SITE ASSESSMENT REPORT
FOR
HIMCO DUMP
U.S. EPA ID: N/A
SS ID: 4J
TDD: T05-9203-028
PAN: EIN0154SAA

JUNE 17, 1992

Prepared by: _____ Date: 6/17/92
Reviewed by: _____ Date: 6/19/92
Approved by: _____ Date: 6/19/92

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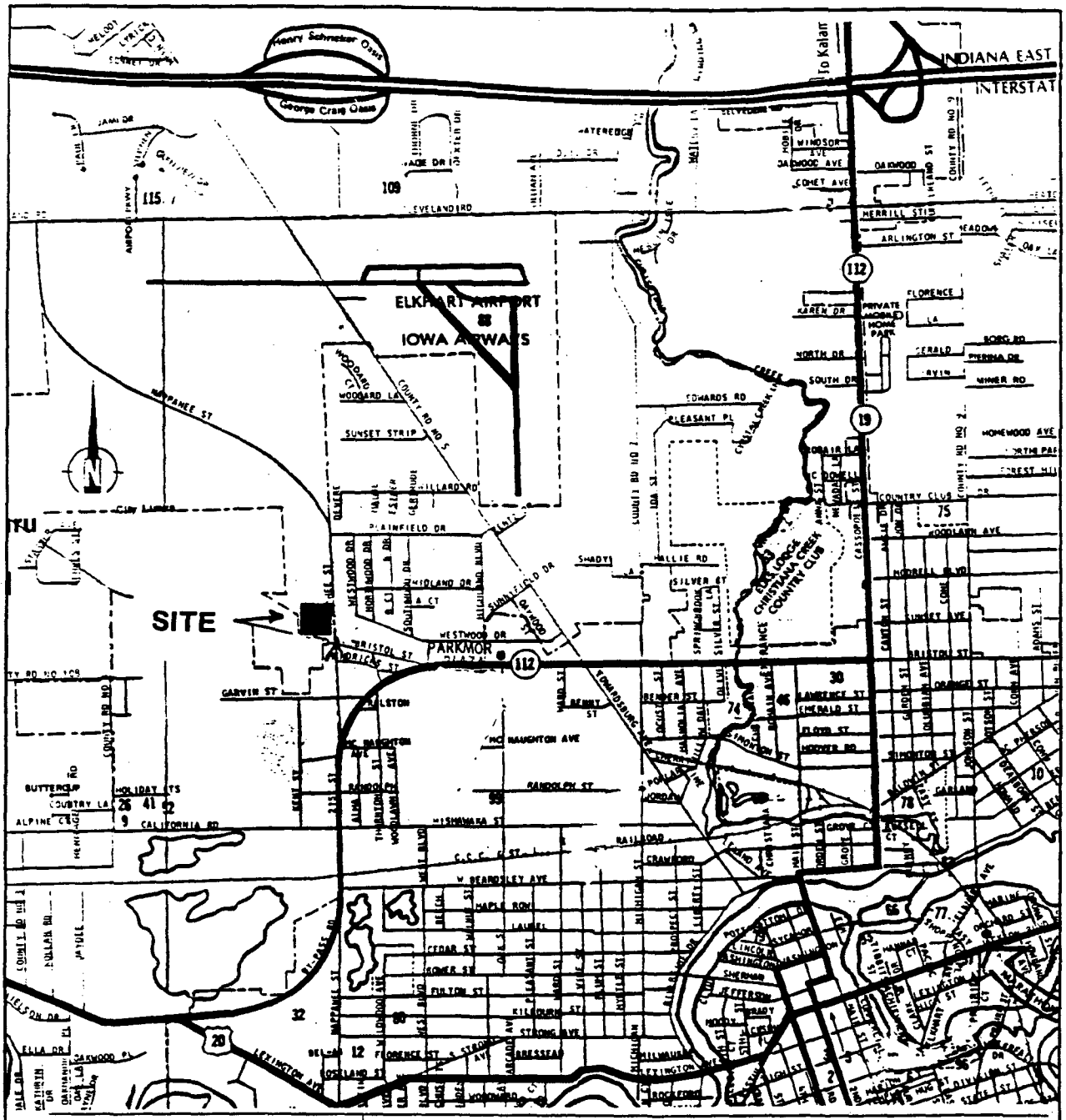
INTRODUCTION

The Ecology and Environment, Inc. (E & E), Technical Assistance Team (TAT) was tasked by the U.S. Environmental Protection Agency (U.S. EPA) to respond and sample at the Himco Dump site, Elkhart, Elkhart County, Indiana, under Technical Directive Document (TDD) T05-9203-028. Currently, a Remedial Investigation/Feasibility Study (RI/FS) is being conducted at the site. As part of the RI, test pits were excavated on-site. A sample collected from a test pit located at the southeast central portion of the site and adjacent to private residences consisted of leachate containing 48% toluene by weight. As a result, U.S. EPA initiated an emergency removal site assessment at the site.

BACKGROUND

The Himco Dump Site is an inactive landfill located northwest of the intersection of County Road 10 and the Nappanee Street Extension in Elkhart, Indiana (see Figure 1 for site location). The site is located on approximately 50 acres in Cleveland Township (NE 1/4, Section 36, T.38N., R.4E). The site is bordered by residences and County Road 10 to the south, by Nappanee Street Extension to the east, by trees and a quarry pond to the north, and by two ponds to the west. The area surrounding the site is residential, agricultural, and light industrial.

The site was operated as a landfill by Himco Waste Away Service, Inc., from 1960 until September 1976. The current site owners are Miles Laboratories; CLD Corporation; Alonzo Craft, Jr.; and the Indiana and Michigan Electric Company. Approximately two-thirds of the waste deposited in the landfill was calcium sulfate sludges and by-products from Miles Laboratories. As much as 360 tons per day of calcium sulfate sludge was dumped for an extended period. Municipal, industrial, and hospital wastes, as well as demolition/construction debris, were also disposed of at the site.



