OF BASE NEUTRAL ACID EXTRACTABLES ANALYSIS

CLIENT ID :	Blank	a377 #242	a379 #245	a380 #244	a375 #243
FILE :	[illegible]2L002	[illegible]2L003	[illegible]2L004	[illegible]2L005	[illegible]2L007
MATRIX :	SOIL	SOIL	SOIL	SOIL	SOIL
DIL. FACT.:	1.0	1.0	1.0	1.0	1.0
% SOLID :	100	75	84	84	73
UNITS :	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg

COMPOUND	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL	CONC.	MDL
4-Nitroaniline	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
4,6-Dinitro-2-methylphenol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
N-Nitrosodiphenylamine	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
4-Bromophenyl-phenylether	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Hexachlorobenzene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Pentachlorophenol	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Phenanthrene	ND	990	97(J)	1320	ND	1179	ND	1179	ND	1356
Anthracene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Di-n-butylphthalate	ND	990	ND	1320	ND	1179	192(J)	1179	ND	1356
Fluoranthene	ND	990	492(J)	1320	ND	1179	ND	1179	ND	1356
Pyrene	ND	990	328(J)	1320	ND	1179	ND	1179	ND	1356
Butylbenzylphthalate	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
3,3'-Dichlorobenzidine	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Benzo(a)anthracene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Bis(2-Ethylhexyl)phthalate	304(J)	990	529(J)	1320	ND	1179	ND	1179	ND	1356
Chrysene	ND	990	266(J)	1320	ND	1179	ND	1179	ND	1356
Di-n-octylphthalate	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Benzo(b)fluoranthene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Benzo(k)fluoranthene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Benzo(a)pyrene	ND	990	128(J)	1320	ND	1179	ND	1179	ND	1356
Indeno(1,2,3-cd)pyrene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Dibenzo(a,h)anthracene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356
Benzo(g,h,i)perylene	ND	990	ND	1320	ND	1179	ND	1179	ND	1356

(J) Indicates compound concentration found below MDL.
ND Indicates compound Not Detected

Table 1.7 RESULTS OF PESTICIDES/PCBS IN WATER

(Concentrations reported as ug/L)

Sample ID	Lab.Blk.	4374	4375	4376	4378	4381	4382	4383	4385
Sample size (mL)	1000	960	1025	1010	1050	990	1050	1020	1030
Sample matrix	Water	Water	Water	Water	Water	Water	Water	Water	Water
Sample location		Site 1	Site 5	Site 3	Site 4	Site 8	Site 7	Site 7	Site 8
a-BHC	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
g-BHC	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
b-BHC	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
HEPTACHLOR	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
d-BHC	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ALDRIN	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
HEPTACHLOR EPOXIDE	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ENDOSULFAN (I)	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
p,p'-D D E	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
DIELDRIN	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ENDRIN	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
p,p'-D D D	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ENDOSULFAN (II)	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
p,p'-D D T	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ENDRIN ALDEHYDE	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ENDOSULFAN SULFATE	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
METHOXYCHLOR	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
TOXAPHENE	0.25 U	0.30 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
CHLORDANE	0.25 U	0.30 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AROCLOR 1016	0.25 U	0.30 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AROCLOR 1221	0.25 U	0.30 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AROCLOR 1232	0.25 U	0.30 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AROCLOR 1242	0.25 U	0.30 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AROCLOR 1248	0.25 U	0.30 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AROCLOR 1254	0.25 U	0.30 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
AROCLOR 1260	0.25 U	0.30 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

Table 1.8 RESULTS OF PESTICIDES/PCBS IN SEDIMENT

(Concentrations reported as ug/Kg)

Sample ID Sample size (g) Sample matrix Sample location	Lab.Blk. 10.02 Sediment	4377 10.04 Sediment Site 4	4375 10.27 Sediment Site 5	4380 10.50 Sediment Site 9	4379 10.07 Sediment Site 9
a-BHC	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
g-BHC	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
b-BHC	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
HEPTACHLOR	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
d-BHC	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
ALDRIN	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
HEPTACHLOR EPOXIDE	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
ENDOSULFAN (I)	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
p,p'-D D E	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
DIELDRIN	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
ENDRIN	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
p,p'-D D D	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
ENDOSULFAN (II)	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
p,p'-D D T	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
ENDRIN ALDEHYDE	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
ENDOSULFAN SULFATE	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
METHOXYCHLOR	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U
TOXAPHENE	25.0 U	25.0 U	130 U	130 U	130 U
CHLORDANE	25.0 U	25.0 U	130 U	130 U	130 U
AROCLOR 1016	25.0 U	25.0 U	130 U	130 U	130 U
AROCLOR 1221	25.0 U	25.0 U	130 U	130 U	130 U
AROCLOR 1232	25.0 U	25.0 U	130 U	130 U	130 U
AROCLOR 1242	25.0 U	25.0 U	130 U	130 U	130 U
AROCLOR 1248	25.0 U	25.0 U	130 U	130 U	130 U
AROCLOR 1254	25.0 U	25.0 U	130 U	130 U	130 U
AROCLOR 1260	25.0 U	25.0 U	130 U	130 U	130 U

Table 1.9 RESULTS OF HERBICIDES IN WATER

(Concentrations reported as ug/L)

Sample ID	Lab.Blk.	4374	4375	4376	4378	4381	4382	4383	4385
Sample size (mL)	1000	1041	1046	1015	1023	1033	1064	1022	1024
Sample matrix	Water	Water	Water	Water	Water	Water	Water	Water	Water
Sample location		Site 1	Site 5	Site 3	Site 4	Site 8	Site 7	Site 7	Site 8
2,4,-D	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
SILVEX	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

U denotes detection limit.

Table 1.10 RESULTS OF HERBICIDES IN SOIL

(Concentrations reported as ug/Kg)

Sample ID	Lab.Blk.	4377	4375	4380	4379
Sample size (G)	30.46	30.95	30.83	30.78	30.72
Sample matrix	SOIL	SOIL	SOIL	SOIL	SOIL
Sample location		Site 1	Site 5	Site 3	Site 4
2,4,-D	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
SILVEX	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

U denotes detection limit.

Table 1.11

Results of the Metals Analysis

WAB 1300 Quincy Illinois Water Samples

Concentrations reported as ug/l

Parameter	4375 Site 2	4374 Site 1	4376 Site 3	4378 Site 4	4383 Site 7	4382 Site 7	4381 Site 8	DETECTION LIMIT
Aluminum	17000	20000	10000	11000	13000	24000	26000	2000
Antimony	10U	10U	10U	10U	10U	10U	10U	10
Arsenic	10U	10U	10U	10U	10U	10U	10U	10
Barium	5000U	5000U	5000U	5000U	5000U	5000U	5000U	5000
Beryllium	50U	50U	50U	50U	50U	50U	50U	50
Cadmium	25U	25U	25U	25U	25U	25U	25U	25
Calcium	33000	35000	34000	34000	34000	33000	34000	1000
Chromium	50U	50U	50U	50U	50U	50U	50U	50
Cobalt	50U	50U	50U	50U	50U	50U	50U	50
Copper	50U	50U	50U	50U	50U	50U	50U	50
Iron	570	550	620	310	370	320	290	100
Lead	22	13	5	5	5U	5U	20	5
Magnesium	23000	21000	21000	21000	21000	20000	22000	100
Manganese	150	110	100	89	96	98	110	50
Mercury	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0
Nickel	50U	100	50U	50U	50U	50U	73	50
Potassium	2900	2900	3100	2900	3000	3000	3000	100
Selenium	5U	5U	5U	5U	5U	5U	5U	5
Silver	50U	50U	50U	50U	50U	50U	50U	50
Sodium	16000	13000	15000	14000	15000	12000	14000	100
Thallium	10U	10U	10U	10U	10U	10U	10U	10
Vanadium	50U	50U	50U	50U	50U	50U	50U	50
Zinc	50U	50U	50U	50U	50U	50U	50U	50

U -denotes detection limit

Table 1.12

Results of the Metals Analysis

WA# 1300 Quincy Illinois Soil Samples

Concentrations reported as ug/kg

Parameter	4375 Site 5	4377 Site 4	4379 Site 9	4380 Site 9	DETECTION LIMIT
Aluminum	3600000	2600000	1900000	2400000	200000
Antimony	2700	2000	1200	1500	1000
Arsenic	2200	2200	2000	3100	2000
Barium	1000000U	1000000U	1000000U	1000000U	1000000
Beryllium	10000U	10000U	10000U	10000U	10000
Cadmium	5000U	5000U	5000U	5000U	5000
Calcium	2700000	1700000	1100000	1400000	100000
Chromium	10000U	10000U	10000U	10000U	10000
Cobalt	10000U	10000U	10000U	10000U	10000
Copper	10000U	10000U	10000U	10000U	10000
Iron	6500000	6200000	5600000	8700000	20000
Lead	6100	4500	3900	5400	1000
Magnesium	1500000	750000	1000000	1300000	20000
Manganese	380000	360000	210000	360000	10000
Mercury	55	49	45	40U	40
Nickel	10000U	10000U	10000U	10000U	10000
Potassium	410000	280000	150000	200000	20000
Selenium	1000U	1000U	1000U	1000U	1000
Silver	10000U	10000U	10000U	10000U	10000
Sodium	180000	130000	150000	140000	10000
Thallium	2000U	2000U	2000U	2000U	2000
Vanadium	16000	13000	10000	15000	10000
Zinc	31000	20000	17000	22000	5000

U -denotes detection limit

QA/QC for VOA

Prior to analysis, each sample was spiked with three surrogate standards. The volatile surrogate percent recoveries, which ranged from 91 to 108 are listed in Tables 2.1 and 2.2 for water and soil samples respectively. All fifty seven values were within the acceptable QC limits for the water and soil samples.

Sample 4374 was chosen for the matrix spike/matrix spike duplicate (MS/MSD) analysis for water. The percent recoveries, 95 to 104, and the relative percent differences (RPDs), which varied from 0 (zero) to 9 are listed in Table 2.3 and are within acceptable QC limits.

Sample 4375 was chosen for the MS/MSD analysis for soil. The percent recoveries, 97 to 113, and the RPDs, which varied from 0 (zero) to 2 are listed in Table 2.4 and are all within acceptable QC limits.

Table 2.1

WATER VOLATILE SURROGATE RECOVERY

	EPA Sample NO.	S1 (DCE-d4)	S2 (TOL-d8)	S3 (DCB-d4)	TOT OUT
1	4387	100	101	99	0
2	4374	104	97	95	0
3	4374 10x	108	97	99	0
4	4375	102	101	100	0
5	4376	102	102	101	0
6	4378	102	101	100	0
7	4381	99	99	101	0
8	4382	102	101	100	0
9	4383	103	102	101	0
10	Lab Blank	105	98	103	0
11	4374 MS	101	100	102	0
12	4374 MSD	97	101	101	0

S1 (DCE-d4) = 1,2-Dichloroethane-d4 (76-114)
S2 (TOL-d8) = Toluene-d8 (88-110)
S3 (DCB-d4) = 1,2-Dichlorobenzene-d4 (85-115)

* Values outside of contract required QC limits

Table 2.2

SOIL.VOLATILE SURROGATE RECOVERY

	EPA Sample NO.	S1 (DCE-d4)	S2 (TOL-d8)	S3 (DCB-d4)	TOT OUT
1	4375	103	97	93	0
2	4377	107	99	97	0
3	4379	106	97	100	0
4	4380	105	96	101	0
5	Lab Blank	105	97	106	0
6	4375 MS	101	98	91	0
7	4375 MSD	94	97	92	0

S1 (DCE-d4) = 1,2-Dichloroethane-d4 (70-121)
S2 (TOL-d8) = Toluene-d8 (81-117)
S3 (DCB-d4) = 1,2-Dichlorobenzene-d4 (74-121)

* Values outside of contract required QC limits

Table 2.3

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: WESTON REAC Contract: 68-03-3482

Lab Code: NA Case No.: 1300 SAS No.: NA SDG No.: NA

Matrix Spike - EPA Sample No.: 4374

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMI REC
1,1-Dichloroethene	50.00	0.00	48.00	95	61-1
Trichloroethene	50.00	.80	51.00	100	71-1
Benzene	50.00	0.00	50.00	99	76-1
Toluene	50.00	0.00	51.00	102	76-1
Chlorobenzene	50.00	0.00	48.00	96	75-1

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
1,1-Dichloroethene	50.00	52.00	104	9	14	61-14
Trichloroethene	50.00	52.00	102	1	14	71-12
Benzene	50.00	51.00	101	2	11	76-12
Toluene	50.00	52.00	103	0	13	76-12
Chlorobenzene	50.00	51.00	101	5	13	75-13

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

Table 2.4

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: WESTON REAC Contract: 68-03-3482

Lab Code: NA Case No.: 1300 SAS No.: NA SDG No.: NA

Matrix Spike - EPA Sample No.: 4375 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIM REC
1,1-Dichloroethene	50.00	0.00	50.00	100	59-1
Trichloroethene	50.00	.80	49.00	97	62-1
Benzene	50.00	0.00	51.00	102	66-1
Toluene	50.00	0.00	50.00	101	59-1
Chlorobenzene	50.00	0.00	55.00	111	60-1

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	REC
1,1-Dichloroethene	50.00	49.00	98	2	22	59-1
Trichloroethene	50.00	49.00	97	0	24	62-1
Benzene	50.00	50.00	100	1	21	66-1
Toluene	50.00	50.00	101	0	21	59-1
Chlorobenzene	50.00	56.00	113	1	21	60-1

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS:

QA/QC PROCEDURES FOR BNA

Surrogates

Before extraction, each sample was spiked with a six component mixture of CLP surrogate standards to achieve the following levels in the final extract:

2-Fluorophenol	100ug/ml	2-Fluorobiphenyl	50ug/ml
Phenol-d6	100ug/ml	Nitrobenzene-d_5	50ug/ml
2,4,6-Tribromophenol	100ug/ml	Terphenyl-d_{14}	50ug/ml

The surrogate percent recoveries for the water samples, listed in Table 2.5, ranged from 3 to 120. Three, out of seventy two, values exceeded acceptable QC limits. Two values were for sample 4385.

The surrogate percent recoveries for soils, listed in Table 2.6 ranged from 15 to 305. Twenty-nine out of forty-two values exceeded acceptable QC limits.

Matrix Spike/Matrix Spike Duplicates

Sample 4385 was chosen for the matrix spike/matrix spike duplicate (MS/MSD) analyses for the water samples. The results, listed in Table 2.7, ranged from 5 to 62. Four results, both N-nitrosodipropylamine values and both 4-nitrophenol values, out of 22 values, exceeded acceptable QC limits. The relative percent differences, also listed in Table 2.7, ranged from 0 (zero) to 36; one, of eleven, values exceeded acceptable QC limits.

Sample 4375 was chosen for the MS/MSD analyses for the soil samples. The results, listed in Table 2.8, ranged from 19 to 60. None of the MS/MSD values exceeded acceptable QC limits, Two, of 11, relative percent differences, also listed in Table 2.8, and ranging from 0 (zero) to 75, exceeded acceptable QC limits.