QUANDRANGLE LOCATION

ecology and environment, Inc.
Technical Assistance Team
Region V
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TITLE	SITE LOCATION MAP	FIGURE # 1
SITE	HIMCO DUMP	SCALE 1" = 1/2 MILE
CITY	STATE	PAN
ELKHART	INDIANA	EIN0154SAA

In the majority of the landfill, refuse was dumped at the ground surface, which was a low-lying marsh or wetland. The landfilling occurred until the total depth of materials deposited averaged 10 to 15 feet over the 50 acre area, and the site was brought to the height of the surrounding land. However, along the eastern portion of the site, trench filling was conducted. Paper refuse was burned in these trenches. Daily cover of sandy soil was obtained from a gravel pit north of the landfill and from the perimeter of the site where sand was available. In 1976 the landfill was closed and covered with approximately 1 foot of sand overlying a calcium sulfate layer. No liner, leachate system, or gas recovery system was constructed as part of the landfill.

The site was initially discovered in 1971 by the Indiana State Board of Health (ISBH). At this time, the site was identified as an open dump. In 1974, ISBH received complaints from residents south of the site along County Road 10 regarding the color, taste, and odor of their water. Six residential wells along County Road 10, ranging in depth from 20 to 30 feet, were sampled by ISBH. Analytical results indicated the presence of elevated levels of manganese. ISBH advised Charles Himes, the landfill operator, to drill new wells to replace these six shallow wells. The new wells installed by Himes were finished below a confining clay layer, at depths ranging from 152 to 172 feet.

In 1975, Himes signed a Consent Agreement with the ISBH Stream Pollution Control Board to close the site by September 1976. In 1984, the U.S EPA Field Investigation Team (FIT) conducted a site inspection (SI) at the Himco Dump site. Leachate seeps were observed by the FIT during the SI. Groundwater samples were collected from United States Geologic Survey wells. Results indicated the presence of volatile organic compounds (VOCs), semivolatile organic compounds (semi-VOCs), and metals in the downgradient wells. The site was proposed to the National Priorities List (NPL) in June 1988 and was officially designated an NPL site in February 1990.

In February 1990, representatives of U.S. EPA's Emergency Response

and Enforcement Response Branch (EERB) and the TAT sampled groundwater from 27 residential wells in the vicinity of the site. Analytical results revealed the presence of elevated levels of sodium. As a result, in 1991, Himco Waste Away Services, Inc., Miles Laboratories, and the City of Elkhart paid for an extension of municipal water services to some residents whose water supply had been adversely affected by contaminants from the dump.

In 1989, U.S. EPA authorized a RI/FS at the site under the Alternative Remedial Contract Strategy (ARCS) program. The Phase I RI was conducted from October 1990 through February 1991, and the Phase II RI was conducted in September 1991. Activities completed during the RI included the installation of monitoring wells, excavation of test pits, and the collection of soil, leachate, sediment, gas, surface water, and ground water samples. Results of the RI indicated that soil and leachate were contaminated with VOCs, semi-VOCs, and inorganics.

Results of the RI identified an area of high contamination at a test pit located at the southeast central portion of the Himco Dump site, designated as test pit TL5 in the RI. Test pit TL5 was located along an old railroad bed which runs south of the fill area. Two drums were encountered during excavation of this test pit. Leachate collected from this area was biphasic; one phase, the organic phase, contained 48 percent toluene by weight (refer to Appendix A for a summary of the analytical results of the leachate). As a result of concentrations of VOCs identified at this location, U.S. EPA directed an emergency removal site assessment that was conducted by the TAT on May 7, 1992.

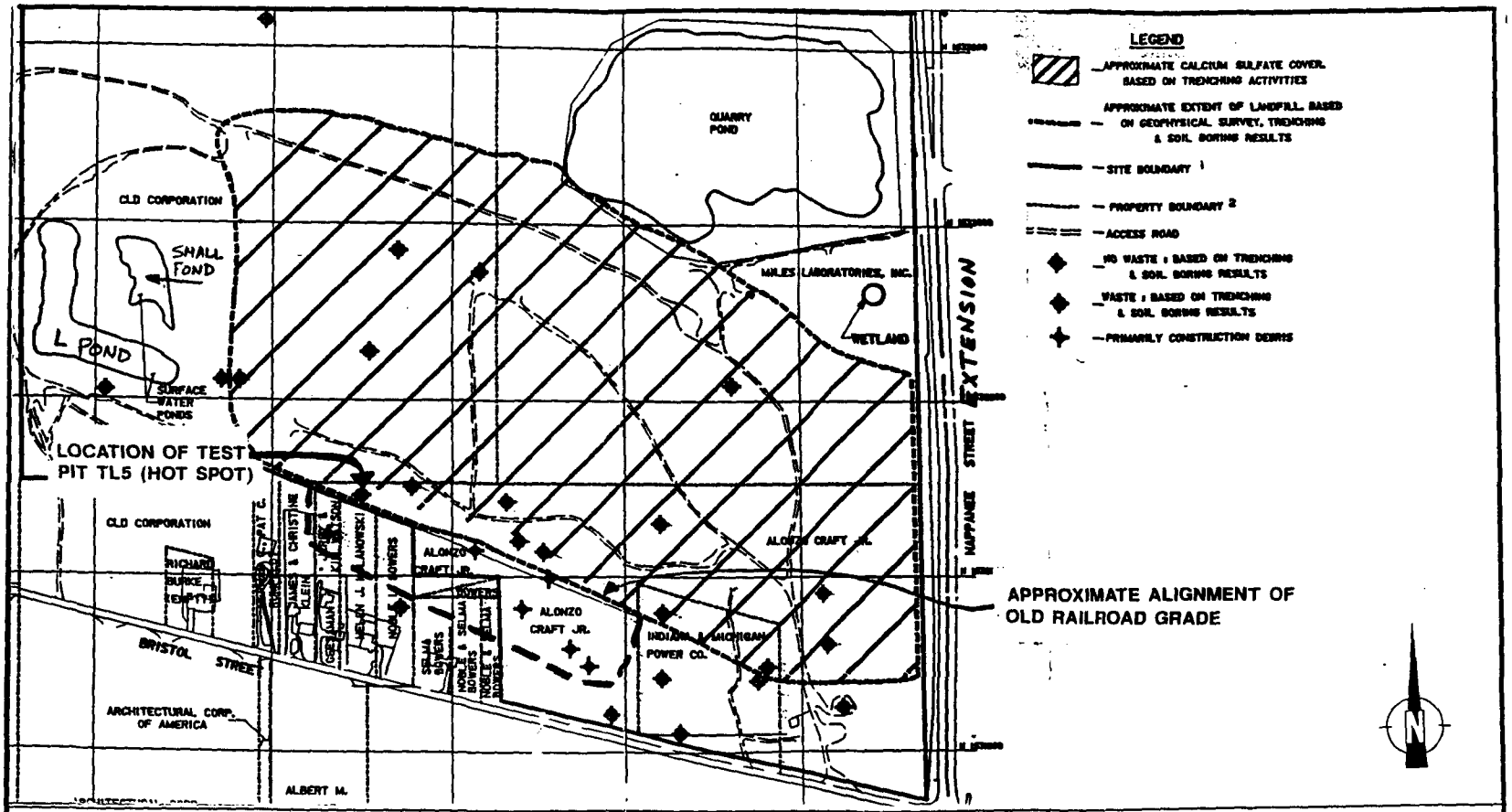
SITE ACTIVITIES

May 7, 1992: The TAT mobilized equipment and arrived on-site at 1030 Hours. The U.S. EPA On-Scene Coordinator (OSC) and the U.S. EPA Remedial Project Managers (RPMs) were on-site at the time that the TAT arrived. Personnel on-site and their affiliations are listed below:

Personnel	Affiliation
Paul Steadman	U.S. EPA OSC
Robert Lance	U.S. EPA RPM
Mary Elaine Gustafson	U.S. EPA RPM
Karen Martin	U.S. EPA Community Relations Coordinator
Kirsten Elvekrog	TAT Team Leader
Brad Stimple	TAT Site Safety Officer
Bill Schaefer	SEC Donohue, ARCS Contractor
Geoffrey Downie	Elkhart County Health Department
James Smith	Indiana Department of Environmental Management

At 1045 Hours, the TAT initiated an on-site reconnaissance in level D protection. Private residences abut the site to the southwest. A sand access road extended north and west into the site from County Road 10. A locked gate was present; however, the site was not fenced and no other means of security was apparent. The majority of the site is covered with grass, with scattered young trees also present to the west. Several piles of concrete and asphalt waste material were present across the eastern portion of the landfill. Approximately 35 acres of the 50-acre property was used as fill area. The remainder of the site was composed primarily of three ponds. North of the fill area was a quarry pond. This pond was completely surrounded by a fence with a locked gate. An L-shaped pond and a small pond were located west of the fill area. According to Downie, area residents use the ponds for fishing. Fish were observed in all three ponds at the time of the assessment (refer to Figure 2 for site features).

Test pit number TL5 was located in the southeast portion of the fill area. The test pit had been dug in a former railroad grade which forms the southern extent of the property boundary. A grade of approximately 5% to 7% sloping to the south is present. The test pit had been backfilled but its boundaries were evident at the time of the site assessment by the absence of vegetation and the presence of



QUADRANGLE LOCATION

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Technical Assistance Team
Region V
111 W. Jackson Blvd., Chicago, Illinois 60604

TITLE	SITE FEATURES	FIGURE #	2
SITE	HIMCO DUMP	SCALE	1" = 300'
CITY	ELKHART	STATE	INDIANA
		PAN	EIN0154SAA
SOURCE	SEC DONOHUE INC.	DATE	NOV. 1991
		REVISED	MAY 1992

miscellaneous debris brought to the surface by the disturbance. Private residences are located within approximately 50 yards south of the test pit.

After completion of the site reconnaissance, the TAT and the OSC discussed the observations recorded by both the TAT and the OSC, as well as the proposed sampling scheme. It was determined that the TAT would attempt to collect one residential well sample from a recently installed well at one of the residences located southwest of the site. The well had been installed in October 1991 and is reportedly set at a depth of 42 feet below ground surface. No evidence of a permit to drill the well was identified. The owner of this well had recently complained to U.S. EPA about the odor and taste of his water. Groundwater flow beneath the site is to the south/southeast. The residences located immediately south of the site currently receive municipal water.

At 1230 Hours, the TAT and Downie left the site to collect one residential well sample, RW1. The residence was located at [redacted] County Road 10, approximately 1/4 mile southwest of the site. The well draws from a depth of approximately 40 feet. At 1250 Hours, the TAT returned to the site. All personnel left the site at 1300 Hours.

A blank sample was poured at 1700 Hours and designated as RW2. The blank was poured from distilled water. At 1730 Hours TAT member Elvekrog completed sample management activities. At 1945 Hours TAT member Elvekrog relinquished the samples to Federal Express. The sample was shipped to Biological and Environmental Control Laboratories of Toledo, Ohio. The samples were analyzed for VOCs, semi-VOCs, total cyanide, and metals.

ANALYTICAL RESULTS

Results of the chemical analysis of the TAT-collected residential well sample revealed the presence of low levels of metals in residential well RW1. Total iron was detected at a concentration of 460 µg/L and total manganese at 100 µg/L. The semivolatile di(2-ethylhexyl)adipate

was also detected at a concentration of 6.58 µg/L in RW1. A summary of the data analysis is presented in Table 1. A copy of the data package submitted by the laboratory is included in Appendix B.

DISCUSSION OF POTENTIAL THREATS

Conditions observed during the U.S. EPA investigation of the Himco Dump site that constitute a threat and may be used to determine the appropriateness of a removal action as outlined in Section 300.415 (b) (2) of the National Contingency Plan (NCP) included:

- o Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations, animals, or food chains: Analytical results of the leachate collected during the 1991 RI revealed the presence of flammable and hazardous substances at high concentrations at the site. Residences are located adjacent to the south side of the site. Because the site is not fenced, and there is no other means of security at the site, there is a potential for residents, their pets, and area wildlife to come into contact with hazardous substances at the site.