Table 2.5

WATER SEMI-VOLATILE SURROGATE RECOVERY

	EPA Sample NO.	S1 (NBZ)	S2 (FBP)	S3 (TPH)	S4 (PHL)	S5 (2FP)	S6 (TBP)	TOT OUT
1	4375 #234	64	57	48	35	48	58	0
2	4376 #235	69	58	54	36	46	54	0
3	4378 #236	68	54	54	36	49	57	0
4	4381 #237	62	52	51	36	45	50	0
5	4382 #238	67	53	47	36	45	59	0
6	4383 #239	66	57	59	40	48	46	0
7	4385 #240	63	49	41	13	4*	3*	2
8	4386 #241	58	55	52	29	39	47	0
9	4374 #233	65	56	65	34	44	54	0
10	BLANK	65	57	62	32	44	61	0
11	4385MS #24	57	53	40	30	45	50	0
12	4385MSD #2	120*	105	116	69	78	97	1

S1 (NBZ) = Nitrobenzene-d5 (35-114)
S2 (FBP) = 2-Fluorobiphenyl (43-116)
S3 (TPH) = Terphenyl-d14 (35-114)
S4 (PHL) = Phenol-d5 (10-94)
S5 (2FP) = 2-Fluorophenol (21-100)
S6 (TBP) = 2,4,6-Tribromophenol (10-123)

* Values outside of contract required QC limits

Table 2.6

SOIL SEMI-VOLATILE SURROGATE RECOVERY

	EPA Sample NO.	S1 (NBZ)	S2 (FBP)	S3 (TPH)	S4 (PHL)	S5 (2FP)	S6 (TBP)	TOT OUT
1	4377 #242	118	112	157*	246*	168*	206*	4
2	4379 #245	44	46	70	66	51	46	0
3	4380 #244	126*	120*	192*	286*	200*	201*	6
4	4375 #243	154*	139*	187*	305*	226*	265*	6
5	Blank	42	42	57	54	27	15*	1
6	4375MS #24	155*	140*	177*	286*	222*	290*	6
7	4375MSD #2	147*	151*	153*	267*	186*	233*	6

S1 (NBZ) = Nitrobenzene-d5 (23-120)
S2 (FBP) = 2-Fluorobiphenyl (30-115)
S3 (TPH) = Terphenyl-d14 (18-137)
S4 (PHL) = Phenol-d5 (24-113)
S5 (2FP) = 2-Fluorophenol (25-121)
S6 (TBP) = 2,4,6-Tribromophenol (19-122)

* Values outside of contract required QC limits

Table 2.7

3D

WATER SEMI-VOLATILE MATRIX SPIKE MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: WESTON Contract: WA-1300

Lab Code: I your EP Case No.: 1300 SAS No.: NA SDG No.: NA

Matrix Spike - EPA Sample No.: 4385

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	100.00	0.00	29.00	28	12- 89
2-Chlorophenol	100.00	0.00	43.00	42	27-123
1,4-Dichlorobenzene	50.00	0.00	23.00	45	36- 97
N-Nitroso-di-n-prop.(1)	50.00	0.00	17.00	33 *	41-116
1,2,4-Trichlorobenzene	50.00	0.00	24.00	47	39- 98
4-Chloro-3-methylphenol	100.00	0.00	46.00	46	23- 97
Acenaphthene	50.00	0.00	27.00	53	46-118
4-Nitrophenol	100.00	0.00	5.80	5 *	10- 80
2,4-Dinitrotoluene	50.00	0.00	27.00	54	24- 96
Pentachlorophenol	100.00	0.00	29.00	29	9-103
Pyrene	50.00	0.00	17.00	34	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	100.00	32.00	31	10	42	12- 89
2-Chlorophenol	100.00	48.00	48	13	40	27-123
1,4-Dichlorobenzene	50.00	27.00	53	16	28	36- 97
N-Nitroso-di-n-prop.(1)	50.00	19.00	37 *	11	38	41-116
1,2,4-Trichlorobenzene	50.00	27.00	53	12	28	39- 98
4-Chloro-3-methylphenol	100.00	47.00	47	2	42	23- 97
Acenaphthene	50.00	31.00	62	15	31	46-118
4-Nitrophenol	100.00	6.60	6 *	18	50	10- 80
2,4-Dinitrotoluene	50.00	27.00	54	0	38	24- 96
Pentachlorophenol	100.00	33.00	32	9	50	9-103
Pyrene	50.00	25.00	49	36 *	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of qc limits

RPD: 1 out of 11 outside limits
Spike Recovery: 4 out of 22 outside limits

COMMENTS: _____

Table 2.8

SOIL SEMI-VOLATILE MATRIX SPIKE MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:WESTON Contract:WA-1300

Lab Code: I your EP Case No.: 1300 SAS No.: NA SDG No.: NA

Matrix Spike - EPA Sample No.: 4375 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	10000.00	0.00	4620.00	46	26- 90
2-Chlorophenol	10000.00	0.00	5590.00	55	25-102
1,4-Dichlorobenzene	5000.00	0.00	2870.00	57	28-104
N-Nitroso-di-n-prop.(1)	5000.00	0.00	2360.00	47	41-126
1,2,4-Trichlorobenzene	5000.00	0.00	2420.00	48	38-107
4-Chloro-3-methylphenol	10000.00	0.00	4410.00	44	26-103
Acenaphthene	5000.00	0.00	2780.00	55	31-137
4-Nitrophenol	10000.00	0.00	4110.00	41	11-114
2,4-Dinitrotoluene	5000.00	0.00	2420.00	48	28- 89
Pentachlorophenol	10000.00	0.00	3700.00	36	17-109
Pyrene	5000.00	0.00	2410.00	48	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	10000.00	4620.00	46	0	35	26- 90
2-Chlorophenol	10000.00	5310.00	53	3	50	25-102
1,4-Dichlorobenzene	5000.00	2690.00	53	7	27	28-104
N-Nitroso-di-n-prop.(1)	5000.00	2130.00	42	11	38	41-126
1,2,4-Trichlorobenzene	5000.00	2350.00	47	2	23	38-107
4-Chloro-3-methylphenol	10000.00	3950.00	39	12	33	26-103
Acenaphthene	5000.00	3010.00	60	8	19	31-137
4-Nitrophenol	10000.00	1980.00	19	73 *	50	11-114
2,4-Dinitrotoluene	5000.00	2230.00	44	8	47	28- 89
Pentachlorophenol	10000.00	2180.00	21	52 *	47	17-109
Pyrene	5000.00	2300.00	45	6	36	35-142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of qc limits

RPD: 2 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS: _____

QA/QC FOR PESTICIDES

The soil samples had to be cleaned a second time by chromatography through Florisil.

Each sample was spiked with 100 uL of a 2 ug/ml solution of dibutyl chlorendate; percent recoveries ranged from 47 to 110 in water and 81.2 to 159.1 in soil. Results of the surrogate recoveries are listed in Table 2.9.

EMSL WP 385, containing heptachlor, p,p'-DDE, aldrin, dieldrin, p,p'-DDT and p,p'-DDD was analysed to check the accuracy of the standard calibration. The percent recoveries, ranging from 98.2 to 132.0, and all within accepted QC limits are listed in Table 2.10.

Sample 4382 was chosen for the matrix spike/matrix spike duplicate (MS/MSD) analyses of the water samples. A mixture of g-BHC, dieldrin, endrin, and p,p'-DDT was added to give a concentration of 100 ug/L for each analyte. The percent recoveries, 59 to 88, are listed in Table 2.11. The values are within acceptable QC limits. The relative percent differences (RPDs) ranged from 10 to 25.

The Lab Blank and sample 4377 were chosen for the MS/MSD analyses of the soil samples. A mixture of g-BHC, dieldrin, endrin, and p,p'-DDT was added to give a concentration of 9.9 ug/Kg for each analyte in the lab blank and 14.3 ug/Kg for each analyte in sample 4377. Percent recoveries ranged from 81 to 113 for the lab blank and from 106 to 169 for sample 4377. All recoveries were within acceptable QC limits except the four matrix spikes. The RPDs ranged from 13 to 46. Results are listed in Table 2.11.

Table 2.9 RESULTS OF DBC SURROGATE RECOVERIES

Sample ID	Matrix	% Recovery
4374	WATER	87.7
4375	WATER	85.1
4376	WATER	77.0
4378	WATER	110.7
4381	WATER	86.2
4382	WATER	47.0
4382 MS	WATER	57.3
4382 MSD	WATER	58.0
4383	WATER	76.7
4385	WATER	62.4
LAB. BLANK	WATER	71.5
LAB. BLANK	SOIL	112.3
LAB. BLANK MS	SOIL	109.8
LAB. BLANK MSD	SOIL	83.8
4377	SOIL	159.1
4377 MS	SOIL	147.5
4377 MMSD	SOIL	109.8
4375	SOIL	114.3
4380	SOIL	81.2
4379	SOIL	91.6

TABLE 2.10 QA check with EMSL control sample (concentrations reported as ug/L)

EMSL mix #385 (1:50 dil'n.)

Parameter	EMSL Conc.	Recovered Conc.	%Recovery	Recommended % Range
Heptachlor	40	46.4	116.0	42-122
Aldrin	40	40.6	101.5	34-111
p,p'-D D E	40	52.8	132.0	30-145
Dieldrin	40	45.4	113.5	30-146
p,p'-D D D	200	208.9	104.5	31-141
p,p'-D D T	200	196.3	98.2	25-160

Table 2.11 Matrix spike/Matrix spike duplicates recovery
(Concentrations reported as ug/Kg for soil and ug/L for water)

Sample ID : LAB. BLANK
Sample matrix : Soil
Sample location :

Analyte	Spike Added	Sample Conc.	MS Conc.	MSD Conc.	MS %Rec.	MSD %Rec.	QC Rec. Limits	RPD
HEPTACHLOR	9.9	0.00	9.100	8.000	92	81	32-127	13
DIELDRIN	9.9	0.00	10.000	8.700	101	88	36-146	14
ENDRIN	9.9	0.00	11.200	9.400	113	95	30-147	17
p,p'-DDT	9.9	0.00	10.500	9.100	106	92	25-160	14

Sample ID : 082589-242 (4377)
Sample matrix : Soil
Sample location : Site 4

Analyte	Spike Added	Sample Conc.	MS Conc.	MSD Conc.	MS %Rec.	MSD %Rec.	QC Rec. Limits	RPD
HEPTACHLOR	14.3	0.00	21.3	16.4	149	115	32-127	26
DIELDRIN	14.3	0.00	23.5	18.8	164	131	36-146	22
ENDRIN	14.3	0.00	23.7	17.9	166	125	30-147	28
p,p'-DDT	14.3	0.00	24.2	15.2	169	106	25-160	46

Sample ID : 082589-238 (4382)
Sample matrix : Water
Sample location : Site 7

Analyte	Spike Added	LAB. BLK Conc.	MS Conc.	MSD Conc.	MS %Rec.	MSD %Rec.	QC Rec. Limits	RPD
HEPTACHLOR	0.1	0.00	0.071	0.059	71	59	32-127	18
DIELDRIN	0.1	0.00	0.082	0.064	82	64	36-146	25
ENDRIN	0.1	0.00	0.088	0.072	88	72	30-147	20
p,p'-DDT	0.1	0.00	0.081	0.073	81	73	25-160	10

QA/QC FOR HERBICIDES

Each sample was spiked with 200 uL of a 1 ug/ml solution of 2,4,5-T; percent recoveries ranged from 89 to 358 in water and 81 to 588 in soil. Results of the surrogate recoveries are listed in Table 2.12.

EMSL WS 785, containing 2,4-D and Silvex was analysed to check the accuracy of the standard calibration. The percent recoveries, ranging from 99.2 for 2,4-D to 82 for Silvex, and all within accepted QC limits are listed in Table 2.13.

Sample 4374 was chosen for the matrix spike/matrix spike duplicate (MS/MSD) analyses of the water samples. A mixture of 2,4-D and Silvex was added to give a concentration of 0.2 ug/L for each analyte. The percent recoveries and RPDs are listed in Table 2.14. Better recoveries are possible if a selective standard curve is used.

Sample 4379 was chosen for the MS/MSD analyses of the soil samples. A mixture of 2,4-D and Silvex was added to give a concentration of 7.97 ug/Kg for each analyte in sample 4379. Percent recoveries ranged from 14 to 178 for sample 4379. Results are also listed in Table 2.14.

Table 2.12 RESULTS OF 2,4,5-T SURROGATE RECOVERIES

Sample ID	Matrix	% Recovery
4374	WATER	358.0
4374 MS	WATER	287.0
4374 MSD	WATER	126.0
4375	WATER	319.0
4376	WATER	190.0
4378	WATER	157.0
4381	WATER	138.0
4382	WATER	95.0
4383	WATER	89.0
4385	WATER	166.0
LAB. BLANK	WATER	238.0
4377	SEDIMENT	125.0
4375	SEDIMENT	81.0
4380	SEDIMENT	506.0
4379	SEDIMENT	----
4379 MS	SEDIMENT	371.0
4379 MMSD	SEDIMENT	588.0
LAB. BLANK	SOIL	238.0

TABLE 2.13 QA check with EMSL control sample (concentrations reported as ug/L)

EMSL WS-785 (1:50 dil'n.)

Parameter	EMSL Conc.	Recovered Conc.	%Recovery	Recommended % Range
2,4-D	1000	995.0	99.5	43.2-131.6
SILVEX	100	82.0	82.0	34.9-130

Table 2.14 Matrix spike/Matrix spike duplicates recovery
(Concentrations reported as ug/Kg for soil and ug/L for water)

Sample ID : 082589-245 (4379)
Sample matrix : Soil
Sample location : SITE 9

Analyte	Spike Added	Sample Conc.	MS Conc.	MSD Conc.	MS %Rec.	MSD %Rec.	RPD
2,4-D	7.97	0.00	2.312	14.200	29	91	62
SILVEX	7.97	0.00	1.116	4.95	14	62	126

Sample ID : 082589-233 (4374)
Sample matrix : WATER
Sample location : SITE 1

Analyte	Spike Added	Sample Conc.	MS Conc.	MSD Conc.	MS %Rec.	MSD %Rec.	RPD
2,4-D	0.2	0.00	0.006	---	3	---	NC
SILVEX	0.2	0.00	0.120	0.006	60	3	181

NC Denotes Not Calculable

QA/QC PROCEDURE FOR METALS

EMSL 186, 1083 ICAP-7, 1183 SAM #1, 1183 conc #2, 378 conc # 14, and 386 were used to check the accuracy of the calibration curve. The percent recoveries ranged from 85 to 124 and all recoveries were within the 95% confidence limits. The recoveries are listed in Table 2.15

Sample 4381 Site 8 was chosen for matrix spike/ matrix spike duplicate (MS/MSD) analyses for the water samples. The percent recoveries, listed in Table 2.16, ranged from 5 to 142. The values that exceed the acceptable QC limits were obtained for silver and antimony; these metals have been dropped from the CLP requirements. The relative percent differences (RPDs), also listed in Table 2.16 ranged from 0 (zero) to 46. The 46% RPD was obtained for silver; the next highest value, 32, was for thallium and antimony.

Sample 4379 Site 9 was chosen for MS/MSD analyses for the soil samples. The percent recoveries, listed in Table 2.17, ranged from 45 to 183. The RPDs, also listed in Table 2.17 ranged from 0 (zero) to 97. After 97 (for manganese), the second high value, 22, was for antimony. The remaining values ranged from 0 (zero) to 9.

The results of the spike blank analysis are reported in Table 2.18 for water and Table 2.19 for soils. The percent recoveries ranged from 28 to 156 for water and 64 to 111 for soil.

CLP does not require matrix spikes for aluminum, calcium, magnesium, potassium, and sodium.

Table 2.15

Results of the EMSL for Quincy Illinois Samples

Concentrations reported in ug/L.

METAL	EMSL #	CONC. RECOVERED	TRUE VALUE	95 % CONFIDENCE INTERVAL	% RECOVERY
Aluminum	WP 386	602	500	423-623	120
Aluminum	WP 386	622	500	423-623	124
Antimony	WP 186	21	20	7.87-31.4	105
Arsenic	WP 386	104	100	77.2-121	104
Barium	WP 1183 CONC#2	11000	10000	9400-11400	110
Beryllium	WP 386	105	100	88.7-110	105
Cadmium	WP 386	26	25	21.2-27.7	104
Calcium	WP 1183 SAM#1	6480	7500	6450-8570	86
Chromium	WP 386	96	100	84.4-115	96
Cobalt	WP 386	108	100	86.8-112	108
Copper	WP 386	96	100	89.4-109	96
Iron	WP 386	106	100	82.7-118	106
Lead	WP 386	98	100	82.8-116	98
Magnesium	WP 1183 CONC#2	600	500	400-600	120
Manganese	WP 386	98	100	88.4-109	98
Mercury	WS 378 CONC#14	4.4	4.4	3.24-5.24	100
Nickel	WP 386	116	100	84.1-116	116
Potassium	WP 1183 CONC#2	1291	1500	1140-1900	86
Selenium	WP 386	22	25	17.4-28.3	88
Silver	WP 1083 ICAP-7	1021	990	-	103
Sodium	WP 1183 CONC#2	1438	1500	1300-1780	96
Sodium	WP 1183 CONC#2	1664	1500	1300-1780	111
Thallium	WP 186	21	20	14.5-28.0	105
Thallium	WP 186	17	20	14.5-28.0	85
Vanadium	WP 386	254	250	213-299	102
Zinc	WP 386	100	100	85.9-115	100

Table 2.16

Results of Matrix spike/Matrix spike duplicate Analysis

WA# 1300 Quincy Illinois Water Samples

Concentration reported in ug/l

SAMPLE# SITE 8 (4381)

METAL	SAMPLE CONC.	ORIGINAL CONC. Spike	ORIGINAL CONC. Dup.	RECOVERED CONC. Spike	RECOVERED CONC. Dup.	% RECOVERY Spike	% RECOVERY Dup.	RPD
Antimony	3	50	50	35	47	64	88	32
Arsenic	4	50	50	75	60	142	112	24
Beryllium	0	1000	1000	1111	913	111	91	20
Cadmium	0	1000	1000	1307	1075	131	108	19
Chromium	22	1000	1000	815	665	79	64	21
Cobalt	12	500	500	565	567	111	111	0
Copper	15	1000	1000	1287	1280	127	127	1
Iron	292	1000	1000	1538	1551	125	126	1
Lead	20	50	50	82	82	124	124	0
Manganese	108	500	500	622	620	103	102	0
Mercury	0	10	10	12.4	11.2	124	112	10
Nickel	73	1000	1000	1380	1161	131	109	18
Selenium	1	50	50	48	49	94	96	2
Silver	3	1000	1000	57	89	5	9	46
Thallium	0	50	50	13	18	26	36	32
Vanadium	12	500	500	576	619	113	121	7
Zinc	0	1000	1000	1316	1029	132	103	24

Table 2.17

Results of Matrix spike/Matrix spike duplicate Analysis

WA# 1300 Quincy Illinois Soil Samples

Concentration reported in ug/kg

SAMPLE# SITE 9 (4379)

METAL	SAMPLE CONC.	ORIGINAL CONC. Spike	ORIGINAL CONC. Dup.	RECOVERED CONC. Spike	RECOVERED CONC. Dup.	% RECOVERY Spike	% RECOVERY Dup.	RPD
Antimony	1176	19608	19231	10000	11923	45	54	22
Arsenic	1961	19608	19231	24510	23462	115	112	3
Beryllium	196	196078	192308	171569	172115	87	89	2
Cadmium	588	196078	192308	187843	187885	96	97	2
Chromium	3725	196078	192308	134314	129808	67	66	2
Cobalt	2549	98039	96154	105098	103846	105	105	1
Copper	2157	196078	192308	184510	183846	93	94	2
Lead	3922	196078	192308	186078	186923	93	95	2
Manganese	208235	98039	96154	270784	384231	64	183	97
Mercury	45	2000	1613	2925	2177	144	132	9
Nickel	6078	196078	192308	202157	197885	100	100	0
Selenium	0	19608	19231	13529	12885	69	67	3
Silver	1176	196078	192308	194118	191538	98	99	1
Thallium	0	19608	19231	15098	14423	77	75	3
Vanadium	10000	98039	96154	122549	116346	115	111	4
Zinc	17059	196078	192308	217059	218077	102	105	2