- o Hazardous substances or pollutants or contaminants in drums, barrels, tanks, other bulk storage containers that may pose a threat of release: As the result of a 1990 U.S. EPA sampling effort, it was determined that ground water quality in nearby residential wells was adversely impacted by the site. As as result, nearby residences were placed on municipal water in 1991. During the excavation of test pit TL5 as part of the 1991 RI, two drums were encountered. The condition of these drums is unknown. It is also unknown whether additional drums are buried at the site. Leachate samples collected at this location contained the volatile organic compound toluene at 48 percent by weight. Based on this information, a release to the environment from the drums has occurred.

- o Threat of fire or explosion: A potential for fire or explosion

TABLE 1

RESULTS OF CHEMICAL ANALYSIS OF
TAT-COLLECTED RESIDENTIAL WELL SAMPLE

Sample Collection Information and Parameters	Sample Number RW1	RW2(Blank)
Date	5/07/92	5/07/92
Time	1245	1700
Lab Sample Number	92T05967	92T05968
Compound Detected (values in µg/L)		
Total Iron	460	ND
Total Manganese	100	2.0
Total Zinc	16	ND
Methylene Chloride	ND	2.55
Di(2-ethylhexyl)adipate	6.58	6.18

ND = Not detected

exists at the Himco Dump site. Chemical analysis of leachate samples collected as part of the RI in September 1991 revealed toluene at 48 percent by weight of the sample volume. Toluene has a flash point of 40 degrees Fahrenheit, classifiying it as a RCRA ignitable waste. Residences are located immediately south of the test pit and there is no fence or other means of security to restrict access to the site.

SUMMARY

TAT conducted a sampling site assessment at the Himco Dump site on May 7, 1992. Based on the analytical results from the 1991 RI, high concentrations of hazardous waste are present at the site. In consideration of the accessibility of the site and the nature of the wastes, a removal action is appropriate at the site. On May 12, 1992, U.S. EPA sent a Confirmation of General Notice of Liability, 122(c) Letter, to Himco Waste Away Services. As a result, Himco Waste Away Services contracted Mittelhauser Corporation to conduct an immediate removal action at the site. The removal action, consisting of two phases, commenced on May 19, 1992. Phase I, the VOC Excavation portion, was completed on May 22, 1992. Phase II, the Extent of Contamination Survey, is scheduled to commence on or about June 3, 1992.

APPENDIX A

SUMMARY OF ANALYTICAL RESULTS FROM LEACHATE SAMPLED SEPTEMBER 1991

TECHNICAL MEMORANDUM

DATE: March 26, 1992

TO: Mehdi Geraminegad, Site Manger

CC: Bill Schaefer
Pam Charleston
Karen Roberts
PMO Files

FROM Steven J. Padovani - RI Lead

SUBJECT: EPA ARCS Region V Contract No. 68-W8-009:
EPA Work Assingment No. 17-5L4J
Sec Donohue Project No. 20026.030
Himco Dump-TL5 Leachate Analytical Results

Introduction

This Technical Memorandum (TM) presents information concerning the leachate sampled from test pit TL5. Information in this TM describes the physical aspects and the analytical results of the leachate.

Test pit TL5 was excavated at the Himco Dump Site in Elkhart, Indiana, on September 13, 1991. The general location of TL5 is shown in the attached Figure 2-3 generated for the RI report. The exact coordinates of TL5 is as follows:

NORTHING (FT.)	EASTING (FT.)
1,532,223	406,254

Physical Aspects

Excavation of TL5 revealed a reddish brown leachate which separated into two phases. The top phase retained its red/brown color. The bottom phase was a cloudy yellow color. A picture of these two phases is included in Attachment 1. Solid waste observed in TL5 included two drums, asphalt, wood and plastic.

TL5 was excavated to an approximate depth of 12 feet. The red/brown leachate was observed to be seeping into the trench at a depth of approximately 6 feet. A copy of the trench log is included in Attachment 2.

Analytical Results

Leachate from TL5 was sampled and analyzed for VOCs, BNAs, PCB/pesticides, total metals/CN, and water quality. The two phases were analyzed separately for VOCs and BNAs. Pesticides/PCBs, total metals/CN, and water quality were analyzed with the two phases mixed. A complete report of analytical data above detection limits are included in Attachment 3.

Tables 1, 2, 3 and 4 summarize the analytical results of TL5 leachate. No pesticides or PCBs were detected in TL5 leachate.

A/R/HIMCO/AO1

TABLE 1

SUMMARY OF DETECTED VOCS
TL5 LEACHATE
HIMCO SITE
1992

Chemical	Red Phase Concentration (mg/kg)	Yellow Phase Concentration (mg/kg)
Methylene Chloride	ND	260(BJ)
Acetone	ND	300(BJ)
2-Butanone	ND	4100(BJ)
4-Methyl-2-pentanone	17000(J)	410(J)
2-Hexanone	29000(J)	570(J)
Toluene	480000(J)	850(BJ)
Ethyl Benzene	6400(J)	ND
Xylenes(Total)	44000(J)	77(J)

Qualifiers

ND - Below detection limit
B - Analyte found in associated blank as well as in the sample
J - Indicates an estimated value

A/R/HIMCO/AO1

TABLE 2

SUMMARY OF DETECTED BNA
TL5 LEACHATE
HIMCO SITE
1992

Chemical	Red Phase Concentration (mg/kg)	Yellow Phase Concentration (mg/kg)
Phenol	560 (ug/L)	ND
Benzyl alcohol	ND	11(J)
Benzoic acid	ND	9
Naphthalene	45(J)	ND
bis(2-Ethylhexyl)phthalate	180(J)	ND

Qualifiers

ND - Below detection limit
J - Indicates an estimated value

A/R/HIMCO/AO1

TABLE 3

SUMMARY OF DETECTED INORGANIC ANALYTES
TL5 LEACHATE
HIMCO SITE
1992

Analyte	Concentration (MG/L)
Aluminum	356
Antimony	ND
Arsenic	ND
Barium	4.7(B)
Beryllium	1.5(BNJ)
Cadmium	ND
Calcium	552
Chromium	10(BNJ)
Cobalt	ND
Copper	3(BJ)
Iron	254
Lead	ND
Magnesium	108(J)
Manganese	ND
Mercury	ND
Nickel	ND
Potassium	ND
Selenium	ND
Silver	ND
Sodium	ND
Thallium	ND
Vanadium	ND
Zinc	18.4
Cyanide	48.4

Qualifiers

ND - Below detection limit
B - Analyte found in associated blank as well as in the sample
J - Indicates an estimated value
N - Spike sample not within control limits. The value is usable.