Table 2.18

Results of Spike Blank Analysis

Quincy Illinois WA#1300

Concentration reported in ug/l

METAL	Spike Blank	Concetration Recovered	% Spike Recovery
Antimony	50	49	98
Arsenic	50	73	146
Beryllium	1000	995	100
Cadmium	1000	1027	103
Chromium	1000	1168	117
Cobalt	500	548	110
Copper	1000	986	99
Iron	1000	1106	110
Lead	50	78	156
Manganese	500	515	103
Mercury	10	11.0	110
Nickel	1000	1058	106
Selenium	50	51	102
Silver	1000	1072	107
Thallium	50	49	98
Vanadium	500	544	109
Zinc	1000	990	99

Table 2.19

Results of Spike Blank Analysis

Quincy Illinois (Soil Sample)

Concentration reported in ug/kg

METAL	Spike Blank	Concentration Recovered	% Spike Recovery
Antimony	10000	8600	86
Arsenic	10000	11000	110
Beryllium	100000	93100	93
Cadmium	100000	100000	100
Chromium	100000	96200	96
Cobalt	50000	50100	100
Copper	100000	96400	96
Lead	100000	103900	104
Manganese	50000	47800	96
Mercury	1000	1060.0	106
Nickel	100000	98700	99
Selenium	10000	8300	83
Silver	100000	102900	103
Thallium	10000	6400	64
Vanadium	50000	55500	111
Zinc	100000	95600	96

000112

... Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 1716

Project Name: Quincy Illinois
Project Number: 1300
RFW Contact: _____ Phone: _____ Due Date: _____

SHEET NO 1 OF 5

00075

SAMPLE IDENTFICATION / ANALYSES REQUESTED

Sample No	Sampling Location	Matrix	Date Collected	Container/Preservative	PP Metals	Herbicides	Pest/PCBs	BNA	
4315	Site 2 SR	W	8/23/89	1 l gl/4°C HNO_3	X				
4315	Site 2	W	8/23/89	1 l amb/4°C		X			
4315	Site 2	W	8/23/89	1 l amb/4°C		X			
4315	Site 2	W	8/23/89	1 l amb/4°C				X	
4315	Site 2	W	8/23/89	1 l amb/4°C				X	
4315	Site 2	W	8/23/89	1 l amb/4°C			X		
4315	Site 2	W	8/23/89	1 l amb/4°C			X		
4374	Site 1	W	8/22/89	32 oz gl/4°C HNO_3	X				
4374	Site 1	W	8/22/89	1 l amb/4°C		X			
4374	Site 1	W	8/22/89	1 l amb/4°C			X		
4374	Site 1	W	8/22/89	1 l amb/4°C		X			
4374	Site 1	W	8/22/89	1 l amb/4°C				X	

Matrix
S Soil
W Water
O Oil
DS Drum Solids
DL Drum Liquids
X Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
1,2/all	Scott Fuhrer								

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 1717

Project Name: QUINCY ILLINOIS
Project Number: 1300
RFW Contact: _____ Phone: _____ Due Date: _____

SHEET NO 2 OF

00076

SAMPLE IDENTFICATION / **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	BNA	Pest/PCB	PP Metals	Herbicides	
4374	Site 1	W	8/22/89	1 l amb / 4°C	X				
4374	Site 1	W	8/22/89	1 l amb / 4°C		X			
4376	Site 3	W	8/23/89	32 oz gl / 4° HNO_3			X		
4376	Site 3	W	8/23/89	1 l amb / 4°C	X				
4376	Site 3	W	8/23/89	1 l amb / 4°C		X			
4376	Site 3	W	8/23/89	1 l amb / 4°C				X	
4376	Site 3	W	8/23/89	1 l amb / 4°C				X	
4376	Site 3	W	8/23/89	1 l amb. / 4°C	X				
4376	Site 3	W	8/23/89	1 l amb. / 4°C		X			
4378	Site 4	W	8/23/89	32 oz / 4° HNO_3			X		
4378	Site 4	W	8/23/89	1 l amb / 4°C		X			
4378	Site 4	W	8/23/89	1 l amb / 4°C	X				
4378	Site 4	W	8/23/89	1 l amb. / 4°C				X	
4378	Site 4	W	8/23/89	1 l amb / 4°C	X				

Matrix
S Soil
W Water
O Oil
DS Drum Solids
DL Drum Liquids
X Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
14 / all	[illegible]								

000114

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 1718

REAC, Edison, N.J.
EPA Contract 68-03-3482

Project Name: QUINCY ILLINOIS
Project Number: 1300
RFW Contact: Phone: Due Date:

SHEET NO 3 OF

00077

SAMPLE IDENTFICATION / ANALYSES REQUESTED

Sample No	Sampling Location	Matrix	Date Collected	Container/Preservative	VOA				
4374	Site 1	W	8/22/89	40ml / 4°C	X				
4374	Site 1	W	8/22/89	40 ml / 4°C	X				
4374	Site 1	W	8/22/89	40 ml / 4°C	X				
4375	Site 2	W	8/23/89	40 ml / 4°C	X	} contain sediment/floating matter			
4375	Site 2	W	8/23/89	40 ml / 4°C	X				
4375	Site 2	W	8/23/89	40 ml / 4°C	X				
4376	Site 3	W	8/23/89	40 ml / 4°C	X				
4376	Site 3	W	8/23/89	40 ml / 4°C	X				
4376	Site 3	W	8/23/89	40 ml / 4°C	X				
4378	Site 4	W	8/23/89	40 ml / 4°C	X				
4378	Site 4	W	8/23/89	40 ml / 4°C	X				
4378	Site 4	W	8/23/89	40 ml / 4°C	X				
4383	Site 7	W	8/23/89	40 ml / 4°C	X	} contains floating matter & have headspace			
4383	Site 7	W	8/23/89	40 ml / 4°C	X				
4383	Site 7	W	8/23/89	40 ml / 4°C	X				
4381	Site 8	W	8/23/89	40 ml / 4°C	X				
4381	Site 8	W	8/23/89	40 ml / 4°C	X				
4381	Site 8	W	8/23/89	40 ml / 4°C	X				
4382	Site 7	W	8/23/89	40 ml / 4°C	X	} all have headspace, floating matter			
4382	Site 7	W	8/23/89	40 ml / 4°C	X				

Matrix
S - Soil
W - Water
O - Oil
DS - Drum Solids
DL - Drum Liquids
X - Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
20/all	Scott Rubin								

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 1719

SHEET NO 4 OF

Project Name: QUINCY ILLINOIS
Project Number: 1300
RFW Contact: Phone: Due Date:

SAMPLE IDENTFICATION / **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	BNA	PP Metals	Herbicides	Pest/PCB	VOA
1377	Site 4	Sed	8/23/89	8oz gl / 4°C	X				
4377	Site 4	S	8/23/89	8oz gl / 4°C		X			
1377	Site 4	S	8/23/89	8oz gl / 4°C			X		
4377	Site 4	S	8/23/89	8oz gl / 4°C				X	
4375	Site 5	S	8/23/89	8oz gl / 4°C	X				
4375	Site 5	S	8/23/89	8oz gl / 4°C		X			
4375	Site 5	S	8/23/89	8oz gl / 4°C			X		
4375	Site 5	S	8/23/89	8oz gl / 4°C				X	
4375	Site 5	S	8/23/89	5oz gl / 4°C					X
4375	Site 5	S	8/23/89	5oz gl / 4°C					X
4377	Site 4	S	8/23/89	5oz gl / 4°C					X
4377	Site 4	S	8/23/89	4ml / 4°C					X
4380	Site 9	S	8/23/89	8oz / 4°C	X				
4380	Site 9	S	8/23/89	8oz / 4°C				X	
4380	Site 9	S	8/23/89	8oz / 4°C			X		
4380	Site 9	S	8/23/89	8oz / 4°C		X			
4379	Site 9	S	8/23/89	8oz / 4°C			X		
4379	Site 9	S	8/23/89	8oz / 4°C	X				
4379	Site 9	S	8/23/89	8oz / 4°C		X			
4379	Site 9	S	8/23/89	8oz / 4°C				X	

Matrix
S Soil DS- Drum Solids
W Water DL- Drum Liquids
O Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
20 / all	[illegible]								

00115

00078

000116

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 1720

SHEET NO 5

00079

..., Edison, N.J.
EPA Contract 68-03-3482

Project Name: QUINCY ILLINOIS
Project Number: 1300
RFW Contact: _____ Phone: _____ Due Date: _____

SAMPLE IDENTFICATION					ANALYSES REQUESTED				
Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	Pest/PCB	Herbicides	BNA		
4378	Site 4	W	8/23/89	1 l amb / 4°C		X			
4378	Site 4	W	8/23/89	1 l amb / 4°C	X				
4382	Site 7	W	8/23/89	1 l amb / 4°C		X			
4382	Site 7	W	8/23/89	1 l amb / 4°C		X			
4382	Site 7	W	8/23/89	1 l amb / 4°C	X				
4382	Site 7	W	8/23/89	1 l amb / 4°C			X		
4382	Site 7	W	8/23/89	1 l amb / 4°C			X		
4382	Site 7	W	8/23/89	1 l amb / 4°C	X				
4383	Site 7	W	8/23/89	1 l amb / 4°C			X		
4383	Site 7	W	8/23/89	1 l amb / 4°C		X			
4383	Site 7	W	8/23/89	1 l amb / 4°C	X				

Matrix
S Soil
W Water
O Oil
DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
11/ill	S. Maywich								

000117

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 1721

REAC, Edison, N.J.
EPA Contract 68-03-3482

Project Name QUINCY ILLINOIS
Project Number 1300
RFW Contact _____ Phone _____ Due Date _____

SHEET NO 6 OF ___

00080

SAMPLE IDENTFICATION **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	VOA				
4379	Site 9	S	8/23/89	40 ml / 4°C					
4379	Site 9	S	8/23/89	40 ml / 4°C					
4380	Site 9	S	8/23/89	40 ml / 4°C					
4380	Site 9	S	8/23/89	40 ml / 4°C					

Matrix:
S Soil DS- Drum Solids
W Water DL- Drum Liquids
O Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	

000118

REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 1722

Project Name: Quincy IL
Project Number: 1300
RFW Contact: _____ Phone: _____ Due Date: _____

SHEET NO 7 OF ___

00081

SAMPLE IDENTFICATION					ANALYSES REQUESTED				
Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	Pest/PCB	Herbicides	BNA	Metals	
4383	Site 7	W	8/23/89	1 lamb/4°C			X		
4383	Site 7	W	8/23/89	1 lamb/4°C	X				
4383	Site 7	W	8/23/89	1 lamb/4°C		X			
4383	Site 7	W	8/23/89	~~1 lamb~~ 4°C HNO3				X	
4382	[illegible] 7	W	8/23/89	~~1 lamb~~ HNO3/4°C				X	
4381	Site 8	W	8/23/89	1 lamb/4°C	X				
4381	Site 8	W	8/23/89	1 lamb/4°C	X				
4381	Site 8	W	8/23/89	1 lamb/4°C		X			
4381	Site 8	W	8/23/89	1 lamb/4°C		X			
4381	Site 8	W	8/23/89	1 lamb/4°C			X		
4381	Site 8	W	8/23/89	1 lamb/4°C			X		

Matrix
S Soil
W Water
O Oil
DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
Well	A Mazurek								

REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 1723

Project Name: QUINCY
Project Number: 1300
RFW Contact: _____ Phone: _____ Due Date: _____

SHEET NO 8 OF ___

00082

SAMPLE IDENTFICATION / **ANALYSES REQUESTED**

Sample No	Sampling Location	Matrix	Date Collected	Container/Preservative	VOA				
4382	Site 7	W	8/23/89	40ml / 4°C	X	headspace, floating matter			
4387	Trip Blank	W	8/23/89	40ml / 4°C	X	} 1 has headspace			
4387	Trip Blank	W	8/23/89	40ml / 4°C	X				

Matrix
S Soil DS- Drum Solids
W Water DL- Drum Liquids
O Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
3/all	Scott Richon								

00119

000120

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 1724

SHEET NO 9 OF 9

Project Name Quincy, IL
Project Number 1300
RFW Contact _____ Phone _____ Due Date _____

00083

SAMPLE IDENTFICATION					ANALYSES REQUESTED				
Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	Pest/PCB	BNA	HERBICIDE	METALS	
4386	Rinsate	W	8/23/89	1 lamb / 4°C					
4381	Site 8	W	8/23/89	32 oz [illegible]				X	
4385	Site 8	W	8/23/89	1 lamb / 4°C	X				
4385	Site 8	W	8/23/89	1 lamb / 4°C	X				
4385	Site 8	W	8/23/89	1 lamb / 4°C		X			
4385	Site 8	W	8/23/89	1 lamb / 4°C		X			
4385	Site 8	W	8/23/89	1 lamb / 4°C			X		
4385	Site 8	W	8/23/89	1 lamb / 4°C			X		

Matrix
S Soil DS- Drum Solids
W Water DL- Drum Liquids
O Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
8/all	S Mizyasek								

APPENDIX B - TRIP REPORT

QUINCY DRUM SITE
QUINCY, ILLINOIS

rd:eh/RUHREN/FR-2300

APPENDIX C - CHAIN OF CUSTODY, FIELD DATA SHEETS, LOG TRANSCRIPTS

QUINCY DRUM SITE
QUINCY, ILLINOIS

Roy F. 'eston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RE RD/LAB WORK REQUEST

No: 1716

Project Name: [illegible]
Project Number: [illegible]
RFW Contact: _____ Phone: _____ Due Date: _____

SHEET NO. 1 OF _

SAMPLE IDENTFICATION / ANALYSES REQUESTED

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	[illegible]	[illegible]	[illegible]	[illegible]	
4375	30' [illegible]	W	[illegible]	[illegible]	X				
4375	[illegible]	W	[illegible]	[illegible]		X			
[illegible]	[illegible]	W	[illegible]	[illegible]		X			
[illegible]	[illegible]	W	[illegible]	[illegible]				X	
4376	[illegible]	W	[illegible]	[illegible]					
[illegible]	[illegible]	W	[illegible]	[illegible]			X		
[illegible]	30' [illegible]	W	[illegible]	[illegible]					
4374	15' [illegible]	W	[illegible]	[illegible]					
4374	[illegible]	W	[illegible]	[illegible]		X			
4374	[illegible]	W	[illegible]	[illegible]			X		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		X			
[illegible]	15 [illegible]	W	[illegible]	[illegible]				X	

BRIDGE

BRIDGE

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
1.2/[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					

000123

Roy Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN C. CUSTODY R[illegible]ORD/LAB WORK REQUEST

No: [illegible]717

SHEET NO ___ OF

Project Name: [illegible]
Project Number: [illegible]
RFW Contact: _____ Phone: _____ Due Date _____

SAMPLE IDENTFICATION / ANALYSES REQUESTED

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	[illegible]	[illegible]	[illegible]		
4374	15' Site 1	W	[illegible]	[illegible]	X				
4374	15' Site 1 BRIDGE	W	[illegible]	[illegible]		X			
4376	Site 3	W	[illegible]	[illegible]			X		
4376	Site 3	W	[illegible]	[illegible]	X				
4376	15' Site 3 Down	W	[illegible]	[illegible]		X			
4376	Site 3 Stream	W	[illegible]	[illegible]				X	
4376	Site 3	W	[illegible]	[illegible]				X	
4376	Site 3	W	[illegible]	[illegible]	X				
4376	[illegible]	W	[illegible]	[illegible]		X			
4378	Site 4	W	[illegible]	[illegible]			X		
4378	Site 4 Down	W	[illegible]	[illegible]		X			
4378	30' Site 4	W	[illegible]	[illegible]	X				
4378	Site 4 Stream	W	[illegible]	[illegible]				X	
4378	Site 4	W	[illegible]	[illegible]	X				

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					

000124

Ro[illegible] Weston, Inc.
REA[illegible], Edison, N.J.
EPA Contract 68-03-3482

CHAIN [illegible] CUSTODY [illegible]CORD/LAB WORK REQUEST

No. [illegible]

SHEET NO [illegible] OF

Project Name: [illegible]
Project Number: [illegible]
RFW Contact: _____ Phone _____ Due Date: _____

SAMPLE IDENTFICATION | **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	[illegible]				
[illegible]	15' [illegible] BRIDGE	[illegible]	[illegible]	[illegible]	X				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	X				
[illegible]	15' [illegible]	[illegible]	[illegible]	[illegible]	X				
[illegible]	30' [illegible] BRIDGE	[illegible]	[illegible]	[illegible]	X				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	X				
[illegible]	30' [illegible]	[illegible]	[illegible]	[illegible]	X				
4316	Site 3	W	[illegible]	40 ml / 4°C	X				
4316	15' Site 3 Down Str	W	[illegible]	40 ml / 4°C	X				
4316	Site 3	W	[illegible]	40 ml / 4°C	X				
[illegible]	30 Site 4 Down Str	W	[illegible]	[illegible]	X				
[illegible]	30 [illegible]	W	[illegible]	[illegible]	X				
[illegible]	30 [illegible]	W	[illegible]	[illegible]	X				
DUPE — [illegible]	15' [illegible] mid DUPE	W	[illegible]	[illegible]	X				
[illegible]	15' [illegible]	W	[illegible]	[illegible]	X				
[illegible]	15' [illegible]	W	[illegible]	[illegible]	X				
4381	30' [illegible] 8 mid	W	5/22/[illegible]	40 ml / 4°C	X				
[illegible]	30' [illegible] 8	W	[illegible]	[illegible]	X				
[illegible]	30' Site 8	W	5/22/[illegible]	[illegible]	X				
[illegible]	15' Site 7 mid	W	[illegible]	[illegible]	X				
[illegible]	15' [illegible] 7 mid	W	[illegible]	[illegible]	X				

Matrix:
S- Soil
W- Water
O- Oil
DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
[illegible]	Scott [illegible]	[illegible]	[illegible]	[illegible]					

000125

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 1715

SHEET NO 1 OF _

Project Name: [illegible]
Project Number: [illegible]
RFW Contact: _____ Phone: _____ Due Date: _____

SAMPLE IDENTFICATION / **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	BNA	PP Metal	Herbicide	[illegible]	[illegible]
1317	Site 4	Sed	5/23/91	[illegible] / 4°C	X				
1317	Site 4 Down	S	5/23/91	[illegible] / 4°C		X			
[illegible]	Site 4 Str	S	[illegible]	[illegible] / 4°C			X		
[illegible]	Site 4	S	[illegible]	[illegible] / 4°C				X	
1375	30' Site 5 Bridge	S	8/23/91	[illegible] / 4°C	X				
1315	Site 5	S	8/23/91	[illegible] / 4°C		X			
1315	Site 5	S	8/23/91	[illegible] / 4°C			X		
1315	Site 5	S	8/23/91	[illegible] / 4°C				X	
1315	Site 5	S	8/23/91	[illegible] / 4°C					
1315	30' Site 5 Bridge	S	8/23/91	[illegible] / 4°C					
1317	Site 4 Down	S	[illegible]	[illegible] / 4°C					
[illegible]	Site 4	S	[illegible]	[illegible] / 4°C					
1350	Site 1 Dupe	S	[illegible]	[illegible] / 4°C	X				
1350	Site 1 Dupe	S	[illegible]	[illegible] / 4°C				X	
1350	Site 1 Dupe	S	[illegible]	[illegible] / 4°C			X		
[illegible]	Site 1 Dupe	S	[illegible]	[illegible] / 4°C		X			
1377	Site 1	S	[illegible]	[illegible] / 4°C			X		
1377	Site 1 Mid	S	8/23/91	[illegible] / 4°C	X				
1377	Site 1 Sec	S	[illegible]	[illegible] / 4°C		X			
1377	Site 1	S	[illegible]	[illegible] / 4°C				X	

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
Incl	[illegible]	[illegible]							

000126

Roy Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 1120

Project Name: [illegible]
Project Number: [illegible]
RFW Contact: _____ Phone: _____ Due Date: _____

SHEET NO. [illegible] OF

SAMPLE IDENTFICATION / **ANALYSES REQUESTED**

	Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	[illegible]	[illegible]	BNA		
✓	[illegible]	30' [illegible] Down	W	[illegible]	[illegible]		X			
✓	[illegible]	[illegible] stream	W	[illegible]	[illegible]	X				
✓	[illegible]	15' [illegible] Mid	W	[illegible]	[illegible]		X			
✓	4382	[illegible]	W	[illegible]	[illegible]		X			
✓	4382	[illegible]	W	8/23/89	1 liter/4°C	X				
✓	4382	[illegible]	W	8/23/89	[illegible]			X		
✓	4382	[illegible]	W	8/23/89	1 liter/4°C			X		
✓	4382	15' [illegible] mid	W	[illegible]	[illegible]	X				
D ✓	4383	15' [illegible] mid	W	[illegible]	[illegible]			X		
X ✓	[illegible]	15' [illegible]	W	[illegible]	1 liter/4°C		X			
E ✓	[illegible]	15' [illegible] mid	[illegible]	[illegible]	[illegible]	X				

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					

000127

Roy F /eston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RE RD/LAB WORK REQUEST

No: 1721

SHEET NO ___ OF ___

Project Name: [illegible]
Project Number: [illegible]
RFW Contact: _____ Phone: _____ Due Date: _____

SAMPLE IDENTFICATION / **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	VOA				
1277	[illegible] mid	S	[illegible]	[illegible]					
1279	[illegible] sec	S	[illegible]	[illegible]					
[illegible]	[illegible] Dupe	S	[illegible]	[illegible]					
[illegible]	[illegible] Dupe	S	[illegible]	[illegible]					

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
		[illegible]	[illegible]	[illegible]					

000128

Roy F. [illegible]eston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RE[illegible]RD/LAB WORK REQUEST

No: [illegible]22

Project Name: [illegible]
Project Number: [illegible]
RFW Contact: _____ Phone: _____ Due Date: _____

SHEET NO [illegible] OF [illegible]

SAMPLE IDENTFICATION / **ANALYSES REQUESTED**

	Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	Pest/PCB	[illegible]	BNA	Metal	
DUPE	[illegible]383	15' Site 7 mid	W	[illegible]	[illegible]			X		
	[illegible]383	Site 7	W	[illegible]	[illegible]	X				
	[illegible]383	Site 7	W	[illegible]	[illegible]		X			
	[illegible]383	15' Site 7 mid	W	[illegible]	[illegible]				X	
	[illegible]382	15' Site 7 mid	W	[illegible]	[illegible]				X	
	4381	30' Site 8 mid	W	[illegible]	[illegible]	X				
	[illegible]381	[illegible]' Site 8 River	W	[illegible]	[illegible]	X				
	[illegible]381	[illegible]' Site 8	W	[illegible]	[illegible]		X			
	[illegible]381	[illegible]' Site 8	W	[illegible]	[illegible]		X			
	[illegible]381	[illegible]' Site 8	W	[illegible]	[illegible]			X		
	[illegible]381	[illegible]' Site 8	W	[illegible]	[illegible]			X		

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					

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Roy [illegible] Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: [illegible]

SHEET NO [illegible] OF [illegible]

Project Name: [illegible]
Project Number: 1300
RFW Contact: _____ Phone: _____ Due Date: _____

SAMPLE IDENTFICATION / ANALYSES REQUESTED

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	VOA				
✓ 4382	15' [illegible] 7 Mid	W	[illegible]	[illegible] / 4°C	X				
✓ 4387	Trip Blank	W	[illegible]	[illegible] / [illegible]	X				
✓ 4387	Trip Blank	W	[illegible]	[illegible] / [illegible]	X				

Matrix:
S- Soil
W- Water
O- Oil
DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
3/all	[illegible]	[illegible]	[illegible]	[illegible]					

000130

Roy I Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: [illegible]

SHEET NO [illegible] OF [illegible]

Project Name: [illegible]
Project Number: [illegible]
RFW Contact: _____ Phone: _____ Due Date: _____

SAMPLE IDENTFICATION / **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	Pest/PCB	BNA	[illegible]	[illegible]	
Rinsate ✓ 4386	Rinsate	W	8/23/89	1 [illegible] / 4°C					
✓ 4381	30' [illegible] Mid river	W	8/23/89	[illegible]				X	
MAT. SPK. ✓ [illegible]	Matrix [illegible] Mid	W	8/23/89	1 [illegible] / 4°C	X				
✓ [illegible]	[illegible] River	W	8/23/89	1 [illegible] / 4°C	X				
✓ [illegible]	[illegible]	W	8/23/89	1 [illegible] / 4°C					
✓ [illegible]	[illegible]	W	8/23/89	1 [illegible] / 4°C		X			
✓ [illegible]	[illegible]	W	8/23/89	1 [illegible] / 4°C			X		
✓ [illegible]	Matrix [illegible]	W	8/23/89	1 [illegible] / 4°C			X		

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
Stall	[illegible]	[illegible]	[illegible]	[illegible]					

000131

000132

FIELD DATA SHEET

Nº 004374

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Chain of Custody No. 1, 2, 3

Lab No.: _____ Samplers: Mayasich / Ruhren REAC Task Leader: Ruhren

Date: 8/22/89 Site Name: QUINCY ILLINOIS EPA Task Monitor: Charters

Time: 1825 Sample Location: 1A Bridge 15ft Project No.: 1300

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER		STREAM		BOTTOM	
landfill	old field	upland palustrine	rock	clay	color	Murky	width		rock	slit
industrial	wooded	lowland riverine	gravel	muck	odor		depth	~30'	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	
stream/surface	soil	[illegible]		color	Murky	pH	8.10	ambient temp	85° F
groundwater	pond/lake	trout	other	odor		ORP	.166	barometric pressure	
brackish	river	bucket	yes	temp	26°C	salinity	0	relative humidity	85%
ocean/saline	effluent	sugar		DO	2.06	sample depth	15'	weather conditions	
sediment	sludge	ekman		cond	.442	tide stage			

ANALYSES TO BE PERFORMED

TOC required? ____ Yes ✓ No
If No, explain not requested

Grain size analysis required? ____ Yes ✓ No
If No, explain water

ORGANICS
- A. halogenated & aromatic volatiles
- B. volatiles-USEPA 624
- C. trihalomethanes
- D. pesticides/PCB
- E. PCB
- F. base neutral/acid extractables-USEPA 625
- G. pesticides, drinking water
- H. herbicides, drinking water

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

LIMITED CHEMISTRY
- 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

OTHER ANALYSES (specify)

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3 for pp meta
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other 4°C

STORAGE
- wet ice refrigeration
- dry ice
- ambient

BIOASSESSMENT
- See attached data sheet
- See comments

RCRA
- A. EP toxicity ____ metals ____ pesticides ____ herbicides
- B. ignitability
- C. corrosivity ____ pH ____
- D. reactivity

AIR SAMPLING
- Sampling Method ____
- Sample Flow Rate ____
- Sampling Time ____
- Volume Collected ____

Collection Media
Special Shipping Instructions ____
#Field Blanks ____ #Sample Blanks ____

COMMENTS:

			COC
1	32 oz gl	pp metals	1
2	1 l amb	herbicides	1
2	1 l amb	pesticides / PCBS	1, 2
2	1 l amb	BNAs	1, 2
3	40 ml VOA		3

~30' from shore under bridge

000133

№ 004375

FIELD DATA SHEET

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Chain of Custody No. 1,3
Lab No.: ____ Samplers: Mayasich / Tobia
REAC Task Leader: Ruhren
Date: 5/23/89 Site Name: QUINCY ILLINOIS
EPA Task Monitor: Charters
Time: W 0915/S1015 Sample Location: 1B Bridge 30 ft
Project No.: 1300

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color murky	width ~~[illegible]~~	rock	silt
industrial	wooded	lowland riverine	gravel	muck	odor ____	depth ~30	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	
stream/surface	soil	kemmerer	ponar	color Murky	pH 7.94	ambient temp 95°F	
groundwater	pond/lake	trowel	other ____	odor ____	ORP .118	barometric pressure ____	
brackish	river	bucket		temp 25.50°C	salinity 0	relative humidity 85%	
ocean/saline	effluent	sugar		DO 2.46	sample depth ~25'	weather conditions ____	
sediment	sludge	ekman		cond .438	tide stage ____		

ANALYSES TO BE PERFORMED

TOC required? ____ Yes ✓ No
If No, explain H_2O

Grain size analysis required? ____ Yes ✓ No
If No, explain H_2O

ORGANICS
- A. halogenated & aromatic volatiles
- B. volatiles-USEPA 624
- C. trihalomethanes
- D. pesticides/PCB
- E. PCB
- F. base neutral/acid extractables-USEPA 625
- G. pesticides, drinking water
- H. herbicides, drinking water

INORGANICS
- A. metals, priority pollutant
- B. metals scan (ICP)
- C. metals, other ____

LIMITED CHEMISTRY
- 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

OTHER ANALYSES (specify) ____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3 pp metals
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other 4°C

STORAGE
- wet ice refrig.
- dry ice
- ambient

BIOASSESSMENT
- See attached data sheet
- See comments

RCRA
- A. EP toxicity ____ metals ____ pesticides ____ herbicides
- B. ignitability
- C. corrosivity ____ pH ____
- D. reactivity

AIR SAMPLING
Sampling Method ____ Collection Media
Sample Flow Rate ____ Special Shipping Instructions ____
Sampling Time ____
Volume Collected ____ #Field Blanks ____ #Sample Blanks ____

COMMENTS:

			COC
1	32 oz	gl pp metals	1
2	1 l	amb. herbicides	1
2	1 l	amb. pest / PCB	1
2	1 l	amb. BNAs	1
3	40	ml VOA	3

After storm event in am.

Sed		COC
1	8oz gl BNAs	4
1	8oz gl pp metals	4
1	8oz gl pest/PCB	4
1	8oz gl herb	4
2	40ml VOA	4

000134

FIELD DATA SHEET

№ 004376

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

LOC. 3

Chain of Custody No. 2, 3

Lab No.: _____ Samplers: Mayasich / Tobia REAC Task Leader: Ruhren

Date: 8/23/89 Site Name: QUINCY ILLINOIS EPA Task Monitor: Charters

Time: _____ Sample Location: 4 Downstream 15' deep Project No.: 1300

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM
landfill	old field	upland palustrine	rock	clay	color Murky	width ~	rock (slit)
industrial	wooded	(lowland riverine)	gravel	muck	odor	depth ~30'	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
(stream/surface)	soil	(kemmerer)	ponar	color Murky	pH 8.03	ambient temp 86°F
groundwater	pond/lake	trowl	other	odor	ORP .132	barometric pressure
brackish	(river)	bucket		temp 25.7°C	salinity 0	relative humidity ~85%
ocean/saline	effluent	sugar		DO 2.15	sample depth ~22'	weather conditions
sediment	sludge	ekman		cond .446	tide stage	

ANALYSES TO BE PERFORMED

TOC required? ___ Yes ✓ No
If No, explain H_2O

Grain size analysis required? ___ Yes ✓ No
If No, explain H_2O

ORGANICS
- A. halogenated & aromatic volatiles
- (B.) volatiles-USEPA 624
- C. trihalomethanes
- (D.) pesticides/PCB
- E. PCB
- (F.) base neutral/acid extractables-USEPA 625
- (G.) pesticides, drinking water
- (H.) herbicides, drinking water

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

LIMITED CHEMISTRY
- 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

OTHER ANALYSES (specify)

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
(glass jar)	(HNO3) pp metals
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	(other) 4°C

STORAGE
- (wet ice) refrigerator
- dry ice
- ambient

BIOASSESSMENT
- See attached data sheet
- See comments

RCRA
- A. EP toxicity ___ metals ___ pesticides ___ herbicides
- B. ignitability
- C. corrosivity ___ pH ___
- D. reactivity

AIR SAMPLING
- Sampling Method ___
- Sample Flow Rate ___
- Sampling Time ___
- Volume Collected ___

Collection Media
Special Shipping Instructions ___
#Field Blanks ___ #Sample Blanks ___

COMMENTS:

	COC
1 32 oz gl pp metals	2
2 1 l amb herb.	2
2 1 l amb pest/pcb	2
2 1 l amb BNAs	2
3 40 ml VOAs	3

After Storm Event in am

000135

FIELD DATA SHEET

№ 004377

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

LOC 3

Lab No.: _____ Samplers: Mayasich / Tobia
Date: 8/23/89 Site Name: Quincy Illinois
Time: 1150 Sample Location: (5) Downstream (30ft) Sed

Chain of Custody No. _____
REAC Task Leader: Ruhren
EPA Task Monitor: Charters
Project No.: 1300

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

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

SURFACE WATER
color Murky, odor _____, flow _____, direction _____

STREAM
width _____, depth ~30', velocity _____ cm/s, pools _____ %, riffles _____ %

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

SAMPLE TYPE
stream/surface, groundwater, brackish, ocean/saline, (sediment), soil, pond/lake, (river), effluent, sludge

DEVICE
(Ponar), trowl, bucket, sugar, ekman, other _____

SAMPLE INFORMATION
color Brown, odor _____, temp 25.70 (water), DO 8.24, cond .446
pH 8.03, ORP .132, salinity 0, sample depth ~23', tide stage _____

WEATHER PARAMETERS
ambient temp 85°F, barometric pressure _____, relative humidity ~86%, weather conditions Cloudy

ANALYSES TO BE PERFORMED

TOC required? ____ Yes ✓ No
If No, explain _____

Grain size analysis required? ____ Yes ✓ No
If No, explain _____

ORGANICS
A. halogenated & aromatic volatiles
(B) volatiles-USEPA 624
C. trihalomethanes
(D) pesticides/PCB
E. PCB
(F) base neutral/acid extractables-USEPA 625
(G) pesticides, drinking water
(H) herbicides, drinking water

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

RCRA
A. EP toxicity ____ metals ____ pesticides ____ herbicides
B. ignitability
C. corrosivity ____ pH ____
D. reactivity

LIMITED CHEMISTRY
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

OTHER ANALYSES (specify)
_____
_____

AIR SAMPLING
Sampling Method _____
Sample Flow Rate _____
Sampling Time _____
Volume Collected _____
Collection Media
Special Shipping Instructions _____
#Field Blanks ____ #Sample Blanks ____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
(glass jar)	(HNO3) pp metals 4
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	(other) 4°C

STORAGE
(wet ice) refrig.
dry ice
ambient

BIOASSESSMENT
See attached data sheet
See comments

COMMENTS.