TABLE 4

SUMMARY OF WATER QUALITY PARAMETERS
TL5 LEACHATE
HIMCO SITE
1992

Chemical Name	Concentration (MG/L)
Alkalinity	1152(J)
Bromide	ND
COD	29800(J)
Chloride	46.2(J)
Nitrogen, Ammonia (NH3)	181(J)
Sulfate, SO4	2610
TDS	ND
TKN	24.4(J)
Total Phosphorus	ND
TSS	360(J)

Qualifiers

ND - Below detection limit
B - Analyte found in associated blank as well as in the sample
J - Indicates an estimated value

A/R/HIMCO/AO1

APPENDIX B

LABORATORY DATA PACKAGE

ecology and environment, inc.
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MEMORANDUM

DATE: June 12, 1992

TO: Kirsten Elvekrog, Project Manager, E & E, Chicago, IL

THRU: Nick Rombakis, TAT-chemist, E & E, Chicago, IL

FROM: Jane G. Malkin, TAT-Chemist, E & E, Chicago, IL

SUBJ: **Organic Data Quality Assurance Review,** Himco Dump, Elkhart, IN

REF: Analytical TDD: T05-9205-805 Project TDD: T05-9205-030
Analytical PAN: EIN015AAA Project PAN: EIN0154RAA

The data quality assurance review of 2 residential well water samples collected from the Himco Dump site in Elkhart, Indiana has been completed. Analysis for semi-volatile organics (EPA method 8270) was performed by Biological and Environmental Control Laboratories, Toledo, Ohio.

The 2 residential well water samples were numbered: RW1 and RW2.

Data Qualifications:

I. Holding Time: Acceptable

The samples were collected on May 7, 1992, extracted and analyzed on May 11, 1992 . This met the required holding time for extraction of 7 days and the holding time for analysis which is 40 days from the date of extraction for semi-volatiles.

II. GC/MS Tuning: Acceptable

GC/MS tuning abundance criteria for decaflourotriphenylphosphine (DFTPP) was within the established control limits.

III. Calibration

A. Initial Calibration: Acceptable.

The initial calibration on the instrument for the

semi-volatile analysis was performed on 4/21/92. All average relative response factors (RRFs) were greater than 0.05 and the percent relative standard deviation (RSD) between the response factors were less than 30% except for endrin (32.345%), 7,12 dimethylbenz(a)anthracene (37.138%), endeno[1,2,3-cd] pyrene (33.286%), dibenzo[a,h]anthracene (35.055%), benzo(a,h,i)perylene (33.425%), and 2,4 dinitrophenol (33.425%). Since none of these compounds were detected in the samples, no action was taken.

B. Continuing Calibration:

The lab performed a continuing calibration on the same day as the analysis. All the continuing calibration standard RRFs were greater than 0.05 and the percent difference (%D) from initial calibration were less than 25% except for nitropropane (31.79%), methoxychlor (34.55%), benzidine (97.20%), dimethylbenz(a)anthracene (40.45%), endeno (1,2,3-cd)pyrene (33.80%), and benzo(q,h,i)perylene(34.03%). Since none of these compounds were reported in the sample analysis, no action was taken.

IV. Internal Standards: Data not available.

V. Matrix Spike/Matrix Spike Duplicates (MS/MSD):

The lab spiked a sample that did not belong to this project. The percent recoveries of the MS/MSD were all within the control limits except for 2,4 dinitrotoluene in the MS sample. No action was taken.

The relative percent difference (RPD) between the recoveries were all within the control limits.

VI. Method Blank: Acceptable

Results of the method blank was below the instrument detection limit.

VII. Surrogate Recovery: Acceptable

The percent surrogate recoveries were all within the prescribed control limits.

VIII. Compound Identification: Acceptable.

A review of the data and the spectra indicated that the compounds reported as detected was correct.

IX. Overall Assessment of Data for Use:

The overall usefulness of the data is based on the criteria outlined in "Quality Assurance/Quality Control Guidance for Removal Activities" (OSWER Directive 9360.4-01 April, 1990).

Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

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MEMORANDUM

DATE: June 10, 1992

TO: Kirsten Elvekrog, Project Manager, E & E, Chicago, IL

THRU: Nick Rombakis, TAT-Chemist, E & E, Chicago, IL

FROM: Jane Malkin, TAT-Chemist, E & E, Chicago, IL

SUBJ: **Inorganic Data Quality Assurance Review,** Himco Dump, Elkhart, IN

REF: Analytical TDD: T05-9205-805 Project TDD: T05-9205-030
Analytical PAN: EIN0154AAA Project PAN: EEIN0154RAA

The data quality assurance review of 2 residential well water amples collected from the Himco Dump site in Elkhart, Indiana has been completed. The analysis for metals by inductively coupled plasma (ICP) EPA method 6010, the analysis for mercury by manual cold-vapor technique (EPA method 7470), and the analysis for cyanide by EPA method 335.2 was performed by Biological and Environmental Control Laboratories, Inc., Toledo, Ohio

The 2 residential well water samples were numbered: RW1 and RW2.