Sed			COC
1	8oz gl	BNAs	4
1	8oz gl	pp metals	4
1	8oz gl	Pest/PCB	4
1	8oz gl	Herb	4
2	40ml	VOA	4

000136

FIELD DATA SHEET

№ 004378

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

LOC 3

Lab No.: _____ Samplers: Mayasich / Tobia
Date: 8/22/89 Site Name: QUINCY Illinois
Time: 1415 Sample Location: 30' deep Downstream

Chain of Custody No.s 2, 5, 3
REAC Task Leader: Ruhren
EPA Task Monitor: Charters
Project No.: 1300

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	
(stream/surface)	soil	(kemmerer)	sonar	color Mucky	pH 8.03	ambient temp 85°F	
groundwater	pond/lake	trowel	other _____	odor _____	ORP .132	barometric pressure _____	
brackish	(river)	bucket		temp 25.7C	salinity 0	relative humidity 85%	
ocean/saline	effluent	sugar		DO 2.21	sample depth ~20'	weather conditions _____	
sediment	sludge	ekman		cond .446	tide stage _____		

ANALYSES TO BE PERFORMED

TOC required? ____ Yes ✓ No
If No, explain H_2O

Grain size analysis required? ____ Yes ✓ No
If No, explain _____

ORGANICS
- A. halogenated & aromatic volatiles
- (B) volatiles-USEPA 624
- C. trihalomethanes
- (D) pesticides/PCB
- E. PCB
- (F) base neutral/acid extractables-USEPA 625
- (G) pesticides, drinking water
- (H) herbicides, drinking water

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

RCRA
- A. EP toxicity ____ metals ____ pesticides ____ herbicides
- B. ignitability
- C. corrosivity ____ pH ____
- D. reactivity

LIMITED CHEMISTRY
- 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

OTHER ANALYSES (specify)
_____
_____

AIR SAMPLING
Sampling Method _____
Sample Flow Rate _____
Sampling Time _____
Volume Collected _____
Collection Media
Special Shipping Instructions _____
#Field Blanks ____ #Sample Blanks ____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
(glass jar)	(HNO3) for pp metal
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	(other) 4°C

STORAGE
(wet ice) refrig.
dry ice
ambient

BIOASSESSMENT
See attached data sheet
See comments

COMMENTS:

			COC
1	32 oz	gl pp metals	2
2	1 l	amb. herbicide	2, 5,
2	1 l	amb. pest. / PCB	2, 5
2	1 l	amb BNAs	2
3	40 ml	VOAs	3

Off Boat Club dock

000137

N: 004379

FIELD DATA SHEET

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

LOC 2

Lab No.: _____ Samplers: Mayasich / Tobia
Date: 8/23/89 Site Name: QUINCY ILLINOIS
Time: 1600 Sample Location: Mid Section Sed

Chain of Custody No. 4, 6
REAC Task Leader: Runren
EPA Task Monitor: Charters
Project No.: 1300

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

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

SURFACE WATER
color Murky, odor _____, flow _____, direction _____

STREAM
width _____, depth ~30', velocity _____ cm/s, pools _____ %, riffles _____ %

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

SAMPLE TYPE
stream/surface, groundwater, brackish, ocean/saline, sediment, soil, pond/lake, river, effluent, sludge

DEVICE
kemmerer, ponar, trowl, other _____, bucket, sugar, ekman

SAMPLE INFORMATION
color Brown, pH 7.99
odor _____, ORP .123
temp 25.62, salinity 0
water DO 2.49, sample depth ~30'
cond .449, tide stage _____

WEATHER PARAMETERS
ambient temp 85°F
barometric pressure _____
relative humidity ~85%
weather conditions Cloudy

ANALYSES TO BE PERFORMED

TOC required? ____ Yes ✓ No
If No, explain not requested

Grain size analysis required? ____ Yes ✓ No
If No, explain _____

ORGANICS
A. halogenated & aromatic volatiles
B. volatiles-USEPA 624
C. trihalomethanes
D. pesticides/PCB
E. PCB
F. base neutral/acid extractables-USEPA 625
G. pesticides, drinking water
H. herbicides, drinking water

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

RCRA
A. EP toxicity ____ metals ____ pesticides ____ herbicides
B. ignitability
C. corrosivity ____ pH ____
D. reactivity

LIMITED CHEMISTRY
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

OTHER ANALYSES (specify)
_____
_____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other 4°C

STORAGE
wet ice, dry ice, ambient — Refrig.

BIOASSESSMENT
See attached data sheet
See comments

AIR SAMPLING
Sampling Method _____
Sample Flow Rate _____
Sampling Time _____
Volume Collected _____
Collection Media
Special Shipping Instructions _____
#Field Blanks ____ #Sample Blanks ____

COMMENTS:

Sediment

				COC
1	8oz	gl	BNAs	4
1	8oz	gl	pp Metals	4
1	8oz	gl	Pest/PCBs	4
1	8oz	gl	Herb.	4
2	40 ml		VOA	6

000138

FIELD DATA SHEET

№ 004380

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

LOC 2

Lab No.: ____ Samplers: Mayasich / Tobia Chain of Custody No. 4, 6
Date: 8/23/89 Site Name: Quincy Illinois REAC Task Leader: Ruhren
Time: 1600 Sample Location: Middle Section Sed Dupe EPA Task Monitor: Charters
Project No.: 1300

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

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

SURFACE WATER
color ____ odor ____ flow Sluggish direction ____

STREAM
width ____ depth ~30' velocity ____ cm/s pools ____ % riffles ____ %

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

SAMPLE TYPE
stream/surface, groundwater, brackish, ocean/saline, sediment; soil, pond/lake, river, effluent, sludge

DEVICE
kemmerer, trowl, bucket, sugar, ekman; ponar, other ____

SAMPLE INFORMATION
color Mucky pH 7.99
odor ____ ORP .123
temp 25.52 C salinity 0
DO 2.41 sample depth ~30'
cond .449 tide stage ____
water

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

ANALYSES TO BE PERFORMED

TOC required? ____ Yes ✓ No
If No, explain Not requested

Grain size analysis required? ____ Yes ✓ No
If No, explain ____

ORGANICS
A. halogenated & aromatic volatiles
B. volatiles-USEPA 624
C. trihalomethanes
D. pesticides/PCB
E. PCB
F. base neutral/acid extractables-USEPA 625
G. pesticides, drinking water
H. herbicides, ~~drinking water~~

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

RCRA
A. EP toxicity ____ metals ____ pesticides ____ herbicides
B. ignitability
C. corrosivity ____ pH ____
D. reactivity

LIMITED CHEMISTRY
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

OTHER ANALYSES (specify)
____
____

AIR SAMPLING
Sampling Method ____
Sample Flow Rate ____
Sampling Time ____
Volume Collected ____
Collection Media
Special Shipping Instructions ____
#Field Blanks ____ #Sample Blanks ____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other 4°C

STORAGE
wet ice refrig.
dry ice
ambient

BIOASSESSMENT
See attached data sheet
See comments

COMMENTS:

Sediment Dupe

Sediment	COC
1 8oz gl BNAs	4
1 8oz gl pp Metals	4
1 8oz gl Pest/PCBs	4
1 8oz gl Herbicides	4
2 40 ml VOAs	6

000139

FIELD DATA SHEET

№ 004381

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

LOC 2

Chain of Custody No. 379
REAC Task Leader: Ruhren
EPA Task Monitor: Charters
Project No.: 1300

Lab No.: _____
Date: 8/23/89
Time: _____
Samplers: Mayasich / Tobia
Site Name: Quincy Illinois
Sample Location: Mid Site 30' deep

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color Murky	width _____	rock	silt
industrial	wooded	(lowland riverine)	gravel	muck	odor _____	depth ~30'	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
(stream/surface)	soil	(kemmerer)	ponar	color Murky	pH 7.99	ambient temp _____
groundwater	pond/lake	trowl	other _____	odor _____	ORP .123	barometric pressure _____
brackish	(river)	bucket		temp 25.82	salinity 0	relative humidity _____
ocean/saline	effluent	sugar		DO 2.49	sample depth ~28'	weather conditions _____
sediment	sludge	ekman		cond .449	tide stage _____	

ANALYSES TO BE PERFORMED

TOC required? ____ Yes ✓ No
If No, explain _____

Grain size analysis required? ____ Yes ✓ No
If No, explain _____

ORGANICS
- A. halogenated & aromatic volatiles
- (B) volatiles-USEPA 624
- C. trihalomethanes
- (D) pesticides/PCB
- E. PCB
- (F) base neutral/acid extractables-USEPA 625
- G. pesticides, drinking water
- (H) herbicides, drinking water

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

RCRA
- A. EP toxicity ____ metals ____ pesticides ____ herbicides
- B. ignitability
- C. corrosivity ____ pH ____
- D. reactivity

LIMITED CHEMISTRY
- 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

OTHER ANALYSES (specify)
_____
_____

AIR SAMPLING
Sampling Method _____
Sample Flow Rate _____
Sampling Time _____
Volume Collected _____
Collection Media
Special Shipping Instructions _____
#Field Blanks ____ #Sample Blanks ____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
(glass jar)	(HNO3) for pp metals
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	(other) 4°C

STORAGE
(wet ice) refrig.
dry ice
ambient

BIOASSESSMENT
See attached data sheet
See comments

COMMENTS:

			COC
1	32 oz	gl pp metals	9
2	1 l	amb herb	7
2	1 l	amb pest/PCBs	7
2	1 l	amb BNAs	7
3	40 ml	VOAs	3

000140

Nº 004382

FIELD DATA SHEET

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Loc 2

Lab No.: ____ Samplers: Mayasich / Tobia
Date: 8/23/89 Site Name: Quincy Illinois
Time: ____ Sample Location: 15' deep Mid Section

Chain of Custody No. 3, 5, 7, 8
REAC Task Leader: Ruhren
EPA Task Monitor: Charters
Project No.: 1300

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color Murky	width ____	rock	silt
industrial	wooded	lowland riverine	gravel	muck	odor ____	depth ~30'	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	
stream/surface	soil	kemmerer	ponar	color Murky	pH 8.02	ambient temp	85°F
groundwater	pond/lake	trowl	other ____	odor –	ORP .121	barometric pressure	____
brackish	river	bucket		temp 26.40	salinity 0	relative humidity	85%
ocean/saline	effluent	sugar		DO 3.58	sample depth ~15'	weather conditions	after storm event, clearing
sediment	sludge	ekman		cond .450	tide stage ____		

ANALYSES TO BE PERFORMED

TOC required? ____ Yes ✓ No
If No, explain ____

Grain size analysis required? ____ Yes ✓ No
If No, explain ____

ORGANICS
- A. halogenated & aromatic volatiles
- (B.) volatiles-USEPA 624
- C. trihalomethanes
- (D.) pesticides/PCB
- E. PCB
- (F.) base neutral/acid extractables-USEPA 625
- G. pesticides, drinking water
- (H.) herbicides, drinking water

INORGANICS
- (A.) metals, priority pollutant
- B. metals scan (ICP)
- C. metals, other ____

RCRA
- A. EP toxicity ____ metals ____ pesticides ____ herbicides
- B. ignitability
- C. corrosivity ____ pH ____
- D. reactivity

LIMITED CHEMISTRY
- 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

OTHER ANALYSES (specify)
____
____

AIR SAMPLING
Sampling Method ____ Collection Media ____
Sample Flow Rate ____ Special Shipping Instructions ____
Sampling Time ____
Volume Collected ____ #Field Blanks ____ #Sample Blanks ____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
(glass jar)	(HNO3) pp metals
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	(other) 4°C

STORAGE
(wet ice) refrig.
dry ice
ambient

BIOASSESSMENT
See attached data sheet
See comments

COMMENTS:

		COC
1	32 oz gl pp metals	7
2	1 l amb. herb.	5
2	1 l amb. pest/PCBs	5
2	1 l amb. BNAs	5
3	40 ml VOAs	3,8

000141

FIELD DATA SHEET

№ 004383

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Loc 2

Chain of Custody No. 3, 5, 7

Lab No.: ____
Date: 8/23/89
Time: ____

Samplers: Mayasich / Tobia
Site Name: Quincy Illinois
Sample Location: Dupe 15' Mid Sec. Water

REAC Task Leader: Ruhren
EPA Task Monitor: Charters
Project No.: 1300

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color Murky	width ____	rock	silt
industrial	wooded	(owland riverine)	gravel	muck	odor ____	depth ~30'	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	
(stream/surface)	soil	(kemmerer)	ponar	color Murky	pH 8.02	ambient temp 85f	
groundwater	pond/lake	trowel	other ____	odor —	ORP .121	barometric pressure ____	
brackish	(river)	bucket		temp 25.90C	salinity 0	relative humidity 95%	
ocean/saline	effluent	sugar		DO 2.58	sample depth ~15'	weather conditions cloudy	
sediment	sludge	ekman		cond .450	tide stage ____	after storm	

ANALYSES TO BE PERFORMED

TOC required? ____ Yes ✓ No
If No, explain ____

Grain size analysis required? ____ Yes ✓ No
If No, explain ____

ORGANICS
- A. halogenated & aromatic volatiles
- (B.) volatiles-USEPA 624
- C. trihalomethanes
- (D.) pesticides/PCB
- E. PCB
- (F.) base neutral/acid extractables-USEPA 625
- G. pesticides, drinking water
- (H.) herbicides, drinking water

INORGANICS
- (A.) metals, priority pollutant
- B. metals scan (ICP)
- C. metals, other ____

RCRA
- A. EP toxicity ____ metals ____ pesticides ____ herbicides
- B. ignitability
- C. corrosivity ____ pH ____
- D. reactivity

LIMITED CHEMISTRY
- 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

OTHER ANALYSES (specify)
____
____

AIR SAMPLING
Sampling Method ____
Sample Flow Rate ____
Sampling Time ____
Volume Collected ____
Collection Media
Special Shipping Instructions ____
#Field Blanks ____ #Sample Blanks ____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
(glass jar)	(HNO3) pp metals
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	(other) 4°C

STORAGE
(wet ice) refrig.
dry ice
ambient

BIOASSESSMENT
See attached data sheet
See comments

COMMENTS:

			COC
1	32 oz gl	pp Metals	7
2	1 l amb	herbicides	5,7
2	1 l amb	pest / PCB	5,7
2	1 l amb	BNAs	5,7
3	40 ml	VOA	3

000142

FIELD DATA SHEET

№ 004385

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Loc 2

Lab No.: _____ Samplers: Mayasich / Tobia
Date: _____ Site Name: Quincy Illinois
Time: _____ Sample Location: Matrix Spike (30') Mid

Chain of Custody No. _____
REAC Task Leader: Ruhren
EPA Task Monitor: Charters
Project No.: 1300

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 _____

SURFACE WATER
color murky, odor _____, flow _____, direction _____

STREAM
width _____, depth ~30', velocity _____ cm/s, pools _____ %, riffles _____ %

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

SAMPLE TYPE
stream/surface, groundwater, brackish, ocean/saline, sediment, soil, pond/lake, river, effluent, sludge

DEVICE
kemmerer, ponar, trowl, other _____, bucket, sugar, ekman

SAMPLE INFORMATION
color Murky, pH 7.99
odor _____, ORP .123
temp 25.82, salinity 0
DO 2.49, sample depth ~28'
cond .449, tide stage _____

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

ANALYSES TO BE PERFORMED

TOC required? ____ Yes ✓ No
If No, explain _____

Grain size analysis required? ____ Yes ✓ No
If No, explain _____

ORGANICS
A. halogenated & aromatic volatiles
B. volatiles-USEPA 624
C. trihalomethanes
D. pesticides/PCB
E. PCB
F. base neutral/acid extractables-USEPA 625
G. pesticides, drinking water
H. herbicides, drinking water

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

RCRA
A. EP toxicity ____ metals ____ pesticides ____ herbicides
B. ignitability
C. corrosivity ____ pH ____
D. reactivity

LIMITED CHEMISTRY
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

OTHER ANALYSES (specify)
_____
_____

AIR SAMPLING
Sampling Method _____
Sample Flow Rate _____
Sampling Time _____
Volume Collected _____
Collection Media
Special Shipping Instructions _____
#Field Blanks ____ #Sample Blanks ____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other 4°C

STORAGE
wet ice, dry ice, ambient
refrig

BIOASSESSMENT
See attached data sheet
See comments

COMMENTS: COC

2 1 l amb. herb. 9
2 1 l amb. pest/PCB 9
2 1 l amb. BNAs 9

*No PP Metals NO VOA

000143

FIELD DATA SHEET

№ 004386

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Chain of Custody No. 9

Lab No.: _____ Samplers: Mayasich I Tobia REAC Task Leader: Runren

Date: 8/23/89 Site Name: Quincy Illinois EPA Task Monitor: Charters

Time: 1200 Sample Location: Rinsate Blank Project No.: 1300

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
stream/surface	soil	(kemmerer)	ponar	color _____	pH _____	ambient temp _____
groundwater	pond/lake	trowel	other _____	odor _____	ORP _____	barometric pressure _____
brackish	(river)	bucket		temp _____	salinity _____	relative humidity _____
ocean/saline	effluent	sugar		DO _____	sample depth _____	weather conditions _____
sediment	sludge	ekman		cond _____	tide stage _____	

ANALYSES TO BE PERFORMED

TOC required? _____Yes _____No
If No, explain _____

Grain size analysis required? _____Yes _____No
If No, explain _____

ORGANICS
- A. halogenated & aromatic volatiles
- B. volatiles-USEPA 624
- C. trihalomethanes
- D. pesticides/PCB
- E. PCB
- F. base neutral/acid extractables-USEPA 625
- G. pesticides, drinking water
- H. herbicides, drinking water

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

RCRA
- A. EP toxicity _____metals _____pesticides _____herbicides
- B. ignitability
- C corrosivity_____pH_____
- D. reactivity

LIMITED CHEMISTRY
- 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

OTHER ANALYSES (specify)
_____
_____

AIR SAMPLING
Sampling Method _____ Collection Media
Sample Flow Rate_____ Special Shipping Instructions _____
Sampling Time _____
Volume Collected _____ #Field Blanks ___ #Sample Blanks ___

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other _____

STORAGE
- wet ice
- dry ice
- ambient

BIOASSESSMENT
- See attached data sheet
- See comments

COMMENTS:

1 1 l amb / 4°C Rinsate of Brass Kemmerer

000144

FIELD DATA SHEET

№ 004387

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Chain of Custody No. 8
Lab No.: ____
Samplers: Mayasich / Tobia
REAC Task Leader: Runren
Date: 8/23/89
Site Name: Quincy Illinois
EPA Task Monitor: Charters
Time: 1230
Sample Location: (Base) Trip Blank
Project No.: 1300

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
stream/surface	soil	kemmerer	ponar	color ____	pH ____	ambient temp ____
groundwater	pond/lake	trowl	other ____	odor ____	ORP ____	barometric pressure ____
brackish	river	bucket		temp ____	salinity ____	relative humidity ____
ocean/saline	effluent	sugar		DO ____	sample depth ____	weather conditions ____
sediment	sludge	ekman		cond ____	tide stage ____	

ANALYSES TO BE PERFORMED

TOC required? ____Yes ____No
If No, explain ____

Grain size analysis required? ____Yes ____No
If No, explain ____

ORGANICS
- A. halogenated & aromatic volatiles
- B. volatiles-USEPA 624
- C. trihalomethanes
- D. pesticides/PCB
- E. PCB
- F. base neutral/acid extractables-USEPA 625
- G. pesticides, drinking water
- H. herbicides, drinking water

INORGANICS
- A. metals, priority pollutant
- B. metals scan (ICP)
- C. metals, other ____

LIMITED CHEMISTRY
- 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

OTHER ANALYSES (specify)
____
____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other ____

STORAGE
- wet ice
- dry ice
- ambient

BIOASSESSMENT
- See attached data sheet
- See comments

RCRA
- A. EP toxicity ____metals ____pesticides ____herbicides
- B. ignitability
- C. corrosivity ____pH____
- D. reactivity

AIR SAMPLING
- Sampling Method ____
- Sample Flow Rate ____
- Sampling Time ____
- Volume Collected ____

Collection Media
Special Shipping Instructions ____
____
#Field Blanks ____ #Sample Blanks ____

COMMENTS:

2 40 ml VOA Trip Blanks

8/22/89 Left 114 willow 5AM in Limo picked up Rich Tobia 0515. Arrived airport 6AM for 7AM flight. arrived St. Louis 0845 EDT. Picked up rental car & truck proceeded to Fed Ex terminal - loaded truck - all packages accounted for. Proceeded 1020 west on I-70 to 61 N. Stopped for lunch in Bowling Green, Mo. 1150-1215. Arrived Quincy 1320 Sheriff station at city hall on Broadway St. Showed us site on map (Sheriff Bob Hall) site is along front street between Jersey & York streets. Moore-Mars Soybean

Dave Charters: set up decon line, calibrate hydrolab, set up zodiac, set up generator charge transponder battery.

Sampling Site 3 off boat ramp
#4376 15 ft. + 2 ft. above bottom
Site 4 #4377 + sediments
(4382 + 4383 dupe
(4381 + 4385 matrix spike) Site 7 15 ft.
#4374 " 8 2 ft off bottom
Bridge upstream #4372 Site 1 15 ft.
" 2 2 ft off bottom
7 sediments

Water samples
72 Oz. glass - metals
2 1l ambers BNA
2 1l amber Pest/PCB
4 VOA volatiles

Called REAC 1620 (1720 EDT) spoke with Craig Moylan asked him to ship 2 ... 1l poly bottles which did not arrive at Fed Ex.

Hydrolab upstream site under bridge
~30 ft from shore.

	Temp	pH	DO	Cond	ORP
depth 0	26.26	8.09	1.85	.442	.166
1M	26.13	8.10	1.93	[illegible]	.166
2M	26.10	8.10	1.95	.442	.166
3M	25.97	8.13	2.02	.444	.164
4M	25.89	8.11	2.04	.441	.165
5M	25.80	8.10	2.06	.442	.166
6M	25.75	8.05	2.03	[illegible]	.167
7M	25.70	7.97	2.01	.442	.169
8M	25.47	7.95	2.01	.442	.169
8.5M bottom	25.50	7.94	2.01	.443	.172

Salinity 0.00 at all sites

000146

8/22

After sampling with Kennamer (same as for Medicine Lake) at 15 ft at Upstream (Bridge) site, went back to staging area & packed up equipment. Scott Ruhnau deposited Rental truck at police station for the night. Arrived Quincy Motor Inn 0730 CDT. S. Hayashi

8/23/89

0630 Met with Scott Ruhnau & Rich Tolin. Looked for store to buy supplies. Picked up truck at police station proceeded to site 0700. Heavy Rain set up tarp off end of truck. Deployed equipment. Went in boat with IL conservation officer Steve Bosko TAT. Mr. Scahill sampled at depth, upstream site at bridge 0915 #4375. 1015 sediment sample all parameters using power dredge. Sandy black muck homogenized, filled containers, used plastic bucket for sediment. 1030 left site to staging area 1040.

Hydrolab 0915 at bridge

Depth	Temp	pH	DO	Cond	ORP
0.0	25.68	8.03	4.42	.441	.112
1.0	25.68	8.05	3.78	.444	.110
2.0	25.67	8.04	3.32	.445	.110
3.0	25.68	8.05	3.05	.444	.109
4.0	25.66	8.04	2.92	.445	.111
5.0	25.66	8.03	2.80	.443	.113
6.0	25.61	8.08	[illegible]	[illegible]	.117
7.0	25.60	7.97	2.54	.439	[illegible]
8.0	25.57	7.91	2.46	.438	.118

8. 1M Bottom

Site 2 ~~[illegible]~~ off south side

Heat Clue

Depth (m)	Temp	pH	DO	cond.	ORP
0.0	25.75	8.03	2.11	.447	.134
1.0	25.72	8.04	2.03	.446	.133
2.0	25.74	8.03	2.00	.446	.133
3.0	25.71	8.02	2.05	.446	.133
4.0	25.70	8.03	2.09	.446	.132
5.0	25.71	8.03	2.15	.446	.132
6.0	25.70	8.03	2.19	.446	.132
7.0	25.70	8.03	2.21	.446	.132

Salinity 0.0 at all points.

Site 3 + 4 cont.

Depth	temp	pH	DO	cond	ORP
7.5	25.70	8.03	2.24	.446	.132

1150 Sediment sample site 4 off SS Boat Club all parameters as for site 2. Had difficulty in getting grab with ponar. Moved farther from shore (100 yds).

Deep sample off SS Boat club 1415

Lunch + call in to office, pick up shipped 12 polys at hotel

1445 Sed. + dupes of staging area
1500

Chaining samples + deconing equipment - Harry Compton + Allen Humphreys. Took Water + dupes off staging area 1600 - 1715 + Hydrolab

Packed - Hotel 2130

Sampling

	Site #	Sample #	Location	Time	Date
Bridge	1	4374	Upstream 15ft		8/22
	2	4375	Upstream B	0915	8/23
	3	4375	Sediment	1015	
South Side Boat Club	4 (3)	4376	Downstream 15ft		
	5	4377	Downstream B	30 ft	
	6	4377	" Sediment	1150	
Hydrolab Staging area	7	4382	Middle 15ft		
	8	4383	Pipe		
	9	4381	Middle 30ft		
		4385	Matrix Spike		
	9	4379	Middle Side		
		4386	" " Pipe		
		4386	Rinsate		

Hydrolab for staging area 50 yds out from Bdy + chain

Depth	Temp	pH	DO	Cond	ORP
0m	27.20	8.20	2.98	0.447	0.113
2 meter	26.46	8.15	2.78	0.447	0.114
4	25.90	8.02	2.58	0.450	0.121
6	25.84	8.00	2.53	0.449	0.122
8	25.82	7.99	2.49	0.449	0.123
9.4	25.82	7.97	2.49	0.448	0.124

8/24/89

to site 0700 packed &
drove truck to get vermiculite
- packed for shipment at
Swing Fed Ex - 8 priority (samples)
29 Standard Air (equipment)
Drove Back to site 1000.
Leave Fed Ex info to Scott Ruhren 1015,
left site 1020, proceeded down
South US 61 to I70E to Lambert -
St. Louis Airport, arrived 1245
checked in rental car. proceeded
to gate. Flight is late. Arrived in
Newark 1800. Spoke with David Charters
after arrival - Rewrite SOP (1289) Work
Plan + Torch W.P. as they are - no changes.
Tentative date for ACS Griffith, Ind site
visit Sept. 5-6. Possible return to Torch
lake. Limo home with Rich Tobia arrived
1845. S Mayasich

000149

APPENDIX D - QUINCY, ILLINOIS, WATER DEPARTMENT REPORT

QUINCY DRUM SITE
QUINCY, ILLINOIS

CITY OF QUINCY WATER DEPARTMENT, QUINCY, ILLINOIS

Laboratory Worksheet

Date August 18, 1989

79° + Clear

Time of Analysis

ation & Parameters	7:30 AM	10:00 AM	12:30 AM	3:30 PM	6:00 PM	8:30 PM	11:30 PM	2:00 AM	4:30 AM	TOTAL	AVG
Odor	5	5	6	5	4.5	5	6	6	5	47.5	5
Turbidity Pumps 1 & 2											
Turbidity Pumps 3 & 4	12.5	10.9	11.7	13.1	11.4	11.4	13	11	11	104	12
SETTLING BASIN											
Odor	5	—	6	5	—	5	6	—	6	33	5.5
Turbidity	77	79	76	79	81	83	78	76	78	707	79
Total Res. Chlorine	2.35	2.40	2.15	2.25	2.55	2.35	2.00	2.10	2.10	20.25	2.25
Free Res. Chlorine	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Ammonia	1.28	1.27	1.10	1.47	1.27	1.24	1.29	1.06	1.18	11.16	1.24
pH	7.90	7.95	7.90	7.90	7.90	7.95	7.90	7.90	7.95	71.0	7.89
ACC. SLURRY MIX											
Lime (Hydroxide Alk)	42	35	34	25	25	29	29	23	31	276	31
Total Alkalinity	64	61	62	56	55	57	61	65	65	546	61
Phenol. Alkalinity	53	48	48	42	46	43	45	44	47	410	46
% Solids	15	14	15	15.5	14.5	13.5	11.5	11.6	11	121.	13
pH	10.70	10.70	10.70	10.70	10.70	10.70	10.65	10.65	10.65	96.25	10.69
ACCELATOR											
Odor	2.2	—	2.2	2.2	—	3.0	3.0	—	2.2	15.8	2.6
Total Res. Chlorine	2.00	2.05	2.05	2.20	2.10	2.00	1.95	1.75	1.80	17.75	1.97
Free Res. Chlorine	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05
RECARBONATED											
Total Alkalinity	56	—	56	53	—	54	55	—	66	340	57
Phenol Alkalinity	10	—	7	6	—	6	4	—	6	39	6.5
pH	8.95	8.95	8.80	8.90	8.90	8.95	8.70	8.95	8.90	79.5	8.83
Fluoride	1.00	1.06	1.02	0.97	0.98	1.00	1.12	1.04	1.09	9.23	1.03
Known Addition	0.98	1.03	1.02	0.99	—	1.00	1.05	1.00	1.03	8.1	1.01
SETTLED											
Turbidity	1.16	1.16	1.25	1.62	1.65	1.57	1.09	1.11	1.05	11.66	1.30
Filtered Turbidity NTU									NTU	0.09	
Time Analyst									Time	1524	
									Analyst	JJD	
#_____ **FILTERED**											
Turbidity	0.07	0.08	0.09	0.09	0.13	0.10	0.10	0.12	0.14	0.92	0.10
Color	1	—	1	3	—	3	2.5	—	2.5	13.	2.2
Odor	1.6	—	1.9	1.9	—	1.9	1.9	—	1.6	10.8	1.8
Total Alkalinity	57	—	58	53	—	54	56	—	57	335	56
Phenol Alkalinity	10	—	8	6	—	6	5	—	9	44	7
pH	9.00	9.00	9.05	8.95	—	9.05	8.95	8.90	8.90	71.25	8.91
Total Hardness	108	—	94	88	—	90	88	—	86	554	92
Ca. Hardness	76	—	74	64	—	58	56	—	50	378	63
Mg Hardness	32	—	20	24	—	32	32	—	36	176	29
N.C.H.	51	—	36	32	—	36	32	—	39	216	36
Fluoride	1.04	—	—	—	0.92	—	—	1.06	—	3.02	1.01
Total Res. Chlorine	4.25	4.25	4.35	4.40	4.40	4.35	3.75	3.65	3.60	37.0	4.11
Free Res. Chlorine	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Chloride	—	—	—	—	—	—	—	—	—		29
Sulfate	—	—	—	—	—	—	—	—	—		32.5
Ammonia	1.00	1.04	1.04	1.34	1.11		1.23	0.94	1.19	9.04	1.13
Service Pump											
Total Chlorine	4.25	4.25	4.30	4.40	4.40	4.35	4.05	3.85	3.80	37.45	4.16
Free Chlorine	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Ammonia	1.03	1.13	1.00	1.34	1.16	1.24	1.33	1.00	1.21	10.34	1.15
Fluoride	1.04	—	—	—	0.93	—	—	1.10	—	3.07	1.02
Analyst Initials	SRK	SRK	SRK	JJD	JJD		JJD	JJD	JJD		

LOCATIONS	RAW	DIST #1	DIST #2	DIST #3	DIST #4
PARAMETERS					
Temperature °C	26	23	26	25	27
Turbidity	10.5	0.14	[illegible]	[illegible]	[illegible]
Color	—	2	2	2	2
Odor	[illegible]	[illegible]	2.2	1.9	1.9
Total Alkalinity	51	63	63	61	61
Phenol. Alkalinity	6	7	7	8	8
pH	[illegible]	[illegible]	9.00	9.00	[illegible]
Total Hardness	176	100	110	96	98
Ca Hardness	122	66	66	62	68
Mg Hardness	54	34	44	34	30
N.C.H.	25	37	47	35	37
CO_2	—	—	—	—	—
Total Res. Chlorine	—	3.30	3.60	[illegible]	[illegible]
Free Res. Chlorine		<0.05	<0.05	[illegible]	<0.05
Ammonia	[illegible]	0.99	1.06	[illegible]	1.05
Fluoride	0.23	1.02	1.03	1.03	1.01
Chloride	[illegible]	31	35	27	29
Sulfate	7	31	31	29	33
Analyst Initials	SRK	SRK	SRK	SRK	SRK

HOT WATER	
Temperature °C	59
Total Alkalinity	[illegible]
Phenol Alkalinity	[illegible]
pH	[illegible]
Total Hardness	[illegible]
Ca Hardness	[illegible]
Mg Hardness	[illegible]
N.C.H.	[illegible]

ADDITIONAL SAMPLES

LOCATIONS	[illegible] SRK	1400 [illegible]	1700 [illegible]	1900 [illegible]	[illegible]	
Tot. Res. Cl				<0.05		
Fluoride	0.09					
Chloride						
~~Tot. Alk~~ TO CA		20	14.2	0.39		
Phenol. Alk						
Tot. Hardness						
Ca Hardness						
Mg Hardness						
N.C.H.						
Sulfate						
AMMONIA	2.02					
Analyst Initials	SRK	JJD	JJD	JJD		

Turbidity

CITY OF QUINCY WATER DEPARTMENT, QUINCY, ILLINOIS

Laboratory Worksheet

Date Saturday 8-19-89

tion & Parameters — **Time of Analysis**

RAW	7:30 AM	10:00 AM	12:30 AM	3:30 PM	6:00 PM	8:30 PM	11:30 PM	2:00 AM	4:30 AM	TOTAL	AVG
Odor	5	5	6	6	6	5	5	5	5	43	5
Turbidity Pumps 1 & 2											
Turbidity Pumps 3 & 4	11.4	12.5	11.7	13.1	15.5		11	12	13	100.2	12
SETTLING BASIN											
Odor	5		6	6			6		6		6
Turbidity	7.1	7.5	7.5	8.3	8.3	8.1	6.6	8.5	8.8	70.7	7.9
Total Res. Chlorine	2.25	2.20	2.10	2.20	2.20		1.90	1.95	1.90	16.7	2.09
Free Res. Chlorine	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05		<0.05
Ammonia	1.28	1.20	1.19	1.02	1.27		1.29	1.52	1.29	10.06	1.26
pH	7.90	7.85	7.85	7.90	7.90	7.90	7.90	7.85	7.95	71.05	7.89
ACC. SLURRY MIX											
Lime (Hydroxide Alk)	+23	+27	+31	35	38	36	39	39	30	290	32
Total Alkalinity	57	65	59	67	64	64	67	67	64	574	64
Phenol. Alkalinity	46	46	45	51	51	50	52	50	47	432	48
% Solids	10	10	10	10	11	11	9	9	11	91	10
pH	10.50	10.70	10.80	10.75	10.70	10.70	10.60	10.50	10.75	96.3	10.70
ACCELATOR											
Odor	2.7		2.2	2.7			2.7		2.2	12.5	2.5
Total Res. Chlorine	1.90	2.05	2.00	1.80	1.90		1.40	1.55	1.60	14.2	1.78
Free Res. Chlorine	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05		<0.05
RECARBONATED											
Total Alkalinity	58		57	59		61	59	62	61	419	60
Phenol Alkalinity	8		10	10		8	0	10	6	52	7
pH	8.85	8.90	9.05	9.00	8.80	8.90	7.95	9.20	9.05	79.7	8.86
Fluoride	0.96	1.07	1.06	1.10	1.06	1.02	1.14	1.02	1.10	9.49	1.05
Known Addition	0.98	1.08		1.02	1.04	0.98	1.12	1.01	1.08	8.28	1.04
SETTLED											
Turbidity	1.08	1.12	1.07	1.32	0.92	1.03	0.67	1.34	1.34	9.89	1.10
Filtered Turbidity NTU Time Analyst									NTU Time Analyst		
#_____ FILTERED											
Turbidity	0.17	0.15	0.13	0.12	0.11	0.17	0.19	0.16	0.16	1.36	0.15
Color	2		2	1		2	1		1	9	1.5
Odor	1.6		1.7	1.6			1.6		1.6	7.8	1.6
Total Alkalinity	57		58	58			59	58	56	346	58
Phenol Alkalinity	8		8	11			7	7	7	48	8
pH	8.90	9.00	8.90	9.00	9.05	9.00	8.95	8.95	9.05	80.8	8.98
Total Hardness	90		90	92			92	92	90	546	91
Ca. Hardness	60		60	60			56	56	54	346	58
Mg Hardness	30		30	32			36	36	36	200	33
N.C.H.	33		32	34			33	34	34	200	33
Fluoride	0.96			1.07				1.11		3.14	1.05
Total Res. Chlorine	3.90	3.75	3.75	3.80	3.85		3.80	4.00	3.85	31.1	3.89
Free Res. Chlorine	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05		<0.05
Chloride											3.3
Sulfate											34
Ammonia	1.10	1.02	1.14	0.98	1.10		1.23	1.35	1.29	9.21	1.15
High Service Pump											
Total Chlorine	3.95	3.90	3.90	3.85	3.85	3.90	3.95	3.80	3.80	34.6	3.84
Free Chlorine	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Ammonia	1.17	1.10	1.18	0.95	1.10		1.23	1.37	1.26	9.36	1.17
Fluoride	[illegible]			[illegible]				[illegible]		3.19	1.06
Analyst Initials	[illegible]										