Data Qualifications:

I. Sample Holding Time: Acceptable.

The samples were collected on May 7, 1992 and analyzed by May 22, 1992. The samples were analyzed within the 6 months holding time from the date of collection allowed for metal samples and within 28 days holding time allowed in the case of mercury. Cyanide was analyzed on May 11, 1992 which met the holding time requirement of 14 days for cyanide samples.

II. Calibration

A. Initial Calibration and Calibration Verification: Acceptable

Initial calibration was performed with a blank and 3 standards. The percentage recoveries were within 90 - 110% of the true standard value. No contamination above the instrument detection limit

(IDL) was detected in the initial calibration blank.

The initial calibration for mercury was performed with 3 standards and one blank. The percentage recoveries were within 80 - 120% of the true standard value in the initial calibration for mercury. No contamination above the instrument detection limit (IDL) was detected in the initial calibration blank.

The initial calibration for cyanide was performed with 8 standards. The correlation factor was greater than 0.995.

B. *Continuing Calibration:* Acceptable

All continuing calibration results were within the control limit of 90 - 110% for the metals and within 80 - 120% for mercury. No contamination above the IDL was detected in the continuing calibration blank.

III. Blanks: Acceptable

Method blanks were prepared and analyzed with the samples. No contamination above the IDL was detected.

IV. Laboratory Control Sample Analysis: Data not available.

V. Interference Check Sample (ICS) Analysis: Data not available.

VI. Matrix Spike Sample Analysis: Acceptable.

All the percent recoveries for the matrix spikes were all within the control limits.

VII. Duplicate Samples: Acceptable

The relative percent difference (RPD) between the results were all within the control limits.

VIII. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in "Quality Assurance/Quality Control Guidance for Removal Activities" (OSWER Directive 9360.4-01, April 1990). Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

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MEMORANDUM

DATE: June 12, 1992

TO: Kirsten Elvekrog, Project Manager, E & E, Chicago, IL

FROM: Jane G. Malkin, TAT-Chemist, E & E, Chicago, IL

TRHU: Nick Rombakis, TAT-Chemist, E & E, Chicago, IL

SUBJ: **Organic Data Quality Assurance Review**, Himco Dump, Elkhart, IN

REF: Analytical TDD: T05-9205-805 Project TDD: T05-9205-030
Analytical PAN: EIN0154AAA Project PAN: EIN0154RAA

The data quality assurance review of 2 residential water samples collected from the Himco Dump site in Elkhart, Indiana has been completed. Analysis for volatile organics (EPA method 8240) was performed by Biological and Environmental Control Laboratories, Toledo, Ohio.

The 2 residential well water samples were numbered: RW1 and RW2.

Data Qualifications:

I. Holding Time: Acceptable

The samples were collected on May 7, 1992 and analyzed by May 11, 1992, which met the holding time requirement of 14 days for volatile organic samples.

II. GC/MS Tuning: Acceptable

GC/MS tuning ion abundance criteria for bromoflourobenzene (BFB) was within the established control limits.

III. Calibration

A. Initial Calibration:

The initial calibrations on the instrument was performed on the same date that the analysis was performed. All average relative

response factors (RRF's) were greater than 0.05 and the percent relative standard deviation (RSD) between response factors was less than 30% which were within the prescribed control limits except for dichlorodifluoromethane (122.072%) and chloromethane (75.243%). Since none of these compounds were detected in the samples, no action was taken.

B. Continuing Calibration: Data not available.

Since the initial calibration was performed during the sample analysis, there was no need for a continuing calibration.

IV. Internal Standards: Data not available.

V. Matrix Spike/Matrix Spike Duplicates (MS/MSD):

The lab spiked a sample not belonging to this project. The percent recoveries of the MS/MSD were all within the control limits and relative percent difference (RPD) between the recoveries were all within control limits.

VI. Method Blank: Acceptable.

No contamination above the instrument detection limit (IDL) was detected except for methylene chloride. Methylene chloride result was flagged (B).

VII. Surrogate Recovery: Acceptable

The percent surrogate recoveries for the samples as well as the MS/MSD samples were all within the prescribed control limits.

VIII. Compound Identification:

The raw chromatogram and the spectra were not available for review.

IX. Overall Assessment of Data for Use:

The overall usefulness of the data is based on the criteria outlined in "Quality Assurance/Quality Control Guidance for Removal Activities" (OSWER Directive 9360.4-01 April, 1990).

Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions:

B - The material was detected in the sample, and was also detected in the blank.

Ecology & Environment
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Chicago, IL 60614

ATTN: Mary Jane Ripp

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615 front street
toledo, ohio 43605
(419) 693-5307

1632 enterprise parkway
twinsburg, ohio 44087
(216) 425-8200

lab no: 92T05967
p.o. no.

sample description: T05-9203-028 - Project # ZT1051 - grab - Station # RW1 - residential well - 5/7/92 @ 1245 - B.E.C. Drinking Water Lab No. 00277

results:

Analyte	Method	Result
Total Arsenic	EPA-600, 206.2	less than 2.5 ug/L
Total Barium	EPA-600, 200.7	less than 100 ug/L
Total Cadmium	EPA-600, 213.2	less than 0.3 ug/L
Total Chromium	EPA-600, 218.2	less than 7.5 ug/L
Total Copper	EPA-600, 220.1	less than 10 ug/L
Total Cyanide	EPA-600, 335.2	less than 0.01 mg/L
Total Iron	EPA-600, 200.7	460 ug/L
Total Lead	EPA-600, 239.2	less than 1.5 ug/L
Total Manganese	EPA-600, 243.2	100 ug/L
Total Mercury	EPA-600, 245.1	less than 0.2 ug/L
Total Selenium	EPA-600, 270.2	less than 2.4 ug/L
Total Silver	EPA-600, 272.2	less than 0.9 ug/L
Total Zinc	EPA-600, 200.7	16 ug/L

date completed: 5/22/92 | tech: DVV/KAD/MJK | approved by:

Ecology & Environment
111 W. Jackson Blvd.
Chicago, IL 60614

ATTN: Mary Jane Ripp

biological & environmental control laboratories, inc.
615 front street
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(419) 693-5307