Pic Clear

PARAMETERS	LOCATIONS RAW	DIST #1	DIST #2	DIST #3
Temperature °C	27.6			
Turbidity	11.4			
Color				
Odor	5			
Total Alkalinity	153			
Phenol. Alkalinity	3			
pH	8.35			
Total Hardness	170			
Ca Hardness	100			
Mg Hardness	70			
N.C.H.	17			
CO_2				
Total Res. Chlorine				
Free Res. Chlorine				
Ammonia	0.03			
Fluoride	0.24			
Chloride	22			
Sulfate	6			
Analyst Initials	[illegible]			

HOT WATER	
Temperature °C	50.2
Total Alkalinity	57
Phenol Alkalinity	4
pH	8.45
Total Hardness	90
Ca Hardness	60
Mg Hardness	30
N.C.H.	33

ADDITIONAL SAMPLES

LOCATIONS	1718 S 7th St 0.9cc	1416 Kedzie Line 10.25	0500 424 Cold Dr.			
Tot. Res. Cl	3.05	3.75				
Fluoride						
Chloride						
Tot. Alk						
Phenol. Alk						
Tot. Hardness						
Ca Hardness						
Mg Hardness						
N.C.H.						
Sulfate						
Jacks	0.37	0.24	0.65			
Analyst Initials	[illegible]	[illegible]	[illegible]			

D.W. 0.17

NH3 0.0

CITY OF QUINCY WATER DEPARTMENT, QUINCY, ILLINOIS

Laboratory Worksheet

Date 8-26-89 Sunday

Location & Parameters — **Time of Analysis**

RAW	7:30 AM	10:00 AM	12:30 AM	3:30 PM	6:00 PM	8:30 PM	11:30 PM	2:00 AM	4:30 AM	TOTAL	AVG
Odor							5	5	5		5
Turbidity Pumps 1 & 2											
Turbidity Pumps 3 & 4							14.5	13.8	12.6		13.6
SETTLING BASIN											
Odor							6		7		7
Turbidity							4.9	6.6	8.2		6.6
Total Res. Chlorine							1.85	2.05	2.05		2.00
Free Res. Chlorine							<0.05	<0.05	<0.05		<0.05
Ammonia							1.11	1.33	1.25		1.23
pH							7.80	7.80	7.75		7.80
ACC. SLURRY MIX											
Lime (Hydroxide Alk)							29	28	33		30
Total Alkalinity							71	72	71		72
Phenol. Alkalinity							50	50	52		51
% Solids							4	5	6		5
pH							10.60	10.65	10.70		10.65
ACCELATOR											
Odor							2.2		2.2		2.2
Total Res. Chlorine							1.50	1.70	1.80		1.65
Free Res. Chlorine							<0.05	<0.05	<0.05		<0.05
RECARBONATED											
Alkalinity							64		64		64
Phenol Alkalinity							14		13		14
pH							9.15	8.80	8.95		8.95
Fluoride							1.03	1.03	1.08		1.05
Known Addition							1.03	1.05	1.07		1.05
SETTLED											
Turbidity							0.92	1.47	0.95		1.11
Filtered Turbidity									NTU		.20
NTU Time Analyst									Time		10:00
									Analyst		GH
#_____ FILTERED											
Turbidity							0.24	0.27	0.20		0.24
Color							1		1		1
Odor							1.9		1.9		1.9
Total Alkalinity							61		67		64
Phenol Alkalinity							11		8		10
pH							8.90	8.80	8.85		8.85
Total Hardness							102		104		103
Ca. Hardness							62		60		61
Mg. Hardness							40		44		42
N.C.H							41		37		39
Fluoride							1.00				1.00
Total Res. Chlorine							3.20	3.55	3.80		3.50
Free Res. Chlorine							<0.05	<0.05	<0.05		<0.05
Chloride											31
Sulfate											33
Ammonia							0.98	1.11	1.08		1.06
High Service Pump											
Total Chlorine							3.60	3.50	3.60		3.55
Free Chlorine							<0.05	<0.05	<0.05		<0.05
Ammonia							0.93	1.07	1.08		1.03
Fluoride							1.03				1.03
Analyst Initials							SRK	SRK	SRK		SRK

PARAMETERS	LOCATIONS: RAW	DIST #1	DIST #2	DIST #3
Temperature °C	26			
Turbidity	14.5			
Color				
Odor	5			
Total Alkalinity	149			
Phenol. Alkalinity	0			
pH	7.10			
Total Hardness	114			
Ca Hardness	108			
Mg Hardness	56			
N.C.H.	15			
CO_2	25			
Total Res. Chlorine				
Free Res. Chlorine				
Ammonia	0.11			
Fluoride	0.29			
Chloride	25			
Sulfate	3			
Analyst Initials	JRK			

HOT WATER	
Temperature °C	53
Total Alkalinity	59
Phenol Alkalinity	6
pH	8.60
Total Hardness	97
Ca Hardness	60
Mg Hardness	32
N.C.H.	33

ADDITIONAL SAMPLES

LOCATIONS	413 Carol Drive					
Tot. Res. Cl	3.55					
Fluoride						
Chloride						
Tot. Alk						
Phenol. Alk						
Tot. Hardness						
Ca Hardness						
Mg Hardness						
N.C.H.						
Sulfate						
Turb	JR					
Analyst Initials	GH					

CITY OF QUINCY WATER DEPARTMENT, QUINCY, ILLINOIS

Laboratory Worksheet

Date [illegible] August 21 1985

...ion & Parameters	Time of Analysis										
...AW	7:30 AM	10:00 AM	12:30 AM	3:30 PM	6:00 PM	8:30 PM	11:30 PM	2:00 AM	4:30 AM	TOTAL	AVG
Odor	6	6	6	7	6	5	4.5	4.5	4.5		5.5
Turbidity Pumps 1 & 2											
Turbidity Pumps 3 & 4	[illegible]	[illegible]	13.3	13.3	12.3	12.8	[illegible]	[illegible]	[illegible]		[illegible]
SETTLING BASIN											
Odor	6	—	6	6	—	5	4.5	—	[illegible]		[illegible]
Turbidity	5.1	8.4	8.3	8.5	8.2	7.9	7.7	[illegible]	[illegible]		8.1
Total Res. Chlorine	[illegible]	2.25	2.35	2.30	2.30	2.00	[illegible]	[illegible]	[illegible]		2.15
Free Res. Chlorine	[illegible]	<0.05	<0.05	<0.05	<0.05	[illegible]	[illegible]	[illegible]	[illegible]		<0.05
Ammonia	1.27	[illegible]	1.26	1.26	1.19	1.03	[illegible]	1.18	1.14		1.26
pH	7.70	7.70	7.70	7.70	7.70	7.85	7.75	[illegible]	7.75		7.75
ACC. SLURRY MIX											
Lime (Hydroxide Alk)	134	134	131	130	131	128	[illegible]	[illegible]	[illegible]		[illegible] 29
...otal Alkalinity	60	64	65	60	75	62	[illegible]	[illegible]	[illegible]		65
Phenol. Alkalinity	42	44	44	45	53	45	[illegible]	[illegible]	[illegible]		47
% Solids	6.5	7.0	7.0	6	7	8	[illegible]	9	[illegible]		7.5
pH	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
ACCELATOR											
Odor	2.7	—	2.7	2.7	—	2.2	2.2	—	2.2		2.4
Total Res. Chlorine	[illegible]	2.20	2.05	2.10	2.05	1.90	1.75	1.75	1.75		1.95
Free Res. Chlorine	[illegible]	<0.05	<0.05	<0.05	<0.05	<0.05	[illegible]	[illegible]	[illegible]		<0.05
RECARBONATED											
...Alkalinity	61	—	60	60	—	55	[illegible]	—	55		59
...ol Alkalinity	10	—	9	11	—	6	[illegible]	—	7		8
pH	9.00	8.95	9.05	9.10	9.00	8.95	[illegible]	8.95	8.95		8.95
Fluoride	0.98	1.04	1.11	1.00	1.06	1.03	1.04	0.93	[illegible]		[illegible]
Known Addition	[illegible]	—	[illegible]	[illegible]	[illegible]	—	1.05	—	[illegible]		[illegible]
SETTLED											
Turbidity	1.55	1.62	1.33	1.25	1.07	1.02	[illegible]	[illegible]	[illegible]		[illegible]
Filtered Turbidity NTU Time Analyst									NTU	0.71	
									Time	[illegible]	
									Analyst	[illegible]	
#____ FILTERED											
Turbidity	0.22	0.21	0.24	0.24	0.19	0.16	0.15	0.15	0.14		0.19
Color	3	—	3	2	—	2	2.5	—	2.5		2.5
Odor	1.9	—	1.9	1.9	—	1.9	1.9	—	1.9		1.9
Total Alkalinity	60	—	59	60	—	59	[illegible]	—	59		59
Phenol Alkalinity	[illegible]	—	9	9	—	10	9	—	6		9
pH	5.99	—	9.00	9.00	9.15	9.05	5.95	[illegible]	[illegible]		8.95
Total Hardness	91	—	90	86	—	90	92	—	[illegible]		90
Ca. Hardness	50	—	54	52	—	[illegible]	56	—	[illegible]		53
Mg. Hardness	41	—	36	34	—	30	37	—	40		37
N.C.H.	36	—	31	26	—	31	32	—	31		31
Fluoride	1.02	—	1.09	1.02	—	—	—	[illegible]	—		[illegible]
Total Res. Chlorine	4.05	4.45	4.40	4.35	4.05	3.90	[illegible]	3.20	3.35		3.40
Free Res. Chlorine	<0.05	<0.05	<0.05	<0.05	0.10	0.17	[illegible]	[illegible]	<0.05		[illegible]
Chloride	—	—	—								24
...ate	—	—	—								31
...nonia	1.24	1.11	1.34	1.34	0.84	0.71	1.15	1.12	1.19		1.05
...gh Service Pump											
Total Chlorine	3.40	3.90	4.15	4.10	4.15	4.05	3.70	3.50	[illegible]		3.55
Free Chlorine	[illegible]	<0.05	<0.05	<0.05	[illegible]	[illegible]	[illegible]	<0.05	<0.05		[illegible]
Ammonia	1.21	1.32	1.27	1.15	1.02	0.99	[illegible]	[illegible]	[illegible]		[illegible]
Fluoride	[illegible]	—	[illegible]	[illegible]	—	—	—	[illegible]	—		[illegible]
Analyst Initials	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		

80°/CLEAR

LOCATIONS				
PARAMETERS	RAW	DIST #1	DIST #2	DIST #3
Temperature °C	[illegible]	[illegible]	[illegible]	25.9
Turbidity	[illegible]	0.17	0.19	0.15
Color	—	3	2	3
Odor	[illegible]	[illegible]	19	[illegible]
Total Alkalinity	[illegible]	59	55	60
Phenol. Alkalinity	0	9	8	7
pH	8.00	[illegible]	8.90	[illegible]
Total Hardness	1[illegible]9	[illegible]	90	94
Ca Hardness	[illegible]	[illegible]	60	54
Mg Hardness	64	30	30	40
N.C.H.	[illegible]	35	35	34
CO_2	[illegible]	—	—	—
Total Res. Chlorine	—	3.55	2.90	3.00
Free Res. Chlorine	—	<0.05	<0.05	<0.05
Ammonia	0.93	1.02	0.95	1.07
Fluoride	[illegible]	1.01	[illegible]	[illegible]
Chloride	[illegible]	29	29	27
Sulfate	45	34.0	34.0	34.0
Analyst Initials	[illegible]	[illegible]	[illegible]	[illegible]

HOT WATER	
Temperature °C	[illegible]
Total Alkalinity	57
Phenol Alkalinity	0
pH	[illegible]
Total Hardness	[illegible]
Ca Hardness	[illegible]
Mg Hardness	[illegible]
N.C.H.	33

ADDITIONAL SAMPLES

LOCATIONS	Reservoir Outlet					
Tot. Res. Cl						
Fluoride	[illegible]					
Chloride						
Tot. Alk						
Phenol. Alk						
Tot. Hardness						
Ca Hardness						
Mg Hardness						
N.C.H						
Sulfate						
Analyst Initials						

N-13

CITY OF QUINCY WATER DEPARTMENT, QUINCY, ILLINOIS

Laboratory Worksheet

Date [illegible]

Location & Parameters — **Time of Analysis**

	7:30 AM	10:00 AM	12:30 AM	3:30 PM	6:00 PM	8:30 PM	11:30 PM	2:00 AM	4:30 AM	TOTAL	AVG
Odor	4.5	4.5	3.0								
Turbidity Pumps 1 & 2											
Turbidity Pumps 3 & 4	1.0	1.2	1.33								
SETTLING BASIN											
Odor	4.5	—	4.5								
Turbidity	7.9	5.1	4.2								
Total Res. Chlorine	2.10	2.20	2.30								
Free Res. Chlorine	<0.05	<0.05	<0.05								
Ammonia	1.38	1.21	1.20								
pH	7.60	7.60	7.60								
ACC. SLURRY MIX											
Lime (Hydroxide Alk)	4.14	4.29	4.6								
Total Alkalinity	64	58	66								
Phenol Alkalinity	33	43	30								
% Solids	9.0	11.0	7.5								
pH	10.20	10.20	10.05								
ACCELATOR											
Odor	2.2	—	2.2								
Total Res. Chlorine	1.85	1.95	1.95								
Free Res. Chlorine	<0.05	<0.05	<0.05								
RECARBONATED											
Total Alkalinity	57	—	57								
Phenol Alkalinity	5	—	3								
	4.70	4.00	5.35								
Fluoride	0.93	0.81	0.78								
Known Addition	0.95	0.92	0.92								
SETTLED											
Turbidity	1.75	2.5	1.41								
Filtered Turbidity NTU Time Analyst									NTU	0.16	
									Time	0734	
									Analyst	[illegible]	
#_____ **FILTERED**											
Turbidity	0.16	0.19	0.17								
Color	3	—	3								
Odor	1.6	—	1.6								
Total Alkalinity	58	—	56								
Phenol Alkalinity	6	—	8								
pH	4.75	—	8.95								
Total Hardness	90	—	96								
Ca. Hardness	52	—	50								
Mg. Hardness	38	—	36								
N.C.H.	32	—	30								
Fluoride	0.78	—	0.91								
Total Res. Chlorine	3.70	3.90	4.10								
Free Res. Chlorine	<0.05	<0.05	<0.05								
Chloride	—	—	—	—	—	—	—	—	—		
Sulfate	—	—	—	—	—	—	—	—	—		
Ammonia	1.19	1.19	1.21								
Hi Service Pump											
Total Chlorine	3.45	3.65	3.85								
Free Chlorine	<0.05	<0.05	<0.05								
Ammonia	1.20	1.12	1.20								
Fluoride	0.79	—	0.88								
Analyst Initials	[illegible]	[illegible]	[illegible]								

50°/Clear

PARAMETERS	LOCATIONS RAW	DIST #1	DIST #2	DIST #3	
Temperature °C	26.6	29.3	30.9	24.6	23
Turbidity	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Color	—	3	3	3	
Odor	4.5	1.6	2.2	1.9	1
Total Alkalinity	150	59	59	59	5
Phenol. Alkalinity	6	5	3	4	7
pH	7.75	8.75	8.70	8.55	5
Total Hardness	170	88	90	92	9
Ca Hardness	102	52	52	52	5
Mg Hardness	68	36	38	40	3
N.C.H.	20	29	31	33	3
CO_2	54	—	—	—	—
Total Res. Chlorine	—	3.25	3.35	3.55	3
Free Res. Chlorine	—	<0.05	<0.05	<0.05	<0
Ammonia	0.05	1.02	0.84	1.11	1
Fluoride	0.22	1.04	1.00	1.02	0.4
Chloride	24	25	25	26	2
Sulfate	55	330	330	315	33
Analyst Initials	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

HOT WATER	
Temperature °C	57
Total Alkalinity	57
Phenol Alkalinity	5
pH	9.25
Total Hardness	92
Ca Hardness	54
Mg Hardness	[illegible]
N.C.H.	5

ADDITIONAL SAMPLES

LOCATIONS	LIME					
Tot. Res. Cl						
Fluoride						
Chloride	229					
Tot. Alk	65					
Phenol. Alk	47					
Tot. Hardness						
Ca Hardness						
Mg Hardness						
N.C.H.						
Sulfate						
Analyst Initials	[illegible]					

	F	NH_3
DIW	0.100	0.044

Turbidity

APPENDIX E - HEALTH AND SAFETY PLAN

QUINCY DRUM SITE
QUINCY, ILLINOIS

WESTON/REAC WORK LOCATION HEALTH AND SAFETY PLAN

Prepared by: Richard Tubia REAC Approval: _____

Date: 8/21/89

1.0 INTRODUCTION

Site Name: Quincy, Illinois WA # 1300

Original Safety Plan: Yes X No ___ Modification No. _____

Location: Street No.: _____

City: Quincy

State: Illinois

Site Contact: _____ Site Phone # _____

Directions to Site: _____

1.1 Site/Incident Description

A. Urban ___ Residential ___ Commercial ___ River X
Industrial ___ Rural ___ Remote ___
Active ___ Inactive ___ Landfill ___

B. Spill ___ Air Release ___ Fire ___
HW Site ___ Other: _____

Unknown Drums

C. Containers involved? X Yes ___ No
Drums: X No. # ___ Tanks ___ No. # ___
Describe condition: _____

D. Site size: _____ Terrain: River Weather _____

E. Are Regional TAT's Onsite? Yes ___ No ___

F. Map attached: Yes ___ No ___

2.0 KEY PERSONNEL

EPA Work Assignment Manager: Dave Charters

EPA On-Scene Coordinator: _____

REAC Task Leader: Scott Ruhren

Subcontractor: (__ None) _____

Field Supervisor: _____

REAC Site Safety Coordinator: Sally Mayasich

3.0 TASK/OPERATION SAFETY AND HEALTH RISK ANALYSIS

3.1 Chemical/Exposure Hazards

X Inhalation	__ Ingestion	X Skin contact
__ Biological	__ Explosive	__ Flammable
__ Radioactive	__ Pressure sensitive	__ Water reactive

3.2 Physical Hazards

Heat X Cold __ Heavy machinery __ Water X
Noise __ Underground utilities __
Overhead hazard __ Unguarded floor opening/lagoons __
Weights/lifting X Pressurized air __
Compressed gases __ Ladders __ Scaffolds __
Building entry __ Test-pits __
Confined space (attach confined space entry plan) __

Other: Batteries, Boat

_____

_____

3.3 Table 3.3 provides a summary of chemical and physical hazards potentially encountered by personnel during each task.

TABLE 3.3
TASK RISK ANALYSIS: CHEMICAL HAZARDS OF CONCERN

Task	Contaminant	PEL/TLV/IDLH	Source/ Concentration Onsite	Route of Exposure	Monitoring Device
Water + Sediment Sampling	unknown		Drums	skin inhalation injection	magnehelic HNU physical

TASK RISK ANALYSIS: PHYSICAL HAZARDS OF CONCERN

Task	Hazard	Description	Prevention/Monitoring Technique
ROV - Drum Search	Batteries Generator	Mississippi River	Proper safety - grounding
Sampling	Heat ~~Burning~~	clothing	awareness, Rest breaks monitoring
"	Drowning	Boating	life jackets, (SOP attached)

rd:eh/H&SPLANS/H&S-LOCATION

4.0 PERSONNEL TRAINING REQUIREMENTS

Consistent with OSHA's 29 CFR 1910.120 regulation covering Hazardous Waste Operations and Emergency Response, all site personnel will be trained in accordance with the requirements. At a minimum, all personnel will be trained to recognize the hazards on-site, the provisions of this SHSP, and personnel responsible for safety at this site.

4.1 Site supervisors must be trained to meet the additional requirements for supervisors. The following individuals will serve as field supervisors for this project:

_____

4.2 Site Specific Training Topics

The following topics will be discussed by the REAC field team leader prior to commencement of onsite activities:

✓ Site Hazards ✓ Emergency Procedures ___ (Table 3.3)

Other: _____

_____

5.0 PERSONNEL PROTECTIVE EQUIPMENT

5.1 Protective Ensemble

Tasks: _____	Tasks: water + sediment Sampling	Tasks: ROV Drum Search
Level B ___	Level C ☒	Level D ___
___ Saranex	___ Saranex	___ Tyvek
___ Tyvek	☒ Tyvek	☒ Cotton Coveralls
___ Other: ____	☒ Other: Apron	___ Other: ____
___ SCBA	☒ APR	___ Eye Protection
___ Tetherline	☒ Cartridge: GMCH	___ Booties
___ Booties	☒ Booties	___ Hard Hat
___ Surgicals	☒ Surgicals	___ Surgicals
___ Gloves: ____	☒ Gloves: PVC	☒ Work Gloves
___ Overgloves: ____	___ Overgloves: ___	___ Escape Pack
___ Hard Hat	___ Hard Hat	☒ Steel Toe/ Shank Boots
___ Steel Toe/Shank Boots	☒ Steel Toe/Shank Boots	☒ Life preservers
	☒ Life preservers	

Additional Protective Clothing:

___ Rain Gear ___ Hard Hat Liner ☒ Splash Apron
___ Fireman Boots ___ Insulated Coveralls ___ Splash Shield

5.2 Justify levels of protection selected:

Contamination of soil + water unknown

_____

6.0 SITE AIR MONITORING PLAN

6.1 Instrument Calibration

Required Instrument		Calibration Date	Battery Check
X	HNU		
___	OVA		
___	CGI		
___	Monotox: Type: ___		
	___		
	___		
___	Oxygen Detector		
___	RAM-I		
___	Mini-RAM		
___	Draeger Tube Type: ___		
	___		

6.2 Person(s) Responsible for Monitoring (___ indicates competence test checkout):

_____ _____

_____ _____

_____ _____

6.3 Type of Monitoring:

___ Survey/Characterization ___ Perimeter

___ Work Zone ___ Exposure/Breathing Zone

6.4 Objective of Monitoring: organic vapors

6.5 Action Levels:

HNU - Background ⇒ level D

Background to 5ppm ⇒ level C

7.0 MEDICAL MONITORING

All personnel are expected to maintain a current status with respect to their employers medical monitoring program. Weston maintains an annual schedule of update medicals. Subcontractors will be expected to provide documentation of current medical.

8.0 SITE CONTROL

8.1 Buddy system is required for all site work involving levels of protection or potentially representing a risk to personnel.

8.2 Site communications plan:

X Radio's ___ Air Horn
___ Whistle ___ Megaphone
X Hand Signals:

Signal	Definition
Hands clutching throat	Out of air/can't breath
Hands on top of head	Need assistance
Thumbs up	OK/I'm alright/I understand
Thumbs down	No/negative
Arms waving upright	Send backup support
Grip partners wrist	Exit area immediately

8.3 Site Work Zones:

The Exclusion Zone is defined as the area where contamination is either known or likely to be present, or because of activity, will provide a potential to cause harm to personnel. Entry into the Exclusion Zone requires the use of personnel protective equipment.

The Contamination Reduction Zone is the area where personnel conduct personal and equipment decontamination. It is essentially a buffer zone between contaminated areas and clean areas. Activities to be conducted in this zone will require personal protection as defined in the decontamination plan.

The Support Zone is situated in clean areas where the chance to encounter hazardous materials or conditions is minimal. Personal protective equipment is therefore not required.

Site work zone definition can be found:

___ Site map ___ Sketch on reverse of this page

8.4 Nearest Medical Assistance

The following personnel on-site have current certification on CPR and/or First Aid.

NAME	CPR	FIRST AID
Sally Mayasich	X	X
Scott Ruhren	X	X

Directions and a map to the nearest medical assistance is attached to this plan.

8.5 Standing Orders

Standing Orders for Exclusion Zone
[Delete or add steps as necessary]

- No smoking, eating, or drinking in this zone.
- No horse play.
- No matches or lighters in this zone.
- Check-in on entrance to this zone.
- Check-out on exit from this zone.
- Implement the communications system.
- Line of sight must be in position.
- Wear the appropriate level of protection as defined in the SHSP.

Standing Orders for Contamination Reduction Zone
[Delete or add steps as necessary]

- No smoking, eating, or drinking in this zone.
- No horse play.
- No matches or lighters in this zone.
- Wear the appropriate level of protection.

9.0 DECONTAMINATION PLAN

Describe decontamination sequence for each level of protection to be used on-site. level C

Step 1 wash + rinse outer gloves + boots

Step 2 remove " " " " "

Step 3 wash + rinse apron

Step 4 remove apron + tyvek

Step 5 remove inner gloves

Step 6 remove APR

Step 7 wash hands + face

Step 8

Step 9

Step 10

Are personnel required to assist with decon? ___ Yes X No

If yes, what level of protection is required for those assisting? (Circle one) B, C, D.

Describe disposition of wastes: _____

_____

10.0 CONTINGENCY PLANNING

10.1 Identify location of the following during the site orientation.

X First Aid Kit: _____ Eye Wash: _____
___ Stretcher: _____ Emergency Shower: _____
X Fire Extinguisher: on boat

___ Public Telephone: _____
___ Site Telephone: _____
___ Mobile Telephone: _____
___ *Two-Way Radios:* _____
___ Telephone Contact Lists: _____

___ SCBA's: _____
___ Escape Packs: _____

___ Evacuation Routes: _____

_____

_____

Illinois Info 217-755-1222

10.2 Emergency Contact/Notification System

The following list provides names and telephone numbers for emergency contact personnel.

Organization	Contact	Telephone
Ambulance:		911
Police:		222-9360
Fire:		228-4440
State Police:		
Hospital #1:	Blessing	223-5811
Hospital #2:	St Mary's	223-1200
Poison Control Center:	(Springfield)	217-753-3330
Regional EPA:		
State Authority:		
National Response Center		800-424-8802
Center for Disease Control		404-488-4100
CHEMTREC		(800) 424-9300
TSCA HOTLINE		(202) 554-1404
RCRA HOTLINE		(800) 424-9346
CDC	(DAY)	(404) 452-4100
	(NIGHT)	(404) 329-2888
BUREAU OF ALCOHOL, TOBACCO & FIREARMS		(800) 424-9555, (202) 566-7777
NATIONAL RESPONSE CENTER		(800) 424-8802
WESTON MEDICAL EMERGENCY SERVICE		(513) 421-3063
PESTICIDE INFORMATION SERVICE		(800) 424-9346
BUREAU OF EXPLOSIVES, A.A. RAILWAYS		(202) 835-9500
WESTON REAC OFFICE		(201) 632-9200
Scott Butterfield, Weston Program Manager		(201) 632-9770 (W)
		(609) 394-3682 (H)
Craig Moylan, Operations Manager		(201) 632-9774 (W)
		(215) 383-0477 (H)
Martin O'Neill, Health & Safety Manager		(201) 632-9773 (W)
		(201) 219-9207 (H)
	(BEEPER)	(201) 519-9115

Hospital Blessing Broadway between 9th + 10th
St Mary's Broadway between 14 + 16th

rd:eh/H&SPLANS/H&S-LOCATION

QUINCY CITY HALL 217-228-4500

10.3 Medical Emergencies

Any person who becomes ill or injured in the exclusion zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket.) First aid should be administered while awaiting an ambulance or paramedics.

Any person being transported to a clinic or hospital for treatment should taken with them information on the chemical(s) they have been exposed to at the site. This information is included in Section 3.0 of this plan. Map with directions to the hospital can be found: _____ next page _____ sketch on reverse side of this page.

10.4 Fire or Explosion

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the designated personnel will advise the fire commander of the location, nature, and identification of the hazardous materials onsite.

If it is safe to do so, site personnel may:

- Use fire fighting equipment available onsite to control or extinguish the fire; and,
- Remove or isolate flammable or other hazardous materials which may contribute to the fire.

10.5 Spill or Leaks

In the event of a spill or a leak, site personnel will:

- Inform their supervisor immediately;
- Locate the source of the spillage and stop the flow if it can be done safely; and,
- Begin containment and recovery of the spilled materials with sorbent (vermiculate, etc.).

11.0 ACKNOWLEDGMENT

I have read, understood, and agreed with the information set forth in this Health and Safety Plan and will adhere to the protocols specified herein.

Scott Ruhren	Scott Ruhren	9/22/89
Site Manager	Signature	Date
Sally Marsich	Sally Marsich	8/22/89
Site Safety Coordinator	Signature	Date
Steven Bosko	Steven R Bosko	8-22-89
Field Team Member	Signature	Date
Richard J Tobia	Richard J Tobia	8/22/89
Field Team Member	Signature	Date
Field Team Member	Signature	Date
Field Team Member	Signature	Date
Field Team Member	Signature	Date
Field Team Member	Signature	Date
Field Team Member	Signature	Date

SUBCONTRACTORS:

Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date

rd:eh/H&SPLANS/H&S-LOCATION

1.2 Summarize Site History:

Divers sustained chemical burns from drums under Mississippi River

1.3 Background Information Sources (Report Titles, Names, Dates):

1.4 Scope of Work:

A. Emergency Response ___ Air Sampling ___ Bioassessment ___
Contractor Oversight ___ Treatability Study ___
Geophysical Monitoring ___ Well Sampling ___
Well Installation ___ Soil Sampling ___ Tank Sampling ___
Drum Sampling ___ Bulk Sampling ___
Lagoon Sampling ___ Sediment Sampling X
~~Surface~~ Water Sampling X Walk Through Assessment ___

B. Task Description	Date of Activity
Water + sediment sampling ROV - Proton Magnetometer Drum search	8/22 - 8/24

11.0 LAGOON SAMPLING

Hazards encountered during lagoon sampling include those typically found in operations over water (i.e. drowning), and potentially severe exposures to hazardous materials via inhalation and skin contact. Just as in drum sampling and tank sampling operations, lagoon sampling procedures should be prepared and reviewed with all personnel pror to actual completion of the task.

The basic shoreline safety requirements for lagoon sampling are:

- Sampling platforms must be of sound construction, and equipped with features that meet or exceed OSHA regulations.
- Safety harness for the sampling personnel.
- Safety ropes secured to a fixed point on land and the work platform.
- Back-up personnel to assist in the sampling and to pull back the sampler if unstable/banks are encountered.
- Sampling personnel must be able to access rescue equipment such as a ring buoy or rescue hook in a reasonable amount of time.

If the contents of the lagoon is considered hazardous, personnel will require personal protective equipment. Sampling personnel should be aware of the restrictions associated with protective equipment such as the reduction in visability, dexterity, and communication and thus the potential for accidents. Each person in the sampling vessel must be equipped with a life preserver and/or lifeline. A two way radio should be utilized to communicate with the on shore support party.

It is absolutely crucial that the sampling procedures and protocols be approved by the REAC HSO and fully discussed with the entire sampling prior to the initiation of the mobilization.

12.0 BOATING SAFETY

REAC's use of boats will primarily involve the collection of sediment or water samples in "pristine" water bodies, and bathymetric surveys. During boating activities, the greatest risk to personnel is a result of the chance for accidental drowning. This SOP is not appropriate for activities on or near lagoons or waste impoundments.

12.1 Prerequisites

REAC employees assigned to boating operations must demonstrate a strong competency in swimming ability. This competency is best demonstrated by current certification in SCUBA, or previous Red Cross certification in basic water rescue or advanced life saving. Additional requirements include adequate physical fitness and a working "common sense" with respect to safe boating practices.

12.2 General Procedures

Each REAC employee assigned to a task involving use of a boat is responsible for the safe operation of the boat and adherence to these procedures.

1. The REAC Task Leader will serve as Crew Leader. It is the Crew Leader's responsibility to assist other team members with adherence to these requirements. The Task Leader will also be responsible for determining if the boat activity and situation can be handled confidently. The situation may be impacted upon by weather forecast, water conditions, specific task, and ability of REAC team.

2. The crew leader will complete the "boat safety equipment checklist" prior to preparing to cast-off.

3. Boat capacity shall not be exceeded. The total capacity for the Zodiac is 1323 lbs. including motor.

4. Boats shall not be operated while employees are standing.

5. Boarding of boats shall be in accordance with manufacturer's recommendations. Team members must be considerate of weight distribution while boarding. When boarding from a platform, a minimum of two lines shall secure the boat fore and aft. Where possible, boarding from a platform shall be made from the long side of the boat.

6. U.S. Coast Guard approved personal flotation devices (PFD) shall be carried by all personnel on board. If water temperature is below 65°F, or sampling activities require standing, PFD's must be worn by all personnel on board.

7. If work is conducted on water's with water temperatures below 60°F, personnel must wear survival suits.

8. A secondary power supply, such as oars, must be carried on each boat in the event of engine failure.

9. A U.S. Coast Guard approved life/ring with at least 90 feet of line shall be immediately available during boarding operations and carried on every boat.

10. If sampling activities involve a water body greater than 100 acres and/or sampling locations are greater than .25 miles from the nearest shore, two way radio communication must be maintained with a shore party.

11. If work activities proceed into dusk, adequate running lights must be utilized. At a minimum, a bow and stern light will be lit.

12. Personnel will review the attached summary of navigational aids and "rules of the road" when sampling bodies of water larger than 100 areas, or when other boat traffic is significant.

13.0 REFERENCES

The following manuals or standards have served as a basis for this SOP. This list is not all inclusive:

1. Guidance Manual for Activities at Hazardous Waste Sites. NIOSH/OSHA/USCG/USEPA, October, 1985;

2. Standard Operating Safety Guideline, USEPA. Environmental Response Team, November, 1984;

3. General Industry Standard, OSHA (29 CFR 1910).