1632 enterprise parkway
twinsburg, ohio 44087
(216) 425-8200

lab no: 92T05967
p.o. no.

sample description: T05-9203-028 - Project # ZT1051 - grab - Station # RW1 - residential well - 5/7/92 @ 1245 - B.E.C. Drinking Water Lab No. 00277

analysis: VOA

procedure: EPA-600, Method 524.2

results:

COMPOUND	RESULTS (ug/L)
Benzene	< 0.500
Bromodichloromethane	< 0.500
Bromobenzene	< 0.500
Bromochloromethane	< 0.500
Bromoform	< 0.500
Bromomethane	< 0.500
n-Butylbenzene	< 0.500
sec-Butylbenzene	< 0.500
tert-Butylbenzene	< 0.500
Carbon tetrachloride	< 0.500
Chlorobenzene	< 0.500
Chlorodibromomethane	< 0.500
Chloroethane	< 0.500
Chloroform	< 0.500
Chloromethane	< 0.500
2-Chlorotoluene	< 0.500
4-Chlorotoluene	< 0.500
1,2-Dibromo-3-Chloropropane	< 0.500
1,2-Dibromoethane (EDB)	< 0.500
Dibromomethane	< 0.500
1,2-Dichlorobenzene	< 0.500
1,3-Dichlorobenzene	< 0.500
1,4-Dichlorobenzene	< 0.500
Dichlorodifluoromethane	< 0.500
1,1-Dichloroethane	< 0.500
1,2-Dichloroethane	< 0.500
1,1-Dichloroethene	< 0.500
cis-1,2-Dichloroethene	< 0.500
1,2-Dichloropropane	< 0.500
1,3-Dichloropropane	< 0.500
2,2-Dichloropropane	< 0.500
1,1-Dichloropropene	< 0.500
cis-1,3-Dichloropropene	< 0.500
trans-1,3-Dichloropropene	< 0.500
Ethyl Benzene	< 0.500

date completed: 5/12/92 | tech: JH | approved by:

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lab no. 92T05967
p.o. no.

sample description: T05-9203-028 - Project # ZT1051 - grab - Station # RW1 - residential well - 5/7/92 @ 1245 - B.E.C. Drinking Water Lab No. 00277

analysis: VOA

results: continued

COMPOUND	RESULTS (ug/L)
Hexachlorobutadiene	< 0.500
Isopropylbenzene	< 0.500
4-Isopropyltoluene	< 0.500
Methylene Chloride	< 0.500
Naphthalene	< 0.500
n-Propylbenzene	< 0.500
Styrene	< 0.500
1,1,1,2-Tetrachloroethane	< 0.500
1,1,2,2-Tetrachloroethane	< 0.500
Tetrachloroethene	< 0.500
Toluene	< 0.500
1,2,3-Trichlorobenzene	< 0.500
1,2,4-Trichlorobenzene	< 0.500
1,1,1-Trichloroethane	< 0.500
1,1,2-Trichloroethane	< 0.500
Trichloroethene	< 0.500
Trichlorofluoromethane	< 0.500
1,2,3-Trichloropropane	< 0.500
1,2,4-Trimethylbenzene	< 0.500
1,3,5-Trimentylbenzene	< 0.500
Vinyl chloride	< 0.500
m & p-Xylenes	< 0.500
o-Xylenes	< 0.500

SURROGATES: Compound	% Recovery	Acceptable Range
1,2-Dichloroethane-d4	80.6	76-114
Toluene-d8	104	88-110
4-Bromofluorobenzene	114	86-115

date completed: 5/12/92
technician:
approved by:

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lab no: 92T05967
p.o. no.

sample description: T05-9203-028 - Project # ZT1051 - grab - Station # RW1 - residential well - 5/7/92 @ 1245 - B.E.C. Drinking Water Lab No. 00277

analysis: Base Neutrals/Acid Extractables

procedure: EPA-600, Method 525 *

results:

BASE NEUTRALS	RESULTS (ug/L)
Acenaphthylene	< 5
Anthracene	< 5
Benzo (a) anthracene	< 5
Benzo (a) pyrene	< 5
Benzo(b)fluoroanthene	< 5
Benzo(k)fluoroanthene	< 5
Benzo (ghi) perylene	< 5
Butyl benzyl phthalate	< 5
Chrysene	< 5
Dibenzo(a,h) anthracene	< 5
Diethyl phthalate	< 5
Dimethyl phthalate	< 5
Di(2-ethylhexyl)adipate	6.58
Fluorene	< 5
Hexachlorobenzene	< 5
Hexachlorocyclopentadiene	< 5
Indeno(1,2,3-cd)pyrene	< 5
Phenanthrene	< 5
Pyrene	< 5

SURROGATE RECOVERY: Compound	% Recovery	Acceptable Range
Nitrobenzene - d5	89.3	35 - 114
2-Fluorobiphenyl	81.7	43 - 116
p-Terphenyl-d14	88.4	33 - 141

* NOTE: Solid phase extraction was not used, liquid-liquid separatory funnel was used for extraction.

ACID EXTRACTABLES	RESULTS (ug/L)
Pentachlorophenol	< 25

SURROGATE RECOVERY: Compound	% Recovery	Acceptable Range
2-Fluorophenol	71.5	21-100
Phenol-d6	52.6	10-94
2,4,6-Tribromophenol	102	10-123

date completed: 5/18/92 | approved by:

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lab no. 92T05968
p.o. no.

sample description: T05-9203-028 - Project # ZT1051 - grab - Station # RW2 - residential well - 5/7/92 @ 1700 - B.E.C. Drinking Water Lab No. 00278

results:

Analyte	Method	Result
Total Arsenic	EPA-600, 206.2	less than 2.5 ug/L
Total Barium	EPA-600, 200.7	less than 100 ug/L
Total Cadmium	EPA-600, 213.2	less than 0.3 ug/L
Total Chromium	EPA-600, 218.2	less than 7.5 ug/L
Total Copper	EPA-600, 220.1	less than 10 ug/L
Total Cyanide	EPA-600, 335.2	less than 0.01 mg/L
Total Iron	EPA-600, 200.7	less than 80 ug/L
Total Lead	EPA-600, 239.2	less than 1.5 ug/L
Total Manganese	EPA-600, 243.2	2.0 ug/L
Total Mercury	EPA-600, 245.1	less than 0.2 ug/L
Total Selenium	EPA-600, 270.2	less than 2.4 ug/L
Total Silver	EPA-600, 272.2	less than 0.9 ug/L
Total Zinc	EPA-600, 200.7	less than 15 ug/L

date completed: 5/22/92 | tech: DVV/KAD/HJK | approved by:

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(216) 425-8200

lab no: 92T05968
p.o. no.:

sample description: T05-9203-028 - Project # ZT1051 - grab - Station # RW2 - residential well - 5/7/92 @ 1700 - B.E.C. Drinking Water Lab No. 00278

analysis: VOA

procedure: EPA-600, Method 524.2

results:

COMPOUND	RESULTS (ug/L)
Benzene	< 0.500
Bromodichloromethane	< 0.500
Bromobenzene	< 0.500
Bromochloromethane	< 0.500
Bromoform	< 0.500
Bromomethane	< 0.500
n-Butylbenzene	< 0.500
sec-Butylbenzene	< 0.500
tert-Butylbenzene	< 0.500
Carbon tetrachloride	< 0.500
Chlorobenzene	< 0.500
Chlorodibromomethane	< 0.500
Chloroethane	< 0.500
Chloroform	< 0.500
Chloromethane	< 0.500
2-Chlorotoluene	< 0.500
4-Chlorotoluene	< 0.500
1,2-Dibromo-3-Chloropropane	< 0.500
1,2-Dibromoethane (EDB)	< 0.500
Dibromomethane	< 0.500
1,2-Dichlorobenzene	< 0.500
1,3-Dichlorobenzene	< 0.500
1,4-Dichlorobenzene	< 0.500
Dichlorodifluoromethane	< 0.500
1,1-Dichloroethane	< 0.500
1,2-Dichloroethane	< 0.500
1,1-Dichloroethene	< 0.500
cis-1,2-Dichloroethene	< 0.500
1,2-Dichloropropane	< 0.500
1,3-Dichloropropane	< 0.500
2,2-Dichloropropane	< 0.500
1,1-Dichloropropene	< 0.500
cis-1,3-Dichloropropene	< 0.500
trans-1,3-Dichloropropene	< 0.500
Ethyl Benzene	< 0.500

date completed: 5/12/92 | approved by:

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lab no: 92T05968
p.o. no:

sample description: T05-9203-028 - Project # ZT1051 - grab - Station # RW2 - residential well - 5/7/92 @ 1700 - B.E.C. Drinking Water Lab No. 00278

analysis: VOA

results: continued

COMPOUND	RESULTS (ug/L)
Hexachlorobutadiene	< 0.500
Isopropylbenzene	< 0.500
4-Isopropyltoluene	< 0.500
Methylene Chloride	2.55 (B)
Naphthalene	< 0.500
n-Propylbenzene	< 0.500
Styrene	< 0.500
1,1,1,2-Tetrachloroethane	< 0.500
1,1,2,2-Tetrachloroethane	< 0.500
Tetrachloroethene	< 0.500
Toluene	< 0.500
1,2,3-Trichlorobenzene	< 0.500
1,2,4-Trichlorobenzene	< 0.500
1,1,1-Trichloroethane	< 0.500
1,1,2-Trichloroethane	< 0.500
Trichloroethene	< 0.500
Trichlorofluoromethane	< 0.500
1,2,3-Trichloropropane	< 0.500
1,2,4-Trimethylbenzene	< 0.500
1,3,5-Trimentylbenzene	< 0.500
Vinyl chloride	< 0.500
m & p-Xylenes	< 0.500
o-Xylenes	< 0.500

SURROGATES: Compound	% Recovery	Acceptable Range
1,2-Dichloroethane-d4	91.7	76-114
Toluene-d8	98.8	88-110
4-Bromofluorobenzene	106	86-115

6/12/92

date completed: 5/12/92

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lab-no. 92T05968
p.o. no.

sample description: T05-9203-028 - Project # ZT1051 - grab - Station # RW2 - residential well - 5/7/92 @ 1700 - B.E.C. Drinking Water Lab No. 00278

analysis: Base Neutrals/Acid Extractables

procedure: EPA-600, Method 525 *

results:

BASE NEUTRALS	RESULTS (ug/L)
Acenaphthylene	< 5
Anthracene	< 5
Benzo (a) anthracene	< 5
Benzo (a) pyrene	< 5
Benzo(b)fluoroanthene	< 5
Benzo(k)fluoroanthene	< 5
Benzo (ghi) perylene	< 5
Butyl benzyl phthalate	< 5
Chrysene	< 5
Dibenzo(a,h) anthracene	< 5
Diethyl phthalate	< 5
Dimethyl phthalate	< 5
Di(2-ethylhexyl)adipate	6.18
Fluorene	< 5
Hexachlorobenzene	< 5
Hexachlorocyclopentadiene	< 5
Indeno(1,2,3-cd)pyrene	< 5
Phenanthrene	< 5
Pyrene	< 5

SURROGATE RECOVERY: Compound	% Recovery	Acceptable Range
Nitrobenzene - d5	81.9	35 - 114
2-Fluorobiphenyl	77.3	43 - 116
p-Terphenyl-d14	82.1	33 - 141

* NOTE: Solid phase extraction was not used, liquid-liquid separatory funnel was used for extraction.

ACID EXTRACTABLES	RESULTS (ug/L)
Pentachlorophenol	< 25

SURROGATE RECOVERY: Compound	% Recovery	Acceptable Range
2-Fluorophenol	66.6	21-100
Phenol-d6	52.3	10-94
2,4,6-Tribromophenol	98.6	10-123

date completed: 5/18/92 | approved by: