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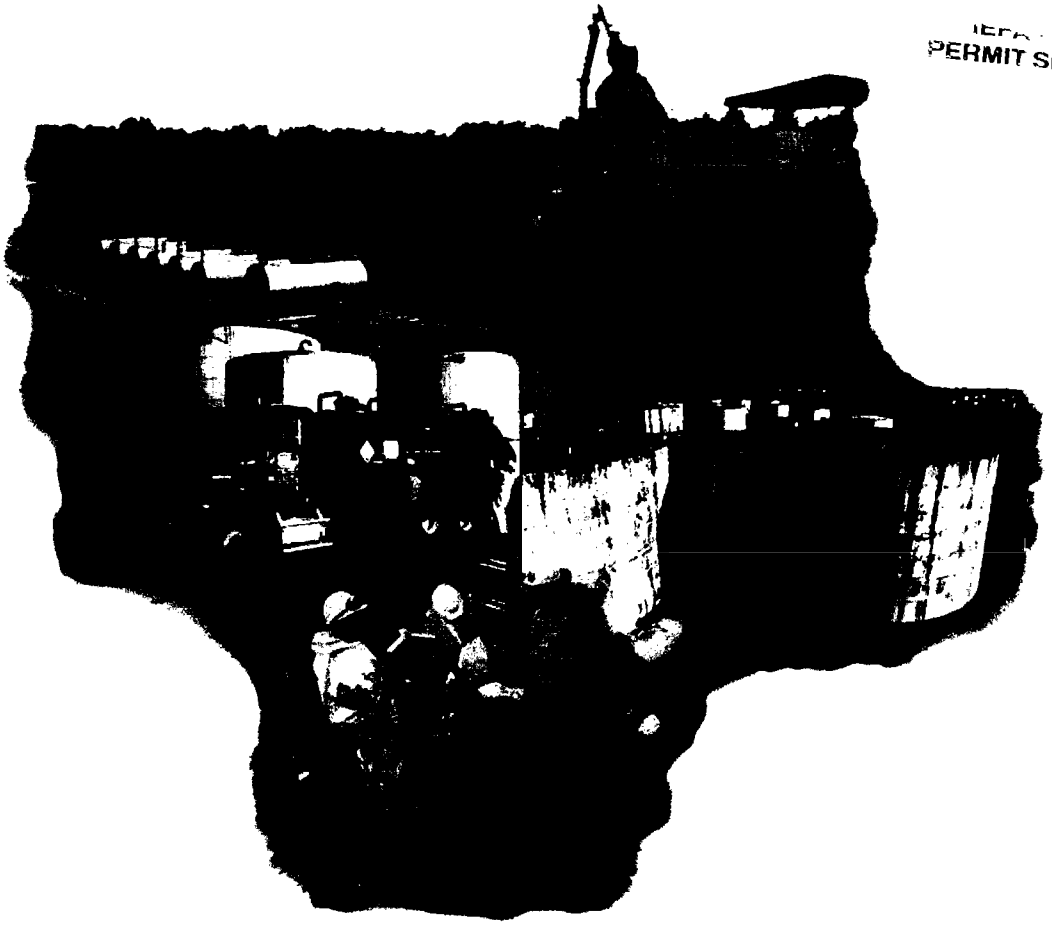

# RCRA FACILITY INVESTIGATION PHASE I - REPORT

0311620007 – Cook County
Heritage Environmental Services, Inc.
ILD 085349264

Heritage Treatment Center
Lemont, Illinois

HERITAGE

HERITAGE REMEDIATION / ENGINEERING, INC.

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**HERITAGE REMEDIATION/ENGINEERING, INC.**

1319 Marquette Dr.
Romeoville, IL 60441
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# RCRA FACILITY INVESTIGATION
# PHASE I - REPORT

0311620007 – Cook County
Heritage Environmental Services, Inc.
ILD 085349264

Prepared for:

Mr. Bob Garcia
Heritage Treatment Center
North Canal Bank Road
Lemont, Illinois 60439

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Submitted by:

Heritage Environmental Services, Inc.
Chicago Division
1319 Marquette Drive
Romeoville, Illinois 60441

August 31, 1994



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Certification Statement
Phase I of the RCRA Facility Investigation
Heritage Environmental Services, Inc.
Lemont, Illinois

Log No. B-128

Upon completion of Phase I of the RFI, this statement is to be completed by both a responsible officer of the owner or operator (as defined in 35 IAC 702.126) and by the registered professional engineer overseeing all work associated with the investigation. Submit one copy of the certification with original signatures and three additional copies.

RFI Phase I activities at the facility described in the RFI Phase I Workplan have been completed in accordance with the specifications in the approved RFI Workplan. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

ILD 085349264
USEPA ID Number

Heritage Environmental Services
Facility Name

Robert D. Garcia Jr 8/31/94
Signature of Owner/Operator Date

Robert D. Garcia, Facility Manager
Name and Title

8/31/94
Signature of Registered P.E. Date

Robert J. Millman, P.E. 062-039024
Name of Registered P.E. and Illinois Registration Number

Mailing Address of P.E.:

Heritage Remediation/Engineering, Inc.

1319 Marquette Drive

Romeoville, Illinois 60441

Registered P.E.'s Seal:

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Laboratory Certification Statement
Phase I of the RCRA Facility Investigation
Heritage Environmental Services, Inc.
Lemont, Illinois
Log No. B-128

Upon completion of Phase I of the RFI, this statement is to be completed by both a responsible officer of the owner or operator (as defined in 35 IAC 702.126) and (2) a responsible officer (as defined in 35 IAC 702.126) of the laboratory which conducted the chemical analyses required as part of Phase I of the RFI. The original of this statement shall accompany the original certification statement for the overall Phase I activities and the RFI Phase I Report.

The sample collection, handling, preservation, preparation and analysis conducted as part of Phase I of the RFI at the facility described in this document has been conducted in accordance with the specifications in the approved workplan. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

ILD 085349264
USEPA ID Number

Heritage Environmental Services
Facility Name

Robert D. Garcia 8/31/94
Signature of Owner/Operator Date

Robert D. Garcia, Facility Manager
Name and Title of Owner/Operator Representative

Heritage Labortories, Inc.
Name of Laboratory

8-31-94
Signature of Laboratory Responsible Officer Date

Christine L. Sarkan, Quality Assurance Officer
Name and Title of Laboratory Responsible Officer

Mailing Address of Laboratory:

Heritage Laboratories, Inc.

1319 Marquette Drive

Romeoville, Illinois 60441

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# RCRA FACILITY INVESTIGATION
# PHASE I - REPORT

0311620007 – Cook County
Heritage Environmental Services, Inc.
ILD 085349264

Prepared for:

Mr. Bob Garcia
Heritage Treatment Center
North Canal Bank Road
Lemont, Illinois 60439

Submitted by:

Heritage Environmental Services, Inc.
Chicago Division
1319 Marquette Drive
Romeoville, Illinois 60441

August 31, 1994



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## 1.0 INTRODUCTION

Heritage Environmental Services, Inc. (HERITAGE) owns and operates a commercial and industrial waste storage and treatment facility in Lemont Township, unincorporated Cook County, Illinois. HERITAGE also engages in the cleaning of industrial and marine storage vessels at this facility. As part of the requirements under the facility's RCRA permit, the facility was requested by the Illinois Environmental Protection Agency's (IEPA) Division of Land Pollution Control (DLPC) to conduct a RCRA Facility Investigation (RFI) and, as necessary, to implement a Corrective Action Plan (CAP). The purpose of the RFI was to determine whether releases of hazardous wastes and hazardous constituents have occurred from any of the solid waste management units (SWMUs) identified during the IEPA's RCRA Facility Assessment (RFA) as listed in Table 1, and the nature and extent of these releases.

On October 29, 1993 the RCRA Facility Investigation Work Plan documents were submitted to the IEPA for their review and approval. This Work Plan was prepared to address the Phase I activities which were to provide information on the characteristics and integrity of each SWMU and to evaluate whether or not hazardous wastes or constituents have been released from the identified SWMU's. On February 2, 1994, the IEPA approved the Work Plan subject to conditions and modifications presented in their correspondence of February 2, 1994. A copy of this correspondence is included as Appendix B.

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TABLE 1

SOLID WASTE MANAGEMENT UNITS
Heritage Environmental Services, Inc.
Lemont, Illinois

| Solid Waste Management Unit (SWMU) | Environmental Element of Concern |
|---|---|
| Truck Transfer Area | Secondary Containment System Integrity |
| Outdoor Container Storage Area | Secondary Containment System Integrity |
| Van Trailer Container Storage Area | Soil and Secondary Containment System Integrity |
| Old Aerosol Can Crushing Unit | Soil |
| Roll-off Box Storage Area | Secondary Containment System Integrity and Soil Sampling During Closure |
| Drum Crushing Unit | Secondary Containment Integrity and Soil Sampling During Closure |
| Underground Sanitary Waste Holding Tanks | Tank Integrity and SW846-8240 Run-On Contents |
| Barge Cleaning Transfer Point | Soil |
| Drainage Ditch and Tile Leading to Chicago Sanitary and Ship Canal | Soil Along Length of Ditch and Provisions for Lining of Ditch |


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## 1.1 Report Organization

This RFI Phase I Report has been prepared to document the activities conducted as part of the Phase I Investigation activities and to present the results and findings of this phase of the RFI.

The report has been organized to present this information in the following sections:

Section 1.0 INTRODUCTION

This section provides the organization of the RFI Report, and provides an overview of the facility history and site conditions.

Section 2.0 PHASE I INVESTIGATIVE ACTIVITIES

This section summarizes the activities conducted at each SWMU and discusses the purpose and objective of the sampling effort at each SWMU. It also discusses the selection of the sample locations and presents a description of the sampling procedures and protocols followed in performing the sampling activities.

Section 3.0 SUMMARY OF FIELD OBSERVATIONS AND ANALYSIS

This section presents a summary of the field observation and field screening results as performed. This section also summarizes the subsurface soil conditions encountered at the facility and more specifically the SWMUs.


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Section 4.0 ANALYTICAL PROCEDURES

This section discusses the analytical methods and procedures followed by the field and laboratory personnel.

Section 5.0 - SUMMARY AND EVALUATION OF ANALYTICAL DATA

This section presents the data for the various samples submitted to the laboratory for analysis and discusses the results of the laboratory data collected during the Phase I activities.

Section 6.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents the conclusions of the Phase I RFI activities and provides recommendations for further activities as necessary.

## 1.2 Chronological Summary and Cost of the Phase I Activities

Appendix C provides a chronological summary of the Phase I activities. The RFI activities commenced with the ESCA Integrity inspection of the Drum Crushing Unit on May 6, 1994, and concluded with the submittal of this RFI report on August 31, 1994. Photo documentation of the RFI activities are also presented in Appendix C. A summary of costs associated with the implementation of the Phase I RFI are also included in Appendix C.



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## 1.3 Qualifications of Personnel Performing the RFI Activities

Appendix D contains resumes of personnel that were involved with the Phase I RFI activities, with exception of subcontractors utilized.

## 1.4 Facility Background

### 1.4.1 Facility Description

The HERITAGE facility is located on the north bank of the Chicago Sanitary and Ship Canal, Mile 301.2 in Lemont Township, Cook County, Illinois. The facility is located in Township 37 North, Range 11 East, Section 20 (NE ¼, NE ¼), and Section 21 (NW ¼, NW ¼). The HERITAGE facility is a commercial industrial waste storage and treatment facility (SIC 9969) at which the cleaning of industrial and marine storage vessels also occurs. The location of the facility is shown in Figure 1, Appendix A and a plan of the existing operating area of the facility is presented in Figure 2, Appendix A.

The operating portion of the facility occupies approximately 8.7 acres of the 17.2 acres of property leased from the Metropolitan Water Reclamation District of Greater Chicago. As a result of its activities, HERITAGE has located on-site a variety of hazardous materials and wastes which may include ignitable, corrosive, reactive and toxic substances.

### 1.4.2 Facility History

The property occupied by HERITAGE is owned by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) (formerly Metropolitan Sanitary District of Greater Chicago) and leased to HERITAGE. Prior to December 1992, the Lemont Industrial District leased the property from the MWRDGC and in turn subleased the 17.2 acres to HERITAGE. Based upon records from the Lemont Industrial District, Inc., the property was leased to Marine Fleeting Company which repaired, maintained, and storage barges and boats from May 1965 to April 1966. From July 1971 to May 1979, Certified Cleaning Services leased the property for the same purpose as Marine Fleeting. In late 1980, Petrochem subleased the property from the Lemont Industrial District. At this time, the property was undeveloped. With occupancy of the site by Petrochem, the office/maintenance shop building and parking areas were constructed. Petrochem was primarily involved in the cleaning of industrial marine vessels. In 1981, the tank farm was constructed. During the time period from 1981 to 1987, Petrochem provided maintenance and cleaning services and stored of oily waste, hazardous waste fuels and fuel/oils at its tank farm facility. It also provided brokering services for other wastes generated in responding to emergency spills.

In 1987, Petrochem constructed an aerosol can crushing unit which was located to the southwest of the tank farm in the area which is presently south of the Van Trailer Storage Area. In 1987 the facility consisted of the office/maintenance shop, the tank farm, truck transfer area, container storage area, the aerosol crushing unit and the barge unloading area. All waste


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materials brought into the facility were stored and processed in the appropriate manner within these areas.

In September 1988, the aerosol can crushing unit burned and was destroyed. This incident and the actions undertaken are described in the substance release report provided in the Part B Application Permit, Section L-Z, Attachment L-1.

In 1988, Petrochem was acquired by Heritage Environmental Services, Inc. and merged with Process Engineering Group to form Heritage Remediation/Engineering, Inc. (HR/E). At this time, the operations involving the storage and handling of wastes at the Lemont facility were incorporated into HERITAGE, separating this element from HR/E. Presently, HERITAGE - Lemont consists of the facilities shown in Figure 2, Appendix A.

In accordance with condition B.2 of Section IV of the RCRA Part B permit issued by the IEPA on March 24, 1993, a RCRA Facility Investigation (RFI) Phase I Work Plan was submitted to the IEPA for review and approval on October 19, 1993. On February 2, 1994, the IEPA approved the RFI Phase I Work Plan for implementation subject to the conditions and modifications identified in the Agency's correspondence of February 2, 1994 (Log 128). A copy of this correspondence is provided in Appendix B.



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### 1.4.3 Site Geology and Hydrogeology

The site is located in the Great Lakes Section of the Central Lowlands physiographic province. The stratigraphic sequence throughout most of the area consists essentially of flat lying sedimentary formations, mostly dolomite. The site is located in the Des Plaines River Valley, and is in an area where nearly all glacial sediments have been removed by erosion.

The United States Department of Agriculture Soil Conservation Service has identified one soil type at the site in the "Soil Survey of DuPage and Part of Cook Counties, Illinois", 1976. This soil type is mapped as Orthents, stony; and is described as mainly spoil banks along the Chicago Sanitary and Ship Canal. Orthents, stony consists of 50 to 85 percent loamy material, while the rest is made up of stones and small boulders. The stones were dredged from the underlying limestone rubble or blasted from bedrock. Boulders are commonly 10 to 18 inches in diameter, while some are as large as 3 to 4 feet.

The HERITAGE facility is constructed on Silurian System bedrock at an approximate elevation of 587 feet MSL. The map entitled, "Quaternary Deposits of Illinois", Illinois State Geologic Survey, 1979, does not indicate the presence of any Quaternary deposits in the immediate vicinity of the site.

The map entitled, "Geologic Map of Illinois", Illinois State Geologic Survey, 1967, indicates that the Silurian System, Niagaran Series dolomite are the uppermost bedrock in the vicinity of the site. The Illinois State Geologic Survey, Circular 479, 1973, entitled, "Rock Stratigraphy of the Silurian System


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in Northeastern and Northwestern Illinois", by H. B. Willman describes the stratigraphy in the vicinity of the site. A geologic section described by Willman, immediately south (approximately 600 feet) of the HERITAGE facility across the Chicago Sanitary and Ship Canal in an abandoned quarry, describes a sequence of the Racine Formation underlain by the Sugar Run Formation, of the Niagaran Series. Correlation of this sequence to the site indicates that the bedrock at the surface of the site is near the base of the Racine Formation or near the top of the Sugar Run Formation. The dolomite of these formations are described as light gray, argillaceous, dense in beds ranging from 2" to 8" thick, and contain various quantities of chert lenses and nodules. A cored specimen collected from SB-26, parted on a bedding plane producing a core approximately 2" thick. The specimen was identified as a light gray, dense, argillaceous, slightly vesicular dolomite.

The Racine Formation consists of reef and inter-reef dolomite. It is the uppermost Silurian Formation, and has a maximum thickness of 300 feet, most of which has been removed by erosion in the Lemont area. The Racine Formation contains numerous fossils of corals, stromatoporoids, bryazoans, brachiopods, crinoids, trilobites, gastropods and polecypods in and around reef structures. Numerous fossils were observed around the barge slip which would indicate that the uppermost bedrock at the site is in fact of the Racine Formation. The Sugar Run does not contain abundant fossils. The Sugar Run Formation overlies the Joliet Formation also of the Silurian Niagaran Series, and underlies the Racine Formation. This well bedded dolomite averages about 25 feet thick, and has been a source of building stone quarried in the Lemont area.


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The Joliet Formation consists of three Members; the Romeo, Markgraf, and Brandon Bridge dolomite. This Formation ranges in thickness from 40 to 80 feet. The Joliet Formation is underlain by three formations of the Alexandrian Series; the Kankakee, Elwood and Wilhelm Formations all comprised of dolomite. The Alexandrian Series ranges from 20 to 180 feet in thickness. The Alexandrian Series is underlain by Ordovician System sediments of the Maquoketa Group.

Figure 3, Appendix A Geologic Cross Sections, shows three scaled cross sections of the site. These cross sections show the relationship of the bedrock surface with respect to various pavement and soil materials which overlie the bedrock at the site. Cross section A-A' also shows the relationship of the Des Plaines River and the Chicago Sanitary and Ship Canal, with the site being located between the two bodies of water.

### 1.4.4 Site Hydrogeology

The topography of the site is such that the majority of precipitation that falls on the site discharges to the Chicago Sanitary and Ship Canal or associated barge slip. During periods when the level of the Des Plaines River is elevated, river water seeps through the dike, north of the facility and flows across paved and gravel areas of the site to the canal and barge slip. During the subsurface investigation, water was observed on top of the bedrock in some of the paved areas (i.e. in the soil materials between the pavement and bedrock). This water is considered to be perched groundwater.



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Normally, the elevations of the Des Plaines River and the Chicago Sanitary and Ship Canal are approximately 587 feet and 578 feet, respectively (See Figure 3, Appendix A). From review of past river flow/stage data (1914 to 1944) the river stage has typically increased approximately five feet during high flow conditions. The Chicago Sanitary and Ship Canal (1986 to 1983) stage typically rises less than 1 foot during high flow and has dripped over 4.5 feet during low flow conditions. It is expected that groundwater would be present beneath the site in the underlying dolomite at various depths between the River and Canal elevations. A very steep southward gradient is expected to exist. The gradient would likely be much steeper in the area between the barge slip and the river in comparison to western portion of the site. Gradients would be expected to range from 0.01 to 0.05 foot per foot across the site.



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# 2.0 PHASE I INVESTIGATIVE ACTIVITIES

## 2.1 Purpose and Objective of Phase I Sampling and Analysis Activities.

### 2.1.1 Objective of Phase I Activities

The overall objective of the Phase I sampling and analysis efforts was to determine whether or not hazardous wastes or hazardous constituents have been released from the following solid waste management units (SWMU's):

- Truck Transfer Area
- Outdoor Container Storage Area
- Van Trailer Container Storage Area
- Old Aerosol Can Crushing Unit
- Roll-Off Box Storage Area
- Drum Crushing Unit
- Underground Sanitary Waste Holding Tanks
- Barge Cleaning Transfer Paint
- Drainage Ditch and Tiles Leading to the Chicago Sanitary and Ship Canal
- "Other" (background areas)

In the course of preparing the RFI Phase I Work Plan the structural integrity of the following units were evaluated by ESCA Consultants, Inc. (ESCA):

- Truck Transfer Area


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- Outdoor Container Storage Area
- Van Trailer Container Storage Area
- Roll-off Box Storage Area
- Tank Farm

The structural integrity of these units were utilized in planning the sampling and analysis program outlined in the Phase I Work Plan.

2.1.2 Purpose of Sampling and Analysis

Based upon a review of the materials potentially managed at each of the units and the structural integrity inspection by ESCA specific activities were proposed and implemented at each of the SWMU's as part of the Phase I RFI activities.

These activities, as appropriate, involved the advancement of soil borings at selected locations within each SWMU area. These locations were selected as representative of potential pathways for contaminants to migrate into the underlying subsurface materials as a result of potential releases at the SWMU's.

- Truck Transfer Area

  The truck transfer area is located as shown in Figure 2, Appendix A. All materials transported to the site are received in this area for acceptance prior to their being processed at the facility. Bulk organic-


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based materials are sampled and tested to ensure the material is within the permitted criteria for acceptance at the facility. Upon acceptance, the material is off-loaded at the liquid transfer station located along the north side of the tank farm and the south side of the truck transfer area.

The inspection of this area by ESCA revealed a few depressions in the asphalt but was considered as competent. As specified in the permit by the IEPA with establishment that the integrity of the secondary containment system was competent by ESCA at this SWMU, further investigative studies in this area were not conducted.

- Outdoor Container Storage Area

The outdoor container storage area is located at the west end of the tank farm. This area is utilized to store containers which are staged with other compatible material, and transported to other facilities for final management.

As specified in the permit by the IEPA with the findings by ESCA, that while the overall condition of this SWMU is in good condition, the presence of several shrinkage cracks, which potentially penetrated the concrete slab warranted additional investigative efforts within this area.

A total of five borings (SB-20 to 24) were advanced at or along the shrinkage cracks or joints in the concrete floor slab of the SWMU.


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The specific locations of these borings are shown in Figure 4, Appendix A. The purpose of these borings was to evaluate if potential releases had migrated beneath the concrete slab.

- Van Trailer Container Storage Area

The Van Trailer Container storage area is located to the south of the tank farm as shown in Figure 2, Appendix A. This area is used to temporarily hold and store containerized waste materials for further processing at the facility, materials resulting from industrial and governmental emergency response actions and the storage of materials in quantity to be transported to other facilities for final management.

As specified in the permit by the IEPA and the finding by ESCA, that while the secondary containment system was in good condition, the presence of depressions in the asphalt from the trailer, a rebar observed in the pavement, as well as a 2 inch diameter hole warranted additional investigative studies at this SWMU.

A total of six (6) borings (SB-14 to 19) were advanced within this SWMU area. One of the borings (SB-18) was advanced next to the 2 inch diameter hole observed in the pavement and SB-17 was advanced adjacent to the steel rebar which protruded from the pavement area. The specific sample locations are shown in Figure 5, Appendix A. The remaining three borings were advanced at locations where depressions


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and cracks were observed in the asphalt surface from the trailer supports of the trailers stored at this SWMU.

In the RFI Work Plan, the boring SB-19 was identified as being located in the southeast corner of the SWMU. Based upon field observations, at the time of the sampling program, this boring was relocated 25 feet to the west of the proposed location. This modification was the result of observing an 8 inch by 8 inch by 1 inch deep depression at this location by the sampling personnel. This represented the largest depression in the area of the SWMU and posed the more likely means of migration of contaminants from a release at this SWMU to the underlying subsurface. This location was therefore considered more representative than the previously selected location in regards to the potential release of contaminants into the environment.

As specified in the permit a sixth (SB-14) soil boring was advanced immediately adjacent to the west side of this SWMU. This location was outside the area of the berm, which had been noted by the IEPA as deteriorated and which had already been repaired.

- Roll-off Box Storage Area

The roll-off box storage area is located at the southeast corner of the tank farm area as shown in Figure 2, Appendix A. This area is utilized to store roll-off containers of non-hazardous tank bottoms, emergency


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response debris, strained/filtered solids and debris, and "RCRA-empty" crushed drums.

As specified in the permit by the IEPA and based upon the findings of ESCA that concrete at the SWMU is in fair condition with several cracks which penetrated the slab, HR/E advanced four borings (SB - 25 to 28) within this SWMU area at or along locations of significant cracks in the concrete floor, see Figure 6, Appendix A.

- Drum Crushing Unit

The drum crushing unit is located along the north edge and at the center of the Roll-Off Box Storage Area. This unit is utilized to compact "RCRA-empty" drums. As specified in the permit by the IEPA, the structural interegrity of the concrete at this SWMU was evaluated by ESCA. Since this unit was located in the Roll-Off Box Storage Area this evaluation of the interegrity of the drum crushing unit was included as part of the evaluation of the entire area.

This evaluation identified a crack in the area immediately beneath the unit which then traversed across the roll-off box storage area. As noted above, HR/E advanced four borings (SB-25 to 28) within this SWMU area. SB-26 was located along the crack, which originated beneath the drum crushing unit, and immediately next to the unit, see Figure 6, Appendix A.


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- Other (Drum Processing Unit)

In the course of performing the investigation at the facility it was determined that as part of the supplemental fuels drum processing, drums were emptied of their contents and then crushed in one operation within the drum processing unit. While this unit was not addressed by IEPA, it was investigated as part of this investigation.

The existing aerosol can crushing unit is located at the north end of this unit. This unit was constructed as a separate part of the container storage and processing building. This SWMU was constructed with a double containment liner beneath the concrete floor. Since the inspection by ESCA, see Appendix E, revealed several hairline cracks in the concrete floor a water sample was collected from the "witness" wells located in this area, see Figure 2, Appendix A. These "witness" wells are located above the upper liner and between the upper and lower liners.

- Barge Cleaning Transfer Point

The barge cleaning transfer point is the location along the west side of the barge slip at which all connections to hoses for pumping materials from the barges are located.

In accordance with the permit, as specified by the IEPA, a soil sample SB-13 was collected in the area of the transfer point from barge to the


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land based facility, see Figure 2, Appendix A. This sample was collected from the soils near the connection point of the piping leading to the tank farm area and where the piping from the barge cleaning operations connects to this system. This would be the most likely point for a release to occur.

- Old Aerosol Can Crushing Unit

While the specific footprint of this unit was not definable, the general area as shown in Figure 2, Appendix A was reported to be the general area where the unit was previously located. This area was located south of the existing van container storage trailer area and was utilized to empty and collect the contents of aerosol cans with the empty containers being crushed and disposed as a "RCRA-empty containers". In 1988, this unit was destroyed by a fire. This area is now a bituminous paved area for the movement of vehicles into and out of the container storage and processing building and the van trailer storage area, see Figure 2, Appendix A.

As specified in the permit, soil sampling in the area of the old aerosol can crushing unit was conducted. Since this unit had been located in the area now covered by bituminous pavement between the van trailer storage area and the container storage and processing unit, HR/E advanced two borings soil borings (SB-11 and 12) in the area of this former SWMU, see Figure 2, Appendix A. The location of these soil borings were based upon discussions with plant personnel and were


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located at either end of the area identified as previously occupied by this SWMU.

- Underground Sanitary Waste Holding Tank

This unit consists of a 10,000 gallon sanitary waste holding tank and a 2,000 gallon overflow tank. These tanks are located west of the offices at the northwest corner of the office building. Sanitary wastes from the facility are accumulated within these tanks. The tanks are periodically pumped of their contents and transported to the Lemont Wastewater Treatment Plant for disposal.

In accordance with the permit specified by the IEPA the integrity of tanks were to be determined and as necessary soil samples were to be collected in the area. Since these tanks are of fiberglass construction and are directly connected to the sanitary sewers, conventional tightness tests were not feasible. Therefore, one soil boring was proposed in this area. This soil sample was to be visually observed for evidence of contamination and analyzed for volatile organic constituents similar to the tank contents as required in the permit. In the Agency's response of February 2, 1994, the IEPA requested that one soil sample be collected from the mid-point of the USTs along each of the four (4) sides. Upon discussion with plant personnel and advancement of exploratory probes in the area it was determined that approximately 8 inches of soil overlayed the bedrock. The USTs had been installed by blasting the bedrock and installing the USTs within


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this cavity. The backfill material consisted of crushed limestone. HR/E personnel advanced one boring (SB-29) into the backfill material of the USTs between the two USTs to a depth of 24 inches below surface grade. At a depth of 18 inches below grade (BSG) perched groundwater was encountered. This boring was at the south end of the tanks, in a downgradient direction.

Based upon the presence of perched groundwater and the crushed limestone backfill this was the only boring advanced at this SWMU. A groundwater sample was collected in lieu of one or more soil samples. This water sample is considered to be representative of conditions within the UST excavation since any potential releases would have been dispersed throughout the backfill materials by the water present in the cavity created in the bedrock.

- Drainage Ditch and Tile Leading to Chicago Sanitary and Ship Canal

The drainage ditch is located to the west of the office building and traverses the site from north to south. Flow in the ditch is the result of surface water run-off the facility during precipitation events and water seepage from the Des Plaines River south dike during periods of high water. The seepage primarily occurs along the bank area adjacent to and north of the office parking area see Figure 2, Appendix A. In order to minimize the impact of this off-site surface water run on at the facility, HERITAGE has constructed an asphalt lined swale along the upper portion of the site. At the discharge end of the ditch


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HERITAGE has constructed a weir and a control gate by which flow to the Chicago Sanitary and Ship Canal can be stopped in the event that a release occurs at the facility into the ditch.

As specified in the permit by the IEPA, soil samples were collected along the length of the ditch as part of the Phase I RFI activities. HR/E collected soil samples at five locations (SD-1 to 5), throughout the length of the ditch, see Figure 2, Appendix A.

- Other (Background)

As a result of the extensive covering of the site by bituminous materials and the relative absence of soil cover separating these surfaces and the underlying bedrock, HR/E anticipated that the soil samples collected in the various SWMU areas could exhibit chemical constituents typically found in bituminous material. Therefore, HR/E proposed to advance three soil borings adjacent to and inside the northern edge of the office area parking lot, see Figure 2. These samples would be considered as background conditions for those areas in which bituminous materials were present as the overlying surface.

In accordance with the IEPA modifications presented in their February 2, 1994 correspondence HR/E personnel advanced soil borings at ten (10) locations (SB-1 to 10) along the northern edge of the facility as shown in Figure 2. The use of ten (10) soil samples as opposed to three (3) soil samples was considered necessary by the agency in order


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to provide a meaningful quantitative evaluation of background conditions. These locations were selected based upon the absence of Heritage facility operations occurring at the present time or having occurred in the past within these areas.

## 2.2 Investigative Sampling Procedures

On May 16, 1994 HR/E personnel mobilized to the site to conduct the RFI activities. These activities were performed in accordance with the procedures and protocols outlined in the October 29, 1994 RFI Work Plan as modified and in accordance with the conditions presented in the IEPA's February 2, 1994 approval of this Work plan.

### 2.2.1 Soil Boring Procedures

Upon mobilization to each SWMU area, the specific location within the unit at which samples would be collected, were marked and located. While these locations had previously been identified in the RFI Work Plan, at several SWMUs, the actual location and/or number of borings and samples collected were modified/changed based upon field conditions. The specific location of the soil borings and the basis of selecting these locations are discussed in Section 3.0 of this report. The advancement of the borings at the site generally was accomplished following the procedures outlined herein.

Since most of the site is covered by asphalt or concrete surfaces a concrete coring machine was utilized to cut a 4 inch diameter core through this material. With the removal of the core a stainless steel hand auger, was used


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to advance the boring or to collect a soil sample depending upon subsurface conditions at some locations it was necessary to collect the sample by hand. In this instance the hands were double nitrile gloved. As discussed in Section 3.0 bedrock was encountered immediately beneath the concrete or asphalt surface or within several inches of the covering surface.

### 2.2.2 Soil Sampling Procedures

At each of the soil sampling locations, a soil sample was collected from the interval underlying the concrete or bituminous surface and overlying the bedrock where feasible. The soil material encountered and described in Section 3 of this report consisted of stone, gravel, silt, and clay intermixed. As a result of the shallow thickness and the characteristics of the "soil" material, the soil samples collected for volatile organic analysis were not obtained in accordance with Attachment 7 of the IEPA's RCRA closure plan instructions. The procedures utilized and described in Section 3 were performed in a manner to minimize the agitation and the time the "soil" sample was exposed to the air. At the barge cleaning transfer point the soil sample was collected from the surface to a depth of 4 inches where bedrock was encountered.

The soil samples collected were visually examined by the field geologist with notations as to its lithological characteristics, color, odor, and other physical features. The soil samples were placed into the appropriate containers for laboratory analysis.



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At each soil sampling location, a portion of the soil sample was immediately placed into 2 ounce glass containers for volatile organic constituent analysis. These soil samples were hand packed into the glass jars, with Teflon™ lined lids, to minimize any air space. A separate portion of the soil sample was placed in 4 ounce glass containers for base/neutral and acid extractable semi-volatile organic constituent analysis. The remaining sample volume was used to fill a one quart glass container for TCLP metal analysis where appropriate. As a result of insufficient soil volume at some of the locations, one or two additional borings were advanced within one foot of the initial boring to obtain the required sample volume. This was especially necessary when duplicate samples were obtained.

In the course of filling the jars, to the extent possible all stones greater than 1 cm in size were removed as the soil sample was placed in the containers. This was done as quickly as possible when filling the volatile organic sample containers, to minimize volatization of the samples.

A separate portion of the soil sample was placed into a 6-oz. sampling container, covered with foil wrap, and subsequently screened following headspace analysis procedures using a MicroTip PID (photoionization device) with a sensitive ionization probe (10.6 electron-volts) to indicate the presence or absence of volatile organic vapors in the air space above the soil sample. Prior to conducting the PID field screening, each collected sample was agitated to break up soil slumps within the closed jar. The lid was then removed and the PID probe inserted through the aluminum foil into the headspace above the soil sample and the reading was recorded.


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The soil sample containers were provided by Heritage Laboratories. Each sample container was pre-labeled and was marked as to the analysis to be performed and whether preservatives had been added. After collection of the soil sample, the sample container was sealed and the label completed by insertion of the site designated project identification, sample location, depth of sample, time and date of sample collection and the sampler's initials. The samples were placed into an ice packed cooler and kept iced until delivered to the laboratory accompanied by the appropriate Chain-of-Custody Documentation.

### 2.2.3 Groundwater Sampling

In the course of performing the Phase I RFI activities the presence of perched water within the UST excavation (groundwater) resulted in a field modification to the sampling plan. In lieu of sampling from the four sides of the USTs at depth, groundwater was sampled at the backfill water interface as representative of the conditions at this SWMU.

The groundwater sample was collected using a soil probe device. The soil probe device consists of a slotted drive point to which is attached polyethylene tubing. Upon driving the probe to the desired depth (2 feet), just below the water table, the drive mechanism is removed leaving the slotted drive point. The tubing attached to the drive point and extending above the surface was connected to a peristaltic pump. A total volume of at least 5 tube volumes was pumped from the excavation probe hole prior to collecting a sample for


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analysis. The pumping rate was controlled to ensure a continuous stream of flow.

During these activities HR/E also collected water samples from the two (2) witness well systems located at the drum crushing building area and the container processing building. These areas are adjacent but have separate double liner containment as a part of their construction. At each of these areas, witness wells have been constructed to monitor conditions above the upper liner and between liners. The water level present in each of these wells was measured and at least 5 volumes of the wells were removed using a peristaltic pump. The samples were then collected using this same pump. The tubing used at each location was disposed of and new tubing installed in the pump between each well sampling event.

Initially two (2) 40 ml glass jars, with Teflon™ lined septum lids, were filled to eliminate any air space for volatile organic analysis. A separate sample was then collected for semi-volatile and/or total metals analysis. The sample containers were then labeled and placed into an iced cooler for transportation to the laboratory. All samples were transported to the laboratory under a chain-of-custody.

### 2.2.4 Decontamination

In collecting the various samples at the facility decontamination of augers, trowels, concrete corer and scoops consisted of a soap and water wash and potable water rinse. Additional scrubbing as necessary was performed to


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remove any encrusted materials followed by rinsing with water. Decontaminated equipment was stored on plastic sheeting until utilized.

All sampling equipment was decontaminated prior to use, and all reusable non-dedicated equipment (stainless steel pans and spatulas, etc.) were decontaminated between samples, events and before removal from the site.

All sample bottles were provided by Heritage Laboratories and were provided to HR/E with lids on and as necessary, preservatives.

Decontamination of the sample containers was performed by the laboratory in accordance with the project QAPjP.

The HR/E sampler wore single use latex or nitrile gloves. These single use latex and nitrile gloves were disposed between each sampling interval and event to prevent cross contamination of the samples.

### 2.2.5 Abandonment of Soil Boring and Groundwater Probes

All soil borings were abandoned by filling the open holes with dry granular bentonite to the concrete and/or bituminous interface. These areas were patched with concrete.



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## 2.3 Sample and Document Custody Procedures

Information regarding samples collected for laboratory analysis was entered into the appropriate spaces on a chain-of-custody record form. This form remained with the samples, and a record of transfer from party to party was maintained on the form, until finally received by the laboratory where the analysis was performed. Copies of the chain-of-custody documents are provided in Appendix F.

All samples were delivered to the laboratory within 24-hours of collection.



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## 3.0 SUMMARY OF FIELD OBSERVATIONS AND ANALYSIS

On May 16-20, 1994, HR/E personnel mobilized to the subject site for the performance of the RCRA Facility Investigation (RFI) field sampling activities. The RFI activities conducted consisted of subsurface investigations in and adjacent to eight Solid Waste Management Units (SWMU's), and a background area identified in the RFI Work Plan. No subsurface investigation was conducted in the truck transfer area SWMU. Each boring location was surveyed to determine the elevations on July 7, 1994.

The location of the soil borings are indicated in Figures 2 through 6. At some SWMUs the sampling locations were moved from those indicated in the RFI Work Plans based upon field observations. In addition, the sampling location numbers were field assigned and do not correlate with the location numbers presented in the RFI Work Plan. This was a result of increasing the number of background samples from three to ten. The soil samples collected were submitted to HERITAGE Laboratories in Romeoville, Illinois for analysis. Table 3-1 summarizes the samples collected and the specific analyses for each sample submitted. Chain-of-Custody documentation and Laboratory Certificates of Analysis are included in Appendix F and G, respectively.

This section of the report describes the field methods utilized for soil sample collection, the subsurface conditions and geology observed, and the results of field screening, where applicable. Unified Soil Classifications are presented in parenthesis after soil descriptions.



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## TABLE 3-1

### Summary of Samples Collected for Analysis

| Sample Type/Location | Field Measurements | Laboratory Parameters[1] | Analytical Method[1] | # of Samples | Quality Control Samples | | | | Total # of Samples |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | # Field (2) Duplicates | # Field Blanks | # of Trip Blanks | # of (3) MS/MSD | |
| Soils | | | | | | | | | |
| Outdoor Container Storage Area | --- | Volatile Organics | SW846 | 5 | 1 | N/A | N/A | N/A | 6 |
| | --- | Semi-Volatile Organics | SW 846 | 5 | 1 | N/A | N/A | N/A | 6 |
| | --- | TCLP Metals | SW 846 | 5 | 1 | N/A | N/A | N/A | 6 |
| Van Trailer Container Storage Area | --- | Volatile Organics | SW846 | 6 | 0 | N/A | N/A | N/A | 6 |
| | --- | Semi-Volatile Organics | SW 846 | 6 | 0 | N/A | N/A | N/A | 6 |
| | --- | TCLP Metals | SW846 | 6 | 0 | N/A | N/A | N/A | 6 |
| Old Aerosol Can Crushing Unit | --- | Volatile Organics | SW846 | 2 | N/A | N/A | N/A | N/A | 2 |
| | --- | Semi-Volatile Organics | SW846 | 2 | N/A | N/A | N/A | N/A | 2 |
| | --- | TCLP Metals | SW846 | 2 | N/A | N/A | N/A | N/A | 2 |
| Roll-off Box Storage Area/ Drum Crushing Unit | --- | Volatile Organics | SW846 | 0 | N/A | N/A | N/A | N/A | 0 |
| | --- | Semi-Volatile Organics | SW846 | 0 | N/A | N/A | N/A | N/A | 0 |
| | --- | TCLP Metals | SW846 | --- | N/A | N/A | N/A | N/A | --- |
| Barge Cleaning Transfer Point | --- | Volatile Organics | SW846 | 1 | N/A | N/A | N/A | N/A | 1 |
| | --- | Semi-Volatile Organics | SW846 | 1 | N/A | N/A | N/A | N/A | 1 |
| | --- | TCLP Metals | SW846 | --- | N/A | N/A | N/A | N/A | --- |

## TABLE 3-1

### Summary of Samples Collected for Analysis

| Sample Type/Location | Field Measurements | Laboratory Parameters[1] | Analytical Method[1] | # of Samples | Quality Control Samples | | | | Total # of Samples |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | # Field (2) Duplicates | # Field Blanks | # of Trip Blanks | # of (3) MS/MSD | |
| Drainage Ditch | --- | Volatile Organics | SW846 | 5 | 1 | N/A | N/A | 1 | 7 |
| | --- | Semi-Volatile Organics | SW846 | 5 | 1 | N/A | N/A | 1 | 7 |
| | --- | TCLP Metals | SW846 | 5 | 1 | N/A | N/A | N/A | 6 |
| Other - Parking Lot | --- | Volatile Organics | SW846 | 10 | 1 | N/A | N/A | N/A | 11 |
| | --- | Semi-Volatile Organics | SW846 | 10 | 1 | N/A | N/A | N/A | 11 |
| | --- | TCLP Metals | SW846 | --- | N/A | N/A | N/A | N/A | --- |
| Sanitary Holding Tanks | --- | Volatile Organics | SW846 | 1 | N/A | N/A | N/A | N/A | 1 |
| | --- | Semi-Volatile Organics | SW846 | 1 | N/A | N/A | N/A | N/A | 1 |
| | --- | TCLP Metals | Sw846 | --- | N/A | N/A | N/A | N/A | --- |
| Soils Total | --- | Volatile Organics | SW846 | 30 | 3 | N/A | N/A | 1 | 34 |
| | --- | Semi-Volatile Organics | SW846 | 30 | 3 | N/A | N/A | 1 | 34 |
| | --- | TCLP Metals | SW846 | 18 | 2 | N/A | N/A | N/A | 20 |

## TABLE 3-1

### Summary of Samples Collected for Analysis

| Sample Type/Location | Field Measurements | Laboratory Parameters(1) | Analytical Method(1) | # of Samples | Quality Control Samples | | | | Total # of Samples |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | # Field (2) Duplicates | # Field Blanks | # of Trip Blanks | # of (3) MS/MSD | |
| Water | | | | | | | | | |
| Sanitary Holding Tanks | --- | Volatile Organics | SW846 | 1 | N/A | 1 | 1 | N/A | 3 |
| Witness Wells | --- | Volatile Organics | SW846 | 2 | -- | -- | -- | -- | 2 |
| | --- | Semi-Volatile Organics | SW846 | 2 | -- | -- | -- | -- | 2 |

(1) See Table 2 for a listing of specific analyses, methodology and detection concentrations.
(2) One duplicate for every 10 soil samples.
(3) One matrix spike for every 20 soil samples.

## 3.1 Outdoor Container Storage Area

Soil samples were collected from four of five locations in the area of the Outdoor Container Storage Area. The sampling locations are numbered SB-20 through SB-24. A sample was not obtained from location SB-20. The locations of these borings are shown in Figure 4, Appendix A, Outdoor Container Storage Area. Sampling was conducted at these locations on May 18, 1994.

Sampling location SB-20 was advanced by utilizing a concrete coring machine to core through the surface pavement adjacent to a crack in the concrete. Coring continued through 0.7 feet of concrete and into the bedrock surface. Soil or gravel materials were not encountered in this boring, thereby preventing collection of any sample. The bedrock surface was encountered at an elevation of 586.69 feet.

Sampling location SB-21 was advanced by utilizing a concrete coring machine to core through the surface pavement, midway along a crack in the concrete, and advancing the boring into the subsurface by hand to a depth of 1.1 feet below surface grade (BSG). Bedrock was encountered at the base of this boring at an elevation of 586.26 feet. The subsurface profile consisted of 0.9 feet of concrete pavement underlain by dark grey to black silty clay (USC = CL-ML) approximately 0.2 feet in thickness. The soil exhibited a slight hydrocarbon odor and a PID meter reading of 1984 ppm. The laboratory sample was collected from 0.9' to 1.1' BSG. The sample was submitted to the laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.


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Sampling location SB-22 was advanced by utilizing a concrete coring machine to core through the surface pavement, at the intersection of two cracks in the concrete, and advancing the boring into the subsurface by hand to a depth of 1.11 feet BSG. Three separate and adjacent borings were required to collect sufficient soil sample for laboratory analysis. Bedrock was encountered at the base of this boring at an elevation of 586.24 feet. The subsurface profile consisted of 1.0 feet of concrete pavement underlain by grey to black gravelly silty clay (USC = CL-ML), approximately 0.11 feet in thickness. The laboratory sample was collected from 1.0 to 1.11 feet BSG. This sample exhibited a slight petroleum odor and a PID headspace reading of 60 ppm. The sample was submitted to the laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.

Sampling location SB-23 was advanced by utilizing a concrete coring machine to core through the surface pavement, at the intersection of two cracks in the concrete, and advancing the boring into the subsurface by hand to a depth of 0.93 feet BSG. Three separate and adjacent borings were required to collect sufficient soil sample for laboratory analysis. Bedrock was encountered at the base of this boring at an elevation of 586.47 feet. The subsurface profile consisted of 0.85 feet of concrete pavement underlain by grey to black gravelly (limestone gravel) silty clay (USC = CL-ML), approximately 0.08 feet in thickness. The laboratory sample was collected from 0.85 to 0.93 feet BSG. This sample exhibited a PID headspace reading of 70 ppm and a slight petroleum odor. The sample was submitted to the laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.

Sampling location SB-24 was advanced by utilizing a concrete coring machine to core through the surface pavement, at the intersection of one crack and two construction


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joints, and advancing the boring into the subsurface by hand to a depth of 0.91 feet BSG. Three separate and adjacent borings were required to collect sufficient soil sample for laboratory analysis, including a duplicate sample. Bedrock was encountered at the base of this boring at an elevation of 586.47 feet. The subsurface profile consisted of 0.85 feet of concrete pavement underlain by grey to black silty clay (USC = CL-ML), approximately 0.06 feet in thickness. The laboratory sample was collected from 0.85 to 0.91 feet BSG. This sample exhibited a slight petroleum odor and a PID headspace reading of greater than 2000ppm. The sample was submitted to the laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.

## 3.2 Van Trailer Container Storage Area

Soil samples were collected from six locations in and adjacent to the Van Trailer Storage Area. These sampling locations are numbered SB-14 through SB-19. The locations of these samples are indicated in Figure 5, Appendix A, Van Trailer Container Storage Area. Sampling was conducted at these locations on May 17, 1994.

Sampling location SB-14 was advanced by utilizing a concrete coring machine to core through the surface pavement, immediately west of the containment curb adjacent to the SWMU, and advancing the boring into the subsurface by hand auger to a depth of 1.2 feet BSG. Bedrock was not noted at the base of this boring, however the bedrock elevation is estimated to be 585.9 feet. The subsurface profile consisted of 0.32 feet of asphalt pavement underlain by a crushed limestone gravel, underlain by a dark brown silty sandy gravel (USC = GM), approximately 0.88 feet in


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thickness. Decayed organic material, i.e. plants & roots were noted on top of the crushed limestone gravel immediately beneath the asphalt. The laboratory sample was collected from 0.32 to 0.88 feet BSG. This sample exhibited a septic type odor and a PID headspace reading of 60 ppm. Gravel pieces larger than 1 centimeter diameter (visual approximation) were removed by hand prior to packing the sample in jars for laboratory analysis. The sample was submitted to the laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.

Sampling location SB-15 was advanced by utilizing a concrete coring machine to core through the surface pavement, in the northwest corner of the SWMU near a trailer support depression (8" x 8" x 1" deep), and advancing the boring into the subsurface by hand auger to a depth of 1.1 feet BSG. Bedrock was encountered at the base of this boring at an elevation of 585.9 feet. The subsurface profile consisted of 0.6 feet of asphalt pavement underlain by a crushed limestone gravel (USC = GW), underlain by a brown silty gravel to a dark brown clayey gravel (USC = GM-GC) immediately above bedrock. approximately 0.50 feet in thickness. The laboratory sample was collected from 0.6 to 1.1 feet BSG. This sample did not exhibit any noticeable odor and a PID headspace reading of 20 ppm. Gravel pieces larger than 1 centimeter diameter (visual approximation) were removed by hand prior to packing the sample in jars for laboratory analysis. The sample was submitted to the laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.

Sampling location SB-16 was advanced by utilizing a concrete coring machine to core through the surface pavement, in the southwest corner of the SWMU near a trailer support depression (8" x 8" x 1" deep), and advancing the boring into the subsurface


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by hand auger to a depth of 1.0 feet BSG. Bedrock was encountered at the base of this boring at an elevation of 585.93 feet. The subsurface profile consisted of 0.4 feet of asphalt pavement underlain by a crushed limestone gravel (USC = GW), approximately 0.60 feet in thickness. After completing the boring, water collected in the open boring which was removed prior to sampling, however the sample collected was wet. The laboratory sample was collected from 0.4 to 1.0 feet BSG. This sample did not exhibit any noticeable odor and a PID headspace reading of 20 ppm. Gravel pieces larger than 1 centimeter diameter (visual approximation) were removed by hand prior to packing the sample in jars for laboratory analysis. The sample was submitted to the laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.

Sampling location SB-17 was advanced by utilizing a concrete coring machine to core through the surface pavement, in the northeast corner of the SWMU near a piece of rebar which protruded through the pavement, and advancing the boring into the subsurface by hand auger to a depth of 1.1 feet BSG. Bedrock was encountered at the base of this boring at an elevation of 586.25 feet. The subsurface profile consisted of 0.175 feet of asphalt pavement underlain by a piece of concrete 0.4 feet in thickness, fine to coarse gravel (USC = GW), with some gravelly clay (GC) near the base of the boring, approximately 0.60 feet in thickness. The concrete piece was present in only one-half of the core. Water collected in the open boring which was removed prior to sampling, however the sample collected was wet. The laboratory sample was collected from 0.575 to 1.1 feet BSG. This sample did not exhibit any noticeable odor and a PID headspace reading of 18 ppm. Gravel pieces larger than 1 centimeter diameter (visual approximation) were removed by hand prior to packing the sample in jars for laboratory analysis. The sample was submitted to the


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laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.

Sampling location SB-18 was advanced by utilizing a concrete coring machine to core through the surface pavement, in the east end of the SWMU near a 2-inch diameter hole in the pavement, and advancing the boring into the subsurface by hand auger to a depth of 0.8 feet BSG. Bedrock was encountered at the base of this boring at an elevation of 586.47. The subsurface profile consisted of 0.35 feet of asphalt pavement underlain by a coarse sandy gravel (USC = GP), approximately 0.45 feet in thickness. Water collected in the open boring which was removed prior to sampling, however the soil sample collected was wet. The laboratory sample was collected from 0.35 to 0.8 feet BSG. This sample did not exhibit any noticeable odor and a PID headspace reading of 18 ppm. Gravel pieces larger than 1 centimeter diameter (visual approximation) were removed by hand prior to packing the sample in jars for laboratory analysis. The sample was submitted to the laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.

Sampling location SB-19 was advanced by utilizing a concrete coring machine to core through the surface pavement, on the south side of the SWMU near a trailer support depression (8" x 8" x 2" deep), and advancing the boring into the subsurface by hand auger to a depth of 0.7 feet BSG. Bedrock was encountered at the base of this boring at an elevation of 586.29 feet. The subsurface profile consisted of 0.32 feet of asphalt pavement underlain by a coarse sandy gravel (USC = GP), approximately 0.38 feet in thickness. Water collected in the open boring which was removed prior to sampling, however the soil sample collected was wet. The water present in this boring exhibited a very slight hydrocarbon sheen (potentially from the asphalt). The


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laboratory sample was collected from 0.35 to 0.8 feet BSG. This sample did not exhibit any noticeable odor and a PID headspace reading of 31 ppm. Gravel pieces larger than 1 centimeter diameter (visual approximation) were removed by hand prior to packing the sample in jars for laboratory analysis. The sample was submitted to the laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.

### 3.3 Old Aerosol Can Crushing Unit

Soil samples were collected from two locations in the area of the former aerosol can crushing unit. These sampling locations are numbered SB-11 and SB-12. The locations of these samples are shown in Figure 2, Appendix A. Sampling was conducted at locations SB-11 and SB-12 on May 17, 1994.

Sampling location SB-11 was advanced by utilizing a concrete coring machine to core through the surface pavement, near the west end of the former aerosol can crushing unit, and advancing the boring into the subsurface by hand to a depth of 0.55 feet BSG. Bedrock was encountered at the base of this boring at an elevation of 585.52 feet. The subsurface profile consisted of 0.25 feet of asphalt pavement underlain by dark brown silty gravel (USC = GM), approximately 0.3 feet in thickness. The laboratory sample was collected from 0.25 to 0.55 feet BSG. This sample exhibited a slight petroleum odor and a PID headspace reading of 26 ppm. There was a small amount of water in the boring, which exhibited a slight hydrocarbon sheen (potentially from the asphalt). The sample was submitted to the laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.


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Sampling location SB-12 was advanced by utilizing a concrete coring machine to core through the surface pavement, near the east end of the former aerosol can crushing unit, and advancing the boring into the subsurface by hand to a depth of 0.49 feet BSG. Two separate and adjacent borings were required to collect sufficient soil sample for laboratory analysis. Bedrock was encountered at the base of this boring at an elevation of 586.05 feet. The subsurface profile consisted of 0.4 feet of asphalt pavement underlain by brown silty gravel (USC = GM), approximately 0.09 feet in thickness. The laboratory sample was collected from 0.4 to 0.49 feet BSG. This sample exhibited a hydrocarbon odor and a PID headspace reading of 65 ppm. The sample was submitted to the laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.

### 3.4 Roll-off Box Storage Area

Four borings were advanced in the Roll-off Box Storage Area. These sampling locations are numbered SB-25 and SB-28. The locations of these samples are indicated in Figure 6, Appendix A. SB-26 was advanced next to the drum crushing unit and is discussed in Section 3.4. Borings were conducted at these locations on May 19, 1994. The presence of bedrock directly beneath the surface pavement in this area prevented the collection of soil samples. At each of these locations virtually no soil materials were present (less than 1/8-inch) beneath the surface pavement.

Sampling location SB-25 was completed, along a crack in the concrete on the east side of the SWMU, to 0.6 feet BSG where bedrock was encountered at an elevation of 586.67. The concrete core measured 0.58 feet in length. Two core holes were attempted at this location to obtain sufficient soil sample. An insufficient amount of


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soil was present for sample collection. The soil which was present exhibited a slight hydrocarbon odor. This sample exhibited a PID headspace reading of 141 ppm. A slight amount of water collected in the open boring which exhibited a slight sheen.

Sampling location SB-27 was completed to 0.59 feet BSG where bedrock was encountered at an elevation of 586.61. The boring was completed near the intersection of two cracks on the west side of the SWMU. The concrete core measured 0.58 feet in length. A fine gravel (USC = GP) containing no fines was present beneath the concrete and above the bedrock surface (.01' in thickness). An insufficient amount of soil was present for sample collection. A small amount of water collected in the open boring.

Sampling location SB-28 was completed to 0.52 feet BSG where bedrock was encountered at an elevation of 586.84 feet. Sampling location SB-28 was completed, between two cracks in the concrete on the south side of the SWMU. The concrete core measured 0.51 feet in length. A fine gravel (USC = GP) containing no fines was present beneath the concrete and above the bedrock surface (.01' in thickness). An insufficient amount of soil was present for sample collection. A small amount of water collected in the open boring.

### 3.5 Drum Crushing Unit

As discussed previously, with the drum crusher being located within the roll-off box storage area, one (1) boring, SB-26, was advanced next to this unit as shown in Figure 6, Appendix A. This boring was advanced at this location since the crack originating


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from under the drum crusher unit splits at this point traversing in two directions across the roll-off box storage area. This boring was advanced on May 19, 1994.

Sampling location SB-26 was completed to 0.57 feet BSG, at the intersection of two cracks in the concrete on the north side of the SWMU. The concrete core measured 0.42 feet in length. The core was continued to 0.57 feet. The bottom portion of the core consisted of dolomite bedrock. The specimen was identified as a light gray, dense, argillaceous, slightly vesicular dolomite. The top of the bedrock dolomite was encountered at an elevation of 586.79. No soil materials were present and therefore, no soil samples were collected. A slight amount of water collected in the open boring.

### 3.6 Underground Sanitary Holding Tanks

In accordance with the February 2, 1994 Agency correspondence (Appendix B), HR/E intended to complete four soil borings to a depth of 10 feet BSG on each side of the underground sanitary holding tanks. However, perched groundwater was encountered in the backfill surrounding the tanks approximately 18" BSG.

HR/E personnel selected the first boring location between the two underground sanitary holding tanks in a down gradient direction, i.e. south end of the tanks. Sampling location SB-29 was advanced by hand auger to a depth of 24-inches BSG. Bedrock was not encountered at the base of this boring. The subsurface profile consisted of approximately 8 inches of black organic silty topsoil (USC = OL). This was underlain by crushed limestone Grade 8 (USC = GW). Water was encountered at a depth of 18", at an approximate elevation of 585.57 feet. As a result of the


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presence of water in close proximity to the surface it was decided to collect a groundwater sample from within the backfill which would represent conditions surrounding the underground tanks. This sampling location is numbered SB-29. The location of this sample is indicated in Figure 2, Appendix A. Sampling was conducted at this location on May 20, 1994.

This sample was collected from the open boring through an aluminum screen point connected with polypropylene tubing to a peristaltic sampling pump. Approximately 1 gallon of water was purged from the boring prior to sample collection. This sample was designated GW-1. The sample was submitted to the laboratory for volatile and semi-volatile organic compound analyses.

### 3.7 Barge Cleaning Transfer Point

One soil sample was collected from the area of the Barge Cleaning Transfer Point. This sampling location is numbered SB-13. The location of this sample is indicated in Figure 2, Appendix A. Sampling was conducted at this location on May 17, 1994.

Sampling location SB-13 was advanced by hand auger to a depth of 4-inches below surface grade (BSG) beneath the pipe rack. Bedrock was encountered at the base of this boring at an elevation of 586.75 feet. The subsurface profile consisted of 4-inches of brown silty sand (USC = SM) with some fine gravel and roots. The laboratory sample was collected from 0-inches to 4-inches BSG. This sample did not reveal an odor and exhibited a PID headspace reading of 36 ppm. The sample was submitted to the laboratory for volatile and semi-volatile organic compound analyses.


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## 3.8 Drainage Ditch

Five (5) sampling points were located along the drainage ditch. Three (3) soil samples were submitted from these five (5) boring locations. Soil samples were not submitted from SD-3 and SD-4. These sampling locations are numbered SD-1 through SD-5. The locations of these samples are indicated in Figure 2, Appendix A. Sampling was conducted at these locations on May 19, 1994.

Sampling location SD-1 was advanced (by hand auger) to a depth of 1 foot below surface grade (BSG). Bedrock was not encountered at the base of this boring. The subsurface profile consisted of one-foot of primarily crushed limestone with silt, clay, and sand (USC = GM-GC). The laboratory sample was collected from 0 to 1 foot BSG. Gravel pieces larger than 1 centimeter diameter (visual approximation) were removed by hand prior to packing the sample in jars for laboratory analysis. This sample did not exhibit an odor and exhibited a PID headspace reading of 12 ppm. The sample was submitted to the laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.

Sampling location SD-2 was advanced by utilizing a concrete coring machine to core through the asphalt surface pavement, and advancing the boring into the subsurface with a hand auger) to a depth of 1-foot BSG. Bedrock was encountered at the base of this boring, at an approximate elevation of 585.02 feet. The subsurface profile consisted of 0.4 feet of asphalt pavement underlain by a gravel with very coarse sand (USC = GP-GW) to the top of bedrock. The laboratory sample was collected from 0.4 to 1.0 feet BSG. Gravel pieces larger than 1 centimeter diameter (Visual approximation) were removed by hand prior to packing the sample for laboratory


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analysis. This sample did not exhibit an odor and exhibited a PID headspace reading of 15 ppm. Water was observed at the bottom of this boring upon its completion. The sample was submitted to the laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.

Sampling location SD-3 was advanced by utilizing a concrete coring machine to core through the asphalt surface pavement, and advancing the boring into the subsurface by hand to a depth of 0.40 feet BSG. Bedrock was encountered at the base of this boring at an approximate elevation of 585.29 feet. The subsurface profile consisted of 0.38 feet of asphalt pavement and 0.02 feet of a sand and gravel mixture (USC = SP). Water was observed at the bottom of this boring upon its completion. An insufficient amount of soil was present for sample collection.

Sampling location SD-4 was advanced by utilizing a concrete coring machine to core through the asphalt surface pavement, and advancing the boring into the subsurface with a hand auger to a depth of 0.45 feet BSG. Bedrock was encountered at the base of this boring at an approximate elevation of 583.96 feet. The subsurface profile consisted of 0.2 feet of asphalt pavement and 0.25 feet of coarse gravel (USC = GP), (greater than 0.5 inch diameter). There were no fines in the gravel, therefore no sample was collected.

A grab sample was collected by hand from sediment present on top of bedrock at the sampling location SD-5. This location is immediately downstream of the discharge control gate and consisted of a small area of deposition of sediment. This sediment pile was approximately 2- inches deep on top of the bedrock surface (elevation 583.95 feet). The sediment consisted of a slightly silty medium sand (USC = SP-SM). This


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sample did not exhibit an odor and exhibited a PID headspace reading of 24 ppm. The sample was submitted to the laboratory for volatile and semi-volatile organic compounds and TCLP metals analyses.

### 3.9 Other (Background) Sample Points

Background soil samples were collected from ten locations along the north side of the facility property. These sampling locations are numbered SB-1 through SB-10. A duplicate sample, designated SB-7D, was collected at location SB-7. The locations of the background samples are indicated in Figure 2, Appendix A. Sampling was conducted at locations SB-1 through SB-9 on May 16, 1994 and at location SB-10 on May 17, 1994.

Sampling location SB-1 was advanced by utilizing a concrete coring machine to core through the asphalt surface pavement, and advancing the boring into the subsurface with a hand auger) to a depth of 1.4 feet BSG. Bedrock was encountered at the base of this boring, at an approximate elevation of 587.08 feet. The subsurface profile consisted of 0.23 feet of asphalt pavement underlain by a crushed limestone gravel (USC = GW) to the top of bedrock. The laboratory sample was collected from 0.23 to 1.4 feet BSG. Gravel pieces larger than 1 centimeter diameter (Visual approximation) were removed by hand prior to packing the sample for laboratory analysis. This sample did not exhibit an odor. The sample was submitted to the laboratory for volatile and semi-volatile organic compound analyses.

Sampling location SB-2 was advanced by utilizing a concrete coring machine to core through the asphalt surface pavement, and advancing the boring into the subsurface


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with a hand auger) to a depth of 0.75 feet BSG. Bedrock was encountered at the base of this boring, at an approximate elevation of 586.72 feet. The subsurface profile consisted of 0.1 feet of asphalt pavement underlain by a crushed limestone gravel (USC = GW) to the top of bedrock. The laboratory sample was collected from 0.1 to 0.75 feet BSG. Gravel pieces larger than 1 centimeter diameter (Visual approximation) were removed by hand prior to packing the sample for laboratory analysis. This sample did not exhibit an odor. The sample was submitted to the laboratory for volatile and semi-volatile organic compound analyses.

Sampling location SB-3 was advanced by utilizing a concrete coring machine to core through the asphalt surface pavement, and advancing the boring into the subsurface with a hand auger) to a depth of 1.2 feet BSG. Bedrock was encountered at the base of this boring, at an approximate elevation of 585.97'. The subsurface profile consisted of 0.15 feet of asphalt pavement underlain by a crushed limestone gravel (USC = GW) to the top of bedrock. The laboratory sample was collected from 0.15 to 1.2 feet BSG. Gravel pieces larger than 1 centimeter diameter (Visual approximation) were removed by hand prior to packing the sample for laboratory analysis. This sample did not exhibit an odor. The sample was submitted to the laboratory for volatile and semi-volatile organic compound analyses.

SB-4 through SB-10 were generally collected from the south slope of the south dike of the Des Plaines River. A brief description of each boring is presented below:

| | |
|---|---|
| SB-4 0-6" | Dry black slightly clayey silt with gravel up to 1-1/2" diameter and grass roots (Fill material), USC = ML. Large dolomite boulder at 6" BSG. |



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| | | |
|---|---|---|
| SB-5 | 0-6" | Dry black slightly clayey silt with gravel and grass roots (Fill material), USC = ML. |
| SB-6 | 0-5" | Dry brown/black silt with gravel and grass roots (Fill material), USC = ML. |
| SB-7 | 0-6" | Dry brown/black silt with gravel and grass roots (Fill material), USC = ML. |
| SB-8 | 0-6" | Dry brown/black slightly clayey silt with gravel up to 2" diameter and grass roots (Fill material), USC = ML. |
| SB-9 | 0-5" | Brown silty gravel with roots (Fill material), USC = GM. |
| SB-10 | 0-5" | Dry brown/black slightly clayey silt with gravel up to 2" diameter and grass roots (Fill material), USC = ML. |

At each of these sample locations, bedrock was not encountered; however the presence of boulders and large rocks precluded the further advancement of these borings. Soil samples from each of the borings were submitted to the laboratory for volatile and semi-volatile organic compound analyses.

## 3.10 Other (Drum Processing Unit)

ESCA Consultants performed a structural survey of the Drum Processing Unit (DPU) prior to the sampling efforts conducted at the site. Several hairline cracks were noted in the ESCA report. A copy of the ESCA report is included in Appendix E. The DPU building includes a primary and secondary containment system which is comprised of a double liner system. Two witness wells are located within the DPU building; one above the primary liner (WW-1), and one between the primary and secondary liner (WW-2). A separate liner system exists beneath the adjacent


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Container Processing Building, which also contains similar witness wells; designated as WW-3 (above primary liner) and WW-4 (above secondary liner).

In lieu of collecting soil samples, these witness wells were purged and sampled. The locations of these well samples are indicated in Figure 2, Appendix A. The samples, designated WW-1, WW-2, WW-3 and WW-4, were collected on May 20, 1994. The wells were each purged and sampled with a peristaltic sampling pump equipped with polypropylene tubing. Dedicated tubing was used for each well. The witness wells were purged dry and allowed to recharge prior to collection of the samples. The water samples were submitted to the laboratory for volatile and semi-volatile organic compounds and total metals analyses.



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# 4.0 ANALYTICAL PROCEDURES

The following section documents the specific methodologies and procedures followed in analyzing the samples as collected and submitted to the laboratory during performance of the RFI.

## 4.1 Analytical Methods Utilized

The soil and water samples as submitted for analysis were analyzed at Heritage Laboratories in accordance with U.S. EPA SW-846 Methods. In general volatile organic constituents were analyzed in accordance with the SW-846-8240A Method and semi-volatile organic constituents were extracted in accordance with SW-846-3550 and analyzed by SW-846-8270A Methods. The specific analytical method and the procedures as defined by these methods were followed by the analyst. In addition the soil samples were analyzed for Toxicity Characteristic Teaching Procedures (TCLP), ICP or FAA acid digestion of the extract by SW-846-3010A followed by analysis for barium by SW-846-6010A, cadmium by SW846-7130, chromium by SW846-6010A, lead by SW846-6010, and silver by SW-846-7760A methods. A GFAA acid digestion by method SW-846-3020A proceeded analysis for arsenic by SW-846-7060 and selenium by SW-846-7740 methods or a mercury CUAA acid digestion of the extract proceeding mercury analysis by SW846-7470 methods.

A copy of the certificate of analysis for each sample submitted to the laboratory is provided in Appendix G. The Certificate of Analysis identifies the specific analytical method utilized, analyst, date of receipt and date of analysis. The Certificate of


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Analysis also identifies any dilution made to the sample and notes any interferences encountered during the analysis as well as the practical quantification limit achieved.

## 4.2 Quality Assurance/Quality Control Procedures

In accordance with the Quality Assurance Project Plan a total of three duplicate soil samples were collected and submitted to the laboratory for volatile and semi-volatile organic analysis by the laboratory. In addition a matrix spike/matrix spike duplicate soil sample was submitted to the laboratory.

A separate trip blank sample was prepared by Heritage Laboratories for volatile organic analysis of waters. This container was transported to the field and submitted to the laboratory for volatile organic analysis along with the other samples. A field blank water sample was prepared by HR/E in the field by filling a 4 ounce glass, septum lined, teflon coated screw on lid container with water used to decontaminate the equipment. The container was filled to ensure zero entrapment of air within the glass jar upon closure.

This water sample was collected by pouring the water into a previously decontaminated jar. The decontamination water originated from a hose connected to plant water.

The specific laboratory QA/QC procedures are identified and documented in Appendix H, Laboratory Data Package. The laboratory data package also identifies specific interferences and the basis of the practical quantification limits as achieved in the analysis performed.



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# 5.0 SUMMARY AND EVALUATION OF DATA

## 5.1 Summary of Analytical Data

Tables 5-1 through 5-16 present a summary of laboratory analyses of the soil samples collected at the site. Table 5-17 and Table 5-18 present the laboratory analyses of the groundwater sample collected from the sanitary waste holding tank excavation. Tables 5-19 through 5-21 present the laboratory analyses of the water collected from the witness wells located in the container processing and storage building and the drum processing unit area. Tables 5-22 through 5-24 present the laboratory data for the Decontamination/coring water (Field blank) and Table 5-25 presents the laboratory data obtained from analysis of the trip blank.

## 5.2 Evaluation of Data Approach

In evaluating the nature and extent of contamination at the site several factors were considered. These included the collection of ten (10) background soil samples for volatile organic and semi-volatile organic constituent analyses. The results of these analyses and statistically derived concentrations for the constituents of concern (Appendix I) were utilized in evaluating contamination at the various SWMUs. A second factor utilized in the process was to compare the concentrations of the constituents detected within each of the SWMU areas to published USEPA RCRA Corrective Action Levels, Appendix J. Where a Corrective Action Level has not been indicated the Region III U.S. EPA guidance memorandum on a risk based concentration table was utilized. This table, Appendix K, presents a quarterly summary of reference dosages and carcinogenic potency slope factors for over 600


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## TABLE 5-1
**Summary of Analytical Results**
**Background Soil Samples**
**Volatile Organic Compounds**
**Heritage Treatment Center**
**Lemont, Illinois**
**August 31, 1994**

| SAMPLE LOCATION | SB-1 | SB-2 | SB-3 | SB-4 | SB-5 | SB-6 | SB-7 | SB-7D | SB-8 | SB-9 | SB-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Acetone | 84 | 180 | 30 | 23 | <20 | <20 | <20 | <20 | 26 | 28 | <20 |
| Acrolein | <50[2] | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 |
| Acrylonitrile | <70 | <70 | <70 | <70 | <70 | <70 | <70 | <70 | <70 | <70 | <70 |
| Benzene | <5 | <5 | 4J | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Bromodichloromethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Bromoform | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Bromomethane | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Carbon Disulfide | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Carbon Tetrachloride | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Chlorobenzene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Chloroethane | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Chloroform | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Chloromethane | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Dibromochloromethane | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| cis-1,3-Dichloropropene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |

**TABLE 5-1 (cont'd)**
**Summary of Analytical Results**
**Background Soil Samples**
**Volatile Organic Compounds**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-1 | SB-2 | SB-3 | SB-4 | SB-5 | SB-6 | SB-7 | SB-7D | SB-8 | SB-9 | SB-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Compound/Concentration(1) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Dichlorodifluoromethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,1-Dichloroethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,2-Dichloroethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,1-Dichloroethene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,2-Dichloropropane | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Ethylbenzene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | 4J | 8 | 8 |
| Fluorotrichloromethane | <5 | <5 | 77 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | 3J |
| 2-Hexanone | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Methylene Chloride | 11 | 12 | 81 | 18 | 120 | 140 | 120 | 140 | 23 | 16 | 21 |
| Methyl Ethyl Ketone | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 4-Methyl-2-Pentanone | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Styrene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,1,2,2-Tetrachloroethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Tetrachloroethene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | 6 | 8 | 12 |
| Tetrahydrofuran | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | 17J | 35 | 25 |

**TABLE 5-1 (cont'd)**
**Summary of Analytical Results**
**Background Soil Samples**
**Volatile Organic Compounds**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-1 | SB-2 | SB-3 | SB-4 | SB-5 | SB-6 | SB-7 | SB-7D | SB-8 | SB-9 | SB-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Compound/Concentration(1) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Toluene | 7 | 4J | 15 | 8 | 16 | 15 | 16 | 9 | 19 | 31 | 28 |
| 1,2-Dichloroethene (Total) | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| trans-1,3-Dichloropropene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,1,1-Trichloroethane | <5 | <5 | <5 | <5 | 4J | <5 | 4J | 3J | 6 | 3J | 11 |
| 1,1,2-Trichloroethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Trichloroethene | 9 | 6 | 11 | 11 | 32 | 32 | 26 | 19 | 59 | 60 | 110 |
| Vinyl Acetate | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Vinyl Chloride | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Xylene (Total) | <5 | <5 | 6 | <5 | 8 | 10 | 11 | 8 | 9 | 25 | 25 |

(1) ug/kg = ppb
(2) <50 denotes constituent concentration was less than detection limit of the value following the less than cursor.
(3) J denotes estimated value at or below the detection limit

## TABLE 5-2
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Background Soil Samples**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SB-1 | SB-2 | SB-3 | SB-4 | SB-5 | SB-6 | SB-7 | SB-7D[3] | SB-8 | SB-9 | SB-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Acenaphthene | <330[2] | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Acenaphthylene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Anthracene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Benz(a)anthracene | <330 | 250J[4] | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Benzo(a)pyrene | <330 | 360 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | 190J | <1700 |
| Benzo(b)fluoranthene | <330 | 680 | <330 | 310J | <330 | <3300 | <1700 | <1700 | <1700 | 490 | <1700 |
| Benzo(g,h,i)perylene | <330 | 490 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | 200J | <1700 |
| Benzo(k)fluoranthene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Benzyl Alcohol | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Benzylbutylphthalate | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| bis(2-Chloroethoxy) Methane | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| bis(2-Chloroethyl) Ether | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| bis(2-Chloroisopropyl) Ether | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| bis(2-Ethylhexyl) Phthalate | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 4-Bromodipheny Ether | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |

## TABLE 5-2 (cont'd)
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Background Soil Samples**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SB-1 | SB-2 | SB-3 | SB-4 | SB-5 | SB-6 | SB-7 | SB-7D | SB-8 | SB-9 | SB-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Carbazole | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 4-Chloroaniline | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 2-Chloronaphthalene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 4-Chlorophenylphenylether | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Chrysene | <330 | 330 | <330 | 160J | <330 | <3300 | <1700 | <1700 | <1700 | 190J | <1700 |
| Dibenz(a,h)anthracene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Dibenzofuran | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 1,2-Dichlorobenzene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 1,3-Dichlorobenzene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 1,4-Dichlorobenzene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 3,3-Dichlorobenzidine | <660 | <660 | <660 | <660 | <660 | <6600 | <3400 | <3400 | <3400 | <660 | <3400 |
| Diethylphthalate | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Dimethylphthalate | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Di-N-butylphthalate | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Dinitrobenzenes | <1700 | <1700 | <1700 | <1700 | <1700 | <17000 | <8500 | <8500 | <8500 | <1700 | <8500 |

**TABLE 5-2 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Background Soil Samples**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SB-1 | SB-2 | SB-3 | SB-4 | SB-5 | SB-6 | SB-7 | SB-7D | SB-8 | SB-9 | SB-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| 2,4-Dinitrotoluene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 2,6-Dinitrotoluene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Di-N-octylphthalate | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Fluoranthene | <330 | 1000 | <330 | 390 | <330 | <3300 | <1700 | <1700 | <1700 | 420 | <1700 |
| Fluorene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Hexachlorobenzene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Hexachlorobutadiene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Hexachlorocyclopentadiene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Hexachloroethane | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Indeno(1,2,3-c,d)pyrene | <330 | 400 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | 190J | <1700 |
| Isophorone | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 2-Methylnaphthalene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Naphthalene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 2-Nitroaniline | <1700 | <1700 | <1700 | <1700 | <1700 | <17000 | <8500 | <8500 | <8500 | <1700 | <8500 |
| 3-Nitroaniline | <1700 | <1700 | <1700 | <1700 | <1700 | <17000 | <8500 | <8500 | <8500 | <1700 | <8500 |

**TABLE 5-2 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Background Soil Samples**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SB-1 | SB-2 | SB-3 | SB-4 | SB-5 | SB-6 | SB-7 | SB-7D | SB-8 | SB-9 | SB-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| 4-Nitroaniline | <1700 | <1700 | <1700 | <1700 | <1700 | <17000 | <8500 | <8500 | <8500 | <1700 | <8500 |
| Nitrobenzene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| N-Nitro-Diphenylamine | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| N-Nitroso-Di-N-Propylamine | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Phenanthrene | <330 | 830 | <330 | 330 | <330 | <3300 | <1700 | <1700 | <1700 | 390 | <1700 |
| 2-Picoline | <1700 | <1700 | <1700 | <1700 | <1700 | <17000 | <8500 | <8500 | <8500 | <1700 | <8500 |
| Pyrene | <330 | 780 | <330 | 300J | <330 | <3300 | <1700 | <1700 | <1700 | 390 | <1700 |
| Pyridine | <1700 | <1700 | <1700 | <1700 | <1700 | <17000 | <8500 | <8500 | <8500 | <1700 | <8500 |
| Toluenediamine | <1700 | <1700 | <1700 | <1700 | <1700 | <17000 | <8500 | <8500 | <8500 | <1700 | <8500 |
| 1,2,4-Trichlorobenzene | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Benzoic Acid | <1700 | <1700 | <1700 | <1700 | <1700 | <17000 | <8500 | <8500 | <8500 | <1700 | <8500 |
| 4-Chloro-3-Methylphenol | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 2-Chlorophenol | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 2,4-Dichlorophenol | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 2,4-Dimethylphenol | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |

## TABLE 5-2 (cont'd)
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Background Soil Samples**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SB-1 | SB-2 | SB-3 | SB-4 | SB-5 | SB-6 | SB-7 | SB-7D | SB-8 | SB-9 | SB-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Compound/Concentration(1) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| 4,6-Dinitro-2-Methylphenol | <1700 | <1700 | <1700 | <1700 | <1700 | <17000 | <8500 | <8500 | <8500 | <1700 | <8500 |
| 2,4-Dinitrophenol | <1700 | <1700 | <1700 | <1700 | <1700 | <17000 | <8500 | <8500 | <8500 | <1700 | <8500 |
| 2-Methylphenol | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 4-Methylphenol | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 2-Nitrophenol | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 4-Nitrophenol | <1700 | <1700 | <1700 | <1700 | <1700 | <17000 | <8500 | <8500 | <8500 | <1700 | <8500 |
| Pentachlorophenol | <1700 | <1700 | <1700 | <1700 | <1700 | <17000 | <8500 | <8500 | <8500 | <1700 | <8500 |
| Phenol | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| Tetrachlorophenol | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 2,4,5-Trichlorophenol | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |
| 2,4,6-Trichlorophenol | <330 | <330 | <330 | <330 | <330 | <3300 | <1700 | <1700 | <1700 | <330 | <1700 |

(1) ug/kg = ppb
(2) <330 denotes constituent concentration was less than detection limit of the value following the less than cursor.
(3) Duplicate Soil Sample
(4) J denotes estimated value at or below the detection limit.

## TABLE 5-3
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Old Aerosol Can Crushing Unit**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-11 | SB-12 |
|---|---|---|
| **Compound/Concentration[1]** | **(ppb)** | **(ppb)** |
| Acetone | 86 | 80 |
| Acrolein | <50[2] | <50 |
| Acrylonitrile | <70 | <70 |
| Benzene | <5 | <5 |
| Bromodichloromethane | <5 | <5 |
| Bromoform | <5 | <5 |
| Bromomethane | <10 | <10 |
| Carbon Disulfide | <5 | <5 |
| Carbon Tetrachloride | <5 | <5 |
| Chlorobenzene | <5 | <5 |
| Chloroethane | <10 | <10 |
| Chloroform | <5 | <5 |
| Chloromethane | <10 | <10 |
| Dibromochloromethane | <5 | <5 |
| cis-1,3-Dichloropropene | <5 | <5 |
| Dichlorodifluoromethane | <5 | <5 |
| 1,1-Dichloroethane | <5 | <5 |
| 1,2-Dichloroethane | <5 | <5 |
| 1,1-Dichloroethene | <5 | <5 |
| 1,2-Dichloropropane | <5 | <5 |
| Ethylbenzene | <5 | 3J[3] |
| Trichlorofluoromethane | <5 | <5 |
| 2-Hexanone | <10 | <10 |
| Methylene Chloride | 29 | 15 |

**TABLE 5-3 (cont'd)**
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Old Aerosol Can Crushing Unit**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-11 | SB-12 |
|---|---|---|
| Compound/Concentration(1) | (ppb) | (ppb) |
| Methyl Ethyl Ketone | 23 | <10 |
| 4-Methyl-2-Pentanone | <10 | 9J |
| Styrene | <5 | <5 |
| 1,1,2,2-Tetrachloroethane | <5 | <5 |
| Tetrachloroethene | <5 | 3J |
| Tetrahydrofuran | <25 | 26 |
| Toluene | 7 | 16 |
| 1,2-Dichloroethene (Total) | <5 | <5 |
| trans-1,3-Dichloropropene | <5 | <5 |
| 1,1,1-Trichloroethane | <5 | 3J |
| 1,1,2-Trichloroethane | <5 | <5 |
| Trichloroethene | 9 | 36 |
| Vinyl Acetate | <10 | <10 |
| Vinyl Chloride | <10 | <10 |
| Xylene (Total) | 13 | 14 |

(1) ug/kg = ppb
(2) <5 denotes constituent concentration was less than detection limit of the value following the less than cursor.
(3) J denotes estimated value at or below detection limit.

**TABLE 5-4**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Old Aerosol Can Crushing Unit**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-11 | SB-12 |
|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) |
| Acenaphthene | <1700[2] | <3300 |
| Acenaphthylene | <1700 | <3300 |
| Anthracene | <1700 | <3300 |
| Benz(a)anthracene | <1700 | <3300 |
| Benzo(a)pyrene | <1700 | <3300 |
| Benzo(b)fluoranthene | <1700 | <3300 |
| Benzo(g,h,i)perylene | <1700 | <3300 |
| Benzo(k)fluoranthene | <1700 | <3300 |
| Benzyl Alcohol | <1700 | <3300 |
| Benzylbutylphthalate | <1700 | <3300 |
| bis(2-Chloroethoxy) Methane | <1700 | <3300 |
| bis(2-Chloroethyl) Ether | <1700 | <3300 |
| bis(2-Chloroisopropyl) Ether | <1700 | <3300 |
| bis(2-Ethylhexyl) Phthalate | <1700 | <3300 |
| 4-Bromodiphenyl Ether | <1700 | <3300 |
| Carbazole | <1700 | <3300 |
| 4-Chloroaniline | <1700 | <3300 |
| 2-Chloronaphthalene | <1700 | <3300 |
| 4-Chlorophenylphenylether | <1700 | <3300 |
| Chrysene | <1700 | <3300 |
| Dibenz(a,h)anthracene | <1700 | <3300 |
| Dibenzofuran | <1700 | <3300 |
| 1,2-Dichlorobenzene | <1700 | <3300 |
| 1,3-Dichlorobenzene | <1700 | <3300 |
| 1,4-Dichlorobenzene | <1700 | <3300 |

**TABLE 5-4 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Old Aerosol Can Crushing Unit**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-11 | SB-12 |
|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) |
| 3,3-Dichlorobenzidine | <3400 | <6600 |
| Diethylphthalate | <1700 | <3300 |
| Dimethylphthalate | <1700 | <3300 |
| Di-N-butylphthalate | <1700 | <3300 |
| Dinitrobenzenes | <8500 | <17000 |
| 2,4-Dinitrotoluene | <1700 | <3300 |
| 2,6-Dinitrotoluene | <1700 | <3300 |
| Di-N-octylphthalate | <1700 | <3300 |
| Fluoranthene | <1700 | <3300 |
| Fluorene | <1700 | <3300 |
| Hexachlorobenzene | <1700 | <3300 |
| Hexachlorobutadiene | <1700 | <3300 |
| Hexachlorocyclopentadiene | <1700 | <3300 |
| Hexachloroethane | <1700 | <3300 |
| Indeno(1,2,3-c,d)pyrene | <1700 | <3300 |
| Isophorone | <1700 | <3300 |
| 2-Methylnaphthalene | <1700 | 1900J[3] |
| Naphthalene | <1700 | <3300 |
| 2-Nitroaniline | <8500 | <17000 |
| 3-Nitroaniline | <8500 | <17000 |
| 4-Nitroaniline | <8500 | <17000 |
| Nitrobenzene | <1700 | <3300 |
| N-Nitro-Diphenylamine | <1700 | <3300 |
| N-Nitroso-Di-N-Propylamine | <1700 | <3300 |
| Phenanthrene | <1700 | <3300 |
| 2-Picoline | <8500 | <17000 |

**TABLE 5-4 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Old Aerosol Can Crushing Unit**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-11 | SB-12 |
|---|---|---|
| Compound/Concentration(1) | (ppb) | (ppb) |
| Pyrene | <1700 | <3300 |
| Pyridine | <8500 | <17000 |
| Toluenediamine | <8500 | <17000 |
| 1,2,4-Trichlorobenzene | <1700 | <3300 |
| Benzoic Acid | <8500 | <17000 |
| 4-Chloro-3-Methylphenol | <1700 | <3300 |
| 2-Chlorophenol | <1700 | <3300 |
| 2,4-Dichlorophenol | <1700 | <3300 |
| 2,4-Dimethylphenol | <1700 | <3300 |
| 4,6-Dinitro-2-Methylphenol | <8500 | <17000 |
| 2,4-Dinitrophenol | <8500 | <17000 |
| 2-Methylphenol | <1700 | <3300 |
| 4-Methylphenol | <1700 | <3300 |
| 2-Nitrophenol | <1700 | <3300 |
| 4-Nitrophenol | <8500 | <17000 |
| Pentachlorophenol | <8500 | <17000 |
| Phenol | <1700 | <3300 |
| Tetrachlorophenol | <1700 | <3300 |
| 2,4,5-Trichlorophenol | <1700 | <3300 |
| 2,4,6-Trichlorophenol | <1700 | <3300 |

(1) ug/kg = ppb
(2) <1700 denotes constituent concentration was less than detection limit of the value following the less than cursor.
(3) J denotes estimated value at or below detection limit.

## TABLE 5-5
**Summary of Analytical Results**
**TCLP Metals**
**Old Aerosol Can Crushing Unit**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SB-11 | SB-12 |
|---|---|---|
| Compound/Concentration(1) | (ppm) | (ppm) |
| Barium | <10.0(2) | <5.0 |
| Cadmium | <0.05 | <0.05 |
| Chromium | <0.04 | <0.02 |
| Lead | <0.20 | <0.10 |
| Silver | <0.05 | <0.05 |
| Arsenic | <0.005 | <0.005 |
| Selenium | <0.05 | <0.025 |
| Mercury | <0.005 | <0.005 |

(1) mg/kg = ppm
(2) <10.0 denotes constituent concentration was less than detection limit of the value following the less than cursor.

## TABLE 5-6
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Barge Transfer Point**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-13 |
|---|---|
| Compound/Concentration[1] | (ppb) |
| Acetone | 40 |
| Acrolein | <50[2] |
| Acrylonitrile | <70 |
| Benzene | <5 |
| Bromodichloromethane | <5 |
| Bromoform | <5 |
| Bromomethane | <10 |
| Carbon Disulfide | <5 |
| Carbon Tetrachloride | <5 |
| Chlorobenzene | <5 |
| Chloroethane | <10 |
| Chloroform | <5 |
| Chloromethane | <10 |
| Dibromochloromethane | <5 |
| cis-1,3-Dichloropropene | <5 |
| Dichlorodifluoromethane | <5 |
| 1,1-Dichloroethane | <5 |
| 1,2-Dichloroethane | <5 |
| 1,1-Dichloroethene | <5 |
| 1,2-Dichloropropane | <5 |
| Ethylbenzene | 4J[3] |
| Trichlorofluoromethane | 3J |
| 2-Hexanone | <10 |
| Methylene Chloride | 46 |

**TABLE 5-6 (cont'd)**
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Barge Transfer Point**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-13 |
|---|---|
| Compound/Concentration(1) | (ppb) |
| Methyl Ethyl Ketone | <10 |
| 4-Methyl-2-Pentanone | <10 |
| Styrene | <5 |
| 1,1,2,2-Tetrachloroethane | <5 |
| Tetrachloroethene | 9 |
| Tetrahydrofuran | 32 |
| Toluene | 24 |
| 1,2-Dichloroethene (Total) | <5 |
| trans-1,3-Dichloropropene | <5 |
| 1,1,1-Trichloroethane | 6 |
| 1,1,2-Trichloroethane | <5 |
| Trichloroethene | 90 |
| Vinyl Acetate | <10 |
| Vinyl Chloride | <10 |
| Xylene (Total) | 7 |

(1) ug/kg = ppb
(2) <5 denotes constituent concentration was less than detection limit of the value following the less than cursor.
(3) J denotes estimated value at or below detection limit.

## TABLE 5-7
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Barge Transfer Point**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-13 |
|---|---|
| **Compound/Concentration** | **(ppb)** |
| Acenaphthene | 3500 |
| Acenaphthylene | <3300[2] |
| Anthracene | 7500 |
| Benz(a)anthracene | 17000 |
| Benzo(a)pyrene | 12000 |
| Benzo(b)fluoranthene | 17000 |
| Benzo(g,h,i)perylene | 10000 |
| Benzo(k)fluoranthene | 8400 |
| Benzyl Alcohol | <3300 |
| Benzylbutylphthalate | <3300 |
| bis(2-Chloroethoxy) Methane | <3300 |
| bis(2-Chloroethyl) Ether | <3300 |
| bis(2-Chloroisopropyl) Ether | <3300 |
| bis(2-Ethylhexyl) Phthalate | 3900 |
| 4-Bromophenylphenylether | <3300 |
| Carbazole | 2800J |
| 4-Chloroaniline | <3300 |
| 2-Chloronaphthalene | <3300 |
| 4-Chlorophenylphenylether | <3300 |
| Chrysene | 20000 |
| Dibenz(a,h)anthracene | <3300 |
| Dibenzofuran | 2400J[3] |
| 1,2-Dichlorobenzene | <3300 |
| 1,3-Dichlorobenzene | <3300 |
| 1,4-Dichlorobenzene | <3300 |

**TABLE 5-7 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Barge Transfer Point**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-13 |
|---|---|
| **Compound/Concentration** | **(ppb)** |
| 3,3-Dichlorobenzidine | <6600 |
| Diethylphthalate | <3300 |
| Dimethylphthalate | <3300 |
| Di-N-butylphthalate | <3300 |
| Dinitrobenzenes | <17000 |
| 2,4-Dinitrotoluene | <3300 |
| 2,6-Dinitrotoluene | <3300 |
| Di-N-octylphthalate | <3300 |
| Fluoranthene | 23000 |
| Fluorene | 4300 |
| Hexachlorobenzene | <3300 |
| Hexachlorobutadiene | <3300 |
| Hexachlorocyclopentadiene | <3300 |
| Hexachloroethane | <3300 |
| Indeno(1,2,3-c,d)pyrene | 9900 |
| Isophorone | <3300 |
| 2-Methylnaphthalene | <3300 |
| Naphthalene | <3300 |
| 2-Nitroaniline | <17000 |
| 3-Nitroaniline | <17000 |
| 4-Nitroaniline | <17000 |
| Nitrobenzene | <3300 |
| N-Nitro-Diphenylamine | <3300 |
| N-Nitroso-Di-N-Propylamine | <3300 |
| Phenanthrene | 23000 |
| 2-Picoline | <17000 |

**TABLE 5-7 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Barge Transfer Point**
**Heritage Treatment Center**
**Lemont, Illinois**

| **SAMPLE LOCATION** | **SB-13** |
|---|---|
| **Compound/Concentration** | **(ppb)** |
| Pyrene | 31000 |
| Pyridine | <17000 |
| Toluenediamine | <17000 |
| 1,2,4-Trichlorobenzene | <3300 |
| Benzoic Acid | <17000 |
| 4-Chloro-3-Methylphenol | <3300 |
| 2-Chlorophenol | <3300 |
| 2,4-Dichlorophenol | <3300 |
| 2,4-Dimethylphenol | <3300 |
| 4,6-Dinitro-2-Methylphenol | <17000 |
| 2,4-Dinitrophenol | <17000 |
| 2-Methylphenol | <3300 |
| 4-Methylphenol | <3300 |
| 2-Nitrophenol | <3300 |
| 4-Nitrophenol | <17000 |
| Pentachlorophenol | <17000 |
| Phenol | <3300 |
| Tetrachlorophenol | <3300 |
| 2,4,5-Trichlorophenol | <3300 |
| 2,4,6-Trichlorophenol | <3300 |

(1) ug/kg = ppb
(2) <10 denotes constituent concentration was less than detection limit of the value following the less than cursor.
(3) J denotes estimated value at or below detection limit.

## TABLE 5-8
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Van Trailer Storage Area**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-14 | SB-15 | SB-16 | SB-17 | SB-18 | SB-19 |
|---|---|---|---|---|---|---|
| Compound/Concentration(1) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Acetone | 29 | 230 | 46 | 97 | 47 | 44 |
| Acrolein | <50(2) | <50 | <50 | <50 | <50 | <50 |
| Acrylonitrile | <70 | <70 | <70 | <70 | <70 | <70 |
| Benzene | <5 | <5 | <5 | <5 | <5 | <5 |
| Bromodichloromethane | <5 | <5 | <5 | <5 | <5 | <5 |
| Bromoform | <5 | <5 | <5 | <5 | <5 | <5 |
| Bromomethane | <10 | <10 | <10 | <10 | <10 | <10 |
| Carbon Disulfide | <5 | <5 | <5 | <5 | <5 | <5 |
| Carbon Tetrachloride | <5 | <5 | <5 | <5 | <5 | <5 |
| Chlorobenzene | <5 | <5 | <5 | <5 | <5 | <5 |
| Chloroethane | <10 | <10 | <10 | <10 | <10 | <10 |
| Chloroform | <5 | <5 | <5 | <5 | <5 | <5 |
| Chloromethane | <10 | <10 | <10 | <10 | <10 | <10 |
| Dibromochloromethane | <10 | <10 | <10 | <10 | <10 | <10 |
| cis-1,3-Dichloropropene | <5 | <5 | <5 | <5 | <5 | <5 |
| Dichlorodifluoromethane | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,1-Dichloroethane | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,2-Dichloroethane | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,1-Dichloroethene | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,2-Dichloropropane | <5 | <5 | <5 | <5 | <5 | <5 |
| Ethylbenzene | 4J | <5 | <5 | 4J | 3J | <5 |
| Fluorotrichloromethane | <5 | <5 | <5 | <5 | <5 | <5 |
| 2-Hexanone | <10 | <10 | <10 | <10 | <10 | <10 |
| Methylene Chloride | 12 | 17 | 8 | 19 | 13 | 6 |
| Methyl Ethyl Ketone | <10 | <10 | <10 | <10 | <10 | <10 |

**TABLE 5-8 (cont'd)**
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Van Trailer Storage Area**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-14 | SB-15 | SB-16 | SB-17 | SB-18 | SB-19 |
|---|---|---|---|---|---|---|
| Compound/Concentration(1) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| 4-Methyl-2-Pentanone | 10 | 5J(3) | 5J | 18 | 12 | <10 |
| Styrene | <5 | 3J | <5 | <5 | <5 | <5 |
| 1,1,2,2-Tetrachloroethane | <5 | <5 | <5 | <5 | <5 | <5 |
| Tetrachloroethene | 6 | <5 | <5 | <5 | <5 | <5 |
| Tetrahydrofuran | 33 | 29 | 27 | 35 | 41 | <25 |
| Toluene | 15 | 13 | 9 | 7 | 11 | 3J |
| 1,2-Dichloroethene (Total) | <5 | <5 | <5 | <5 | <5 | <5 |
| trans-1,3-Dichloropropene | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,1,1-Trichloroethane | <5 | <5 | <5 | 3J | <5 | <5 |
| 1,1,2-Trichloroethane | <5 | <5 | <5 | <5 | <5 | <5 |
| Trichloroethene | 51 | 20 | 18 | 24 | 24 | 11 |
| Vinyl Acetate | <10 | <10 | <10 | <10 | <10 | <10 |
| Vinyl Chloride | <10 | <10 | <10 | <10 | <10 | <10 |
| Xylene (Total) | 9 | <5 | 7 | 11 | 5 | <5 |

(1) ug/kg = ppb
(2) <50 denotes constituent concentration was less than detection limit of the value following the less than cursor.
(3) J denotes estimated value at or below the detection limit

## TABLE 5-9
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Van Trailer Storage Area**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SB-14 | SB-15 | SB-16 | SB-17 | SB-18 | SB-19 |
|---|---|---|---|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Acenaphthene | <660[2] | <930 | <330 | <1000 | <1000 | <1000 |
| Acenaphthylene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Anthracene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Benz(a)anthracene | 1000 | <930 | 210J[2] | <1000 | <1000 | 890J |
| Benzo(a)pyrene | 700 | <930 | <330 | <1000 | <1000 | <1000 |
| Benzo(b)fluoranthene | 1100 | <930 | 220J | <1000 | <1000 | 1300 |
| Benzo(g,h,i)perylene | 670 | <930 | <330 | <1000 | <1000 | <1000 |
| Benzo(k)fluoranthene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Benzyl Alcohol | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Benzylbutylphthalate | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| bis(2-Chloroethoxy) Methane | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| bis(2-Chloroethyl) Ether | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| bis(2-Chloroisopropyl) Ether | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| bis(2-Ethylhexyl) Phthalate | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 4-Bromodiphenyl Ether | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Carbazole | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 4-Chloroaniline | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 2-Chloronaphthalene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 4-Chlorophenylphenylether | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Chrysene | 1200 | <930 | 230J | <1000 | <1000 | 1200 |
| Dibenz(a,h)anthracene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Dibenzofuran | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 1,2-Dichlorobenzene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 1,3-Dichlorobenzene | <660 | <930 | <330 | <1000 | <1000 | <1000 |

**TABLE 5-9 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Van Trailer Storage Area**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SB-14 | SB-15 | SB-16 | SB-17 | SB-18 | SB-19 |
|---|---|---|---|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| 1,4-Dichlorobenzene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 3,3-Dichlorobenzidine | <1300 | <1900 | <660 | <2000 | <2000 | <2000 |
| Diethylphthalate | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Dimethylphthalate | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Di-n-butylphthalate | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Dinitrobenzenes | <3300 | <4700 | <1700 | <5000 | <5000 | <5000 |
| 2,4-Dinitrotoluene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 2,6-Dinitrotoluene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Di-N-octylphthalate | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Fluoranthene | 1300 | <930 | 380 | <1000 | <1000 | 1700 |
| Fluorene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Hexachlorobenzene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Hexachlorobutadiene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Hexachlorocyclopentadiene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Hexachloroethane | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Indeno(1,2,3-c,d)pyrene | 630J | <930 | <330 | <1000 | <1000 | <1000 |
| Isophorone | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 2-Methylnaphthalene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Naphthalene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 2-Nitroaniline | <3300 | <4700 | <1700 | <5000 | <5000 | <5000 |
| 3-Nitroaniline | <3300 | <4700 | <1700 | <5000 | <5000 | <5000 |
| 4-Nitroaniline | <3300 | <4700 | <1700 | <5000 | <5000 | <5000 |
| Nitrobenzene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| N-Nitrosodiphenylamine | <660 | <930 | <330 | <1000 | <1000 | <1000 |

**TABLE 5-9 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Van Trailer Storage Area**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SB-14 | SB-15 | SB-16 | SB-17 | SB-18 | SB-19 |
|---|---|---|---|---|---|---|
| Compound/Concentration(1) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| N-Nitroso-Di-N-Propylamine | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Phenanthrene | 930 | <930 | 720 | <1000 | <1000 | 2200 |
| 2-Picoline | <3300 | <4700 | <1700 | <5000 | <5000 | <5000 |
| Pyrene | 1400 | <930 | 470 | <1000 | <1000 | 2100 |
| Pyridine | <3300 | <4700 | <1700 | <5000 | <5000 | <5000 |
| Toluenediamine | <3300 | <4700 | <1700 | <5000 | <5000 | <5000 |
| 1,2,4-Trichlorobenzene | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Benzoic Acid | <3300 | <4700 | <1700 | <5000 | <5000 | <5000 |
| 4-Chloro-3-Methylphenol | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 2-Chlorophenol | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 2,4-Dichlorophenol | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 2,4-Dimethylphenol | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 4,6-Dinitro-2-Methylphenol | <3300 | <4700 | <1700 | <5000 | <5000 | <5000 |
| 2,4-Dinitrophenol | <3300 | <4700 | <1700 | <5000 | <5000 | <5000 |
| 2-Methylphenol | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 4-Methylphenol | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 2-Nitrophenol | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 4-Nitrophenol | <3300 | <4700 | <1700 | <5000 | <5000 | <5000 |
| Pentachlorophenol | <3300 | <4700 | <1700 | <5000 | <5000 | <5000 |
| Phenol | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| Tetrachlorophenol | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 2,4,5-Trichlorophenol | <660 | <930 | <330 | <1000 | <1000 | <1000 |
| 2,4,6-Trichlorophenol | <660 | <930 | <330 | <1000 | <1000 | <1000 |

(1) ug/kg = ppb
(2) <660 denotes constituent concentration was less than detection limit of the value following the less than cursor.
(3) RT denotes Retention Time in tenths of a minutes
(4) NAF - Not Analyzed For

## TABLE 5-10
**Summary of Analytical Results**
**TCLP Metals**
**Van Trailer Storage**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SB-14 | SB-15 | SB-16 | SB-17 | SB-18 | SB-19 |
|---|---|---|---|---|---|---|
| Compound/Concentration | (ppm) | (ppm) | (ppm) | (ppm) | (ppm) | (ppm) |
| Arsenic | <0.005 | <0.005 | <0.005 | 0.005 | <0.005 | <0.005 |
| Barium | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 |
| Cadmium | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Chromium | <0.02 | <0.05 | <0.10 | <0.10 | <0.10 | <0.10 |
| Lead | <0.10 | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 |
| Mercury | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Selenium | <0.010 | <0.010 | <0.010 | <0.010 | <0.025 | <0.025 |
| Silver | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

## TABLE 5-11
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Outdoor Container Storage Area**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-21 | SB-22 | SB-23 | SB-24 | SB-24D |
|---|---|---|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Acetone | 130 | 360 | 75 | 68 | 68 |
| Acrolein | <50[2] | <250 | <50 | <50 | <50 |
| Acrylonitrile | <70 | <350 | <70 | <70 | <70 |
| Benzene | 8 | <25 | 5 | <5 | <5 |
| Bromodichloromethane | <5 | <25 | <5 | <5 | <5 |
| Bromoform | <5 | <25 | <5 | <5 | <5 |
| Bromomethane | <10 | <50 | <10 | <10 | <10 |
| Carbon Disulfide | <5 | <25 | <5 | <5 | 3J |
| Carbon Tetrachloride | <5 | <25 | <5 | <5 | <5 |
| Chlorobenzene | <5 | <25 | <5 | <5 | <5 |
| Chloroethane | <10 | <50 | <10 | <10 | <10 |
| Chloroform | <5 | <25 | <5 | <5 | <5 |
| Chloromethane | <10 | <50 | <10 | <10 | <10 |
| Dibromochloromethane | <10 | <25 | <10 | <10 | <10 |
| cis-1,3-Dichloropropene | <5 | <25 | <5 | <5 | <5 |
| Dichlorodifluoromethane | <5 | <25 | <5 | <5 | <5 |
| 1,1-Dichloroethane | <5 | <25 | <5 | <5 | <5 |
| 1,2-Dichloroethane | <5 | <25 | <5 | <5 | <5 |
| 1,1-Dichloroethene | <5 | <25 | <5 | <5 | <5 |
| 1,2-Dichloropropane | <5 | <25 | <5 | <5 | <5 |
| Ethylbenzene | 8 | 100 | <5 | 12 | 6 |
| Fluorotrichloromethane | <5 | <25 | <5 | <5 | <5 |
| 2-Hexanone | <10 | <50 | <10 | <10 | <10 |
| Methylene Chloride | 4J | 55 | 13 | 13 | 30 |
| Methyl Ethyl Ketone | <10 | 30J | <10 | <10 | <10 |
| 4-Methyl-2-Pentanone | <10 | <50 | <10 | <10 | <10 |
| Styrene | <5 | <25 | <5 | <5 | <5 |

**TABLE 5-11 (cont'd)**
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Outdoor Container Storage Area**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SB-21 | SB-22 | SB-23 | SB-24 | SB-24D |
|---|---|---|---|---|---|
| Compound/Concentration(1) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| 1,1,2,2-Tetrachloroethane | <5 | <25 | <5 | <5 | <5 |
| Tetrachloroethene | <5 | <25 | <5 | <5 | <5 |
| Tetrahydrofuran | <25 | <120 | <25 | <25 | <25 |
| Toluene | 11 | 60 | 26 | 32 | 19 |
| 1,2-Dichloroethene (Total) | <5 | <25 | <5 | <5 | <5 |
| trans-1,3-Dichloropropene | <5 | <25 | <5 | <5 | <5 |
| 1,1,1-Trichloroethane | <5 | <25 | <5 | <5 | 3J |
| 1,1,2-Trichloroethane | <5 | <25 | <5 | <5 | <5 |
| Trichloroethene | 7 | 35 | <5 | 9 | 15 |
| Vinyl Acetate | <10 | <50 | <10 | <10 | <10 |
| Vinyl Chloride | <10 | <50 | <10 | <10 | <10 |
| Xylene (Total) | 27 | 1200 | 130 | <5 | <5 |

(1) ug/L= ppb
(2) <50 denotes constituent concentration was less than detection limit of the value following the less than cursor.
J Denotes estimated value at or below the detection limit.

## TABLE 5-12
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Outdoor Container Storage Area**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SB-21 | SB-22 | SB-23 | SB-24 | SB-24D[2] |
|---|---|---|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Acenaphthene | <330[3] | <1000 | <5000 | <1000 | <330 |
| Acenaphthylene | <330 | <1000 | <5000 | <1000 | <330 |
| Anthracene | 220J[4] | 2300 | <5000 | 880J | 660 |
| Benz(a)anthracene | <330 | 790J | <5000 | 1100 | 340 |
| Benzo(a)pyrene | <330 | 780J | <5000 | 710J | 390 |
| Benzo(b)fluoranthene | 200J | 1200 | <5000 | 750J | 600 |
| Benzo(g,h,i)perylene | <330 | 800J | <5000 | <1000 | 490 |
| Benzo(k)fluoranthene | <330 | <1000 | <5000 | <1000 | <330 |
| Benzyl Alcohol | <330 | <1000 | 18000 | <1000 | <330 |
| Benzylbutylphthalate | 750 | <1000 | <5000 | <1000 | 750 |
| bis(2-Chloroethoxy) Methane | <330 | <1000 | <5000 | <1000 | <330 |
| bis(2-Chloroethyl) Ether | <330 | <1000 | <5000 | <1000 | <330 |
| bis(2-Chloroisopropyl) Ether | <330 | <1000 | <5000 | <1000 | <330 |
| bis(2-Ethylhexyl) Phthalate | 430 | 2200 | 4500J | 4300 | 880 |
| 4-Bromophenylphenylether | <330 | <1000 | <5000 | <1000 | <330 |
| Carbazole | <330 | <1000 | <5000 | <1000 | 190J |
| 4-Chloroaniline | <330 | <1000 | <5000 | <1000 | <330 |
| 2-Chloronaphthalene | <330 | <1000 | <5000 | <1000 | <330 |
| 4-Chlorophenylphenylether | <330 | <1000 | <5000 | <1000 | <330 |
| Chrysene | 280J | 1800 | <5000 | 2100 | 690 |
| Dibenz(a,h)anthracene | <330 | <1000 | <5000 | <1000 | <330 |
| Dibenzofuran | <330 | <1000 | <5000 | <1000 | <330 |
| 1,2-Dichlorobenzene | <330 | <1000 | <5000 | <1000 | <330 |
| 1,3-Dichlorobenzene | <330 | <1000 | <5000 | <1000 | <330 |
| 1,4-Dichlorobenzene | <330 | <1000 | <5000 | <1000 | <330 |
| 3,3-Dichlorobenzidine | <660 | <2000 | <10000 | <2000 | <660 |
| Diethylphthalate | <330 | <1000 | <5000 | <1000 | <330 |

**TABLE 5-12 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Outdoor Container Storage Area**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SB-21 | SB-22 | SB-23 | SB-24 | SB-24D |
|---|---|---|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Dimethylphthalate | <330 | <1000 | <5000 | <1000 | <330 |
| Di-N-butylphthalate | <330 | <1000 | <5000 | <1000 | <330 |
| Dinitrobenzenes | <1700 | <5000 | <25000 | <5000 | <1700 |
| 2,4-Dinitrotoluene | <330 | <1000 | <5000 | <1000 | <330 |
| 2,6-Dinitrotoluene | <330 | <1000 | <5000 | <1000 | <330 |
| Di-N-octylphthalate | <330 | <1000 | <5000 | <1000 | <330 |
| Fluoranthene | 210J | 880J | 2700J | 700J | 390 |
| Fluorene | <330 | <1000 | <5000 | <1000 | <330 |
| Hexachlorobenzene | <330 | <1000 | <5000 | <1000 | <330 |
| Hexachlorobutadiene | <330 | <1000 | <5000 | <1000 | <330 |
| Hexachlorocyclopentadiene | <330 | <1000 | <5000 | <1000 | <330 |
| Hexachloroethane | <330 | <1000 | <5000 | <1000 | <330 |
| Indeno(1,2,3-c,d)pyrene | <330 | <1000 | <5000 | <1000 | 390 |
| Isophorone | <330 | <1000 | <5000 | <1000 | <330 |
| 2-Methylnaphthalene | <330 | 1300 | <5000 | 570J | 240J |
| Naphthalene | <330 | 2000 | <5000 | <1000 | <330 |
| 2-Nitroaniline | <1700 | <5000 | <25000 | <5000 | <1700 |
| 3-Nitroaniline | <1700 | <5000 | <25000 | <5000 | <1700 |
| 4-Nitroaniline | <1700 | <5000 | <25000 | <5000 | <1700 |
| Nitrobenzene | <330 | <1000 | <5000 | <1000 | <330 |
| N-Nitro-Diphenylamine | <330 | <1000 | <5000 | <1000 | <330 |
| N-Nitroso-Di-N-Propylamine | <330 | <1000 | <5000 | <1000 | <330 |
| Phenanthrene | 460 | 1700 | <5000 | 1200 | 560 |
| 2-Picoline | <1700 | <5000 | <5000 | <5000 | <1700 |
| Pyrene | 330 | 1600 | 3000J | 2000 | 650 |
| Pyridine | <1700 | <5000 | <25000 | <5000 | <330 |
| Toluenediamine | <1700 | <5000 | <25000 | <5000 | <330 |

**TABLE 5-12 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Outdoor Container Storage Area**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SB-21 | SB-22 | SB-23 | SB-24 | SB-24D |
|---|---|---|---|---|---|
| Compound/Concentration(1) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| 1,2,4-Trichlorobenzene | <330 | <1000 | <5000 | <1000 | <330 |
| Benzoic Acid | <1700 | <5000 | <25000 | <5000 | <1700 |
| 4-Chloro-3-Methylphenol | <330 | <1000 | <5000 | <1000 | <330 |
| 2-Chlorophenol | <330 | <1000 | <5000 | <1000 | <330 |
| 2,4-Dichlorophenol | <330 | <1000 | <5000 | <1000 | <330 |
| 2,4-Dimethylphenol | <330 | <1000 | <5000 | <1000 | <330 |
| 4,6-Dinitro-2-Methylphenol | <1700 | <5000 | <25000 | <5000 | <1700 |
| 2,4-Dinitrophenol | <1700 | <5000 | <25000 | <5000 | <1700 |
| 2-Methylphenol | <330 | <1000 | <5000 | <1000 | <330 |
| 4-Methylphenol | <330 | <1000 | <5000 | <1000 | <330 |
| 2-Nitrophenol | <330 | <1000 | <5000 | <1000 | <330 |
| 4-Nitrophenol | <1700 | <5000 | <25000 | <5000 | <1700 |
| Pentachlorophenol | <1700 | <5000 | <25000 | <5000 | <1700 |
| Phenol | <330 | <1000 | <5000 | <1000 | <330 |
| Tetrachlorophenol | <330 | <1000 | <5000 | <1000 | <330 |
| 2,4,5-Trichlorophenol | <330 | <1000 | <5000 | <1000 | <330 |
| 2,4,6-Trichlorophenol | <330 | <1000 | <5000 | <1000 | <330 |

(1) ug/kg = ppb
(2) Duplicate Soil Sample
(3) <330 denotes constituent concentration was less than detection limit of the value following the less than cursor.
(4) J denotes estimated value at or below the detection limit.

## TABLE 5-13
**Summary of Analytical Results**
**TCLP Metals**
**Outdoor Container Storage Area**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SB-21 | SB-22 | SB-23 | SB-24 | SB-24D |
|---|---|---|---|---|---|
| Compound/Concentration(1) | (ppm) | (ppm) | (ppm) | (ppm) | (ppm) |
| Arsenic | 0.008 | 0.014 | 0.006 | 0.006 | 0.008 |
| Barium | <5.0(2) | <5.0 | <5.0 | <5.0 | <5.0 |
| Cadmium | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Chromium | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Lead | <0.25 | <0.25 | <0.25 | <0.25 | <0.25 |
| Mercury | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Selenium | <0.05 | <0.025 | <0.05 | <0.05 | <0.05 |
| Silver | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

(1) mg/L = ppm
(2) <5.0 denotes constituent concentration was less than detection limit of the value following the less than cursor.

## TABLE 5-14
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Drainage Ditch Sediments**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SD-1 | SD-1D | SD-1R | SD-2 | SD-5 |
|---|---|---|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Acetone | <20[2] | <20 | <20 | 33 | 33 |
| Acrolein | <50 | <50 | <50 | <50 | <50 |
| Acrylonitrile | <70 | <70 | <70 | <70 | <70 |
| Benzene | <5 | <5 | <5 | <5 | <5 |
| Bromodichloromethane | <5 | <5 | <5 | <5 | <5 |
| Bromoform | <5 | <5 | <5 | <5 | <5 |
| Bromomethane | <10 | <10 | <10 | <10 | <10 |
| Carbon Disulfide | <5 | <5 | <5 | <5 | <5 |
| Carbon Tetrachloride | <5 | <5 | <5 | <5 | <5 |
| Chlorobenzene | <5 | <5 | <5 | <5 | <5 |
| Chloroethane | <10 | <10 | <10 | <10 | <10 |
| Chloroform | <5 | <5 | <5 | <5 | 18 |
| Chloromethane | <10 | <10 | <10 | <10 | <10 |
| Dibromochloromethane | <10 | <10 | <10 | <10 | <10 |
| cis-1,3-Dichloropropene | <5 | <5 | <5 | <5 | <5 |
| Dichlorodifluoromethane | <5 | <5 | <5 | <5 | <5 |
| 1,1-Dichloroethane | <5 | <5 | <5 | <5 | <5 |
| 1,2-Dichloroethane | <5 | <5 | <5 | <5 | <5 |
| 1,1-Dichloroethene | <5 | <5 | <5 | <5 | <5 |
| 1,2-Dichloropropane | <5 | <5 | <5 | <5 | <5 |
| Ethylbenzene | <5 | <5 | <5 | <5 | 7 |
| Fluorotrichloromethane | <5 | <5 | <5 | <5 | <5 |
| 2-Hexanone | <10 | <10 | <10 | <10 | <10 |
| Methylene Chloride | 34 | 34 | 32 | 21 | 10 |
| Methyl Ethyl Ketone | <10 | <10 | <10 | <10 | <10 |
| 4-Methyl-2-Pentanone | <10 | <10 | <10 | <10 | <10 |
| Styrene | <5 | <5 | <5 | <5 | <5 |

**TABLE 5-14 (cont'd)**
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Drainage Ditch Sediments**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | SD-1 | SD-1D | SD-1R | SD-2 | SD-5 |
|---|---|---|---|---|---|
| Compound/Concentration(1) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| 1,1,2,2-Tetrachloroethane | <5 | <5 | <5 | <5 | <5 |
| Tetrachloroethene | 4J | 5 | <5 | 3J | 7 |
| Tetrahydrofuran | <25 | <25 | <25 | 32 | <25 |
| Toluene | 11 | 10 | 9 | 3J | 28 |
| 1,2-Dichloroethene (Total) | <5 | <5 | <5 | <5 | <5 |
| trans-1,3-Dichloropropene | <5 | <5 | <5 | <5 | <5 |
| 1,1,1-Trichloroethane | 3J | <5 | 4J | <5 | <5 |
| 1,1,2-Trichloroethane | <5 | <5 | <5 | <5 | <5 |
| Trichloroethene | 31 | 39 | 37 | 17 | 42 |
| Vinyl Acetate | <10 | <10 | <10 | <10 | <10 |
| Vinyl Chloride | <10 | <10 | <10 | <10 | <10 |
| Xylene (Total) | <5 | <5 | <5 | 9 | 15 |

(1) ug/L = ppb
(2) <20 denotes constituent concentration was less than detection limit of the value following the less than cursor.
J Denotes estimated value at or below detection limit.

## TABLE 5-15
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Drainage Ditch Sediments**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SD-1 | SD-1D[1] | SD-1R[2] | SD-2 | SD-5 |
|---|---|---|---|---|---|
| Compound/Concentration[3] | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| Acenaphthene | <330[4] | <330 | <330 | <330 | 5800 |
| Acenaphthylene | <330 | <330 | <330 | <330 | <3300 |
| Anthracene | <330 | <330 | <330 | <330 | 10000 |
| Benz(a)anthracene | 260J[5] | 230J | 310J | <330 | 18000 |
| Benzo(a)pyrene | 810 | 330 | 420 | 200J | 15000 |
| Benzo(b)fluoranthene | 1400 | 560 | 940 | 320J | 22000 |
| Benzo(g,h,i)perylene | 730 | 300J | 420 | <330 | 11000 |
| Benzo(k)fluoranthene | <330 | <330 | <330 | <330 | <3300 |
| Benzyl Alcohol | <330 | <330 | <330 | <330 | 21000 |
| Benzylbutylphthalate | <330 | <330 | <330 | <330 | <3300 |
| bis(2-Chloroethoxy) Methane | <330 | <330 | <330 | <330 | <3300 |
| bis(2-Chloroethyl) Ether | <330 | <330 | <330 | <330 | <3300 |
| bis(2-Chloroisopropyl) Ether | <330 | <330 | <330 | <330 | <3300 |
| bis(2-Ethylhexyl) Phthalate | 190J | <330 | <330 | <330 | 11000 |
| 4-Bromophenylphenylether | <330 | <330 | <330 | <330 | <3300 |
| Carbazole | <330 | <330 | <330 | <330 | 4700 |
| 4-Chloroaniline | <330 | <330 | <330 | <330 | <3300 |
| 2-Chloronaphthalene | <330 | <330 | <330 | <330 | <3300 |
| 4-Chlorophenylphenylether | <330 | <330 | <330 | <330 | <3300 |
| Chrysene | 450 | 420 | 470 | 260J | 19000 |
| Dibenz(a,h)anthracene | <330 | <330 | <330 | <330 | 2000J |
| Dibenzofuran | <330 | <330 | <330 | <330 | 3500 |
| 1,2-Dichlorobenzene | <330 | <330 | <330 | <330 | <3300 |
| 1,3-Dichlorobenzene | <330 | <330 | <330 | <330 | <3300 |

**TABLE 5-15 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Drainage Ditch Sediments**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SD-1 | SD-1D[1] | SD-1R[2] | SD-2 | SD-5 |
|---|---|---|---|---|---|
| Compound/Concentration[3] | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| 1,4-Dichlorobenzene | <330 | <330 | <330 | <330 | <3300 |
| 3,3-Dichlorobenzidine | <660 | <660 | <660 | <660 | <6600 |
| Diethylphthalate | <330 | <330 | <330 | <330 | <3300 |
| Dimethylphthalate | <330 | <330 | <330 | <330 | <3300 |
| Di-N-butylphthalate | <330 | <330 | <330 | <330 | <3300 |
| Dinitrobenzenes | <1700 | <1700 | <1700 | <1700 | <17000 |
| 2,4-Dinitrotoluene | <330 | <330 | <330 | <330 | <3300 |
| 2,6-Dinitrotoluene | <330 | <330 | <330 | <330 | <3300 |
| Di-N-octylphthalate | <330 | <330 | <330 | <330 | <3300 |
| Fluoranthene | 860 | 780 | 920 | 550 | 33000 |
| Fluorene | <330 | <330 | <330 | <330 | 7300 |
| Hexachlorobenzene | <330 | <330 | <330 | <330 | <3300 |
| Hexachlorobutadiene | <330 | <330 | <330 | <330 | <3300 |
| Hexachlorocyclopentadiene | <330 | <330 | <330 | <330 | <3300 |
| Hexachloroethane | <330 | <330 | <330 | <330 | <3300 |
| Indeno(1,2,3-c,d)pyrene | 780 | 330 | 390 | <330 | 11000 |
| Isophorone | <330 | <330 | <330 | <330 | <3300 |
| 2-Methylnaphthalene | <330 | <330 | <330 | <330 | 8400 |
| Naphthalene | <330 | <330 | <330 | <330 | 2400J |
| 2-Nitroaniline | <1700 | <1700 | <1700 | <1700 | <17000 |
| 3-Nitroaniline | <1700 | <1700 | <1700 | <1700 | <17000 |
| 4-Nitroaniline | <1700 | <1700 | <1700 | <1700 | <17000 |
| Nitrobenzene | <330 | <330 | <330 | <330 | <3300 |
| N-Nitro-Diphenylamine | <330 | <330 | <330 | <330 | <3300 |

**TABLE 5-15 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Drainage Ditch Sediments**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SD-1 | SD-1D(1) | SD-1R(2) | SD-2 | SD-5 |
|---|---|---|---|---|---|
| Compound/Concentration(3) | (ppb) | (ppb) | (ppb) | (ppb) | (ppb) |
| N-Nitroso-Di-N-Propylamine | <330 | <330 | <330 | <330 | <3300 |
| Phenanthrene | 590 | 600 | 820 | 380 | 39000 |
| 2-Picoline | <330 | <1700 | <1700 | <1700 | <17000 |
| Pyrene | 690 | 710 | 940 | 420 | 37000 |
| Pyridine | <330 | <1700 | <1700 | <1700 | <17000 |
| Toluenediamine | <1700 | <1700 | <1700 | <1700 | <17000 |
| 1,2,4-Trichlorobenzene | <330 | <330 | <330 | <330 | <3300 |
| Benzoic Acid | <1700 | <1700 | <1700 | <1700 | <17000 |
| 4-Chloro-3-Methylphenol | <330 | <330 | <330 | <330 | <3300 |
| 2-Chlorophenol | <330 | <330 | <330 | <330 | <3300 |
| 2,4-Dichlorophenol | <330 | <330 | <330 | <330 | <3300 |
| 2,4-Dimethylphenol | <330 | <330 | <330 | <330 | <3300 |
| 4,6-Dinitro-2-Methylphenol | <1700 | <1700 | <1700 | <1700 | <17000 |
| 2,4-Dinitrophenol | <1700 | <1700 | <1700 | <1700 | <17000 |
| 2-Methylphenol | <330 | <330 | <330 | <330 | <3300 |
| 4-Methylphenol | <330 | <330 | <330 | <330 | <3300 |
| 2-Nitrophenol | <330 | <330 | <330 | <330 | <3300 |
| 4-Nitrophenol | <1700 | <1700 | <1700 | <1700 | <17000 |
| Pentachlorophenol | <1700 | <1700 | <1700 | <1700 | <17000 |
| Phenol | <330 | <330 | <330 | <330 | <3300 |
| Tetrachlorophenol | <330 | <330 | <330 | <330 | <3300 |
| 2,4,5-Trichlorophenol | <330 | <330 | <330 | <330 | <3300 |
| 2,4,6-Trichlorophenol | <330 | <330 | <330 | <330 | <3300 |

(1) D-Duplicate Soil Sample
(2) Duplicate Soil Sample
(3) ug/kg = ppb
(4) <330 denotes constituent concentration was less than detection limit of the value following the less than cursor.
(5) J denotes estimated value at or below the detection limit.

## TABLE 5-16
**Summary of Analytical Results**
**TCLP Metals**
**Drainage Ditch Sediments**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | SD-1 | SD-1D | SD-2 | SD-5 |
|---|---|---|---|---|
| Compound/Concentration(1) | (ppm) | (ppm) | (ppm) | (ppm) |
| Arsenic | <0.005(2) | <0.005 | <0.005 | <0.005 |
| Barium | <5.0 | <5.0 | <5.0 | <5.0 |
| Cadmium | <0.05 | <0.05 | <0.05 | <0.05 |
| Chromium | <0.05 | <0.05 | <0.05 | <0.05 |
| Lead | <0.25 | <0.25 | <0.25 | <0.25 |
| Mercury | <0.005 | <0.005 | <0.005 | <0.005 |
| Selenium | <0.025 | <0.025 | <0.025 | <0.025 |
| Silver | <0.05 | <0.05 | <0.05 | <0.05 |

(1) mg/L = ppm
(2) <0.005 denotes constituent concentration was less than detection limit of the value following the less than cursor.

## TABLE 5-17
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Sanitary Holding Tanks**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | GW-1 |
|---|---|
| Compound/Concentration[2] | (ppb) |
| Acetone | <20[3] |
| Acrolein | <50 |
| Acrylonitrile | <70 |
| Benzene | <5 |
| Bromodichloromethane | <5 |
| Bromoform | <5 |
| Bromomethane | <10 |
| Carbon Disulfide | <5 |
| Carbon Tetrachloride | <5 |
| Chlorobenzene | <5 |
| Chloroethane | <10 |
| Chloroform | <5 |
| Chloromethane | <10 |
| Dibromochloromethane | <10 |
| cis-1,3-Dichloropropene | <5 |
| Dichlorodifluoromethane | <5 |
| 1,1-Dichloroethane | <7 |
| 1,2-Dichloroethane | <5 |
| 1,1-Dichloroethene | <5 |
| 1,2-Dichloropropane | <5 |
| Ethylbenzene | <5 |
| Fluorotrichloromethane | <5 |
| 2-Hexanone | <10 |
| Methylene Chloride | <5 |
| Methyl Ethyl Ketone | <10 |

**TABLE 5-17 (cont'd)**
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Sanitary Holding Tanks Groundwater**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | GW-1 |
|---|---|
| Compound/Concentration(2) | (ppb) |
| 4-Methyl-2-Pentanone | <10 |
| Styrene | <5 |
| 1,1,2,2-Tetrachloroethane | <5 |
| Tetrachloroethene | <5 |
| Tetrahydrofuran | <25 |
| Toluene | <5 |
| 1,2-Dichloroethene (Total) | <5 |
| trans-1,3-Dichloropropene | <5 |
| 1,1,1-Trichloroethane | <5 |
| 1,1,2-Trichloroethane | <5 |
| Trichloroethene | <5 |
| Vinyl Acetate | <10 |
| Vinyl Chloride | <10 |
| Xylene (Total) | <5 |

(1) TB - Trip Blank
(2) ug/L = ppb
(3) <5 denotes constituent concentration was less than detection limit of the value following the less than cursor.

## TABLE 5-18
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Sanitary Holding Tanks Groundwater**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | GW-1 |
|---|---|
| Compound/Concentration[1] | (ppb) |
| Acenaphthene | <10[2] |
| Acenaphthylene | <10 |
| Anthracene | <10 |
| Benz(a)anthracene | <10 |
| Benzo(a)pyrene | <10 |
| Benzo(b)fluoranthene | <10 |
| Benzo(g,h,i)perylene | <10 |
| Benzo(k)fluoranthene | <10 |
| Benzyl Alcohol | <10 |
| Benzylbutylphthalate | <10 |
| bis(2-Chloroethoxy) Methane | <10 |
| bis(2-Chloroethyl) Ether | <10 |
| bis(2-Chloroisopropyl) Ether | <10 |
| bis(2-Ethylhexyl) Phthalate | <10 |
| 4-Bromodiphenyl Ether | <10 |
| Carbazole | <10 |
| 4-Chloroaniline | <10 |
| 2-Chloronaphthalene | <10 |
| 4-Chlorophenylphenylether | <10 |
| Chrysene | <10 |
| Dibenz(a,h)anthracene | <10 |
| Dibenzofuran | <10 |
| 1,2-Dichlorobenzene | <10 |
| 1,3-Dichlorobenzene | <10 |
| 1,4-Dichlorobenzene | <10 |

**TABLE 5-18 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Sanitary Holding Tanks Groundwater**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | GW-1 |
|---|---|
| Compound/Concentration[1] | (ppb) |
| 3,3-Dichlorobenzidine | <20 |
| Diethylphthalate | <10 |
| Dimethylphthalate | <10 |
| Di-N-butylphthalate | <10 |
| Dinitrobenzenes | <50 |
| 2,4-Dinitrotoluene | <10 |
| 2,6-Dinitrotoluene | <10 |
| Di-N-octylphthalate | <10 |
| Fluoranthene | <10 |
| Fluorene | <10 |
| Hexachlorobenzene | <10 |
| Hexachlorobutadiene | <10 |
| Hexachlorocyclopentadiene | <10 |
| Hexachloroethane | <10 |
| Indeno(1,2,3-c,d)pyrene | <10 |
| Isophorone | <10 |
| 2-Methylnaphthalene | <10 |
| Naphthalene | <10 |
| 2-Nitroaniline | <50 |
| 3-Nitroaniline | <50 |
| 4-Nitroaniline | <50 |
| Nitrobenzene | <10 |
| N-Nitro-Diphenylamine | <10 |
| N-Nitroso-Di-N-Propylamine | <10 |
| Phenanthrene | <10 |
| 2-Picoline | <50 |

**TABLE 5-18 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Sanitary Holding Tanks Groundwater**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | GW-1 |
|---|---|
| Compound/Concentration(1) | (ppb) |
| Pyrene | <10 |
| Pyridine | <50 |
| Toluenediamine | <50 |
| 1,2,4-Trichlorobenzene | <10 |
| Benzoic Acid | <50 |
| 4-Chloro-3-Methylphenol | <10 |
| 2-Chlorophenol | <10 |
| 2,4-Dichlorophenol | <10 |
| 2,4-Dimethylphenol | <10 |
| 4,6-Dinitro-2-Methylphenol | <50 |
| 2,4-Dinitrophenol | <50 |
| 2-Methylphenol | <10 |
| 4-Methylphenol | <10 |
| 2-Nitrophenol | <10 |
| 4-Nitrophenol | <50 |
| Pentachlorophenol | <50 |
| Phenol | <10 |
| Tetrachlorophenol | <10 |
| 2,4,5-Trichlorophenol | <50 |
| 2,4,6-Trichlorophenol | <10 |

(1) ug/L = ppb
(2) <10 denotes constituent concentration was less than detection limit of the value following the less than cursor.
* Denotes compound was also detected in method blank.

## TABLE 5-19
**Summary of Analytical Results**
**Drum Processing Unit/Container Processing and Storage Building**
**Volatile Organic Compounds**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | WW-1 | WW-2 | WW-3 | WW-4 |
|---|---|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) | (ppb) | (ppb) |
| Acetone | 3500 | 950R[2] | <20[3] | <20 |
| Acrolein | <500 | <50 | <50 | <50 |
| Acrylonitrile | <700 | <70 | <70 | <70 |
| Benzene | <50 | <5 | <5 | <5 |
| Bromodichloromethane | <50 | <5 | <5 | <5 |
| Bromoform | <50 | <5 | <5 | <5 |
| Bromomethane | <100 | <10 | <10 | <10 |
| Carbon Disulfide | <50 | 7 | <5 | <5 |
| Carbon Tetrachloride | <50 | <5 | <5 | <5 |
| Chlorobenzene | <50 | <5 | <5 | <5 |
| Chloroethane | <100 | <10 | <10 | <10 |
| Chloroform | 28J | 7 | <5 | <5 |
| Chloromethane | <100 | <10 | <10 | <10 |
| Dibromochloromethane | <50 | <5 | <10 | <10 |
| cis-1,3-Dichloropropene | <50 | <5 | <5 | <5 |
| Dichlorodifluoromethane | <50 | <5 | <5 | <5 |
| 1,1-Dichloroethane | 48J | 10 | <5 | <5 |
| 1,2-Dichloroethane | <50 | <5 | <5 | <5 |
| 1,1-Dichloroethene | <50 | <5 | <5 | <5 |
| 1,2-Dichloropropane | <50 | <5 | <5 | <5 |
| Ethylbenzene | <50 | 7 | <5 | <5 |
| Fluorotrichloromethane | <50 | <5 | <5 | <5 |
| 2-Hexanone | <100 | <10 | <10 | <10 |
| Methylene Chloride | <50 | 8 | 6 | 5 |
| Methyl Ethyl Ketone | 460 | 670R | 61 | <10 |
| 4-Methyl-2-Pentanone | <100 | 19 | <10 | <10 |
| Styrene | <50 | <5 | <5 | <5 |

**TABLE 5-19 (cont'd)**
**Summary of Analytical Results**
**Drum Processing Unit/Container Processing and Storage Building**
**Volatile Organic Compounds**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLE LOCATION | WW-1 | WW-2 | WW-3 | WW-4 |
|---|---|---|---|---|
| Compound/Concentration | (ppb) | (ppb) | (ppb) | (ppb) |
| 1,1,2,2-Tetrachloroethane | <50 | <5 | <5 | <5 |
| Tetrachloroethene | <50 | 4J | <5 | <5 |
| Tetrahydrofuran | 640 | 160R | <25 | <25 |
| Toluene | <50 | 9 | 5 | <5 |
| 1,2-Dichloroethene (Total) | <50 | <5 | <5 | <5 |
| trans-1,3-Dichloropropene | <50 | <5 | <5 | <5 |
| 1,1,1-Trichloroethane | 420 | 23 | 3J | <5 |
| 1,1,2-Trichloroethane | <50 | <5 | <5 | <5 |
| Trichloroethene | <50 | <5 | <5 | <5 |
| Vinyl Acetate | <100 | <10 | <10 | <10 |
| Vinyl Chloride | <100 | <10 | <10 | <10 |
| Xylene (Total) | <50 | 43 | <5 | <5 |

(1) ug/L = ppb
(2) R denotes that concentration was out of linear calibration range. Sample was diluted and reanalyzed.
(3) <5 denotes constituent concentration was less than detection limit of the value following the less than cursor.
(4) J denotes estimated value at or below the detection limit.

## TABLE 5-20
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Drum Processing Unit/Container Processing and Storage Building**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | WW-1 | WW-2 | WW-3 | WW-4 |
|---|---|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) | (ppb) | (ppb) |
| Acenaphthene | <10 | <10 | <10 | <10 |
| Acenaphthylene | <10 | <10 | <10 | <10 |
| Anthracene | <10 | <10 | <10 | <10 |
| Benz(a)anthracene | <10 | <10 | <10 | <10 |
| Benzo(a)pyrene | <10 | <10 | <10 | <10 |
| Benzo(b)fluoranthene | <10 | <10 | <10 | <10 |
| Benzo(g,h,i)perylene | <10 | <10 | <10 | <10 |
| Benzo(k)fluoranthene | <10 | <10 | <10 | <10 |
| Benzyl Alcohol | <10 | <10 | <10 | <10 |
| Benzylbutylphthalate | <10 | <10 | <10 | <10 |
| bis(2-Chloroethoxy) Methane | <10 | <10 | <10 | <10 |
| bis(2-Chloroethyl) Ether | <10 | <10 | <10 | <10 |
| bis(2-Chloroisopropyl) Ether | <10 | <10 | <10 | <10 |
| bis(2-Ethylhexyl) Phthalate | 8J | <10 | <10 | 36 |
| 4-Bromophenylphenylether | <10 | <10 | <10 | <10 |
| Carbazole | <10 | <10 | <10 | <10 |
| 4-Chloroaniline | <10 | <10 | <10 | <10 |
| 2-Chloronaphthalene | <10 | <10 | <10 | <10 |
| 4-Chlorophenylphenylether | <10 | <10 | <10 | <10 |
| Chrysene | <10 | <10 | <10 | <10 |
| Dibenz(a,h)anthracene | <10 | <10 | <10 | <10 |
| Dibenzofuran | <10 | <10 | <10 | <10 |
| 1,2-Dichlorobenzene | <10 | <10 | <10 | <10 |
| 1,3-Dichlorobenzene | <10 | <10 | <10 | <10 |
| 1,4-Dichlorobenzene | <10 | <10 | <10 | <10 |
| 3,3-Dichlorobenzidine | <20 | <20 | <20 | <20 |
| Diethylphthalate | <10 | <10 | <10 | <10 |

**TABLE 5-20 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Drum Process Unit/Container Processing and Storage Building**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | WW-1 | WW-2 | WW-3 | WW-4 |
|---|---|---|---|---|
| Compound/Concentration[1] | (ppb) | (ppb) | (ppb) | (ppb) |
| Dimethylphthalate | <10 | <10 | <10 | <10 |
| Di-N-butylphthalate | <10 | <10 | <10 | <10 |
| Dinitrobenzenes | <50 | <50 | <50 | <50 |
| 2,4-Dinitrotoluene | <10 | <10 | <10 | <10 |
| 2,6-Dinitrotoluene | 10 | 16 | 13 | <10 |
| Di-N-octylphthalate | <10 | <10 | <10 | <10 |
| Fluoranthene | <10 | <10 | <10 | <10 |
| Fluorene | <10 | <10 | <10 | <10 |
| Hexachlorobenzene | <10 | <10 | <10 | <10 |
| Hexachlorobutadiene | <10 | <10 | <10 | <10 |
| Hexachlorocyclopentadiene | <10 | <10 | <10 | <10 |
| Hexachloroethane | <10 | <10 | <10 | <10 |
| Indeno(1,2,3-c,d)pyrene | <10 | <10 | <10 | <10 |
| Isophorone | 37 | 7J[3] | <10 | <10 |
| 2-Methylnaphthalene | <10 | <10 | <10 | <10 |
| Naphthalene | <10 | <10 | <10 | <10 |
| 2-Nitroaniline | <50 | <50 | <50 | <50 |
| 3-Nitroaniline | <50 | <50 | <50 | <50 |
| 4-Nitroaniline | <50 | <50 | <50 | <50 |
| Nitrobenzene | <10 | <10 | <10 | <10 |
| N-Nitro-Diphenylamine | <10 | <10 | <10 | <10 |
| N-Nitroso-Di-N-Propylamine | <10 | <10 | <10 | <10 |
| Phenanthrene | <10 | <10 | <10 | <10 |
| 2-Picoline | <50 | <50 | <50 | <50 |
| Pyrene | <10 | <10 | <10 | <10 |
| Pyridine | <50 | <50 | <50 | <50 |
| Toluenediamine | <50 | <50 | <50 | <50 |

**TABLE 5-20 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Drum Processing Unit/Container Processing and Storage Building**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | WW-1 | WW-2 | WW-3 | WW-4 |
|---|---|---|---|---|
| Compound/Concentration(1) | (ppb) | (ppb) | (ppb) | (ppb) |
| 1,2,4-Trichlorobenzene | <10 | <10 | <10 | <10 |
| Benzoic Acid | <50 | <50 | <50 | <50 |
| 4-Chloro-3-Methylphenol | <10 | <10 | <10 | <10 |
| 2-Chlorophenol | <10 | <10 | <10 | <10 |
| 2,4-Dichlorophenol | <10 | <10 | <10 | <10 |
| 2,4-Dimethylphenol | <10 | <10 | <10 | <10 |
| 4,6-Dinitro-2-Methylphenol | <50 | <50 | <50 | <50 |
| 2,4-Dinitrophenol | <50 | <50 | <50 | <50 |
| 2-Methylphenol | <10 | <10 | <10 | <10 |
| 4-Methylphenol | <10 | <10 | <10 | <10 |
| 2-Nitrophenol | <10 | <10 | <10 | <10 |
| 4-Nitrophenol | <50 | <50 | <50 | <50 |
| Pentachlorophenol | <50 | <50 | <50 | <50 |
| Phenol | <10 | <10 | <10 | <10 |
| Tetrachlorophenol | <10 | <10 | <10 | <10 |
| 2,4,5-Trichlorophenol | <10 | <10 | <10 | <10 |
| 2,4,6-Trichlorophenol | <10 | <10 | <10 | <10 |

(1) ug/kg = ppb
(2) <10 denotes constituent concentration was less than detection limit of the value following the less than cursor.
(3) J denotes estimated value at or below the detection limit.

## TABLE 5-21
**Summary of Analytical Results**
**Total Metals**
**Drum Processing Unit/Container Processing and Storage Building**
**Heritage Treatment Center**
**Lemont, Illinois**

| SAMPLING LOCATION | WW-1 | WW-2 | WW-3 | WW-2 |
|---|---|---|---|---|
| **Compound/Concentration** | **(ppm)** | **(ppm)** | **(ppm)** | **(ppm)** |
| Antimony | <0.050 | <0.050 | <0.050 | <0.050 |
| Arsenic | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Beryllium | <0.005 | <0.005 | <0.005 | <0.005 |
| Cadmium | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Chromium | <0.010 | <0.010 | <0.010 | 0.059 |
| Copper | <0.020 | <0.020 | <0.020 | 0.021 |
| Lead | <0.050 | <0.050 | <0.050 | <0.050 |
| Mercury | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Nickel | 0.90 | 0.19 | <0.010 | 0.051 |
| Selenium | <0.025 | <0.025 | <0.025 | <0.025 |
| Silver | <0.010 | <0.010 | <0.010 | <0.010 |
| Thallium | <0.30 | <0.30 | <0.30 | <0.30 |
| Zinc | 0.12 | 0.029 | 0.021 | 0.022 |

(1) mg/L = ppm
(2) <0.050 denotes constituent concentration was less than detection limit of the value following the less than cursor.

## TABLE 5-22
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Decontamination / Coring Water**
**Heritage Treatment Center**
**Lemont, Illinois**

| COMPOUND/CONCENTRATION[1] | (ppb) |
|---|---|
| Acetone | <20[2] |
| Acrolein | <50 |
| Acrylonitrile | <70 |
| Benzene | <5 |
| Bromodichloromethane | <5 |
| Bromoform | <5 |
| Bromomethane | <10 |
| Carbon Disulfide | <5 |
| Carbon Tetrachloride | <5 |
| Chlorobenzene | <5 |
| Chloroethane | <10 |
| Chloroform | <5 |
| Chloromethane | <10 |
| Dibromochloromethane | <5 |
| cis-1,3-Dichloropropene | <5 |
| Dichlorodifluoromethane | <5 |
| 1,1-Dichloroethane | 7 |
| 1,2-Dichloroethane | <5 |
| 1,1-Dichloroethene | <5 |
| 1,2-Dichloropropane | <5 |
| Ethylbenzene | <5 |
| Trichlorofluoromethane | <5 |
| 2-Hexanone | <10 |
| Methylene Chloride | 3J[3] |

**TABLE 5-22 (cont'd)**
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Decontamination / Coring Water**
**Heritage Treatment Center**
**Lemont, Illinois**

| COMPOUND/CONCENTRATION(1) | (ppb) |
|---|---|
| Methyl Ethyl Ketone | <10 |
| 4-Methyl-2-Pentanone | <10 |
| Styrene | <5 |
| 1,1,2,2-Tetrachloroethane | <5 |
| Tetrachloroethene | <5 |
| Tetrahydrofuran | <25 |
| Toluene | <5 |
| 1,2-Dichloroethene (Total) | 10 |
| trans-1,3-Dichloropropene | <5 |
| 1,1,1-Trichloroethane | <5 |
| 1,1,2-Trichloroethane | <5 |
| Trichloroethene | <5 |
| Vinyl Acetate | <10 |
| Vinyl Chloride | 10 |
| Xylene (Total) | <5 |

(1) ug/L= ppb
(2) <20 denotes constituent concentration was less than detection limit of the value following the less than cursor.
(3) J denotes estimated value at or below the detection limit.

## TABLE 5-23
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Decontamination / Coring Water**
**Heritage Treatment Center**
**Lemont, Illinois**

| COMPOUND/CONCENTRATION[1] | (ppb) |
|---|---|
| Acenaphthene | <10[2] |
| Acenaphthylene | <10 |
| Anthracene | <10 |
| Benz(a)anthracene | <10 |
| Benzo(a)pyrene | <10 |
| Benzo(b)fluoranthene | <10 |
| Benzo(g,h,i)perylene | <10 |
| Benzo(k)fluoranthene | <10 |
| Benzyl Alcohol | <10 |
| Benzylbutylphthalate | <10 |
| bis(2-Chloroethoxy) Methane | <10 |
| bis(2-Chloroethyl) Ether | <10 |
| bis(2-Chloroisopropyl) Ether | <10 |
| bis(2-Ethylhexyl) Phthalate | <10 |
| 4-Bromophenylphenylether | <10 |
| Carbazole | <10 |
| 4-Chloroaniline | <10 |
| 2-Chloronaphthalene | <10 |
| 4-Chlorophenylphenylether | <10 |
| Chrysene | <10 |
| Dibenz(a,h)anthracene | <10 |
| Dibenzofuran | <10 |
| 1,2-Dichlorobenzene | <10 |
| 1,3-Dichlorobenzene | <10 |

**TABLE 5-23 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Decontamination / Coring Water**
**Heritage Treatment Center**
**Lemont, Illinois**

| COMPOUND/CONCENTRATION[1] | (ppb) |
|---|---|
| 1,4-Dichlorobenzene | <10 |
| 3,3-Dichlorobenzidine | <20 |
| Diethylphthalate | <10 |
| Dimethylphthalate | <10 |
| Di-N-butylphthalate | <10 |
| Dinitrobenzenes | <50 |
| 2,4-Dinitrotoluene | <10 |
| 2,6-Dinitrotoluene | <10 |
| Di-N-octylphthalate | <10 |
| Fluoranthene | <10 |
| Fluorene | <10 |
| Hexachlorobenzene | <10 |
| Hexachlorobutadiene | <10 |
| Hexachlorocyclopentadiene | <10 |
| Hexachloroethane | <10 |
| Indeno(1,2,3-c,d)pyrene | <10 |
| Isophorone | <10 |
| 2-Methylnaphthalene | <10 |
| Naphthalene | <10 |
| 2-Nitroaniline | <50 |
| 3-Nitroaniline | <50 |
| 4-Nitroaniline | <50 |
| Nitrobenzene | <10 |
| N-Nitro-Diphenylamine | <10 |
| N-Nitroso-Di-N-Propylamine | <10 |

**TABLE 5-23 (cont'd)**
**Summary of Analytical Results**
**Semi-Volatile Organic Compounds**
**Decontamination / Coring Water**
**Heritage Treatment Center**
**Lemont, Illinois**

| COMPOUND/CONCENTRATION(1) | (ppb) |
|---|---|
| Phenanthrene | <10 |
| 2-Picoline | <50 |
| Pyrene | <10 |
| Pyridine | <50 |
| Toluenediamine | <50 |
| 1,2,4-Trichlorobenzene | <10 |
| Benzoic Acid | <50 |
| 4-Chloro-3-Methylphenol | <10 |
| 2-Chlorophenol | <10 |
| 2,4-Dichlorophenol | <10 |
| 2,4-Dimethylphenol | <10 |
| 4,6-Dinitro-2-Methylphenol | <50 |
| 2,4-Dinitrophenol | <50 |
| 2-Methylphenol | <10 |
| 4-Methylphenol | <10 |
| 2-Nitrophenol | <10 |
| 4-Nitrophenol | <50 |
| Pentachlorophenol | <50 |
| Phenol | <10 |
| Tetrachlorophenol | <10 |
| 2,4,5-Trichlorophenol | <50 |
| 2,4,6-Trichlorophenol | <10 |

(1) ug/kg = ppb
(2) <10 denotes constituent concentration was less than detection limit of the value following the less than cursor.

## TABLE 5-24
**Summary of Analytical Results**
**Total Metals**
**Decontamination / Coring Waters**
**Heritage Treatment Center**
**Lemont, Illinois**

| COMPOUND/CONCENTRATION(1) | (ppm) |
|---|---|
| Antimony | <0.050(2) |
| Arsenic | <0.005 |
| Beryllium | <0.0050 |
| Cadmium | <0.0050 |
| Chromium | <0.010 |
| Copper | <0.020 |
| Lead | <0.050 |
| Mercury | <0.0005 |
| Nickel | <0.010 |
| Selenium | <0.025 |
| Silver | <0.010 |
| Thallium | <0.30 |
| Zinc | <0.020 |

(1) ug/L = ppb
(2) <0.050 denotes constituent concentration was less than detection limit of the value following the less than cursor.

**TABLE 5-25**
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Trip Blank**
**Heritage Treatment Center**
**Lemont, Illinois**

| COMPOUND/CONCENTRATION[1] | (ppb) |
|---|---|
| Acetone | <20 |
| Acrolein | <50 |
| Acrylonitrile | <70 |
| Benzene | <5 |
| Bromodichloromethane | <5 |
| Bromoform | <5 |
| Bromomethane | <10 |
| Carbon Disulfide | <5 |
| Carbon Tetrachloride | <5 |
| Chlorobenzene | <5 |
| Chloroethane | <10 |
| Chloroform | <5 |
| Chloromethane | <10 |
| Dibromochloromethane | <5 |
| cis-1,3-Dichloropropene | <5 |
| Dichlorodifluoromethane | <5 |
| 1,1-Dichloroethane | <5 |
| 1,2-Dichloroethane | <5 |
| 1,1-Dichloroethene | <5 |
| 1,2-Dichloropropane | <5 |
| Ethylbenzene | <5 |
| Trichlorofluoromethane | <5 |
| 2-Hexanone | <10 |
| Dichloromethane (Methylene Chloride) | <5 |
| Methyl Ethyl Ketone | <10 |
| 4-Methyl-2-Pentanone | <10 |

**TABLE 5-25 (cont'd)**
**Summary of Analytical Results**
**Volatile Organic Compounds**
**Decontamination / Coring Water**
**Heritage Treatment Center**
**Lemont, Illinois**

| COMPOUND/CONCENTRATION(1) | (ppb) |
|---|---|
| Styrene | <5 |
| 1,1,2,2-Tetrachloroethane | <5 |
| Tetrachloroethene | <5 |
| Tetrahydrofuran | <25 |
| Toluene | <5 |
| 1,2-Dichloroethene (CIS and TRANS) | <5 |
| trans-1,3-Dichloropropene | <5 |
| 1,1,1-Trichloroethane | <5 |
| 1,1,2-Trichloroethane | <5 |
| Trichloroethene | <5 |
| Vinyl Acetate | <10 |
| Vinyl Chloride | 10 |
| Xylene (Total) | <5 |

(1) ug/L= ppb
(2) <20 denotes constituent concentration was less than detection limit of the value following the less than cursor.

chemicals. These toxicity constants have been combined with a "standard" exposure scenario to develop benchmark concentrations to evaluate potential risks associated with contaminants at a site.

The determination of the nature and extent of metals contamination at the site was based upon the concentration of TCLP metals exhibited by the soil sample. These concentrations were then compared to the Class I and Class II Groundwater Quality Standards as promulgated by the IEPA.

These factors as well as other non-numerical factors were then used in the following discussion to evaluate the nature and extent of contamination at the various SWMUs.

## 5.3 Evaluation of Soils Data

### 5.3.1 Background Soil Samples

In accordance with the RFI Work Plan as modified by the IEPA's February 2, 1994 correspondence a total of ten (10) locations were selected to obtain background soil samples for volatile and semi-volatile organic constituents. These locations were selected based upon the absence of site specific waste management activities occurring or having occurred within these areas. Specifically, these background soil sampling locations shown in Figure 3, Appendix A, were along the northern boundary of the facility. Several of the soil sample locations were located beneath the asphalt parking lot located in front of the office. The remaining background soil samples were collected within and along the south toe of the berm (Old Canal Bank Road).


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#### 5.3.1.1 Volatile Organic Constituents

The results of the analysis of the background soil samples for volatile organic constituents are presented in Table 5-1. Review of these results indicate a general absence of volatile organic constituents. While trace concentrations of acetone, toluene, and xylene were detected, these concentrations are not considered to be indicative of significant contamination.

#### 5.3.1.2 Semi-Volatile Organic Constituents

Table 5-2 summarizes the semi-volatile organic constituent analyses performed within the background area. With the exception of the polynuclear aromatic hydrocarbon constituents, detected primarily at SP-2, 4 and 9 the semi-volatile organic constituents were below the detection limits of the soil analysis. At the background soil sampling locations SB-6, 7, 8 and 10 the detection limits were elevated as a result of matrix interference. It is also noted in examining the Certificates of Analysis, Appendix G that a significant number of tentatively identified unknown hydrocarbons were present at elevated concentrations.

#### 5.3.1.3 Discussion of Results

The soil samples collected are considered as representative of background conditions at the site. The soil samples were collected


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from the berm area, which was considered as representative of conditions at the site unimpacted by operations at the site from the time of construction of the Chicago Sanitary and Ship Canal. Several soil samples were collected from beneath the asphalt parking area since a large portion of the site has been asphalted in recent years. As discussed in the preceding sections volatile organic constituents were essentially not detected. The slightly elevated concentrations of methylene chloride and trichloroethene and the location of these soil samples, SP-5, 6, 7, 8 and 9, indicate a potential for contamination originating from off-site since these soil samples were located within the materials of the berm, and would be considered to be upgradient of site waste treatment storage activities. The detected semi-volatile organic constituents consisted of the polynuclear aromatic hydrocarbons. The presence of other semi-volatile organic constituents were reported at concentrations less then the detectable limits of the specific sample. The elevated detection limits at SP-6, 7, 8 and 10 may be reflective of the construction of the berm and its permeability. In prior years, part of the maintenance of the roadway surface at the top of the berm was the placement of angular stone along its length by others. In an attempt to mitigate the dust problems associated with the stone placed on the roadway it was not uncommon for parties, other than HERITAGE, to use oil of some nature as a dust suppressant.

As evident by the rather excessive seepage along the berm, especially to the northwest of the office building of HERITAGE, the berm is very porous in various sections along its length. Therefore, it is not unlikely



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that the materials used for purposes of dust suppression along the road would permeate into the underlying materials and could then discharge via the seeps in the berm or alternatively the oil could run off the road surface down the face of the slope onto the HERITAGE facility.

At SP-1,2, and 3 the presence of semi-volatile organics was anticipated since they were located below the asphaltic parking surface materials. This data collected from the background soil samples was utilized as a factor in evaluating specific constituent contamination at the SWMU's. The mean and standard deviation for each identified constituent of the ten background soil samples was calculated. These values were then utilized as base line concentrations to evaluate the SWMU specific constituent concentrations. In developing the mean of each constituent, where a constituent was reported as below detectable limits a value equal to one-half the detection limit was used in calculating the mean. The standard deviation of the data was then calculated, and the mean and standard deviation were considered as the range into which any soil sample constituent could be considered as within background concentrations. The mean values and one standard deviations are summarized in Appendix I. In examining the mean and the standard deviation for Benzo(a) pyrene, 569 ppb and 1029 ppb, respectfully, these background concentrations were observed to be in excess of the 390 ppb concentration as presented in the risk based concentration table, Appendix K.



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### 5.3.2 Old Aerosol Can Crushing Unit

In accordance with the RFI Work Plan two (2) soil samples were collected in the area of the old aerosol can crushing unit which burned in 1988. Since this area is now covered with asphalt as part of the containment system as shown in Figure 2, Appendix A, it was necessary to core through the overlaying asphalt. As discussed in Section 3.3, the soil samples consisted of essentially crushed stone with some fines. The soil samples within this area were submitted to the laboratory for volatile and semi-volatile organic and TCLP metals constituents.

#### 5.3.2.1 Volatile Organic Constituents

Table 5-3 presents the summary of volatile organic laboratory analysis for the two soil samples collected at this SWMU. This data indicates the presence of trace concentrations of several volatile organic constituents. Specifically acetone at 86 and 80ppb, methylene chloride at 29 and 15ppb, methyl ethyl ketone at 23ppb, tetrahydrofuran at 26ppb, toluene at 7 and 16ppb, trichloroethene at 9 and 36ppb, and xylene at 13 and 14ppb.

#### 5.3.2.2 Semi-Volatile Organic Constituents

Table 5-4 shows that all of the semi-volatile organic constituents were below the detection limits for the analysis. As a result of matrix interference from these soil samples the achievable detection limit was


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elevated. In comparing the Certificates of Analysis of the background soil samples and the two soil samples from this SWMU, many of the same unknown hydrocarbons at similar concentrations were detected.

#### 5.3.2.3 TCLP Metals Constituents

Table 5-5 presents the TCLP metal results for the two soil samples collected at this SWMU. In all instances the results show that the TCLP metals were below their respective detection limits.

#### 5.3.2.4 Discussion of Results

Table 5-26 presents a summary of the constituents detected in the soil samples collected. The corresponding concentrations for the mean and one standard deviation of the mean of the background soil samples as well as the RCRA Corrective Action Level concentration and a risk based concentration for industrial property are also presented in this table.

As a result of the non-detection of semi-volatile constituents at elevated detection limits, Table 5-26 only reflects the volatile organic constituents. Since the TCLP metals were all non-detectable metals, they are not considered as a contaminant at the SWMU. Methyl ethyl ketone, and tetrahydrofuran were the only volatile organic constituents which marginally exceeded the background concentration value representing mean plus one (1) standard deviation. At this time, there


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## TABLE 5-26
Comparison of Detectable Constituents and Reference Concentrations
Old Aerosol Can Crushing Area

| Sample Location | SP-11 | SP-12 | Background(1) Mean | Background(2) 1 Std. Dev. | RCRA Corrective(2) Action Level | Risk Based(3) Concentration |
|---|---|---|---|---|---|---|
| Constituent/Concentration | ppb | ppb | ppb | ppb | ppb | ppb |
| Acetone | 86 | 80 | 38 | 87 | 8E+06 | 1E+08 |
| Methylene Chloride | 29 | 15 | 64 | 118 | 9E+04 | 3.8E+05 |
| Methyl Ethyl Ketone | 23 | BDL | <10(4) | <10 | 4E+06 | 6.1E+08 |
| Tetrahydrofuran | BDL | 26 | 16 | 23 | --- | --- |
| Toluene | 7 | 16 | 15 | 23 | 2E+07 | 2.0E+08 |
| Trichloroethene | 9 | 36 | 34 | 64 | 6E+02 | 2.0E+08 |
| Xylene | 13 | 14 | 10 | 18 | 2E+08 | 1.0E+09 |

(1) See Appendix I
(2) See Appendix J
(3) See Appendix K
(4) Since this compound was non-detectable in the background soil samples the comparison was made with the PQL for the constituent.

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are no values established as a RCRA Corrective Action Level nor risk based concentrations for these constituents. Therefore, in evaluating this constituent, the range of background concentrations were utilized (BDL to 35ppb) to evaluate the potential of contamination.

Comparison of these constituents with the RCRA Corrective Action Level and industrial risk based concentration in soils indicate that the presence of these constituents does not present significant evidence of contamination by volatile organic constituents. Based upon the field observations of the soils underlying the asphalt cover (1 to 4 inches in thickness) and PID readings ranging from 26 to 65ppm these soils are considered to be contaminated. The relatively large number of unknown semi-volatile organic hydrocarbons present in the analysis of these samples indicates that this contamination consists primarily of the semi-volatile constituents.

### 5.3.3 Barge Cleaning Transfer Point

In accordance with the RFI Work Plan a soil sample was collected from this area and analyzed for volatile and semi-volatile organic constituents.



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#### 5.3.3.1 Volatile Organic Constituents

Table 5-6 presents the laboratory volatile organic constituent results. Review of this data indicates that methylene chloride, tetrachloroethene, tetrahydrofuran, toluene, 1,1,1-trichloroethane, trichloroethene and xylene were detected at concentrations above the detection limits.

#### 5.3.3.2 Semi-Volatile Constituents

Table 5-7 presents the semi-volatile organic constituent laboratory results. Review of this data indicates that elevated concentrations of several of the semi-volatile organic constituents are present in the soil in this area. These concentration range from acenaphthene at 3500ppb to pyrene at 31,000ppb.

#### 5.3.3.3 Discussion of Results

This area encompasses approximately 40 to 80 square feet and is less than 4 inches in thickness. This area lies between the barge slip and the asphalt roadway which was constructed in 1989. Prior to asphalting, the roadway was constructed of crushed limestone.

Table 5-27 presents a summary of the constituents detected in the soil samples collected at this location. The corresponding background,


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RCRA Corrective Action Levels, and risk based concentrations are also presented in this table.

In review of this table the volatile organic constituents, tetrahydrofuran and toluene are essentially at concentrations equivalent to the background concentrations. Trichloroethene at 90ppb is in excess of the background concentrations. This concentration however, is several orders of magnitude less than the RCRA Corrective Action Level and the risk based concentration for an industrial area.

The semi-volatile organic constituents as detected and presented in Table 5-27 were found at concentrations in excess of background concentrations identified at the facility. Comparison with published RCRA Corrective Action Levels was limited to Bis(2-Ethylhexyl) Phthalate. For the remaining semi-volatile constituents, the risk based concentrations for an industrial area were used as guidance. Benz(a)anthracene at 17,000ppb, Benzo(a)pyrene at 12,000ppb, Benzo(b)fluoranthene at 17,000ppb and Indeno (1,2,3-cd) pyrene at 9,900ppb are in excess of both background concentration and the risk based concentrations.

### 5.3.4 Van Trailer Storage Area

In accordance with the RFI Work Plan six (6) soil samples were collected from this SWMU area and submitted to the laboratory for volatile organic and TCLP metal analyses.



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TABLE 5-27
Comparison of Detectable Constituents and Reference Concentrations
Barge Cleaning Transfer Point

| Sample Location | SP-13 | Background(1) Mean | Background(1) 1 Std. Dev. | RCRA Corrective(2) Action Level | Risk Based(3) Concentration |
|---|---|---|---|---|---|
| Constituent/Concentration | ppb | ppb | ppb | ppb | ppb |
| **Volatile Organics** | | | | | |
| Acetone | 40 | 38 | 87 | 8E+06 | 1E+08 |
| Methylene Chloride | 46 | 64 | 118 | 9E+04 | 3.8E+05 |
| Tetrachloroethene | 9 | 5 | 8 | 1E+04 | 5.5E+04 |
| Tetrahydrofuran | 32 | 16 | 23 | --- | --- |
| Toluene | 24 | 15 | 23 | 2E+07 | 2.0E+08 |
| 1,1,1-Trichloroethane | 6 | 4 | 6 | 7E+06 | --- |
| Trichloroethene | 90 | 34 | 64 | 6E+04 | 2.6E+05 |
| Xylene | 7 | 10 | 18 | 2E+08 | 1E+09 |
| **Semi-Volatile Organics** | | | | | |
| Acenaphthene | 3,500 | 549 | 1022 | --- | 6.1E+07 |
| Anthracene | 7,500 | 549 | 1022 | --- | 3.1E+08 |
| Benz(a)Anthracene | 17,000 | 557 | 1024 | --- | 3.9E+03 |
| Benzo(a)pyrene | 12,000 | 569 | 1029 | --- | 3.9E+02 |
| Benzo(b)Fluoranthene | 17,000 | 639 | 1066 | --- | 3.9E+03 |
| Benzo(g,h,i)Perylene | 10,000 | 582 | 1037 | --- | |



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TABLE 5-27 (Cont'd)
Comparison of Detectable Constituents and Reference Concentrations
Barge Cleaning Transfer Point

| Sample Location | SP-13 | Background(1) Mean | Background(1) 1 Std. Dev. | RCRA Corrective(2) Action Level | Risk Based(3) Concentration |
|---|---|---|---|---|---|
| Constituent/Concentration | ppb | ppb | ppb | ppb | ppb |
| Semi-Volatile Organics | | | | | |
| Bis(2-Ethylhexyl)Phthalate | 3,900 | 549 | 1022 | 5E+04 | 2E+05 |
| Carbozole | 2,800J(4) | 549 | 1022 | --- | 1.4E+05 |
| Chrysene | 20,000 | 566 | 1027 | --- | 3.9E+05 |
| Dibenzofuran | 2,400J | 549 | 1022 | --- | --- |
| Fluoranthene | 23,000 | 669 | 1106 | --- | 4.1E+07 |
| Indeno(1,2,3-cd)Pyrene | 9,900 | 573 | 1031 | --- | 3.9E+03 |
| Phenanthrene | 23,000 | 645 | 1079 | --- | --- |
| Pyrene | 31,000 | 638 | 1072 | --- | 3.1E+07 |

(1) See Appendix I
(2) See Appendix J
(3) See Appendix K
(4) J = Estimated Concentration



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#### 5.3.4.1 Volatile Organic Constituents

Table 5-8 presents the laboratory volatile organic constituent results for the six (6) soil samples collected at this SWMU. Acetone, methylene chloride, toluene and trichloroethene were detected in the soils at all six locations. In addition, 4-Methyl-2-Pentanone, tetrachloroethene, tetrahydrofuran, and xylene were detected at one or more of the locations.

#### 5.3.4.2 Semi-Volatile Organics

Table 5-9 presents the laboratory semi-volatile organic constituent results at the six (6) soil sampling locations. The constituents detected at these locations included benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene and pyrene. These are primarily the polynuclear aromatic hydrocarbons. As a result of matrix interferences, the detection limits for several of the soil samples were slightly elevated.

#### 5.3.4.3 TCLP Metals Constituents

Table 5-10 presents the results of the laboratory analysis for TCLP metals of the soil samples collected at this SWMU. The results of these analyses indicate that all of the metals were less than the detection limit at each of the locations.



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#### 5.3.4.4 Discussion of Results

Table 5-28 presents a summary of the detected constituents at each of the soil sampling locations at this SWMU. The corresponding reference background, RCRA Corrective Action levels and risk based concentrations are also presented in this table. With the exception of tetrahydrofuran and acetone, volatile organic constituent concentrations are below the background, RCRA Corrective Action level and the risk based concentrations.

At SB-15 the soil sample exhibited a concentration of 230ppb of acetone and at SB-17 a concentration of 97ppb was detected. These two locations are located to the north side of the Van Trailer Storage Area and adjacent to the tank farm and outdoor container storage areas.

The semi-volatile organic constituents detected in this area consisted primarily of the polynuclear aromatic hydrocarbons. At SP-14 which was located to the west of and outside the Van Trailers Storage Area benzo(b)fluoranthene at 1100ppb, and fluoranthene at 1300ppb, were detected at concentrations slightly above the background concentrations and were several times less than the risk based concentrations pyrene at 1400ppb was detected within the background concentrations. The only other soil sample which exhibited concentrations of contaminants above the reference concentrations was SB-19. This sample location as presented in Figure 4, Appendix A, was located at the south and



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TABLE 5-28
Comparison of Detectable Constituents and Referenced Concentration
Van Trailer Storage Area

| Sample Location | SB-14 | SB-15 | SB-16 | SB-17 | SB-18 | SB-19 | Background(1) Mean | Background(1) 1 Std. Dev. | RCRA(2) Corrective Action Level | Risk(3) Based Concentration |
|---|---|---|---|---|---|---|---|---|---|---|
| Constituent/Concentrations | ppb | ppb | ppb | ppb | ppb | ppb | ppb | ppb | ppb | ppb |
| **Volatile Organics** | | | | | | | | | | |
| Acetone | 29 | 230 | 46 | 97 | 47 | 44 | 38 | 87 | 8E+06 | 1E+08 |
| Methylene Chloride | 12 | 17 | 8 | 19 | 13 | 6 | 64 | 118 | 9E+04 | 3.8E+05 |
| 4-Methyl-2-Pentanone | <10 | 5J(4) | 5J | 18 | 12 | <10 | 5 | 5 | | |
| Tetrachloroethene | 6 | <5 | <5 | <5 | <5 | <5 | 5 | 8 | 1E+04 | 5.5E+04 |
| Tetrahydrofuran | 33 | 29 | 27 | 35 | 41 | <25 | 16 | 23 | | |
| Toluene | 15 | 13 | 9 | 7 | 11 | 3J | 15 | 23 | 2E+07 | 2.0E+08 |
| Trichloroethene | 51 | 20 | 18 | 24 | 24 | 11 | 34 | 64 | 6E+04 | 2.6+05 |
| Xylene | 9 | <5 | 7 | 11 | 5 | <5 | 10 | 18 | 2E+08 | 1E+09 |
| **Semi-Volatile Organics** | | | | | | | | | | |
| Benz(a)anthracene | 1000 | <930 | 210J | <1000 | <1000 | 890J | 557 | 1024 | | 3.9E+03 |
| Benzo(a)pyrene | 700 | <930 | <330 | <1000 | <1000 | <1000 | 569 | 1029 | | 3.9E+02 |
| Benzo(b)fluoranthene | 1100 | <930 | 220J | <1000 | <1000 | <1300 | 639 | 1066 | | 3.9E+03 |
| Benzo(g,h,i)perylene | 670 | <930 | <330 | <1000 | <1000 | <1000 | 582 | 1037 | | 3.9E+04 |
| Chrysene | 1200 | <930 | 230J | <1000 | <1000 | 1200 | 566 | 1027 | | 3.9E+04 |

## TABLE 5-28
Comparison of Detectable Constituents and Referenced Concentration
Van Trailer Storage Area

| Sample Location | SB-14 | SB-15 | SB-16 | SB-17 | SB-18 | SB-19 | Background(1) Mean | Background(1) 1 Std. Dev. | RCRA(2) Corrective Action Level | Risk(3) Based Concentration |
|---|---|---|---|---|---|---|---|---|---|---|
| Constituent/Concentrations | ppb | ppb | ppb | ppb | ppb | ppb | ppb | ppb | ppb | ppb |
| Fluoranthene | 1300 | <930 | 380 | <1000 | <1000 | 1700 | 669 | 1106 | | 2.0E+05 |
| Indeno(1,2,3-c,d)pyrene | 630J | <930 | <330 | <1000 | <1000 | <1000 | 573 | 1031 | | 3.9E+03 |
| Phenanthrene | 930 | <930 | 720 | <1000 | <1000 | 2000 | 645 | 1079 | | |
| Pyrene | 1400 | <930 | 470 | <1000 | <1000 | <1000 | 638 | 1022 | | 3.1E+07 |

(1) See Appendix I
(2) See Appendix J
(3) See Appendix K
(4) J = Estimated Concentration

eastside of the Van Trailer Storage area. In addition to the three constituents detected at SB-14, chrysene at 1200ppb and phenanthrene at 2000ppb were also detected at SB-19. These constituents were above the background concentrations but were still below the risk based concentrations for an industrial area.

### 5.3.5 Outdoor Container Storage Area

In accordance with the RFI Work Plan soil samples were collected from five (5) locations in this area and analyzed for volatile and semi-volatile organic and TCLP metals constituent analysis.

#### 5.3.5.1 Volatile Organic Constituents

Table 5-11 presents the laboratory volatile organic constituent results. From review of this table acetone was found to be present at all of the sample locations, with the soils collected at SB-21 and SB-22 exhibiting the higher acetone concentration. In general all of the soil samples exhibited concentrations of methylene chloride, toluene, trichloroethene, and xylene. The soil samples analyzed at SB-21 and SB-22 also exhibited elevated concentrations of benzene and ethylbenzene.



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#### 5.3.5.2 Semi-Volatile Organic Constituents

Table 5-12 presents the semi-volatile organic constituent results. Review of this data indicates that elevated concentrations of semi-volatile organic constituents are present in the soils in this area. A duplicate soil sample was also collected at SB-24. In comparing the laboratory analysis of these two soil samples SB-24 and SB-24D an order of magnitude difference in concentrations was observed. In collecting sufficient samples for these analyses, three separate borings were required to be advanced. In further evaluation of this data the higher of the concentrations between the two samples was utilized.

#### 5.3.5.3 TCLP Metal Constituents

Table 5-13 presents a summary of the TCLP metals analysis performed on the soil samples collected at this SWMU. Arsenic was the only constituent detected above the detection limits at the four sampling locations with concentrations ranging from 0.006 to 0.014ppm.

#### 5.3.5.4 Discussion of Results

Table 5-29 presents a summary of the constituents detected in the soil samples collected at this location. The corresponding reference background, RCRA Corrective Action Levels and risk based concentrations are also presented in this table. Review of the data indicates that the soil sample collected at SP-22, as shown in Figure 4,



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## TABLE 5-29
Comparison of Detectable Constituents and Referenced Concentration
Outdoor Container Storage Area

| Sample Location | SP-21 | SP-22 | SP-23 | SP-24 | SP-24D(4) | Background(1) Mean | Background(1) 1 Std. Dev. | RCRA(2) Corrective Action Level | Risk(3) Based Concentration |
|---|---|---|---|---|---|---|---|---|---|
| Constituent/Concentrations | ppb | ppb | ppb | ppb | ppb | ppb | ppb | ppb | ppb |
| **Volatile Organics** | | | | | | | | | |
| Acetone | 130 | 360 | 75 | 68 | 68 | 38 | 87 | 8E+06 | 1E+08 |
| Benzene | 8 | BDL | 5 | BDL | BDL | 3 | 3 | --- | 9.9E+04 |
| Ethylbenzene | 8 | 100 | BDL | 12 | 6 | 4 | 6 | 8E+06 | 9.2E+08 |
| Methylene Chloride | 4J(5) | 55 | 13 | 13 | 20 | 64 | 118 | 9E+04 | 3.8E+05 |
| Toluene | 11 | 60 | 26 | 32 | 19 | 15 | 23 | 2E+07 | 2.0E+08 |
| Trichloroethene | 7 | 35 | BDL | 9 | 15 | 34 | 64 | 6E+04 | 2.6+05 |
| Xylene | 27 | 1200 | 130 | BDL | BDL | 10 | 18 | 2E+08 | 1.0E+09 |
| **Semi-Volatile Organics** | | | | | | | | | |
| Anthracene | 220J | 2300 | BDL | 880J | 660 | 549 | 1022 | --- | 3.1E+08 |
| Benzo(a)anthracene | BDL | 790J | BDL | 1100 | 340 | 557 | 1024 | --- | 3.9E+03 |
| Benzo(a)pyrene | BDL | 780J | BDL | 750J | 390 | 569 | 1029 | --- | 3.9E+02 |
| Benzo(b)fluoranthene | 200J | 1200 | BDL | 750J | 600 | 639 | 1066 | --- | 3.9E+03 |
| Benzo(g,h,i)perylene | BDL | 800 | BDL | BDL | 490 | 582 | 1037 | --- | --- |
| Benzylbutylphthalate | 750 | BDL | BDL | BDL | 750 | 549 | 1022 | 2E+07 | 2.0E+08 |

TABLE 5-29(Cont'd)
Comparison of Detectable Constituents and Referenced Concentration
Outdoor Container Storage Area

| Sample Location | SP-21 | SP-22 | SP-23 | SP-24 | SP-24D(4) | Background(1) Mean | Background(1) 1 Std. Dev. | RCRA(2) Corrective Action Level | Risk(3) Based Concentration |
|---|---|---|---|---|---|---|---|---|---|
| Constituent/Concentrations | ppb | ppb | ppb | ppb | ppb | ppb | ppb | ppb | ppb |
| Semi-Volatile Organics | | | | | | | | | |
| Benzyl Alcohol | BDL | BDL | 18000 | BDL | BDL | 549 | 1022 | --- | 3.1E+08 |
| Bis(2-Ethylhexyl)phthalate | 430 | 2200 | 4500J | 4300 | 880 | 549 | 1022 | 5E+04 | 2E+05 |
| Chrysene | 280J | 1800 | BDL | 2100 | 690 | 566 | 1027 | --- | 3.9E+05 |
| Fluoranthene | 210J | 880J | 2700J | 700J | 390 | 669 | 1106 | --- | 4.1E+07 |
| Indeno(1,2,3-c,d)pyrene | BDL | BDL | BDL | BDL | 390 | 573 | 1031 | --- | 3.9E+03 |
| 2-Methylnapththalene | BDL | 1300 | BDL | 570J | 240J | 549 | 1022 | --- | --- |
| Naphthalene | BDL | 2000 | BDL | BDL | BDL | 549 | 1022 | --- | 4.1E+07 |
| Phenanthrene | 460 | 1700 | BDL | 1200 | 560 | 645 | 1079 | --- | --- |
| Pyrene | 330 | 1600 | 3000J | 2000 | 650 | 638 | 1072 | --- | 3.1E+07 |

(1) See Appendix I
(2) See Appendix J
(3) See Appendix K
(4) Duplicate Sample
(5) J = Estimated Concentration

Appendix A exhibits elevated concentrations of the contaminants. This soil sample was collected at the joint in the concrete. While these constituent concentrations do not exceed the RCRA Corrective Action Levels or the risk based concentrations; acetone at 360ppb, ethylbenzene at 100ppb, toluene at 60ppb and xylene at 1200ppb do exceed the background concentrations.

Similar to other SWMU's at the facility the polynuclear aromatic hydrocarbons are also present at similar concentrations. Additional constituents were also detected in the soils at various locations. Benzyl alcohol at 18,000ppb was found at the soil sample location SP-23 (See Figure 4, Appendix A). Elevated concentrations of the semi-volatile constituents were detected in the soil sample SP-22, where elevated volatile organic constituent concentrations were detected. Similar elevated semi-volatile organic constituent concentrations were observed at SP-24, which was collected in the area of the entrance ramp of the unit.

In addition to the other constituents detected at these two locations, 2-methylnaphthalene and naphthalene were also detected. Bis(2-ethylhexyl) phthalate was detected at all four of the sampling locations ranging in concentration from 430ppb to 4500ppb. The higher concentrations of the semi-volatile organic constituents were detected in the soil sample SP-23 which was located between the entrance ramp and the joint in the concrete floor. All of the constituent concentrations generally exceeded the background concentrations with



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the exception of benzo(a)pyrene and benzo(g,h,i) perylene. Based upon the analytical data the area at this SWMU is considered as contaminated by various semi-volatile constituents.

The Arsenic concentrations ranging from 0.006 to 0.014ppm are all below the Illinois Groundwater Quality Standards of 0.05ppm for Class I waters and 0.10ppm for Class II waters. Metals are therefore not considered as a contaminant in this SWMU.

### 5.3.6 Drainage Ditch

In accordance with the RFI Work Plan soil samples were collected from various locations along the drainage ditch as shown in Figure 2, Appendix A. Since most of the drainage ditch had been asphalted 1993, as part of the overall plant improvements, the majority of soil samples were collected from beneath the asphalt surface. The soil sampling locations were selected to follow the previous drainage pathway through the facility.

#### 5.3.6.1 Volatile Organic Constituents

Table 5-14 presents the volatile organic constituents results. Trace concentrations of acetone, methylene chloride, tetrachloroethene, toluene, trichloroethene and xylene were detected in the soil samples collected from these various locations.



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### 5.3.6.2 Semi-Volatile Organic Constituents

Table 5-15 presents the semi-volatile organic constituents results for the soil samples collected from along the drainage ditch. As discussed previously the same polynuclear aromatic hydrocarbons detected at other locations at the site were detected in the soil samples collected along the drainage ditch.

The highest concentrations of the semi-volatile organic constituents were detected at sediment sampling location SD-5. This sample location, as seen in Figure 2, Appendix A was located in the drainage ditch immediately before the discharge to the Chicago Sanitary and Ship Canal and was collected from a small pile of sediment on the surface of the bedrock. The concentrations of the various constituents ranged from 2400ppb to 37,000ppb and are further discussed in the following sections.

### 5.3.6.3 TCLP Metal Constituents

The results of the laboratory analysis are summarized in Table 5-16 for the TCLP metal constituents. The results of these analyses revealed that the metals were all below the detection limits at all of the drainage ditch sampling locations including SD-5 which exhibited the higher organic constituent concentrations.



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### 5.3.6.4 Discussion of Results

Table 5-30 presents a summary of the constituents detected in the soil samples as collected along the drainage ditch. The corresponding background, RCRA Corrective Action Levels, and risk based concentrations are also referenced in this table. In the course of conducting the soil sampling, soil samples at SD-3 and SD-4 were not obtained as a result of the insufficient soil material present at these locations. At soil sampling location SD-1 a duplicate soil sample was collected. A third volume of soil sample from this location was also prepared for the purposes of the laboratory performing a matrix spike of this soil sample. After submittal to the laboratory HERITAGE became aware of the fact that a matrix spike had already been performed on another sample. This sample was therefore analyzed as another duplicate.

The laboratory analyses of the soil samples revealed that the volatile organic constituents were below the background, Corrective Action and risk based concentrations. The semi-volatile organic constituent analysis revealed concentrations in the soil samples of various polynuclear aromatic hydrocarbon compounds as well as other constituents. In most instances, the soils at the various sampling locations were less than the mean background concentrations. At SD-1 benzo(b)fluoranthene was detected at 1400ppb which exceeded the background reference concentration. At the soil sample location SD-5 all of the constituents were detected at an order of magnitude higher



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TABLE 5-30
Comparison of Detectable Constituents and Referenced Concentration
Drainage Ditch

| Sample Location | SD-1 | SD-1D(1) | SD-1R(2) | SD-2 | SD-5 | Background(3) Mean | Background(3) 1 Std. Dev. | RCRA(4) Corrective Action Level | Risk(5) Based Concentration |
|---|---|---|---|---|---|---|---|---|---|
| Constituent/Concentrations | ppb | ppb | ppb | ppb | ppb | ppb | ppb | ppb | ppb |
| **Volatile Organics** | | | | | | | | | |
| Acetone | BDL | BDL | BDL | 33 | 33 | 38 | 87 | 8E+06 | 1E+08 |
| Chloroform | BDL | BDL | BDL | BDL | 18 | 3 | 0 | 1E+05 | 4.7E+05 |
| Ethylbenzene | BDL | BDL | BDL | BDL | 7 | 4 | 6 | 8E+06 | 1E+08 |
| Methylene Chloride | 34 | 34 | 32 | 21 | 10 | 64 | 118 | 9E+04 | 3.8E+05 |
| Tetrachloroethene | 4J | 5 | BDL | 3J | 7 | 5 | 8 | 1E+04 | 5.5E+04 |
| Tetrahydrofuran | BDL | BDL | BDL | 32 | BDL | 16 | 23 | --- | --- |
| Toluene | 11 | 10 | 9 | 3J | 28 | 15 | 23 | 2E+07 | 2.0E+08 |
| 1,1,1-Trichloroethane | 3J | BDL | 4J | BDL | BDL | 4 | 6 | 7E+06 | 9.2E+07 |
| Trichloroethene | 31 | 39 | 37 | 17 | 42 | 34 | 64 | 6E+04 | 2.6+05 |
| Xylene | BDL | BDL | BDL | 9 | 15 | 10 | 18 | 2E+08 | 1.0E+09 |
| **Semi-Volatile Organics** | | | | | | | | | |
| Acenaphthene | BDL | BDL | BDL | BDL | 5800 | 549 | 1022 | --- | 6.1E+07 |
| Anthracene | BDL | BDL | BDL | BDL | 10,000 | 549 | 1022 | --- | 3.1E+08 |
| Benzo(a)anthracene | 260J | 230J(6) | 310J | BDL | 18,000 | 557 | 1024 | --- | 3,900 |
| Benzo(a)pyrene | 810 | 330 | 420 | 200J | 15,000 | 569 | 1029 | --- | 390 |
| Benzo(b)fluoranthene | 1400 | 560 | 940 | 320J | 22,000 | 639 | 1066 | --- | 3,900 |

TABLE 5-30(Cont'd)
Comparison of Detectable Constituents and Referenced Concentration
Drainage Ditch

| Sample Location | SP-21 | SP-22 | SP-23 | SP-24 | SP-24D(4) | Background(1) Mean | Background(1) 1 Std. Dev. | RCRA(2) Corrective Action Level | Risk(3) Based Concentration |
|---|---|---|---|---|---|---|---|---|---|
| Constituent/Concentrations | ppb | ppb | ppb | ppb | ppb | ppb | ppb | ppb | ppb |
| Semi-Volatile Organics | | | | | | | | | |
| Benzo(g,h,i)perylene | 730 | 300 | 420 | BDL | 11,000 | 582 | 1037 | --- | --- |
| Benzl Alcohol | BDL | BDL | BDL | BDL | 21,000 | 549 | 1022 | --- | 3.1E+08 |
| Bis(2-Ethylhexyl)phthalate | 190J | BDL | BDL | BDL | 11,000 | 549 | 1022 | 5E+04 | 2E+05 |
| Carbazole | BDL | BDL | BDL | BDL | 4700 | 549 | 1022 | --- | 1.4E+05 |
| Chrysene | 450 | 420 | 470 | 260J | 19,000 | 566 | 1027 | --- | 3.9E+05 |
| Dibenz(a,h)anthracene | BDL | BDL | BDL | BDL | 2,000J | 549 | 1022 | --- | 3.9E+05 |
| Fluoranthene | 860 | 780 | 920 | 550 | 33,000 | 669 | 1106 | --- | 4.1E+07 |
| Fluorene | BDL | BDL | BDL | BDL | 7,300 | 549 | 1022 | --- | 4.1E+07 |
| Indeno(1,2,3-c,d)pyrene | 780 | 330 | 390 | BDL | 11,000 | 573 | 1031 | --- | 3,900 |
| Phenanthrene | 590 | 600 | 820 | 380 | 39,000 | 645 | 1079 | --- | |
| Pyrene | 690 | 710 | 940 | 420 | 37,000 | 638 | 1072 | --- | 3.1E+07 |

(1) Duplicate
(2) Second Duplicate
(3) See Appendix I
(4) See Appendix J
(5) See Appendix K
(6) J = Estimated Concentration

concentration than the background reference concentration or the soils at SD-1. At SD-5 benzo(a)anthracene (18,000ppb), benzo(1)pyrene (15,000ppb) and benzo(b)fluoranthene (22,000ppb) were found in excess of the risk based concentrations of 3900, 390, and 3900ppb respectively. Benzo(a)pyrene was detected at concentrations in excess of the risk based concentration at SD-1 and SD-5.

From visual examination of the soils at SD-5 they appear to be accumulated particulates washed down the ditch which settled out at this location, as a result of periodic ponding of water in this area. Since the vast portion of the surface area contributing to the surface water runoff from this location has been asphalted within the last year the natural runoff from this area would be anticipated to contain fines from the asphaltic coating. Visual examination of this sediment noted black granular material present in the sediment. This material was assumed to be asphalt particles. The polynuclear aromatic hydrocarbon constituents which are associated with the asphalt would thereby be carried in the runoff as part of the fines from the parking surfaces. Analyses of these fines are therefore considered as the primary source of the contaminants at SD-5.



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## 5.4 Evaluation of Water Data

### 5.4.1 Sanitary Holding Tanks

As discussed in Section 3.6, based upon conditions at this SWMU a sample of groundwater from the sanitary holding tanks excavation was collected. This sample designated as GW-1 was collected from between the two tanks and submitted to the laboratory for volatile and semi-volatile organic constituent analyses. A trip blank was also submitted for volatile organic analysis.

#### 5.4.1.1 Volatile Organic Constituents

In both the trip blank and GW-1 all of the volatile organic constituents were reported as less than the detection concentrations as presented in Table 5-17.

#### 5.4.1.2 Semi-Volatile Organic Constituents

The semi-volatile organic constituents were all reported as below the detection concentrations as presented in Table 5-18.

#### 5.4.1.3 Discussion of Results

The groundwater sample as collected at this SWMU did not exhibit any constituents above the detection concentrations. Based upon these analyses, the soils are not considered to be contaminated.



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### 5.4.2 Drum Processing Unit

As discussed in Section 3.10 a structural integrity survey of this area was conducted by ESCA Consultants. This survey revealed hairline cracks and joints in the concrete floor. Since this unit was constructed with a double liner containment system the risk of potential damage to these liners precluded advancement of borings in this area. In lieu of the soil sampling, HERITAGE sampled water present in the two witness wells located in this area. These witness wells were designated as WW-1 and WW-2. WW-1 was located within the sand material above the first liner and WW-2 was located between the first and second liner.

At the same time, Witness Wells WW-3 and WW-4 which were located within the separate containment system of the adjacent Container Processing and Storage Building were sampled. WW-3 was located within the sand layer above the upper liner and WW-4 was located between the liners. These water samples were submitted to the laboratory for volatile and semi-volatile organic constituent analysis.

#### 5.4.2.1 Volatile Organic Constituents

Table 5-19 presents a summary of the laboratory volatile organic constituent analysis results. This data reveals elevated concentrations of several volatile organic constituents at the Drum Processing Unit within the materials above the primary liner (WW-1). These included acetone (3500ppb), methyl ethyl ketone (460ppb), methylene chloride


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(170ppb), tetrahydrofuran (640ppb) and 1,1,1-trichloroethane (420ppb). Analyses of the water collected from between the liners (WW-2) revealed low concentrations of several volatile organic constituents. Acetone at 950ppb and methyl ethyl ketone at 670ppb were the more significant of the constituents detected.

In comparison the analysis of the two witness wells at the adjacent Container Processing and Storage Building revealed only a few constituents at trace concentrations above the first (primary containment) liner. The water from between the liners (secondary containment) contained only one detectable constituent, methylene chloride at 5ppb.

#### 5.4.2.2 Semi-Volatile Organic Constituents

Analysis of the waters for semi-volatile organic constituents are summarized in Table 5-20. From review of this data essentially all of the semi-volatile organic constituents were at very trace concentrations or below the detection limits.

#### 5.4.2.3 Total Metals Constituents

The results of the total metal analyses are presented in Table 5-21. These results are all below the detection concentrations with the exception of nickel and zinc, which were detected at trace concentrations.



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#### 5.4.2.4 Discussion of Results

From review of the laboratory analyses the only constituents which pose a significant indication of contamination are the volatile organic constituents. Furthermore, these constituents are limited to the Drum Processing Unit.

The secondary liner system at the Drum Processing Unit exhibited elevated concentrations and detection levels above the first liner and several constituents above the second liner. In evaluating this data, the IEPA Class II Groundwater Quality Standards, the Safe Drinking Water Maximum Concentration Levels (MCLs) and the risk based concentrations were used as reference concentrations. These constituents and their referenced concentrations are shown in Table 5-31. Examination of these analyses indicate that none of the constituents are detected at concentrations exceeding the IEPA Class II groundwater quality standards. Based upon tap water several of the constituents detected exceeded the risk based concentration table values. Of more significance is the source of this water and these constituents since this system is part of the containment liner system. It is possible that these materials have been present for a period of time. Alternatively, small quantities of liquids may have infiltrated through joint seals and cracks in the concrete into the materials underlying this area with the resulting transport of the volatile organics into the underlying materials.



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The presence of acetone and methyl ethyl ketone between the liners, especially at slightly higher concentrations than the materials above the liner is not readily explained. Therefore, HERITAGE arranged for the two witness wells to be pumped an a periodic basis. Within a time period of July 18 to August 5, 1994 a total estimated volume of 80 gallons has been withdrawn from the wells. The majority of this water was removed from WW-1. HERITAGE will sample these wells once again and upon receipt of the data forward it to the attention of the IEPA.

The purpose of these efforts are to evaluate whether this phenomenon is the result of retained water within this area following its construction or continuing seepage of water into the system from outside the liners.

### 5.4.3 Decontamination/Coring Water

In the course of performing the activities at the various SWMU's water, used in decontamination of equipment and coring, from the site water well was utilized. A sample of this water was submitted to the laboratory for volatile and semi-volatile organic analysis and total metals analysis.



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TABLE 5-31
Comparison of Detectable Concentrations and Referenced Concentrations
Drum Processing Unit/Container Processing and Storage Building

| Sample Location | WW-1 | WW-2 | IEPA Class II GW Standard | MCL | Risk Based Concentration |
|---|---|---|---|---|---|
| Constituent/Concentrations | ppb | ppb | ppb | ppb | ppb |
| Acetone | 3500 | 950 | --- | --- | 3,700 |
| Carbon Disulfide | BDL | 7 | --- | --- | 21 |
| Chloroform(1) | 28J | 7 | --- | 0.100* | 0.15 |
| 1,1-Dichloroethane | 48J | 10 | --- | --- | 810 |
| Ethylbenzene | BDL | 7 | 1000 | --- | 1,300 |
| Methylene Chloride | BDL | 8 | 50 | --- | 4.1 |
| Methyl Ethyl Ketone | 460 | 670 | --- | --- | 22,000 |
| 4-Methyl-2-Pentanone | BDL | 19 | --- | --- | --- |
| Tetrachloroethene | BDL | 4J | 25 | --- | 1.1 |
| Tetrahydrofuran | 640 | 160 | --- | --- | --- |
| Toluene | BDL | 9 | 2500 | --- | 750 |
| 1,1,1-Trichloroethane | 420 | 23 | 1000 | 200 | 1,300 |
| Xylene | BDL | 43 | 10,000 | --- | 1,400 |

(1) Trihalomethanes MCL is 100ppb based upon total of bromoform, bromodichloromethene, chloroform, and dibromochloromethane which includes chloroform.

#### 5.4.3.1 Volatile Organic Constituents

Table 5-22 presents the results of the volatile organic analysis which shows all constituents below detection limits except for 1-1-dichloroethane at 7ppb, 1,2-dichloroethene at 10ppb, and vinyl chloride at 10ppb.

#### 5.4.3.2 Semi-Volatile Organic Constituents

Table 5-26 presents the results of the semi-volatile organic constituent analysis which indicates all constituents below the detection concentrations.

#### 5.4.3.3 Total Metals Analysis

Table 5-24 presents the results of the total metals analysis which were all below the detection concentrations.

#### 5.4.3.4 Discussion of Results

The concentration of the constituents were essentially all below the detection concentrations. Vinyl chloride was an exception that, at 10ppb, is above the Class I groundwater quality standard and MCL of 2ppb and is equal to the Class II standard. Since this water is not used for consumptive purposes, but as process water and for the sanitary



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facilities the Class II standard is more appropriate in this instance. Furthermore, this constituent was not detected in other soil and water samples.

## 5.5 Nature and Extent of Contamination

Based upon the evaluation of the laboratory data and the field observations the following analysis of the nature and extent of potential contamination at the SWMUs has been determined.

### 5.5.1 Soil Contamination

In general, while several of the SWMU areas exhibited volatile organic constituents acetone and tetrahydrofuran were found slightly in excess of the background reference concentrations. However, in the case of acetone, this constituent is found many times as a laboratory contaminant and is considered an innocuous constituent with a RCRA Corrective Action Level of 8,000,000ppb or a Risk Based concentration in soils of 100,000,000ppb. At this time, there have been no reference concentrations established for tretrahydrofuran. While acetone is soluble in water, based upon its octonal water partition coefficient (log $K_{ow}$) value, it is not considered to bio-accumulate. Therefore, the presence of these constituents at the various SWMUs are not considered significant.

In evaluating the potential of contamination attributed to semi-volatile organic constituents the primary group of this family of constituents which were



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observed at the site were the polynuclear aromatic hydrocarbons (PNAs). However, these constituents were also observed to be present in the background soil samples collected. The primary PNA detected in the majority of samples was Benzo(a)pyrene which was detected at concentrations exceeding the referenced risk based concentration of 390ppb. The referenced background concentrations including the mean concentration (569ppb) as well as upper range (1029ppb) also exceeded the referenced risk based concentration. Therefore, semi-volatile constituent contamination is considered to exist throughout the site. However, it is believed that the offsite road activities have significantly contributed to the existence of these constituents at the facility. Furthermore, with the exception of the SWMUs as discussed further in this section, the nature and magnitude of this contamination is significantly less than the concentrations which would necessitate any action at this time. In addition, there is no indication of metals contamination at any of the SWMUs.

#### 5.5.1.1 Barge Cleaning Transfer Point

The soil sample analyzed at this location revealed elevated concentrations of several volatile organic constituents and this area is considered contaminated as the result of activities conducted throughout the operating life of this property. Since this area was the location for connections between various barge cleaning hoses and fixed piping on-shore the potential exists that small quantities of materials were spilled at this location. This is also the only area where operations are conducted on soils are exposed at the surface and not



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covered by an impervious asphalt or concrete cover. This area is approximately 2 to 2½ feet wide and is approximately 20 to 40 feet in length. The soil depth in this area, until bedrock is encountered, is 4 inches.

#### 5.5.1.2 Outdoor Container Storage Area

At this SWMU the PID readings were elevated at two locations sampled. At both of these locations, a construction joint existed or was very close. While there have been no reported releases within this area xylene was detected at concentrations above those observed elsewhere at the site. Other semi-volatile constituents were also detected at concentrations higher than those observed elsewhere and are considered as indicative of potential contamination within the 1 to 2-inches of materials underlying the concrete at this SWMU. The contamination as identified is located under the southern half of this unit encompassing an area of approximately 30 feet by 50 feet. The contaminate concentrations are well below the referenced action criteria.

#### 5.5.1.3 Drainage Ditch

With the exception of the last sample point (southernmost) along the drainage ditch the materials and soils sampled along this unit are not considered to have been adversely impacted by waste storage and treatment at the site. This sampling program also provides additional



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support of background conditions. At SD-1 which was the first upgradient sampling location, there has been no waste management activities conducted in this area. The majority of the surface flow which enters immediately upstream of this location originates from a well defined seep in the berm at the northwest corner of the front parking lot and outside the property (fence) line. As seen by the analytical data, the concentrations of constituents observed in the soils at this location were equivalent to, if not higher than concentrations observed at other SWMUs and sampling points at the site. This was evident for both volatile and semi-volatile organic constituents. As was previously noted, some of the fines appeared to be asphaltic in nature at SD-5, the last (southernmost) sample location and as evident in the photographic documentation, Appendix C, the amount of material at SD-5 was less than a cubic foot.

### 5.5.2 Water Contamination

In evaluating the potential for contamination in the underground sanitary holding tank area, a groundwater sample was collected since soil samples could not be collected as a result of the high water table observed in this area; (18-inches BSG). This water is perched groundwater within the UST excavation. There was no indication of contamination in this area.

In general, the materials underlying the asphalt and concrete surfaces consisted of one to four inches of limestone gravel and fines. Within these materials, water was observed primarily in the soil sampling locations along



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the southern half of the facility. This was observed even in the Roll-off box storage area where the "soils" if they existed were less than ⅛ inch in thickness.

The groundwater at the facility and under the various SWMUs is considered as perched groundwater on top of the bedrock surface. At several of the locations where water was observed, a slight sheen was also observed. Based upon this observation and the soils analysis, this water would be considered contaminated.

Based upon the fact that the upgradient, offsite berm road has been oiled in the past years, this could account for the prevalence of the semi-volatile organic constituents in the soils and potentially the waters at the site. This could be the result of both surface water runoff, seepage into and through the berm as well as carryon into the facility by vehicle or traffic in the past when some of the areas within the plant were not asphalted. The existence of contamination by semi-volatile organic constituents are considered reflective of the in-place materials located under the impermeable asphalt and concrete surfaces of the current facility. Since the majority of the existing asphalt surfaces were paved within the last one to two years, and recognizing the typically observed presence of perched groundwater immediately below the pavement, the presence of these constituents in the soil samples as well as the slight sheen observed on the surface of the perched groundwater at several locations May be directly attributed to the asphalt pavement.

In the course of performing the activities at the site and with the observation of water at several sampling locations the HR/E personnel examined the



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exposed bedrock along the Chicago Sanitary and Ship Canal and the large slip for evidence of seepage at the top of or from within the bedrock surface. The only area of seepage was along the northern edge of the barge slip, the result of Des Plaines River infiltration through the berm.

### 5.5.3 Other - Drum Processing Unit

The Drum Processing Unit SWMU unit is unique from the other areas in that it was constructed with a double liner containment system. At the time of construction these liners were tested in accordance with the required procedures and specifications and were found to be competent. However, at this time water has been observed above the first liner and between both liners. Analytical testing of this water has revealed elevated concentrations volatile organic constituents within both areas of the containment system. The semi-volatile organic constituents which were found throughout the soils at the other SWMUs were not detected within the water collected from the containment system at this SWMU.

Water was also observed within the liner areas of the adjacent Container Processing and Storage Building, but laboratory analysis of these waters did not indicate the presence of contamination.

The contamination observed at the Drum Processing SWMU unit is unique to this area only. However, while the source of this contamination can not be specifically identified, it is expected that the extent of contamination is within the limits of the building containment system.



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# 6.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon the Phase I - RFI investigation activities conducted at the various SWMUs at the HERITAGE-Lemont facility the following conclusions and recommendations have been prepared.

## 6.1 Conclusions

Based upon the field and analytical data, contamination of the soils underlying the various SWMUs and the surrounding area including off-site and upgradient areas, is exhibited by evidence of trace contamination of semi-volatile organic chemicals. The magnitude and extent of contamination at the following SWMUs are not considered to warrant further action at this time, since the constituents detected are present in background soils or are well below the action levels as established by the USEPA and risk based concentrations which are used as guidance for evaluating potential risks within an industrial area. These SWMUs include the following:

- Van Trailer Container Storage Area,
- Old Aerosol Can Crushing Unit,
- Drum Crushing Unit
- Underground Sanitary Holding Tanks

The soils at the Barge Cleaning Transfer Point are considered to be contaminated. Since these soils are at the edge of the barge slip and are the only exposed soils in the waste management areas of the facility further actions are considered appropriate to address this area. The soils at the discharge point of the drainage ditch are also



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considered contaminated, not by waste management practices, but simply as a result of the extensive asphalt surfaces at the facility and the deposition of surface runoff sediment at this particular location.

The soils underlying the Outdoor Container Storage Area exhibited evidence of contamination apparently as a result of operations within this area. While there have been no reported release or spills within the area, the presence of constituents other than those detected at other SWMUs and the background soils indicates that some materials may have accumulated on the concrete surfaces and penetrated into the underlying material through the construction joints and shrinkage cracks at this SWMU.

The concentrations of the contamination within the subsurface soils at the Outdoor Container Storage SWMU are below the concentrations established for corrective actions to be undertaken.

While there was insufficient soil present within the borings at the Roll-off Box Storage Area or the Drum Crushing Unit, as located within this area, these borings did exhibit the presence of a small quantity of water. Only one of these borings, the eastern most boring SB-25, exhibited a hydrocarbon odor and a slight sheen on the water.

The area encompassing the operational units of the facility (SWMUs) primarily the southern half of the facility is underlain by groundwater perched on bedrock. This perched groundwater was observed in the various soil borings and generally is only



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⅛ inch to 2-inches deep. However, since this water exists within the thin layer of contaminated subsurface soils, these waters are considered contaminated.

Volatile organic contamination exists within the double liner containment system of the Drum Processing Unit SWMU. Whether the contamination is the result of airborne volatile organic constituents from the nearby aerosol can crushing unit and the drum crushing unit, or is the result of trace quantities of materials seeping through cracks and expansion joints in the floor is not known at this time. While the integrity of the liners were tested at the time of installation and construction of the building housing the Drum Processing Unit the presence of contaminants and water within both liners indicates a potential interconnection of these units.

In order to evaluate this situation more fully, additional activities will be necessary.

## 6.2 Recommendations

At this time HR/E recommends that no further actions be implemented at the various SWMUs at the site, with the exception of the following areas and actions as specified herein.

1. At the Barge Cleaning Transfer Point the soils should be excavated and disposed in an appropriate and applicable manner. This will involve approximately 1 to 3 - 55 gallon drum of soil. Following the removal of these soils this area should be asphalted draining towards the site.



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2. At the Outdoor Container Storage Area the Roll-off Box Storage Area, and Drum Crushing Unit, ESCA consultants have recommended as part of their survey of these and other units that a sealer be placed on the surfaces. HERITAGE intends to implement this program of sealing the various surfaces in the near future. This program will eliminate the potential for seepage through the construction joints and cracks and this will mitigate future contamination of the subsurface soils.

3. At this time, the sediments at SD-5, drainage ditch are recommended to be excavated and incorporated with other waste materials, (barge cleaning transfer point) at the site for disposal, since this volume represents less than 1 cubic foot of soil (sediment). Future actions at this area will be dependent upon the build-up of materials at this location. At this time, no other actions are recommended at this location.

4. Since the background (berm) soils themselves are contaminated, and seepage of the Des Plaines River through this berm has the potential of transporting contamination on to the site, as well as through the site, a means of minimizing stormwater and surface water seepage at the site is recommended to be implemented at the site. This could be effectively implemented through the construction of an interceptor trench located along the toe of the berm and along the north side of the facility. This trench could be designed to discharge at the northwest corner of the barge slip. This interception of flow especially



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during heavy precipitation events would minimize flow across the site. This would allow more time for only direct precipitation runoff from the facility areas to be retained behind the control gate, minimizing particulate carryout, prior to discharge. This control and the sealing of the surfaces at the site would also minimize infiltration of precipitation into the underlying subsurface.

7. At this time, HERITAGE personnel are periodically checking and, as appropriate, pumping the two witness wells in the Drum Crushing Area and collecting these liquids. HR/E has recommended that this continue on a once per day basis, as a result of small volume recovery per pumping event until the volume of water recharging reaches a deminimus condition, at which time the wells would be re-sampled. Should the volume of water removed each day remain constant (or not decrease significantly) over several months the wells would be re-sampled at this time and an appropriate approach to evaluating conditions with this area will be evaluated.

8. While the water used as decontamination water from the onsite well did not exhibit concentrations of constituents in excess of the Class II Water Standards, a second round of sampling and analysis of this well is recommended to verify the results obtained during this investigative study.

Upon conclusion of these sampling efforts this data will be forwarded to the IEPA with recommendations for future actions at the SWMUs.



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# APPENDIX A

# FIGURES



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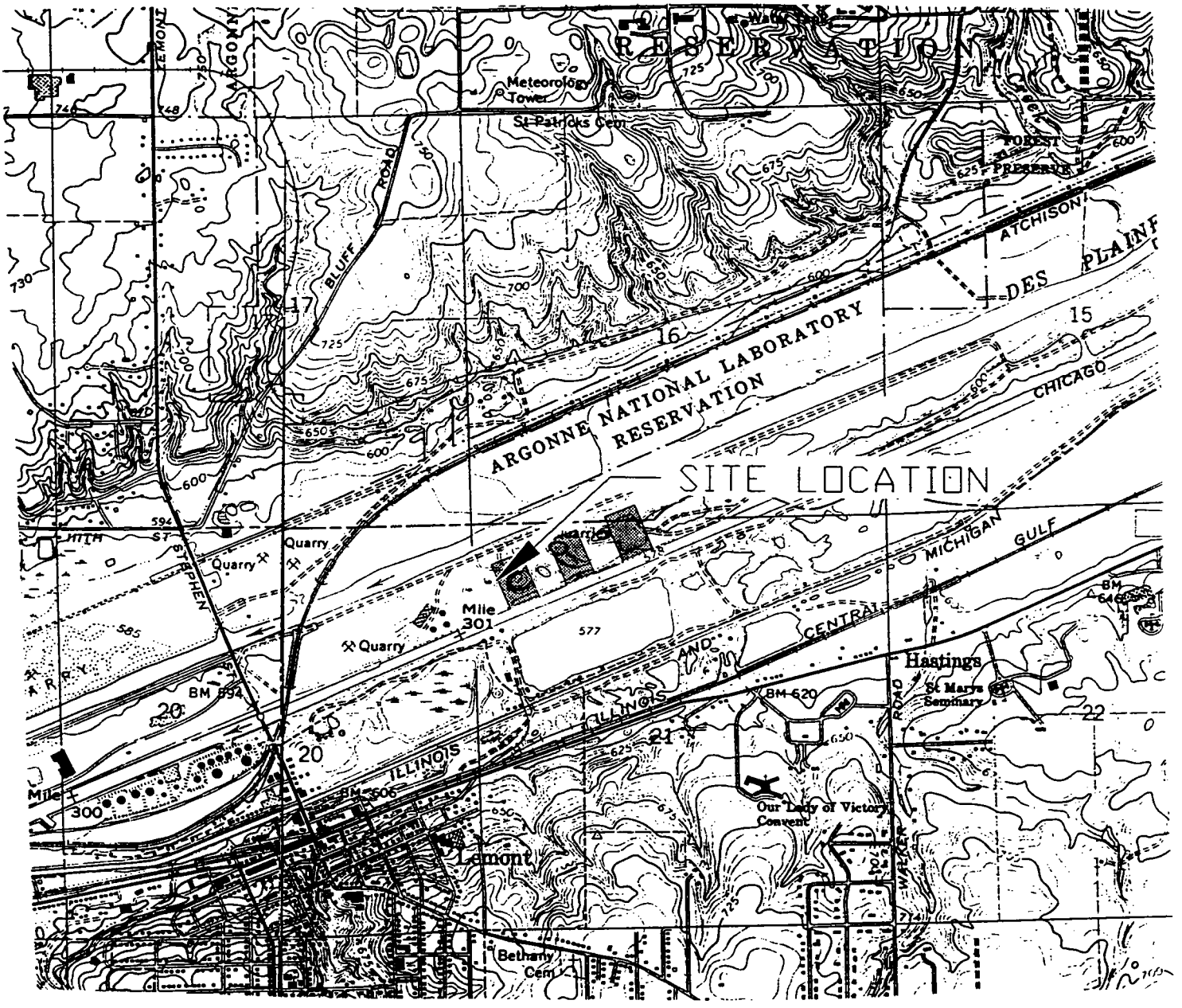


SAG BRIDGE AND ROMEOVILLE QUADRANGLES

Illinois 7.5 Minute Series

SCALE

2000' 0 1000' 2000'

NORTH

HERITAGE TREATMENT CENTER

LEMONT, ILLINOIS

SITE LOCATION MAP

REVISIONS

HERITAGE

HERITAGE REMEDIATION/ENGINEERING, INC.

| | | | |
|---|---|---|---|
| DRAWN BY KJR | DATE 26 OCT 1993 | FIGURE 1 | |
| APPROVED BY | SCALE AS SHOWN | JOB NO. 6199 | |

Figure 2 is attached in the oversize folder at the end of this Report.



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Figure 3 is also attached in the oversize folder at the end of this Report.



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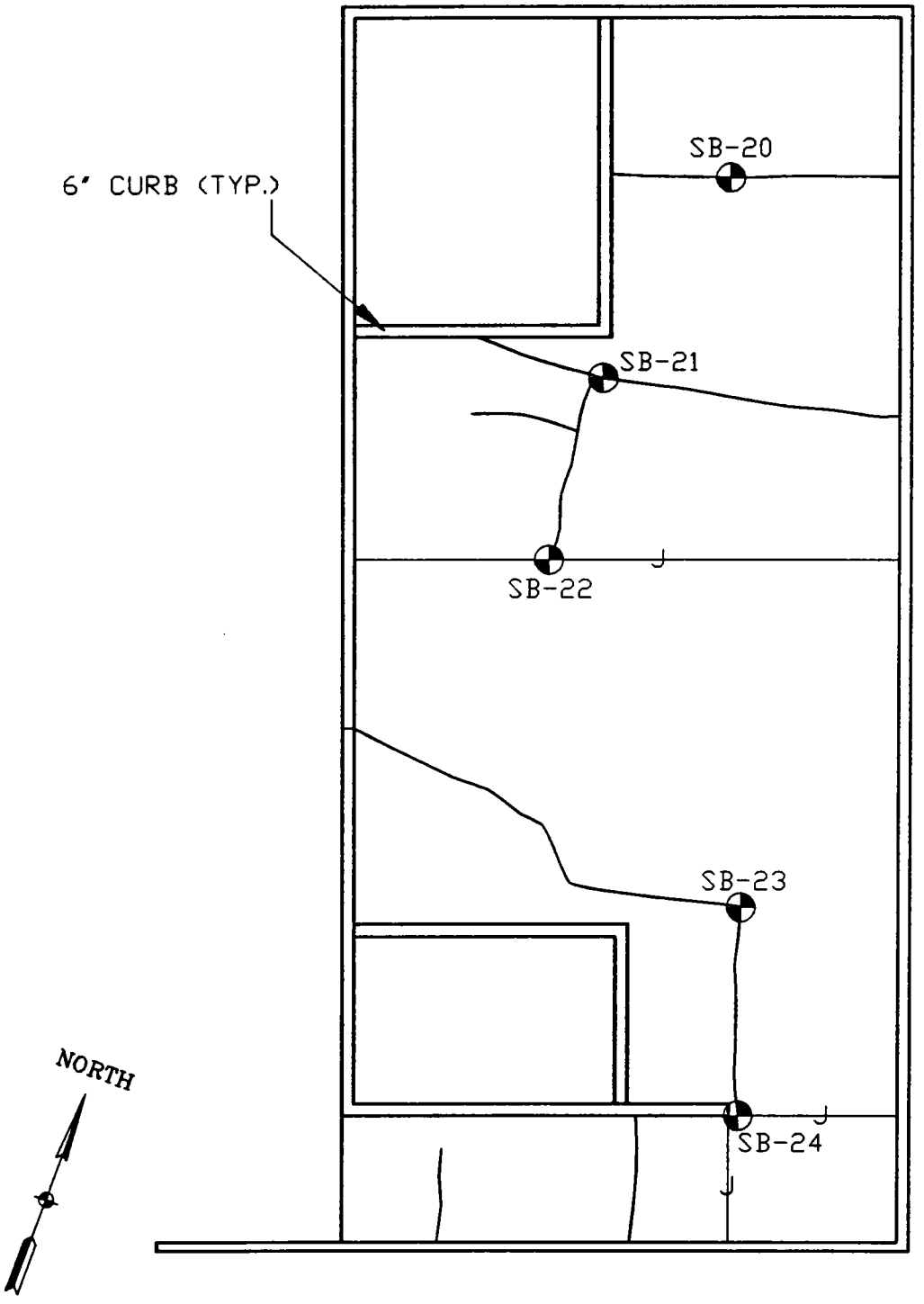



- BOREHOLE LOCATION

- DENOTES CONSTRUCTION JOINT

SCALE

0 10' 20'

HERITAGE TREATMENT CENTER
LEMONT, ILLINOIS

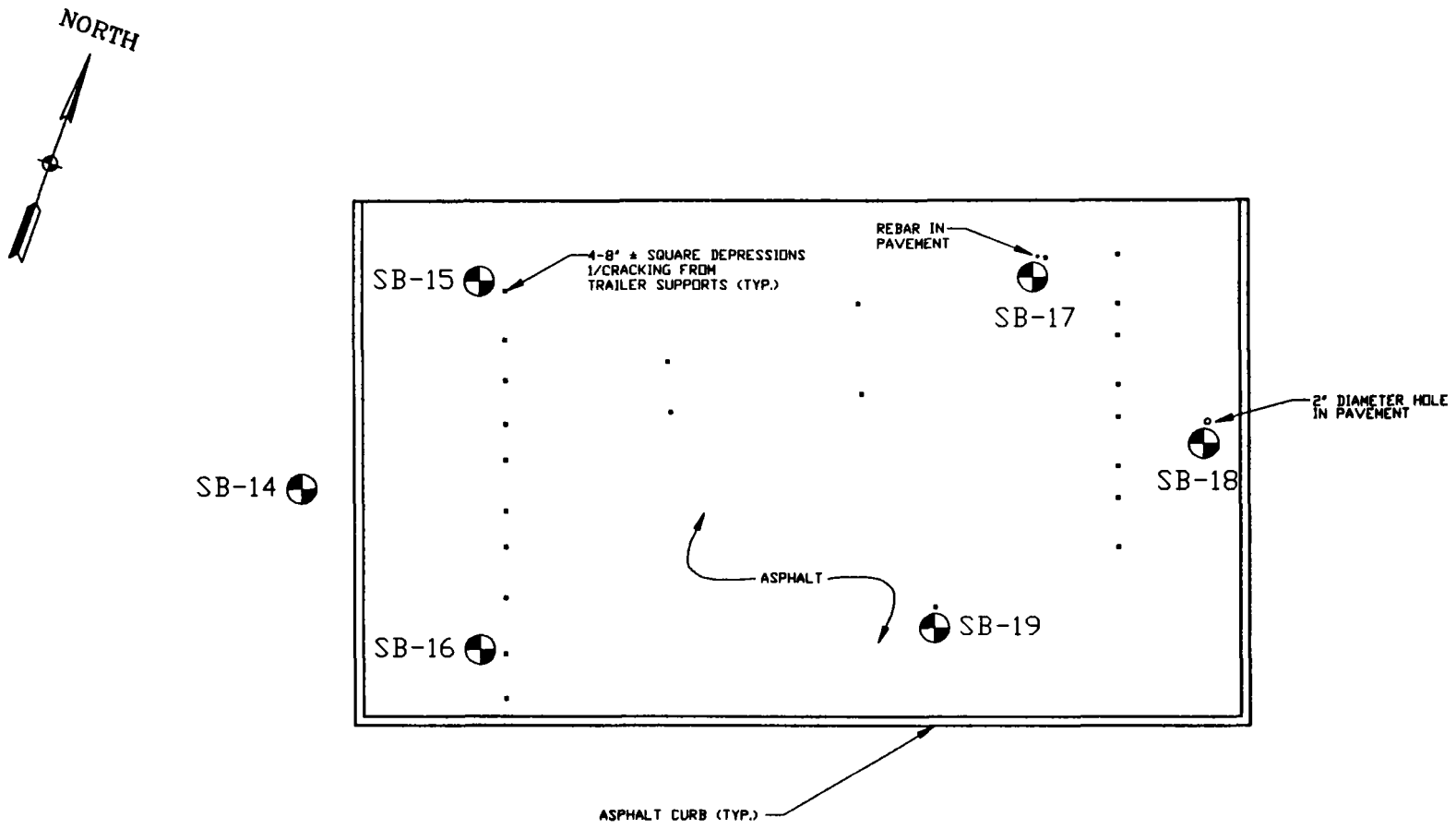
OUTDOOR CONTAINER STORAGE AREA

REVISIONS

HERITAGE

HERITAGE REMEDIATION/ENGINEERING, INC.

| | | | |
|---|---|---|---|
| | DRAWN BY RPW | DATE 28 JULY 1994 | FIGURE 4 |
| 6702fig3 | APPROVED BY | SCALE 1"=10' | JOB NO. 6702 |




⊕ - BOREHOLE LOCATION

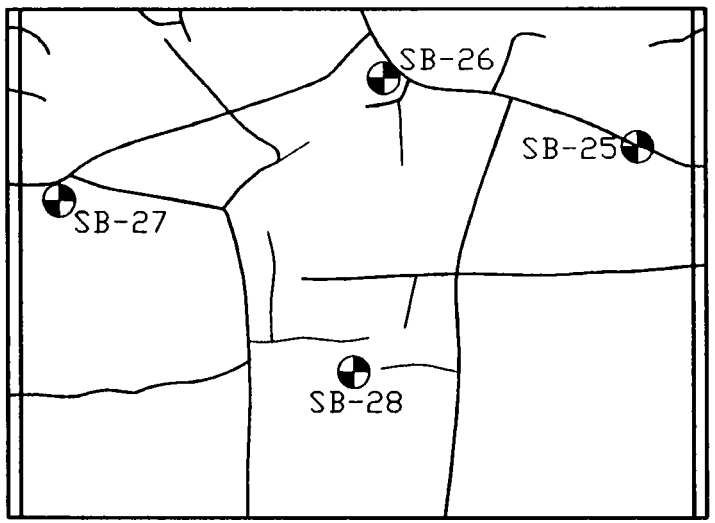
SCALE

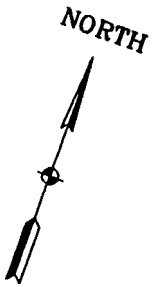
0 10' 20'

**HERITAGE TREATMENT CENTER**
LEMONT, ILLINOIS

**VAN TRAILER CONTAINER STORAGE AREA**

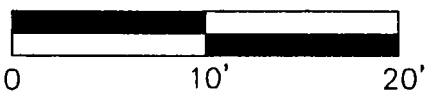
| REVISIONS | HERITAGE REMEDIATION/ENGINEERING, INC. | | |
|---|---|---|---|
| | DRAWN BY RPW | DATE 28 JULY 1994 | FIGURE 5 |
| 6702fig4 | APPROVED BY | SCALE 1"=20' | JOB NO. 6702 |




BOREHOLE LOCATION

SCALE




| | | | |
|---|---|---|---|
| HERITAGE TREATMENT CENTER<br>LEMONT, ILLINOIS | | | |
| ROLL-OFF BOX STORAGE AREA | | | |
| REVISIONS | HERITAGE®<br>HERITAGE REMEDIATION/ENGINEERING, INC. | | |
| | DRAWN BY RPW | DATE 28 JULY 1994 | FIGURE 6 |
| 6702fig5 | APPROVED BY | SCALE 1"=10' | JOB NO. 6702 |

# APPENDIX B

# IEPA, FEBRUARY 2, 1994 CORRESPONDENCE



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State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
2200 Churchill Road, Springfield, IL 62794-9276
217/524-3300

February 2, 1994

Mr. Robert D. Garcia
Heritage Environmental Services, Inc.
Post Office Box 337
Lemont, Illinois 60439

Mr. Frank E. Dalton
Metropolitan Water Reclamation
District of Greater Chicago
100 E. Erie Street
Chicago, Illinois 60611

FEB - 4 1994

Re: 0311620007 -- Cook County
Heritage Environmental Services
ILD085349264
Date Received: November 2, 1993
Log No. 128
RCRA Permits

Dear Messrs. Garcia and Dalton:

The RCRA Facility Investigation (RFI) Phase I Workplan for the above-referenced facility submitted by Heritage Remediation/Engineering, Inc. has been reviewed by this Agency. This workplan was submitted in accordance with Condition B.2 of Section IV of the RCRA Part B permit issued for the above-referenced facility (Log No. 128) on March 24, 1993. The workplan is hereby approved subject to the following conditions and modifications:

1. This RFI Phase I Workplan shall be carried out to investigate for possible releases from the following solid waste management units (SWMUs):

| SWMU NO. | NAME |
|---|---|
| 1 | Truck Transfer Area |
| 2 | Outdoor Container Storage Area |
| 3 | Van Trailer Container Storage Area |
| 4 | Old Aerosol Can Crushing Unit |
| 5 | Roll-Off Box Storage Area |
| 6 | Drum Crushing Unit |
| 7 | Underground Sanitary Waste Holding Tanks |
| 8 | Barge Cleaning Transfer Paint |
| 9 | Drainage Ditch and Tiles Leading to the Chicago Sanitary and Ship Canal |
| 10 | "Other" [background areas] |

As stated in Condition B.2 of Section IV of the RCRA Part B Permit issued for the above referenced facility, the purpose of the required Phase I investigation is to "demonstrate conclusively whether or not hazardous wastes or hazardous constituents have been released from the SWMUs identified above." Therefore, the review of this RFI Phase I Workplan was conducted with this goal in mind.

2. RFI Phase I activities must be completed by August 1, 1994. When Phase I is complete, the owner or operator must submit to the Agency certification both by a responsible officer of the owner or operator and by an independent registered professional engineer that the facility completed Phase I in accordance with the specifications in the approved RFI Phase I workplan. In addition, a certification statement meeting the requirements of 35 IAC 702.126 must be provided by a responsible officer of the laboratory which conducted the chemical analyses that the requirements of this letter were met during the chemical analyses of all samples. This certification must address the applicable sample collection, preservation, handling preparation and analytical requirements set forth in this letter for which the laboratory is responsible. These certifications must be received at this Agency after completing Phase I, or by October 1, 1994. These dates may be extended if Heritage submits information to the Agency indicating that it is attempting to complete the required activities in a timely manner but needs additional time to complete the investigation.

   The attached certification forms must be used. Signatures must meet the requirements of 35 Ill. Adm. Code Section 702.126. The independent engineer should be present at all critical, major points (activities) during the RFI. These might include soil sampling, soil removal, backfilling, final cover placement, etc. The frequency of inspections by the independent engineer must be sufficient to determine the adequacy of each critical activity.

   The Illinois Professional Engineering Act (Ill. Rev. Stat., Ch. 111, par. 5105 et. seq.) requires that any person who practices professional engineering in the State of Illinois or implies that he (she) is a professional engineer must be registered under the Illinois Professional Engineering Act (par. 5101, Section 1). Therefore, any certification or engineering services which are performed for a RFI workplan in the State of Illinois must be done by an Illinois P.E.

   Plans and specifications, designs, drawings, reports, and other documents rendered as professional engineering services, and revisions of the above must be sealed and signed by a professional engineer in accordance with par. 5119, Section 13.1 of the Illinois Professional Engineering Act.

   As part of the certification, to document the RFI Phase I activities at your facility, please submit a Phase I Report and Summary which includes, at a minimum:

   a. The information identified in Condition 14 below regarding the required soil sampling/analysis effort at each SWMU where such an investigation is necessary.

   b. Information which the workplan indicates will be in the report;

   c. A chronological summary of Phase I activities and the cost involved.

d. Color photo documentation of Phase I activities.

e. A description of the qualifications of personnel performing and directing the RFI activities including contractor personnel.

f. A general discussion of the activities which should be carried out as part of Phase 2 of the RCRA Facility Investigation.

The original and two (2) copies of all certifications, logs, or reports which are required to be submitted to the Agency by the facility should be mailed to the following address:

Illinois Environmental Protection Agency
Division of Land Pollution Control -- #33
Permit Section
2200 Churchill Road
Post Office Box 19276
Springfield, Illinois 62794-9276

3. If the Agency determines that implementation of this RFI Workplan fails to satisfy the requirements of Section IV of the RCRA Part B Permit (Log No. 128), the Agency reserves the right to require that additional work be completed to satisfy these requirements. Revisions of RFI Workplans are subject to the appeal provisions of Section 40 of the Illinois Environmental Protection Act.

All soil samples shall be analyzed individually (i.e., no compositing). Analytical procedures shall be conducted in accordance with Test Methods for Evaluating Solid Wastes, Third Edition (SW-846). When a SW-846 (Third Edition) analytical method is specified, all the chemicals listed in the Quantitation Limits Table for that method shall be reported unless specifically exempted in writing by the Agency. Apparent visually contaminated material within a sampling interval shall be included in the sample portion of the interval to be analyzed. To demonstrate a parameter is not present in a sample, analysis results must show a detection limit at least as low as the PQL for that parameter in the third edition of SW-846. For inorganic parameters, the detection limit achieved during the analysis of the TCLP extract must be at least as low as the RCRA Groundwater Detection Limits, as referenced in SW-846 (Third Edition) Volume 1A, pages TWO-29 and TWO-30, Table 2-15.

The following procedure must be utilized in the collection of all required soil samples:

a. The procedures used to collect the soil samples must be sufficient so that all soil encountered is classified in accordance with ASTM Method D-2488.

b. If a drill rig or similar piece of equipment is necessary to collect required soil samples, then:

1. The procedures specified in ASTM Method D-1586 (Split Spoon Sampling) or D-1587 (Shelby Tube Sampling) must be used in collecting the samples.

2. Soil samples must be collected continuously at several locations to provide information regarding the shallow geology of the area where the investigation is being conducted;

c. All soil samples which will be analyzed for volatile organic compounds (VOCs) must be collected in accordance with Attachment 7 of the Agency's RCRA closure plan instructions. If samples to be analyzed for VOCs cannot be collected using this procedure, then the collection technique utilized efforts must be made during the collection of these samples to (1) minimize agitation of the sample being collected and (2) minimize the time the sample is exposed to the air. In addition, the soil must be compacted as it is placed in the sample bottle, to minimize void space in the sample. Furthermore, the sample bottle into which the soil is placed must be filled so that there is no headspace in the top of the bottle.

d. Soil samples not collected explicitly for VOC analysis should be field-screened for the presence of VOCs at all locations where VOCs are a concern;

e. All other soil samples must be collected in accordance with the procedures set forth in SW-846; and

f. When visually discolored or contaminated material exists within an area to be sampled, horizontal placement of sampling locations shall be adjusted to include such visually discolored and/or contaminated areas. Sample size per interval shall be minimized to prevent dilution of any contamination.

4. Quality assurance/quality control procedures which meet the requirements of SW-846 must be implemented during all required sampling/analysis efforts. In addition, sample collection, handling, preservation, preparation and analysis must be conducted in accordance with the procedures set forth in SW-846 and the requirements set forth in this letter.

5. All concrete/asphalt surfaces within the Drum Crushing Unit shall be visually inspected, photographed and any residue adhering to the surface must be removed by scraping and/or brushing. After cleaning the concrete asphalt surfaces, an independent registered professional engineer shall inspect the integrity of the concrete/asphalt surfaces. These surfaces shall be inspected for cracks which penetrate through the concrete/asphalt. In addition, all construction joints must be inspected to ensure they are watertight. This inspection must be carried out in accordance with standards and recommendations of professional/technical entities such as the American Concrete Institute, the Portland Cement

Association, the American Society for Testing and Materials, the American Society of Civil Engineers, etc. which relate to the ability of concrete structures to contain liquids.

The results of this inspection shall be (1) submitted as part of the Phase I RFI report, and (2) certified in accordance with 35 Ill. Adm. Code 702.126 by the engineer. The report must include (1) the results of the inspection, (2) scaled drawings showing the location of all cracks and construction joints observed during the investigation, (3) conclusions reached regarding any cracks or construction joints observed in the areas of concern, (4) justification for the conclusions reached (e.g., information must be provided which indicates that any construction joints in the areas of concern are indeed watertight), and (5) photographs to support the conclusions reached.

If joints, cracks or other defects are found which would potentially allow hazardous waste or hazardous constituents to migrate through the base, then soil samples <u>must</u> be collected from beneath the joint/crack/defect to determine if hazardous waste or hazardous constituents have been released to the underlying soil. This sampling/analysis effort shall be carried out in accordance to the below listed procedures.

a. Samples must be collected from at least one location along <u>each</u> joint or crack that provides a potential for hazardous waste or hazardous constituents to migrate to underlying soil. If the crack/joint is more than approximately 10′ long, then samples must be collected from along the crack/joint at approximately 10′ intervals. Such locations shall be biased to stained areas or low-lying areas where spills would tend to accumulate.

b. Samples must be from 3"-9" below the backfill/natural soil interface at each location. Collection and analysis of each sample shall be carried out in accordance with the procedures set forth in this letter.

c. Collection and analysis of these samples shall be carried out in accordance with the procedures set forth in this letter.

6. Any equipment, including heavy earth movers or smaller tools, shall be scraped to remove any residue. Following this, the equipment must be steam cleaned and triple rinsed. All residues, wash and rinse water shall be collected and managed as a hazardous waste if analysis of the waste detects the presence of hazardous constituents or it exhibits a characteristic of hazardous waste. In any event the material must be managed as a special waste.

7. If the Agency's DLPC determines, based on the data obtained from the Phase I Workplan activities, that there has been no release of hazardous waste or hazardous constituents to the environment from a SWMU identified in Condition 1 above, then no further investigative action will be

required for that SWMU. If the Agency's DLPC determines, based on the data, that there has been a release of hazardous waste or hazardous constituents to the environment or that the data is inconclusive, the Permittee will be notified by the Agency's DLPC.

8. If Heritage conducts a Phase I investigation which differs from the described above, then it must provide adequate justification in the report required by Condition 2 above for the variances. As stated in Condition 1 above, the Agency feels that the requirements set forth in this letter are necessary to reach a conclusion that there has not been a release from a given SWMU. If the goals of Heritage are somewhat different than this, then there may be justification for varying from the requirements set forth in this letter.

9. The Health and Safety Plan contained in the subject workplan is neither approved nor disapproved. Under the provisions of 29 CFR 1910 (51 FR 15,654, December 19, 1986), cleanup operations must meet the applicable requirements of OSHA's Hazardous Waste Operations and Emergency Response standard. These requirements include hazard communication, medical surveillance, health and safety programs, air monitoring, decontamination and training. General site workers engaged in activities that expose or potentially expose them to hazardous substances must receive a minimum of 40 hours of safety and health training off site plus a minimum of three days of actual field experience under the direct supervision of a trained experienced supervisor. Managers and supervisors at the cleanup site must have at least an additional eight hours of specialized training on managing hazardous waste operations.

10. Reports must be prepared and submitted to the Agency which describe the activities completed each quarter of the calendar year while the Phase I investigation is being carried out. The quarterly reports shall contain at a minimum:

    a. An estimate of the percentage of the investigation completed;

    b. Summary of activities completed during the reporting period;

    c. Summaries of all actual or proposed changes to the Workplan or its implementation;

    d. Summaries of all actual or potential problems encountered during the reporting period;

    e. Proposal for correcting any problems;

    f. Projected work for the next reporting period; and

    g. Other information or data as requested in writing by the Agency's DLPC.

11. A quarterly report for the work completed from the date of this letter to March 31, 1994 (the first quarter of the current calendar year during which the required Phase I investigation is taking place) must be submitted to the Agency by May 1, 1994. Subsequent quarterly reports must be submitted in a similar manner until the final Phase I RFI Report is submitted to the Agency.

12. The portion of the final RFI Phase I report documenting the results of the required soil sampling/analysis effort must contain the following information, for each SWMU investigated:

    a. A discussion of (1) the reason for the sampling/analysis effort conducted at each SWMU and (2) the goals of the sampling analysis effort conducted at each SWMU;

    b. A scaled drawing showing the horizontal and vertical location where all soil samples were collected at each SWMU;

    c. Justification for the locations from which soil samples were collected;

    d. A description of the procedures used for:

        1. Sample collection;

        2. Sample preservation;

        3. Chain of custody; and

        4. Decontamination of sampling equipment.

    e. Visual classification of each soil sample collected for analysis;

    f. A discussion of the results of any field screening efforts;

    g. A description of the soil types encountered during the investigation, including scaled cross-sections;

    h. A description of the procedures used to analyze the soil samples, including:

        1. The analytical procedure used, including the procedures, if any, used to prepare the sample for analysis;

        2. Any dilutions made to the original sample;

        3. Any interferences encountered during the analysis of each sample; and

        4. The practical quantitation limit achieved, including justification for reporting PQLs which are above those set forth in SW-846.

i. A description of all quality control/quality assurance analyses conducted, including the analysis of lab blanks, trip blanks and field blanks;

j. A description of all quality assurance/quality control efforts made overall;

k. A summary of all analytical data, including QA/QC results, in tabular form;

l. Copies of the final laboratory sheets which report the results of the analyses, including final sheets reporting quality assurance/quality control data;

m. Colored photographs documenting the sampling effort; and

n. A discussion of the collected data. This discussion should identify those sample locations where contaminants were detected and the concentrations of the contaminants. Conclusions which can be drawn from the information compiled should also be included in this discussion.

13. The collection of only three soil samples to evaluate background levels of contaminants may not provide sufficient data to conduct a meaningful quantitative evaluation. However, the background sampling proposed may provide for a qualitative evaluation of the data. A minimum of ten samples are necessary to conduct a meaningful quantitative evaluation.

14. Rather than collect a sample from the Underground Sanitary Waste Holding Tanks, Heritage should sample from along each of the four sides of these tanks and analyze them in accordance with the requirements of this letter. Each sample location should be the approximate midpoint of each site. The collection/analysis of samples from these four locations should conclusively demonstrate whether or not there has been a release from this SWMU.

Should you have any questions regarding this matter, please contact William T. Sinnott, II at 217/524-3300.

Sincerely,

Douglas W. Clay, P.E.
Hazardous Waste Branch Manager
Permit Section, Bureau of Land

DWC:WTS/mls/sp1030Y/1-8
JKM

Attachments: RFI Phase I Certification
RFI Phase I Laboratory Certification Statement

cc: USEPA Region V -- George Hamper

## Certification Statement
Phase I of the RCRA Facility Investigation
Heritage Environmental Services, Inc.
Lemont, Illinois

Log No. B-128

Upon completion of Phase I of the RFI, this statement is to be completed by both a responsible officer of the owner or operator (as defined in 35 IAC 702.126) and by the registered professional engineer overseeing all work associated with the investigation. Submit one copy of the certification with original signatures and three additional copies.

RFI Phase I activities at the facility described in the RFI Phase I Workplan have been completed in accordance with the specifications in the approved RFI Workplan. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

| | |
|---|---|
| USEPA ID Number | Facility Name |
| Signature of Owner/Operator Date | Name and Title |
| Signature of Registered P.E. Date | Name of Registered P.E. and Illinois Registration Number |
| Mailing Address of P.E.: | Registered P.E.'s Seal: |

LWE:WTS/mls/sp1030Y/9

Laboratory Certification Statement
Phase I of the RCRA Facility Investigation
Heritage Environmental Services, Inc.
Lemont, Illinois
Log No. B-128

Upon completion of Phase I of the RFI, this statement is to be completed by both a responsible officer of the owner or operator (as defined in 35 IAC 702.126) and (2) a responsible officer (as defined in 35 IAC 702.126) of the laboratory which conducted the chemical analyses required as part of Phase I of the RFI. The original of this statement shall accompany the original certification statement for the overall Phase I activities and the RFI Phase I Report.

The sample collection, handling, preservation, preparation and analysis conducted as part of Phase I of the RFI at the facility described in this document has been conducted in accordance with the specifications in the approved workplan. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

| | |
|---|---|
| USEPA ID Number | Facility Name |
| Signature of Owner/Operator Date | Name and Title of Owner/Operator Representative |
| Name of Laboratory | Signature of Laboratory Responsible Officer Date |
| | Name and Title of Laboratory Responsible Officer |

Mailing Address of Laboratory:

LWE:WTS/mls/sp1030Y/10

# APPENDIX C

# CHRONOLOGICAL SUMMARY OF RFI ACTIVITIES



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# CHRONOLOGICAL SUMMARY

| DATE | ACTIVITY | COSTS |
|---|---|---|
| October 29, 1993 | Phase I RFI Work Plan submitted to IEPA for review and approval. | $12,112.46 |
| February 2, 1994 | IEPA approval of Phase I RFI Work Plans with modifications. | |
| April 25, 1994 | First Quarterly Progress Report submitted to IEPA. | ----- |
| | Contractual agreement with ESCA consultants finalized. | ----- |
| May 6-9, 1994 | ESCA consultants performs structural survey of Drum Processing Unit. | $932.25 |
| May 16-20, 1994 | Field Sampling Activities in accordance with the Phase I RFI Work Plans conducted. | $6,911.00 |
| May 17 - July 31, 1994 | Laboratory Analysis | $38,347.56 |
| July 7, 1994 | Sampling Locations Surveyed. | $1,106.09 |
| July 13, 1994 | Request for 30 day extension for submittal of RFI Summary Report filed with IEPA. | ----- |
| August 10, 1994 | 2nd Quarterly Progress Report submitted to IEPA. | ----- |
| August 19, 1994 | Laboratory Data Package received by HR/E. | ----- |
| June 6-August 31, 1994 | Phase I RFI Summary Report preparation. | $26,851.33 |
| August 31, 1994 | Phase I RFI Summary Report submitted to IEPA | ----- |
| | TOTAL COSTS | $73,215.98 |



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# APPENDIX D

# RESUMES OF PERSONNEL PERFORMING ACTIVITIES



Recycled Paper

As a Senior Project Engineer in the HERITAGE-Chicago office, Mr. Millman has responsibility for inception, implementation and management of engineering projects. Hazardous waste services include RCRA regulatory site closure and certification, Superfund investigations, real estate audits, RCRA compliance plans, waste characterization and disposal programs, and regulatory agency negotiations. Wastewater services include waste characterizations, treatment studies, treatment process design, permitting assistance, and Industrial surcharge negotiations. Mr. Millman is also actively involved in the remediation of LUST sites.

## HERITAGE PROJECT EXPERIENCE

- Provided RCRA Part B permitting assistance to a major department of defense ordnance manufacturer. Efforts included; data collecting, preliminary air dispersion modeling and preparation of responses to regulatory agency's comments.

- Completed remedial investigation study and conducted feasibility studies and prepared bid specification document for implementation of insitu soil treatment and groundwater recovery and treatment at a PCE/TCE contaminated site under a voluntary cleanup program.

- Provided technical support for public meetings, including development of agenda and presentation.

- Performed numerous environmental property transfer assessments for a variety of sites, including industrial manufacturing facilities, oil blending facility, vacant parcels, abandoned commercial and industrial properties.

- Assisted small manufacturers in their NPDES permitting process.

- Preparation of the necessary work plan under a voluntary cleanup program at an agricultural chemical facility.

- Supervised and directed LUST remediation projects and coordinated and certified LUST reimbursement in Illinois ranging in size from $10,000 to $1,000,000.

- Provided technical expertise in several environmental litigations between private parties.

## PRIOR EXPERIENCE

**Senior Project Manager, Camp, Dresser & McKee, January 1985 - December 1988.**

Mr. Millman was a Project Manager in CDM's Chicago Office. Primarily, Mr. Millman was the Project Manager for two superfund sites, one contaminated with lead and one contaminated with TCE in the groundwater. Mr. Millman was also responsible for overseeing the technical efforts of six to eight professionals, as well as overseeing the direction and technical scope for four other superfund sites. Mr. Millman was also responsible for providing technical review of all reports and documents prepared within the hazardous waste group. Mr. Millman was the lead engineer at CDM-Chicago in the certification of closure of RCRA facilities as well as performing audits of real estate where industrial processes had been involved. Mr. Millman was responsible for planning and oversight of field and office work, preparation and review of technical reports, and maintenance of budgets. Mr. Millman prepared project proposals for industrial, state and federal clients to include technical approach as well as costs.

- Supervised and conducted various field activities at hazardous waste sites including soil gas surveys, electroconductive surveys, monitoring well installation, soil and water sampling, and air monitoring. Evaluated the data as collected to develop alternative corrective actions.

- Performed a site assessment of a electronics manufacturing facility in preparation for client to purchase the facility.

- Conducted a site assessment of three plastic coatings plants totaling 120,000 square feet for an industrial client prior to purchase of the industry.

- Performed an RI/FS at an EPA Superfund site contaminated with lead. Coordinated the efforts of the U.S.E.P.A., U.S. Bureau of Mines, and other contractors in evaluating the feasibility of several innovative technologies for remediation of the contaminated wastes and soils.

**Project Manager - Metcalf and Eddy, May 1984 - January 1985.**

At Metcalf and Eddy, Mr. Millman was responsible for the preparation of several proposals for industrial wastewater facilities as well as RI/FS projects for state and private industry. He also participated in the preparation of a technical review of the state-of-the-art in incineration technology for the State of Minnesota. This included visitation of existing incineration facilities throughout the United States, discussions with European facility and equipment personnel, and review of literature.

- Prepared a technical evaluation of treatment processes versus categories of wastes as well as several position papers for a State Agency as part of the development of a Hazardous Waste Management Plan for the State.

- Assisted in the preparation and submittal of NPDES Permits for several industries ranging from cooling water discharges, stormwater runoff from coal piles, to effluent discharges from wastewater treatment facilities.

**Project Engineer, Roy F. Weston, Inc., January 1973 - April 1984.**

Mr. Millman provided engineering services to industry and government specializing in various aspects of hazardous waste management and water pollution control. These services included waste characterization, treatability studies, pilot plant operation, development of process designs, preparation and presentation of technical reports, and negotiations with the various parties involved.

Hazardous waste activities involved performance of an RI and development of plans and specifications for implementation of a drum removal. Other activities included preparation of RCRA Part A and Part B submittals for industry.

- Conducted a site characterization study of a combined automotive and appliance production facility involving metal finishing, casting, painting and other related operations. Following the study, recommendations were made and implemented for segregation, recycling, and disposal of the various waste product streams from these operations.

- Supervised field efforts for characterizing hazardous waste at a Chem Dyne, Ohio "Super Fund" site under U.S. EPA Contract

Program. Prepared plans and specifications for U.S. Army Corps of Engineers to contract for cleanup of this site.

- Managed projects for several industrial clients in bringing their plants into compliance with the RCRA Program and in submittal of their Part A Permit Applications under this Program.

- Prepared monthly Industrial Surcharge Forms for small industrial clients discharging to the Chicago MSD.

- Performed sampling program of landfill material and leachate for analysis of priority pollutants in compliance with state requirements to prove that this site was not source of groundwater pollution.

- Under U.S. EPA Contract Program; prepared Remedial Action Master Plans for several hazardous waste sites, including technical approaches and estimated costs for implementing the plan.

- Prepared and coordinated efforts of other technical personnel in completing RCRA Part B Permit Applications for existing and proposed hazardous waste land disposal facilities.

- Provided technical assistance to industry in legal proceedings to revise the Industrial Surcharge Ordinance of the Detroit Water and Sewer Department. Resulting changes in the ordinance provided significant savings to the clients. This assistance included attending meetings with the city representatives, their technical consultants and legal counsel.

- Evaluated manufacturers process equipment design procedure for client preparatory to legal proceedings against the manufacturer for improper application of the process.

- Treatability studies for pharmaceutical, aerosol packaging, oil refining, pulp and paper mill, organic chemical plants, pulp and paper mill, metal finishing, and many others which included flow measurement and sampling, data collection and analysis, evaluation, development of design parameters, cost estimates, and preparation of an engineering report with the conclusions and recommendations as determined by the study.

- Performed a treatability study for an oil refinery to develop the necessary wastewater treatment facilities to comply with its NPDES permit. The process design included API separators, pressure filters, equalization tanks, activated sludge system, clarification, chemical addition and mixing systems, effluent polishing pond, and discharge monitoring systems.

## EDUCATION

M.S. - Civil Engineering - Sanitary Engineering
University of Missouri at Rolla, 1973

B.S. - Civil Engineering - Sanitary Engineering
University of Missouri at Rolla, 1969

## REGISTRATION

Registered in the States of Illinois and Wisconsin as a Professional Engineer.

## PUBLICATIONS

**Have you checked the Equitability of your User Charge Rates Lately,** WPCF Conference and Journal, American City and County Public Works, 1981, Co-Author.

Mr. Reinhard's responsibilities as Senior Project Geologist with HERITAGE include managing hazardous waste projects, contaminated site cleanups, soil borings, groundwater monitoring well installations, and sampling/analysis projects. Other responsibilities include groundwater recovery/treatment system designs, groundwater modelling, and underground storage tank removal/site remediation projects including the evaluation, design and implementation of alternative remedial technologies such as bioremediation and soil vapor extraction systems.

## HERITAGE PROJECT EXPERIENCE

- Hydrogeologic and chemical data evaluation for RI/FS project at a site contaminated by chlorinated solvent releases. The work included evaluation of slug test data, and groundwater modelling using a "Random-Walk" Solute Transport Model to determine the most effective extraction well placement for incorporation into the Feasibility Study.

- Conducted several subsurface investigations including groundwater characterization at several sites for a major oil company. Oversight of remediation at the sites, and evaluation and design of an in-situ soil vapor extraction system at an active service station.

- Performed a treatability study to evaluate the feasibility of washing a diesel fuel contaminated self-contained underground storage tank backfill with an emulsifier and subsequent ultrafiltration. This method proved unfeasible, therefore a bioremediation approach was evaluated and implemented to remediate the contaminated backfill.

- Numerous subsurface investigations for hydrocarbon contamination and industrial site assessments, and evaluation of alternative remedial technologies at numerous sites, including groundwater controls for SVE and bioremediation systems.

- Participated in the design of in-situ soil vapor extraction systems at several petroleum and solvent contaminated sites.

- Performed several environmental property transfer assessments at industrial, residential and commercial properties.

- Managed and supervised technical and remediation efforts at numerous LUST sites in Illinois, Indiana, and Missouri.

## PRIOR EXPERIENCE

**Project Manager/Geologist, DISC International, Memphis, Tennessee, December 1987 - December 1988, Little Rock, Arkansas, November 1986 - December 1987.**

As a project manager with DISC, Mr. Reinhard was responsible for preparation of site assessment and pre-purchase audit reports, remediation plans, and geotechnical engineering reports. He was also responsible for the management of geotechnical investigations, underground storage tank assessments for hydrocarbon contamination, storage tank removal/remediation projects, monitoring well installations, and property audits. Examples of projects he has managed or worked on include:

- Numerous subsurface investigations for hydrocarbon contamination at underground storage tank facilities throughout Arkansas, Tennessee, Georgia and Alabama, and preparation of Environmental Assessment Plans and Remedial Action Plans for contaminated sites.

- Tank removal projects including excavation, treatment, and disposal of associated contaminated soils and groundwater.

- Emergency Response to a jet fuel spill which included containment and removal of floating product on a public lake. Assisted with the investigation to determine extent of subsurface contamination in a karst area, the design and construction of an interceptor trench to stop the flow of fuel prior to exfiltration into the lake, and design, permitting, installation, operation and monitoring of an associated pump/treatment system.

- Design work for a RCRA Lagoon closure including a sludge solidification mix design for a hygroscopic sludge, exploration for various capping materials and determination of soil additives to meet RCRA closure permeability requirements and specified strength characteristics.

- Design work for a RCRA Hazardous Waste Treatment, Storage and Disposal facility's landfill including leachate collection and detection system design, preliminary liner compatibility studies, and closure plan, as well as preparation of associated sections of the RCRA Part B Permit Application.

- Numerous geotechnical investigations and report preparations for housing complexes, commercial and industrial facilities, schools, restaurants, and service stations.

- Site manager for the installation of monitoring wells at an EPA Region IV -REM III Site in Tennessee, responsible for all decontamination, drilling, sampling, and well installation procedures.

- Site inspections, research and reports for environmental pre-purchase audits of agricultural, industrial, commercial, office, and residential type properties.

**Geologist, Southwestern Laboratories, Inc., Shreveport, Louisiana, August 1985 - October 1986**

As a geologist with SWL, Mr. Reinhard worked as a field geologist on drilling projects with the Geotechnical Engineering Division, and as a construction materials technician with the Construction Materials Testing Division. He performed various tests on soils and construction materials according to ASTM, ACI and other industry standards. His duties included:

- Soil classification and characterization by field and laboratory methods including Atterberg limits, sieve analyses, hydrometer analyses, proctor, CBR, unconfined compression, in-place density, and permeability tests.

- Designed concrete mixes for various projects.

- Inspection of clay liners for power plant lagoons and settling ponds, using nuclear density methods and field permeability testing.

- Field soils inspection on large earth moving projects.

- Preparation of soil profiles for slope stability analyses.

## EDUCATION

B.S. Geology and Geophysics, University of Missouri-Rolla, 1983

## REGISTRATION

Registered Professional Geologist, State of Arkansas.
Certified Professional Geologist, No. 1561, 1990

As a Project Geologist with the HERITAGE group, Mr. Crandell is responsible for managing groundwater investigation studies, environmental site audits, and hazardous waste projects. These projects include RCRA compliance and enforcement negotiations, contaminated site assessment and remediation, soil sampling, classification and analysis, monitoring well design, installation, and closure.

## HERITAGE PROJECT EXPERIENCE

- The performance of a hydrogeologic study for a UST/LUST area to determine the feasibility of a previously installed soil vapor extraction system to reach the required remedial objectives as set by the regulating agency.
- The design and construction of a calibration stand-pipe utilized to calibrate physical slugs and data loggers for hydrogeologic investigations.
- Geotechnical support in a feasibility study for the Illinois Department of Transportation (IDOT) concerning the disposal of special-waste soils derived from IDOT/LUST sites at a local area landfill.
- Design and supervision of monitoring well installation, groundwater sampling and monitoring well closure plans for industries located in Illinois, Indiana, Michigan and Missouri.
- Supervision of subsurface soil investigations for a major oil company conducted prior to the scheduled upgrading of existing underground storage tank sites.
- Supervision of Phase I and II environmental site audits.
- Geotechnical support and supervision of soil sampling plans for RCRA facility closures.

## PRIOR EXPERIENCE

**Field Geologist, Maecorp, Inc., Chicago, Illinois, October 1988 - May 1989**

Prior to joining Heritage Remediation/Engineering, Inc., Mr. Crandell was employed as a field geologist for the Chicago Division of Maecorp Inc.

Mr. Crandell's accomplishments include the following:

- Passed the State of Illinois Water Well Contractors examination.

- Performed the field work for Maecorp's underground storage tank integrity testing program.

- Performed the field operations for soil-gas sampling projects including evaluation of analytical results and contaminate plume boundaries.

- Participated as the on-site geologist for drilling operations. Responsibilities included logging of collected soil samples, sample packaging for laboratory analysis, monitoring well installation and development, groundwater sampling, and evaluation of collected geologic, hydrologic and laboratory analytical data.

- Responsible for project drafting requirements including site plan-views, geologic cross-sections, isopack maps and two-dimensional contaminate-plume geometries.

**Laboratory Technician, Maecorp, Inc., Grand Rapids, Michigan, September 1987 - October 1988**

- Received certification as a hazardous waste and asbestos abatement technician.

- Received training in hazardous waste sampling protocol including chain-of-custody documentation and transportation manifesting.

- Performed wet-chemical testing of solid wastes to determine hazardous characteristics and storage compatibility including labpacking of these materials where required.

- Received certification as a Petrotite technician and conducted underground storage tank integrity testing for UST monitoring compliance and RCRA facility closures.

- Worked on numerous CERCLA Projects in U.S.E.P.A. Region 5.

## EDUCATION

B.S. - Dual Major in Geology and Chemistry, Grand Valley State University, 1987.

## SEMINARS

Field Methods in Hydrology, Ohio University, 1987.

40 hrs. NOSHA Hazardous Waste Worker Training, 1987.

40 hrs. AHERA Asbestos Abatement Worker Training, 1988.

Petrotite UST Testing Technician Training, 1988.

RCRA Review Course for Hazardous Waste Managers, 1989.

Monitoring for the Groundwater Specialist, NWWA, 1989.

## PROFESSIONAL SOCIETY MEMBERSHIP AND REGISTRATION

National Water Well Association (NWWA)
Member AGWSE Division

Illinois Water Well Association (IWWA)
Licensed Water Well Contractor

Mr. Wilkins responsibilities as Project Scientist with HERITAGE include managing various environmental projects including; performing environmental property transfer assessments, providing regulatory compliance oversight, RCRA permitting assistance activities, oversight of soil boring and groundwater monitoring well installation, and contaminated media sampling projects. Other responsibilities include air dispersion modelling, and underground storage tank removal/site remediation projects including the evaluation, design and implementation of remedial alternatives.

## HERITAGE PROJECT EXPERIENCE

- Provided RCRA Part B permitting assistance to a major Department of Defense ordnance manufacturer. Permittee had submitted Part B permit applications for hazardous waste storage and treatment facilities located in separate portions of their complex. Efforts included data collection, preliminary air dispersion modelling, and Part B permit revisions to address Environmental Protection Agency comments.

- Conducted subsurface investigations including soil borings and groundwater characterization at several underground storage tank sites. Oversight of remediation at the sites, and design of a groundwater extraction and treatment system at an active service station.

- Performed numerous environmental property transfer assessments for a variety of sites, including; industrial manufacturing facilities, an oil blending facility, a salvage facility, and vacant parcels.

- Participated in emergency response and facility decontamination operations as a field supervisor at the site of an explosion and fire at a facility which manufactured chemical coatings. Activities during this assignment included drum sampling & overpacking, labpacking, manifesting/labelling of hazardous waste drums, bulk, and labpack shipments.

## PRIOR EXPERIENCE

**Staff Engineering Geologist, U.S. Department of Energy, Salt Repository Project, Hereford, Texas, August 1987 - July 1988**

As the staff engineering geologist with the Salt Repository Project, Regulatory Compliance Division, Mr. Wilkins provided management and oversight of various activities being conducted in preparation for the characterization of the Permian Basin salt formations in the Texas panhandle to determine suitability for the construction of a repository for the isolation of high-level radioactive waste in the form of spent fuel from civilian nuclear power reactors.

**General Engineer, U.S. Department of Energy, Chicago Operations Office, Argonne, Illinois, July 1988 - April 1990**

As a general engineer, Mr. Wilkins performed a variety of activities in both the Environment, Safety, and Health Division, and the Waste Management Branch of the Technology Management Division. Examples of responsibilities include;

- Participated in the development of a project charter and management plan for the certification of transuranic nuclear waste at generator sites, prior to eventual shipment to the Waste Isolation Pilot Plant (WIPP).
- Developed a guidebook on Federal Environmental regulations for the Chicago Operations Office of the U. S. Department of Energy.
- Managed regulatory aspect of radioactive mixed waste generation activities at Chicago Operations Office facilities.
- Prepared, reviewed and evaluated compliance documentation prepared under the National Environmental Policy Act (NEPA) for federal energy and research projects with the potential to impact the environment.
- Participated in the development of the Waste Management and Environmental Restoration Five Year Plan for Chicago Operations Office facilities.

## EDUCATION

Bachelor of Science, Engineering Geology, Purdue University, 1987

## SUBSEQUENT TRAINING

- Leaking Underground Storage Tank Workshop, Georgia Institute of Technology, 9/88
- Management of Hazardous Wastes, Institute for Regulatory Science, 9/88
- CERCLA Compliance With Other Laws Workshop (ARARs), U.S. Environmental Protection Agency, 3/89
- CERCLA Remedial Investigation/Feasibility Study (RI/FS) Workshop, and RCRA Land Disposal Restrictions Workshop, U.S. Department of Energy, 4/89

- Hazardous Materials Manager Training, Institute of Hazardous Materials Management, 5/89
- RCRA Closure Workshop, U.S. Department of Energy, 6/89
- Management & Oversight/Risk Tree (MORT), Accident/Incident Investigation, EG & G -Idaho, 9/89
- Hazardous Waste Site Worker Training (OSHA 1910.120), Heritage Environmental Services, Inc., 6/90
- OSHA Hazardous Waste Site Supervisor Training, Environmental Training Consultants, Inc., 4/91

## REGISTRATION & CERTIFICATION

Certified Hazardous Materials Manager (CHMM), Certification # 2811

Certified for Underground Storage Tank Removal, State of Indiana, Certification # IL-90-63

## MEMBERSHIPS

Federation of Environmental Technologists, Milwaukee, WI

Association of Groundwater Scientists and Engineers Division of the National Groundwater Association, Dublin, OH

Geological Society of America, Boulder, CO

# APPENDIX E

# ESCA INTEGRITY INSPECTION REPORT (DRUM PROCESSING UNIT)



Recycled Paper

# ESCA
CONSULTANTS, INC.

May 9, 1994

Heritage Environmental Services, Inc.
P.O. Box 337
Lemont, IL 60439

Attn: Mr. Bob Garcia, Plant Manager

Subject: Secondary Containment Assessment
Drum Processing Area
Lemont, Illinois Facility

Dear Mr. Garcia:

Per your request ESCA Consultants, Inc. (ESCA) has performed a structural inspection of the secondary containment Drum Processing Area at the subject plant in Lemont, Illinois. We have noted structural deficiencies which are shown on the exhibit in Appendix A. We have also assessed the suitability of these areas to perform their functions in accordance with applicable design standards.

Inspection

On May 6, 1994, ESCA visited the plant site and inspected the structural condition of the subject area. Following is a description of the results of this inspection:

> The area consists of a concrete slab with concrete walls on all sides. A coating is present on the floor. The east wall is concrete for 3.5' above the floor where it becomes CMU. The other three walls are 15 1/2" tall; metal siding extends up above these walls. There are garage doors with ramps on the north and south walls. A pedestrian door with stairway is also located on the north wall. At the time of our inspection, several drums were being processed in the area.
>
> The slab and walls are generally in good condition. The coating is in fair condition. In a few areas it has been damaged. There are a few tight cracks in the slab; the west wall has three vertical cracks. The floor could not be inspected under a metal equipment base (22' x 6'-4"). See the Appendix for condition sketch.

Discussion/Evaluation

The area is in good structural condition. The structural design appears to be adequate; there are no deficiencies which cause concern regarding structural integrity. However, there are deficiencies which may be questioned in regard to the ability of the area to contain releases of waste. They are:

1606 WILLOW VIEW ROAD, SUITE 2I P.O. BOX 159 URBANA, IL 61801 (217) 384-0505

1. Steel Base for Equipment

   If the depth of a spill was greater than 1", waste could flow through holes which are present in the sides of the equipment base. These holes should be sealed to eliminate this possibility. One solution would be to seal weld 1/4" plate over all of the holes.

2. Cracks in Floor and West Wall

   The cracks shown on the condition sketch in Appendix A should be sealed with an acceptable sealing product.[1]

3. Protective Coating

   After repair of the floor cracks, the coating should be reapplied to effectively protect the entire slab.

Certification

Based upon our field inspections and assessments of the physical condition of the secondary containment area described herein, and contingent upon sealing of cracks and other remedial measures as necessary, we certify that the structural integrity of these areas complies with all applicable design standards.

STATE OF ILLINOIS
RICHARD D. PAYNE
No. 4647
LICENSED STRUCTURAL ENGINEER

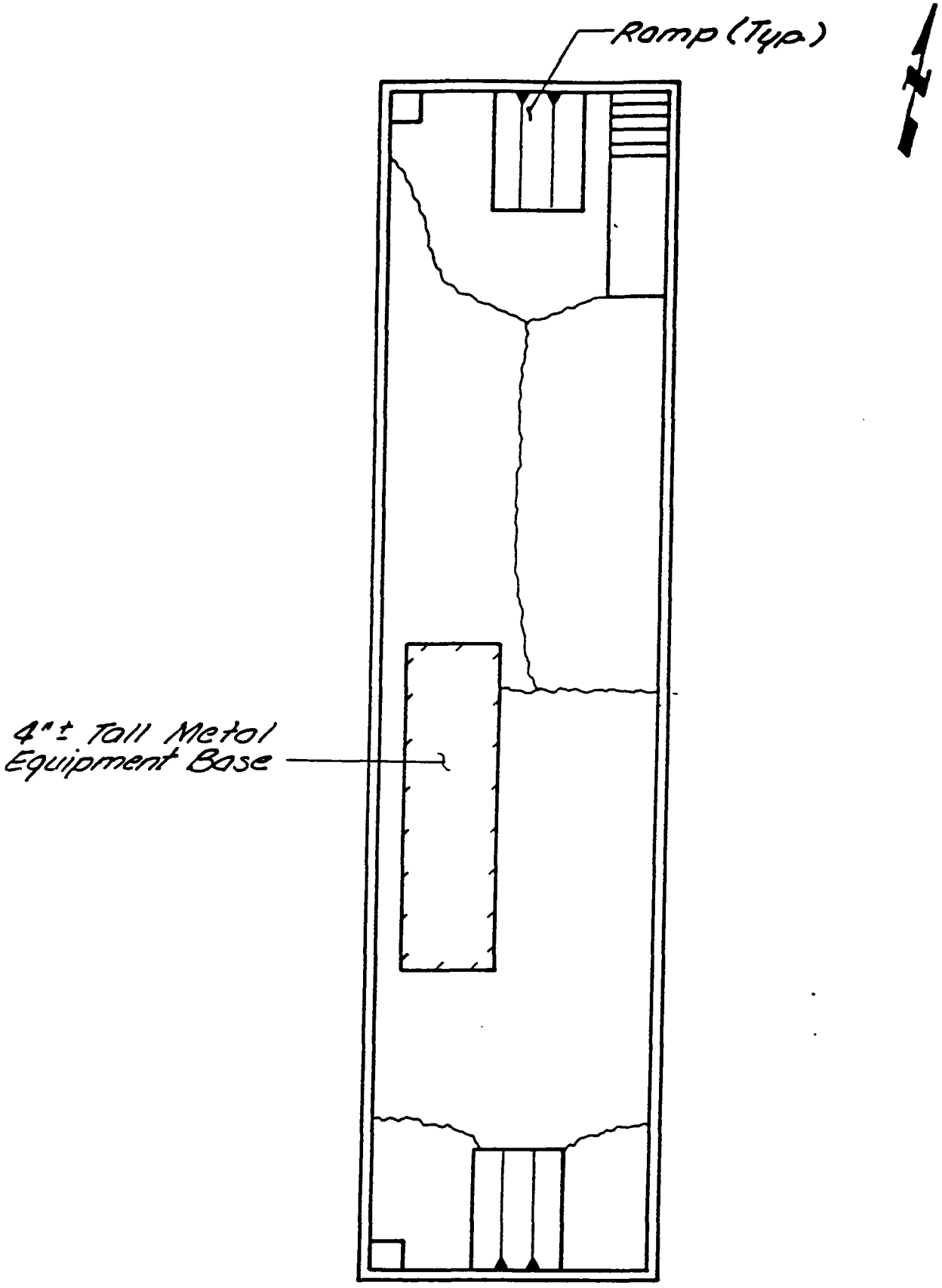
Sincerely,
ESCA CONSULTANTS, INC.

Richard D. Payne, P.E., S.E.
President

RDP/ejm

Attachments

[1]One acceptable material is Sikadur 35, Hi-Mod LV by SIKA Corp.




DRUM PROCESSING AREA

SCALE: 1" = 10'

# APPENDIX F

# CHAIN-OF-CUSTODY DOCUMENTATION



Recycled Paper

# HERITAGE LABO TORIES, INC.

1319 MARQUETTE DRIVE • ROMEOVILLE, IL 60441
(708) 378-1600

NO. 4970

## CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Co. Name: HRS Job No. 6702

Project Name: HES RCRA Facility Investigation

Quote No.: 7118436-37 PO No.: 4860-02328

ENVIRONMENTAL PROGRAM:

CWA NPDES_____ IWP _____ SLUDGE_____

RCRA MW_____ SW X DISPOSAL_____

SDWA_____ CERCLA/SUPERFUND_____ OTHER RFI

Sampled by: Ken [illegible]

Analyses Requested: (Note special detection limits or methods)

Report To:
Co: HTC
Add: Invoice HTC Attn: Bob [illegible]

Attn:
Phone:

Accelerated Turnaround Requested _____ (Subject to Additional Charge)

Result Request by: ___/___/___ Mo Day Yr (Date must be Accepted and Approved by Lab.)

| Sample ID: | Date: | Time: | Comp | Grab | Sample Description: | Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other | No. of Containers | Volatiles | Semi-Volatiles | TCLP metals | | | | | | | Remarks: | EMS Sample No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5/19/94 | 1315 | | X | SD-1 | S | 3 | X | X | X | | | | | | | D[illegible] | C156812 |
| | | 1315 | | X | SD-1 D | S | 3 | X | X | X | | | | | | | Dup | C156813 |
| | | 1315 | | X | SD-1 R | S | 2 | X | X | | | | | | | | [illegible] Dup. | C156814 |
| | | 1410 | | X | SD-2 | S | 3 | X | X | X | | | | | | | | C156815 |
| | | 1510 | | X | SD-5 | S | 3 | X | X | X | | | | | | | | C156816 |

| Relinquished by: (Signature) | Date /Time | Received by: (Signature) | Relinquished by: (Signature) | Date /Time | Received by: (Signature) |
|---|---|---|---|---|---|
| Ken [illegible] | 5/19/94 1615 | | | / | |
| Relinquished by: (Signature) | Date /Time | Received by: (Signature) | Relinquished by: (Signature) | Date /Time | Received by: (Signature) |
| | / | | | / | |
| Relinquished by: (Signature) | Date /Time | Received for Lab by: (Signature) | Remarks: | | |
| | 5/19/94 | Kathy [illegible] | | | |

Distribution: Original and Yellow copy accompany sample shipment to laboratory; Pink copy retained by client.

# HERITAGE LABORATORIES, INC.

1319 MARQUETTE DRIVE • ROMEOVILLE, IL 60441
(708) 378-1600

NO. 4269

## CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Co. Name: HR/E Job No. 6702
Project Name: HES RCRA Facility Investigation
Quote No.: Z118436 PO No.: 4860-02328

ENVIRONMENTAL PROGRAM:
CWA NPDES_____ IWP_____ SLUDGE_____
RCRA MW_____ SW X DISPOSAL_____
SDWA_____ CERCLA/SUPERFUND_____ OTHER RFI

Sampled by: Kevin Crandell

Analyses Requested: (Note special detection limits or methods)

Report To:
Co: HTC
Add: Invoice HTC
Attn. Bob Garcia
Attn:
Phone:

Accelerated Turnaround Requested _____ (Subject to Additional Charge)

Result Request by: ___/___/___ Mo Day Yr (Date must be Accepted and Approved by Lab.)

| Sample ID: | Date: | Time: | Comp | Grab | Sample Description: | Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other | No. of Containers | VOC | SVOC | TCLP Metals | | | | | | | | Remarks: | EMS Sample No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5-18-94 | | | X | SB-20 (see remarks) | Soil | 0 | | | | | | | | | | | Outdoor Container Storage | RFI |
| | 5-18-94 | 0905 | | X | SB-21 | Soil | 3 | ✓ | ✓ | ✓ | | | | | | | | " " " 0.9-1.1 ft | C15676 5 |
| | 5-18-94 | 1100 | | X | SB-22 | Soil | 3 | ✓ | ✓ | ✓ | | | | | | | | " " " 1.0-1.1 ft | C15676 6 |
| | 5-18-94 | 1150 | | X | SB-23 | Soil | 3 | ✓ | ✓ | ✓ | | | | | | | | " " " 0.85-0.93 ft | C15676 7 |
| | 5-18-94 | 1220 | | X | SB-24 | Soil | 3 | ✓ | ✓ | ✓ | | | | | | | | " " " 0.85-0.91 ft | C15676 8 |
| | 5-18-94 | 1225 | | X | SB-24 D | Soil | 3 | ✓ | ✓ | ✓ | | | | | | | | " " " 0.85-0.91 ft | C15676 9 |

| Relinquished by: (Signature) | Date /Time | Received by: (Signature) | Relinquished by: (Signature) | Date /Time | Received by: (Signature) |
|---|---|---|---|---|---|
| Kevin Crandell | 1805 / 5/18/94 | | | / | |
| Relinquished by: (Signature) | Date /Time | Received by: (Signature) | Relinquished by: (Signature) | Date /Time | Received by: (Signature) |
| | / | | | / | |
| Relinquished by: (Signature) | Date /Time 5:00 5/19/94 | Received for Lab by: (Signature) Kathy Young | Remarks: Bedrock encountered below concrete pad @ SB-20, No sample could be collected. | | |

Distribution: Original and Yellow copy accompany sample shipment to laboratory; Pink copy retained by client.

# HERITAGE LABORATORIES, INC.

1319 MARQUETTE DRIVE • ROMEOVILLE, IL 60441
(708) 378-1600

NO. 5058

## CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Co. Name: HR/E Job No. 6702

Project Name: HES RCRA Facility Investigation

Quote No.: 211843 PO No.: 4860-02328

ENVIRONMENTAL PROGRAM:

CWA NPDES_____ IWP_____ SLUDGE_____

RCRA MW_____ SW X DISPOSAL_____

SDWA_____ CERCLA/SUPERFUND_____ OTHER RFI

Sampled by: Ken J Rea

Analyses Requested: (Note special detection limits or methods)

Report To:
Co: HTC
Add: Invoice HTC. Attn: Bob Garcia

Attn:
Phone:

Accelerated Turnaround Requested _____
(Subject to Additional Charge)

Result Request by: ___/___/___ (Mo Day Yr)
(Date must be Accepted and Approved by Lab.)

| Sample ID: | Date: | Time: | Comp | Grab | Sample Description: | Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other | No. of Containers | Volatiles | Semi-volatiles | TCLP metals | | | | | | | Remarks: | EMS Sample No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5/17/94 | 820 | | X | SB-10 | S | 2 | X | X | | | | | | | | Background 0-5" | C156710 |
| | | 930 | | X | SB-11 | S | 3 | X | X | X | | | | | | | old aerosol unit 0.05'-0.55' | C156711 |
| | | 1015 | | X | SB-12 | S | 3 | X | X | X | | | | | | | old aerosol unit 0.4'-0.5' | C156712 |
| | | 1105 | | X | SB-13 | S | 3 | X | X | X | | | | | | | Barge cleaning area 0-4" | C156713 |
| | | 1140 | | X | SB-14 | S | 3 | X | X | X | | | | | | | van trailer storage 0.35'-1.2' | C156714 |
| | | 1310 | | X | SB-15 | S | 3 | X | X | X | | | | | | | " " " 0.6'-1.1' | C156715 |
| | | 1335 | | X | SB-16 | S | 3 | X | X | X | | | | | | | " " " 0.4'-1.0' | C156716 |
| | | 1420 | | X | SB-17 | S | 3 | X | X | X | | | | | | | " " " 0.4'-1.1' | C156717 |
| | | 1445 | | X | SB-18 | S | 3 | X | X | X | | | | | | | " " " 0.35'-0.8' | C156718 |
| | | 1510 | | X | SB-19 | S | 3 | X | X | X | | | | | | | " " " 0.3'-0.7' | C156719 |

| Relinquished by: (Signature) | Date /Time | Received by: (Signature) | Relinquished by: (Signature) | Date /Time | Received by: (Signature) |
|---|---|---|---|---|---|
| Ken J Rea | 5/17/94 1640 | | | / | |
| Relinquished by: (Signature) | Date /Time | Received by: (Signature) | Relinquished by: (Signature) | Date /Time | Received by: (Signature) |
| | / | | | / | |
| Relinquished by: (Signature) | Date /Time | Received for Lab by: (Signature) | Remarks: | | |
| | 5/17/94 | Kathy Young | | | |

Distribution: Original and Yellow copy accompany sample shipment to laboratory; Pink copy retained by client.

# HERITAGE LABO ORIES, INC.

1319 MARQUETTE DRIVE • ROMEOVILLE, IL 60441
(708) 378-1600

NO. 5057

## CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Co. Name: HRS Job No. 6702
Project Name: HES RCRA Facility Investigation
Quote No.: Z118436 PO No.: 4860-02328

ENVIRONMENTAL PROGRAM:
CWA NPDES_____ IWP _____ SLUDGE_____
RCRA MW_____ SW X DISPOSAL_____
SDWA_____ CERCLA/SUPERFUND_____ OTHER RFI

Sampled by: Kevin J Reinhard

Analyses Requested: (Note special detection limits or methods)

Report To:
Co: HTC
Add: Invoice HTC Attn: Bob Garcia
Attn:
Phone:
Accelerated Turnaround Requested _____ (Subject to Additional Charge)
Result Request by: ___/___/___ Mo Day Yr (Date must be Accepted and Approved by Lab.)

| Sample ID: | Date: | Time: | Comp | Grab | Sample Description: | Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other | No. of Containers | Volatiles | Semi-volatiles | Remarks: | EMS Sample No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5/6/94 | 1250 | | X | SB-1 | S | 2 | X | X | Background 4'-15" | C156680 |
| | | 1325 | | X | SB-2 | S | 2 | X | X | 2"-8" | C156681 |
| | | 1355 | | X | SB-3 | S | 2 | X | X | 2"-14" | C156682 |
| | | 1445 | | X | SB-4 | S | 2 | X | X | 0-6" | C156683 |
| | | 1500 | | X | SB-5 | S | 2 | X | X | 0-6" | C156684 |
| | | 1540 | | X | SB-6 | S | 2 | X | X | 0-5" | C156685 |
| | | 1555 | | X | SB-7 | S | 2 | X | X | 0-6" | C156686 |
| | | 1555 | | X | SB-7D | S | 2 | X | X | 0-6" | C156687 |
| | | 1615 | | X | SB-8 | S | 2 | X | X | 0-6" | C156688 |
| | | 1630 | | X | SB-9 | S | 2 | X | X | 0-5" | C156689 |

| Relinquished by: (Signature) | Date /Time | Received by: (Signature) | Relinquished by: (Signature) | Date /Time | Received by: (Signature) |
|---|---|---|---|---|---|
| Kevin J Reinhard | 5/6/94 / 1755 | | | / | |
| Relinquished by: (Signature) | Date /Time | Received by: (Signature) | Relinquished by: (Signature) | Date /Time | Received by: (Signature) |
| | / | | | / | |
| Relinquished by: (Signature) | Date /Time | Received for Lab by: (Signature) | Remarks: | | |
| | / | [illegible] | | | |

Distribution: Original and Yellow copy accompany sample shipment to laboratory;

# HERITAGE LAB( TORIES, INC.

1319 MARQUETTE DRIVE • ROMEOVILLE, IL 60441
(708) 378-1600

NO. 5062

## CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Co. Name: HR/E Job No. 6702
Project Name: HES RCRA Facility Investigation
Quote No.: ~~Z118436~~ Key PO No.: 4860-02328
ENVIRONMENTAL PROGRAM: Z121138
CWA NPDES____ IWP ____ SLUDGE____
RCRA MW____ SW X DISPOSAL____
SDWA____ CERCLA/SUPERFUND____ OTHER RFI
Sampled by: Kevin Crandell

Analyses Requested: (Note special detection limits or methods)

Report To:
Co: HTC
Add: Invoice HTC: Attn Bob Garcia
Attn:
Phone:
Accelerated Turnaround Requested ____ (Subject to Additional Charge)
Result Request by: ___ / ___ / ___ (Mo Day Yr)
(Date must be Accepted and Approved by Lab.)

| Sample ID: | Date: | Time: | Comp | Grab | Sample Description: | Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other | No. of Containers | VOC | SVOC | ~~TCLP~~ METALS | | | | | | | | Remarks: | EMS Sample No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WW-1 | 5/20/94 | 1425 | | X | Drum Processing Area | WW | 6 | ✓ | ✓ | ✓ | | | | | | | | Shallow | C156876 |
| WW-2 | 5/20/94 | 1410 | | X | Drum Processing Area | WW | 6 | ✓ | ✓ | ✓ | | | | | | | | Deep | C156877 |
| | 5/20/94 | 1030 | | X | Decon/Curing Water | WW | 6 | ✓ | ✓ | ✓ | | | | | | | | | C156878 |
| GW-1 | 5/20/94 | 0950 | | X | @ SB-29 Groundwater | GW | 3 | ✓ | ✓ | | | | | | | | | @ 2.5 ft. bgs. | C156879 |
| TB | 5/20/94 | 1700 | | X | Trip Blank | other | 1 | ✓ | | | | | | | | | | 5-20-94 | C156880 |

| Relinquished by: (Signature) | Date /Time | Received by: (Signature) | Relinquished by: (Sign | Signature) |
|---|---|---|---|---|
| Kevin Crandell | 5-23-94 / 0915 | | | |
| Relinquished by: (Signature) | Date /Time | Received by: (Signature) | Relinquished by: (Sign | Signature) |
| | / | | | |
| Relinquished by: (Signature) | Date /Time | Received for Lab by: (Signature) | Remarks: | |
| | 5/23/94 | Kathy Young | | |

Distribution: Original and Yellow copy accompany sample shipment to laboratory; Pink copy retained by client.

Kevin:
C of C's for last of Sample Submittals from HTC.
KTC.
5-25-94

# HERITAGE LABORATORIES, INC.

1319 MARQUETTE DRIVE • HOMEOVILLE, IL 60441
(708) 378-1600

NO. 5064

## CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Co. Name: HR/E Job No 6702
Project Name: HES RCRA Facility Investigation
Quote No.: ~~Z118436~~ Y
PO No.: 4860-02328
ENVIRONMENTAL PROGRAM: Z121138
CWA NPDES____ IWP ____ SLUDGE____
RCRA MW____ SW X DISPOSAL____
SDWA____ CERCLA/SUPERFUND____ OTHER RFI
Sampled by: Kevin Crandell

Analyses Requested: (Note special detection limits or methods)

Report To:
Co: HTC
Add: Invoice HTC c Bob GARCIA
Attn:
Phone:
Accelerated Turnaround Requested ____ (Subject to Additional Charge)
Result Request by: ___ / ___ / ___ Mo Day Yr
(Date must be Accepted and Approved by Lab.)

| Sample ID: | Date: | Time: | Comp | Grab | Sample Description: | Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other | No. of Containers | VOC | SVOC | ~~TOLL~~ METALS (KTA) | | | | | | | Remarks: | EMS Sample No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WW-3 | 5-20-94 | 1540 | | X | Container Storage / Processing | WW | 6 | ✓ | ✓ | ✓ | | | | | | | Deep | C156881 |
| WW-4 | 5-20-94 | 1630 | | X | Container Storage / Processing | WW | 6 | ✓ | ✓ | ✓ | | | | | | | Shallow | C156882 |

| Relinquished by: (Signature) | Date /Time | Received by: (Signature) | Relinquished by: (Signature) | Date /Time | Received by: (Signature) |
|---|---|---|---|---|---|
| Kevin Crandell | 5-23-94 0915 | | | / | |
| Relinquished by: (Signature) | Date /Time | Received by: (Signature) | Relinquished by: (Signature) | Date /Time | Received by: (Signature) |
| | / | | | / | |
| Relinquished by: (Signature) | Date /Time | Received for Lab by: (Signature) | Remarks: | | |
| | 5/23/94 | Kathy Young | | | |

Distribution: Original and Yellow copy accompany sample shipment to laboratory; Pink copy retained by client.

# APPENDIX G

# CERTIFICATES OF ANALYSIS



Recycled Paper

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| IERITAGE LABORATORIES, INC.<br>319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156680 |
| | Complete | PO Number | |
| | 03-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 08-JUN-94 | 16-MAY-94 12:50 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-1 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP  Analysis Date: 18-MAY-94 15:41  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 84 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| ACRYLONITRILE | BDL | 70 | ug/kg |
| ENZENE | BDL | 5 | ug/kg |
| OMODICHLOROMETHANE | BDL | 5 | ug/kg |
| ROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 11 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| TETRACHLOROETHENE | BDL | 5 | ug/kg |
| TRAHYDROFURAN | BDL | 25 | ug/kg |
| OLUENE | 7 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,1,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| ICHLOROETHENE | 9 | 5 | ug/kg |
| NYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | BDL | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 104 | | % Rec |
| TOLUENE-D8 | 101 | | % Rec |
| 4-BROMOFLUOROBENZENE | 107 | | % Rec |

*1:1 DILUTION.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 17-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.41 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 18-MAY-94 17:09 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 330 | ug/kg |
| ACENAPHTHYLENE | BDL | 330 | ug/kg |
| NTHRACENE | BDL | 330 | ug/kg |
| NZ(A)ANTHRACENE | BDL | 330 | ug/kg |
| NZO(A)PYRENE | BDL | 330 | ug/kg |
| BENZO(B)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 330 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZYL ALCOHOL | BDL | 330 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 330 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 330 | ug/kg |
| CARBAZOLE | BDL | 330 | ug/kg |
| 4-CHLOROANILINE | BDL | 330 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 330 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 330 | ug/kg |
| CHRYSENE | BDL | 330 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 330 | ug/kg |
| DIBENZOFURAN | BDL | 330 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 660 | ug/kg |
| DIETHYLPHTHALATE | BDL | 330 | ug/kg |
| DIMETHYLPHTHALATE | BDL | 330 | ug/kg |
| -N-BUTYLPHTHALATE | BDL | 330 | ug/kg |
| NITROBENZENES | BDL | 1700 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 330 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 330 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 330 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LUORANTHENE | BDL | 330 | ug/kg |
| UORENE | BDL | 330 | ug/kg |
| XACHLOROBENZENE | BDL | 330 | ug/kg |
| EXACHLOROBUTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROETHANE | BDL | 330 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 330 | ug/kg |
| ISOPHORONE | BDL | 330 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 330 | ug/kg |
| NAPHTHALENE | BDL | 330 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 1700 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 1700 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 1700 | ug/kg |
| NITROBENZENE | BDL | 330 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 330 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 330 | ug/kg |
| PHENANTHRENE | BDL | 330 | ug/kg |
| 2-PICOLINE | BDL | 1700 | ug/kg |
| PYRENE | BDL | 330 | ug/kg |
| PYRIDINE | BDL | 1700 | ug/kg |
| TOLUENEDIAMINE | BDL | 1700 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 330 | ug/kg |
| BENZOIC ACID | BDL | 1700 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 330 | ug/kg |
| 2-CHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4-DICHLOROPHENOL | BDL | 330 | ug/kg |
| ,4-DIMETHYLPHENOL | BDL | 330 | ug/kg |
| 6-DINITRO-O-CRESOL | BDL | 1700 | ug/kg |
| ,4-DINITROPHENOL | BDL | 1700 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 330 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 330 | ug/kg |
| 2-NITROPHENOL | BDL | 330 | ug/kg |
| 4-NITROPHENOL | BDL | 1700 | ug/kg |
| PENTACHLOROPHENOL | BDL | 1700 | ug/kg |
| PHENOL | BDL | 330 | ug/kg |
| TETRACHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| --- | | | |
| ALSO DETECTED | | | |
| 2,4-HEXADIENAL | * 1400 RT=2.28 | | ug/kg |
| 3-PENTEN-2-ONE | * 1600 RT=2.67 | | ug/kg |
| UNKNOWN | * 2600 RT=3.64 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 4600 RT=4.89 | | ug/kg |
| UNKNOWN | * 3000 RT=6.85 | | ug/kg |
| UNKNOWN | * 1200 RT=7.16 | | ug/kg |
| UNKNOWN | * 2600 RT=8.48 | | ug/kg |
| UNKNOWN | * 890 RT=8.73 | | ug/kg |
| UNKNOWN | * 2200 RT=9.88 | | ug/kg |
| UNKNOWN | * 1800 RT=10.49 | | ug/kg |
| UNKNOWN | * 2800 RT=10.9 | | ug/kg |
| UNKNOWN | 1300 RT=11.06 | | ug/kg |
| KNOWN | 1300 RT=11.9 | | ug/kg |
| KNOWN | * 920 RT=12.01 | | ug/kg |
| JNKNOWN | * 4000 RT=12.96 | | ug/kg |
| UNKNOWN | 890 RT=13.66 | | ug/kg |
| 2,5-DIHYDRO-2,2,4-TRIMETHYL-FURAN | * 1100 RT=15.27 | | ug/kg |

HERITAGE LABORATORIES, INC. Lab Sample ID: C156680

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NKNOWN | * 1200 RT=16.77 | | ug/kg |
| KNOWN | 760 RT=17.29 | | ug/kg |
| XAMETHYL-TETRACOSAHEXAENE | EST 2000 RT=28.97 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 66 | | % Rec |
| PHENOL-D5 | 85 | | % Rec |
| NITROBENZENE-D5 | 67 | | % Rec |
| 2-FLUOROBIPHENYL | 116 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 101 | | % Rec |
| TERPHENYL-D14 | 96 | | % Rec |

*1:1 DILUTION.*
** Compound also detected in blank*
*All extra compounds concentration values are estimated.*

Sample Comments

| | |
|---|---|
| * | *See Note for Parameter* |
| *BDL* | *Below Detection Limit* |
| *EST* | *Estimated Value* |
| *RT* | *Retention Time* |

*Sample chain of custody number 5057.*

*This Certificate shall not be reproduced, except in full, ithout the written approval of the lab.*

Quality Assurance Officer: GA Busch

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| HERITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156681 |
| | Complete | PO Number | |
| | 03-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 07-JUL-94 | 16-MAY-94 13:25 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-2 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP  Analysis Date: 18-MAY-94 16:25  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 180 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| ACRYLONITRILE | BDL | 70 | ug/kg |
| ENZENE | BDL | 5 | ug/kg |
| ROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| ROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 12 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| TETRACHLOROETHENE | BDL | 5 | ug/kg |
| ETRAHYDROFURAN | BDL | 25 | ug/kg |
| OLUENE | EST 4 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| l,1,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| RICHLOROETHENE | 6 | 5 | ug/kg |
| INYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | BDL | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| ---------- | | | |
| DICHLOROETHANE-D4 | 103 | | % Rec |
| TOLUENE-D8 | 110 | | % Rec |
| 4-BROMOFLUOROBENZENE | 110 | | % Rec |

*1:1 DILUTION.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 18-MAY-94 Test: PZ36.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.08 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 18-MAY-94 17:59 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 330 | ug/kg |
| ACENAPHTHYLENE | BDL | 330 | ug/kg |
| NTHRACENE | BDL | 330 | ug/kg |
| ENZ(A)ANTHRACENE | EST 250 | 330 | ug/kg |
| ENZO(A)PYRENE | 360 | 330 | ug/kg |
| BENZO(B)FLUORANTHENE | 680 | 330 | ug/kg |
| BENZO(G,H,I)PERYLENE | 490 | 330 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZYL ALCOHOL | BDL | 330 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 330 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 330 | ug/kg |
| CARBAZOLE | BDL | 330 | ug/kg |
| 4-CHLOROANILINE | BDL | 330 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 330 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 330 | ug/kg |
| CHRYSENE | 330 | 330 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 330 | ug/kg |
| DIBENZOFURAN | BDL | 330 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 660 | ug/kg |
| DIETHYLPHTHALATE | BDL | 330 | ug/kg |
| DIMETHYLPHTHALATE | BDL | 330 | ug/kg |
| I-N-BUTYLPHTHALATE | BDL | 330 | ug/kg |
| INITROBENZENES | BDL | 1700 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 330 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 330 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 330 | ug/kg |

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156681

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| FLUORANTHENE | 1000 | 330 | ug/kg |
| FLUORENE | BDL | 330 | ug/kg |
| HEXACHLOROBENZENE | BDL | 330 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROETHANE | BDL | 330 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | 400 | 330 | ug/kg |
| ISOPHORONE | BDL | 330 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 330 | ug/kg |
| NAPHTHALENE | BDL | 330 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 1700 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 1700 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 1700 | ug/kg |
| NITROBENZENE | BDL | 330 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 330 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 330 | ug/kg |
| PHENANTHRENE | 830 | 330 | ug/kg |
| 2-PICOLINE | BDL | 1700 | ug/kg |
| PYRENE | 780 | 330 | ug/kg |
| PYRIDINE | BDL | 1700 | ug/kg |
| TOLUENEDIAMINE | BDL | 1700 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 330 | ug/kg |
| BENZOIC ACID | BDL | 1700 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 330 | ug/kg |
| 2-CHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4-DICHLOROPHENOL | BDL | 330 | ug/kg |
| ,4-DIMETHYLPHENOL | BDL | 330 | ug/kg |
| ,6-DINITRO-O-CRESOL | BDL | 1700 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 1700 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 330 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 330 | ug/kg |
| 2-NITROPHENOL | BDL | 330 | ug/kg |
| 4-NITROPHENOL | BDL | 1700 | ug/kg |
| PENTACHLOROPHENOL | BDL | 1700 | ug/kg |
| PHENOL | BDL | 330 | ug/kg |
| TETRACHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| ... | | | |
| ALSO DETECTED | | | |
| 2,4-HEXADIENAL | * 1500 RT=2.26 | | ug/kg |
| 3-PENTEN-2-ONE | * 1500 RT=2.64 | | ug/kg |
| UNKNOWN | * 2900 RT=3.61 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 5000 RT=4.9 | | ug/kg |
| UNKNOWN | * 3100 RT=6.85 | | ug/kg |
| UNKNOWN | * 1700 RT=7.19 | | ug/kg |
| UNKNOWN | * 6300 RT=8.02 | | ug/kg |
| UNKNOWN | * 2500 RT=8.48 | | ug/kg |
| UNKNOWN | * 990 RT=8.58 | | ug/kg |
| UNKNOWN | * 1600 RT=8.73 | | ug/kg |
| UNKNOWN | * 3300 RT=8.82 | | ug/kg |
| UNKNOWN | 4300 RT=8.91 | | ug/kg |
| UNKNOWN | * 2400 RT=9.88 | | ug/kg |
| UNKNOWN | * 2100 RT=10.49 | | ug/kg |
| UNKNOWN | 1200 RT=10.83 | | ug/kg |
| UNKNOWN | * 920 RT=12.03 | | ug/kg |
| UNKNOWN HYDROCARBON | * 3300 RT=12.96 | | ug/kg |

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156681

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INKNOWN | 1000 RT=13.68 | | ug/kg |
| KNOWN | * 1200 RT=15.29 | | ug/kg |
| KNOWN | * 1100 RT=16.79 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 68 | | % Rec |
| PHENOL-D5 | 89 | | % Rec |
| NITROBENZENE-D5 | 68 | | % Rec |
| 2-FLUOROBIPHENYL | 113 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 93 | | % Rec |
| TERPHENYL-D14 | 93 | | % Rec |

*1:1 DILUTION.*
**Compounds also detected in blank*
*All extra compounds concebtration values are estimated.*

Sample Comments

| | |
|---|---|
| * | *See Note for Parameter* |
| BDL | *Below Detection Limit* |
| EST | *Estimated Value* |
| RT | *Retention Time* |

*Sample chain of custody number 5057.*

*This Certificate shall not be reproduced, except in full,*
*ithout the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| ERITAGE LABORATORIES, INC.<br>319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156682 |
| | Complete | PO Number | |
| | 03-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 08-JUN-94 | 16-MAY-94 13:55 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-3 - GRAB

**VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A**

Analyst: S. SHARP  Analysis Date: 19-MAY-94 11:11  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 30 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| ACRYLONITRILE | BDL | 70 | ug/kg |
| ENZENE | EST 4 | 5 | ug/kg |
| OMODICHLOROMETHANE | BDL | 5 | ug/kg |
| ROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | 77 | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 81 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| TETRACHLOROETHENE | BDL | 5 | ug/kg |
| ETRAHYDROFURAN | BDL | 25 | ug/kg |
| OLUENE | 15 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,1,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| ICHLOROETHENE | 11 | 5 | ug/kg |
| NYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 6 | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 98 | | % Rec |
| TOLUENE-D8 | 108 | | % Rec |
| 4-BROMOFLUOROBENZENE | 98 | | % Rec |

*1:1 DILUTION.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 17-MAY-94 Test: PZ36.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.13 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 18-MAY-94 18:49 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 330 | ug/kg |
| ACENAPHTHYLENE | BDL | 330 | ug/kg |
| NTHRACENE | BDL | 330 | ug/kg |
| NZ(A)ANTHRACENE | BDL | 330 | ug/kg |
| ENZO(A)PYRENE | BDL | 330 | ug/kg |
| BENZO(B)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 330 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZYL ALCOHOL | BDL | 330 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 330 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 330 | ug/kg |
| CARBAZOLE | BDL | 330 | ug/kg |
| 4-CHLOROANILINE | BDL | 330 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 330 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 330 | ug/kg |
| CHRYSENE | BDL | 330 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 330 | ug/kg |
| DIBENZOFURAN | BDL | 330 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 660 | ug/kg |
| DIETHYLPHTHALATE | BDL | 330 | ug/kg |
| DIMETHYLPHTHALATE | BDL | 330 | ug/kg |
| I-N-BUTYLPHTHALATE | BDL | 330 | ug/kg |
| INITROBENZENES | BDL | 1700 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 330 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 330 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 330 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LUORANTHENE | BDL | 330 | ug/kg |
| UORENE | BDL | 330 | ug/kg |
| XACHLOROBENZENE | BDL | 330 | ug/kg |
| XACHLOROBUTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROETHANE | BDL | 330 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 330 | ug/kg |
| ISOPHORONE | BDL | 330 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 330 | ug/kg |
| NAPHTHALENE | BDL | 330 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 1700 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 1700 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 1700 | ug/kg |
| NITROBENZENE | BDL | 330 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 330 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 330 | ug/kg |
| PHENANTHRENE | BDL | 330 | ug/kg |
| 2-PICOLINE | BDL | 1700 | ug/kg |
| PYRENE | BDL | 330 | ug/kg |
| PYRIDINE | BDL | 1700 | ug/kg |
| TOLUENEDIAMINE | BDL | 1700 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 330 | ug/kg |
| BENZOIC ACID | BDL | 1700 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 330 | ug/kg |
| 2-CHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4-DICHLOROPHENOL | BDL | 330 | ug/kg |
| ,4-DIMETHYLPHENOL | BDL | 330 | ug/kg |
| 6-DINITRO-O-CRESOL | BDL | 1700 | ug/kg |
| ,4-DINITROPHENOL | BDL | 1700 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 330 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 330 | ug/kg |
| 2-NITROPHENOL | BDL | 330 | ug/kg |
| 4-NITROPHENOL | BDL | 1700 | ug/kg |
| PENTACHLOROPHENOL | BDL | 1700 | ug/kg |
| PHENOL | BDL | 330 | ug/kg |
| TETRACHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| ALSO DETECTED | | | |
| UNKNOWN | * 1100 RT=2.25 | | ug/kg |
| 3-PENTEN-2-ONE | * 1300 RT=2.64 | | ug/kg |
| UNKNOWN | * 2600 RT=3.63 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 4300 RT=4.9 | | ug/kg |
| UNKNOWN | 730 RT=6.23 | | ug/kg |
| UNKNOWN | * 3000 RT=6.84 | | ug/kg |
| UNKNOWN | * 920 RT=7.18 | | ug/kg |
| UNKNOWN | * 5600 RT=8.02 | | ug/kg |
| UNKNOWN | 2500 RT=8.49 | | ug/kg |
| UNKNOWN | * 960 RT=8.59 | | ug/kg |
| UNKNOWN | * 4000 RT=8.79 | | ug/kg |
| UNKNOWN | * 3300 RT=8.9 | | ug/kg |
| UNKNOWN | * 2200 RT=9.88 | | ug/kg |
| 'NKNOWN | * 2300 RT=10.49 | | ug/kg |
| IKNOWN | * 1100 RT=10.89 | | ug/kg |
| UNKNOWN HYDROCARBON | * 3200 RT=12.96 | | ug/kg |
| UNKNOWN | 990 RT=13.48 | | ug/kg |
| UNKNOWN C17 HYDROCARBON | 860 RT=13.66 | | ug/kg |

**HERITAGE LABORATORIES, INC.** **Lab Sample ID: C156682**

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,5-DIHYDRO-2,2,4-TRIMETHYL-FURAN | * 1100 RT=15.29 | | ug/kg |
| JNKNOWN | * 1100 RT=16.79 | | ug/kg |
| .. | | | |
| URROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 76 | | % Rec |
| PHENOL-D5 | 97 | | % Rec |
| NITROBENZENE-D5 | 70 | | % Rec |
| 2-FLUOROBIPHENYL | 114 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 89 | | % Rec |
| TERPHENYL-D14 | 87 | | % Rec |

*1:1 DILUTION.*
**Compounds also detected in blank*
*All extra compounds concentration values are estimated*

**Sample Comments**

| | |
|---|---|
| * | *See Note for Parameter* |
| BDL | *Below Detection Limit* |
| EST | *Estimated Value* |
| RT | *Retention Time* |

*Sample chain of custody number 5057.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: HABusch

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| HERITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156683 |
| | Complete | PO Number | |
| | 03-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 16-JUN-94 | 16-MAY-94 14:45 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-4 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP  Analysis Date: 18-MAY-94 17:54  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 23 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| ACRYLONITRILE | BDL | 70 | ug/kg |
| BENZENE | BDL | 5 | ug/kg |
| ROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| ROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 18 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| TETRACHLOROETHENE | BDL | 5 | ug/kg |
| ETRAHYDROFURAN | BDL | 25 | ug/kg |
| LUENE | 8 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| 1,1,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| TRICHLOROETHENE | 11 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | BDL | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 102 | | % Rec |
| TOLUENE-D8 | 112 | | % Rec |
| 4-BROMOFLUOROBENZENE | 74 | | % Rec |

*1:1 DILUTION.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 17-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.06 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 18-MAY-94 19:39 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 330 | ug/kg |
| ACENAPHTHYLENE | BDL | 330 | ug/kg |
| ANTHRACENE | BDL | 330 | ug/kg |
| ENZ(A)ANTHRACENE | BDL | 330 | ug/kg |
| ENZO(A)PYRENE | BDL | 330 | ug/kg |
| BENZO(B)FLUORANTHENE | EST 310 | 330 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 330 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZYL ALCOHOL | BDL | 330 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 330 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 330 | ug/kg |
| CARBAZOLE | BDL | 330 | ug/kg |
| 4-CHLOROANILINE | BDL | 330 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 330 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 330 | ug/kg |
| CHRYSENE | EST 160 | 330 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 330 | ug/kg |
| DIBENZOFURAN | BDL | 330 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 660 | ug/kg |
| DIETHYLPHTHALATE | BDL | 330 | ug/kg |
| DIMETHYLPHTHALATE | BDL | 330 | ug/kg |
| I-N-BUTYLPHTHALATE | BDL | 330 | ug/kg |
| INITROBENZENES | BDL | 1700 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 330 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 330 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 330 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LUORANTHENE | 390 | 330 | ug/kg |
| FLUORENE | BDL | 330 | ug/kg |
| EXACHLOROBENZENE | BDL | 330 | ug/kg |
| ..EXACHLOROBUTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROETHANE | BDL | 330 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 330 | ug/kg |
| ISOPHORONE | BDL | 330 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 330 | ug/kg |
| NAPHTHALENE | BDL | 330 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 1700 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 1700 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 1700 | ug/kg |
| NITROBENZENE | BDL | 330 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 330 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 330 | ug/kg |
| PHENANTHRENE | 330 | 330 | ug/kg |
| 2-PICOLINE | BDL | 1700 | ug/kg |
| PYRENE | EST 300 | 330 | ug/kg |
| PYRIDINE | BDL | 1700 | ug/kg |
| TOLUENEDIAMINE | BDL | 1700 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 330 | ug/kg |
| BENZOIC ACID | BDL | 1700 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 330 | ug/kg |
| 2-CHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4-DICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4-DIMETHYLPHENOL | BDL | 330 | ug/kg |
| ,6-DINITRO-O-CRESOL | BDL | 1700 | ug/kg |
| ,4-DINITROPHENOL | BDL | 1700 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 330 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 330 | ug/kg |
| 2-NITROPHENOL | BDL | 330 | ug/kg |
| 4-NITROPHENOL | BDL | 1700 | ug/kg |
| PENTACHLOROPHENOL | BDL | 1700 | ug/kg |
| PHENOL | BDL | 330 | ug/kg |
| TETRACHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| --- | | | |
| ALSO DETECTED | | | |
| UNKNOWN | * 890 RT=2.25 | | ug/kg |
| 3-PENTEN-2-ONE | * 920 RT=2.63 | | ug/kg |
| UNKNOWN | * 1500 RT=3.6 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 2300 RT=4.87 | | ug/kg |
| UNKNOWN | * 2000 RT=6.84 | | ug/kg |
| UNKNOWN | * 990 RT=7.15 | | ug/kg |
| UNKNOWN | 630 RT=7.31 | | ug/kg |
| UNKNOWN | * 3600 RT=7.97 | | ug/kg |
| UNKNOWN | * 1400 RT=8.46 | | ug/kg |
| UNKNOWN | * 2200 RT=8.76 | | ug/kg |
| UNKNOWN | * 2500 RT=8.87 | | ug/kg |
| UNKNOWN | * 1400 RT=9.85 | | ug/kg |
| ''NKNOWN | * 1800 RT=10.43 | | ug/kg |
| IKNOWN | * 2400 RT=10.86 | | ug/kg |
| JNKNOWN | * 990 RT=11.84 | | ug/kg |
| UNKNOWN | * 2000 RT=12.95 | | ug/kg |
| UNKNOWN | * 730 RT=15.28 | | ug/kg |

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156683

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INKNOWN | * 590 RT=17.27 | | ug/kg |
| UNKNOWN | * 990 RT=16.77 | | ug/kg |
| Z,Z)-9,12-OCTADECANOIC ACID | 730 RT=22.94 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 72 | | % Rec |
| PHENOL-D5 | 89 | | % Rec |
| NITROBENZENE-D5 | 64 | | % Rec |
| 2-FLUOROBIPHENYL | 102 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 83 | | % Rec |
| TERPHENYL-D14 | 86 | | % Rec |

*1:1 DILUTION.*
** Compound also detected in blank*
*All extra compounds concentration values are estimated*

Sample Comments

| | |
|---|---|
| * | *See Note for Parameter* |
| *BDL* | *Below Detection Limit* |
| *EST* | *Estimated Value* |
| *RT* | *Retention Time* |

*Sample chain of custody number 5057.*

*This Certificate shall not be reproduced, except in full, ithout the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| HERITAGE LABORATORIES, INC.<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156684 |
| | Complete | PO Number | |
| | 03-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 08-JUN-94 | 16-MAY-94 15:20 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-5 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP  Analysis Date: 19-MAY-94 11:56  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | BDL | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| ACRYLONITRILE | BDL | 70 | ug/kg |
| ENZENE | BDL | 5 | ug/kg |
| OMODICHLOROMETHANE | BDL | 5 | ug/kg |
| OMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 120 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| TETRACHLOROETHENE | BDL | 5 | ug/kg |
| TRAHYDROFURAN | BDL | 25 | ug/kg |
| LUENE | 16 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | EST 4 | 5 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,1,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| ICHLOROETHENE | 32 | 5 | ug/kg |
| NYL ACETATE | BDL | 10 | ug/kg |
| INYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 8 | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 100 | | % Rec |
| TOLUENE-D8 | * 132 | | % Rec |
| 4-BROMOFLUOROBENZENE | 87 | | % Rec |

*1:1 DILUTION.*
*Sample reanalyzed with no improvement in surrogate recovery.*
*Sample reanalyzed with no improvement in internal standard areas.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 17-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.03 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 18-MAY-94 20:30 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CENAPHTHENE | BDL | 330 | ug/kg |
| ENAPHTHYLENE | BDL | 330 | ug/kg |
| THRACENE | BDL | 330 | ug/kg |
| BENZ(A)ANTHRACENE | BDL | 330 | ug/kg |
| BENZO(A)PYRENE | BDL | 330 | ug/kg |
| BENZO(B)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 330 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZYL ALCOHOL | BDL | 330 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 330 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 330 | ug/kg |
| CARBAZOLE | BDL | 330 | ug/kg |
| 4-CHLOROANILINE | BDL | 330 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 330 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 330 | ug/kg |
| CHRYSENE | BDL | 330 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 330 | ug/kg |
| DIBENZOFURAN | BDL | 330 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 660 | ug/kg |
| ETHYLPHTHALATE | BDL | 330 | ug/kg |
| METHYLPHTHALATE | BDL | 330 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 330 | ug/kg |
| DINITROBENZENES | BDL | 1700 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 330 | ug/kg |

HERITAGE LABORATORIES, INC. Lab Sample ID: C156684

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,6-DINITROTOLUENE | BDL | 330 | ug/kg |
| -N-OCTYLPHTHALATE | BDL | 330 | ug/kg |
| UORANTHENE | BDL | 330 | ug/kg |
| FLUORENE | BDL | 330 | ug/kg |
| HEXACHLOROBENZENE | BDL | 330 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROETHANE | BDL | 330 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 330 | ug/kg |
| ISOPHORONE | BDL | 330 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 330 | ug/kg |
| NAPHTHALENE | BDL | 330 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 1700 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 1700 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 1700 | ug/kg |
| NITROBENZENE | BDL | 330 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 330 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 330 | ug/kg |
| PHENANTHRENE | BDL | 330 | ug/kg |
| 2-PICOLINE | BDL | 1700 | ug/kg |
| PYRENE | BDL | 330 | ug/kg |
| PYRIDINE | BDL | 1700 | ug/kg |
| TOLUENEDIAMINE | BDL | 1700 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 330 | ug/kg |
| BENZOIC ACID | BDL | 1700 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 330 | ug/kg |
| -CHLOROPHENOL | BDL | 330 | ug/kg |
| 4-DICHLOROPHENOL | BDL | 330 | ug/kg |
| ,4-DIMETHYLPHENOL | BDL | 330 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 1700 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 1700 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 330 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 330 | ug/kg |
| 2-NITROPHENOL | BDL | 330 | ug/kg |
| 4-NITROPHENOL | BDL | 1700 | ug/kg |
| PENTACHLOROPHENOL | BDL | 1700 | ug/kg |
| PHENOL | BDL | 330 | ug/kg |
| TETRACHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| ALSO DETECTED | | | |
| UNKNOWN | * 1000 RT=2.27 | | ug/kg |
| 3-PENTEN-2-ONE | * 1300 RT=2.65 | | ug/kg |
| UNKNOWN | * 2100 RT=3.61 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 3000 RT=4.87 | | ug/kg |
| UNKNOWN | * 2300 RT=6.83 | | ug/kg |
| UNKNOWN | * 1100 RT=7.15 | | ug/kg |
| UNKNOWN | * 4300 RT=7.99 | | ug/kg |
| UNKNOWN | * 1800 RT=8.46 | | ug/kg |
| UNKNOWN | * 920 RT=8.55 | | ug/kg |
| UNKNOWN | * 3100 RT=8.78 | | ug/kg |
| UNKNOWN | * 2700 RT=8.87 | | ug/kg |
| KNOWN | * 2000 RT=9.84 | | ug/kg |
| KNOWN | * 2000 RT=10.46 | | ug/kg |
| UNKNOWN | * 1300 RT=10.82 | | ug/kg |
| UNKNOWN | * 1300 RT=11.84 | | ug/kg |
| UNKNOWN | * 1100 RT=11.89 | | ug/kg |

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: C156684

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| IKNOWN | * 2700 RT=12.95 | | ug/kg |
| KNOWN | 860 RT=13.65 | | ug/kg |
| 5-DIHYDRO-2,2,4-TRIMETHYL-FURAN | * 960 RT=15.26 | | ug/kg |
| UNKNOWN | * 920 RT=16.77 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 69 | | % Rec |
| PHENOL-D5 | 88 | | % Rec |
| NITROBENZENE-D5 | 72 | | % Rec |
| 2-FLUOROBIPHENYL | 113 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 93 | | % Rec |
| TERPHENYL-D14 | 78 | | % Rec |

*1:1 DILUTION.*
**Compound also detected in blank*
*All extra compounds concentrations values are estimated*

Sample Comments

| | |
|---|---|
| * | *See Note for Parameter* |
| BDL | *Below Detection Limit* |
| EST | *Estimated Value* |
| RT | *Retention Time* |

*Sample chain of custody number 5057.*

*is Certificate shall not be reproduced, except in full,*
*thout the written approval of the lab.*

Quality Assurance Officer: GABusch

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| ERITAGE LABORATORIES, INC.<br>319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156685 |
| | Complete: 03-JUN-94 | PO Number: 480-02328 | |
| | Printed: 08-JUN-94 | Sampled: 16-MAY-94 15:40 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-6 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP  Analysis Date: 19-MAY-94 12:40  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | BDL | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| ACRYLONITRILE | BDL | 70 | ug/kg |
| ENZENE | BDL | 5 | ug/kg |
| OMODICHLOROMETHANE | BDL | 5 | ug/kg |
| OMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 140 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| TETRACHLOROETHENE | BDL | 5 | ug/kg |
| TRAHYDROFURAN | BDL | 25 | ug/kg |
| LUENE | 15 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

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HERITAGE LABORATORIES, INC. Lab Sample ID: C156685

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,1,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| RICHLOROETHENE | 32 | 5 | ug/kg |
| INYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 10 | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| ---------- | | | |
| DICHLOROETHANE-D4 | 107 | | % Rec |
| TOLUENE-D8 | * 125 | | % Rec |
| 4-BROMOFLUOROBENZENE | 79 | | % Rec |

*1:1 DILUTION.*
*Sample reanalyzed with no improvement in surrogate recovery.*
*Sample reanalyzed with no improvement in internal standard areas.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 17-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.34 | | Grams |
| FINAL VOLUME | 2 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: M. QIAN Analysis Date: 18-MAY-94 21:20 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CENAPHTHENE | BDL | 3300 | ug/kg |
| ENAPHTHYLENE | BDL | 3300 | ug/kg |
| NTHRACENE | BDL | 3300 | ug/kg |
| BENZ(A)ANTHRACENE | BDL | 3300 | ug/kg |
| BENZO(A)PYRENE | BDL | 3300 | ug/kg |
| BENZO(B)FLUORANTHENE | BDL | 3300 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 3300 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 3300 | ug/kg |
| BENZYL ALCOHOL | BDL | 3300 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 3300 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 3300 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 3300 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 3300 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 3300 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 3300 | ug/kg |
| CARBAZOLE | BDL | 3300 | ug/kg |
| 4-CHLOROANILINE | BDL | 3300 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 3300 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 3300 | ug/kg |
| CHRYSENE | BDL | 3300 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 3300 | ug/kg |
| DIBENZOFURAN | BDL | 3300 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 3300 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 3300 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 3300 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 6600 | ug/kg |
| IETHYLPHTHALATE | BDL | 3300 | ug/kg |
| METHYLPHTHALATE | BDL | 3300 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 3300 | ug/kg |
| DINITROBENZENES | BDL | 17000 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 3300 | ug/kg |

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HERITAGE LABORATORIES, INC. Lab Sample ID: C156685

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| _,_-DINITROTOLUENE | BDL | 3300 | ug/kg |
| I -OCTYLPHTHALATE | BDL | 3300 | ug/kg |
| _ RANTHENE | BDL | 3300 | ug/kg |
| FLUORENE | BDL | 3300 | ug/kg |
| HEXACHLOROBENZENE | BDL | 3300 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 3300 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 3300 | ug/kg |
| HEXACHLOROETHANE | BDL | 3300 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 3300 | ug/kg |
| ISOPHORONE | BDL | 3300 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 3300 | ug/kg |
| NAPHTHALENE | BDL | 3300 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 17000 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 17000 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 17000 | ug/kg |
| NITROBENZENE | BDL | 3300 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 3300 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 3300 | ug/kg |
| PHENANTHRENE | BDL | 3300 | ug/kg |
| 2-PICOLINE | BDL | 17000 | ug/kg |
| PYRENE | BDL | 3300 | ug/kg |
| PYRIDINE | BDL | 17000 | ug/kg |
| TOLUENEDIAMINE | BDL | 17000 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 3300 | ug/kg |
| BENZOIC ACID | BDL | 17000 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 3300 | ug/kg |
| LOROPHENOL | BDL | 3300 | ug/kg |
| DICHLOROPHENOL | BDL | 3300 | ug/kg |
| 2,4-DIMETHYLPHENOL | BDL | 3300 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 17000 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 17000 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 3300 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 3300 | ug/kg |
| 2-NITROPHENOL | BDL | 3300 | ug/kg |
| 4-NITROPHENOL | BDL | 17000 | ug/kg |
| PENTACHLOROPHENOL | BDL | 17000 | ug/kg |
| PHENOL | BDL | 3300 | ug/kg |
| TETRACHLOROPHENOL | BDL | 3300 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 3300 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 3300 | ug/kg |
| ALSO DETECTED | | | |
| UNKNOWN | * 4000 RT=3.5 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 6600 RT=4.77 | | ug/kg |
| UNKNOWN | * 9900 RT=6.76 | | ug/kg |
| UNKNOWN | * 3300 RT=7.07 | | ug/kg |
| UNKNOWN | * 9900 RT=7.7 | | ug/kg |
| UNKNOWN | 4000 RT=7.86 | | ug/kg |
| UNKNOWN KETONE | 4300 RT=8.16 | | ug/kg |
| UNKNOWN | 6600 RT=8.56 | | ug/kg |
| UNKNOWN | 5000 RT=8.74 | | ug/kg |
| UNKNOWN HYDROCARBON | * 3600 RT=12.86 | | ug/kg |
| :OGATE RECOVERY | | | |
| 2-FLUOROPHENOL | * | | % Rec |
| PHENOL-D5 | * | | % Rec |
| NITROBENZENE-D5 | * | | % Rec |

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| HERITAGE LABORATORIES, INC.<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156686 |
| | Complete | PO Number | |
| | 03-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 08-JUN-94 | 16-MAY-94 15:55 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

Sample Description

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-7 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP  Analysis Date: 19-MAY-94 13:25  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | BDL | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| ACRYLONITRILE | BDL | 70 | ug/kg |
| ENZENE | BDL | 5 | ug/kg |
| ROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| ROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 120 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| TETRACHLOROETHENE | BDL | 5 | ug/kg |
| TRAHYDROFURAN | BDL | 25 | ug/kg |
| LUENE | 16 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | EST 4 | 5 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,1,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| ICHLOROETHENE | 26 | 5 | ug/kg |
| NYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 11 | 5 | ug/kg |
| SURROGATE RECOVERY | | | |
| DICHLOROETHANE-D4 | 102 | | % Rec |
| TOLUENE-D8 | * 125 | | % Rec |
| 4-BROMOFLUOROBENZENE | 76 | | % Rec |

*1:1 DILUTION*
*Sample reanalyzed with no improvement in surrogate recovery.*
*Sample reanalyzed with no improvement in internal standard areas.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 17-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.17 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 18-MAY-94 22:11 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ENAPHTHENE | BDL | 1700 | ug/kg |
| ENAPHTHYLENE | BDL | 1700 | ug/kg |
| THRACENE | BDL | 1700 | ug/kg |
| BENZ(A)ANTHRACENE | BDL | 1700 | ug/kg |
| BENZO(A)PYRENE | BDL | 1700 | ug/kg |
| BENZO(B)FLUORANTHENE | BDL | 1700 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 1700 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 1700 | ug/kg |
| BENZYL ALCOHOL | BDL | 1700 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 1700 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 1700 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 1700 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 1700 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 1700 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 1700 | ug/kg |
| CARBAZOLE | BDL | 1700 | ug/kg |
| 4-CHLOROANILINE | BDL | 1700 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 1700 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 1700 | ug/kg |
| CHRYSENE | BDL | 1700 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 1700 | ug/kg |
| DIBENZOFURAN | BDL | 1700 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 3400 | ug/kg |
| ETHYLPHTHALATE | BDL | 1700 | ug/kg |
| ETHYLPHTHALATE | BDL | 1700 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 1700 | ug/kg |
| DINITROBENZENES | BDL | 8500 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 1700 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,6-DINITROTOLUENE | BDL | 1700 | ug/kg |
| -N-OCTYLPHTHALATE | BDL | 1700 | ug/kg |
| UORANTHENE | BDL | 1700 | ug/kg |
| FLUORENE | BDL | 1700 | ug/kg |
| HEXACHLOROBENZENE | BDL | 1700 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 1700 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 1700 | ug/kg |
| HEXACHLOROETHANE | BDL | 1700 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 1700 | ug/kg |
| ISOPHORONE | BDL | 1700 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 1700 | ug/kg |
| NAPHTHALENE | BDL | 1700 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 8500 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 8500 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 8500 | ug/kg |
| NITROBENZENE | BDL | 1700 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 1700 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 1700 | ug/kg |
| PHENANTHRENE | BDL | 1700 | ug/kg |
| 2-PICOLINE | BDL | 8500 | ug/kg |
| PYRENE | BDL | 1700 | ug/kg |
| PYRIDINE | BDL | 8500 | ug/kg |
| TOLUENEDIAMINE | BDL | 8500 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 1700 | ug/kg |
| BENZOIC ACID | BDL | 8500 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 1700 | ug/kg |
| -CHLOROPHENOL | BDL | 1700 | ug/kg |
| 4-DICHLOROPHENOL | BDL | 1700 | ug/kg |
| ,4-DIMETHYLPHENOL | BDL | 1700 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 8500 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 8500 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 1700 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 1700 | ug/kg |
| 2-NITROPHENOL | BDL | 1700 | ug/kg |
| 4-NITROPHENOL | BDL | 8500 | ug/kg |
| PENTACHLOROPHENOL | BDL | 8500 | ug/kg |
| PHENOL | BDL | 1700 | ug/kg |
| TETRACHLOROPHENOL | BDL | 1700 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 1700 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 1700 | ug/kg |
| ALSO DETECTED | | | |
| UNKNOWN | ** 2900 RT=3.5 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 4400 RT=4.77 | | ug/kg |
| UNKNOWN | 4100 RT=6.75 | | ug/kg |
| UNKNOWN | 2400 RT=7.07 | | ug/kg |
| UNKNOWN | 6600 RT=7.73 | | ug/kg |
| UNKNOWN KETONE | 2400 RT=7.86 | | ug/kg |
| UNKNOWN | 4600 RT=8.56 | | ug/kg |
| UNKNOWN | * 3900 RT=8.74 | | ug/kg |
| UNKNOWN | * 2400 RT=12.88 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| FLUOROPHENOL | 53 | | % Rec |
| HENOL-D5 | 108 | | % Rec |
| NITROBENZENE-D5 | 76 | | % Rec |
| 2-FLUOROBIPHENYL | 145 | | % Rec |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,4,6-TRIBROMOPHENOL | 101 | | % Rec |
| TERPHENYL-D14 | 100 | | % Rec |

*:5 DILUTION.*
*Dilution is necessary due to matrix effect.*
**Compound also detected in blank*
*All extra compounds concentration values are estimated*

Sample Comments

| | |
|---|---|
| * | *See Note for Parameter* |
| ** | *See Note for Parameter* |
| *BDL* | *Below Detection Limit* |
| *EST* | *Estimated Value* |
| *RT* | *Retention Time* |

*Sample chain of custody number 5057.*

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Quality Assurance Officer: GABrush

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| "ERITAGE LABORATORIES, INC.<br>319 MARQUETTE DRIVE<br>..OMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156687 |
| | Complete | PO Number | |
| | 07-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 08-JUN-94 | 16-MAY-94 15:55 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-7D - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP  Analysis Date: 19-MAY-94 14:09  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | BDL | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| ACRYLONITRILE | BDL | 70 | ug/kg |
| NZENE | BDL | 5 | ug/kg |
| OMODICHLOROMETHANE | BDL | 5 | ug/kg |
| OMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 140 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| TETRACHLOROETHENE | BDL | 5 | ug/kg |
| TRAHYDROFURAN | BDL | 25 | ug/kg |
| LUENE | 9 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | EST 3 | 5 | ug/kg |

HERITAGE LABORATORIES, INC. Lab Sample ID: C156687

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,1,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| ICHLOROETHENE | 19 | 5 | ug/kg |
| NYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 8 | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 102 | | % Rec |
| TOLUENE-D8 | * 130 | | % Rec |
| 4-BROMOFLUOROBENZENE | 76 | | % Rec |

*1:1 DILUTION.*
*Sample reanalyzed with no improvement in surrogate recovery.*
*Sample reanalyzed with no improvement in internal standard areas.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 17-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.06 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 18-MAY-94 23:02 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ENAPHTHENE | BDL | 1700 | ug/kg |
| ENAPHTHYLENE | BDL | 1700 | ug/kg |
| ANTHRACENE | BDL | 1700 | ug/kg |
| BENZ(A)ANTHRACENE | BDL | 1700 | ug/kg |
| BENZO(A)PYRENE | BDL | 1700 | ug/kg |
| BENZO(B)FLUORANTHENE | BDL | 1700 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 1700 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 1700 | ug/kg |
| BENZYL ALCOHOL | BDL | 1700 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 1700 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 1700 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 1700 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 1700 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 1700 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 1700 | ug/kg |
| CARBAZOLE | BDL | 1700 | ug/kg |
| 4-CHLOROANILINE | BDL | 1700 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 1700 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 1700 | ug/kg |
| CHRYSENE | BDL | 1700 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 1700 | ug/kg |
| DIBENZOFURAN | BDL | 1700 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 3400 | ug/kg |
| ETHYLPHTHALATE | BDL | 1700 | ug/kg |
| METHYLPHTHALATE | BDL | 1700 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 1700 | ug/kg |
| DINITROBENZENES | BDL | 8500 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 1700 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,6-DINITROTOLUENE | BDL | 1700 | ug/kg |
| -N-OCTYLPHTHALATE | BDL | 1700 | ug/kg |
| JORANTHENE | BDL | 1700 | ug/kg |
| LUORENE | BDL | 1700 | ug/kg |
| HEXACHLOROBENZENE | BDL | 1700 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 1700 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 1700 | ug/kg |
| HEXACHLOROETHANE | BDL | 1700 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 1700 | ug/kg |
| ISOPHORONE | BDL | 1700 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 1700 | ug/kg |
| NAPHTHALENE | BDL | 1700 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 8500 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 8500 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 8500 | ug/kg |
| NITROBENZENE | BDL | 1700 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 1700 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 1700 | ug/kg |
| PHENANTHRENE | BDL | 1700 | ug/kg |
| 2-PICOLINE | BDL | 8500 | ug/kg |
| PYRENE | BDL | 1700 | ug/kg |
| PYRIDINE | BDL | 8500 | ug/kg |
| TOLUENEDIAMINE | BDL | 8500 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 1700 | ug/kg |
| BENZOIC ACID | BDL | 8500 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 1700 | ug/kg |
| -CHLOROPHENOL | BDL | 1700 | ug/kg |
| 4-DICHLOROPHENOL | BDL | 1700 | ug/kg |
| ,4-DIMETHYLPHENOL | BDL | 1700 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 8500 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 8500 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 1700 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 1700 | ug/kg |
| 2-NITROPHENOL | BDL | 1700 | ug/kg |
| 4-NITROPHENOL | BDL | 8500 | ug/kg |
| PENTACHLOROPHENOL | BDL | 8500 | ug/kg |
| PHENOL | BDL | 1700 | ug/kg |
| TETRACHLOROPHENOL | BDL | 1700 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 1700 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 1700 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 3-PENTEN-2-ONE | * 2200 RT=2.57 | | |
| UNKNOWN | * 3400 RT=3.52 | | |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 4600 RT=4.77 | | |
| UNKNOWN | * 3900 RT=6.75 | | |
| UNKNOWN KETONE | * 2400 RT=7.07 | | |
| UNKNOWN | 7100 RT=7.73 | | |
| UNKNOWN | 4600 RT=8.57 | | |
| UNKNOWN | 4600 RT=8.75 | | |
| UNKNOWN | 2200 RT=9.38 | | |
| UNKNOWN | 1700 RT=10.22 | | |
| UNKNOWN C9 HYDROCARBON | 2700 RT=12.89 | | |
| RROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 68 | | % Rec |
| PHENOL-D5 | 122 | | % Rec |

HERITAGE LABORATORIES, INC. Lab Sample ID: C156687

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ITROBENZENE-D5 | 87 | | % Rec |
| FLUOROBIPHENYL | 159 | | % Rec |
| 4,6-TRIBROMOPHENOL | 116 | | % Rec |
| TERPHENYL-D14 | 111 | | % Rec |

*1:5 DILUTION.*
*Dilution necessary due to matrix effect*
**Compound also detected in blank*
*All tentatively identified compound concentration values are estimated.*

Sample Comments

| | |
|---|---|
| * | *See Note for Parameter* |
| BDL | *Below Detection Limit* |
| EST | *Estimated Value* |
| RT | *Retention Time* |

*Sample chain of custody number 5057.*

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Quality Assurance Officer: GABusch

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| RITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156688 |
| | Complete | PO Number | |
| | 08-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 12-JUL-94 | 16-MAY-94 16:15 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-8 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: H. QIAN  Analysis Date: 24-MAY-94 12:17  Instrument: GC/MS VOA  Test: O510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 26 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| YLONITRILE | BDL | 70 | ug/kg |
| ZENE | BDL | 5 | ug/kg |
| ROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | EST 4 | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 23 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| RACHLOROETHENE | 6 | 5 | ug/kg |
| RAHYDROFURAN | EST 17 | 25 | ug/kg |
| TOLUENE | 19 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | 6 | 5 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| CHLOROETHENE | 59 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 9 | 5 | ug/kg |
| SURROGATE RECOVERY | | | |
| DICHLOROETHANE-D4 | 92 | | % Rec |
| TOLUENE-D8 | * 130 | | % Rec |
| 4-BROMOFLUOROBENZENE | 83 | | % Rec |

*1:1 DILUTION.*
*Sample reanalyzed with no improvement in surrogate recovery.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 17-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.07 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: M. QIAN Analysis Date: 18-MAY-94 23:53 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ENAPHTHENE | BDL | 1700 | ug/kg |
| NAPHTHYLENE | BDL | 1700 | ug/kg |
| ANTHRACENE | BDL | 1700 | ug/kg |
| BENZ(A)ANTHRACENE | BDL | 1700 | ug/kg |
| BENZO(A)PYRENE | BDL | 1700 | ug/kg |
| BENZO(B)FLUORANTHENE | BDL | 1700 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 1700 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 1700 | ug/kg |
| BENZYL ALCOHOL | BDL | 1700 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 1700 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 1700 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 1700 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 1700 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 1700 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 1700 | ug/kg |
| CARBAZOLE | BDL | 1700 | ug/kg |
| 4-CHLOROANILINE | BDL | 1700 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 1700 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 1700 | ug/kg |
| CHRYSENE | BDL | 1700 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 1700 | ug/kg |
| DIBENZOFURAN | BDL | 1700 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| 3 3'-DICHLOROBENZIDINE | BDL | 3400 | ug/kg |
| THYLPHTHALATE | BDL | 1700 | ug/kg |
| ETHYLPHTHALATE | BDL | 1700 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 1700 | ug/kg |
| DINITROBENZENES | BDL | 8500 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 1700 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 1700 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| N-OCTYLPHTHALATE | BDL | 1700 | ug/kg |
| ORANTHENE | BDL | 1700 | ug/kg |
| FLUORENE | BDL | 1700 | ug/kg |
| HEXACHLOROBENZENE | BDL | 1700 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 1700 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 1700 | ug/kg |
| HEXACHLOROETHANE | BDL | 1700 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 1700 | ug/kg |
| ISOPHORONE | BDL | 1700 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 1700 | ug/kg |
| NAPHTHALENE | BDL | 1700 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 8500 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 8500 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 8500 | ug/kg |
| NITROBENZENE | BDL | 1700 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 1700 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 1700 | ug/kg |
| PHENANTHRENE | BDL | 1700 | ug/kg |
| 2-PICOLINE | BDL | 8500 | ug/kg |
| PYRENE | BDL | 1700 | ug/kg |
| PYRIDINE | BDL | 8500 | ug/kg |
| TOLUENEDIAMINE | BDL | 8500 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 1700 | ug/kg |
| BENZOIC ACID | BDL | 8500 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 1700 | ug/kg |
| HLOROPHENOL | BDL | 1700 | ug/kg |
| -DICHLOROPHENOL | BDL | 1700 | ug/kg |
| ,4-DIMETHYLPHENOL | BDL | 1700 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 8500 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 8500 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 8500 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 1700 | ug/kg |
| 2-NITROPHENOL | BDL | 1700 | ug/kg |
| 4-NITROPHENOL | BDL | 8500 | ug/kg |
| PENTACHLOROPHENOL | BDL | 8500 | ug/kg |
| PHENOL | BDL | 1700 | ug/kg |
| TETRACHLOROPHENOL | BDL | 1700 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 1700 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 1700 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 1600 RT=2.21 | | ug/kg |
| 3-PENTEN-2-ONE | * 2200 RT=2.57 | | |
| UNKNOWN | * 3600 RT=3.51 | | |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 4400 RT=4.76 | | |
| UNKNOWN | 4600 RT=6.74 | | |
| UNKNOWN | 1100 RT=6.99 | | |
| UNKNOWN | 2700 RT=7.06 | | |
| UNKNOWN | 9000 RT=7.74 | | |
| UNKNOWN | 2600 RT=7.85 | | |
| UNKNOWN | 2600 RT=8.17 | | |
| UNKNOWN | * 5300 RT=8.58 | | |
| NOWN | * 3400 RT=8.73 | | |
| NOWN | 2000 RT=9.37 | | |
| UNKNOWN | 1900 RT=10.23 | | |
| UNKNOWN | 1000 RT=10.75 | | |
| UNKNOWN | 2400 RT=12.87 | | |
| UNKNOWN | * 870 RT=12.94 | | |

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156688

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BUTENOIC ACID,(2) | 880 RT=11.69 | | |
| SURROGATE RECOVERY | | | |
| 2-FLUOROPHENOL | 62 | | % Rec |
| PHENOL-D5 | 105 | | % Rec |
| NITROBENZENE-D5 | 81 | | % Rec |
| 2-FLUOROBIPHENYL | 120 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 96 | | % Rec |
| TERPHENYL-D14 | 113 | | % Rec |

*1:5 DILUTION.*
*Dilution necessary due to matrix effect*
**Compound also detected in blank*
*All tentatively identified compound concentration values are estimated.*

Sample Comments

| | |
|---|---|
| * | *See Note for Parameter* |
| BDL | *Below Detection Limit* |
| EST | *Estimated Value* |
| RT | *Retention Time* |

*Sample chain of custody number 5057.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| :ITAGE LABORATORIES, INC.<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156689 |
| | Complete | PO Number | |
| | 08-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 09-JUN-94 | 16-MAY-94 16:30 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-9 - GRAB

**VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A**

Analyst: H. QIAN  Analysis Date: 24-MAY-94 13:02  Instrument: GC/MS VOA  Test: G510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 28 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| YLONITRILE | BDL | 70 | ug/kg |
| ZENE | BDL | 5 | ug/kg |
| MODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | 8 | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 16 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| RACHLOROETHENE | 8 | 5 | ug/kg |
| RAHYDROFURAN | 35 | 25 | ug/kg |
| TOLUENE | 31 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | EST 3 | 5 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| 2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| HLOROETHENE | 60 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 25 | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 93 | | % Rec |
| TOLUENE-D8 | * 126 | | % Rec |
| 4-BROMOFLUOROBENZENE | 82 | | % Rec |

*1:1 DILUTION.*
*Sample reanalyzed with no improvement in surrogate recovery.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 17-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.12 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 19-MAY-94 00:44 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NAPHTHENE | BDL | 330 | ug/kg |
| APHTHYLENE | BDL | 330 | ug/kg |
| RACENE | BDL | 330 | ug/kg |
| BENZ(A)ANTHRACENE | BDL | 330 | ug/kg |
| BENZO(A)PYRENE | EST 190 | 330 | ug/kg |
| BENZO(B)FLUORANTHENE | 490 | 330 | ug/kg |
| BENZO(G,H,I)PERYLENE | EST 200 | 330 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZYL ALCOHOL | BDL | 330 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 330 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 330 | ug/kg |
| CARBAZOLE | BDL | 330 | ug/kg |
| 4-CHLOROANILINE | BDL | 330 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 330 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 330 | ug/kg |
| CHRYSENE | EST 190 | 330 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 330 | ug/kg |
| DIBENZOFURAN | BDL | 330 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 660 | ug/kg |
| HYLPHTHALATE | BDL | 330 | ug/kg |
| THYLPHTHALATE | BDL | 330 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 330 | ug/kg |
| DINITROBENZENES | BDL | 1700 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 330 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 330 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| N-OCTYLPHTHALATE | BDL | 330 | ug/kg |
| RANTHENE | 420 | 330 | ug/kg |
| FLUORENE | BDL | 330 | ug/kg |
| HEXACHLOROBENZENE | BDL | 330 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROETHANE | BDL | 330 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | EST 190 | 330 | ug/kg |
| ISOPHORONE | BDL | 330 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 330 | ug/kg |
| NAPHTHALENE | BDL | 330 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 1700 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 1700 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 1700 | ug/kg |
| NITROBENZENE | BDL | 330 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 330 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 330 | ug/kg |
| PHENANTHRENE | 390 | 330 | ug/kg |
| 2-PICOLINE | BDL | 1700 | ug/kg |
| PYRENE | 390 | 330 | ug/kg |
| PYRIDINE | BDL | 1700 | ug/kg |
| TOLUENEDIAMINE | BDL | 1700 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 330 | ug/kg |
| BENZOIC ACID | BDL | 1700 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 330 | ug/kg |
| HLOROPHENOL | BDL | 330 | ug/kg |
| DICHLOROPHENOL | BDL | 330 | ug/kg |
| -DIMETHYLPHENOL | BDL | 330 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 1700 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 1700 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 330 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 330 | ug/kg |
| 2-NITROPHENOL | BDL | 330 | ug/kg |
| 4-NITROPHENOL | BDL | 1700 | ug/kg |
| PENTACHLOROPHENOL | BDL | 1700 | ug/kg |
| PHENOL | BDL | 330 | ug/kg |
| TETRACHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 760 RT=2.25 | | ug/kg |
| 3-PENTEN-2-ONE | * 990 RT=2.64 | | ug/kg |
| UNKNOWN | * 1700 RT=3.61 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 2900 RT=4.87 | | ug/kg |
| UNKNOWN | * 2400 RT=6.84 | | ug/kg |
| UNKNOWN | * 630 RT=7.02 | | ug/kg |
| UNKNOWN | * 630 RT=7.16 | | ug/kg |
| UNKNOWN | * 4300 RT=7.97 | | ug/kg |
| UNKNOWN | * 1700 RT=8.47 | | ug/kg |
| UNKNOWN | * 990 RT=8.56 | | ug/kg |
| UNKNOWN | * 2700 RT=8.76 | | ug/kg |
| OWN | * 2900 RT=8.88 | | ug/kg |
| OWN | * 2400 RT=9.85 | | ug/kg |
| UNKNOWN | * 2500 RT=10.46 | | ug/kg |
| UNKNOWN | 1200 RT=10.8 | | ug/kg |
| UNKNOWN | * 1200 RT=10.87 | | ug/kg |
| UNKNOWN | * 2600 RT=12.93 | | ug/kg |

ITAGE LABORATORIES, INC. Lab Sample ID: C156689

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| AN,2,5,DIHYDROO2,2,4-TRIMETHYL | * 990 RT=15.26 | | ug/kg |
| IOWN | 630 RT=15.78 | | ug/kg |
| UNKNOWN | * 960 RT=16.75 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 69 | | % Rec |
| PHENOL-D5 | 100 | | % Rec |
| NITROBENZENE-D5 | 70 | | % Rec |
| 2-FLUOROBIPHENYL | 113 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 73 | | % Rec |
| TERPHENYL-D14 | 86 | | % Rec |

*1:1 DILUTION.*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

Sample Comments

| | |
|---|---|
| * | *See Note for Parameter* |
| BDL | *Below Detection Limit* |
| EST | *Estimated Value* |
| RT | *Retention Time* |

*Sample chain of custody number 5057.*

*s Certificate shall not be reproduced, except in full,*
*hout the written approval of the lab.*

Quality Assurance Officer: GABusch

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| .ITAGE LABORATORIES, INC.<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156710 |
| | Complete | PO Number | |
| | 08-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 09-JUN-94 | 17-MAY-94 08:20 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-10 - GRAB

**VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A**

Analyst: S. SHARP  Analysis Date: 24-MAY-94 21:49  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | BDL | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| YLONITRILE | BDL | 70 | ug/kg |
| ENE | BDL | 5 | ug/kg |
| MODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | 8 | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | EST 3 | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 21 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| ACHLOROETHENE | 12 | 5 | ug/kg |
| AHYDROFURAN | 25 | 25 | ug/kg |
| TOLUENE | 28 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | 11 | 5 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| CHLOROETHENE | 110 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 25 | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 90 | | % Rec |
| TOLUENE-D8 | 114 | | % Rec |
| 4-BROMOFLUOROBENZENE | * 69 | | % Rec |

*1:1 DILUTION.*
*Sample reanalyzed with no improvement in surrogate recovery or internal standard area.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 18-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.08 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 19-MAY-94 01:35 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NAPHTHENE | BDL | 1700 | ug/kg |
| NAPHTHYLENE | BDL | 1700 | ug/kg |
| ANTHRACENE | BDL | 1700 | ug/kg |
| BENZ(A)ANTHRACENE | BDL | 1700 | ug/kg |
| BENZO(A)PYRENE | BDL | 1700 | ug/kg |
| BENZO(B)FLUORANTHENE | BDL | 1700 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 1700 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 1700 | ug/kg |
| BENZYL ALCOHOL | BDL | 1700 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 1700 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 1700 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 1700 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 1700 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 1700 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 1700 | ug/kg |
| CARBAZOLE | BDL | 1700 | ug/kg |
| 4-CHLOROANILINE | BDL | 1700 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 1700 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 1700 | ug/kg |
| CHRYSENE | BDL | 1700 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 1700 | ug/kg |
| DIBENZOFURAN | BDL | 1700 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| '-DICHLOROBENZIDINE | BDL | 3400 | ug/kg |
| HYLPHTHALATE | BDL | 1700 | ug/kg |
| DIMETHYLPHTHALATE | BDL | 1700 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 1700 | ug/kg |
| DINITROBENZENES | BDL | 8500 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 1700 | ug/kg |

ITAGE LABORATORIES, INC. Lab Sample ID: C156710

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| DINITROTOLUENE | BDL | 1700 | ug/kg |
| -OCTYLPHTHALATE | BDL | 1700 | ug/kg |
| FLUORANTHENE | BDL | 1700 | ug/kg |
| FLUORENE | BDL | 1700 | ug/kg |
| HEXACHLOROBENZENE | BDL | 1700 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 1700 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 1700 | ug/kg |
| HEXACHLOROETHANE | BDL | 1700 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 1700 | ug/kg |
| ISOPHORONE | BDL | 1700 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 1700 | ug/kg |
| NAPHTHALENE | BDL | 1700 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 8500 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 8500 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 8500 | ug/kg |
| NITROBENZENE | BDL | 1700 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 1700 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 1700 | ug/kg |
| PHENANTHRENE | BDL | 1700 | ug/kg |
| 2-PICOLINE | BDL | 8500 | ug/kg |
| PYRENE | BDL | 1700 | ug/kg |
| PYRIDINE | BDL | 8500 | ug/kg |
| TOLUENEDIAMINE | BDL | 8500 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 1700 | ug/kg |
| BENZOIC ACID | BDL | 8500 | ug/kg |
| HLORO-3-METHYLPHENOL | BDL | 1700 | ug/kg |
| ILOROPHENOL | BDL | 1700 | ug/kg |
| 2,4-DICHLOROPHENOL | BDL | 1700 | ug/kg |
| 2,4-DIMETHYLPHENOL | BDL | 1700 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 8500 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 8500 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 1700 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 1700 | ug/kg |
| 2-NITROPHENOL | BDL | 1700 | ug/kg |
| 4-NITROPHENOL | BDL | 8500 | ug/kg |
| PENTACHLOROPHENOL | BDL | 8500 | ug/kg |
| PHENOL | BDL | 1700 | ug/kg |
| TETRACHLOROPHENOL | BDL | 1700 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 1700 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 1700 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 1900 RT=2.2 | | ug/kg |
| 3-PENTEN-2-ONE | * 2000 RT=2.56 | | ug/kg |
| UNKNOWN | * 3100 RT=3.51 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 4600 RT=4.77 | | ug/kg |
| UNKNOWN | * 4400 RT=6.76 | | ug/kg |
| UNKNOWN | * 2400 RT=7.08 | | ug/kg |
| UNKNOWN | 8000 RT=7.78 | | ug/kg |
| 2H,PYRAN,3,4-DIHYDRO-6-METHYL | 3200 RT=7.89 | | ug/kg |
| UNKNOWN | 5800 RT=8.61 | | ug/kg |
| UNKNOWN | 4400 RT=8.77 | | ug/kg |
| IOWN | 2200 RT=9.38 | | ug/kg |
| IOWN | 2400 RT=9.72 | | ug/kg |
| UNKNOWN | 2900 RT=10.26 | | ug/kg |
| UNKNOWN | 2400 RT=10.78 | | ug/kg |
| UNKNOWN | 1700 RT=11.71 | | ug/kg |
| UNKNOWN | 3900 RT=12.89 | | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| OWN | 1700 RT=13.34 | | ug/kg |
| SURROGATE RECOVERY | | | |
| 2-FLUOROPHENOL | 64 | | % Rec |
| PHENOL-D5 | 108 | | % Rec |
| NITROBENZENE-D5 | 81 | | % Rec |
| 2-FLUOROBIPHENYL | 142 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 103 | | % Rec |
| TERPHENYL-D14 | 107 | | % Rec |

*1:5 DILUTION.*
*Dilution necessary due to matrix effect*
*All tentatively identified compound concentration values are estimated.*
** Compound also detected in Blank.*

Sample Comments

| | |
|---|---|
| * | *See Note for Parameter* |
| BDL | *Below Detection Limit* |
| EST | *Estimated Value* |
| RT | *Retention Time* |

*Sample chain of custody number 5058.*

*This Certificate shall not be reproduced, except in full,*
*hout the written approval of the lab.*

Quality Assurance Officer: GABusch

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| :RITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156711 |
| | Complete | PO Number | |
| | 10-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 14-JUN-94 | 17-MAY-94 09:30 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

Sample Description

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-11 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP  Analysis Date: 19-MAY-94 18:40  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 86 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| RYLONITRILE | BDL | 70 | ug/kg |
| IZENE | BDL | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 29 | 5 | ug/kg |
| METHYL ETHYL KETONE | 23 | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| RACHLOROETHENE | BDL | 5 | ug/kg |
| TRAHYDROFURAN | BDL | 25 | ug/kg |
| TOLUENE | 7 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

RITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156711

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| CHLOROETHENE | 9 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 13 | 5 | ug/kg |
| UNKNOWN | EST 18 RT=26 | | ug/kg |
| UNKNOWN HYDROCARBON | EST 14 RT=31.13 | | ug/kg |
| UNKNOWN HYDROCARBON | EST 17 RT=32.59 | | ug/kg |
| UNKNOWN | EST 68 RT=34.27 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 111 | | % Rec |
| TOLUENE-D8 | 111 | | % Rec |
| 4-BROMOFLUOROBENZENE | 88 | | % Rec |

*1:1 DILUTION.*

**GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550**

Analyst: S. BUSSEY Analysis Date: 18-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.02 | | Grams |
| FINAL VOLUME | 1 | | mL |

**SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A**

ılyst: H. QIAN Analysis Date: 19-MAY-94 02:25 Instrument: GC/MS SVOA Test: 0505.3.0

ep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 1700 | ug/kg |
| ACENAPHTHYLENE | BDL | 1700 | ug/kg |
| ANTHRACENE | BDL | 1700 | ug/kg |
| BENZ(A)ANTHRACENE | BDL | 1700 | ug/kg |
| BENZO(A)PYRENE | BDL | 1700 | ug/kg |
| BENZO(B)FLUORANTHENE | BDL | 1700 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 1700 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 1700 | ug/kg |
| BENZYL ALCOHOL | BDL | 1700 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 1700 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 1700 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 1700 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 1700 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 1700 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 1700 | ug/kg |
| CARBAZOLE | BDL | 1700 | ug/kg |
| 4-CHLOROANILINE | BDL | 1700 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 1700 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 1700 | ug/kg |
| CHRYSENE | BDL | 1700 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 1700 | ug/kg |
| DIBENZOFURAN | BDL | 1700 | ug/kg |
| ' 2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| -DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| ,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 1700 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 3400 | ug/kg |
| DIETHYLPHTHALATE | BDL | 1700 | ug/kg |
| DIMETHYLPHTHALATE | BDL | 1700 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 1700 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ITROBENZENES | BDL | 8500 | ug/kg |
| -DINITROTOLUENE | BDL | 1700 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 1700 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 1700 | ug/kg |
| FLUORANTHENE | BDL | 1700 | ug/kg |
| FLUORENE | BDL | 1700 | ug/kg |
| HEXACHLOROBENZENE | BDL | 1700 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 1700 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 1700 | ug/kg |
| HEXACHLOROETHANE | BDL | 1700 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 1700 | ug/kg |
| ISOPHORONE | BDL | 1700 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 1700 | ug/kg |
| NAPHTHALENE | BDL | 1700 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 8500 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 8500 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 8500 | ug/kg |
| NITROBENZENE | BDL | 1700 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 1700 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 1700 | ug/kg |
| PHENANTHRENE | BDL | 1700 | ug/kg |
| 2-PICOLINE | BDL | 8500 | ug/kg |
| PYRENE | BDL | 1700 | ug/kg |
| PYRIDINE | BDL | 8500 | ug/kg |
| TOLUENEDIAMINE | BDL | 8500 | ug/kg |
| ,4-TRICHLOROBENZENE | BDL | 1700 | ug/kg |
| ZOIC ACID | BDL | 8500 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 1700 | ug/kg |
| 2-CHLOROPHENOL | BDL | 1700 | ug/kg |
| 2,4-DICHLOROPHENOL | BDL | 1700 | ug/kg |
| 2,4-DIMETHYLPHENOL | BDL | 1700 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 8500 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 8500 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 1700 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 1700 | ug/kg |
| 2-NITROPHENOL | BDL | 1700 | ug/kg |
| 4-NITROPHENOL | BDL | 8500 | ug/kg |
| PENTACHLOROPHENOL | BDL | 8500 | ug/kg |
| PHENOL | BDL | 1700 | ug/kg |
| TETRACHLOROPHENOL | BDL | 1700 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 1700 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 1700 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 2900 RT=2.19 | | ug/kg |
| 3-PENTEN-2-ONE | * 2700 RT=2.56 | | ug/kg |
| UNKNOWN | * 4600 RT=3.5 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 8000 RT=4.77 | | ug/kg |
| UNKNOWN | * 7000 RT=6.76 | | ug/kg |
| UNKNOWN | * 3700 RT=7.07 | | ug/kg |
| UNKNOWN | 12000 RT=7.75 | | ug/kg |
| NKNOWN | 4100 RT=7.87 | | ug/kg |
| NOWN | 7500 RT=8.59 | | ug/kg |
| NOWN | 5300 RT=8.75 | | ug/kg |
| UNKNOWN | 2900 RT=9.36 | | ug/kg |
| UNKNOWN | 2000 RT=10.24 | | ug/kg |
| UNKNOWN C13 HYDROCARBON | 2200 RT=11.73 | | ug/kg |
| UNKNOWN C10 HYDROCARBON | 2000 RT=12.64 | | ug/kg |

RITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156711

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NOWN | 3600 RT=12.86 | | ug/kg |
| NOWN | 2000 RT=13.82 | | ug/kg |
| TETRADECANE | 3400 RT=14.49 | | ug/kg |
| UNKNOWN | 1900 RT=14.97 | | ug/kg |
| UNKNOWN | 1900 RT=15.24 | | ug/kg |
| DODECANE | 2900 RT=15.83 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 62 | | % Rec |
| PHENOL-D5 | 113 | | % Rec |
| NITROBENZENE-D5 | 78 | | % Rec |
| 2-FLUOROBIPHENYL | 148 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 82 | | % Rec |
| TERPHENYL-D14 | 103 | | % Rec |

*1:5 DILUTION.*
*Dilution necessary due to matrix effect*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 18-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 100.07 | | Grams |
| UID FRACTION (GRAMS) | 0 | | Grams |
| RACTED SAMPLE | 100.07 | | Grams |
| SOLIDS | 100 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 9.78 | | Std. Units |
| ADJUSTED PH | 2.37 | | Std. Units |
| BUFFER SOLUTION PH | 4.98 | | Std. Units |
| FINAL PH | 5.73 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 2000 | | mL |
| VOLUME EXTRACT FILTERED | 2000 | | mL |
| VOLUME LIQUID (ADD BACK) | 0 | | mL |
| TOTAL VOLUME FILTRATE | 2000 | | mL |
| AMBIENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1602 | | HRS |
| FINAL TIME | 0910 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: J. ULASZEK Analysis Date: 21-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## TCLP BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M704.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
p: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| BARIUM | BDL | BDL | 10 | mg/L | 1.0 | 2.771 | 176 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| SAMPLE | | 1.013 | | Conc | | | |

 (continued on next page)

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| .E + ADD 1 | | 1.976 | | Conc | | | |
| DILUTION | | 2 | | | | | |

## CADMIUM FAA (1 POINT MSA) SW846-7130

Analyst: C. SARKAN Analysis Date: 27-MAY-94 Instrument: FAA Test: M608.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |
| SAMPLE | 0.001 | | Conc |
| SAMPLE + ADD 1 | 0.576 | | Conc |
| DILUTION | 1 | | |

## TCLP CHROMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M710.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| CHROMIUM | BDL | BDL | 0.04 | mg/L | 1.0 | 0.8819 | 88 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| SAMPLE | | BDL | | Conc | | | |
| SAMPLE + ADD 1 | | 0.6881 | | Conc | | | |
| TION | | 2 | | | | | |

## ıCLP LEAD ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M716.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| LEAD | BDL | BDL | 0.20 | mg/L | 1.0 | 0.8501 | 85 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| SAMPLE | | BDL | | Conc | | | |
| SAMPLE + ADD 1 | | 0.6059 | | Conc | | | |
| DILUTION | | 2 | | | | | |

## SILVER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1 | | mg/L |
| SAMPLE | 0.008 | | Conc |
| SAMPLE + ADD 1 | 1.05 | | Conc |
| DILUTION | 1 | | |

## ^FAA ACID DIGESTION (LEACHATE) SW846-3020A

alyst: J. ULASZEK Analysis Date: 21-MAY-94 Test: P130.9.0
rep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## P ARSENIC GFAA (1 POINT MSA) SW846-7060

lyst: T. NOHA Analysis Date: 23-MAY-94 Instrument: GFAA Test: M703.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| ARSENIC | BDL | BDL | 0.005 | mg/L | 0.10 | 0.099 | 99 |
| ADDITION 1 | | 0.01 | | mg/L | | | |
| SAMPLE | | 0.015 | | Conc | | | |
| SAMPLE + ADD 1 | | 0.0119 | | Conc | | | |
| DILUTION | | 1 | | | | | |

## TCLP SELENIUM GFAA (1 POINT MSA) SW846-7740

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: GFAA Test: M728.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| SELENIUM | BDL | BDL | 0.05 | mg/L | 0.05 | 0.047 | 94 |
| ADDITION 1 | | 0.01 | | mg/L | | | |
| SAMPLE | | 0.001 | | Conc | | | |
| SAMPLE + ADD 1 | | 0.0086 | | Conc | | | |
| DILUTION | | 5 | | | | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

lyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P131.9.0
p: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## TCLP MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M720.6.0
Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| MERCURY | BDL | BDL | 0.005 | mg/L | 0.001 | 0.00082 | 82 |
| ADDITION 1 | | 0.001 | | mg/L | | | |
| SAMPLE | | 0.000 | | Conc | | | |
| SAMPLE + ADD 1 | | 0.00097 | | Conc | | | |
| DILUTION | | 1 | | | | | |

Sample Comments

* *See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 5058.*

*s Certificate shall not be reproduced, except in full,*
*thout the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| :ITAGE LABORATORIES, INC.<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156712 |
| | Complete | PO Number | |
| | 08-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 09-JUN-94 | 17-MAY-94 10:15 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-12 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: H. QIAN  Analysis Date: 24-MAY-94 14:14  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 80 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| YLONITRILE | BDL | 70 | ug/kg |
| ZENE | BDL | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | EST 3 | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 15 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | EST 9 | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| RACHLOROETHENE | EST 3 | 5 | ug/kg |
| RAHYDROFURAN | 26 | 25 | ug/kg |
| TOLUENE | 16 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | EST 3 | 5 | ug/kg |

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| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| 2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| HLOROETHENE | 36 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 14 | 5 | ug/kg |
| ALSO DETECTED | | | |
| UNKNOWN HYDROCARBON | EST 28 RT=34.24 | | ug/kg |
| UNKNOWN HYDROCARBON | EST 18 RT=35.16 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 92 | | % Rec |
| TOLUENE-D8 | 116 | | % Rec |
| 4-BROMOFLUOROBENZENE | 88 | | % Rec |

*1:1 DILUTION.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 18-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.04 | | Grams |
| FINAL VOLUME | 2 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 20-MAY-94 18:19 Instrument: GC/MS SVOA Test: 0505.3.0

p: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 3300 | ug/kg |
| ACENAPHTHYLENE | BDL | 3300 | ug/kg |
| ANTHRACENE | BDL | 3300 | ug/kg |
| BENZ(A)ANTHRACENE | BDL | 3300 | ug/kg |
| BENZO(A)PYRENE | BDL | 3300 | ug/kg |
| BENZO(B)FLUORANTHENE | BDL | 3300 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 3300 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 3300 | ug/kg |
| BENZYL ALCOHOL | BDL | 3300 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 3300 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 3300 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 3300 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 3300 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 3300 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 3300 | ug/kg |
| CARBAZOLE | BDL | 3300 | ug/kg |
| 4-CHLOROANILINE | BDL | 3300 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 3300 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 3300 | ug/kg |
| CHRYSENE | BDL | 3300 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 3300 | ug/kg |
| DIBENZOFURAN | BDL | 3300 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 3300 | ug/kg |
| 1 3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 3300 | ug/kg |
| ·DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 3300 | ug/kg |
| , '-DICHLOROBENZIDINE | BDL | 6600 | ug/kg |
| DIETHYLPHTHALATE | BDL | 3300 | ug/kg |
| DIMETHYLPHTHALATE | BDL | 3300 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 3300 | ug/kg |
| DINITROBENZENES | BDL | 17000 | ug/kg |

ITAGE LABORATORIES, INC. Lab Sample ID: C156712

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ? DINITROTOLUENE | BDL | 3300 | ug/kg |
| DINITROTOLUENE | BDL | 3300 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 3300 | ug/kg |
| FLUORANTHENE | BDL | 3300 | ug/kg |
| FLUORENE | BDL | 3300 | ug/kg |
| HEXACHLOROBENZENE | BDL | 3300 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 3300 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 3300 | ug/kg |
| HEXACHLOROETHANE | BDL | 3300 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 3300 | ug/kg |
| ISOPHORONE | BDL | 3300 | ug/kg |
| 2-METHYLNAPHTHALENE | EST 1900 | 3300 | ug/kg |
| NAPHTHALENE | BDL | 3300 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 17000 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 17000 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 17000 | ug/kg |
| NITROBENZENE | BDL | 3300 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 3300 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 3300 | ug/kg |
| PHENANTHRENE | BDL | 3300 | ug/kg |
| 2-PICOLINE | BDL | 17000 | ug/kg |
| PYRENE | BDL | 3300 | ug/kg |
| PYRIDINE | BDL | 17000 | ug/kg |
| TOLUENEDIAMINE | BDL | 17000 | ug/kg |
| 1 2,4-TRICHLOROBENZENE | BDL | 3300 | ug/kg |
| ZOIC ACID | BDL | 17000 | ug/kg |
| ILORO-3-METHYLPHENOL | BDL | 3300 | ug/kg |
| 2-CHLOROPHENOL | BDL | 3300 | ug/kg |
| 2,4-DICHLOROPHENOL | BDL | 3300 | ug/kg |
| 2,4-DIMETHYLPHENOL | BDL | 3300 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 17000 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 17000 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 3300 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 3300 | ug/kg |
| 2-NITROPHENOL | BDL | 3300 | ug/kg |
| 4-NITROPHENOL | BDL | 17000 | ug/kg |
| PENTACHLOROPHENOL | BDL | 17000 | ug/kg |
| PHENOL | BDL | 3300 | ug/kg |
| TETRACHLOROPHENOL | BDL | 3300 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 3300 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 3300 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 3-PENTEN-2-ONE | * 5600 RT=3.46 | | ug/kg |
| UNKNOWN | * 4300 RT=3.82 | | ug/kg |
| UNKNOWN | * 8600 RT=4.42 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 12000 RT=5.56 | | ug/kg |
| UNKNOWN | * 8600 RT=7.31 | | ug/kg |
| UNKNOWN | 8300 RT=7.58 | | ug/kg |
| UNKNOWN | 9900 RT=8.07 | | ug/kg |
| UNKNOWN | 8910 RT=8.43 | | ug/kg |
| UNKNOWN | 5900 RT=8.81 | | ug/kg |
| IOWN | 4600 RT=9.01 | | ug/kg |
| NOWN | 4300 RT=9.28 | | ug/kg |
| UNKNOWN C13 HYDROCARBON | 4300 RT=11.59 | | ug/kg |
| UNKNOWN HYDROCARBON | 8600 RT=12.36 | | ug/kg |
| UNKNOWN | 5300 RT=12.57 | | ug/kg |
| UNKNOWN HYDROCARBON | 11000 RT=12.73 | | ug/kg |

ITAGE LABORATORIES, INC. Lab Sample ID: C156712

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| U OWN | 3300 RT=13.37 | | ug/kg |
| OWN HYDROCARBON | 8600 RT=13.95 | | ug/kg |
| UNKNOWN HYDROCARBON | 4600 RT=14.63 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| ---------- | | | |
| 2-FLUOROPHENOL | ** | | % Rec |
| PHENOL-D5 | ** | | % Rec |
| NITROBENZENE-D5 | ** | | % Rec |
| 2-FLUOROBIPHENYL | ** | | % Rec |
| 2,4,6-TRIBROMOPHENOL | ** | | % Rec |
| TERPHENYL-D14 | ** | | % Rec |

*1:5 DILUTION.*
***Surrogates were diluted out*
*Dilution necessary due to matrix effect*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 18-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 100.01 | | Grams |
| LIQUID FRACTION (GRAMS) | 0.01 | | Grams |
| EXTRACTED SAMPLE | 96.84 | | Grams |
| IDS | 97 | | Percent |
| MM SIEVE TEST | | | Passed |
| INITIAL PH | 9.65 | | Std. Units |
| ADJUSTED PH | 5.12 | | Std. Units |
| BUFFER SOLUTION PH | 2.90 | | Std. Units |
| FINAL PH | 5.20 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 1940 | | mL |
| VOLUME EXTRACT FILTERED | 1940 | | mL |
| VOLUME LIQUID (ADD BACK) | 0 | | mL |
| TOTAL VOLUME FILTRATE | 1940 | | mL |
| AMBIENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1602 | | HRS |
| FINAL TIME | 0910 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: J. ULASZEK Analysis Date: 21-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## TCLP BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 01-JUN-94 07:50 Instrument: ICP Test: M704.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| BARIUM | BDL | BDL | 5.0 | mg/L | 1.0 | 4.319 | 94 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| SAMPLE | | 3.378 | | Conc | | | |
| SAMPLE + ADD 1 | | 4.266 | | Conc | | | |
| DILUTION | | 1 | | | | | |

 (continued on next page)

## IIUM FAA (1 POINT MSA) SW846-7130

yst: C. SARKAN Analysis Date: 27-MAY-94 Instrument: FAA Test: M608.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |
| SAMPLE | 0.001 | | Conc |
| SAMPLE + ADD 1 | 0.526 | | Conc |
| DILUTION | 1 | | |

## TCLP CHROMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 01-JUN-94 07:50 Instrument: ICP Test: M710.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| CHROMIUM | BDL | BDL | 0.02 | mg/L | 1.0 | 0.8823 | 88 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| SAMPLE | | -0.0038 | | Conc | | | |
| SAMPLE + ADD 1 | | 0.8930 | | Conc | | | |
| DILUTION | | 1 | | | | | |

## TCLP LEAD ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 01-JUN-94 07:50 Instrument: ICP Test: M716.7.0
p: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
p: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| LEAD | BDL | BDL | 0.10 | mg/L | 1.0 | 0.8963 | 90 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| SAMPLE | | 0.0118 | | Conc | | | |
| SAMPLE + ADD 1 | | 0.9440 | | Conc | | | |
| DILUTION | | 1 | | | | | |

## SILVER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1 | | mg/L |
| SAMPLE | -0.019 | | Conc |
| SAMPLE + ADD 1 | 1.05 | | Conc |
| DILUTION | 1 | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: J. ULASZEK Analysis Date: 21-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ITIAL WEIGHT OR VOLUME | 50 | | mL |
| AL VOLUME | 50 | | mL |

ITAGE LABORATORIES, INC. Lab Sample ID: C156712

## ENIC GFAA (1 POINT MSA) SW846-7060

Analyst: T. NOHA Analysis Date: 24-MAY-94 Instrument: GFAA Test: M603.6.0
: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | BDL | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0018 | | Conc |
| SAMPLE + ADD 1 | 0.0109 | | Conc |
| DILUTION | 1 | | |

## SELENIUM GFAA (1 POINT MSA) SW846-7740

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: GFAA Test: M628.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.025 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0005 | | Conc |
| SAMPLE + ADD 1 | 0.0093 | | Conc |
| DILUTION | 5 | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TIAL WEIGHT OR VOLUME | 10 | | mL |
| L VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0
Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| SAMPLE + ADD 1 | 0.00089 | | Conc |
| DILUTION | 1 | | |

**Sample Comments**

| | |
|---|---|
| * | *See Note for Parameter* |
| ** | *See Note for Parameter* |
| *BDL* | *Below Detection Limit* |
| *EST* | *Estimated Value* |
| *RT* | *Retention Time* |

*Sample chain of custody number 5058.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: GABusch

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| :ITAGE LABORATORIES, INC.<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156713 |
| | Complete | PO Number | |
| | 08-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 09-JUN-94 | 17-MAY-94 11:05 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-13 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: H. QIAN  Analysis Date: 24-MAY-94 15:05  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 40 | 20 | ug/kg |
| ^CROLEIN | BDL | 50 | ug/kg |
| YLONITRILE | BDL | 70 | ug/kg |
| ZENE | BDL | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | EST 4 | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | EST 3 | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 46 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1 1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| RACHLOROETHENE | 9 | 5 | ug/kg |
| RAHYDROFURAN | 32 | 25 | ug/kg |
| TOLUENE | 24 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | 6 | 5 | ug/kg |

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ITAGE LABORATORIES, INC. Lab Sample ID: C156713

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| 2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| HLOROETHENE | 90 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 7 | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| ---------- | | | |
| DICHLOROETHANE-D4 | 96 | | % Rec |
| TOLUENE-D8 | * 125 | | % Rec |
| 4-BROMOFLUOROBENZENE | 85 | | % Rec |

*1:1 DILUTION.*
*Sample reanalyzed with no improvement in surrogate recovery.*

**GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550**
Analyst: S. BUSSEY Analysis Date: 18-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.16 | | Grams |
| FINAL VOLUME | 2 | | mL |

**SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A**
Analyst: H. QIAN Analysis Date: 20-MAY-94 19:08 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NAPHTHENE | 3500 | 3300 | ug/kg |
| IAPHTHYLENE | BDL | 3300 | ug/kg |
| ANTHRACENE | 7500 | 3300 | ug/kg |
| BENZ(A)ANTHRACENE | 17000 | 3300 | ug/kg |
| BENZO(A)PYRENE | 12000 | 3300 | ug/kg |
| BENZO(B)FLUORANTHENE | 17000 | 3300 | ug/kg |
| BENZO(G,H,I)PERYLENE | 10000 | 3300 | ug/kg |
| BENZO(K)FLUORANTHENE | 8400 | 3300 | ug/kg |
| BENZYL ALCOHOL | BDL | 3300 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 3300 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 3300 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 3300 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 3300 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | 3900 | 3300 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 3300 | ug/kg |
| CARBAZOLE | EST 2800 | 3300 | ug/kg |
| 4-CHLOROANILINE | BDL | 3300 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 3300 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 3300 | ug/kg |
| CHRYSENE | 20000 | 3300 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 3300 | ug/kg |
| DIBENZOFURAN | EST 2400 | 3300 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 3300 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 3300 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 3300 | ug/kg |
| 3 3'-DICHLOROBENZIDINE | BDL | 6600 | ug/kg |
| THYLPHTHALATE | BDL | 3300 | ug/kg |
| ETHYLPHTHALATE | BDL | 3300 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 3300 | ug/kg |
| DINITROBENZENES | BDL | 17000 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 3300 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 3300 | ug/kg |

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| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| [illegible]N-OCTYLPHTHALATE | BDL | 3300 | ug/kg |
| [illegible]ORANTHENE | 23000 | 3300 | ug/kg |
| FLUORENE | 4300 | 3300 | ug/kg |
| HEXACHLOROBENZENE | BDL | 3300 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 3300 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 3300 | ug/kg |
| HEXACHLOROETHANE | BDL | 3300 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | 9900 | 3300 | ug/kg |
| ISOPHORONE | BDL | 3300 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 3300 | ug/kg |
| NAPHTHALENE | BDL | 3300 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 17000 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 17000 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 17000 | ug/kg |
| NITROBENZENE | BDL | 3300 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 3300 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 3300 | ug/kg |
| PHENANTHRENE | 23000 | 3300 | ug/kg |
| 2-PICOLINE | BDL | 17000 | ug/kg |
| PYRENE | 31000 | 3300 | ug/kg |
| PYRIDINE | BDL | 17000 | ug/kg |
| TOLUENEDIAMINE | BDL | 17000 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 3300 | ug/kg |
| BENZOIC ACID | BDL | 17000 | ug/kg |
| [illegible]-CHLORO-3-METHYLPHENOL | BDL | 3300 | ug/kg |
| [illegible]HLOROPHENOL | BDL | 3300 | ug/kg |
| [illegible]-DICHLOROPHENOL | BDL | 3300 | ug/kg |
| [illegible],4-DIMETHYLPHENOL | BDL | 3300 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 17000 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 17000 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 3300 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 3300 | ug/kg |
| 2-NITROPHENOL | BDL | 3300 | ug/kg |
| 4-NITROPHENOL | BDL | 17000 | ug/kg |
| PENTACHLOROPHENOL | BDL | 17000 | ug/kg |
| PHENOL | BDL | 3300 | ug/kg |
| TETRACHLOROPHENOL | BDL | 3300 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 3300 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 3300 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 3-PENTEN-2-ONE | * 4000 RT=3.46 | | ug/kg |
| UNKNOWN | * 6900 RT=4.41 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 11000 RT=5.55 | | ug/kg |
| UNKNOWN | * 8300 RT=7.3 | | ug/kg |
| UNKNOWN | 5900 RT=7.57 | | ug/kg |
| UNKNOWN | 9900 RT=8.07 | | ug/kg |
| UNKNOWN | 5300 RT=8.42 | | ug/kg |
| UNKNOWN | 5900 RT=8.81 | | ug/kg |
| UNKNOWN | 5600 RT=9 | | ug/kg |
| UNKNOWN AROMATIC HYDROCARBON | 5300 RT=19.63 | | ug/kg |
| UNKNOWN | 4000 RT=37.67 | | ug/kg |
| [illegible]NOWN | 3600 RT=12.57 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | ** | | % Rec |
| PHENOL-D5 | ** | | % Rec |

ITAGE LABORATORIES, INC. Lab Sample ID: C156713

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| OBENZENE-D5 | ** | | % Rec |
| UOROBIPHENYL | ** | | % Rec |
| 2,4,6-TRIBROMOPHENOL | ** | | % Rec |
| TERPHENYL-D14 | ** | | % Rec |

*1:5 DILUTION.*
***Surrogates were diluted out*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

Sample Comments

| | |
|---|---|
| * | *See Note for Parameter* |
| ** | *See Note for Parameter* |
| *BDL* | *Below Detection Limit* |
| *EST* | *Estimated Value* |
| *RT* | *Retention Time* |

*Sample chain of custody number 5058.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: G.A. Busch

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| ...RITAGE LABORATORIES, INC.<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156714 |
| | Complete | PO Number | |
| | 08-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 09-JUN-94 | 17-MAY-94 11:40 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-14 - GRAB

**VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A**

Analyst: H. QIAN  Analysis Date: 24-MAY-94 15:50  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 29 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| YLONITRILE | BDL | 70 | ug/kg |
| ZENE | BDL | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | EST 4 | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 12 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| RACHLOROETHENE | 6 | 5 | ug/kg |
| RAHYDROFURAN | 33 | 25 | ug/kg |
| TOLUENE | 15 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

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ITAGE LABORATORIES, INC. Lab Sample ID: C156714

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| 2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| ....CHLOROETHENE | 51 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 9 | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 96 | | % Rec |
| TOLUENE-D8 | 114 | | % Rec |
| 4-BROMOFLUOROBENZENE | 89 | | % Rec |

*1:1 DILUTION.*

**GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550**
Analyst: S. BUSSEY Analysis Date: 18-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.10 | | Grams |
| FINAL VOLUME | 2 | | mL |

**SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A**
Analyst: H. QIAN Analysis Date: 20-MAY-94 19:57 Instrument: GC/MS SVOA Test: Q505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ^CENAPHTHENE | BDL | 660 | ug/kg |
| NAPHTHYLENE | BDL | 660 | ug/kg |
| IRACENE | BDL | 660 | ug/kg |
| BENZ(A)ANTHRACENE | 1000 | 660 | ug/kg |
| BENZO(A)PYRENE | 700 | 660 | ug/kg |
| BENZO(B)FLUORANTHENE | 1100 | 660 | ug/kg |
| BENZO(G,H,I)PERYLENE | 670 | 660 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 660 | ug/kg |
| BENZYL ALCOHOL | BDL | 660 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 660 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 660 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 660 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 660 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 660 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 660 | ug/kg |
| CARBAZOLE | BDL | 660 | ug/kg |
| 4-CHLOROANILINE | BDL | 660 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 660 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 660 | ug/kg |
| CHRYSENE | 1200 | 660 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 660 | ug/kg |
| DIBENZOFURAN | BDL | 660 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 660 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 660 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 660 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 1300 | ug/kg |
| DI[illegible]THYLPHTHALATE | BDL | 660 | ug/kg |
| ETHYLPHTHALATE | BDL | 660 | ug/kg |
| -N-BUTYLPHTHALATE | BDL | 660 | ug/kg |
| DINITROBENZENES | BDL | 3300 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 660 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 660 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 660 | ug/kg |

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| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| RANTHENE | 1300 | 660 | ug/kg |
| RENE | BDL | 660 | ug/kg |
| HEXACHLOROBENZENE | BDL | 660 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 660 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 660 | ug/kg |
| HEXACHLOROETHANE | BDL | 660 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | EST 630 | 660 | ug/kg |
| ISOPHORONE | BDL | 660 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 660 | ug/kg |
| NAPHTHALENE | BDL | 660 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 3300 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 3300 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 3300 | ug/kg |
| NITROBENZENE | BDL | 660 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 660 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 660 | ug/kg |
| PHENANTHRENE | 930 | 660 | ug/kg |
| 2-PICOLINE | BDL | 3300 | ug/kg |
| PYRENE | 1400 | 660 | ug/kg |
| PYRIDINE | BDL | 3300 | ug/kg |
| TOLUENEDIAMINE | BDL | 3300 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 660 | ug/kg |
| BENZOIC ACID | BDL | 3300 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 660 | ug/kg |
| 2-CHLOROPHENOL | BDL | 660 | ug/kg |
| -DICHLOROPHENOL | BDL | 660 | ug/kg |
| DIMETHYLPHENOL | BDL | 660 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 3300 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 3300 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 660 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 660 | ug/kg |
| 2-NITROPHENOL | BDL | 660 | ug/kg |
| 4-NITROPHENOL | BDL | 3300 | ug/kg |
| PENTACHLOROPHENOL | BDL | 3300 | ug/kg |
| PHENOL | BDL | 660 | ug/kg |
| TETRACHLOROPHENOL | BDL | 660 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 660 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 660 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 8200 RT=3 | | ug/kg |
| 3-PENTEN-2-ONE | * 11000 RT=3.49 | | ug/kg |
| UNKNOWN | * 5600 RT=3.84 | | ug/kg |
| UNKNOWN | * 16000 RT=4.46 | | ug/kg |
| UNKNOWN | 4600 RT=4.64 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 21000 RT=5.6 | | ug/kg |
| UNKNOWN | * 18000 RT=7.33 | | ug/kg |
| UNKNOWN | 6300 RT=7.59 | | ug/kg |
| UNKNOWN | * 5600 RT=7.62 | | ug/kg |
| UNKNOWN | 22000 RT=8.16 | | ug/kg |
| UNKNOWN | 9200 RT=8.46 | | ug/kg |
| UNKNOWN | 5300 RT=8.56 | | ug/kg |
| OWN | 6300 RT=8.66 | | ug/kg |
| OWN | 14000 RT=8.88 | | ug/kg |
| UNKNOWN | * 18000 RT=9.06 | | ug/kg |
| UNKNOWN | 5300 RT=9.57 | | ug/kg |
| UNKNOWN | 12000 RT=10.23 | | ug/kg |
| UNKNOWN HYDROCARBON | 15000 RT=12.59 | | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| IOWN | 5000 RT=12.65 | | ug/kg |
| IOWN | 7600 RT=13.14 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 87 | | % Rec |
| PHENOL-D5 | 104 | | % Rec |
| NITROBENZENE-D5 | 77 | | % Rec |
| 2-FLUOROBIPHENYL | 101 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 58 | | % Rec |
| TERPHENYL-D14 | 93 | | % Rec |

*1:1 DILUTION.*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 18-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 100.06 | | Grams |
| LIQUID FRACTION (GRAMS) | 0 | | Grams |
| EXTRACTED SAMPLE | 100.06 | | Grams |
| SOLIDS | 100 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 9.51 | | Std. Units |
| USTED PH | 5.20 | | Std. Units |
| ER SOLUTION PH | 2.90 | | Std. Units |
| FINAL PH | 5.24 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 2000 | | mL |
| VOLUME EXTRACT FILTERED | 2000 | | mL |
| VOLUME LIQUID (ADD BACK) | 0 | | mL |
| TOTAL VOLUME FILTRATE | 2000 | | mL |
| AMBIENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1602 | | HRS |
| FINAL TIME | 0910 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: J. ULASZEK Analysis Date: 21-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## TCLP BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 01-JUN-94 07:50 Instrument: ICP Test: M704.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| BARIUM | BDL | BDL | 5.0 | mg/L | 1.0 | 2.509 | 88 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| E | | 1.625 | | Conc | | | |
| : + ADD 1 | | 2.426 | | Conc | | | |
| DILUTION | | 1 | | | | | |

ITAGE LABORATORIES, INC. Lab Sample ID: C156714

## MIUM FAA (1 POINT MSA) SW846-7130

Analyst: C. SARKAN Analysis Date: 27-MAY-94 Instrument: FAA Test: M608.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |
| SAMPLE | 0.001 | | Conc |
| SAMPLE + ADD 1 | 0.551 | | Conc |
| DILUTION | 1 | | |

## TCLP CHROMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 01-JUN-94 07:50 Instrument: ICP Test: M710.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| CHROMIUM | BDL | BDL | 0.02 | mg/L | 1.0 | 0.8814 | 88 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| SAMPLE | | -0.0075 | | Conc | | | |
| SAMPLE + ADD 1 | | 0.8548 | | Conc | | | |
| DILUTION | | 1 | | | | | |

## TCLP LEAD ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 01-JUN-94 07:50 Instrument: ICP Test: M716.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| LEAD | BDL | BDL | 0.10 | mg/L | 1.0 | 0.9710 | 97 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| SAMPLE | | 0.0515 | | Conc | | | |
| SAMPLE + ADD 1 | | 0.9300 | | Conc | | | |
| DILUTION | | 1 | | | | | |

## SILVER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1 | | mg/L |
| SAMPLE | -.019 | | Conc |
| SAMPLE + ADD 1 | 1.12 | | Conc |
| DILUTION | 1 | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: J. OLASZEK Analysis Date: 21-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

ITAGE LABORATORIES, INC. Lab Sample ID: C156714

## ENIC GFAA (1 POINT MSA) SW846-7060

lyst: T. NOHA Analysis Date: 24-MAY-94 Instrument: GFAA Test: M603.6.0
p: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | BDL | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0017 | | Conc |
| SAMPLE + ADD 1 | 0.0106 | | Conc |
| DILUTION | 1 | | |

## SELENIUM GFAA (1 POINT MSA) SW846-7740

Analyst: T. NOHA Analysis Date: 25-MAY-94 Instrument: GFAA Test: M628.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.010 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0001 | | Conc |
| SAMPLE + ADD 1 | 0.0077 | | Conc |
| DILUTION | 1 | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TIAL WEIGHT OR VOLUME | 10 | | mL |
| L VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0
Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| SAMPLE + ADD 1 | 0.00097 | | Conc |
| DILUTION | 1 | | |

**Sample Comments**

** See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 5058.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: GABusch

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| RITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156715 |
| | Complete | PO Number | |
| | 09-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 06-JUL-94 | 17-MAY-94 13:10 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

Sample Description

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-15 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: H. QIAN  Analysis Date: 24-MAY-94 16:35  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 230 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| RYLONITRILE | BDL | 70 | ug/kg |
| ZENE | BDL | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 17 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | EST 5 | 10 | ug/kg |
| STYRENE | EST 3 | 5 | ug/kg |
| 1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| RACHLOROETHENE | BDL | 5 | ug/kg |
| TRAHYDROFURAN | 29 | 25 | ug/kg |
| TOLUENE | 13 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| CHLOROETHENE | 20 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | BDL | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 95 | | % Rec |
| TOLUENE-D8 | 116 | | % Rec |
| 4-BROMOFLUOROBENZENE | 86 | | % Rec |

*1:1 DILUTION.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 18-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10.73 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 20-MAY-94 20:47 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ^CENAPHTHENE | BDL | 930 | ug/kg |
| NAPHTHYLENE | BDL | 930 | ug/kg |
| HRACENE | BDL | 930 | ug/kg |
| BENZ(A)ANTHRACENE | BDL | 930 | ug/kg |
| BENZO(A)PYRENE | BDL | 930 | ug/kg |
| BENZO(B)FLUORANTHENE | BDL | 930 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 930 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 930 | ug/kg |
| BENZYL ALCOHOL | BDL | 930 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 930 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 930 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 930 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 930 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 930 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 930 | ug/kg |
| CARBAZOLE | BDL | 930 | ug/kg |
| 4-CHLOROANILINE | BDL | 930 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 930 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 930 | ug/kg |
| CHRYSENE | BDL | 930 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 930 | ug/kg |
| DIBENZOFURAN | BDL | 930 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 930 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 930 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 930 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 1900 | ug/kg |
| DIETHYLPHTHALATE | BDL | 930 | ug/kg |
| ETHYLPHTHALATE | BDL | 930 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 930 | ug/kg |
| DINITROBENZENES | BDL | 4700 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 930 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 930 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 930 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| )RANTHENE | BDL | 930 | ug/kg |
| ORENE | BDL | 930 | ug/kg |
| HEXACHLOROBENZENE | BDL | 930 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 930 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 930 | ug/kg |
| HEXACHLOROETHANE | BDL | 930 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 930 | ug/kg |
| ISOPHORONE | BDL | 930 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 930 | ug/kg |
| NAPHTHALENE | BDL | 930 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 4700 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 4700 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 4700 | ug/kg |
| NITROBENZENE | BDL | 930 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 930 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 930 | ug/kg |
| PHENANTHRENE | BDL | 930 | ug/kg |
| 2-PICOLINE | BDL | 4700 | ug/kg |
| PYRENE | BDL | 930 | ug/kg |
| PYRIDINE | BDL | 4700 | ug/kg |
| TOLUENEDIAMINE | BDL | 4700 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 930 | ug/kg |
| BENZOIC ACID | BDL | 4700 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 930 | ug/kg |
| 2-CHLOROPHENOL | BDL | 930 | ug/kg |
| -DICHLOROPHENOL | BDL | 930 | ug/kg |
| -DIMETHYLPHENOL | BDL | 930 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 4700 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 4700 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 930 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 930 | ug/kg |
| 2-NITROPHENOL | BDL | 930 | ug/kg |
| 4-NITROPHENOL | BDL | 4700 | ug/kg |
| PENTACHLOROPHENOL | BDL | 4700 | ug/kg |
| PHENOL | BDL | 930 | ug/kg |
| TETRACHLOROPHENOL | BDL | 930 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 930 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 930 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| UNKNOWN | 3600 RT=2.33 | | ug/kg |
| UNKNOWN | 3600 RT=2.85 | | ug/kg |
| 2,4-HEXADIENAL | * 5200 RT=3.03 | | ug/kg |
| 3-PENTEN-2-ONE | * 12000 RT=3.54 | | ug/kg |
| UNKNOWN | * 9300 RT=3.89 | | ug/kg |
| UNKNOWN | * 19000 RT=4.51 | | ug/kg |
| UNKNOWN | 8900 RT=4.71 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 23000 RT=5.65 | | ug/kg |
| UNKNOWN | * 3500 RT=6.84 | | ug/kg |
| UNKNOWN | * 18000 RT=7.39 | | ug/kg |
| UNKNOWN | 6400 RT=7.62 | | ug/kg |
| "NKNOWN | * 4600 RT=7.68 | | ug/kg |
| NOWN | * 8500 RT=8.18 | | ug/kg |
| .KNOWN | * 13000 RT=8.27 | | ug/kg |
| UNKNOWN | * 10000 RT=8.53 | | ug/kg |
| UNKNOWN | * 9000 RT=8.95 | | ug/kg |
| UNKNOWN | * 10000 RT=9.1 | | ug/kg |
| UNKNOWN | * 8000 RT=10.37 | | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| IOWN | * 8400 RT=12.62 | | ug/kg |
| SURROGATE RECOVERY | | | |
| 2-FLUOROPHENOL | 95 | | % Rec |
| PHENOL-D5 | 68 | | % Rec |
| NITROBENZENE-D5 | 68 | | % Rec |
| 2-FLUOROBIPHENYL | 82 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 59 | | % Rec |
| TERPHENYL-D14 | 81 | | % Rec |

*1:1 DILUTION.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 18-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 100.08 | | Grams |
| LIQUID FRACTION (GRAMS) | 0.03 | | Grams |
| EXTRACTED SAMPLE | 97.76 | | Grams |
| SOLIDS | 98 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 9.30 | | Std. Units |
| ADJUSTED PH | 4.29 | | Std. Units |
| BUFFER SOLUTION PH | 4.98 | | Std. Units |
| FINAL PH | 5.56 | | Std. Units |
| UME BUFFERED SOLUTION | 1955 | | mL |
| UME EXTRACT FILTERED | 1955 | | mL |
| VOLUME LIQUID (ADD BACK) | 0 | | mL |
| TOTAL VOLUME FILTRATE | 1955 | | mL |
| AMBIENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1602 | | HRS |
| FINAL TIME | 0910 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: T. IRVING Analysis Date: 23-MAY-94 Test: P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## TCLP BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 09-JUN-94 Instrument: ICP Test: M704.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| BARIUM | BDL | BDL | 5.0 | mg/L | 1.0 | 3.7 | 89 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| SAMPLE | | 2.9 | | Conc | | | |
| SAMPLE + ADD 1 | | 3.7 | | Conc | | | |
| DILUTION | | 1 | | | | | |

## P CADMIUM FAA (1 POINT MSA) SW846-7130

lyst: C. SARKAN Analysis Date: 23-MAY-94 Instrument: FAA Test: M708.5.0
p: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| CADMIUM | BDL | BDL | 0.05 | mg/L | 1 | 1.08 | 108 |
| ADDITION 1 | | 0.5 | | mg/L | | | |
| SAMPLE | | 0.014 | | Conc | | | |
| SAMPLE + ADD 1 | | 0.567 | | Conc | | | |
| DILUTION | | 1 | 1 | | | | |

## TCLP CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: S. KANAPILLY Analysis Date: 24-MAY-94 Instrument: FAA Test: M710.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| CHROMIUM | BDL | BDL | 0.05 | mg/L | 1.0 | 0.770 | 77 |
| ADDITION 1 | | 1 | | mg/L | | | |
| SAMPLE | | -0.08 | | Conc | | | |
| SAMPLE + ADD 1 | | 1.03 | | Conc | | | |
| DILUTION | | 1 | | | | | |

## TCLP LEAD FAA (1 POINT MSA) SW846-7420

Analyst: C. SARKAN Analysis Date: 31-MAY-94 Instrument: FAA Test: M716.5.0
rep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
ep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| LEAD | BDL | BDL | 0.25 | mg/L | 1 | 0.980 | 98 |
| ADDITION 1 | | 2 | | mg/L | | | |
| SAMPLE | | -0.001 | | Conc | | | |
| SAMPLE + ADD 1 | | 2.08 | | Conc | | | |
| DILUTION | | 1 | | | | | |

## TCLP SILVER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M730.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| SILVER | BDL | BDL | 0.05 | mg/L | 1.0 | 0.442 | 44 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| SAMPLE | | -0.032 | | Conc | | | |
| SAMPLE + ADD 1 | | 1.01 | | Conc | | | |
| DILUTION | | 1 | | | | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: T. IRVING Analysis Date: 23-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TIAL WEIGHT OR VOLUME | 50 | | mL |
| NAL VOLUME | 50 | | mL |

RITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156715

## ...SENIC GFAA (1 POINT MSA) SW846-7060

lyst: T. NOHA Analysis Date: 28-MAY-94 Instrument: GFAA Test: M603.6.0
p: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | BDL | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0011 | | Conc |
| SAMPLE + ADD 1 | 0.0123 | | Conc |
| DILUTION | | | |

## SELENIUM GFAA (1 POINT MSA) SW846-7740

Analyst: T. NOHA Analysis Date: 25-MAY-94 Instrument: GFAA Test: M628.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.010 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | -0.0007 | | Conc |
| SAMPLE + ADD 1 | 0.0076 | | Conc |
| DILUTION | | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TIAL WEIGHT OR VOLUME | 10 | | mL |
| AL VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0
Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| SAMPLE + ADD 1 | 0.00097 | | Conc |
| DILUTION | 1 | | |

Sample Comments

** See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 5058.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| .RITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156716 |
| | Complete | PO Number | |
| | 14-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 15-JUN-94 | 17-MAY-94 13:35 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-16 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY  Analysis Date: 25-MAY-94 10:16  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 46 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| RYLONITRILE | BDL | 70 | ug/kg |
| ZENE | BDL | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 8 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | EST 5 | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1 1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| RACHLOROETHENE | BDL | 5 | ug/kg |
| _ RAHYDROFURAN | 27 | 25 | ug/kg |
| TOLUENE | 9 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| ICHLOROETHENE | 18 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 7 | 5 | ug/kg |
| SURROGATE RECOVERY | | | |
| DICHLOROETHANE-D4 | 91 | | % Rec |
| TOLUENE-D8 | 107 | | % Rec |
| 4-BROMOFLUOROBENZENE | 95 | | % Rec |

*1:1 DILUTION.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 18-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.08 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 24-MAY-94 17:22 Instrument: GC/MS SVOA Test: O505.3.0

Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ^CENAPHTHENE | BDL | 330 | ug/kg |
| NAPHTHYLENE | BDL | 330 | ug/kg |
| HRACENE | BDL | 330 | ug/kg |
| BENZ(A)ANTHRACENE | EST 210 | 330 | ug/kg |
| BENZO(A)PYRENE | BDL | 330 | ug/kg |
| BENZO(B)FLUORANTHENE | EST 220 | 330 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 330 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZYL ALCOHOL | BDL | 330 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 330 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 330 | ug/kg |
| CARBAZOLE | BDL | 330 | ug/kg |
| 4-CHLOROANILINE | BDL | 330 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 330 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 330 | ug/kg |
| CHRYSENE | EST 230 | 330 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 330 | ug/kg |
| DIBENZOFURAN | BDL | 330 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 660 | ug/kg |
| THYLPHTHALATE | BDL | 330 | ug/kg |
| ETHYLPHTHALATE | BDL | 330 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 330 | ug/kg |
| DINITROBENZENES | BDL | 1700 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 330 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 330 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 330 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ORANTHENE | 380 | 330 | ug/kg |
| ..ORENE | BDL | 330 | ug/kg |
| HEXACHLOROBENZENE | BDL | 330 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROETHANE | BDL | 330 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 330 | ug/kg |
| ISOPHORONE | BDL | 330 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 330 | ug/kg |
| NAPHTHALENE | BDL | 330 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 1700 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 1700 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 1700 | ug/kg |
| NITROBENZENE | BDL | 330 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 330 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 330 | ug/kg |
| PHENANTHRENE | 720 | 330 | ug/kg |
| 2-PICOLINE | BDL | 1700 | ug/kg |
| PYRENE | 470 | 330 | ug/kg |
| PYRIDINE | BDL | 1700 | ug/kg |
| TOLUENEDIAMINE | BDL | 1700 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 330 | ug/kg |
| BENZOIC ACID | BDL | 1700 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 330 | ug/kg |
| 2-CHLOROPHENOL | BDL | 330 | ug/kg |
| -DICHLOROPHENOL | BDL | 330 | ug/kg |
| -DIMETHYLPHENOL | BDL | 330 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 1700 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 1700 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 330 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 330 | ug/kg |
| 2-NITROPHENOL | BDL | 330 | ug/kg |
| 4-NITROPHENOL | BDL | 1700 | ug/kg |
| PENTACHLOROPHENOL | BDL | 1700 | ug/kg |
| PHENOL | BDL | 330 | ug/kg |
| TETRACHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 3-PENTEN-2-ONE | * 430 RT=3.55 | | ug/kg |
| UNKNOWN | * 330 RT=3.9 | | ug/kg |
| UNKNOWN | * 690 RT=4.53 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 920 RT=5.68 | | ug/kg |
| UNKNOWN | * 920 RT=7.44 | | ug/kg |
| UNKNOWN | * 530 RT=7.74 | | ug/kg |
| UNKNOWN | 730 RT=8.32 | | ug/kg |
| UNKNOWN | * 820 RT=8.6 | | ug/kg |
| 2,4-HEXADIENAL | * 360 RT=3.05 | | ug/kg |
| UNKNOWN | * 820 RT=9.06 | | ug/kg |
| UNKNOWN | * 790 RT=9.18 | | ug/kg |
| NOWN | * 1800 RT=10.44 | | ug/kg |
| NOWN | * 890 RT=11.62 | | ug/kg |
| ..KNOWN | * 2600 RT=12.71 | | ug/kg |
| UNKNOWN | * 1200 RT=13.26 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LUOROPHENOL | 97 | | % Rec |
| NOL-D5 | 81 | | % Rec |
| NITROBENZENE-D5 | 61 | | % Rec |
| 2-FLUOROBIPHENYL | 98 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 49 | | % Rec |
| TERPHENYL-D14 | 106 | | % Rec |

*1:1 DILUTION.*
*All tentatively identified compound concentration values are estimated.*
** Compound also detected in Blank.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 18-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 99.99 | | Grams |
| LIQUID FRACTION (GRAMS) | 0 | | Grams |
| EXTRACTED SAMPLE | 94.82 | | Grams |
| SOLIDS | 95 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 9.52 | | Std. Units |
| ADJUSTED PH | 5.40 | | Std. Units |
| BUFFER SOLUTION PH | 2.90 | | Std. Units |
| FINAL PH | 5.21 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 1900 | | mL |
| VOLUME EXTRACT FILTERED | 1900 | | mL |
| UME LIQUID (ADD BACK) | 0 | | mL |
| AL VOLUME FILTRATE | 1900 | | mL |
| AMBIENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1602 | | HRS |
| FINAL TIME | 0910 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: T. IRVING Analysis Date: 23-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## TCLP BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 09-JUN-94 Instrument: ICP Test: M704.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| BARIUM | BDL | BDL | 5.0 | mg/L | 1.0 | 4.4 | 96 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| SAMPLE | | 3.4 | | Conc | | | |
| SAMPLE + ADD 1 | | 4.2 | | Conc | | | |
| DILUTION | | 1 | | | | | |

## MIUM FAA (1 POINT MSA) SW846-7130

lyst: C. SARKAN Analysis Date: 23-MAY-94 Instrument: FAA Test: M608.5.0
rep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LE | -0.012 | | Conc |
| LE + ADD 1 | 0.558 | | Conc |
| DILUTION | 1 | | |

## CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: S. KANAPILLY Analysis Date: 24-MAY-94 Instrument: FAA Test: M610.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.10 | mg/L |
| ADDITION 1 | 1 | | mg/L |
| SAMPLE | -0.03 | | Conc |
| SAMPLE + ADD 1 | 1.01 | | Conc |
| DILUTION | 1 | | |

## LEAD FAA (1 POINT MSA) SW846-7420

Analyst: C. SARKAN Analysis Date: 31-MAY-94 Instrument: FAA Test: M616.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.25 | mg/L |
| ADDITION 1 | 2.0 | | mg/L |
| SAMPLE | -0.12 | | Conc |
| SAMPLE + ADD 1 | 1.96 | | Conc |
| DILUTION | | | |

## VER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | -0.018 | | Conc |
| SAMPLE + ADD 1 | 1.07 | | Conc |
| DILUTION | | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: T. IRVING Analysis Date: 23-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA (1 POINT MSA) SW846-7060

Analyst: T. NOHA Analysis Date: 28-MAY-94 Instrument: GFAA Test: M603.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | BDL | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0020 | | Conc |
| SAMPLE + ADD 1 | 0.0119 | | Conc |
| UTION | | | |

ITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156716

## ENIUM GFAA (1 POINT MSA) SW846-7740

lyst: T. NOHA Analysis Date: 25-MAY-94 Instrument: GFAA Test: M628.6.0

p: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.010 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | -0.0001 | | Conc |
| SAMPLE + ADD 1 | 0.0074 | | Conc |
| DILUTION | | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P131.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0

Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| PLE + ADD 1 | 0.0010 | | Conc |
| UTION | 1 | | |

Sample Comments

** See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 5058.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| RITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156717 |
| | Complete | PO Number | |
| | 09-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 07-JUL-94 | 17-MAY-94 14:20 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

Sample Description

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-17 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP  Analysis Date: 24-MAY-94 19:36  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 97 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| YLONITRILE | BDL | 70 | ug/kg |
| ZENE | BDL | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | EST 4 | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 19 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | 18 | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| RACHLOROETHENE | BDL | 5 | ug/kg |
| TRAHYDROFURAN | 35 | 25 | ug/kg |
| TOLUENE | 7 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | EST 3 | 5 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| CHLOROETHENE | 24 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 11 | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 94 | | % Rec |
| TOLUENE-D8 | 113 | | % Rec |
| 4-BROMOFLUOROBENZENE | 80 | | % Rec |

*1:1 DILUTION.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 18-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10.05 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 21-MAY-94 00:03 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 1000 | ug/kg |
| ENAPHTHYLENE | BDL | 1000 | ug/kg |
| HRACENE | BDL | 1000 | ug/kg |
| BENZ(A)ANTHRACENE | BDL | 1000 | ug/kg |
| BENZO(A)PYRENE | BDL | 1000 | ug/kg |
| BENZO(B)FLUORANTHENE | BDL | 1000 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 1000 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 1000 | ug/kg |
| BENZYL ALCOHOL | BDL | 1000 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 1000 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 1000 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 1000 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 1000 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 1000 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 1000 | ug/kg |
| CARBAZOLE | BDL | 1000 | ug/kg |
| 4-CHLOROANILINE | BDL | 1000 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 1000 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 1000 | ug/kg |
| CHRYSENE | BDL | 1000 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 1000 | ug/kg |
| DIBENZOFURAN | BDL | 1000 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 2000 | ug/kg |
| DIETHYLPHTHALATE | BDL | 1000 | ug/kg |
| IETHYLPHTHALATE | BDL | 1000 | ug/kg |
| -N-BUTYLPHTHALATE | BDL | 1000 | ug/kg |
| DINITROBENZENES | BDL | 5000 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 1000 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 1000 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 1000 | ug/kg |

 (continued on next page)

RITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156717

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ORANTHENE | BDL | 1000 | ug/kg |
| ORENE | BDL | 1000 | ug/kg |
| HEXACHLOROBENZENE | BDL | 1000 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 1000 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 1000 | ug/kg |
| HEXACHLOROETHANE | BDL | 1000 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 1000 | ug/kg |
| ISOPHORONE | BDL | 1000 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 1000 | ug/kg |
| NAPHTHALENE | BDL | 1000 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 5000 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 5000 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 5000 | ug/kg |
| NITROBENZENE | BDL | 1000 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 1000 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 1000 | ug/kg |
| PHENANTHRENE | BDL | 1000 | ug/kg |
| 2-PICOLINE | BDL | 5000 | ug/kg |
| PYRENE | BDL | 1000 | ug/kg |
| PYRIDINE | BDL | 5000 | ug/kg |
| TOLUENEDIAMINE | BDL | 5000 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 1000 | ug/kg |
| BENZOIC ACID | BDL | 5000 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 1000 | ug/kg |
| 2-CHLOROPHENOL | BDL | 1000 | ug/kg |
| 4-DICHLOROPHENOL | BDL | 1000 | ug/kg |
| -DIMETHYLPHENOL | BDL | 1000 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 5000 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 5000 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 1000 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 1000 | ug/kg |
| 2-NITROPHENOL | BDL | 1000 | ug/kg |
| 4-NITROPHENOL | BDL | 5000 | ug/kg |
| PENTACHLOROPHENOL | BDL | 5000 | ug/kg |
| PHENOL | BDL | 1000 | ug/kg |
| TETRACHLOROPHENOL | BDL | 1000 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 1000 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 1000 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 2100 RT=2.99 | | ug/kg |
| 3-PENTEN-2-ONE | * 3300 RT=3.5 | | ug/kg |
| UNKNOWN | * 2500 RT=3.85 | | ug/kg |
| UNKNOWN | * 5400 RT=4.49 | | ug/kg |
| UNKNOWN | 2300 RT=4.68 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 7300 RT=5.65 | | ug/kg |
| UNKNOWN | 1100 RT=6.91 | | ug/kg |
| UNKNOWN | * 5700 RT=7.38 | | ug/kg |
| UNKNOWN | 1200 RT=7.54 | | ug/kg |
| UNKNOWN | * 1200 RT=7.67 | | ug/kg |
| UNKNOWN | * 1300 RT=8.17 | | ug/kg |
| KNOWN | * 1600 RT=8.27 | | ug/kg |
| NOWN | * 1400 RT=8.56 | | ug/kg |
| KNOWN | * 4500 RT=9 | | ug/kg |
| UNKNOWN | * 5200 RT=9.13 | | ug/kg |
| UNKNOWN | * 8400 RT=10.4 | | ug/kg |
| UNKNOWN | * 3500 RT=11.58 | | ug/kg |
| UNKNOWN | * 11000 RT=12.64 | | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NOWN | * 3200 RT=12.97 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 101 | | % Rec |
| PHENOL-D5 | 71 | | % Rec |
| NITROBENZENE-D5 | 87 | | % Rec |
| 2-FLUOROBIPHENYL | 86 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 55 | | % Rec |
| TERPHENYL-D14 | 99 | | % Rec |

*1:1 DILUTION.*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 18-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 100.08 | | Grams |
| LIQUID FRACTION (GRAMS) | 0.02 | | Grams |
| EXTRACTED SAMPLE | 96.95 | | Grams |
| SOLIDS | 97 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 9.66 | | Std. Units |
| ^DJUSTED PH | 2.35 | | Std. Units |
| FFER SOLUTION PH | 4.98 | | Std. Units |
| IAL PH | 5.69 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 1940 | | mL |
| VOLUME EXTRACT FILTERED | 1940 | | mL |
| VOLUME LIQUID (ADD BACK) | 0 | | mL |
| TOTAL VOLUME FILTRATE | 1940 | | mL |
| AMBIENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1602 | | HRS |
| FINAL TIME | 0910 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: T. IRVING Analysis Date: 23-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## TCLP BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 09-JUN-94 Instrument: ICP Test: M704.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| BARIUM | BDL | BDL | 5.0 | mg/L | 1.0 | 4.0 | 79 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| PLE | | 3.2 | | Conc | | | |
| LE + ADD 1 | | 4.0 | | Conc | | | |
| ILUTION | | 1 | | | | | |

## MIUM FAA (1 POINT MSA) SW846-7130

lyst: C. SARKAN Analysis Date: 23-MAY-94 Instrument: FAA Test: M608.5.0
p: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |
| SAMPLE | -0.020 | | Conc |
| SAMPLE + ADD 1 | 0.558 | | Conc |
| DILUTION | 1 | | |

## CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: S. KANAPILLY Analysis Date: 24-MAY-94 Instrument: FAA Test: M610.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.10 | mg/L |
| ADDITION 1 | 1 | | mg/L |
| SAMPLE | -0.03 | | Conc |
| SAMPLE + ADD 1 | 1.05 | | Conc |
| DILUTION | 1 | | |

## LEAD FAA (1 POINT MSA) SW846-7420

Analyst: C. SARKAN Analysis Date: 31-MAY-94 Instrument: FAA Test: M616.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| D | BDL | 0.25 | mg/L |
| ADDITION 1 | 2.0 | | mg/L |
| SAMPLE | -0.12 | | Conc |
| SAMPLE + ADD 1 | 2.08 | | Conc |
| DILUTION | | | |

## SILVER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | -0.032 | | Conc |
| SAMPLE + ADD 1 | 1.03 | | Conc |
| DILUTION | | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: T. IRVING Analysis Date: 23-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA (1 POINT MSA) SW846-7060

Analyst: T. NOHA Analysis Date: 28-MAY-94 Instrument: GFAA Test: M603.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
ep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | 0.007 | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0072 | | Conc |
| SAMPLE + ADD 1 | 0.0162 | | Conc |

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156717

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| DILUTION | | | |

**SELENIUM GFAA (1 POINT MSA) SW846-7740**
Analyst: T. NOHA Analysis Date: 25-MAY-94 Instrument: GFAA Test: M628.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.010 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0006 | | Conc |
| SAMPLE + ADD 1 | 0.0065 | | Conc |
| DILUTION | | | |

**MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470**
Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

**MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470**
Analyst: A. SNAPP Analysis Date: 25-MAY-94 Test: P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

**MERCURY CVAA (1 POINT MSA) SW846-7470**
Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0
Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| SAMPLE + ADD 1 | 0.0010 | | Conc |
| DILUTION | 1 | | |

Sample Comments

** See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 5058.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: Christine Sardon (Sarg) revised 7-7-94

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| RITAGE ENVIRONMENTAL SERVICES, INC.<br>OMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156718 |
| | Complete | PO Number | |
| | 09-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 11-JUL-94 | 17-MAY-94 14:45 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-18 - GRAB

**VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A**

Analyst: S. SHARP  Analysis Date: 24-MAY-94 20:20  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 47 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| RYLONITRILE | BDL | 70 | ug/kg |
| ZENE | BDL | 5 | ug/kg |
| MODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | EST 3 | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 13 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | 12 | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| RACHLOROETHENE | BDL | 5 | ug/kg |
| RAHYDROFURAN | 41 | 25 | ug/kg |
| OLUENE | 11 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| CHLOROETHENE | 24 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 5 | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| ---------- | | | |
| DICHLOROETHANE-D4 | 93 | | % Rec |
| TOLUENE-D8 | 117 | | % Rec |
| 4-BROMOFLUOROBENZENE | 83 | | % Rec |

*1:1 DILUTION.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 18-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10.08 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 20-MAY-94 23:14 Instrument: GC/MS SVOA Test: Q505.3.0

Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 1000 | ug/kg |
| ENAPHTHYLENE | BDL | 1000 | ug/kg |
| HRACENE | BDL | 1000 | ug/kg |
| Z(A)ANTHRACENE | BDL | 1000 | ug/kg |
| BENZO(A)PYRENE | BDL | 1000 | ug/kg |
| BENZO(B)FLUORANTHENE | BDL | 1000 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 1000 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 1000 | ug/kg |
| BENZYL ALCOHOL | BDL | 1000 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 1000 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 1000 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 1000 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 1000 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 1000 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 1000 | ug/kg |
| CARBAZOLE | BDL | 1000 | ug/kg |
| 4-CHLOROANILINE | BDL | 1000 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 1000 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 1000 | ug/kg |
| CHRYSENE | BDL | 1000 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 1000 | ug/kg |
| DIBENZOFURAN | BDL | 1000 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 2000 | ug/kg |
| DIETHYLPHTHALATE | BDL | 1000 | ug/kg |
| ETHYLPHTHALATE | BDL | 1000 | ug/kg |
| -N-BUTYLPHTHALATE | BDL | 1000 | ug/kg |
| DINITROBENZENES | BDL | 5000 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 1000 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 1000 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 1000 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ORANTHENE | BDL | 1000 | ug/kg |
| ORENE | BDL | 1000 | ug/kg |
| HEXACHLOROBENZENE | BDL | 1000 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 1000 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 1000 | ug/kg |
| HEXACHLOROETHANE | BDL | 1000 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 1000 | ug/kg |
| ISOPHORONE | BDL | 1000 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 1000 | ug/kg |
| NAPHTHALENE | BDL | 1000 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 5000 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 5000 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 5000 | ug/kg |
| NITROBENZENE | BDL | 1000 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 1000 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 1000 | ug/kg |
| PHENANTHRENE | BDL | 1000 | ug/kg |
| 2-PICOLINE | BDL | 5000 | ug/kg |
| PYRENE | BDL | 1000 | ug/kg |
| PYRIDINE | BDL | 5000 | ug/kg |
| TOLUENEDIAMINE | BDL | 5000 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 1000 | ug/kg |
| BENZOIC ACID | BDL | 5000 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 1000 | ug/kg |
| 2-CHLOROPHENOL | BDL | 1000 | ug/kg |
| 4-DICHLOROPHENOL | BDL | 1000 | ug/kg |
| -DIMETHYLPHENOL | BDL | 1000 | ug/kg |
| ,6-DINITRO-O-CRESOL | BDL | 5000 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 5000 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 1000 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 1000 | ug/kg |
| 2-NITROPHENOL | BDL | 1000 | ug/kg |
| 4-NITROPHENOL | BDL | 5000 | ug/kg |
| PENTACHLOROPHENOL | BDL | 5000 | ug/kg |
| PHENOL | BDL | 1000 | ug/kg |
| TETRACHLOROPHENOL | BDL | 1000 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 1000 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 1000 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 1300 RT=3.01 | | ug/kg |
| 3-PENTEN-2-ONE | * 1500 RT=3.5 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 3700 RT=5.62 | | ug/kg |
| UNKNOWN | * 2700 RT=4.48 | | ug/kg |
| UNKNOWN | * 3100 RT=7.36 | | ug/kg |
| UNKNOWN | * 1000 RT=8.27 | | ug/kg |
| UNKNOWN | * 2400 RT=8.98 | | ug/kg |
| UNKNOWN | * 3300 RT=9.11 | | ug/kg |
| UNKNOWN | * 3800 RT=10.33 | | ug/kg |
| UNKNOWN | * 5100 RT=10.76 | | ug/kg |
| UNKNOWN | * 2700 RT=11.54 | | ug/kg |
| UNKNOWN | * 8500 RT=12.62 | | ug/kg |
| NOWN | 2700 RT=12.68 | | ug/kg |
| NOWN | 2700 RT=13.17 | | ug/kg |
| UNKNOWN | * 2000 RT=14.59 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | ug/kg |
| ---------- | | | |

ITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156718

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| UOROPHENOL | 83 | | % Rec |
| IOL-D5 | 108 | | % Rec |
| NITROBENZENE-D5 | 58 | | % Rec |
| 2-FLUOROBIPHENYL | 80 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 58 | | % Rec |
| TERPHENYL-D14 | 91 | | % Rec |

*1:1 DILUTION.*
*All tentatively identified compound concentration values are estimated.*
** Compound also detected in Blank.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 18-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 99.94 | | Grams |
| LIQUID FRACTION (GRAMS) | 0 | | Grams |
| EXTRACTED SAMPLE | 98.98 | | Grams |
| SOLIDS | 99 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 9.39 | | Std. Units |
| ADJUSTED PH | 5.08 | | Std. Units |
| BUFFER SOLUTION PH | 2.90 | | Std. Units |
| FINAL PH | 5.08 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 1980 | | mL |
| VOLUME EXTRACT FILTERED | 1980 | | mL |
| UME LIQUID (ADD BACK) | 0 | | mL |
| AL VOLUME FILTRATE | 1980 | | mL |
| AMBIENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1602 | | HRS |
| FINAL TIME | 0910 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: T. IRVING Analysis Date: 23-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## TCLP BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 09-JUN-94 Instrument: ICP Test: M704.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| BARIUM | BDL | BDL | 5.0 | mg/L | 1.0 | 4.5 | 72 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| SAMPLE | | 3.7 | | Conc | | | |
| SAMPLE + ADD 1 | | 4.6 | | Conc | | | |
| DILUTION | | 1 | | | | | |

## CADMIUM FAA (1 POINT MSA) SW846-7130

Analyst: C. SARKAN Analysis Date: 23-MAY-94 Instrument: FAA Test: M608.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| 'LE | -0.012 | | Conc |
| 'LE + ADD 1 | 0.549 | | Conc |
| DILUTION | 1 | | |

## CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: S. KANAPILLY Analysis Date: 24-MAY-94 Instrument: FAA Test: M610.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.10 | mg/L |
| ADDITION 1 | 1 | | mg/L |
| SAMPLE | -0.01 | | Conc |
| SAMPLE + ADD 1 | 1.05 | | Conc |
| DILUTION | 1 | | |

## LEAD FAA (1 POINT MSA) SW846-7420

Analyst: C. SARKAN Analysis Date: 31-MAY-94 Instrument: FAA Test: M616.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.25 | mg/L |
| ADDITION 1 | 2.0 | | mg/L |
| SAMPLE | 0.121 | | Conc |
| SAMPLE + ADD 1 | 2.33 | | Conc |
| DILUTION | | | |

## VER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | -0.018 | | Conc |
| SAMPLE + ADD 1 | 0.945 | | Conc |
| DILUTION | | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: T. IRVING Analysis Date: 23-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA (1 POINT MSA) SW846-7060

Analyst: T. MOHA Analysis Date: 28-MAY-94 Instrument: GFAA Test: M603.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | BDL | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0024 | | Conc |
| SAMPLE + ADD 1 | 0.0126 | | Conc |
| UTION | | | |

"ERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156718

## ENIUM GFAA (1 POINT MSA) SW846-7740

lyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: GFAA Test: M620.6.0
p: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.025 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0004 | | Conc |
| SAMPLE + ADD 1 | 0.0085 | | Conc |
| DILUTION | 5 | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 25-MAY-94 Test: P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

lyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0
p: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.1
ep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| SAMPLE + ADD 1 | 0.00104 | | Conc |
| DILUTION | 1 | | |

Sample Comments

** See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 5058.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| RITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 17-MAY-94 | 2936 | C156719 |
| | Complete | PO Number | |
| | 09-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 11-JUL-94 | 17-MAY-94 15:10 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

Sample Description

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-19 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP  Analysis Date: 24-MAY-94 21:05  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 44 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| YLONITRILE | BDL | 70 | ug/kg |
| ZENE | BDL | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 6 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| TRACHLOROETHENE | BDL | 5 | ug/kg |
| TRAHYDROFURAN | BDL | 25 | ug/kg |
| TOLUENE | EST 3 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| CHLOROETHENE | 11 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | BDL | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| ---------- | | | |
| DICHLOROETHANE-D4 | 90 | | % Rec |
| TOLUENE-D8 | 110 | | % Rec |
| 4-BROMOFLUOROBENZENE | 96 | | % Rec |

*1:1 DILUTION.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. BUSSEY Analysis Date: 18-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10.12 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 20-MAY-94 22:25 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 1000 | ug/kg |
| NAPHTHYLENE | BDL | 1000 | ug/kg |
| HRACENE | BDL | 1000 | ug/kg |
| BENZ(A)ANTHRACENE | EST 890 | 1000 | ug/kg |
| BENZO(A)PYRENE | BDL | 1000 | ug/kg |
| BENZO(B)FLUORANTHENE | 1300 | 1000 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 1000 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 1000 | ug/kg |
| BENZYL ALCOHOL | BDL | 1000 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 1000 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 1000 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 1000 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 1000 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 1000 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 1000 | ug/kg |
| CARBAZOLE | BDL | 1000 | ug/kg |
| 4-CHLOROANILINE | BDL | 1000 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 1000 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 1000 | ug/kg |
| CHRYSENE | 1200 | 1000 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 1000 | ug/kg |
| DIBENZOFURAN | BDL | 1000 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 2000 | ug/kg |
| DIETHYLPHTHALATE | BDL | 1000 | ug/kg |
| ETHYLPHTHALATE | BDL | 1000 | ug/kg |
| -N-BUTYLPHTHALATE | BDL | 1000 | ug/kg |
| DINITROBENZENES | BDL | 5000 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 1000 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 1000 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 1000 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| )RANTHENE | 1700 | 1000 | ug/kg |
| )RENE | BDL | 1000 | ug/kg |
| HEXACHLOROBENZENE | BDL | 1000 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 1000 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 1000 | ug/kg |
| HEXACHLOROETHANE | BDL | 1000 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 1000 | ug/kg |
| ISOPHORONE | BDL | 1000 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 1000 | ug/kg |
| NAPHTHALENE | BDL | 1000 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 5000 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 5000 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 5000 | ug/kg |
| NITROBENZENE | BDL | 1000 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 1000 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 1000 | ug/kg |
| PHENANTHRENE | 2200 | 1000 | ug/kg |
| 2-PICOLINE | BDL | 5000 | ug/kg |
| PYRENE | 2100 | 1000 | ug/kg |
| PYRIDINE | BDL | 5000 | ug/kg |
| TOLUENEDIAMINE | BDL | 5000 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 1000 | ug/kg |
| BENZOIC ACID | BDL | 5000 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 1000 | ug/kg |
| 2-CHLOROPHENOL | BDL | 1000 | ug/kg |
| -DICHLOROPHENOL | BDL | 1000 | ug/kg |
| -DIMETHYLPHENOL | BDL | 1000 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 5000 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 5000 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 1000 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 1000 | ug/kg |
| 2-NITROPHENOL | BDL | 1000 | ug/kg |
| 4-NITROPHENOL | BDL | 5000 | ug/kg |
| PENTACHLOROPHENOL | BDL | 5000 | ug/kg |
| PHENOL | BDL | 1000 | ug/kg |
| TETRACHLOROPHENOL | BDL | 1000 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 1000 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 1000 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 12000 RT=2.99 | | ug/kg |
| 3-PENTEN-2-ONE | * 19000 RT=3.51 | | ug/kg |
| UNKNOWN | * 11000 RT=3.85 | | ug/kg |
| UNKNOWN | * 30000 RT=4.49 | | ug/kg |
| UNKNOWN | 11000 RT=4.68 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 40000 RT=5.65 | | ug/kg |
| UNKNOWN | 5800 RT=6.92 | | ug/kg |
| UNKNOWN | * 31000 RT=7.38 | | ug/kg |
| UNKNOWN | 5700 RT=7.61 | | ug/kg |
| UNKNOWN | * 8800 RT=7.66 | | ug/kg |
| UNKNOWN | * 7400 RT=8.18 | | ug/kg |
| "KNOWN | * 8800 RT=8.27 | | ug/kg |
| NOWN | * 16000 RT=8.55 | | ug/kg |
| KNOWN | * 23000 RT=9 | | ug/kg |
| UNKNOWN | * 32000 RT=9.13 | | ug/kg |
| UNKNOWN | * 5500 RT=10.38 | | ug/kg |
| UNKNOWN | * 3400 RT=11.59 | | ug/kg |
| UNKNOWN | * 11000 RT=12.64 | | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| IOWN | 3100 RT=13.19 | | ug/kg |
| SURROGATE RECOVERY | | | |
| 2-FLUOROPHENOL | 103 | | % Rec |
| PHENOL-D5 | 93 | | % Rec |
| NITROBENZENE-D5 | 72 | | % Rec |
| 2-FLUOROBIPHENYL | 85 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 55 | | % Rec |
| TERPHENYL-D14 | 101 | | % Rec |

*1:1 DILUTION.*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 18-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 100.05 | | Grams |
| LIQUID FRACTION (GRAMS) | 0 | | Grams |
| EXTRACTED SAMPLE | 96.25 | | Grams |
| SOLIDS | 96 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 9.77 | | Std. Units |
| ^DJUSTED PH | 5.51 | | Std. Units |
| FER SOLUTION PH | 2.90 | | Std. Units |
| AL PH | 5.25 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 1930 | | mL |
| VOLUME EXTRACT FILTERED | 1930 | | mL |
| VOLUME LIQUID (ADD BACK) | 0 | | mL |
| TOTAL VOLUME FILTRATE | 1930 | | mL |
| AMBIENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1602 | | HRS |
| FINAL TIME | 0910 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: T. IRVING Analysis Date: 23-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## TCLP BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 09-JUN-94 Instrument: ICP Test: M704.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Corrected Result | Observed Result | Detection Limit | Units | Matrix Spike True Value | Sample + Spike | Matrix Spike % Recovery |
|---|---|---|---|---|---|---|---|
| BARIUM | BDL | BDL | 5.0 | mg/L | 1.0 | 4.0 | 71 |
| ADDITION 1 | | 1.0 | | mg/L | | | |
| LE | | 3.3 | | Conc | | | |
| E + ADD 1 | | 4.2 | | Conc | | | |
| LUTION | | 1 | | | | | |

ITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156719

## MIUM FAA (1 POINT MSA) SW846-7130

lyst: C. SARKAN Analysis Date: 23-MAY-94 Instrument: FAA Test: M608.5.0
p: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |
| SAMPLE | -.029 | | Conc |
| SAMPLE + ADD 1 | 0.549 | | Conc |
| DILUTION | 1 | | |

## CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: S. KANAPILLY Analysis Date: 24-MAY-94 Instrument: FAA Test: M610.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.10 | mg/L |
| ADDITION 1 | 1 | | mg/L |
| SAMPLE | 0.005 | | Conc |
| SAMPLE + ADD 1 | 1.07 | | Conc |
| DILUTION | 1 | | |

## LEAD FAA (1 POINT MSA) SW846-7420

Analyst: C. SARKAN Analysis Date: 31-MAY-94 Instrument: FAA Test: M616.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| D | BDL | 0.25 | mg/L |
| ADDITION 1 | 2.0 | | mg/L |
| SAMPLE | -0.001 | | Conc |
| SAMPLE + ADD 1 | 2.08 | | Conc |
| DILUTION | | | |

## SILVER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | -0.032 | | Conc |
| SAMPLE + ADD 1 | 0.945 | | Conc |
| DILUTION | | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: T. IRVING Analysis Date: 23-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA (1 POINT MSA) SW846-7060

Analyst: T. MOHA Analysis Date: 28-MAY-94 Instrument: GFAA Test: M603.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
p: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | BDL | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0001 | | Conc |
| SAMPLE + ADD 1 | 0.0106 | | Conc |

RITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156719

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| UTION | | | |

## SELENIUM GFAA (1 POINT MSA) SW846-7740

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: GFAA Test: M628.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.025 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0014 | | Conc |
| SAMPLE + ADD 1 | 0.0078 | | Conc |
| DILUTION | 5 | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 25-MAY-94 Test: P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| AL VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0
Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| SAMPLE + ADD 1 | 0.00093 | | Conc |
| DILUTION | 1 | | |

**Sample Comments**

** See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 5058.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| :RITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 19-MAY-94 | 2936 | C156765 |
| | Complete | PO Number | |
| | 14-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 30-JUN-94 | 18-MAY-94 09:05 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

Sample Description

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-21 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY  Analysis Date: 25-MAY-94 11:44  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 130 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| RYLONITRILE | BDL | 70 | ug/kg |
| ZENE | 8 | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | 8 | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | EST 4 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| TRACHLOROETHENE | BDL | 5 | ug/kg |
| TRAHYDROFURAN | BDL | 25 | ug/kg |
| TOLUENE | 11 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

 (continued on next page)

RITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156765

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| CHLOROETHENE | 7 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 27 | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| ---------- | | | |
| DICHLOROETHANE-D4 | 89 | | % Rec |
| TOLUENE-D8 | 110 | | % Rec |
| 4-BROMOFLUOROBENZENE | 104 | | % Rec |

*1:1 DILUTION.*

**GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550**

Analyst: K. RUBLE Analysis Date: 20-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.20 | | Grams |
| FINAL VOLUME | 1 | | mL |

**SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A**

Analyst: H. QIAN Analysis Date: 24-MAY-94 20:37 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 330 | ug/kg |
| ENAPHTHYLENE | BDL | 330 | ug/kg |
| HRACENE | EST 220 | 330 | ug/kg |
| BENZ(A)ANTHRACENE | BDL | 330 | ug/kg |
| BENZO(A)PYRENE | BDL | 330 | ug/kg |
| BENZO(B)FLUORANTHENE | EST 200 | 330 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 330 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZYL ALCOHOL | BDL | 330 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | 750 | 330 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | 430 | 330 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 330 | ug/kg |
| CARBAZOLE | BDL | 330 | ug/kg |
| 4-CHLOROANILINE | BDL | 330 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 330 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 330 | ug/kg |
| CHRYSENE | EST 280 | 330 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 330 | ug/kg |
| DIBENZOFURAN | BDL | 330 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 660 | ug/kg |
| ETHYLPHTHALATE | BDL | 330 | ug/kg |
| ETHYLPHTHALATE | BDL | 330 | ug/kg |
| -N-BUTYLPHTHALATE | BDL | 330 | ug/kg |
| DINITROBENZENES | BDL | 1700 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 330 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 330 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 330 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ORANTHENE | EST 210 | 330 | ug/kg |
| ORENE | BDL | 330 | ug/kg |
| HEXACHLOROBENZENE | BDL | 330 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROETHANE | BDL | 330 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 330 | ug/kg |
| ISOPHORONE | BDL | 330 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 330 | ug/kg |
| NAPHTHALENE | BDL | 330 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 1700 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 1700 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 1700 | ug/kg |
| NITROBENZENE | BDL | 330 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 330 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 330 | ug/kg |
| PHENANTHRENE | 460 | 330 | ug/kg |
| 2-PICOLINE | BDL | 1700 | ug/kg |
| PYRENE | 330 | 330 | ug/kg |
| PYRIDINE | BDL | 1700 | ug/kg |
| TOLUENEDIAMINE | BDL | 1700 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 330 | ug/kg |
| BENZOIC ACID | BDL | 1700 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 330 | ug/kg |
| 2-CHLOROPHENOL | BDL | 330 | ug/kg |
| 4-DICHLOROPHENOL | BDL | 330 | ug/kg |
| -DIMETHYLPHENOL | BDL | 330 | ug/kg |
| ,6-DINITRO-O-CRESOL | BDL | 1700 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 1700 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 330 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 330 | ug/kg |
| 2-NITROPHENOL | BDL | 330 | ug/kg |
| 4-NITROPHENOL | BDL | 1700 | ug/kg |
| PENTACHLOROPHENOL | BDL | 1700 | ug/kg |
| PHENOL | BDL | 330 | ug/kg |
| TETRACHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 500 RT=3.05 | | ug/kg |
| 3-PENTEN-2-ONE | * 860 RT=3.55 | | ug/kg |
| UNKNOWN | * 560 RT=3.9 | | ug/kg |
| UNKNOWN | * 1500 RT=4.54 | | ug/kg |
| UNKNOWN KETONE | * 630 RT=4.72 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 2000 RT=5.69 | | ug/kg |
| UNKNOWN | * 1800 RT=7.44 | | ug/kg |
| UNKNOWN | * 560 RT=7.6 | | ug/kg |
| UNKNOWN | * 890 RT=7.74 | | ug/kg |
| UNKNOWN | * 560 RT=8.24 | | ug/kg |
| UNKNOWN | 1500 RT=8.31 | | ug/kg |
| NKNOWN | * 1300 RT=8.6 | | ug/kg |
| NOWN | * 1300 RT=9.05 | | ug/kg |
| KNOWN | * 1200 RT=9.17 | | ug/kg |
| UNKNOWN | * 2100 RT=10.45 | | ug/kg |
| UNKNOWN | * 2300 RT=12.69 | | ug/kg |
| UNKNOWN HYDROCARBON | 1100 RT=16.25 | | ug/kg |
| UNKNOWN HYDROCARBON | 3600 RT=17.27 | | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NOWN HYDROCARBON | 1800 RT=18.24 | | ug/kg |
| NOWN HYDROCARBON | 1300 RT=19.16 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 126 | | % Rec |
| PHENOL-D5 | 87 | | % Rec |
| NITROBENZENE-D5 | 77 | | % Rec |
| 2-FLUOROBIPHENYL | 115 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 68 | | % Rec |
| TERPHENYL-D14 | 104 | | % Rec |

*1:1 DILUTION.*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 100.07 | | Grams |
| LIQUID FRACTION (GRAMS) | 0 | | Grams |
| EXTRACTED SAMPLE | 100.07 | | Grams |
| SOLIDS | 100 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 9.40 | | Std. Units |
| USTED PH | 2.12 | | Std. Units |
| FER SOLUTION PH | 4.98 | | Std. Units |
| FINAL PH | 5.55 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 2000 | | mL |
| VOLUME EXTRACT FILTERED | 2000 | | mL |
| VOLUME LIQUID (ADD BACK) | 0 | | mL |
| TOTAL VOLUME FILTRATE | 2000 | | mL |
| AMBIENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1607 | | HRS |
| FINAL TIME | 1035 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: J. ULASZEK Analysis Date: 25-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 09-JUN-94 Instrument: ICP Test: M604.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BARIUM | BDL | 5.0 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| MPLE | 4.2 | | Conc |
| PLE + ADD 1 | 5.1 | | Conc |
| LUTION | 1 | | |

## MIUM FAA (1 POINT MSA) SW846-7130

lyst: C. SARKAN Analysis Date: 27-MAY-94 Instrument: FAA Test: M608.5.0
p: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |
| SAMPLE | 0.009 | | Conc |
| SAMPLE + ADD 1 | 0.551 | | Conc |
| DILUTION | 1 | | |

## CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. MILENKOVIC Analysis Date: 01-JUN-94 Instrument: FAA Test: M610.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | BDL | | Conc |
| SAMPLE + ADD 1 | 0.931 | | Conc |
| DILUTION | 1 | | |

## LEAD FAA (1 POINT MSA) SW846-7420

Analyst: C. SARKAN Analysis Date: 31-MAY-94 Instrument: FAA Test: M616.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| D | BDL | 0.25 | mg/L |
| ADDITION 1 | 2.0 | | mg/L |
| SAMPLE | -0.001 | | Conc |
| SAMPLE + ADD 1 | 2.21 | | Conc |
| DILUTION | | | |

## SILVER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | 0.008 | | Conc |
| SAMPLE + ADD 1 | 1.08 | | Conc |
| DILUTION | | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: T. IRVING Analysis Date: 25-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA (1 POINT MSA) SW846-7060

lyst: T. NOHA Analysis Date: 28-MAY-94 Instrument: GFAA Test: M603.6.0
rep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | 0.008 | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| PLE | 0.0084 | | Conc |
| PLE + ADD 1 | 0.0193 | | Conc |
| DILUTION | | | |

## SELENIUM GFAA (1 POINT MSA) SW846-7740

Analyst: T. NOHA Analysis Date: 04-JUN-94 Instrument: GFAA Test: M628.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | -0.0003 | | Conc |
| SAMPLE + ADD 1 | 0.0073 | | Conc |
| DILUTION | 10 | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 23-MAY-94 Test: P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 26-MAY-94 Test: P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TIAL WEIGHT OR VOLUME | 10 | | mL |
| INAL VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0
Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.00018 | | Conc |
| SAMPLE + ADD 1 | 0.00104 | | Conc |
| DILUTION | 1 | | |

Sample Comments

** See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 4969.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: Christine Sarka

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| RITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 19-MAY-94 | 2936 | C156766 |
| | Complete | PO Number | |
| | 14-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 11-JUL-94 | 18-MAY-94 11:00 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-22 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY  Analysis Date: 27-MAY-94 10:27  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 360 | 100 | ug/kg |
| ACROLEIN | BDL | 250 | ug/kg |
| RYLONITRILE | BDL | 350 | ug/kg |
| ZENE | BDL | 25 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 25 | ug/kg |
| BROMOFORM | BDL | 25 | ug/kg |
| BROMOMETHANE | BDL | 50 | ug/kg |
| CARBON DISULFIDE | BDL | 25 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 25 | ug/kg |
| CHLOROBENZENE | BDL | 25 | ug/kg |
| CHLOROETHANE | BDL | 50 | ug/kg |
| CHLOROFORM | BDL | 25 | ug/kg |
| CHLOROMETHANE | BDL | 50 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 25 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 25 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 25 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 25 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 25 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 25 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 25 | ug/kg |
| ETHYL BENZENE | 100 | 25 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 25 | ug/kg |
| 2-HEXANONE | BDL | 50 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 55 | 25 | ug/kg |
| METHYL ETHYL KETONE | EST 30 | 50 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 50 | ug/kg |
| STYRENE | BDL | 25 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 25 | ug/kg |
| TRACHLOROETHENE | BDL | 25 | ug/kg |
| RAHYDROFURAN | BDL | 120 | ug/kg |
| TOLUENE | 60 | 25 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 25 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 25 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 25 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 25 | ug/kg |
| CHLOROETHENE | 35 | 25 | ug/kg |
| VINYL ACETATE | BDL | 50 | ug/kg |
| VINYL CHLORIDE | BDL | 50 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 1200 | 25 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| UNKNOWN | EST 1000 RT=23.41 | | ug/kg |
| UNKNOWN HYDROCARBON | EST 2600 RT=26.11 | | ug/kg |
| UNKNOWN C9 HYDROCARBON | EST 900 RT=27.19 | | ug/kg |
| UNKNOWN C9 HYDROCARBON | EST 1000 RT=27.9 | | ug/kg |
| UNKNOWN HYDROCARBON | EST 1200 RT=28.28 | | ug/kg |
| UNKNOWN HYDROCARBON | EST 1700 RT=31.2 | | ug/kg |
| METHYL-PROPYLBENZENE | EST 2400 RT=32.71 | | ug/kg |
| ETHYL METHYL BENZENE | EST 6700 RT=34.33 | | ug/kg |
| ETHYL METHYL BENZENE | EST 7500 RT=35.47 | | ug/kg |
| UNKNOWN C10 HYDROCARBON | EST 2500 RT=36.99 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 97 | | % Rec |
| TOLUENE-D8 | 110 | | % Rec |
| 4-BROMOFLUOROBENZENE | 114 | | % Rec |

*1:5 DILUTION.*

## MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: K. RUBLE Analysis Date: 20-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10.20 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 24-MAY-94 21:26 Instrument: GC/MS SVOA Test: Q505.3.0

Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 1000 | ug/kg |
| ACENAPHTHYLENE | BDL | 1000 | ug/kg |
| ANTHRACENE | 2300 | 1000 | ug/kg |
| BENZ(A)ANTHRACENE | EST 790 | 1000 | ug/kg |
| BENZO(A)PYRENE | EST 780 | 1000 | ug/kg |
| BENZO(B)FLUORANTHENE | 1200 | 1000 | ug/kg |
| BENZO(G,H,I)PERYLENE | EST 800 | 1000 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 1000 | ug/kg |
| BENZYL ALCOHOL | BDL | 1000 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 1000 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 1000 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 1000 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 1000 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | 2200 | 1000 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 1000 | ug/kg |
| BAZOLE | BDL | 1000 | ug/kg |
| CHLOROANILINE | BDL | 1000 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 1000 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 1000 | ug/kg |
| CHRYSENE | 1800 | 1000 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 1000 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ENZOFURAN | BDL | 1000 | ug/kg |
| -DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 2000 | ug/kg |
| DIETHYLPHTHALATE | BDL | 1000 | ug/kg |
| DIMETHYLPHTHALATE | BDL | 1000 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 1000 | ug/kg |
| DINITROBENZENES | BDL | 5000 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 1000 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 1000 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 1000 | ug/kg |
| FLUORANTHENE | EST 880 | 1000 | ug/kg |
| FLUORENE | BDL | 1000 | ug/kg |
| HEXACHLOROBENZENE | BDL | 1000 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 1000 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 1000 | ug/kg |
| HEXACHLOROETHANE | BDL | 1000 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 1000 | ug/kg |
| ISOPHORONE | BDL | 1000 | ug/kg |
| 2-METHYLNAPHTHALENE | 1300 | 1000 | ug/kg |
| NAPHTHALENE | 2000 | 1000 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 5000 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 5000 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 5000 | ug/kg |
| TROBENZENE | BDL | 1000 | ug/kg |
| ITROSODIPHENYLAMINE | BDL | 1000 | ug/kg |
| -NITROSO-DI-N-PROPYLAMINE | BDL | 1000 | ug/kg |
| PHENANTHRENE | 1700 | 1000 | ug/kg |
| 2-PICOLINE | BDL | 5000 | ug/kg |
| PYRENE | 1600 | 1000 | ug/kg |
| PYRIDINE | BDL | 5000 | ug/kg |
| TOLUENEDIAMINE | BDL | 5000 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 1000 | ug/kg |
| BENZOIC ACID | BDL | 5000 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 1000 | ug/kg |
| 2-CHLOROPHENOL | BDL | 1000 | ug/kg |
| 2,4-DICHLOROPHENOL | BDL | 1000 | ug/kg |
| 2,4-DIMETHYLPHENOL | BDL | 1000 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 5000 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 5000 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 1000 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 1000 | ug/kg |
| 2-NITROPHENOL | BDL | 1000 | ug/kg |
| 4-NITROPHENOL | BDL | 5000 | ug/kg |
| PENTACHLOROPHENOL | BDL | 5000 | ug/kg |
| PHENOL | BDL | 1000 | ug/kg |
| TETRACHLOROPHENOL | BDL | 1000 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 1000 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 1000 | ug/kg |
| ..<br>ROGATE RECOVERY<br>---------- | | | |
| 2-FLUOROPHENOL | 154 | | % Rec |
| PHENOL-D5 | 108 | | % Rec |
| NITROBENZENE-D5 | 74 | | % Rec |
| 2-FLUOROBIPHENYL | 124 | | % Rec |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,6-TRIBROMOPHENOL | 59 | | % Rec |
| PHENYL-D14 | 122 | | % Rec |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 2500 RT=3.04 | | ug/kg |
| 3-PENTEN-2-ONE | * 3300 RT=3.54 | | ug/kg |
| UNKNOWN | * 5500 RT=4.54 | | ug/kg |
| UNKNOWN KETONE | * 2400 RT=4.72 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 8000 RT=5.69 | | ug/kg |
| UNKNOWN | * 7600 RT=7.43 | | ug/kg |
| UNKNOWN | 2200 RT=8.04 | | ug/kg |
| UNKNOWN | 3900 RT=8.33 | | ug/kg |
| UNKNOWN C10 HYDROCARBON | 4100 RT=8.54 | | ug/kg |
| UNKNOWN | 2800 RT=8.74 | | ug/kg |
| UNKNOWN | 2400 RT=9.15 | | ug/kg |
| 3-METHYL-DECANE | 2400 RT=9.65 | | ug/kg |
| UNKNOWN HYDROCARBON | 5800 RT=10.12 | | ug/kg |
| UNKNOWN | 3300 RT=10.33 | | ug/kg |
| UNKNOWN C10 HYDROCARBON | 3900 RT=10.47 | | ug/kg |
| UNKNOWN C10 HYDROCARBON | 3800 RT=10.93 | | ug/kg |
| UNKNOWN | 3600 RT=11 | | ug/kg |
| UNKNOWN | 4000 RT=11.09 | | ug/kg |
| UNKNOWN | * 4100 RT=12.69 | | ug/kg |
| UNKNOWN HYDROCARBON | 5500 RT=17.3 | | ug/kg |

*1:1 DILUTION.*
** Compound also detected in Blank.*
*tentatively identified compound concentration values are estimated.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 105.20 | | Grams |
| LIQUID FRACTION (GRAMS) | 0.01 | | Grams |
| EXTRACTED SAMPLE | 100.02 | | Grams |
| SOLIDS | 95 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 10.72 | | Std. Units |
| ADJUSTED PH | 3.12 | | Std. Units |
| BUFFER SOLUTION PH | 4.98 | | Std. Units |
| FINAL PH | 5.56 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 2000 | | mL |
| VOLUME EXTRACT FILTERED | 2000 | | mL |
| VOLUME LIQUID (ADD BACK) | 0 | | mL |
| TOTAL VOLUME FILTRATE | 2000 | | mL |
| AMBIENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1607 | | HRS |
| FINAL TIME | 1035 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: J. ULASZEK Analysis Date: 25-MAY-94 Test: P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## IUM ICP (1 POINT MSA) SW846-6010A

alyst: S. KANAPILLY Analysis Date: 09-JUN-94 Instrument: ICP Test: M604.7.0
rep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BARIUM | BDL | 5.0 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | 3.2 | | Conc |
| SAMPLE + ADD 1 | 4.0 | | Conc |
| DILUTION | 1 | | |

## CADMIUM FAA (1 POINT MSA) SW846-7130

Analyst: C. SARKAN Analysis Date: 27-MAY-94 Instrument: FAA Test: M608.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |
| SAMPLE | -0.007 | | Conc |
| SAMPLE + ADD 1 | 0.543 | | Conc |
| DILUTION | 1 | | |

## CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. MILENKOVIC Analysis Date: 01-JUN-94 Instrument: FAA Test: M610.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| OMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | BDL | | Conc |
| SAMPLE + ADD 1 | 1.01 | | Conc |
| DILUTION | 1 | | |

## LEAD FAA (1 POINT MSA) SW846-7420

Analyst: C. SARKAN Analysis Date: 31-MAY-94 Instrument: FAA Test: M616.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.25 | mg/L |
| ADDITION 1 | 2.0 | | mg/L |
| SAMPLE | -0.12 | | Conc |
| SAMPLE + ADD 1 | 2.08 | | Conc |
| DILUTION | 1 | | |

## SILVER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | -0.005 | | Conc |
| PLE + ADD 1 | 0.972 | | Conc |
| UTION | | | |

## A ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: T. IRVING Analysis Date: 25-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA (1 POINT MSA) SW846-7060

Analyst: T. NOHA Analysis Date: 28-MAY-94 Instrument: GFAA Test: M603.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | 0.014 | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0136 | | Conc |
| SAMPLE + ADD 1 | 0.0229 | | Conc |
| DILUTION | | | |

## SELENIUM GFAA (1 POINT MSA) SW846-7740

Analyst: T. NOHA Analysis Date: 04-JUN-94 Instrument: GFAA Test: M628.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.025 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | -0.0003 | | Conc |
| MPLE + ADD 1 | 0.0069 | | Conc |
| UTION | 5 | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 23-MAY-94 Test: P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 26-MAY-94 Test: P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0
Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| SAMPLE + ADD 1 | 0.00093 | | Conc |
| UTION | 1 | | |

Sample Comments

| | |
|---|---|
| | *See Note for Parameter* |
| *L* | *Below Detection Limit* |
| *EST* | *Estimated Value* |
| *RT* | *Retention Time* |

*Sample chain of custody number 4969.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| ERITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 19-MAY-94 | 2936 | C156767 |
| | Complete | PO Number | |
| | 14-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 30-JUN-94 | 18-MAY-94 11:50 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

Sample Description

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-23 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY  Analysis Date: 27-MAY-94 11:12  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 75 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| RYLONITRILE | BDL | 70 | ug/kg |
| NZENE | 5 | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 13 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| TRACHLOROETHENE | BDL | 5 | ug/kg |
| RAHYDROFURAN | BDL | 25 | ug/kg |
| TOLUENE | 26 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| 1,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| ICHLOROETHENE | BDL | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 130 | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 103 | | % Rec |
| TOLUENE-D8 | 111 | | % Rec |
| 4-BROMOFLUOROBENZENE | 118 | | % Rec |

*1:1 DILUTION.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: K. RUBLE Analysis Date: 20-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10.04 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 24-MAY-94 19:48 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 5000 | ug/kg |
| ENAPHTHYLENE | BDL | 5000 | ug/kg |
| THRACENE | BDL | 5000 | ug/kg |
| BENZ(A)ANTHRACENE | BDL | 5000 | ug/kg |
| BENZO(A)PYRENE | BDL | 5000 | ug/kg |
| BENZO(B)FLUORANTHENE | BDL | 5000 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 5000 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 5000 | ug/kg |
| BENZYL ALCOHOL | 18000 | 5000 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 5000 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 5000 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 5000 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 5000 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | EST 4500 | 5000 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 5000 | ug/kg |
| CARBAZOLE | BDL | 5000 | ug/kg |
| 4-CHLOROANILINE | BDL | 5000 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 5000 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 5000 | ug/kg |
| CHRYSENE | BDL | 5000 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 5000 | ug/kg |
| DIBENZOFURAN | BDL | 5000 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 5000 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 5000 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 5000 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 10000 | ug/kg |
| DIETHYLPHTHALATE | BDL | 5000 | ug/kg |
| ETHYLPHTHALATE | BDL | 5000 | ug/kg |
| -N-BUTYLPHTHALATE | BDL | 5000 | ug/kg |
| DINITROBENZENES | BDL | 25000 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 5000 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 5000 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 5000 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| UORANTHENE | EST 2700 | 5000 | ug/kg |
| UORENE | BDL | 5000 | ug/kg |
| HEXACHLOROBENZENE | BDL | 5000 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 5000 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 5000 | ug/kg |
| HEXACHLOROETHANE | BDL | 5000 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 5000 | ug/kg |
| ISOPHORONE | BDL | 5000 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 5000 | ug/kg |
| NAPHTHALENE | BDL | 5000 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 25000 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 25000 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 25000 | ug/kg |
| NITROBENZENE | BDL | 5000 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 5000 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 5000 | ug/kg |
| PHENANTHRENE | BDL | 5000 | ug/kg |
| 2-PICOLINE | BDL | 25000 | ug/kg |
| PYRENE | EST 3000 | 5000 | ug/kg |
| PYRIDINE | BDL | 25000 | ug/kg |
| TOLUENEDIAMINE | BDL | 25000 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 5000 | ug/kg |
| BENZOIC ACID | BDL | 25000 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 5000 | ug/kg |
| 2-CHLOROPHENOL | BDL | 5000 | ug/kg |
| 4-DICHLOROPHENOL | BDL | 5000 | ug/kg |
| 4-DIMETHYLPHENOL | BDL | 5000 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 25000 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 25000 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 5000 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 5000 | ug/kg |
| 2-NITROPHENOL | BDL | 5000 | ug/kg |
| 4-NITROPHENOL | BDL | 25000 | ug/kg |
| PENTACHLOROPHENOL | BDL | 25000 | ug/kg |
| PHENOL | BDL | 5000 | ug/kg |
| TETRACHLOROPHENOL | BDL | 5000 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 5000 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 5000 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 5500 RT=3.02 | | ug/kg |
| 3-PENTEN-2-ONE | * 8000 RT=3.51 | | ug/kg |
| UNKNOWN | * 13000 RT=4.48 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 31000 RT=5.64 | | ug/kg |
| UNKNOWN | * 16000 RT=7.38 | | ug/kg |
| UNKNOWN | 14000 RT=7.65 | | ug/kg |
| UNKNOWN | 26000 RT=8.17 | | ug/kg |
| UNKNOWN | * 12000 RT=8.51 | | ug/kg |
| UNKNOWN | 8500 RT=8.58 | | ug/kg |
| UNKNOWN | * 14000 RT=8.91 | | ug/kg |
| UNKNOWN | * 9500 RT=9.09 | | ug/kg |
| UNKNOWN | * 7000 RT=12.64 | | ug/kg |
| NOWN | 5000 RT=21.76 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | * | | % Rec |
| PHENOL-D5 | * | | % Rec |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ıTROBENZENE-D5 | * | | % Rec |
| FLUOROBIPHENYL | * | | % Rec |
| ₂,4,6-TRIBROMOPHENOL | * | | % Rec |
| TERPHENYL-D14 | * | | % Rec |

*1:5 DILUTION.*
**Surrogates were diluted out*
*All tentatively identified compound concentration values are estimated.*
*** Compound also detected in Blank.*

**TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311**
Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 99.97 | | Grams |
| LIQUID FRACTION (GRAMS) | 0.02 | | Grams |
| EXTRACTED SAMPLE | 96.46 | | Grams |
| SOLIDS | 96 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 10.52 | | Std. Units |
| ADJUSTED PH | 3.18 | | Std. Units |
| BUFFER SOLUTION PH | 4.98 | | Std. Units |
| FINAL PH | 5.89 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 1930 | | mL |
| VOLUME EXTRACT FILTERED | 1930 | | mL |
| VOLUME LIQUID (ADD BACK) | 0 | | mL |
| TAL VOLUME FILTRATE | 1930 | | mL |
| 3IENT TEMPERATURE | 21 | | Degrees C |
| ITIAL TIME | 1607 | | HRS |
| FINAL TIME | 1035 | | HRS |

**FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A**
Analyst: J. ULASZEK Analysis Date: 25-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

**BARIUM ICP (1 POINT MSA) SW846-6010A**
Analyst: S. KANAPILLY Analysis Date: 09-JUN-94 Instrument: ICP Test: M604.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BARIUM | BDL | 5.0 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | 3.4 | | Conc |
| SAMPLE + ADD 1 | 4.2 | | Conc |
| DILUTION | 1 | | |

**CADMIUM FAA (1 POINT MSA) SW846-7130**
Analyst: C. SARKAN Analysis Date: 27-MAY-94 Instrument: FAA Test: M608.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
ep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |
| SAMPLE | -0.016 | | Conc |
| SAMPLE + ADD 1 | 0.543 | | Conc |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| DILUTION | 1 | | |

## CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. MILENKOVIC Analysis Date: 01-JUN-94 Instrument: FAA Test: M610.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | BDL | | Conc |
| SAMPLE + ADD 1 | 1.01 | | Conc |
| DILUTION | 1 | | |

## LEAD FAA (1 POINT MSA) SW846-7420

Analyst: C. SARKAN Analysis Date: 31-MAY-94 Instrument: FAA Test: M616.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.25 | mg/L |
| ADDITION 1 | 2.0 | | mg/L |
| SAMPLE | -0.001 | | Conc |
| SAMPLE + ADD 1 | 2.08 | | Conc |
| DILUTION | 1 | | |

## SILVER FAA (1 POINT MSA) SW846-7760A

alyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0
ep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
rep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | -0.046 | | Conc |
| SAMPLE + ADD 1 | 1.05 | | Conc |
| DILUTION | | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: T. IRVING Analysis Date: 25-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA (1 POINT MSA) SW846-7060

Analyst: T. NOHA Analysis Date: 28-MAY-94 Instrument: GFAA Test: M603.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | 0.006 | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0063 | | Conc |
| SAMPLE + ADD 1 | 0.0159 | | Conc |
| UTION | | | |

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156767

## ENIUM GFAA (1 POINT MSA) SW846-7740

Analyst: T. NOHA Analysis Date: 04-JUN-94 Instrument: GFAA Test: M628.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0002 | | Conc |
| SAMPLE + ADD 1 | 0.0071 | | Conc |
| DILUTION | 10 | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 23-MAY-94 Test: P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 26-MAY-94 Test: P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0
Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| SAMPLE + ADD 1 | 0.00096 | | Conc |
| DILUTION | 1 | | |

Sample Comments

* *See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 4969.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| ERITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 19-MAY-94 | 2936 | C156768 |
| | Complete | PO Number | |
| | 14-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 30-JUN-94 | 18-MAY-94 12:20 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

Sample Description

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-24 - GRAB

**VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A**

Analyst: G. SWANEY  Analysis Date: 27-MAY-94 11:57  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 68 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| RYLONITRILE | BDL | 70 | ug/kg |
| IZENE | BDL | 5 | ug/kg |
| OMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | 12 | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 13 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| RACHLOROETHENE | BDL | 5 | ug/kg |
| RAHYDROFURAN | BDL | 25 | ug/kg |
| TOLUENE | 32 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156768

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,1,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| ICHLOROETHENE | 9 | 5 | ug/kg |
| ..NYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | BDL | 5 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | EST 6 RT=11.86 | | ug/kg |
| UNKNOWN HYDROCARBON | EST 11 RT=21.59 | | ug/kg |
| UNKNOWN C10 HYDROCARBON | EST 59 RT=25.7 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 94 | | % Rec |
| TOLUENE-D8 | * 126 | | % Rec |
| 4-BROMOFLUOROBENZENE | 109 | | % Rec |

*1:1 DILUTION.*
*Sample reanalyzed with no improvement in surrogate recovery.*

GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550
Analyst: K. RUBLE Analysis Date: 20-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10.05 | | Grams |
| FINAL VOLUME | 1 | | mL |

-MI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A
alyst: H. QIAN Analysis Date: 24-MAY-94 22:14 Instrument: GC/MS SVOA Test: 0505.3.0
ep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 1000 | ug/kg |
| ACENAPHTHYLENE | BDL | 1000 | ug/kg |
| ANTHRACENE | EST 880 | 1000 | ug/kg |
| BENZ(A)ANTHRACENE | 1100 | 1000 | ug/kg |
| BENZO(A)PYRENE | EST 710 | 1000 | ug/kg |
| BENZO(B)FLUORANTHENE | EST 750 | 1000 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 1000 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 1000 | ug/kg |
| BENZYL ALCOHOL | BDL | 1000 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 1000 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 1000 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 1000 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 1000 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | 4300 | 1000 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 1000 | ug/kg |
| CARBAZOLE | BDL | 1000 | ug/kg |
| 4-CHLOROANILINE | BDL | 1000 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 1000 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 1000 | ug/kg |
| CHRYSENE | 2100 | 1000 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 1000 | ug/kg |
| DIBENZOFURAN | BDL | 1000 | ug/kg |
| -DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| -DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 1000 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 2000 | ug/kg |
| DIETHYLPHTHALATE | BDL | 1000 | ug/kg |
| DIMETHYLPHTHALATE | BDL | 1000 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| -N-BUTYLPHTHALATE | BDL | 1000 | ug/kg |
| ITROBENZENES | BDL | 5000 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 1000 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 1000 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 1000 | ug/kg |
| FLUORANTHENE | EST 700 | 1000 | ug/kg |
| FLUORENE | BDL | 1000 | ug/kg |
| HEXACHLOROBENZENE | BDL | 1000 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 1000 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 1000 | ug/kg |
| HEXACHLOROETHANE | BDL | 1000 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 1000 | ug/kg |
| ISOPHORONE | BDL | 1000 | ug/kg |
| 2-METHYLNAPHTHALENE | EST 570 | 1000 | ug/kg |
| NAPHTHALENE | BDL | 1000 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 5000 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 5000 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 5000 | ug/kg |
| NITROBENZENE | BDL | 1000 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 1000 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 1000 | ug/kg |
| PHENANTHRENE | 1200 | 1000 | ug/kg |
| 2-PICOLINE | BDL | 5000 | ug/kg |
| PYRENE | 2000 | 1000 | ug/kg |
| PYRIDINE | BDL | 5000 | ug/kg |
| UENEDIAMINE | BDL | 5000 | ug/kg |
| ,4-TRICHLOROBENZENE | BDL | 1000 | ug/kg |
| NZOIC ACID | BDL | 5000 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 1000 | ug/kg |
| 2-CHLOROPHENOL | BDL | 1000 | ug/kg |
| 2,4-DICHLOROPHENOL | BDL | 1000 | ug/kg |
| 2,4-DIMETHYLPHENOL | BDL | 1000 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 5000 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 5000 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 1000 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 1000 | ug/kg |
| 2-NITROPHENOL | BDL | 1000 | ug/kg |
| 4-NITROPHENOL | BDL | 5000 | ug/kg |
| PENTACHLOROPHENOL | BDL | 5000 | ug/kg |
| PHENOL | BDL | 1000 | ug/kg |
| TETRACHLOROPHENOL | BDL | 1000 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 1000 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 1000 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| UNKNOWN | * 3000 RT=4.53 | | ug/kg |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 4600 RT=5.68 | | ug/kg |
| UNKNOWN | * 3500 RT=7.43 | | ug/kg |
| UNKNOWN | * 2400 RT=7.7 | | ug/kg |
| UNKNOWN | 2800 RT=8.29 | | ug/kg |
| UNKNOWN | * 2900 RT=8.59 | | ug/kg |
| UNKNOWN | * 2700 RT=9.01 | | ug/kg |
| NOWN | * 2900 RT=9.17 | | ug/kg |
| NOWN | * 5700 RT=12.68 | | ug/kg |
| UNKNOWN HYDROCARBON | 5600 RT=16.24 | | ug/kg |
| UNKNOWN HYDROCARBON | 11000 RT=17.28 | | ug/kg |
| UNKNOWN HYDROCARBON | 7300 RT=18.25 | | ug/kg |
| UNKNOWN HYDROCARBON | 7700 RT=19.17 | | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| UNKNOWN HYDROCARBON | 7800 RT=20.05 | | ug/kg |
| UNKNOWN HYDROCARBON | 8100 RT=20.89 | | ug/kg |
| UNKNOWN HYDROCARBON | 22000 RT=21.7 | | ug/kg |
| UNKNOWN HYDROCARBON | 20000 RT=22.47 | | ug/kg |
| UNKNOWN HYDROCARBON | 18000 RT=23.21 | | ug/kg |
| UNKNOWN HYDROCARBON | 21000 RT=24.91 | | ug/kg |
| UNKNOWN HYDROCARBON | 17000 RT=25.97 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 122 | | % Rec |
| PHENOL-D5 | 80 | | % Rec |
| NITROBENZENE-D5 | 87 | | % Rec |
| 2-FLUOROBIPHENYL | 132 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 47 | | % Rec |
| TERPHENYL-D14 | 106 | | % Rec |

*1:1 DILUTION.*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 100.08 | | Grams |
| QUID FRACTION (GRAMS) | 0 | | Grams |
| TRACTED SAMPLE | 100.08 | | Grams |
| LIDS | 100 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 10.96 | | Std. Units |
| ADJUSTED PH | 5.42 | | Std. Units |
| BUFFER SOLUTION PH | 2.93 | | Std. Units |
| FINAL PH | 5.08 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 2000 | | mL |
| VOLUME EXTRACT FILTERED | 2000 | | mL |
| VOLUME LIQUID (ADD BACK) | 0 | | mL |
| TOTAL VOLUME FILTRATE | 2000 | | mL |
| AMBIENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1607 | | HRS |
| FINAL TIME | 1035 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: J. ULASZEK Analysis Date: 25-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 09-JUN-94 Instrument: ICP Test: M604.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BARIUM | BDL | 5.0 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | 3.5 | | Conc |
| SAMPLE + ADD 1 | 4.3 | | Conc |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| UTION | 1 | | |

## CADMIUM FAA (1 POINT MSA) SW846-7130

Analyst: C. SARKAN Analysis Date: 27-MAY-94 Instrument: FAA Test: M608.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |
| SAMPLE | -0.007 | | Conc |
| SAMPLE + ADD 1 | 0.535 | | Conc |
| DILUTION | 1 | | |

## CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. MILENKOVIC Analysis Date: 01-JUN-94 Instrument: FAA Test: M610.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | BDL | | Conc |
| SAMPLE + ADD 1 | 0.987 | | Conc |
| DILUTION | 1 | | |

## LEAD FAA (1 POINT MSA) SW846-7420

nalyst: C. SARKAN Analysis Date: 31-MAY-94 Instrument: FAA Test: M616.5.0
ep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
rep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.25 | mg/L |
| ADDITION 1 | 2.0 | | mg/L |
| SAMPLE | -0.001 | | Conc |
| SAMPLE + ADD 1 | 2.21 | | Conc |
| DILUTION | 1 | | |

## SILVER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | -0.046 | | Conc |
| SAMPLE + ADD 1 | 1.04 | | Conc |
| DILUTION | | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: T. IRVING Analysis Date: 25-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| IAL VOLUME | 50 | | mL |

## ENIC GFAA (1 POINT MSA) SW846-7060

lyst: T. NOHA Analysis Date: 28-MAY-94 Instrument: GFAA Test: M603.6.0
p: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | 0.006 | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0058 | | Conc |
| SAMPLE + ADD 1 | 0.0157 | | Conc |
| DILUTION | | | |

## SELENIUM GFAA (1 POINT MSA) SW846-7740

Analyst: T. NOHA Analysis Date: 04-JUN-94 Instrument: GFAA Test: M628.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | -0.0001 | | Conc |
| SAMPLE + ADD 1 | 0.0065 | | Conc |
| DILUTION | 10 | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 23-MAY-94 Test: P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ITIAL WEIGHT OR VOLUME | 10 | | mL |
| AL VOLUME | 100 | | mL |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 25-MAY-94 Test: P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0
Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| SAMPLE + ADD 1 | 0.0010 | | Conc |
| DILUTION | 1 | | |

Sample Comments

** See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*mple chain of custody number 4969.*

*This Certificate shall not be reproduced, except in full,*

Sample Comments

*hout the written approval of the lab.*

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| RITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 19-MAY-94 | 2936 | C156769 |
| | Complete | PO Number | |
| | 15-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 30-JUN-94 | 18-MAY-94 12:25 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

Sample Description

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SB-24D - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY  Analysis Date: 27-MAY-94 12:42  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 68 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| RYLONITRILE | BDL | 70 | ug/kg |
| ZENE | BDL | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | EST 3 | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | 6 | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 30 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| TRACHLOROETHENE | BDL | 5 | ug/kg |
| TRAHYDROFURAN | BDL | 25 | ug/kg |
| TOLUENE | 19 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | EST 3 | 5 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| CHLOROETHENE | 15 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | BDL | 5 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | EST 12 RT=11.85 | | ug/kg |
| UNKNOWN | EST 9 RT=13.31 | | ug/kg |
| UNKNOWN C10 HYDROCARBON | EST 25 RT=25.69 | | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 93 | | % Rec |
| TOLUENE-D8 | * 124 | | % Rec |
| 4-BROMOFLUOROBENZENE | 86 | | % Rec |

*1:1 DILUTION.*
*Sample reanalyzed with no improvement in surrogate recovery.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: K. RUBLE Analysis Date: 20-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.12 | | Grams |
| FINAL VOLUME | 1 | | mL |

## MI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

nlyst: H. QIAN Analysis Date: 25-MAY-94 18:03 Instrument: GC/MS SVOA Test: 0505.3.0
rep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 330 | ug/kg |
| ACENAPHTHYLENE | BDL | 330 | ug/kg |
| ANTHRACENE | 660 | 330 | ug/kg |
| BENZ(A)ANTHRACENE | 340 | 330 | ug/kg |
| BENZO(A)PYRENE | 390 | 330 | ug/kg |
| BENZO(B)FLUORANTHENE | 600 | 330 | ug/kg |
| BENZO(G,H,I)PERYLENE | 490 | 330 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZYL ALCOHOL | BDL | 330 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | 880 | 330 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 330 | ug/kg |
| CARBAZOLE | EST 190 | 330 | ug/kg |
| 4-CHLOROANILINE | BDL | 330 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 330 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 330 | ug/kg |
| CHRYSENE | 690 | 330 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 330 | ug/kg |
| DIBENZOFURAN | BDL | 330 | ug/kg |
| ?-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| ,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 660 | ug/kg |
| DIETHYLPHTHALATE | BDL | 330 | ug/kg |
| DIMETHYLPHTHALATE | BDL | 330 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| N-BUTYLPHTHALATE | BDL | 330 | ug/kg |
| ITROBENZENES | BDL | 1700 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 330 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 330 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 330 | ug/kg |
| FLUORANTHENE | 390 | 330 | ug/kg |
| FLUORENE | BDL | 330 | ug/kg |
| HEXACHLOROBENZENE | BDL | 330 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROETHANE | BDL | 330 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | 390 | 330 | ug/kg |
| ISOPHORONE | BDL | 330 | ug/kg |
| 2-METHYLNAPHTHALENE | EST 240 | 330 | ug/kg |
| NAPHTHALENE | BDL | 330 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 1700 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 1700 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 1700 | ug/kg |
| NITROBENZENE | BDL | 330 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 330 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 330 | ug/kg |
| PHENANTHRENE | 560 | 330 | ug/kg |
| 2-PICOLINE | BDL | 1700 | ug/kg |
| PYRENE | 650 | 330 | ug/kg |
| PYRIDINE | BDL | 330 | ug/kg |
| UENEDIAMINE | BDL | 330 | ug/kg |
| ,4-TRICHLOROBENZENE | BDL | 330 | ug/kg |
| BENZOIC ACID | BDL | 1700 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 330 | ug/kg |
| 2-CHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4-DICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4-DIMETHYLPHENOL | BDL | 330 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 1700 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 1700 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 330 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 330 | ug/kg |
| 2-NITROPHENOL | BDL | 330 | ug/kg |
| 4-NITROPHENOL | BDL | 1700 | ug/kg |
| PENTACHLOROPHENOL | BDL | 1700 | ug/kg |
| PHENOL | BDL | 330 | ug/kg |
| TETRACHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 560 RT=3.04 | | |
| 3-PENTEN-2-ONE | * 1400 RT=3.54 | | |
| UNKNOWN | * 820 RT=3.89 | | |
| UNKNOWN | * 2100 RT=4.52 | | |
| UNKNOWN KETONE | * 920 RT=4.71 | | |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 4000 RT=5.67 | | |
| NKNOWN | 630 RT=6.85 | | |
| NOWN | * 820 RT=6.99 | | |
| KNOWN | * 2700 RT=7.42 | | |
| UNKNOWN KETONE | 1600 RT=7.67 | | |
| UNKNOWN | * 560 RT=7.72 | | |
| UNKNOWN | 3000 RT=8.27 | | |
| UNKNOWN | * 1400 RT=8.57 | | |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NOWN | 1100 RT=8.73 | | |
| NOWN | * 1500 RT=8.99 | | |
| UNKNOWN | * 2400 RT=9.15 | | |
| UNKNOWN | 920 RT=9.64 | | |
| UNKNOWN | * 1600 RT=12.67 | | |
| UNKNOWN | 630 RT=13.22 | | |
| UNKNOWN HYDROCARBON | 1400 RT=17.28 | | |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 88 | | ug/kg |
| PHENOL-D5 | 80 | | ug/kg |
| NITROBENZENE-D5 | 81 | | ug/kg |
| 2-FLUOROBIPHENYL | 116 | | ug/kg |
| 2,4,6-TRIBROMOPHENOL | 53 | | ug/kg |
| TERPHENYL-D14 | 103 | | ug/kg |

*1:1 DILUTION.*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 100.08 | | Grams |
| UID FRACTION (GRAMS) | 0 | | Grams |
| RACTED SAMPLE | 100.08 | | Grams |
| SOLIDS | 100 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 10.90 | | Std. Units |
| ADJUSTED PH | 2.71 | | Std. Units |
| BUFFER SOLUTION PH | 4.98 | | Std. Units |
| FINAL PH | 5.93 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 2000 | | mL |
| VOLUME EXTRACT FILTERED | 2000 | | mL |
| VOLUME LIQUID (ADD BACK) | 0 | | mL |
| TOTAL VOLUME FILTRATE | 2000 | | mL |
| AMBIENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1607 | | HRS |
| FINAL TIME | 1035 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: J. ULASZEK Analysis Date: 25-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 09-JUN-94 Instrument: ICP Test: M604.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BARIUM | BDL | 5.0 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | 3.2 | | Conc |
| SAMPLE + ADD 1 | 3.9 | | Conc |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| UTION | 1 | | |

## CADMIUM FAA (1 POINT MSA) SW846-7130

Analyst: C. SARKAN Analysis Date: 27-MAY-94 Instrument: FAA Test: M608.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |
| SAMPLE | -0.02 | | Conc |
| SAMPLE + ADD 1 | 0.543 | | Conc |
| DILUTION | 1 | | |

## CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. MILENKOVIC Analysis Date: 01-JUN-94 Instrument: FAA Test: M610.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | BDL | | Conc |
| SAMPLE + ADD 1 | 0.987 | | Conc |
| DILUTION | 1 | | |

## LEAD FAA (1 POINT MSA) SW846-7420

lyst: C. SARKAN Analysis Date: 31-MAY-94 Instrument: FAA Test: M616.5.0
p: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
ep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.25 | mg/L |
| ADDITION 1 | 2.0 | | mg/L |
| SAMPLE | -0.12 | | Conc |
| SAMPLE + ADD 1 | 2.21 | | Conc |
| DILUTION | 1 | | |

## SILVER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | -0.005 | | Conc |
| SAMPLE + ADD 1 | 1.08 | | Conc |
| DILUTION | | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: T. IRVING Analysis Date: 25-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| AL VOLUME | 50 | | mL |

## SENIC GFAA (1 POINT MSA) SW846-7060

ilyst: T. NOHA Analysis Date: 28-MAY-94 Instrument: GFAA Test: M603.6.0
ep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | 0.008 | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0083 | | Conc |
| SAMPLE + ADD 1 | 0.0188 | | Conc |
| DILUTION | | | |

## SELENIUM GFAA (1 POINT MSA) SW846-7740

Analyst: T. NOHA Analysis Date: 04-JUN-94 Instrument: GFAA Test: M628.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0000 | | Conc |
| SAMPLE + ADD 1 | 0.0063 | | Conc |
| DILUTION | 10 | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 23-MAY-94 Test: P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TIAL WEIGHT OR VOLUME | 10 | | mL |
| IAL VOLUME | 100 | | mL |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 26-MAY-94 Test: P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0
Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| SAMPLE + ADD 1 | 0.00096 | | Conc |
| DILUTION | 1 | | |

Sample Comments

* *See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*ample chain of custody number 4969.*

*This Certificate shall not be reproduced, except in full,*

Sample Comments

*hout the written approval of the lab.*

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| HERITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 23-MAY-94 | 2936 | C156879 |
| | Complete | PO Number | |
| | 15-JUN-94 | 4860-02328 | |
| | Printed | Sampled | |
| | 30-JUN-94 | 20-MAY-94 09:50 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION
DESCRIPTION: @ SB-29 GROUNDWATER - GRAB
SAMPLE ID.: GW-1

## GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. BUSSEY  Analysis Date: 27-MAY-94  Test: P233.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 1000 | | mL |
| AL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN  Analysis Date: 25-MAY-94 16:26  Instrument: GC/MS SVOA  Test: 0505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 10 | ug/L |
| ACENAPHTHYLENE | BDL | 10 | ug/L |
| ANTHRACENE | BDL | 10 | ug/L |
| BENZ(A)ANTHRACENE | BDL | 10 | ug/L |
| BENZO(A)PYRENE | BDL | 10 | ug/L |
| BENZO(B)FLUORANTHENE | BDL | 10 | ug/L |
| BENZO(G,H,I)PERYLENE | BDL | 10 | ug/L |
| BENZO(K)FLUORANTHENE | BDL | 10 | ug/L |
| BENZYL ALCOHOL | BDL | 10 | ug/L |
| BENZYLBUTYLPHTHALATE | BDL | 10 | ug/L |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 10 | ug/L |
| BIS(2-CHLOROETHYL)ETHER | BDL | 10 | ug/L |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 10 | ug/L |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 10 | ug/L |
| 4-BROMOPHENYLPHENYLETHER | BDL | 10 | ug/L |
| CARBAZOLE | BDL | 10 | ug/L |
| 4-CHLOROANILINE | BDL | 10 | ug/L |
| 2-CHLORONAPHTHALENE | BDL | 10 | ug/L |
| 4-CHLOROPHENYLPHENYLETHER | BDL | 10 | ug/L |
| RYSENE | BDL | 10 | ug/L |
| ENZ(A,H)ANTHRACENE | BDL | 10 | ug/L |
| BENZOFURAN | BDL | 10 | ug/L |
| 1,2-DICHLOROBENZENE | BDL | 10 | ug/L |
| 1,3-DICHLOROBENZENE | BDL | 10 | ug/L |
| 1,4-DICHLOROBENZENE | BDL | 10 | ug/L |
| 3,3'-DICHLOROBENZIDINE | BDL | 20 | ug/L |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| THYLPHTHALATE | BDL | 10 | ug/L |
| ETHYLPHTHALATE | BDL | 10 | ug/L |
| DI-N-BUTYLPHTHALATE | BDL | 10 | ug/L |
| DINITROBENZENES | BDL | 50 | ug/L |
| 2,4-DINITROTOLUENE | BDL | 10 | ug/L |
| 2,6-DINITROTOLUENE | BDL | 10 | ug/L |
| DI-N-OCTYLPHTHALATE | BDL | 10 | ug/L |
| FLUORANTHENE | BDL | 10 | ug/L |
| FLUORENE | BDL | 10 | ug/L |
| HEXACHLOROBENZENE | BDL | 10 | ug/L |
| HEXACHLOROBUTADIENE | BDL | 10 | ug/L |
| HEXACHLOROCYCLOPENTADIENE | BDL | 10 | ug/L |
| HEXACHLOROETHANE | BDL | 10 | ug/L |
| INDENO(1,2,3-CD)PYRENE | BDL | 10 | ug/L |
| ISOPHORONE | BDL | 10 | ug/L |
| 2-METHYLNAPHTHALENE | BDL | 10 | ug/L |
| NAPHTHALENE | BDL | 10 | ug/L |
| 2-NITROANILINE | BDL | 50 | ug/L |
| 3-NITROANILINE | BDL | 50 | ug/L |
| 4-NITROANILINE | BDL | 50 | ug/L |
| NITROBENZENE | BDL | 10 | ug/L |
| N-NITROSO-DIPHENYLAMINE | BDL | 10 | ug/L |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 10 | ug/L |
| PHENANTHRENE | BDL | 10 | ug/L |
| ?-PICOLINE | BDL | 50 | ug/L |
| ENE | BDL | 10 | ug/L |
| IDINE | BDL | 50 | ug/L |
| TOLUENEDIAMINE | BDL | 50 | ug/L |
| 1,2,4-TRICHLOROBENZENE | BDL | 10 | ug/L |
| BENZOIC ACID | BDL | 50 | ug/L |
| 4-CHLORO-3-METHYLPHENOL | BDL | 10 | ug/L |
| 2-CHLOROPHENOL | BDL | 10 | ug/L |
| 2,4-DICHLOROPHENOL | BDL | 10 | ug/L |
| 2,4-DIMETHYLPHENOL | BDL | 10 | ug/L |
| 4,6-DINITRO-2-METHYLPHENOL | BDL | 50 | ug/L |
| 2,4-DINITROPHENOL | BDL | 50 | ug/L |
| 2-METHYLPHENOL | BDL | 10 | ug/L |
| 4-METHYLPHENOL | BDL | 10 | ug/L |
| 2-NITROPHENOL | BDL | 10 | ug/L |
| 4-NITROPHENOL | BDL | 50 | ug/L |
| PENTACHLOROPHENOL | BDL | 50 | ug/L |
| PHENOL | BDL | 10 | ug/L |
| TETRACHLOROPHENOL | BDL | 10 | ug/L |
| 2,4,5-TRICHLOROPHENOL | BDL | 50 | ug/L |
| 2,4,6-TRICHLOROPHENOL | BDL | 10 | ug/L |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| UNKNOWN | * 10 RT=2.27 | | |
| PENTANE,2,2,4-TRIMETHYL | * 10 RT=2.62 | | |
| UNKNOWN | 11 RT=20.95 | | |
| UNKNOWN ALCOHOL | 30 RT=21.29 | | |
| ""KNOWN | 29 RT=23.02 | | |
| NOWN | 37 RT=23.34 | | |
| ..KNOWN | 26 RT=25.23 | | |
| SURROGATE RECOVERY | | | |
| 2-FLUOROPHENOL | 45 | | % Rec |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NOL-D5 | 33 | | % Rec |
| ROBENZENE-D5 | 49 | | % Rec |
| 2-FLUOROBIPHENYL | 60 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 57 | | % Rec |
| TERPHENYL-D14 | 41 | | % Rec |

*1:1 DILUTION.*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

**VOLATILE ORGANICS SW846-8240A**

Analyst: S. SHARP Analysis Date: 26-MAY-94 20:43 Instrument: GC/MS VOA Test: 0510.3.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | BDL | 20 | ug/L |
| ACROLEIN | BDL | 50 | ug/L |
| ACRYLONITRILE | BDL | 70 | ug/L |
| BENZENE | BDL | 5 | ug/L |
| BROMODICHLOROMETHANE | BDL | 5 | ug/L |
| BROMOFORM | BDL | 5 | ug/L |
| BROMOMETHANE | BDL | 10 | ug/L |
| CARBON DISULFIDE | BDL | 5 | ug/L |
| CARBON TETRACHLORIDE | BDL | 5 | ug/L |
| CHLOROBENZENE | BDL | 5 | ug/L |
| CHLOROETHANE | BDL | 10 | ug/L |
| CHLOROFORM | BDL | 5 | ug/L |
| LOROMETHANE | BDL | 10 | ug/L |
| ROMOCHLOROMETHANE | BDL | 5 | ug/L |
| S-1,3-DICHLOROPROPENE | BDL | 5 | ug/L |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/L |
| 1,1-DICHLOROETHANE | 7 | 5 | ug/L |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/L |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/L |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/L |
| ETHYL BENZENE | BDL | 5 | ug/L |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/L |
| 2-HEXANONE | BDL | 10 | ug/L |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | BDL | 5 | ug/L |
| METHYL ETHYL KETONE | BDL | 10 | ug/L |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/L |
| STYRENE | BDL | 5 | ug/L |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/L |
| TETRACHLOROETHENE | BDL | 5 | ug/L |
| TETRAHYDROFURAN | BDL | 25 | ug/L |
| TOLUENE | BDL | 5 | ug/L |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/L |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/L |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/L |
| 1,1,2-TRICHLOROETHANE | BDL | 5 | ug/L |
| TRICHLOROETHENE | BDL | 5 | ug/L |
| VINYL ACETATE | BDL | 10 | ug/L |
| VINYL CHLORIDE | BDL | 10 | ug/L |
| ENES (O/M/P-XYLENE) | BDL | 5 | ug/L |
| SURROGATE RECOVERY | | | |
| DICHLOROETHANE-D4 | 94 | | % Rec |
| TOLUENE-D8 | 100 | | % Rec |

RITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156879

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ROMOFLUOROBENZENE | 106 | | % Rec |
| *DILUTION.* | | | |

Sample Comments

* *See Note for Parameter*
*BDL* *Below Detection Limit*
*RT* *Retention Time*

*Sample chain of custody number 5062.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: Christine Salas

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| ...RITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 23-MAY-94 | 2936 | C156876 |
| | Complete | PO Number | |
| | 08-AUG-94 | 4860-02328 | |
| | Printed | Sampled | |
| | 09-AUG-94 | 20-MAY-94 14:25 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

Sample Description

PROJECT: HES RCRA FACILITY INVESTIGATION
DESCRIPTION: DRUM PROCESSING AREA - GRAB
SAMPLE ID.: WW-1

## FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A

Analyst: T. IRVING  Analysis Date: 26-MAY-94  Test: P130.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| AL VOLUME | 50 | | mL |

## SILVER ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 27-MAY-94 08:00  Instrument: ICP  Test: M130.3.0

Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.010 | mg/L |

## FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A

Analyst: T. IRVING  Analysis Date: 02-JUN-94  Test: P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ANTIMONY ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 02-JUN-94 13:00  Instrument: ICP  Test: M102.3.0

Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ANTIMONY | BDL | 0.050 | mg/L |

## BERYLLIUM ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 02-JUN-94 13:00  Instrument: ICP  Test: M105.3.0

Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BERYLLIUM | BDL | 0.0050 | mg/L |

 (continued on next page)

## MIUM ICP SW846-6010A

lyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M108.3.0
p: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.0050 | mg/L |

## CHROMIUM ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M110.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.010 | mg/L |

## COPPER ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M112.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| COPPER | BDL | 0.020 | mg/L |

## LEAD ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M116.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.050 | mg/L |

## NICKEL ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 10-JUN-94 07:30 Instrument: ICP Test: M122.3.0
rep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ıı.CKEL | 0.90 | 0.010 | mg/L |

## THALLIUM ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M134.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| THALLIUM | BDL | 0.30 | mg/L |

## GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A

Analyst: T. IRVING Analysis Date: 26-MAY-94 Test: P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA SW846-7060

Analyst: T. NOHA Analysis Date: 10-JUN-94 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | 0.005 | 0.0050 | mg/L |

## SELENIUM GFAA SW846-7740

Analyst: T. NOHA Analysis Date: 04-JUN-94 Instrument: GFAA Test: M128.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ENIUM | BDL | 0.025 | mg/L |

## ..C ICP SW846-6010A

yst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M139.3.0

: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ZINC | 0.12 | 0.020 | mg/L |

## MERCURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470

Analyst: T. IRVING Analysis Date: 24-MAY-94 Test: P131.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 100 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470

Analyst: A. SNAPP Analysis Date: 26-MAY-94 Test: P131.6.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 100 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M120.1.0

Prep: MERCURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470 P131.6.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | 0.0005 | mg/L |

## GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. BUSSEY Analysis Date: 27-MAY-94 Test: P233.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TIAL WEIGHT OR VOLUME | 1000 | | mL |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 25-MAY-94 22:55 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 10 | ug/L |
| ACENAPHTHYLENE | BDL | 10 | ug/L |
| ANTHRACENE | BDL | 10 | ug/L |
| BENZ(A)ANTHRACENE | BDL | 10 | ug/L |
| BENZO(A)PYRENE | BDL | 10 | ug/L |
| BENZO(B)FLUORANTHENE | BDL | 10 | ug/L |
| BENZO(G,H,I)PERYLENE | BDL | 10 | ug/L |
| BENZO(K)FLUORANTHENE | BDL | 10 | ug/L |
| BENZYL ALCOHOL | BDL | 10 | ug/L |
| BENZYLBUTYLPHTHALATE | BDL | 10 | ug/L |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 10 | ug/L |
| BIS(2-CHLOROETHYL)ETHER | BDL | 10 | ug/L |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 10 | ug/L |
| BIS(2-ETHYLHEXYL)PHTHALATE | EST 8 | 10 | ug/L |
| 4-BROMOPHENYLPHENYLETHER | BDL | 10 | ug/L |
| CARBAZOLE | BDL | 10 | ug/L |
| 4-CHLOROANILINE | BDL | 10 | ug/L |
| CHLORONAPHTHALENE | BDL | 10 | ug/L |
| HLOROPHENYLPHENYLETHER | BDL | 10 | ug/L |
| ..RYSENE | BDL | 10 | ug/L |
| DIBENZ(A,H)ANTHRACENE | BDL | 10 | ug/L |
| DIBENZOFURAN | BDL | 10 | ug/L |
| 1,2-DICHLOROBENZENE | BDL | 10 | ug/L |
| 1,3-DICHLOROBENZENE | BDL | 10 | ug/L |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| -DICHLOROBENZENE | BDL | 10 | ug/L |
| ,3'-DICHLOROBENZIDINE | BDL | 20 | ug/L |
| DIETHYLPHTHALATE | BDL | 10 | ug/L |
| DIMETHYLPHTHALATE | BDL | 10 | ug/L |
| DI-N-BUTYLPHTHALATE | BDL | 10 | ug/L |
| DINITROBENZENES | BDL | 50 | ug/L |
| 2,4-DINITROTOLUENE | BDL | 10 | ug/L |
| 2,6-DINITROTOLUENE | 10 | 10 | ug/L |
| DI-N-OCTYLPHTHALATE | BDL | 10 | ug/L |
| FLUORANTHENE | BDL | 10 | ug/L |
| FLUORENE | BDL | 10 | ug/L |
| HEXACHLOROBENZENE | BDL | 10 | ug/L |
| HEXACHLOROBUTADIENE | BDL | 10 | ug/L |
| HEXACHLOROCYCLOPENTADIENE | BDL | 10 | ug/L |
| HEXACHLOROETHANE | BDL | 10 | ug/L |
| INDENO(1,2,3-CD)PYRENE | BDL | 10 | ug/L |
| ISOPHORONE | 37 | 10 | ug/L |
| 2-METHYLNAPHTHALENE | BDL | 10 | ug/L |
| NAPHTHALENE | BDL | 10 | ug/L |
| 2-NITROANILINE | BDL | 50 | ug/L |
| 3-NITROANILINE | BDL | 50 | ug/L |
| 4-NITROANILINE | BDL | 50 | ug/L |
| NITROBENZENE | BDL | 10 | ug/L |
| N-NITROSO-DIPHENYLAMINE | BDL | 10 | ug/L |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 10 | ug/L |
| NANTHRENE | BDL | 10 | ug/L |
| ICOLINE | BDL | 50 | ug/L |
| PYRENE | BDL | 10 | ug/L |
| PYRIDINE | BDL | 50 | ug/L |
| TOLUENEDIAMINE | BDL | 50 | ug/L |
| 1,2,4-TRICHLOROBENZENE | BDL | 10 | ug/L |
| BENZOIC ACID | BDL | 50 | ug/L |
| 4-CHLORO-3-METHYLPHENOL | BDL | 10 | ug/L |
| 2-CHLOROPHENOL | BDL | 10 | ug/L |
| 2,4-DICHLOROPHENOL | BDL | 10 | ug/L |
| 2,4-DIMETHYLPHENOL | BDL | 10 | ug/L |
| 4,6-DINITRO-2-METHYLPHENOL | BDL | 50 | ug/L |
| 2,4-DINITROPHENOL | BDL | 50 | ug/L |
| 2-METHYLPHENOL | BDL | 10 | ug/L |
| 4-METHYLPHENOL | BDL | 10 | ug/L |
| 2-NITROPHENOL | BDL | 10 | ug/L |
| 4-NITROPHENOL | BDL | 50 | ug/L |
| PENTACHLOROPHENOL | BDL | 50 | ug/L |
| PHENOL | BDL | 10 | ug/L |
| TETRACHLOROPHENOL | BDL | 10 | ug/L |
| 2,4,5-TRICHLOROPHENOL | BDL | 10 | ug/L |
| 2,4,6-TRICHLOROPHENOL | BDL | 10 | ug/L |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| UNKNOWN | 130 RT=2.46 | | |
| UNKNOWN | 78 RT=2.58 | | |
| KNOWN | 45 RT=8.49 | | |
| NOWN | 87 RT=8.56 | | |
| KNOWN | 47 RT=8.73 | | |
| UNKNOWN | 290 RT=9.24 | | |
| UNKNOWN | 32 RT=10.67 | | |
| UNKNOWN | 34 RT=12.1 | | |
| UNKNOWN | 28 RT=12.26 | | |

ITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156876

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| IOWN | 50 RT=12.5 | | |
| ....NOWN | 62 RT=12.64 | | |
| UNKNOWN | 100 RT=12.71 | | |
| UNKNOWN | 45 RT=12.74 | | |
| UNKNOWN | 33 RT=13.24 | | |
| UNKNOWN | 21 RT=13.86 | | |
| UNKNOWN | 49 RT=14.19 | | |
| UNKNOWN | 76 RT=15.62 | | |
| UNKNOWN | 29 RT=16.15 | | |
| UNKNOWN | 24 RT=16.46 | | |
| UNKNOWN | 48 RT=17.08 | | |
| UNKNOWN | 30 RT=17.44 | | |
| . | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 44 | | % Rec |
| PHENOL-D5 | 39 | | % Rec |
| NITROBENZENE-D5 | 68 | | % Rec |
| 2-FLUOROBIPHENYL | 79 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 63 | | % Rec |
| TERPHENYL-D14 | 58 | | % Rec |

*1:1 DILUTION.*
*All tentatively identified compound concentration values are estimated.*

ATILE ORGANICS SW846-8240A
lyst: G. SWANEY Analysis Date: 06-JUN-94 17:42 Instrument: GC/MS VOA Test: 0510.3.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 3500 | 1000 | ug/L |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 105 | | % Rec |
| TOLUENE-D8 | 98 | | % Rec |
| 4-BROMOFLUOROBENZENE | 101 | | % Rec |

*1:50 DILUTION.*

VOLATILE ORGANICS SW846-8240A
Analyst: S. SHARP Analysis Date: 02-JUN-94 21:57 Instrument: GC/MS VOA Test: 0510.3.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | * | 200 | ug/L |
| ACROLEIN | BDL | 500 | ug/L |
| ACRYLONITRILE | BDL | 700 | ug/L |
| BENZENE | BDL | 50 | ug/L |
| BROMODICHLOROMETHANE | BDL | 50 | ug/L |
| BROMOFORM | BDL | 50 | ug/L |
| BROMOMETHANE | BDL | 100 | ug/L |
| CARBON DISULFIDE | BDL | 50 | ug/L |
| CARBON TETRACHLORIDE | BDL | 50 | ug/L |
| OROBENZENE | BDL | 50 | ug/L |
| OROETHANE | BDL | 100 | ug/L |
| LOROFORM | EST 28 | 50 | ug/L |
| CHLOROMETHANE | BDL | 100 | ug/L |
| DIBROMOCHLOROMETHANE | BDL | 50 | ug/L |
| CIS-1,3-DICHLOROPROPENE | BDL | 50 | ug/L |
| DICHLORODIFLUOROMETHANE | BDL | 50 | ug/L |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| DICHLOROETHANE | EST 48 | 50 | ug/L |
| -DICHLOROETHANE | BDL | 50 | ug/L |
| 1,1-DICHLOROETHENE | BDL | 50 | ug/L |
| 1,2-DICHLOROPROPANE | BDL | 50 | ug/L |
| ETHYL BENZENE | BDL | 50 | ug/L |
| TRICHLOROFLUOROMETHANE | BDL | 50 | ug/L |
| 2-HEXANONE | BDL | 100 | ug/L |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | BDL | 50 | ug/L |
| METHYL ETHYL KETONE | 460 | 100 | ug/L |
| 4-METHYL-2-PENTANONE | BDL | 100 | ug/L |
| STYRENE | BDL | 50 | ug/L |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 50 | ug/L |
| TETRACHLOROETHENE | BDL | 50 | ug/L |
| TETRAHYDROFURAN | 640 | 250 | ug/L |
| TOLUENE | BDL | 50 | ug/L |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 50 | ug/L |
| TRANS-1,3-DICHLOROPROPENE | BDL | 50 | ug/L |
| 1,1,1-TRICHLOROETHANE | 420 | 50 | ug/L |
| 1,1,2-TRICHLOROETHANE | BDL | 50 | ug/L |
| TRICHLOROETHENE | BDL | 50 | ug/L |
| VINYL ACETATE | BDL | 100 | ug/L |
| VINYL CHLORIDE | BDL | 100 | ug/L |
| XYLENES (O/M/P-XYLENE) | BDL | 50 | ug/L |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| ILOROETHANE-D4 | 91 | | % Rec |
| TOLUENE-D8 | 104 | | % Rec |
| 4-BROMOFLUOROBENZENE | 109 | | % Rec |
| DILUTION | 10 | | |

** This value is outside of the linear calibration range. The sample will be diluted and reanalyzed.*

Sample Comments

| | |
|---|---|
| * | *See Note for Parameter* |
| *BDL* | *Below Detection Limit* |
| *EST* | *Estimated Value* |
| *RT* | *Retention Time* |

*Sample chain of custody number 5062.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| ITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 23-MAY-94 | 2936 | C156877 |
| | Complete | PO Number | |
| | 16-JUN-94 | 4860-02328 | |
| | Printed | Sampled | |
| | 08-JUL-94 | 20-MAY-94 14:10 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION
DESCRIPTION: DRUM PROCESSING AREA - GRAB
SAMPLE ID.: WW-2

## FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A

Analyst: T. IRVING  Analysis Date: 26-MAY-94  Test: P130.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| AL VOLUME | 50 | | mL |

## LVER ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 27-MAY-94 08:00  Instrument: ICP  Test: M130.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.010 | mg/L |

## FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A

Analyst: T. IRVING  Analysis Date: 02-JUN-94  Test: P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ANTIMONY ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 02-JUN-94 13:00  Instrument: ICP  Test: M102.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ANTIMONY | BDL | 0.050 | mg/L |

## BERYLLIUM ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 02-JUN-94 13:00  Instrument: ICP  Test: M105.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BERYLLIUM | BDL | 0.0050 | mg/L |

## MIUM ICP SW846-6010A

lyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M108.3.0
p: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.0050 | mg/L |

## CHROMIUM ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M110.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.010 | mg/L |

## COPPER ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M112.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| COPPER | BDL | 0.020 | mg/L |

## LEAD ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M116.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.050 | mg/L |

## NICKEL ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 10-JUN-94 07:30 Instrument: ICP Test: M122.3.0
rep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ..CKEL | 0.19 | 0.010 | mg/L |

## THALLIUM ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M134.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| THALLIUM | BDL | 0.30 | mg/L |

## GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A

Analyst: T. IRVING Analysis Date: 26-MAY-94 Test: P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA SW846-7060

Analyst: T. NOHA Analysis Date: 01-JUN-94 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | BDL | 0.005 | mg/L |

## SELENIUM GFAA SW846-7740

Analyst: T. NOHA Analysis Date: 04-JUN-94 Instrument: GFAA Test: M128.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ..ENIUM | BDL | 0.025 | mg/L |

ITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156877

## C ICP SW846-6010A

lyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M139.3.0

p: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ZINC | 0.029 | 0.020 | mg/L |

## MERCURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470

Analyst: T. IRVING Analysis Date: 24-MAY-94 Test: P131.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 100 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470

Analyst: A. SNAPP Analysis Date: 26-MAY-94 Test: P131.6.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 100 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M120.1.0

Prep: MERCURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470 P131.6.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | 0.0005 | mg/L |

## GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. BUSSEY Analysis Date: 27-MAY-94 Test: P233.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TIAL WEIGHT OR VOLUME | 1000 | | mL |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 25-MAY-94 23:44 Instrument: GC/MS SVOA Test: O505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 10 | ug/L |
| ACENAPHTHYLENE | BDL | 10 | ug/L |
| ANTHRACENE | BDL | 10 | ug/L |
| BENZ(A)ANTHRACENE | BDL | 10 | ug/L |
| BENZO(A)PYRENE | BDL | 10 | ug/L |
| BENZO(B)FLUORANTHENE | BDL | 10 | ug/L |
| BENZO(G,H,I)PERYLENE | BDL | 10 | ug/L |
| BENZO(K)FLUORANTHENE | BDL | 10 | ug/L |
| BENZYL ALCOHOL | BDL | 10 | ug/L |
| BENZYLBUTYLPHTHALATE | BDL | 10 | ug/L |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 10 | ug/L |
| BIS(2-CHLOROETHYL)ETHER | BDL | 10 | ug/L |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 10 | ug/L |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 10 | ug/L |
| 4-BROMOPHENYLPHENYLETHER | BDL | 10 | ug/L |
| CARBAZOLE | BDL | 10 | ug/L |
| 4-CHLOROANILINE | BDL | 10 | ug/L |
| -CHLORONAPHTHALENE | BDL | 10 | ug/L |
| HLOROPHENYLPHENYLETHER | BDL | 10 | ug/L |
| RYSENE | BDL | 10 | ug/L |
| DIBENZ(A,H)ANTHRACENE | BDL | 10 | ug/L |
| DIBENZOFURAN | BDL | 10 | ug/L |
| 1,2-DICHLOROBENZENE | BDL | 10 | ug/L |
| 1,3-DICHLOROBENZENE | BDL | 10 | ug/L |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| -DICHLOROBENZENE | BDL | 10 | ug/L |
| '-DICHLOROBENZIDINE | BDL | 20 | ug/L |
| DIETHYLPHTHALATE | BDL | 10 | ug/L |
| DIMETHYLPHTHALATE | BDL | 10 | ug/L |
| DI-N-BUTYLPHTHALATE | BDL | 10 | ug/L |
| DINITROBENZENES | BDL | 50 | ug/L |
| 2,4-DINITROTOLUENE | BDL | 10 | ug/L |
| 2,6-DINITROTOLUENE | 16 | 10 | ug/L |
| DI-N-OCTYLPHTHALATE | BDL | 10 | ug/L |
| FLUORANTHENE | BDL | 10 | ug/L |
| FLUORENE | BDL | 10 | ug/L |
| HEXACHLOROBENZENE | BDL | 10 | ug/L |
| HEXACHLOROBUTADIENE | BDL | 10 | ug/L |
| HEXACHLOROCYCLOPENTADIENE | BDL | 10 | ug/L |
| HEXACHLOROETHANE | BDL | 10 | ug/L |
| INDENO(1,2,3-CD)PYRENE | BDL | 10 | ug/L |
| ISOPHORONE | EST 7 | 10 | ug/L |
| 2-METHYLNAPHTHALENE | BDL | 10 | ug/L |
| NAPHTHALENE | BDL | 10 | ug/L |
| 2-NITROANILINE | BDL | 50 | ug/L |
| 3-NITROANILINE | BDL | 50 | ug/L |
| 4-NITROANILINE | BDL | 50 | ug/L |
| NITROBENZENE | BDL | 10 | ug/L |
| N-NITROSO-DIPHENYLAMINE | BDL | 10 | ug/L |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 10 | ug/L |
| ENANTHRENE | BDL | 10 | ug/L |
| ICOLINE | BDL | 50 | ug/L |
| ENE | BDL | 10 | ug/L |
| PYRIDINE | BDL | 50 | ug/L |
| TOLUENEDIAMINE | BDL | 50 | ug/L |
| 1,2,4-TRICHLOROBENZENE | BDL | 10 | ug/L |
| BENZOIC ACID | BDL | 50 | ug/L |
| 4-CHLORO-3-METHYLPHENOL | BDL | 10 | ug/L |
| 2-CHLOROPHENOL | BDL | 10 | ug/L |
| 2,4-DICHLOROPHENOL | BDL | 10 | ug/L |
| 2,4-DIMETHYLPHENOL | BDL | 10 | ug/L |
| 4,6-DINITRO-2-METHYLPHENOL | BDL | 50 | ug/L |
| 2,4-DINITROPHENOL | BDL | 50 | ug/L |
| 2-METHYLPHENOL | BDL | 10 | ug/L |
| 4-METHYLPHENOL | BDL | 10 | ug/L |
| 2-NITROPHENOL | BDL | 10 | ug/L |
| 4-NITROPHENOL | BDL | 50 | ug/L |
| PENTACHLOROPHENOL | BDL | 50 | ug/L |
| PHENOL | BDL | 10 | ug/L |
| TETRACHLOROPHENOL | BDL | 10 | ug/L |
| 2,4,5-TRICHLOROPHENOL | BDL | 10 | ug/L |
| 2,4,6-TRICHLOROPHENOL | BDL | 10 | ug/L |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| UNKNOWN | 230 RT=2.46 | | |
| UNKNOWN | 100 RT=2.58 | | |
| ETHANE,1,1-DIETHOXY | 54 RT=3.31 | | |
| KNOWN ALCOHOL | 100 RT=8.58 | | |
| KNOWN | 190 RT=8.77 | | |
| UNKNOWN | 150 RT=9.2 | | |
| UNKNOWN | 110 RT=12.13 | | |
| UNKNOWN | 49 RT=12.62 | | |
| UNKNOWN | 67 RT=12.67 | | |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| IOWN | 28 RT=12.72 | | |
| IOWN | 18 RT=12.91 | | |
| UNKNOWN | 26 RT=13.1 | | |
| UNKNOWN | 20 RT=13.91 | | |
| UNKNOWN | 31 RT=14.15 | | |
| UNKNOWN | 88 RT=15.57 | | |
| UNKNOWN | 19 RT=15.69 | | |
| N,N-DIETHYL-3-METHYL-BENZAMIDE | 74 RT=16.14 | | |
| UNKNOWN | 22 RT=17.58 | | |
| UNKNOWN | 16 RT=18.26 | | |
| N-BUTYLBENZENESULFONAMIDE | 20 RT=18.32 | | |
| UNKNOWN | 17 RT=19.2 | | |
| UNKNOWN | 83 RT=21.25 | | |
| SURROGATE RECOVERY | | | |
| 2-FLUOROPHENOL | 40 | | % Rec |
| PHENOL-D5 | 29 | | % Rec |
| NITROBENZENE-D5 | 71 | | % Rec |
| 2-FLUOROBIPHENYL | 82 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 58 | | % Rec |
| TERPHENYL-D14 | 77 | | % Rec |

*1:1 DILUTION.*
*All tentatively identified compound concentration values are estimated.*

ATILE ORGANICS SW846-8240A

Analyst: S. SHARP Analysis Date: 26-MAY-94 17:43 Instrument: GC/MS VOA Test: 0510.3.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | * | 20 | ug/L |
| ACROLEIN | BDL | 50 | ug/L |
| ACRYLONITRILE | BDL | 70 | ug/L |
| BENZENE | BDL | 5 | ug/L |
| BROMODICHLOROMETHANE | BDL | 5 | ug/L |
| BROMOFORM | BDL | 5 | ug/L |
| BROMOMETHANE | BDL | 10 | ug/L |
| CARBON DISULFIDE | 7 | 5 | ug/L |
| CARBON TETRACHLORIDE | BDL | 5 | ug/L |
| CHLOROBENZENE | BDL | 5 | ug/L |
| CHLOROETHANE | BDL | 10 | ug/L |
| CHLOROFORM | 7 | 5 | ug/L |
| CHLOROMETHANE | BDL | 10 | ug/L |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/L |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/L |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/L |
| 1,1-DICHLOROETHANE | 10 | 5 | ug/L |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/L |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/L |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/L |
| ETHYL BENZENE | 7 | 5 | ug/L |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/L |
| HEXANONE | BDL | 10 | ug/L |
| CHLOROMETHANE (METHYLENE CHLORIDE) | 8 | 5 | ug/L |
| METHYL ETHYL KETONE | * | 10 | ug/L |
| 4-METHYL-2-PENTANONE | 19 | 10 | ug/L |
| STYRENE | BDL | 5 | ug/L |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/L |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| RACHLOROETHENE | EST 4 | 5 | ug/L |
| RAHYDROFURAN | * | 25 | ug/L |
| TOLUENE | 9 | 5 | ug/L |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/L |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/L |
| 1,1,1-TRICHLOROETHANE | 23 | 5 | ug/L |
| 1,1,2-TRICHLOROETHANE | BDL | 5 | ug/L |
| TRICHLOROETHENE | BDL | 5 | ug/L |
| VINYL ACETATE | BDL | 10 | ug/L |
| VINYL CHLORIDE | BDL | 10 | ug/L |
| XYLENES (O/M/P-XYLENE) | 43 | 5 | ug/L |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 96 | | % Rec |
| TOLUENE-D8 | 100 | | % Rec |
| 4-BROMOFLUOROBENZENE | 107 | | % Rec |

*1:1 DILUTION.*
** This value is outside of the linear calibration range. The sample will be diluted and reanalyzed.*

**VOLATILE ORGANICS SW846-8240A**
Analyst: S. SHARP Analysis Date: 02-JUN-94 22:43 Instrument: GC/MS VOA Test: 0510.3.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ETONE | 950 | 100 | ug/L |
| HYL ETHYL KETONE | 670 | 50 | ug/L |
| TRAHYDROFURAN | 160 | 120 | ug/L |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 111 | | % Rec |
| TOLUENE-D8 | 103 | | % Rec |
| 4-BROMOFLUOROBENZENE | 109 | | % Rec |

*1:5 DILUTION.*

**Sample Comments**

| | |
|---|---|
| * | *See Note for Parameter* |
| BDL | *Below Detection Limit* |
| EST | *Estimated Value* |
| RT | *Retention Time* |

*Sample chain of custody number 5062.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| RITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 23-MAY-94 | 2936 | C156881 |
| | Complete | PO Number | |
| | 16-JUN-94 | 4860-02328 | |
| | Printed | Sampled | |
| | 30-JUN-94 | 20-MAY-94 15:40 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION
DESCRIPTION: CONTAINER STORAGE/PROCESSING - GRAB
SAMPLE ID.: WW-3

## FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A

Analyst: T. IRVING  Analysis Date: 26-MAY-94  Test: P130.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| NAL VOLUME | 50 | | mL |

## ..VER ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 27-MAY-94 08:00  Instrument: ICP  Test: M130.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.010 | mg/L |

## FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A

Analyst: T. IRVING  Analysis Date: 02-JUN-94  Test: P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ANTIMONY ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 02-JUN-94 13:00  Instrument: ICP  Test: M102.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ANTIMONY | BDL | 0.050 | mg/L |

## BERYLLIUM ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 02-JUN-94 13:00  Instrument: ICP  Test: M105.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BERYLLIUM | BDL | 0.0050 | mg/L |

## MIUM ICP SW846-6010A

lyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M108.3.0
: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.0050 | mg/L |

## CHROMIUM ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M110.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.010 | mg/L |

## COPPER ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M112.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| COPPER | BDL | 0.020 | mg/L |

## LEAD ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M116.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.050 | mg/L |

## NICKEL ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 10-JUN-94 07:30 Instrument: ICP Test: M122.3.0
ep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NICKEL | BDL | 0.010 | mg/L |

## THALLIUM ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M134.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| THALLIUM | BDL | 0.30 | mg/L |

## GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A

Analyst: T. IRVING Analysis Date: 26-MAY-94 Test: P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA SW846-7060

Analyst: T. NOHA Analysis Date: 01-JUN-94 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | BDL | 0.005 | mg/L |

## SELENIUM GFAA SW846-7740

Analyst: T. NOHA Analysis Date: 04-JUN-94 Instrument: GFAA Test: M128.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LENIUM | BDL | 0.025 | mg/L |

C ICP SW846-6010A
lyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M139.3.0
): FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ZINC | 0.021 | 0.020 | mg/L |

MERCURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470
Analyst: T. IRVING Analysis Date: 24-MAY-94 Test: P131.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 100 | | mL |
| FINAL VOLUME | 100 | | mL |

MERCURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470
Analyst: A. SNAPP Analysis Date: 26-MAY-94 Test: P131.6.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 100 | | mL |
| FINAL VOLUME | 100 | | mL |

MERCURY CVAA SW846-7470
Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M120.1.0
Prep: MERCURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470 P131.6.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | 0.0005 | mg/L |

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A
Analyst: S. BUSSEY Analysis Date: 27-MAY-94 Test: P233.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TIAL WEIGHT OR VOLUME | 960 | | mL |
| ..AL VOLUME | 1 | | mL |

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A
Analyst: H. QIAN Analysis Date: 26-MAY-94 00:33 Instrument: GC/MS SVOA Test: O505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 10 | ug/L |
| ACENAPHTHYLENE | BDL | 10 | ug/L |
| ANTHRACENE | BDL | 10 | ug/L |
| BENZ(A)ANTHRACENE | BDL | 10 | ug/L |
| BENZO(A)PYRENE | BDL | 10 | ug/L |
| BENZO(B)FLUORANTHENE | BDL | 10 | ug/L |
| BENZO(G,H,I)PERYLENE | BDL | 10 | ug/L |
| BENZO(K)FLUORANTHENE | BDL | 10 | ug/L |
| BENZYL ALCOHOL | BDL | 10 | ug/L |
| BENZYLBUTYLPHTHALATE | BDL | 10 | ug/L |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 10 | ug/L |
| BIS(2-CHLOROETHYL)ETHER | BDL | 10 | ug/L |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 10 | ug/L |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 10 | ug/L |
| 4-BROMOPHENYLPHENYLETHER | BDL | 10 | ug/L |
| CARBAZOLE | BDL | 10 | ug/L |
| 4-CHLOROANILINE | BDL | 10 | ug/L |
| 2-CHLORONAPHTHALENE | BDL | 10 | ug/L |
| :HLOROPHENYLPHENYLETHER | BDL | 10 | ug/L |
| RYSENE | BDL | 10 | ug/L |
| DIBENZ(A,H)ANTHRACENE | BDL | 10 | ug/L |
| DIBENZOFURAN | BDL | 10 | ug/L |
| 1,2-DICHLOROBENZENE | BDL | 10 | ug/L |
| 1,3-DICHLOROBENZENE | BDL | 10 | ug/L |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| -DICHLOROBENZENE | BDL | 10 | ug/L |
| '-DICHLOROBENZIDINE | BDL | 20 | ug/L |
| DIETHYLPHTHALATE | BDL | 10 | ug/L |
| DIMETHYLPHTHALATE | BDL | 10 | ug/L |
| DI-N-BUTYLPHTHALATE | BDL | 10 | ug/L |
| DINITROBENZENES | BDL | 50 | ug/L |
| 2,4-DINITROTOLUENE | BDL | 10 | ug/L |
| 2,6-DINITROTOLUENE | 13 | 10 | ug/L |
| DI-N-OCTYLPHTHALATE | BDL | 10 | ug/L |
| FLUORANTHENE | BDL | 10 | ug/L |
| FLUORENE | BDL | 10 | ug/L |
| HEXACHLOROBENZENE | BDL | 10 | ug/L |
| HEXACHLOROBUTADIENE | BDL | 10 | ug/L |
| HEXACHLOROCYCLOPENTADIENE | BDL | 10 | ug/L |
| HEXACHLOROETHANE | BDL | 10 | ug/L |
| INDENO(1,2,3-CD)PYRENE | BDL | 10 | ug/L |
| ISOPHORONE | BDL | 10 | ug/L |
| 2-METHYLNAPHTHALENE | BDL | 10 | ug/L |
| NAPHTHALENE | BDL | 10 | ug/L |
| 2-NITROANILINE | BDL | 50 | ug/L |
| 3-NITROANILINE | BDL | 50 | ug/L |
| 4-NITROANILINE | BDL | 50 | ug/L |
| NITROBENZENE | BDL | 10 | ug/L |
| N-NITROSO-DIPHENYLAMINE | BDL | 10 | ug/L |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 10 | ug/L |
| ENANTHRENE | BDL | 10 | ug/L |
| ICOLINE | BDL | 50 | ug/L |
| rıRENE | BDL | 10 | ug/L |
| PYRIDINE | BDL | 50 | ug/L |
| TOLUENEDIAMINE | BDL | 50 | ug/L |
| 1,2,4-TRICHLOROBENZENE | BDL | 10 | ug/L |
| BENZOIC ACID | BDL | 50 | ug/L |
| 4-CHLORO-3-METHYLPHENOL | BDL | 10 | ug/L |
| 2-CHLOROPHENOL | BDL | 10 | ug/L |
| 2,4-DICHLOROPHENOL | BDL | 10 | ug/L |
| 2,4-DIMETHYLPHENOL | BDL | 10 | ug/L |
| 4,6-DINITRO-2-METHYLPHENOL | BDL | 50 | ug/L |
| 2,4-DINITROPHENOL | BDL | 50 | ug/L |
| 2-METHYLPHENOL | BDL | 10 | ug/L |
| 4-METHYLPHENOL | BDL | 10 | ug/L |
| 2-NITROPHENOL | BDL | 10 | ug/L |
| 4-NITROPHENOL | BDL | 50 | ug/L |
| PENTACHLOROPHENOL | BDL | 50 | ug/L |
| PHENOL | BDL | 10 | ug/L |
| TETRACHLOROPHENOL | BDL | 10 | ug/L |
| 2,4,5-TRICHLOROPHENOL | BDL | 10 | ug/L |
| 2,4,6-TRICHLOROPHENOL | BDL | 10 | ug/L |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| CYCLOHEXANE,ISOCYANATO | 12 RT=8.55 | | |
| 2,6-(1,1-DIMETHYLETHYL)-2,5-CYCLOHEXADIENE-1,4-D | 15 RT=14.85 | | |
| ''NKNOWN | 69 RT=15.52 | | |
| KNOWN | 21 RT=15.99 | | |
| KNOWN | 28 RT=16.08 | | |
| UNKNOWN | 29 RT=21.25 | | |
| UNKNOWN | 34 RT=23.33 | | |
| SURROGATE RECOVERY | | | |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| UOROPHENOL | 36 | | % Rec |
| PHENOL-D5 | 27 | | % Rec |
| NITROBENZENE-D5 | * 26 | | % Rec |
| 2-FLUOROBIPHENYL | * 26 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 42 | | % Rec |
| TERPHENYL-D14 | * 20 | | % Rec |

*1:1 DILUTION.*
*All tentatively identified compound concentration values are estimated.*
**Quantitation of B/N compounds may be inaccurate due to low B/N surrogates recovery.*

## VOLATILE ORGANICS SW846-8240A

Analyst: S. SHARP Analysis Date: 26-MAY-94 22:13 Instrument: GC/MS VOA Test: 0510.3.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | BDL | 20 | ug/L |
| ACROLEIN | BDL | 50 | ug/L |
| ACRYLONITRILE | BDL | 70 | ug/L |
| BENZENE | BDL | 5 | ug/L |
| BROMODICHLOROMETHANE | BDL | 5 | ug/L |
| BROMOFORM | BDL | 5 | ug/L |
| BROMOMETHANE | BDL | 10 | ug/L |
| CARBON DISULFIDE | BDL | 5 | ug/L |
| CARBON TETRACHLORIDE | BDL | 5 | ug/L |
| LOROBENZENE | BDL | 5 | ug/L |
| )ROETHANE | BDL | 10 | ug/L |
| L..LOROFORM | BDL | 5 | ug/L |
| CHLOROMETHANE | BDL | 10 | ug/L |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/L |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/L |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/L |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/L |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/L |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/L |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/L |
| ETHYL BENZENE | BDL | 5 | ug/L |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/L |
| 2-HEXANONE | BDL | 10 | ug/L |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 6 | 5 | ug/L |
| METHYL ETHYL KETONE | 61 | 10 | ug/L |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/L |
| STYRENE | BDL | 5 | ug/L |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/L |
| TETRACHLOROETHENE | BDL | 5 | ug/L |
| TETRAHYDROFURAN | BDL | 25 | ug/L |
| TOLUENE | 5 | 5 | ug/L |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/L |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/L |
| 1,1,1-TRICHLOROETHANE | EST 3 | 5 | ug/L |
| 1,1,2-TRICHLOROETHANE | BDL | 5 | ug/L |
| CHLOROETHENE | BDL | 5 | ug/L |
| YL ACETATE | BDL | 10 | ug/L |
| VINYL CHLORIDE | BDL | 10 | ug/L |
| XYLENES (O/M/P-XYLENE) | BDL | 5 | ug/L |
| ... | | | |
| SURROGATE RECOVERY | | | |

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156881

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LOROETHANE-D4 | 96 | | % Rec |
| TOLUENE-D8 | 98 | | % Rec |
| 4-BROMOFLUOROBENZENE | 111 | | % Rec |

*1:1 DILUTION.*

Sample Comments

** See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 5062.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| ITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 23-MAY-94 | 2936 | C156882 |
| | Complete | PO Number | |
| | 16-JUN-94 | 4860-02328 | |
| | Printed | Sampled | |
| | 30-JUN-94 | 20-MAY-94 16:30 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION
DESCRIPTION: CONTAINER STORAGE/PROCESSING - GRAB
SAMPLE ID.: WW-4

## FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A

Analyst: T. IRVING  Analysis Date: 26-MAY-94  Test: P130.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| AL VOLUME | 50 | | mL |

## ...VER ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 27-MAY-94 08:00  Instrument: ICP  Test: M130.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.010 | mg/L |

## FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A

Analyst: T. IRVING  Analysis Date: 02-JUN-94  Test: P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ANTIMONY ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 02-JUN-94 13:00  Instrument: ICP  Test: M102.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ANTIMONY | BDL | 0.050 | mg/L |

## BERYLLIUM ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 02-JUN-94 13:00  Instrument: ICP  Test: M105.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BERYLLIUM | BDL | 0.0050 | mg/L |

**MIUM ICP SW846-6010A**
lyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M108.3.0
p: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.0050 | mg/L |

**CHROMIUM ICP SW846-6010A**
Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M110.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | 0.059 | 0.010 | mg/L |

**COPPER ICP SW846-6010A**
Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M112.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| COPPER | 0.021 | 0.020 | mg/L |

**LEAD ICP SW846-6010A**
Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M116.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.050 | mg/L |

**NICKEL ICP SW846-6010A**
Analyst: S. KANAPILLY Analysis Date: 10-JUN-94 07:30 Instrument: ICP Test: M122.3.0
rep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NICKEL | 0.051 | 0.010 | mg/L |

**THALLIUM ICP SW846-6010A**
Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M134.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| THALLIUM | BDL | 0.30 | mg/L |

**GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A**
Analyst: T. IRVING Analysis Date: 26-MAY-94 Test: P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

**ARSENIC GFAA SW846-7060**
Analyst: T. NOHA Analysis Date: 01-JUN-94 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | BDL | 0.005 | mg/L |

**SELENIUM GFAA SW846-7740**
Analyst: T. NOHA Analysis Date: 04-JUN-94 Instrument: GFAA Test: M128.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ENIUM | BDL | 0.025 | mg/L |

## C ICP SW846-6010A

lyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M139.3.0
p: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ZINC | 0.022 | 0.020 | mg/L |

## MERCURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470

Analyst: T. IRVING Analysis Date: 24-MAY-94 Test: P131.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 100 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470

Analyst: A. SNAPP Analysis Date: 26-MAY-94 Test: P131.6.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 100 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M120.1.0
Prep: MERCURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470 P131.6.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | 0.0005 | mg/L |

## GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. BUSSEY Analysis Date: 27-MAY-94 Test: P233.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TIAL WEIGHT OR VOLUME | 1000 | | mL |
| NAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 26-MAY-94 14:38 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 10 | ug/L |
| ACENAPHTHYLENE | BDL | 10 | ug/L |
| ANTHRACENE | BDL | 10 | ug/L |
| BENZ(A)ANTHRACENE | BDL | 10 | ug/L |
| BENZO(A)PYRENE | BDL | 10 | ug/L |
| BENZO(B)FLUORANTHENE | BDL | 10 | ug/L |
| BENZO(G,H,I)PERYLENE | BDL | 10 | ug/L |
| BENZO(K)FLUORANTHENE | BDL | 10 | ug/L |
| BENZYL ALCOHOL | BDL | 10 | ug/L |
| BENZYLBUTYLPHTHALATE | BDL | 10 | ug/L |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 10 | ug/L |
| BIS(2-CHLOROETHYL)ETHER | BDL | 10 | ug/L |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 10 | ug/L |
| BIS(2-ETHYLHEXYL)PHTHALATE | 36 | 10 | ug/L |
| 4-BROMOPHENYLPHENYLETHER | BDL | 10 | ug/L |
| CARBAZOLE | BDL | 10 | ug/L |
| 4-CHLOROANILINE | BDL | 10 | ug/L |
| 2-CHLORONAPHTHALENE | BDL | 10 | ug/L |
| HLOROPHENYLPHENYLETHER | BDL | 10 | ug/L |
| RYSENE | BDL | 10 | ug/L |
| DIBENZ(A,H)ANTHRACENE | BDL | 10 | ug/L |
| DIBENZOFURAN | BDL | 10 | ug/L |
| 1,2-DICHLOROBENZENE | BDL | 10 | ug/L |
| 1,3-DICHLOROBENZENE | BDL | 10 | ug/L |

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156882

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| 4-DICHLOROBENZENE | BDL | 10 | ug/L |
| -DICHLOROBENZIDINE | BDL | 20 | ug/L |
| DIETHYLPHTHALATE | BDL | 10 | ug/L |
| DIMETHYLPHTHALATE | BDL | 10 | ug/L |
| DI-N-BUTYLPHTHALATE | BDL | 10 | ug/L |
| DINITROBENZENES | BDL | 50 | ug/L |
| 2,4-DINITROTOLUENE | BDL | 10 | ug/L |
| 2,6-DINITROTOLUENE | BDL | 10 | ug/L |
| DI-N-OCTYLPHTHALATE | BDL | 10 | ug/L |
| FLUORANTHENE | BDL | 10 | ug/L |
| FLUORENE | BDL | 10 | ug/L |
| HEXACHLOROBENZENE | BDL | 10 | ug/L |
| HEXACHLOROBUTADIENE | BDL | 10 | ug/L |
| HEXACHLOROCYCLOPENTADIENE | BDL | 10 | ug/L |
| HEXACHLOROETHANE | BDL | 10 | ug/L |
| INDENO(1,2,3-CD)PYRENE | BDL | 10 | ug/L |
| ISOPHORONE | BDL | 10 | ug/L |
| 2-METHYLNAPHTHALENE | BDL | 10 | ug/L |
| NAPHTHALENE | BDL | 10 | ug/L |
| 2-NITROANILINE | BDL | 50 | ug/L |
| 3-NITROANILINE | BDL | 50 | ug/L |
| 4-NITROANILINE | BDL | 50 | ug/L |
| NITROBENZENE | BDL | 10 | ug/L |
| N-NITROSO-DIPHENYLAMINE | BDL | 10 | ug/L |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 10 | ug/L |
| ENANTHRENE | BDL | 10 | ug/L |
| ICOLINE | BDL | 50 | ug/L |
| ENE | BDL | 10 | ug/L |
| PYRIDINE | BDL | 50 | ug/L |
| TOLUENEDIAMINE | BDL | 50 | ug/L |
| 1,2,4-TRICHLOROBENZENE | BDL | 10 | ug/L |
| BENZOIC ACID | BDL | 50 | ug/L |
| 4-CHLORO-3-METHYLPHENOL | BDL | 10 | ug/L |
| 2-CHLOROPHENOL | BDL | 10 | ug/L |
| 2,4-DICHLOROPHENOL | BDL | 10 | ug/L |
| 2,4-DIMETHYLPHENOL | BDL | 10 | ug/L |
| 4,6-DINITRO-2-METHYLPHENOL | BDL | 50 | ug/L |
| 2,4-DINITROPHENOL | BDL | 50 | ug/L |
| 2-METHYLPHENOL | BDL | 10 | ug/L |
| 4-METHYLPHENOL | BDL | 10 | ug/L |
| 2-NITROPHENOL | BDL | 10 | ug/L |
| 4-NITROPHENOL | BDL | 50 | ug/L |
| PENTACHLOROPHENOL | BDL | 50 | ug/L |
| PHENOL | BDL | 10 | ug/L |
| TETRACHLOROPHENOL | BDL | 10 | ug/L |
| 2,4,5-TRICHLOROPHENOL | BDL | 10 | ug/L |
| 2,4,6-TRICHLOROPHENOL | BDL | 10 | ug/L |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| UNKNOWN | 27 RT=2.29 | | |
| UNKNOWN ALCOHOL | 21 RT=18.9 | | |
| UNKNOWN ALCOHOL | 14 RT=20.87 | | |
| NOWN ALCOHOL | 150 RT=21.2 | | |
| NOWN ALCOHOL | 55 RT=22.91 | | |
| UNKNOWN ALCOHOL | 80 RT=22.97 | | |
| UNKNOWN ALCOHOL | 290 RT=23.26 | | |
| UNKNOWN ALCOHOL | 121 RT=25.14 | | |

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156882

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ROGATE RECOVERY | | | |
| 2-FLUOROPHENOL | 30 | | % Rec |
| PHENOL-D5 | 31 | | % Rec |
| NITROBENZENE-D5 | 42 | | % Rec |
| 2-FLUOROBIPHENYL | 52 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 28 | | % Rec |
| TERPHENYL-D14 | 42 | | % Rec |

*1:1 DILUTION.*
*All tentatively identified compound concentration values are estimated.*

**VOLATILE ORGANICS SW846-8240A**

Analyst: S. SHARP Analysis Date: 26-MAY-94 22:59 Instrument: GC/MS VOA Test: 0510.3.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | BDL | 20 | ug/L |
| ACROLEIN | BDL | 50 | ug/L |
| ACRYLONITRILE | BDL | 70 | ug/L |
| BENZENE | BDL | 5 | ug/L |
| BROMODICHLOROMETHANE | BDL | 5 | ug/L |
| BROMOFORM | BDL | 5 | ug/L |
| BROMOMETHANE | BDL | 10 | ug/L |
| CARBON DISULFIDE | BDL | 5 | ug/L |
| CARBON TETRACHLORIDE | BDL | 5 | ug/L |
| CHLOROBENZENE | BDL | 5 | ug/L |
| OROETHANE | BDL | 10 | ug/L |
| ROFORM | BDL | 5 | ug/L |
| OROMETHANE | BDL | 10 | ug/L |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/L |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/L |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/L |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/L |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/L |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/L |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/L |
| ETHYL BENZENE | BDL | 5 | ug/L |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/L |
| 2-HEXANONE | BDL | 10 | ug/L |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 5 | 5 | ug/L |
| METHYL ETHYL KETONE | BDL | 10 | ug/L |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/L |
| STYRENE | BDL | 5 | ug/L |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/L |
| TETRACHLOROETHENE | BDL | 5 | ug/L |
| TETRAHYDROFURAN | BDL | 25 | ug/L |
| TOLUENE | BDL | 5 | ug/L |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/L |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/L |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/L |
| 1,1,2-TRICHLOROETHANE | BDL | 5 | ug/L |
| TRICHLOROETHENE | BDL | 5 | ug/L |
| YL ACETATE | BDL | 10 | ug/L |
| YL CHLORIDE | BDL | 10 | ug/L |
| XYLENES (O/M/P-XYLENE) | BDL | 5 | ug/L |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| UNKNOWN | EST 7 RT=8.78 | | ug/L |
| CYCLOHEXENE | EST 5 RT=15.26 | | ug/L |

 (continued on next page)

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156882

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NOWN | EST 9 RT=27.14 | | ug/L |
| SURROGATE RECOVERY | | | |
| DICHLOROETHANE-D4 | 96 | | % Rec |
| TOLUENE-D8 | 99 | | % Rec |
| 4-BROMOFLUOROBENZENE | 109 | | % Rec |

*1:1 DILUTION.*

Sample Comments

*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 5062.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| RITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 23-MAY-94 | 2936 | C156878 |
| | Complete | PO Number | |
| | 15-JUN-94 | 4860-02328 | |
| | Printed | Sampled | |
| | 30-JUN-94 | 20-MAY-94 10:30 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

Sample Description

PROJECT: HES RCRA FACILITY INVESTIGATION
DESCRIPTION: DECON/CORING WATER - GRAB

## FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A

Analyst: T. IRVING  Analysis Date: 26-MAY-94  Test: P130.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## VER ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 27-MAY-94 08:00  Instrument: ICP  Test: M130.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.010 | mg/L |

## FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A

Analyst: T. IRVING  Analysis Date: 02-JUN-94  Test: P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ANTIMONY ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 02-JUN-94 13:00  Instrument: ICP  Test: M102.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ANTIMONY | BDL | 0.050 | mg/L |

## BERYLLIUM ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 02-JUN-94 13:00  Instrument: ICP  Test: M105.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BERYLLIUM | BDL | 0.0050 | mg/L |

## CADMIUM ICP SW846-6010A

Analyst: S. KANAPILLY  Analysis Date: 02-JUN-94 13:00  Instrument: ICP  Test: M108.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.0050 | mg/L |

 (continued on next page)

## MIUM ICP SW846-6010A

lyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M110.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.010 | mg/L |

## COPPER ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M112.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| COPPER | BDL | 0.020 | mg/L |

## LEAD ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M116.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.050 | mg/L |

## NICKEL ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 10-JUN-94 07:30 Instrument: ICP Test: M122.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NICKEL | BDL | 0.010 | mg/L |

## THALLIUM ICP SW846-6010A

lyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M134.3.0
p: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| THALLIUM | BDL | 0.30 | mg/L |

## GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A

Analyst: T. IRVING Analysis Date: 26-MAY-94 Test: P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA SW846-7060

Analyst: T. NOHA Analysis Date: 01-JUN-94 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | BDL | 0.005 | mg/L |

## SELENIUM GFAA SW846-7740

Analyst: T. NOHA Analysis Date: 04-JUN-94 Instrument: GFAA Test: M128.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020A P130.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.025 | mg/L |

## ZINC ICP SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 02-JUN-94 13:00 Instrument: ICP Test: M139.3.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005A P130.4.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NC | BDL | 0.020 | mg/L |

## CURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470

lyst: T. IRVING Analysis Date: 24-MAY-94 Test: P131.6.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 100 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470

Analyst: A. SNAPP Analysis Date: 26-MAY-94 Test: P131.6.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 100 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M120.1.0

Prep: MERCURY CVAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-7470 P131.6.1

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | 0.0005 | mg/L |

## GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A

Analyst: S. BUSSEY Analysis Date: 27-MAY-94 Test: P233.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 960 | | mL |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 25-MAY-94 15:37 Instrument: GC/MS SVOA Test: O505.3.0

ep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510A P233.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 10 | ug/L |
| ACENAPHTHYLENE | BDL | 10 | ug/L |
| ANTHRACENE | BDL | 10 | ug/L |
| BENZ(A)ANTHRACENE | BDL | 10 | ug/L |
| BENZO(A)PYRENE | BDL | 10 | ug/L |
| BENZO(B)FLUORANTHENE | BDL | 10 | ug/L |
| BENZO(G,H,I)PERYLENE | BDL | 10 | ug/L |
| BENZO(K)FLUORANTHENE | BDL | 10 | ug/L |
| BENZYL ALCOHOL | BDL | 10 | ug/L |
| BENZYLBUTYLPHTHALATE | BDL | 10 | ug/L |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 10 | ug/L |
| BIS(2-CHLOROETHYL)ETHER | BDL | 10 | ug/L |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 10 | ug/L |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 10 | ug/L |
| 4-BROMOPHENYLPHENYLETHER | BDL | 10 | ug/L |
| CARBAZOLE | BDL | 10 | ug/L |
| 4-CHLOROANILINE | BDL | 10 | ug/L |
| 2-CHLORONAPHTHALENE | BDL | 10 | ug/L |
| 4-CHLOROPHENYLPHENYLETHER | BDL | 10 | ug/L |
| CHRYSENE | BDL | 10 | ug/L |
| DIBENZ(A,H)ANTHRACENE | BDL | 10 | ug/L |
| DIBENZOFURAN | BDL | 10 | ug/L |
| 1,2-DICHLOROBENZENE | BDL | 10 | ug/L |
| 1 3-DICHLOROBENZENE | BDL | 10 | ug/L |
| -DICHLOROBENZENE | BDL | 10 | ug/L |
| , '-DICHLOROBENZIDINE | BDL | 20 | ug/L |
| DIETHYLPHTHALATE | BDL | 10 | ug/L |
| DIMETHYLPHTHALATE | BDL | 10 | ug/L |
| DI-N-BUTYLPHTHALATE | BDL | 10 | ug/L |
| DINITROBENZENES | BDL | 50 | ug/L |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| -DINITROTOLUENE | BDL | 10 | ug/L |
| -DINITROTOLUENE | BDL | 10 | ug/L |
| DI-N-OCTYLPHTHALATE | BDL | 10 | ug/L |
| FLUORANTHENE | BDL | 10 | ug/L |
| FLUORENE | BDL | 10 | ug/L |
| HEXACHLOROBENZENE | BDL | 10 | ug/L |
| HEXACHLOROBUTADIENE | BDL | 10 | ug/L |
| HEXACHLOROCYCLOPENTADIENE | BDL | 10 | ug/L |
| HEXACHLOROETHANE | BDL | 10 | ug/L |
| INDENO(1,2,3-CD)PYRENE | BDL | 10 | ug/L |
| ISOPHORONE | BDL | 10 | ug/L |
| 2-METHYLNAPHTHALENE | BDL | 10 | ug/L |
| NAPHTHALENE | BDL | 10 | ug/L |
| 2-NITROANILINE | BDL | 50 | ug/L |
| 3-NITROANILINE | BDL | 50 | ug/L |
| 4-NITROANILINE | BDL | 50 | ug/L |
| NITROBENZENE | BDL | 10 | ug/L |
| N-NITROSO-DIPHENYLAMINE | BDL | 10 | ug/L |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 10 | ug/L |
| PHENANTHRENE | BDL | 10 | ug/L |
| 2-PICOLINE | BDL | 50 | ug/L |
| PYRENE | BDL | 10 | ug/L |
| PYRIDINE | BDL | 50 | ug/L |
| TOLUENEDIAMINE | BDL | 50 | ug/L |
| 1,2,4-TRICHLOROBENZENE | BDL | 10 | ug/L |
| NZOIC ACID | BDL | 50 | ug/L |
| HLORO-3-METHYLPHENOL | BDL | 10 | ug/L |
| -CHLOROPHENOL | BDL | 10 | ug/L |
| 2,4-DICHLOROPHENOL | BDL | 10 | ug/L |
| 2,4-DIMETHYLPHENOL | BDL | 10 | ug/L |
| 4,6-DINITRO-2-METHYLPHENOL | BDL | 50 | ug/L |
| 2,4-DINITROPHENOL | BDL | 50 | ug/L |
| 2-METHYLPHENOL | BDL | 10 | ug/L |
| 4-METHYLPHENOL | BDL | 10 | ug/L |
| 2-NITROPHENOL | BDL | 10 | ug/L |
| 4-NITROPHENOL | BDL | 50 | ug/L |
| PENTACHLOROPHENOL | BDL | 50 | ug/L |
| PHENOL | BDL | 10 | ug/L |
| TETRACHLOROPHENOL | BDL | 10 | ug/L |
| 2,4,5-TRICHLOROPHENOL | BDL | 50 | ug/L |
| 2,4,6-TRICHLOROPHENOL | BDL | 10 | ug/L |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| PENTANE,2,2,4-TRIMETHYL | * 16 RT=2.61 | | |
| . | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 37 | | % Rec |
| PHENOL-D5 | 29 | | % Rec |
| NITROBENZENE-D5 | 71 | | % Rec |
| 2-FLUOROBIPHENYL | 86 | | % Rec |
| 2 4,6-TRIBROMOPHENOL | 45 | | % Rec |
| PHENYL-D14 | 90 | | % Rec |

*1 DILUTION.*
** Compound also detected in blank.*
*All tentatively identified compound concentration values are estimated.*

ITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156878

ATILE ORGANICS SW846-8240A

lyst: G. SWANEY Analysis Date: 06-JUN-94 13:10 Instrument: GC/MS VOA Test: 0510.3.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | BDL | 20 | ug/L |
| ACROLEIN | BDL | 50 | ug/L |
| ACRYLONITRILE | BDL | 70 | ug/L |
| BENZENE | BDL | 5 | ug/L |
| BROMODICHLOROMETHANE | BDL | 5 | ug/L |
| BROMOFORM | BDL | 5 | ug/L |
| BROMOMETHANE | BDL | 10 | ug/L |
| CARBON DISULFIDE | BDL | 5 | ug/L |
| CARBON TETRACHLORIDE | BDL | 5 | ug/L |
| CHLOROBENZENE | BDL | 5 | ug/L |
| CHLOROETHANE | BDL | 10 | ug/L |
| CHLOROFORM | BDL | 5 | ug/L |
| CHLOROMETHANE | BDL | 10 | ug/L |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/L |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/L |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/L |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/L |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/L |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/L |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/L |
| ETHYL BENZENE | BDL | 5 | ug/L |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/L |
| 2-HEXANONE | BDL | 10 | ug/L |
| HLOROMETHANE (METHYLENE CHLORIDE) | EST 3 | 5 | ug/L |
| HYL ETHYL KETONE | BDL | 10 | ug/L |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/L |
| STYRENE | BDL | 5 | ug/L |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/L |
| TETRACHLOROETHENE | BDL | 5 | ug/L |
| TETRAHYDROFURAN | BDL | 25 | ug/L |
| TOLUENE | BDL | 5 | ug/L |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | 10 | 5 | ug/L |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/L |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/L |
| 1,1,2-TRICHLOROETHANE | BDL | 5 | ug/L |
| TRICHLOROETHENE | BDL | 5 | ug/L |
| VINYL ACETATE | BDL | 10 | ug/L |
| VINYL CHLORIDE | 10 | 10 | ug/L |
| XYLENES (O/M/P-XYLENE) | BDL | 5 | ug/L |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 91 | | % Rec |
| TOLUENE-D8 | 99 | | % Rec |
| 4-BROMOFLUOROBENZENE | 100 | | % Rec |

*1:1 DILUTION.*

Sample Comments

*See Note for Parameter*
*__L Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

Sample Comments

*-mple chain of custody number 5062.*

*...is Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| RITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 23-MAY-94 | 2936 | C156880 |
| | Complete | PO Number | |
| | 27-MAY-94 | 4860-02328 | |
| | Printed | Sampled | |
| | 30-JUN-94 | 20-MAY-94 12:00 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION
DESCRIPTION: TRIP BLANK - GRAB
SAMPLE ID.: TB

## VOLATILE ORGANICS SW846-8240A

Analyst: S. SHARP  Analysis Date: 26-MAY-94 21:28  Instrument: GC/MS VOA  Test: 0510.3.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | BDL | 20 | ug/L |
| OLEIN | BDL | 50 | ug/L |
| YLONITRILE | BDL | 70 | ug/L |
| NZENE | BDL | 5 | ug/L |
| BROMODICHLOROMETHANE | BDL | 5 | ug/L |
| BROMOFORM | BDL | 5 | ug/L |
| BROMOMETHANE | BDL | 10 | ug/L |
| CARBON DISULFIDE | BDL | 5 | ug/L |
| CARBON TETRACHLORIDE | BDL | 5 | ug/L |
| CHLOROBENZENE | BDL | 5 | ug/L |
| CHLOROETHANE | BDL | 10 | ug/L |
| CHLOROFORM | BDL | 5 | ug/L |
| CHLOROMETHANE | BDL | 10 | ug/L |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/L |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/L |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/L |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/L |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/L |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/L |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/L |
| ETHYL BENZENE | BDL | 5 | ug/L |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/L |
| 2-HEXANONE | BDL | 10 | ug/L |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | BDL | 5 | ug/L |
| METHYL ETHYL KETONE | BDL | 10 | ug/L |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/L |
| TYRENE | BDL | 5 | ug/L |
| ,2,2-TETRACHLOROETHANE | BDL | 5 | ug/L |
| RACHLOROETHENE | BDL | 5 | ug/L |
| TETRAHYDROFURAN | BDL | 25 | ug/L |
| TOLUENE | BDL | 5 | ug/L |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/L |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/L |

 (continued on next page)

ITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156880

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,1-TRICHLOROETHANE | BDL | 5 | ug/L |
| 1,1,2-TRICHLOROETHANE | BDL | 5 | ug/L |
| TRICHLOROETHENE | BDL | 5 | ug/L |
| VINYL ACETATE | BDL | 10 | ug/L |
| VINYL CHLORIDE | BDL | 10 | ug/L |
| XYLENES (O/M/P-XYLENE) | BDL | 5 | ug/L |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 97 | | % Rec |
| TOLUENE-D8 | 96 | | % Rec |
| 4-BROMOFLUOROBENZENE | 112 | | % Rec |

*1:1 DILUTION.*

Sample Comments

*BDL Below Detection Limit*

*Sample chain of custody number 5062.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| :ITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 19-MAY-94 | 2936 | C156812 |
| | Complete | PO Number | |
| | 15-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 30-JUN-94 | 19-MAY-94 13:15 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

Sample Description

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SD-1 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY  Analysis Date: 27-MAY-94 14:56  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | BDL | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| YLONITRILE | BDL | 70 | ug/kg |
| ZENE | BDL | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 34 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| RACHLOROETHENE | EST 4 | 5 | ug/kg |
| RAHYDROFURAN | BDL | 25 | ug/kg |
| TOLUENE | 11 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | EST 3 | 5 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| CHLOROETHENE | 31 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | BDL | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 94 | | % Rec |
| TOLUENE-D8 | 117 | | % Rec |
| 4-BROMOFLUOROBENZENE | 75 | | % Rec |

*1:1 DILUTION.*
*Sample reanalyzed with no improvement in internal standard areas.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: K. RUBLE Analysis Date: 20-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.10 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 25-MAY-94 18:52 Instrument: GC/MS SVOA Test: O505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NAPHTHENE | BDL | 330 | ug/kg |
| NAPHTHYLENE | BDL | 330 | ug/kg |
| ANTHRACENE | BDL | 330 | ug/kg |
| BENZ(A)ANTHRACENE | EST 260 | 330 | ug/kg |
| BENZO(A)PYRENE | 810 | 330 | ug/kg |
| BENZO(B)FLUORANTHENE | 1400 | 330 | ug/kg |
| BENZO(G,H,I)PERYLENE | 730 | 330 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZYL ALCOHOL | BDL | 330 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | EST 190 | 330 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 330 | ug/kg |
| CARBAZOLE | BDL | 330 | ug/kg |
| 4-CHLOROANILINE | BDL | 330 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 330 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 330 | ug/kg |
| CHRYSENE | 450 | 330 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 330 | ug/kg |
| DIBENZOFURAN | BDL | 330 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 3'-DICHLOROBENZIDINE | BDL | 660 | ug/kg |
| THYLPHTHALATE | BDL | 330 | ug/kg |
| METHYLPHTHALATE | BDL | 330 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 330 | ug/kg |
| DINITROBENZENES | BDL | 1700 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 330 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 330 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| I-OCTYLPHTHALATE | BDL | 330 | ug/kg |
| )RANTHENE | 860 | 330 | ug/kg |
| FLUORENE | BDL | 330 | ug/kg |
| HEXACHLOROBENZENE | BDL | 330 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROETHANE | BDL | 330 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | 780 | 330 | ug/kg |
| ISOPHORONE | BDL | 330 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 330 | ug/kg |
| NAPHTHALENE | BDL | 330 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 1700 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 1700 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 1700 | ug/kg |
| NITROBENZENE | BDL | 330 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 330 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 330 | ug/kg |
| PHENANTHRENE | 590 | 330 | ug/kg |
| 2-PICOLINE | BDL | 330 | ug/kg |
| PYRENE | 690 | 330 | ug/kg |
| TOLUENEDIAMINE | BDL | 1700 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 330 | ug/kg |
| BENZOIC ACID | BDL | 1700 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 330 | ug/kg |
| 2-CHLOROPHENOL | BDL | 330 | ug/kg |
| -DICHLOROPHENOL | BDL | 330 | ug/kg |
| -DIMETHYLPHENOL | BDL | 330 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 1700 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 1700 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 330 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 330 | ug/kg |
| 2-NITROPHENOL | BDL | 330 | ug/kg |
| 4-NITROPHENOL | BDL | 1700 | ug/kg |
| PENTACHLOROPHENOL | BDL | 1700 | ug/kg |
| PHENOL | BDL | 330 | ug/kg |
| TETRACHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 430 RT=3.05 | | |
| 3-PENTEN-2-ONE | * 530 RT=3.54 | | |
| UNKNOWN | * 920 RT=4.53 | | |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 1300 RT=5.68 | | |
| UNKNOWN | * 1100 RT=7.42 | | |
| UNKNOWN | 820 RT=8.31 | | |
| UNKNOWN | * 860 RT=8.6 | | |
| UNKNOWN | * 790 RT=9.03 | | |
| UNKNOWN | * 990 RT=9.17 | | |
| UNKNOWN | * 1600 RT=10.42 | | |
| UNKNOWN | * 820 RT=10.82 | | |
| UNKNOWN | * 2100 RT=12.7 | | |
| NOWN | 860 RT=13.03 | | |
| NOWN | 920 RT=13.24 | | |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 85 | | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NOL-D5 | 64 | | ug/kg |
| ROBENZENE-D5 | 62 | | ug/kg |
| 2-FLUOROBIPHENYL | 87 | | ug/kg |
| 2,4,6-TRIBROMOPHENOL | 71 | | ug/kg |
| TERPHENYL-D14 | 100 | | ug/kg |
| PYRIDINE | BDL | 330 | ug/kg |

*1:1 DILUTION.*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 100.07 | | Grams |
| LIQUID FRACTION (GRAMS) | 0 | | Grams |
| EXTRACTED SAMPLE | 100.07 | | Grams |
| SOLIDS | 100 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 8.97 | | Std. Units |
| ADJUSTED PH | 5.65 | | Std. Units |
| BUFFER SOLUTION PH | 2.93 | | Std. Units |
| FINAL PH | 5.46 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 2000 | | mL |
| VOLUME EXTRACT FILTERED | 2000 | | mL |
| LUME LIQUID (ADD BACK) | 0 | | mL |
| AL VOLUME FILTRATE | 2000 | | mL |
| IENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1607 | | HRS |
| FINAL TIME | 1035 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: J. ULASZEK Analysis Date: 25-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 09-JUN-94 Instrument: ICP Test: M604.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BARIUM | BDL | 5.0 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | 2.5 | | Conc |
| SAMPLE + ADD 1 | 3.3 | | Conc |
| DILUTION | 1 | | |

## CADMIUM FAA (1 POINT MSA) SW846-7130

Analyst: C. SARKAN Analysis Date: 27-MAY-94 Instrument: FAA Test: M608.5.0
ep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
ep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |
| SAMPLE | -0.016 | | Conc |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LE + ADD 1 | 0.543 | | Conc |
| TION | 1 | | |

## CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. MILENKOVIC Analysis Date: 01-JUN-94 Instrument: FAA Test: M610.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | BDL | | Conc |
| SAMPLE + ADD 1 | 0.987 | | Conc |
| DILUTION | 1 | | |

## LEAD FAA (1 POINT MSA) SW846-7420

Analyst: C. SARKAN Analysis Date: 31-MAY-94 Instrument: FAA Test: M616.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.25 | mg/L |
| ADDITION 1 | 2.0 | | mg/L |
| SAMPLE | 0.12 | | Conc |
| SAMPLE + ADD 1 | 2.08 | | Conc |
| DILUTION | 1 | | |

## VER FAA (1 POINT MSA) SW846-7760A

lyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0
..ep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | 0.035 | | Conc |
| SAMPLE + ADD 1 | 1.11 | | Conc |
| DILUTION | | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: T. IRVING Analysis Date: 25-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA (1 POINT MSA) SW846-7060

Analyst: T. NOHA Analysis Date: 28-MAY-94 Instrument: GFAA Test: M603.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | BDL | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0000 | | Conc |
| PLE + ADD 1 | 0.0101 | | Conc |
| UTION | | | |

## SELENIUM GFAA (1 POINT MSA) SW846-7740

Analyst: T. NOHA Analysis Date: 04-JUN-94 Instrument: GFAA Test: M628.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.025 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | -0.0002 | | Conc |
| SAMPLE + ADD 1 | 0.0070 | | Conc |
| DILUTION | 5 | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 23-MAY-94 Test: P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 26-MAY-94 Test: P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0
Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.1
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| SAMPLE + ADD 1 | 0.0010 | | Conc |
| DILUTION | 1 | | |

Sample Comments

** See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 4970.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| ;ITAGE ENVIRONMENTAL SERVICES, INC.<br>cUMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 19-MAY-94 | 2936 | C156813 |
| | Complete | PO Number | |
| | 15-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 30-JUN-94 | 19-MAY-94 13:15 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SD-1-D - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY  Analysis Date: 27-MAY-94 15:41  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | BDL | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| RYLONITRILE | BDL | 70 | ug/kg |
| ZENE | BDL | 5 | ug/kg |
| MODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 34 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| TRACHLOROETHENE | 5 | 5 | ug/kg |
| TRAHYDROFURAN | BDL | 25 | ug/kg |
| OLUENE | 10 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| HLOROETHENE | 39 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | BDL | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 97 | | % Rec |
| TOLUENE-D8 | 110 | | % Rec |
| 4-BROMOFLUOROBENZENE | 91 | | % Rec |

*1:1 DILUTION.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: K. RUBLE Analysis Date: 20-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.01 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 25-MAY-94 19:41 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 330 | ug/kg |
| ENAPHTHYLENE | BDL | 330 | ug/kg |
| HRACENE | BDL | 330 | ug/kg |
| Z(A)ANTHRACENE | EST 230 | 330 | ug/kg |
| BENZO(A)PYRENE | 330 | 330 | ug/kg |
| BENZO(B)FLUORANTHENE | 560 | 330 | ug/kg |
| BENZO(G,H,I)PERYLENE | EST 300 | 330 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZYL ALCOHOL | BDL | 330 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 330 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 330 | ug/kg |
| CARBAZOLE | BDL | 330 | ug/kg |
| 4-CHLOROANILINE | BDL | 330 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 330 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 330 | ug/kg |
| CHRYSENE | 420 | 330 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 330 | ug/kg |
| DIBENZOFURAN | BDL | 330 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 660 | ug/kg |
| DIETHYLPHTHALATE | BDL | 330 | ug/kg |
| ETHYLPHTHALATE | BDL | 330 | ug/kg |
| -N-BUTYLPHTHALATE | BDL | 330 | ug/kg |
| DINITROBENZENES | BDL | 1700 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 330 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 330 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 330 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ''ORANTHENE | 780 | 330 | ug/kg |
| )RENE | BDL | 330 | ug/kg |
| HEXACHLOROBENZENE | BDL | 330 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROETHANE | BDL | 330 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | 330 | 330 | ug/kg |
| ISOPHORONE | BDL | 330 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 330 | ug/kg |
| NAPHTHALENE | BDL | 330 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 1700 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 1700 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 1700 | ug/kg |
| NITROBENZENE | BDL | 330 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 330 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 330 | ug/kg |
| PHENANTHRENE | 600 | 330 | ug/kg |
| 2-PICOLINE | BDL | 1700 | ug/kg |
| PYRENE | 710 | 330 | ug/kg |
| PYRIDINE | BDL | 1700 | ug/kg |
| TOLUENEDIAMINE | BDL | 1700 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 330 | ug/kg |
| BENZOIC ACID | BDL | 1700 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 330 | ug/kg |
| 2-CHLOROPHENOL | BDL | 330 | ug/kg |
| ^ 4-DICHLOROPHENOL | BDL | 330 | ug/kg |
| -DIMETHYLPHENOL | BDL | 330 | ug/kg |
| .,_-DINITRO-O-CRESOL | BDL | 1700 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 1700 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 330 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 330 | ug/kg |
| 2-NITROPHENOL | BDL | 330 | ug/kg |
| 4-NITROPHENOL | BDL | 1700 | ug/kg |
| PENTACHLOROPHENOL | BDL | 1700 | ug/kg |
| PHENOL | BDL | 330 | ug/kg |
| TETRACHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 500 RT=3.06 | | |
| 3-PENTEN-2-ONE | * 460 RT=3.56 | | |
| UNKNOWN | * 820 RT=4.53 | | |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 1100 RT=5.69 | | |
| UNKNOWN | * 920 RT=7.43 | | |
| UNKNOWN | 990 RT=8.29 | | |
| UNKNOWN | 330 RT=8.34 | | |
| UNKNOWN | * 820 RT=8.6 | | |
| UNKNOWN | * 420 RT=9.03 | | |
| UNKNOWN | * 680 RT=9.17 | | |
| UNKNOWN | * 890 RT=10.41 | | |
| UNKNOWN | * 2200 RT=12.69 | | |
| KNOWN | 690 RT=12.76 | | |
| KNOWN | 1100 RT=13.24 | | |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 69 | | % Rec |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ⌐ ⌐NOL-D5 | 44 | | % Rec |
| ⌐OBENZENE-D5 | 54 | | % Rec |
| ⌐-⌐LUOROBIPHENYL | 79 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 64 | | % Rec |
| TERPHENYL-D14 | 91 | | % Rec |

*1:1 DILUTION.*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 100.00 | | Grams |
| LIQUID FRACTION (GRAMS) | 0 | | Grams |
| EXTRACTED SAMPLE | 100.00 | | Grams |
| SOLIDS | 100 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 8.95 | | Std. Units |
| ADJUSTED PH | 4.16 | | Std. Units |
| BUFFER SOLUTION PH | 4.98 | | Std. Units |
| FINAL PH | 6.22 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 2000 | | mL |
| VOLUME EXTRACT FILTERED | 2000 | | mL |
| VOLUME LIQUID (ADD BACK) | 0 | | mL |
| ⌐⌐TAL VOLUME FILTRATE | 2000 | | mL |
| IENT TEMPERATURE | 21 | | Degrees C |
| TIAL TIME | 1607 | | HRS |
| FINAL TIME | 1035 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: J. ULASZEK Analysis Date: 25-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 09-JUN-94 Instrument: ICP Test: M604.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BARIUM | BDL | 5.0 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | 2.7 | | Conc |
| SAMPLE + ADD 1 | 3.5 | | Conc |
| DILUTION | 1 | | |

## CADMIUM FAA (1 POINT MSA) SW846-7130

Analyst: C. SARKAN Analysis Date: 27-MAY-94 Instrument: FAA Test: M608.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
rep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |
| SAMPLE | -0.007 | | Conc |
| SAMPLE + ADD 1 | 0.535 | | Conc |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| UTION | 1 | | |

## ...OMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. MILENKOVIC Analysis Date: 01-JUN-94 Instrument: FAA Test: M610.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | BDL | | Conc |
| SAMPLE + ADD 1 | 0.987 | | Conc |
| DILUTION | 1 | | |

## LEAD FAA (1 POINT MSA) SW846-7420

Analyst: C. SARKAN Analysis Date: 31-MAY-94 Instrument: FAA Test: M616.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.25 | mg/L |
| ADDITION 1 | 2.0 | | mg/L |
| SAMPLE | -0.001 | | Conc |
| SAMPLE + ADD 1 | 2.21 | | Conc |
| DILUTION | 1 | | |

## SILVER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | -0.019 | | Conc |
| SAMPLE + ADD 1 | 1.05 | | Conc |
| DILUTION | | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: T. IRVING Analysis Date: 25-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA (1 POINT MSA) SW846-7060

Analyst: T. NOHA Analysis Date: 28-MAY-94 Instrument: GFAA Test: M603.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | BDL | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0001 | | Conc |
| SAMPLE + ADD 1 | 0.0103 | | Conc |
| LUTION | | | |

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156813

## ENIUM GFAA (1 POINT MSA) SW846-7740

--lyst: T. NOHA Analysis Date: 04-JUN-94 Instrument: GFAA Test: M628.6.0
›: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
ep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.025 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0001 | | Conc |
| SAMPLE + ADD 1 | 0.0067 | | Conc |
| DILUTION | 5 | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 23-MAY-94 Test: P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0
Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| MPLE + ADD 1 | 0.0011 | | Conc |
| UTION | 1 | | |

Sample Comments

** See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 4970.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| HERITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 19-MAY-94 | 2936 | C156814 |
| | Complete | PO Number | |
| | 15-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 06-JUL-94 | 19-MAY-94 13:15 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

Sample Description

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SD-1-R - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY  Analysis Date: 25-MAY-94 14:45  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | BDL | 20 | ug/kg |
| ROLEIN | BDL | 50 | ug/kg |
| YLONITRILE | BDL | 70 | ug/kg |
| NZENE | BDL | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 32 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| ,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| ETRACHLOROETHENE | BDL | 5 | ug/kg |
| TETRAHYDROFURAN | BDL | 25 | ug/kg |
| TOLUENE | 9 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | EST 4 | 5 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ' ',2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| :HLOROETHENE | 37 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | BDL | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 102 | | % Rec |
| TOLUENE-D8 | * 119 | | % Rec |
| 4-BROMOFLUOROBENZENE | 88 | | % Rec |

*1:1 DILUTION.*
*Sample reanalyzed with no improvement in surrogate recovery.*
*Sample reanalyzed with no improvement in internal standard areas.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: K. RUBLE Analysis Date: 20-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.02 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 25-MAY-94 20:30 Instrument: GC/MS SVOA Test: O505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NAPHTHENE | BDL | 330 | ug/kg |
| NAPHTHYLENE | BDL | 330 | ug/kg |
| ANTHRACENE | BDL | 330 | ug/kg |
| BENZ(A)ANTHRACENE | EST 310 | 330 | ug/kg |
| BENZO(A)PYRENE | 420 | 330 | ug/kg |
| BENZO(B)FLUORANTHENE | 940 | 330 | ug/kg |
| BENZO(G,H,I)PERYLENE | 420 | 330 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZYL ALCOHOL | BDL | 330 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 330 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 330 | ug/kg |
| CARBAZOLE | BDL | 330 | ug/kg |
| 4-CHLOROANILINE | BDL | 330 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 330 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 330 | ug/kg |
| CHRYSENE | 470 | 330 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 330 | ug/kg |
| DIBENZOFURAN | BDL | 330 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| '-DICHLOROBENZIDINE | BDL | 660 | ug/kg |
| THYLPHTHALATE | BDL | 330 | ug/kg |
| DIMETHYLPHTHALATE | BDL | 330 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 330 | ug/kg |
| DINITROBENZENES | BDL | 1700 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 330 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| DINITROTOLUENE | BDL | 330 | ug/kg |
| -OCTYLPHTHALATE | BDL | 330 | ug/kg |
| FLUORANTHENE | 920 | 330 | ug/kg |
| FLUORENE | BDL | 330 | ug/kg |
| HEXACHLOROBENZENE | BDL | 330 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROETHANE | BDL | 330 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | 390 | 330 | ug/kg |
| ISOPHORONE | BDL | 330 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 330 | ug/kg |
| NAPHTHALENE | BDL | 330 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 1700 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 1700 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 1700 | ug/kg |
| NITROBENZENE | BDL | 330 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 330 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 330 | ug/kg |
| PHENANTHRENE | 820 | 330 | ug/kg |
| 2-PICOLINE | BDL | 1700 | ug/kg |
| PYRENE | 940 | 330 | ug/kg |
| PYRIDINE | BDL | 1700 | ug/kg |
| TOLUENEDIAMINE | BDL | 1700 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 330 | ug/kg |
| BENZOIC ACID | BDL | 1700 | ug/kg |
| CHLORO-3-METHYLPHENOL | BDL | 330 | ug/kg |
| HLOROPHENOL | BDL | 330 | ug/kg |
| 2,4-DICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4-DIMETHYLPHENOL | BDL | 330 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 1700 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 1700 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 330 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 330 | ug/kg |
| 2-NITROPHENOL | BDL | 330 | ug/kg |
| 4-NITROPHENOL | BDL | 1700 | ug/kg |
| PENTACHLOROPHENOL | BDL | 1700 | ug/kg |
| PHENOL | BDL | 330 | ug/kg |
| TETRACHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 660 RT=3.04 | | |
| 3-PENTEN-2-ONE | * 630 RT=3.54 | | |
| UNKNOWN | * 360 RT=3.89 | | |
| UNKNOWN | * 1100 RT=4.53 | | |
| UNKNOWN KETONE | * 360 RT=4.7 | | |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 1600 RT=5.69 | | |
| UNKNOWN | * 1300 RT=7.44 | | |
| UNKNOWN | * 330 RT=7.6 | | |
| UNKNOWN | * 500 RT=7.73 | | |
| NKNOWN | 460 RT=7.78 | | |
| KNOWN | 990 RT=8.33 | | |
| NKNOWN | * 1000 RT=8.62 | | |
| UNKNOWN | * 1000 RT=9.06 | | |
| UNKNOWN | * 1300 RT=9.19 | | |
| UNKNOWN | * 400 RT=9.76 | | |
| UNKNOWN | * 1600 RT=10.44 | | |

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156

| Parameter | Result | Det. Limit | Unit |
|---|---|---|---|
| UNKNOWN | * 890 RT=11.64 | | |
| UNKNOWN | * 2300 RT=12.7 | | |
| UNKNOWN | 920 RT=13.25 | | |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| 2-FLUOROPHENOL | 87 | | % Rec |
| PHENOL-D5 | 65 | | % Rec |
| NITROBENZENE-D5 | 62 | | % Rec |
| 2-FLUOROBIPHENYL | 95 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 70 | | % Rec |
| TERPHENYL-D14 | 108 | | % Re |

*1:1 DILUTION.*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

Sample Comments

| | |
|---|---|
| * | *See Note for Parameter* |
| *BDL* | *Below Detection Limit* |
| *EST* | *Estimated Value* |
| *RT* | *Retention Time* |

*Sample chain of custody number 4970.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| HERITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 19-MAY-94 | 2936 | C156815 |
| | Complete | PO Number | |
| | 15-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 06-JUL-94 | 19-MAY-94 14:10 | |

**Report To**

BOB MILLMAN
HERITAGE REMEDIATION/ENGINEERING
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

**Bill To**

DOUG PLESNER
HERITAGE TREATMENT CENTER
CANAL BANK ROAD
P.O. BOX 337
LEMONT, IL 60439

**Sample Description**

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SD-2 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: G. SWANEY  Analysis Date: 25-MAY-94 19:15  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 33 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| ACRYLONITRILE | BDL | 70 | ug/kg |
| BENZENE | BDL | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | BDL | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | BDL | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 21 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| TETRACHLOROETHENE | EST 3 | 5 | ug/kg |
| TETRAHYDROFURAN | 32 | 25 | ug/kg |
| TOLUENE | EST 3 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156815

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| CHLOROETHENE | 17 | 5 | ug/kg |
| ...YL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 9 | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 93 | | % Rec |
| TOLUENE-D8 | 100 | | % Rec |
| 4-BROMOFLUOROBENZENE | 103 | | % Rec |

*1:1 DILUTION.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: K. RUBLE Analysis Date: 20-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.41 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 25-MAY-94 22:55 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACENAPHTHENE | BDL | 330 | ug/kg |
| ACENAPHTHYLENE | BDL | 330 | ug/kg |
| HRACENE | BDL | 330 | ug/kg |
| Z(A)ANTHRACENE | BDL | 330 | ug/kg |
| BENZO(A)PYRENE | EST 200 | 330 | ug/kg |
| BENZO(B)FLUORANTHENE | EST 320 | 330 | ug/kg |
| BENZO(G,H,I)PERYLENE | BDL | 330 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 330 | ug/kg |
| BENZYL ALCOHOL | BDL | 330 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 330 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 330 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | BDL | 330 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 330 | ug/kg |
| CARBAZOLE | BDL | 330 | ug/kg |
| 4-CHLOROANILINE | BDL | 330 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 330 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 330 | ug/kg |
| CHRYSENE | EST 260 | 330 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | BDL | 330 | ug/kg |
| DIBENZOFURAN | BDL | 330 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 1,4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 330 | ug/kg |
| 3,3'-DICHLOROBENZIDINE | BDL | 660 | ug/kg |
| DIETHYLPHTHALATE | BDL | 330 | ug/kg |
| ETHYLPHTHALATE | BDL | 330 | ug/kg |
| N-BUTYLPHTHALATE | BDL | 330 | ug/kg |
| DINITROBENZENES | BDL | 1700 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 330 | ug/kg |
| 2,6-DINITROTOLUENE | BDL | 330 | ug/kg |
| DI-N-OCTYLPHTHALATE | BDL | 330 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| UORANTHENE | 550 | 330 | ug/kg |
| ORENE | BDL | 330 | ug/kg |
| ACHLOROBENZENE | BDL | 330 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 330 | ug/kg |
| HEXACHLOROETHANE | BDL | 330 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | BDL | 330 | ug/kg |
| ISOPHORONE | BDL | 330 | ug/kg |
| 2-METHYLNAPHTHALENE | BDL | 330 | ug/kg |
| NAPHTHALENE | BDL | 330 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 1700 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 1700 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 1700 | ug/kg |
| NITROBENZENE | BDL | 330 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 330 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 330 | ug/kg |
| PHENANTHRENE | 380 | 330 | ug/kg |
| 2-PICOLINE | BDL | 1700 | ug/kg |
| PYRENE | 420 | 330 | ug/kg |
| PYRIDINE | BDL | 1700 | ug/kg |
| TOLUENEDIAMINE | BDL | 1700 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 330 | ug/kg |
| BENZOIC ACID | BDL | 1700 | ug/kg |
| 4-CHLORO-3-METHYLPHENOL | BDL | 330 | ug/kg |
| 2-CHLOROPHENOL | BDL | 330 | ug/kg |
| 4-DICHLOROPHENOL | BDL | 330 | ug/kg |
| -DIMETHYLPHENOL | BDL | 330 | ug/kg |
| -DINITRO-O-CRESOL | BDL | 1700 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 1700 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 330 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 330 | ug/kg |
| 2-NITROPHENOL | BDL | 330 | ug/kg |
| 4-NITROPHENOL | BDL | 1700 | ug/kg |
| PENTACHLOROPHENOL | BDL | 1700 | ug/kg |
| PHENOL | BDL | 330 | ug/kg |
| TETRACHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 330 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| 2,4-HEXADIENAL | * 630 RT=3.04 | | |
| 3-PENTEN-2-ONE | * 530 RT=3.54 | | |
| UNKNOWN | * 360 RT=3.89 | | |
| UNKNOWN | * 960 RT=4.53 | | |
| UNKNOWN KETONE | * 330 RT=4.71 | | |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 1400 RT=5.68 | | |
| UNKNOWN | * 1200 RT=7.43 | | |
| UNKNOWN | 860 RT=8.33 | | |
| UNKNOWN | * 960 RT=8.61 | | |
| UNKNOWN | * 920 RT=9.06 | | |
| UNKNOWN | * 1100 RT=9.18 | | |
| UNKNOWN | * 1600 RT=10.44 | | |
| NOWN | * 760 RT=11.65 | | |
| NOWN | * 2600 RT=12.7 | | |
| UNKNOWN | 1200 RT=13.25 | | |
| UNKNOWN HYDROCARBON | 460 RT=16.24 | | |
| ... | | | |
| SURROGATE RECOVERY | | | |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LUOROPHENOL | 79 | | % Rec |
| PHENOL-D5 | 64 | | % Rec |
| NITROBENZENE-D5 | 59 | | % Rec |
| 2-FLUOROBIPHENYL | 100 | | % Rec |
| 2,4,6-TRIBROMOPHENOL | 76 | | % Rec |
| TERPHENYL-D14 | 88 | | % Rec |

*1:1 DILUTION.*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 102.90 | | Grams |
| LIQUID FRACTION (GRAMS) | 1.69 | | Grams |
| EXTRACTED SAMPLE | 100.02 | | Grams |
| SOLIDS | 97 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 9.69 | | Std. Units |
| ADJUSTED PH | 5.30 | | Std. Units |
| BUFFER SOLUTION PH | 2.93 | | Std. Units |
| FINAL PH | 5.41 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 2000 | | mL |
| LUME EXTRACT FILTERED | 2000 | | mL |
| UME LIQUID (ADD BACK) | 1.50 | | mL |
| TAL VOLUME FILTRATE | 2001.5 | | mL |
| AMBIENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1607 | | HRS |
| FINAL TIME | 1035 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: J. ULASZEK Analysis Date: 25-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 09-JUN-94 Instrument: ICP Test: M604.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BARIUM | BDL | 5.0 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | 2.6 | | Conc |
| SAMPLE + ADD 1 | 3.4 | | Conc |
| DILUTION | 1 | | |

## CADMIUM FAA (1 POINT MSA) SW846-7130

alyst: C. SARKAN Analysis Date: 27-MAY-94 Instrument: FAA Test: M608.5.0
rep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CADMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 0.5 | | mg/L |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SAMPLE | -0.007 | | Conc |
| SAMPLE + ADD 1 | 0.551 | | Conc |
| DILUTION | 1 | | |

## CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst: A. MILENKOVIC Analysis Date: 01-JUN-94 Instrument: FAA Test: M610.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | BDL | | Conc |
| SAMPLE + ADD 1 | 0.987 | | Conc |
| DILUTION | 1 | | |

## LEAD FAA (1 POINT MSA) SW846-7420

Analyst: C. SARKAN Analysis Date: 31-MAY-94 Instrument: FAA Test: M616.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.25 | mg/L |
| ADDITION 1 | 2.0 | | mg/L |
| SAMPLE | -0.001 | | Conc |
| SAMPLE + ADD 1 | 2.21 | | Conc |
| DILUTION | 1 | | |

## VER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | -0.032 | | Conc |
| SAMPLE + ADD 1 | 1.05 | | Conc |
| DILUTION | | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: T. IRVING Analysis Date: 25-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA (1 POINT MSA) SW846-7060

Analyst: T. NOHA Analysis Date: 28-MAY-94 Instrument: GFAA Test: M603.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | BDL | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | 0.0003 | | Conc |
| SAMPLE + ADD 1 | 0.0108 | | Conc |
| DILUTION | | | |

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: C156815

## ENIUM GFAA (1 POINT MSA) SW846-7740

lyst: T. NOHA Analysis Date: 04-JUN-94 Instrument: GFAA Test: M628.6.0

: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0

: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.025 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | -0.0006 | | Conc |
| SAMPLE + ADD 1 | 0.0065 | | Conc |
| DILUTION | 5 | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: A. SNAPP Analysis Date: 23-MAY-94 Test: P131.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0

Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| SAMPLE + ADD 1 | 0.00093 | | Conc |
| UTION | 1 | | |

Sample Comments

* *See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 4970.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# CERTIFICATE OF ANALYSIS

| Service Location | Received | Project | Lab ID |
|---|---|---|---|
| RITAGE ENVIRONMENTAL SERVICES, INC.<br>COMMERCIAL LABORATORY OPERATIONS<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441<br>(708)378-1600 | 19-MAY-94 | 2936 | C156816 |
| | Complete | PO Number | |
| | 16-JUN-94 | 480-02328 | |
| | Printed | Sampled | |
| | 30-JUN-94 | 19-MAY-94 15:10 | |

| Report To | Bill To |
|---|---|
| BOB MILLMAN<br>HERITAGE REMEDIATION/ENGINEERING<br>1319 MARQUETTE DRIVE<br>ROMEOVILLE, IL 60441 | DOUG PLESNER<br>HERITAGE TREATMENT CENTER<br>CANAL BANK ROAD<br>P.O. BOX 337<br>LEMONT, IL 60439 |

Sample Description

PROJECT: HES RCRA FACILITY INVESTIGATION - JOB #6702
DESCRIPTION: SD-5 - GRAB

## VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240A

Analyst: S. SHARP  Analysis Date: 27-MAY-94 16:31  Instrument: GC/MS VOA  Test: 0510.9.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ACETONE | 33 | 20 | ug/kg |
| ACROLEIN | BDL | 50 | ug/kg |
| YLONITRILE | BDL | 70 | ug/kg |
| ZENE | BDL | 5 | ug/kg |
| BROMODICHLOROMETHANE | BDL | 5 | ug/kg |
| BROMOFORM | BDL | 5 | ug/kg |
| BROMOMETHANE | BDL | 10 | ug/kg |
| CARBON DISULFIDE | BDL | 5 | ug/kg |
| CARBON TETRACHLORIDE | BDL | 5 | ug/kg |
| CHLOROBENZENE | BDL | 5 | ug/kg |
| CHLOROETHANE | BDL | 10 | ug/kg |
| CHLOROFORM | 18 | 5 | ug/kg |
| CHLOROMETHANE | BDL | 10 | ug/kg |
| DIBROMOCHLOROMETHANE | BDL | 5 | ug/kg |
| CIS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| DICHLORODIFLUOROMETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,2-DICHLOROETHANE | BDL | 5 | ug/kg |
| 1,1-DICHLOROETHENE | BDL | 5 | ug/kg |
| 1,2-DICHLOROPROPANE | BDL | 5 | ug/kg |
| ETHYL BENZENE | 7 | 5 | ug/kg |
| TRICHLOROFLUOROMETHANE | BDL | 5 | ug/kg |
| 2-HEXANONE | BDL | 10 | ug/kg |
| DICHLOROMETHANE (METHYLENE CHLORIDE) | 10 | 5 | ug/kg |
| METHYL ETHYL KETONE | BDL | 10 | ug/kg |
| 4-METHYL-2-PENTANONE | BDL | 10 | ug/kg |
| STYRENE | BDL | 5 | ug/kg |
| 1,2,2-TETRACHLOROETHANE | BDL | 5 | ug/kg |
| RACHLOROETHENE | 7 | 5 | ug/kg |
| RAHYDROFURAN | BDL | 25 | ug/kg |
| TOLUENE | 28 | 5 | ug/kg |
| 1,2-DICHLOROETHENE (CIS AND TRANS) | BDL | 5 | ug/kg |
| TRANS-1,3-DICHLOROPROPENE | BDL | 5 | ug/kg |
| 1,1,1-TRICHLOROETHANE | BDL | 5 | ug/kg |

 (continued on next page)

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,2-TRICHLOROETHANE | BDL | 5 | ug/kg |
| CHLOROETHENE | 42 | 5 | ug/kg |
| VINYL ACETATE | BDL | 10 | ug/kg |
| VINYL CHLORIDE | BDL | 10 | ug/kg |
| XYLENES (O/M/P-XYLENE) | 15 | 5 | ug/kg |
| ... | | | |
| SURROGATE RECOVERY | | | |
| --- | | | |
| DICHLOROETHANE-D4 | 90 | | % Rec |
| TOLUENE-D8 | * 121 | | % Rec |
| 4-BROMOFLUOROBENZENE | 82 | | % Rec |

*1:1 DILUTION.*
*Sample reanalyzed with no improvement in surrogate recovery.*
*Sample was reanalyzed with no improvement in internal standard areas.*

## GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: K. RUBLE Analysis Date: 20-MAY-94 Test: P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 30.16 | | Grams |
| FINAL VOLUME | 1 | | mL |

## SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270A

Analyst: H. QIAN Analysis Date: 26-MAY-94 13:44 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| NAPHTHENE | 5800 | 3300 | ug/kg |
| ACENAPHTHYLENE | BDL | 3300 | ug/kg |
| ANTHRACENE | 10000 | 3300 | ug/kg |
| BENZ(A)ANTHRACENE | 18000 | 3300 | ug/kg |
| BENZO(A)PYRENE | 15000 | 3300 | ug/kg |
| BENZO(B)FLUORANTHENE | 22000 | 3300 | ug/kg |
| BENZO(G,H,I)PERYLENE | 11000 | 3300 | ug/kg |
| BENZO(K)FLUORANTHENE | BDL | 3300 | ug/kg |
| BENZYL ALCOHOL | 21000 | 3300 | ug/kg |
| (BENZYLBUTYLPHTHALATE) BUTYLBENZYLPHTHALATE | BDL | 3300 | ug/kg |
| BIS(2-CHLOROETHOXY)METHANE | BDL | 3300 | ug/kg |
| BIS(2-CHLOROETHYL)ETHER | BDL | 3300 | ug/kg |
| BIS(2-CHLOROISOPROPYL)ETHER | BDL | 3300 | ug/kg |
| BIS(2-ETHYLHEXYL)PHTHALATE | 11000 | 3300 | ug/kg |
| 4-BROMODIPHENYL ETHER | BDL | 3300 | ug/kg |
| CARBAZOLE | 4700 | 3300 | ug/kg |
| 4-CHLOROANILINE | BDL | 3300 | ug/kg |
| 2-CHLORONAPHTHALENE | BDL | 3300 | ug/kg |
| 4-CHLOROPHENYL-PHENYLETHER | BDL | 3300 | ug/kg |
| CHRYSENE | 19000 | 3300 | ug/kg |
| DIBENZ(A,H)ANTHRACENE | EST 2000 | 3300 | ug/kg |
| DIBENZOFURAN | 3500 | 3300 | ug/kg |
| 1,2-DICHLOROBENZENE (O-DICHLOROBENZENE) | BDL | 3300 | ug/kg |
| 1,3-DICHLOROBENZENE (M-DICHLOROBENZENE) | BDL | 3300 | ug/kg |
| 4-DICHLOROBENZENE (P-DICHLOROBENZENE) | BDL | 3300 | ug/kg |
| '-DICHLOROBENZIDINE | BDL | 6600 | ug/kg |
| ETHYLPHTHALATE | BDL | 3300 | ug/kg |
| DIMETHYLPHTHALATE | BDL | 3300 | ug/kg |
| DI-N-BUTYLPHTHALATE | BDL | 3300 | ug/kg |
| DINITROBENZENES | BDL | 17000 | ug/kg |
| 2,4-DINITROTOLUENE | BDL | 3300 | ug/kg |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| -DINITROTOLUENE | BDL | 3300 | ug/kg |
| -N-OCTYLPHTHALATE | BDL | 3300 | ug/kg |
| FLUORANTHENE | 33000 | 3300 | ug/kg |
| FLUORENE | 7300 | 3300 | ug/kg |
| HEXACHLOROBENZENE | BDL | 3300 | ug/kg |
| HEXACHLOROBUTADIENE | BDL | 3300 | ug/kg |
| HEXACHLOROCYCLOPENTADIENE | BDL | 3300 | ug/kg |
| HEXACHLOROETHANE | BDL | 3300 | ug/kg |
| INDENO(1,2,3-CD)PYRENE | 11000 | 3300 | ug/kg |
| ISOPHORONE | BDL | 3300 | ug/kg |
| 2-METHYLNAPHTHALENE | 8400 | 3300 | ug/kg |
| NAPHTHALENE | EST 2400 | 3300 | ug/kg |
| 2-NITROANILINE (O-NITROANILINE) | BDL | 17000 | ug/kg |
| 3-NITROANILINE (M-NITROANILINE) | BDL | 17000 | ug/kg |
| 4-NITROANILINE (P-NITROANILINE) | BDL | 17000 | ug/kg |
| NITROBENZENE | BDL | 3300 | ug/kg |
| N-NITROSODIPHENYLAMINE | BDL | 3300 | ug/kg |
| N-NITROSO-DI-N-PROPYLAMINE | BDL | 3300 | ug/kg |
| PHENANTHRENE | 39000 | 3300 | ug/kg |
| 2-PICOLINE | BDL | 17000 | ug/kg |
| PYRENE | 37000 | 3300 | ug/kg |
| PYRIDINE | BDL | 17000 | ug/kg |
| TOLUENEDIAMINE | BDL | 17000 | ug/kg |
| 1,2,4-TRICHLOROBENZENE | BDL | 3300 | ug/kg |
| ENZOIC ACID | BDL | 17000 | ug/kg |
| HLORO-3-METHYLPHENOL | BDL | 3300 | ug/kg |
| HLOROPHENOL | BDL | 3300 | ug/kg |
| 2,4-DICHLOROPHENOL | BDL | 3300 | ug/kg |
| 2,4-DIMETHYLPHENOL | BDL | 3300 | ug/kg |
| 4,6-DINITRO-O-CRESOL | BDL | 17000 | ug/kg |
| 2,4-DINITROPHENOL | BDL | 17000 | ug/kg |
| 2-METHYLPHENOL (O-CRESOL) | BDL | 3300 | ug/kg |
| 4-METHYLPHENOL (P-CRESOL) | BDL | 3300 | ug/kg |
| 2-NITROPHENOL | BDL | 3300 | ug/kg |
| 4-NITROPHENOL | BDL | 17000 | ug/kg |
| PENTACHLOROPHENOL | BDL | 17000 | ug/kg |
| PHENOL | BDL | 3300 | ug/kg |
| TETRACHLOROPHENOL | BDL | 3300 | ug/kg |
| 2,4,5-TRICHLOROPHENOL | BDL | 3300 | ug/kg |
| 2,4,6-TRICHLOROPHENOL | BDL | 3300 | ug/kg |
| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
| UNKNOWN | * 6600 RT=4.43 | | |
| 4-HYDROXY-4-METHYL-2-PENTANONE | * 12000 RT=5.57 | | |
| UNKNOWN | 8900 RT=7.33 | | |
| UNKNOWN | 6900 RT=7.61 | | |
| UNKNOWN | 12000 RT=8.11 | | |
| 1-METHYLNAPHTHALENE | 5900 RT=13.12 | | |
| DIMETHYLNAPHTHALENE | 14000 RT=14.28 | | |
| DIMETHYLNAPHTHALENE | 17000 RT=14.43 | | |
| UNKNOWN | 9900 RT=22.79 | | |
| ROGATE RECOVERY | | | |
| 2-FLUOROPHENOL | 59 | | % Rec |
| PHENOL-D5 | 77 | | % Rec |
| NITROBENZENE-D5 | 74 | | % Rec |
| 2-FLUOROBIPHENYL | 118 | | % Rec |

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ,6-TRIBROMOPHENOL | 55 | | % Rec |
| PHENYL-D14 | 101 | | % Rec |

*1:5 DILUTION.*
** Compound also detected in Blank.*
*All tentatively identified compound concentration values are estimated.*

## TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: A. SNAPP Analysis Date: 20-MAY-94 Test: P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| TOTAL SAMPLE WEIGHT | 100.03 | | Grams |
| LIQUID FRACTION (GRAMS) | 0 | | Grams |
| EXTRACTED SAMPLE | 100.03 | | Grams |
| SOLIDS | 100 | | Percent |
| 9.5 MM SIEVE TEST | | | Passed |
| INITIAL PH | 9.33 | | Std. Units |
| ADJUSTED PH | 2.11 | | Std. Units |
| BUFFER SOLUTION PH | 4.88 | | Std. Units |
| FINAL PH | 5.57 | | Std. Units |
| VOLUME BUFFERED SOLUTION | 2000 | | mL |
| VOLUME EXTRACT FILTERED | 2000 | | mL |
| VOLUME LIQUID (ADD BACK) | 0 | | mL |
| TOTAL VOLUME FILTRATE | 2000 | | mL |
| AMBIENT TEMPERATURE | 21 | | Degrees C |
| INITIAL TIME | 1607 | | HRS |
| AL TIME | 1035 | | HRS |

## FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: J. ULASZEK Analysis Date: 25-MAY-94 Test: P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: S. KANAPILLY Analysis Date: 09-JUN-94 Instrument: ICP Test: M604.7.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| BARIUM | BDL | 5.0 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | 2.4 | | Conc |
| SAMPLE + ADD 1 | 3.3 | | Conc |
| DILUTION | 1 | | |

## CADMIUM FAA (1 POINT MSA) SW846-7130

Analyst: C. SARKAN Analysis Date: 27-MAY-94 Instrument: FAA Test: M608.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| DMIUM | BDL | 0.05 | mg/L |
| ITION 1 | 0.5 | | mg/L |
| PLE | 0.009 | | Conc |
| SAMPLE + ADD 1 | 0.568 | | Conc |
| DILUTION | 1 | | |

## JMIUM FAA (1 POINT MSA) SW846-7190

lyst: A. MILENKOVIC Analysis Date: 01-JUN-94 Instrument: FAA Test: M610.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| CHROMIUM | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | BDL | | Conc |
| SAMPLE + ADD 1 | 0.987 | | Conc |
| DILUTION | 1 | | |

## LEAD FAA (1 POINT MSA) SW846-7420

Analyst: C. SARKAN Analysis Date: 31-MAY-94 Instrument: FAA Test: M616.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| LEAD | BDL | 0.25 | mg/L |
| ADDITION 1 | 2.0 | | mg/L |
| SAMPLE | 0.12 | | Conc |
| SAMPLE + ADD 1 | 2.33 | | Conc |
| DILUTION | 1 | | |

## SILVER FAA (1 POINT MSA) SW846-7760A

Analyst: C. SARKAN Analysis Date: 25-MAY-94 Instrument: FAA Test: M630.5.0
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
ep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SILVER | BDL | 0.05 | mg/L |
| ADDITION 1 | 1.0 | | mg/L |
| SAMPLE | -0.005 | | Conc |
| SAMPLE + ADD 1 | 1.07 | | Conc |
| DILUTION | | | |

## GFAA ACID DIGESTION (LEACHATE) SW846-3020A

Analyst: T. IRVING Analysis Date: 25-MAY-94 Test: P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 50 | | mL |
| FINAL VOLUME | 50 | | mL |

## ARSENIC GFAA (1 POINT MSA) SW846-7060

Analyst: T. NOHA Analysis Date: 28-MAY-94 Instrument: GFAA Test: M603.6.0
Prep: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| ARSENIC | BDL | 0.005 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | -0.0008 | | Conc |
| SAMPLE + ADD 1 | 0.0095 | | Conc |
| DILUTION | | | |

## ENIUM GFAA (1 POINT MSA) SW846-7740

lyst: T. NOHA Analysis Date: 04-JUN-94 Instrument: GFAA Test: M628.6.0

p: GFAA ACID DIGESTION (LEACHATE) SW846-3020A P130.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| SELENIUM | BDL | 0.025 | mg/L |
| ADDITION 1 | 0.01 | | mg/L |
| SAMPLE | -0.0002 | | Conc |
| SAMPLE + ADD 1 | 0.0060 | | Conc |
| DILUTION | 5 | | |

## MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470

Analyst: T. IRVING Analysis Date: 24-MAY-94 Test: P131.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| INITIAL WEIGHT OR VOLUME | 10 | | mL |
| FINAL VOLUME | 100 | | mL |

## MERCURY CVAA (1 POINT MSA) SW846-7470

Analyst: T. NOHA Analysis Date: 27-MAY-94 Instrument: CVAA Test: M620.6.0

Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470 P131.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

| Parameter | Result | Det. Limit | Units |
|---|---|---|---|
| MERCURY | BDL | .005 | mg/L |
| ADDITION 1 | 0.001 | | mg/L |
| SAMPLE | 0.000 | | Conc |
| PLE + ADD 1 | 0.00097 | | Conc |
| UTION | 1 | | |

Sample Comments

** See Note for Parameter*
*BDL Below Detection Limit*
*EST Estimated Value*
*RT Retention Time*

*Sample chain of custody number 4970.*

*This Certificate shall not be reproduced, except in full, without the written approval of the lab.*

Quality Assurance Officer: _____

# APPENDIX H

# LABORATORY DATA PACKAGE



Recycled Paper

This Document is attached as Volume 2
Part 1, 2, 3, 4 and 5



Recycled Paper

# APPENDIX I

# BACKGROUND SOIL CONCENTRATIONS



Recycled Paper

Background Soil Samples - Statistical Analysis
Volatile Organic Compounds
Heritage Treatment Center
Lemont, Illinois

| SAMPLE LOCATION<br>COMPOUND/CONCENTRATION | SB-1<br>(ppb) | SB-2<br>(ppb) | SB-3<br>(ppb) | SB-4<br>(ppb) | SB-5<br>(ppb) | SB-6<br>(ppb) | SB-7<br>(ppb) | SB-7D<br>(ppb) | SB-8<br>(ppb) | SB-9<br>(ppb) | SB-10<br>(ppb) | mean | std.d. | mean plus<br>std.d. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acetone | 84 | 180 | 30 | 23 | 10 | 10 | 10 | 10 | 26 | 28 | 10 | 38 | 49 | 88 |
| Acrolein | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 0 | 25 |
| Acrylonitrile | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 0 | 35 |
| Benzene | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| Bromodichloromethane | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| Bromoform | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| Bromomethane | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 5 |
| Carbon Disulfide | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| Carbon Tetrachloride | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| Chlorobenzene | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| Chloroethane | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 5 |
| Chloroform | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| Dibromochloromethane | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 5 |
| cis-1,3-Dichloropropene | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| Dichlorodifluoromethane | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| 1,1-Dichloroethane | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| 1,2-Dichloroethane | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| 1,1-Dichloroethene | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| 2-Dichloropropane | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| ıylbenzene | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 8 | 8 | 4 | 2 | 6 |
| uorotrichloromethane | 3 | 3 | 77 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 10 | 21 | 31 |
| 2-Hexanone | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 5 |
| Methylene Chloride | 11 | 12 | 81 | 18 | 120 | 140 | 120 | 140 | 23 | 16 | 21 | 64 | 54 | 117 |
| Methyl Ethyl Ketone | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 5 |
| 4-Methyl-2-Pentanone | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 5 |
| Styrene | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| 1,1,2,2-Tetrachloroethane | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| Tetrachloroethene | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 6 | 8 | 12 | 5 | 3 | 7 |
| Tetrahydrofuran | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 17 | 35 | 25 | 16 | 7 | 23 |
| Toluene | 7 | 4 | 15 | 8 | 16 | 15 | 16 | 9 | 19 | 31 | 28 | 15 | 8 | 23 |
| 1,2-Dichloroethene (Total) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| trans-1,3-Dichloropropene | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| 1,1,1-Trichloroethane | 3 | 3 | 3 | 3 | 4 | 3 | 4 | 3 | 6 | 3 | 11 | 4 | 2 | 7 |
| 1,1,2-Trichloroethane | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 |
| Trichloroethene | 9 | 6 | 11 | 11 | 32 | 32 | 26 | 19 | 59 | 60 | 110 | 34 | 30 | 64 |
| Vinyl Acetate | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 5 |
| Vinyl Chloride | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 5 |
| Xylene (Total) | 3 | 3 | 6 | 3 | 8 | 10 | 11 | 8 | 9 | 25 | 25 | 10 | 8 | 18 |

(1) All samples reported as BDL have been assigned a value of 1/2 BDL.

Background Soil Samples - Statistical Analysis
Semi-Volatile Organic Analysis
Heritage Treatment Center
Lemont, Illinois

| SAMPLING LOCATION<br>COMPOUND/CONCENTRATION | SB-1<br>(ppb) | SB-2<br>(ppb) | SB-3<br>(ppb) | SB-4<br>(ppb) | SB-5<br>(ppb) | SB-6<br>(ppb) | SB-7<br>(ppb) | SB-7D<br>(ppb) | SB-8<br>(ppb) | SB-9<br>(ppb) | SB-10<br>(ppb) | mean | std.dev. | mean plus std.dev. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Acenaphthylene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Anthracene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Benz(a)anthracene | 165 | 250 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 557 | 467 | 1024 |
| Benzo(a)pyrene | 165 | 360 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 190 | 850 | 569 | 460 | 1029 |
| Benzo(b)fluoranthene | 165 | 680 | 165 | 310 | 165 | 1650 | 850 | 850 | 850 | 490 | 850 | 639 | 427 | 1066 |
| Benzo(g,h,i)perylene | 165 | 490 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 200 | 850 | 582 | 455 | 1037 |
| Benzo(k)fluoranthene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Benzyl Alcohol | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Benzylbutylphthalate | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| bis(2-Chloroethoxy) Methane | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| bis(2-Chloroethyl) Ether | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| bis(2-Chloroisopropyl) Ether | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| bis(2-Ethylhexyl) Phthalate | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 4-Bromophenylphenylether | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Carbazole | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 4-Chloroaniline | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 2-Chloronaphthalene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 4-Chlorophenylphenylether | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Chrysene | 165 | 330 | 165 | 160 | 165 | 1650 | 850 | 850 | 850 | 190 | 850 | 566 | 461 | 1027 |
| Dibenz(a,h)anthracene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Dibenzofuran | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 1,2-Dichlorobenzene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 1,3-Dichlorobenzene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 1,4-Dichlorobenzene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 3,3'-Dichlorobenzidine | 330 | 330 | 330 | 330 | 330 | 3300 | 1700 | 1700 | 1700 | 330 | 1700 | 1098 | 946 | 2044 |
| Diethylphthalate | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Dimethylphthalate | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| i-N-butylphthalate | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| ıitrobenzenes | 850 | 850 | 850 | 850 | 850 | 8500 | 4520 | 4520 | 4520 | 850 | 4520 | 2880 | 2469 | 5349 |
| 4-Dinitrotoluene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 2,6-Dinitrotoluene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Di-N-octylphthalate | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Fluoranthene | 165 | 1000 | 165 | 390 | 165 | 1650 | 850 | 850 | 850 | 420 | 850 | 669 | 437 | 1106 |
| Fluorene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Hexachlorobenzene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Hexachlorobutadiene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Hexachlorocyclopentadiene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Hexachloroethane | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Indeno(1,2,3-c,d)pyrene | 165 | 400 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 190 | 850 | 573 | 458 | 1031 |
| Isophorone | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 2-Methylnaphthalene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Naphthalene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 2-Nitroaniline | 850 | 850 | 850 | 850 | 850 | 8500 | 4520 | 4520 | 4520 | 850 | 4520 | 2880 | 2469 | 5349 |
| 3-Nitroaniline | 850 | 850 | 850 | 850 | 850 | 8500 | 4520 | 4520 | 4520 | 850 | 4520 | 2880 | 2469 | 5349 |
| 4-Nitroaniline | 850 | 850 | 850 | 850 | 850 | 8500 | 4520 | 4520 | 4520 | 850 | 4520 | 2880 | 2469 | 5349 |
| Nitrobenzene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| N-Nitro-Diphenylamine | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| N-Nitroso-Di-N-Propylamine | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Phenanthrene | 165 | 830 | 165 | 330 | 165 | 1650 | 850 | 850 | 850 | 390 | 850 | 645 | 434 | 1079 |
| 2-Picoline | 850 | 850 | 850 | 850 | 850 | 8500 | 4520 | 4520 | 4520 | 850 | 4520 | 2880 | 2469 | 5349 |
| Pyrene | 165 | 780 | 165 | 300 | 165 | 1650 | 850 | 850 | 850 | 390 | 850 | 638 | 434 | 1072 |
| Pyridine | 850 | 850 | 850 | 850 | 850 | 8500 | 4520 | 4520 | 4520 | 850 | 4520 | 2880 | 2469 | 5349 |
| Toluenediamine | 850 | 850 | 850 | 850 | 850 | 8500 | 4520 | 4520 | 4520 | 850 | 4520 | 2880 | 2469 | 5349 |
| 1,2,4-Trichlorobenzene | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Benzoic Acid | 850 | 850 | 850 | 850 | 850 | 8500 | 4520 | 4520 | 4520 | 850 | 4520 | 2880 | 2469 | 5349 |
| 4-Chloro-3-Methylphenol | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 2-Chlorophenol | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 2,4-Dichlorophenol | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 2,4-Dimethylphenol | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 4,6-Dinitro-2-Methylphenol | 850 | 850 | 850 | 850 | 850 | 8500 | 4520 | 4520 | 4520 | 850 | 4520 | 2880 | 2469 | 5349 |
| 2,4-Dinitrophenol | 850 | 850 | 850 | 850 | 850 | 8500 | 4520 | 4520 | 4520 | 850 | 4520 | 2880 | 2469 | 5349 |
| -Methylphenol | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Methylphenol | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| -Nitrophenol | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 4-Nitrophenol | 850 | 850 | 850 | 850 | 850 | 8500 | 4520 | 4520 | 4520 | 850 | 4520 | 2880 | 2469 | 5349 |
| Pentachlorophenol | 850 | 850 | 850 | 850 | 850 | 8500 | 4520 | 4520 | 4520 | 850 | 4520 | 2880 | 2469 | 5349 |
| Phenol | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| Tetrachlorophenol | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 2,4,5-Trichlorophenol | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |
| 2,4,6-Trichlorophenol | 165 | 165 | 165 | 165 | 165 | 1650 | 850 | 850 | 850 | 165 | 850 | 549 | 473 | 1022 |

(1) All samples reported as BDL have been assigned a value of 1/2 BDL.

# APPENDIX J

# RCRA CORRECTIVE ACTION LEVELS



Recycled Paper

develop and conduct these further Regulatory Impact Analyses.

The new analyses will be conducted in accordance with the existing Agency guidance on Regulatory Impact Analysis and the draft Regulatory Impact Analysis Guidance published in the 1988 Regulatory Program of the United States. The analyses will explicitly examine the costs, health and environmental benefits, and technological limitations for the key regulatory requirements contained in the proposal—especially for the several alternative approaches to ground water remediation outlined in the proposed rule. This analysis will also estimate the aggregate impacts, identified above, for sites eligible for remediation under this rule and for those sites which are listed on the NPL, and will, therefore, look to this rule as an ARAR, under the provisions of CERCLA. Upon completion of the revised analyses, EPA will solicit comment on the results of the analyses and the methodology used to derive them. The Agency will then assess these comments, along with comments which will have been received previously on the proposed rule. Through these actions EPA will ensure that the net social benefits (including environmental and health benefits) of the rule proposed today are maximized, taking into account costs, technological limitations, risks, and realistic assessments of both actual and reasonably expected uses of each site. If the revised RIA, together with the comments received, demonstrate that the rule proposed today does not achieve this outcome, the Agency will make appropriate modifications to the final rule, or if necessary, will repropose the rule.

*B. Regulatory Flexibility Act*

The Regulatory Flexibility Act requires Federal agencies to fully analyze the economic effects of regulations on small entities. The Agency analyzed the economic impacts for the regulatory options that are most similar to today's proposed rule (*i.e.*, "Immediate Cleanup to Health-Based Standards" and "Flexible Cleanup to Health-Based Standards").

The RIA assumes that a small business is significantly impacted if its excess of cash flow over ten percent of its total liabilities is insufficient to meet corrective action costs, or if its net income is insufficient to meet its corrective action costs.

For the alternative analyzed, it was found that small firms encounter more severe impacts from the corrective action requirements than large firms. The options most similar to the proposed rule result in incremental impacts (*i.e.*, relative to the baseline) on approximately 9 to 11 percent of small businesses owning RCRA facilities.

Based on the Agency's guidelines for implementing the Regulatory Feasibility Act, the results of the analysis as summarized above, suggest that the proposed rule does not impose significant impacts on small entities.

*C. Paperwork Reduction Act*

The information collection requirements in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* Reporting and recordkeeping burden on the public for this collection is estimated at 42,497 hours for the 674 respondents, with an average of 1.151 hours per response. (Burden estimates should include all aspects of the collection effort and may include time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, completing and reviewing the collection of information. *etc.*)

If you wish to submit comments regarding any aspect of the collection of information, including suggestions for reducing the burden, or if you would like a copy of the information collection request (please reference ICR #1451), contact Rick Westlund, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460 (202-382-2745); and Tim Hunt, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503. The final rule will respond to any OMB or public comments on the information collection requirements contained in this proposal.

**List of Subjects in 40 CFR Parts 264, 265, 270, and 271**

Administrative practice and procedure, Corrective action, Hazardous waste; Insurance, Reporting and recordkeeping requirements.

Dated: July 5, 1990.

**William Reilly,**

*Administrator.*

## XI. Supplementary Documents

APPENDIX A.—EXAMPLES OF CONCENTRATIONS MEETING CRITERIA FOR ACTION LEVELS

[Section 264.521(a)(2)(i-iv)]

| Constituent name | Class | Air(ug/m^3) | Water (mg/L) | Soils (mg/kg) |
|---|---|---|---|---|
| Acetone | D | | 4E−00 | 8E+03 |
| Acetonitrile | D | | 2E−01 | 5E+02 |
| Acetophenone | D | 2E−01 | 4E−00 | 8E+03 |
| Acrylamide | B2 | 8E−04 | 8E−06 | 2E−01 |
| Acrylonitrile | B1 | 1E−02 | 6E−05 | 1E−00 |
| Aldicarb | D | | 5E−02 | 1E+02 |
| Aldrin | B2 | 2E−04 | 2E−06 | 4E−02 |
| Allyl alcohol | D | | 2E−01 | 4E+02 |
| Aluminum phosphide | D | | 1E−02 | 3E+01 |
| Aniline | B2 | | 6E−03 | 1E+02 |
| Antimony | D | | 1E−02 | 3E+01 |
| Arsenic | A | 7E−05 | (1) | 8E+01 |
| Asbestos (2) | A | 2E−02 | | |
| Barium cyanide | D | | 2E−00 | 6E+03 |
| Barium, ionic | D | 4E−01 | (1) | 4E+03 |
| Benzidine | A | 2E−05 | 2E−07 | 3E−03 |
| Beryllium | B2 | 4E−04 | 8E−06 | 2E−01 |
| Bis(2-ethylhexyl)phthlate | B2 | | 3E−03 | 5E+01 |
| Bis(chloroethyl)ether | B2 | 3E−03 | 3E−05 | 6E-01 |
| Bromodichloromethane (3) | B2 | | 3E−05 | 5E−01 |
| Bromoform (3) | D | | 7E−01 | 2E+03 |
| Bromomethane | D | 3E+01 | 5E−02 | 1E+02 |
| Butyl benzyl phthalate | C | | 7E−00 | 2E+04 |

## APPENDIX A.—EXAMPLES OF CONCENTRATIONS MEETING CRITERIA FOR ACTION LEVELS—Continued

[Section 264.521(a)(2)(i-iv)]

| Constituent name | Class | Air(ug/m^3) | Water (mg/L) | Soils (mg/kg) |
|---|---|---|---|---|
| Cadmium | B1 | 6E−04 | (1) | 4E+01 |
| Calcium cyanide | D | | 1E−00 | 3E+03 |
| Carbon disulfide | D | | 4E−00 | 8E+03 |
| Carbon tetrachloride | B2 | 3E−02 | 3E−04 | 5E−00 |
| Chloral | D | | 7E−02 | 2E+02 |
| Chlordane | B2 | 3E−03 | 3E−05 | 5E−01 |
| Chlorine cyanide | D | | 2E−00 | 4E+03 |
| Chlorobenzene | D | 2E+01 | 7E−01 | 2E+03 |
| Chloroform (3) | B2 | 4E−02 | 6E−03 | 1E+02 |
| 2-Chlorophenol | D | | 2E−01 | 4E+02 |
| Chromium (VI) | A | 9E−05 | (1) | 4E+02 |
| Copper cyanide | D | | 2E−01 | 4E+02 |
| m-Cresol | D | | 2E−00 | 4E+03 |
| o-Cresol | D | | 2E−00 | 4E+03 |
| p-Cresol | D | | 2E−00 | 40+03 |
| Cyanide | D | | 7E−01 | 2E+03 |
| Cyanogen | D | | 1E−00 | 3E+03 |
| Cyanogen bromide | D | | 3E−00 | 7E+03 |
| DDD | B2 | | 1E−04 | 3E−00 |
| DDE | B2 | | 1E−04 | 2E−00 |
| DDT | B2 | 1E−02 | 1E−04 | 2E−00 |
| Dibutyl phthalate | D | | 4E−00 | 8E+03 |
| Dibutylnitrosamine | B2 | 6E−04 | 6E−06 | 1E−01 |
| 3,3'-Dichlorobenzidine | B2 | | 8E−05 | 2E−00 |
| Dichlorodifluoromethane | D | 2E+02 | 7E−00 | 2E+04 |
| 1,2-Dichloroethane | B2 | 4E−02 | (1) | 8E−00 |
| 1,1-Dichloroethylene | C | 3E−02 | (1) | 1E+01 |
| 2,4-Dichlorophenol | D | | 1E−01 | 2E+02 |
| 2,4-Dichlorophenoxyacetic acid | D | | 4E−01 | 8E+02 |
| 1,3-Dichloropropene | B2 | | 1E−02 | 2E+01 |
| Dieldrin | B2 | 2E−04 | 2E−06 | 4E−02 |
| iethyl phthalate | D | | 3E+01 | 6E+04 |
| iethylnitrosamine | B2 | 2E−05 | 2E−07 | 5E−03 |
| imethoate | D | | 7E−01 | 2E+03 |
| Dimethylnitrosamine | B2 | 7E−05 | 7E−07 | 1E−02 |
| m-Dinitrobenzene | D | | 4E−03 | 8E−00 |
| 2,4-Dinitrophenol | D | | 7E−02 | 2E+02 |
| 2 3-Dinitrotoluene (and 2,6-, mixture) | B2 | | 5E−05 | 1E-00 |
| 1,4-Dioxane | B2 | | 3E−03 | 6E+01 |
| Diphenylamine | D | | 9E−01 | 2E+03 |
| 1,2-Diphenylhydrazine | B2 | 4E−03 | 4E−05 | 9E−01 |
| Disulfoton | D | | 1E−03 | 3E−00 |
| Endosulfan | D | | 2E−03 | 4E−00 |
| Endothall | D | | 7E−01 | 2E+03 |
| Endrin | D | | (1) | 2E+01 |
| Epichlorohydrin | B2 | 8E−01 | 4E−03 | 7E+01 |
| Ethylbenzene | D | | 4E-00 | 8E+03 |
| Ethylene dibromide | B2 | 5E−03 | 4E−07 | 8E−03 |
| Formaldehyde | B1 | 8E−02 | | |
| Formic acid | D | | 7E+01 | 2E+05 |
| Glycidyaldehyde | D | | 1E−02 | 3E+01 |
| Heptachlor | B2 | 8E−04 | 8E−06 | 2E−01 |
| Heptachlor epoxide | B2 | 4E−04 | 4E−06 | 8E−02 |
| Hexachlordibenzo-p-dioxin | B2 | 6E−07 | 1E−08 | 1E−04 |
| Hexachlorobutadiene | C | 4E−01 | 4E−03 | 9E+01 |
| alpha-Hexachlorocyclohexane | B2 | 6E−04 | 6E−06 | 1E−01 |
| beta-Hexachlorocyclohexane | C | 2E−02 | 2E−04 | 4E−00 |
| Hexachlorocyclopentadiene | D | 7E−02 | 2E−01 | 6E+02 |
| Hexachloroethane | C | 3E−00 | 3E−02 | 8E+01 |
| Hexachlorophene | D | | 1E−02 | 2E+01 |
| Hydrazine | B2 | 2E−04 | 1E−05 | 2E−01 |
| Hydrogen cyanide | D | | 7E−01 | 2E+03 |
| Hydrogen sulfite | D | | 1E−01 | 2E+02 |
| Isobutyl alcohol | D | | 1E+01 | 2E+04 |
| Isophorone | C | | 9E−02 | 2E+03 |
| Lead | B2 | | (1) | |
| Lindane (gamma-hexachlorocyclohexane) | B2/C | | (1) | 5E−01 |
| m-Phenylenediamine | D | | 2E−01 | 5E+02 |
| Maleic anhydride | D | | 4E−00 | 8E+03 |
| Maleic hydrazide | D | | 2E+01 | 4E+04 |
| Mercury (inorganic) | D | | (1) | 2E+01 |
| Methacrylonitrile | D | 7E−01 | 4E−03 | 8E-00 |
| Methomyl | D | | 9E−01 | 2E+03 |
| Methyl chlorocarbonate | D | | | |
| Methyl ethyl ketone | D | 3E+02 | 2E−00 | 4E+03 |
| Methyl isobutyl ketone | D | 7E+01 | 2E−00 | 4E+03 |
| Methyl parathion | D | | 9E−03 | 2E+01 |

## APPENDIX A.—EXAMPLES OF CONCENTRATIONS MEETING CRITERIA FOR ACTION LEVELS—Continued

[Section 264.521(a)(2)(i-iv)]

| Constituent name | Class | Air(ug/m^3) | Water (mg/L) | Soils (mg/kg) |
|---|---|---|---|---|
| Methylene chloride | B | 3E−01 | 5E−03 | 9E+01 |
| n-Nitroso-di-n-butylamine | B2 | 6E−04 | 6E−06 | 1E−01 |
| n-Nitroso-n-ethylurea | B | | | |
| n-Nitroso-n-methylethylamine | B2 | | 2E−06 | 3E−02 |
| n-Nitrosodi-n-propylamine | B2 | | 5E−06 | 1E−01 |
| n-Nitrosodiethanolamine | B2 | | 1E−05 | 3E−01 |
| n-Nitrosodiphenylamine | B2 | | 7E−03 | 1E+02 |
| n-Nitrosopyrrolidine | B2 | 2E−03 | 2E−05 | 3E−01 |
| Nickel | D | | 7E−01 | 2E+03 |
| Nickel refinery dust | A | 4E−03 | | |
| Nitric oxide | D | | 4E−00 | 8E+03 |
| Nitrobenzene | D | 2E−00 | 2E−02 | 4E+01 |
| Nitrogen dioxide | D | | 4E+01 | 8E+04 |
| Osmium tetroxide | D | | 4E−04 | 8E−01 |
| Parathion | C | | 2E−01 | 5E+02 |
| Pentachlorobenzene | D | | 3E−02 | 6E+01 |
| Pentachloronitrobenzene | C | 1E−01 | 1E−01 | 2E+02 |
| Pentachlorophenol | D | | 1E−00 | 2E+03 |
| Phenol | D | | 2E+01 | 5E+04 |
| Phenyl mercuric acetate | D | | 3E−03 | 6E−00 |
| Phosphine | D | | 1E−02 | 2E+01 |
| Phthalic anhydride | D | | 7E+01 | 2E+05 |
| Polychlorinated biphenyls | B2 | | 5E−06 | 9E−02 |
| Potassium cyanide | D | | 2E−00 | 4E+03 |
| Potassium silver cyanide | D | | 7E−00 | 2E+04 |
| Pronamide | D | | 3E−00 | 6E+03 |
| Pyridine | D | | 4E−02 | 8E+01 |
| Selenious acid | D | | 1E−01 | 2E+02 |
| Selenourea | D | | 2E−01 | 4E+02 |
| Silver | D | | (1) | 2E+02 |
| Silver cyanide | D | | 4E−00 | 8E+03 |
| [illegible]ium cyanide | D | | 1E−00 | 3E+03 |
| [illegible]chnine | D | | 1E−02 | 2E+01 |
| [illegible] | C | | 7E−00 | 2E+04 |
| [illegible]etrachlorethane | C | 1E−00 | 1E−02 | 3E+02 |
| 1,2,[illegible]-Tetrachlorobenzene | D | | 1E−02 | 2E+01 |
| 1,1,1,2-Tetrachloroethane | C | 1E−00 | 1E−02 | 3E+02 |
| 1,1,2,2-Tetrachloroethane | C | 2E−01 | 2E−03 | 4E+01 |
| Tetrachloroethylene | B2 | 1E−00 | 7E−04 | 1E+01 |
| 2,3,4,6-Tetrachlorophenol | D | | 1E−00 | 2E+03 |
| Tetraethyl lead | D | | 4E−06 | 8E−03 |
| Tetraethyldithiopyrophosphate | D | | 2E−02 | 4E+01 |
| Thallic oxide | D | | 2E−03 | 6E−00 |
| Thallium acetate | D | | 3E−03 | 7E−00 |
| Thallium carbonate | D | | 3E−03 | 6E−00 |
| Thallium chloride | D | | 3E−03 | 6E−00 |
| Thallium nitrate | D | | 3E−03 | 7E−00 |
| Thallium sulfate | D | | 3E−03 | 6E−00 |
| Thiosemicarbazide | D | | 2E−01 | 5E+02 |
| Thiram | D | | 2E−01 | 4E+02 |
| Toluene | D | 7E+03 | 1E+01 | 2E+04 |
| Toxaphene | B2 | 3E−03 | (1) | 6E−01 |
| 1,2,4-Trichlorobenzene | D | 1E+01 | 7E−01 | 2E+03 |
| 1,1,1-Trichloroethane | D | 1E+03 | 3E−00 | 7E+03 |
| 1,1,2-Trichloroethane | C | 6E−01 | 6E−03 | 1E+02 |
| Trichloroethylene | B2 | | (1) | 6E+01 |
| Trichloromonofluoromethane | D | 7E+02 | 1E+01 | 2E+04 |
| 2,4,5-Trichlorophenol | D | | 4E−00 | 8E+03 |
| 2,4,6-Trichlorophenol | B2 | 2E−01 | 2E−03 | 4E+01 |
| 2,4,5-Trichlorophenoxyacetic acid | D | | (1) | 8E+02 |
| 1,2,3-Trichloropropane | D | | 2E−01 | 5E+02 |
| Vanadium pentoxide | D | | 3E−01 | 7E+02 |
| Xylenes | D | 1E+03 | 7E+01 | 2E+05 |
| Zinc cyanide | D | | 2E−00 | 4E+03 |
| Zinc phosphide | D | | 1E−02 | 2E+01 |

(1) MCL available; see appendix B.
(2) The air action level for asbestos is measured in units of fibers/milliliters.
(3) There is an MCL for total trihalomethanes, which includes four constituents: bromoform, bromodichloromethane, chloroform, and dibromochloromethane.
[illegible]tration derived using exposure assumptions in appendix D and reference doses for systemic toxicants and verified risk-specific doses at 10−6 for Class A and [illegible]ogens and 10−5 for Class C carcinogens (see section VI.F.2.6 for further discussion).
[illegible] B and C represents class A, B and C carcinogens, respectively; D represents a systemic toxicant.

## APPENDIX B—MAXIMUM CONTAMINANT LEVELS

| Constituent | MCL (ppm) |
|---|---|
| Arsenic | 0.05 |
| Barium | 1 |
| Benzene | 0.005 |
| Cadmium | 0.010 |
| Carbon tetrachloride | 0.005 |
| Chromium VI | 0.05 |
| p-Dichlorobenzene | 0.075 |
| 1,2-Dichloroethane | 0.005 |
| 1,1-Dichloroethylene | 0.007 |

## APPENDIX B—MAXIMUM CONTAMINANT LEVELS—Continued

| Constituent | MCL (ppm) |
|---|---|
| 2,4-D | 0.1 |
| 2,4,5-TP Silvex | 0.01 |
| Endrin | 0.0002 |
| Fluoride | 4.0 |
| Lead | 0.05 |
| Lindane | 0.004 |
| Mercury | 0.002 |
| Methoxychlor | 0.1 |
| Nitrate | 10 |

## APPENDIX B—MAXIMUM CONTAMINANT LEVELS—Continued

| Constituent | MCL (ppm) |
|---|---|
| Selenium | 0.01 |
| Silver | 0.05 |
| Toxaphene | 0.005 |
| 1,1,1-Trichloroethane | 0.2 |
| Trichloroethylene | 0.005 |
| Trihalomethanes, total [1] | 0.10 |
| Vinyl chloride | 0.002 |

[1] Including chloroform, bromoform, bromodichlor methane, and dibromochloromethane

## APPENDIX C—RANGE OF CONCENTRATIONS FOR ESTABLISHING MEDIA PROTECTION STANDARDS FOR CARCINOGENS

| Constituent name | Class | MaxAir (ug/m 3) | MinAir (ug/m 3) | Max-Water (mg/L) | MinWater (mg/L) | MaxSoil (mg/kg) | MinSo+ (mg/kg |
|---|---|---|---|---|---|---|---|
| Acetone | D | | | | | | |
| Acetonitrile | D | | | | | | |
| Acetophenone | D | | | | | | |
| Acrylamide | B2 | 8E-02 | 8E-04 | 8E-04 | 8E-06 | 2E+01 | 2E-( |
| Acrylonitrile | B1 | 1E-00 | 1E-02 | 6E-03 | 6E-05 | 1E+02 | 1E-( |
| Aldicarb | D | | | | | | |
| Aldrin | B2 | 2E-02 | 2E-04 | 2E-04 | 2E-06 | 4E-00 | 4E-( |
| Allyl alcohol | D | | | | | | |
| Aluminum phosphide | D | | | | | | |
| Aniline | B2 | | | 6E-01 | 6E-03 | 1E+04 | 1E+( |
| Antimony | D | | | | | | |
| Arsenic | A | 7E-03 | 7E-05 | | | | |
| Asbestos (2) | A | 2E-00 | 2E-02 | | | | |
| Barium cyanide | D | | | | | | |
| Barium, ionic | D | | | | | | |
| enzidine | A | 2E-03 | 2E-05 | 2E-05 | 2E-07 | 3E-01 | 3E-( |
| eryllium | B2 | 4E-02 | 4E-04 | 8E-04 | 8E-06 | 2E+01 | 2E-( |
| Bis(2-ethylhexyl)phthlate | B2 | | | 3E-01 | 3E-03 | 5E+03 | 5E+( |
| Bis(chloroethyl)ether | B2 | 3E-01 | 3E-03 | 3E-03 | 3E-05 | 6E+01 | 6E-( |
| Bromodichloromethane | B2 | | | 3E-03 | 3E-05 | 5E+01 | 5E-( |
| Bromoform | D | | | | | | |
| Bromomethane | D | | | | | | |
| Butyl benzyl phthalate | C | | | | | | |
| Cadmium | B1 | 6E-02 | 6E-04 | | | | |
| Calcium cyanide | D | | | | | | |
| Carbon disulfide | D | | | | | | |
| Carbon tetrachloride | B2 | 3E-00 | 3E-02 | 3E-02 | 3E-04 | 5E+02 | 5E-( |
| Chloral | D | | | | | | |
| Chlordane | B2 | 3E-01 | 3E-03 | 3E-03 | 3E-05 | 5E+01 | 5E-( |
| Chlorine cyanide | D | | | | | | |
| Chlorobenzene | D | | | | | | |
| Chloroform | B2 | 4E-00 | 4E-02 | 6E-01 | 6E-03 | 1E+04 | 1E+( |
| 2-Chlorophenol | D | | | | | | |
| Chromium (VI) | A | 9E-03 | 9E-05 | | | | |
| Copper cyanide | D | | | | | | |
| m-Cresol | D | | | | | | |
| o-Cresol | D | | | | | | |
| p-Cresol | D | | | | | | |
| Cyanide | D | | | | | | |
| Cyanogen | D | | | | | | |
| Cyanogen bromide | D | | | | | | |
| DDD | B2 | | | 1E-02 | 1E-04 | 3E+02 | 3E-( |
| DDE | B2 | | | 1E-02 | 1E-04 | 2E+02 | 2E-( |
| DDT | B2 | 1E-00 | 1E-02 | 1E-02 | 1E-04 | 2E+02 | 2E-( |
| Dibutyl phthalate | D | | | | | | |
| Dibutylnitrosamine | B2 | 6E-02 | 6E-04 | 6E-04 | 6E-06 | 1E+01 | 1E-( |
| 3,3'-Dichlorobenzidine | B2 | | | 8E-03 | 8E-05 | 2E+02 | 2E-( |
| Dichlorodifluormethane | D | | | | | | |
| 1,2-Dichloroethane | B2 | 4E-00 | 4E-02 | 4E-02 | 4E-04 | 8E+02 | 8E-( |
| 1,1-Dichlorothylene | C | 3E-01 | 3E-03 | 6E-03 | 6E-05 | 1E+02 | 1E-( |
| 2,4-Dichlorophenol | D | | | | | | |
| 2,4-Dichlorophenoxyacetic acid | D | | | | | | |
| 1,3-Dichloropropene | B2 | | | | | | |
| Dieldrin | B2 | 2E-02 | 2E-04 | 2E-04 | 2E-06 | 4E-00 | 4E-( |
| Diethyl phthalate | D | | | | | | |

# APPENDIX K

# RISK BASED CONCENTRATION TABLE



Recycled Paper

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**Region III**
**841 Chestnut Street**
**Philadelphia, Pennsylvania 19107**

July 11, 1994

SUBJECT: Risk-Based Concentration Table, Third Quarter 1994

FROM: Roy L. Smith, Ph.D., Senior Toxicologist
Technical Support Section (3HW13)

TO: RBC Table mailing list

Attached is the EPA Region III risk-based concentration (RBC) table, which we have distributed quarterly to all interested parties since 1991. If you are not currently on the mailing list, but would like to be, please contact Anna Poulton (phone: 215-597-3179, fax: 215-597-9890) and give her your name, address, and phone and fax numbers.

The table contains reference doses and carcinogenic potency slopes (obtained from IRIS through July 1, 1994, HEAST through November March 1994, the Superfund Health Risk Technical Support Center, and other EPA sources) for nearly 600 chemicals. These toxicity constants have been combined with "standard" exposure scenarios to calculate RBCs - chemical concentrations corresponding to fixed levels of risk (*i.e.*, a hazard quotient of 1, or lifetime cancer risk of $10^{-6}$, whichever occurs at a lower concentration) in water, air, fish tissue, and soil.

The Region III toxicologists use the table to screen sites not yet on the NPL, respond rapidly to citizen inquiries, and spot-check formal baseline risk assessments. The background materials provide the complete basis for all the calculations, with the intent of showing users exactly how the RBCs were developed. Simply put, RBCs are risk assessments run in reverse. For a single contaminant in a single medium, under standard default exposure assumptions, the RBC corresponds to the target risk or hazard quotient.

The calculations also have several important limitations. Specifically excluded from consideration are (1) transfers from soil to air and groundwater, and (2) cumulative risk from multiple contaminants or media. Also, the toxicity information in the table has been assembled by hand, and (despite extensive checking and years of use) may contain errors. It's advisable to cross-check before relying on any RfDs or CPSs in the table. If you find any errors, please send me a note.

Lately, many callers have asked whether the risk-based concentrations can be used as valid no-action levels or cleanup levels, especially for soils.. The answer is a bit complex. First, it is important to realize that the RBC table does not constitute regulation or guidance, and should not be viewed as a substitute for a site-specific risk assessment. For sites where:

1. A single medium is contaminated;

2. A single contaminant contributes nearly all of the health risk;

3. Volatilization or leaching of that contaminant from soil is expected not to be significant;

4. The exposure scenarios used in the RBC table are appropriate for the site;

5. The fixed risk levels used in the RBC table are appropriate for the site; and

6. Risk to ecological receptors is expected not to be significant;

the risk-based concentrations would probably be protective as no-action levels or cleanup goals. However, to the extent that a site deviates from this description, as most do, the RBCs would not necessarily be appropriate.

*To summarize, the table should generally not be used to (1) set cleanup or no-action levels at CERCLA or RCRA Corrective Action sites, (2) substitute for EPA guidance for preparing baseline risk assessments, or (3) determine if a waste is hazardous under RCRA.*

This issue of the RBC table includes new toxicity constants and media concentrations, which are marked on the table in underlined boldface print. On pg. 4, the source of the toxicological constants labeled "ECAO-Cincinnati" has been clarified.

I get many telephone calls about the RBC table, but am often unable to answer the phone. Many of you have the same problem, so we play a lot of "phone tag". Last quarter, I suggested that you fax me (at 215-597-9890) your technical questions and concerns, so I could respond by return fax. This has worked very well for me, and I hope you have been satisfied with my responses. I would like to continue this method. Of course, if you don't have access to a fax machine, I will also continue to respond to voice mail messages.

Attachment

## Risk-Based Concentration Table
## Background Information

**General:** Separate carcinogenic and non-carcinogenic risk-based concentrations were calculated for each compound for each pathway. The concentration in the table is the lower of the two, rounded to two significant figures. The following terms and values were used in the calculations:

| Exposure variables | Value | Name |
|---|---|---|
| 1-General: | | |
| Carcinogenic potency slope oral (risk per mg/kg/d): | * | CPSo |
| Carcinogenic potency slope inhaled (risk per mg/kg/d): | * | CPSi |
| Reference dose oral (mg/kg/d): | * | RfDo |
| Reference dose inhaled (mg/kg/d): | * | RfDi |
| Target cancer risk: | 1e-06 | TR |
| Target hazard quotient: | 1 | THQ |
| Body weight, adult (kg): | 70 | BWa |
| Body weight, age 1-6 (kg): | 15 | BWc |
| Averaging time carcinogens (d): | 25550 | ATc |
| Averaging time non-carcinogens (d): | ED*365 | ATn |
| Inhalation, adult (m3/d): | 20 | IRAa |
| Inhalation, child (m3/d): | 12 | IRAc |
| Inhalation factor, age-adjusted (m3-y/kg-d): | 11.66 | IFAadj |
| Tap water ingestion, adult (L/d): | 2 | IRWa |
| Tap water ingestion, age 1-6 (L/d): | 1 | IRWc |
| Tap water ingestion factor, age-adjusted (L-y/kg-d): | 1.09 | IFWadj |
| Fish ingestion (g/d): | 54 | IRF |
| Soil ingestion, adult (mg/d): | 100 | IRSa |
| Soil ingestion, age 1-6 (mg/d): | 200 | IRSc |
| Soil ingestion factor, age adjusted (mg-y/kg-d): | 114.29 | IFSadj |
| | | |
| 2-Residential: | | |
| Exposure frequency (d/y): | 350 | EFr |
| Exposure duration, total (y): | 30 | EDtot |

| Exposure variables | Value | Name |
|---|---|---|
| Exposure duration, age 1-6 (y): | 6 | EDc |
| Volatilization factor (L/m3): | 0.5 | VF |
| | | |
| 3-Occupational: | | |
| Exposure frequency (d/y): | 250 | EFo |
| Exposure duration (y): | 25 | EDo |
| | | |
| * = Contaminant-specific toxicity parameters | | |

The priority among sources of toxicological constants was as follows: (1) IRIS, (2) HEAST, (3) HEAST alternative method, (4) EPA Superfund Health Risk Technical Support Center, (5) withdrawn from IRIS or HEAST, and (6) other EPA documents. Each source was used only if numbers from higher-priority sources were unavailable. The EPA Superfund Health Risk Technical Support Center, part of the Chemical Mixtures Branch of ECAO-Cincinnati, develops provisional RfDs and CPSs on request for contaminants not in IRIS or HEAST. These provisional values are labeled "e = EPA-ECAO provisional" in the table. It is possible they may be obsolete. If one of the "e" constants is important to a Superfund risk assessment, consider requesting, through a Regional risk assessor, a new provisional value.

**Algorithms:**

1. Age-adjusted factors: Because contact rates with tap water, ambient air, and residential soil are different for children and adults, carcinogenic risks during the first 30 years of life were calculated using age-adjusted factors. These factors approximated the integrated exposure from birth until age 30 by combining contact rates, body weights, and exposure durations for two age groups - small children and adults. The age-adjusted factor for soil was obtained from RAGS IB; the others were developed by analogy.

a. Air inhalation ([$m^3 \cdot y$]/[$kg \cdot d$]):

$$IFAadj = \frac{EDc \cdot IRAc}{BWc} + \frac{(EDtot - EDc) \cdot IRAa}{BWa}$$

b. Tap water ingestion ([$L \cdot y$]/[$kg \cdot d$]):

$$IFWadj = \frac{EDc \cdot IRWc}{BWc} + \frac{(EDtot - EDc) \cdot IRWa}{BWa}$$

c. Soil ingestion ([mg· y]/[kg· d]):

$$IFSadj = \frac{EDc \cdot IRSc}{BWc} + \frac{(EDtot - EDc) \cdot IRSa}{BWa}$$

2. Residential water use (µg/L). Volatilization terms were calculated only for compounds with "***" in the "VOC" column. Compounds having a Henry's Law constant greater than $10^{-5}$ were considered volatile. The list may be incomplete, but is unlikely to include false positives. The equations and the volatilization factor (VF, above) were obtained from RAGS IB. Oral potency slopes and reference doses were used for both oral and inhaled exposures for volatile compounds lacking inhalation values. Inhaled potency slopes were substituted for unavailable oral potency slopes only for volatile compounds; inhaled RfDs were substituted for unavailable oral RfDs for both volatile and non-volatile compounds.

a. Carcinogens: Calculations were based on combined childhood and adult exposure.

$$\frac{TR \cdot ATc \cdot 1000 \frac{ug}{mg}}{EFr \cdot ([VF \cdot IFAadj \cdot CPSi] + [IFWadj \cdot CPSo])}$$

b. Non-carcinogens: Calculations were based on adult exposure.

$$\frac{THQ \cdot BWa \cdot ATn \cdot 1000 \frac{ug}{mg}}{EFr \cdot EDtot \cdot \left(\frac{VF \cdot IRAa}{RfDi} + \frac{IRWa}{RfDo}\right)}$$

3. Air (µg/m$^3$). Oral potency slopes and references were used where inhalation values were not available.

a. Carcinogens: Calculations were based on combined childhood and adult exposure.

$$\frac{TR \cdot ATc \cdot 1000 \frac{ug}{mg}}{EFr \cdot IFAadj \cdot CPSi}$$

b. Non-carcinogens: Calculations were based on adult exposure.

$$\frac{THQ \cdot RfDi \cdot BWa \cdot ATn \cdot 1000 \frac{ug}{mg}}{EFr \cdot EDtot \cdot IRAa}$$

4. Fish (mg/kg):

a. Carcinogens: Calculations were based on adult exposure.

$$\frac{TR \cdot BWa \cdot ATc}{EFr \cdot EDtot \cdot \frac{IRF}{1000 \frac{g}{kg}} \cdot CPSo}$$

b. Non-carcinogens: Calculations were based on adult exposure.

$$\frac{THQ \cdot RfDo \cdot BWa \cdot ATn}{EFr \cdot EDtot \cdot \frac{IRF}{1000 \frac{g}{kg}}}$$

5. Soil commercial/industrial (mg/kg): The default exposure assumption that only 50% of incidental soil ingestion occurs at work has been omitted. Calculations were based on adult occupational exposure.

a. Carcinogens:

$$\frac{TR \cdot BWa \cdot ATc}{EFo \cdot EDo \cdot \frac{IRSa}{10^6 \frac{mg}{kg}} \cdot CPSo}$$

b. Non-carcinogens:

$$\frac{THQ \cdot RfDo \cdot BWa \cdot ATn}{EFo \cdot EDo \cdot \frac{IRSa}{10^6 \frac{mg}{kg}}}$$

6. Soil residential (mg/kg):

a. Carcinogens: Calculations were based on combined childhood and adult exposure.

$$\frac{TR \cdot ATc}{EFr \cdot \frac{IFSadj}{10^6 \frac{mg}{kg}} \cdot CPSo}$$

b. Non-carcinogens: Calculations were based on childhood exposure only.

$$\frac{THQ \cdot RfDo \cdot BWc \cdot ATn}{EFr \cdot EDc \cdot \frac{IRSc}{10^6 \frac{mg}{kg}}}$$

*Sources: i=IRIS h=HEAST a=HEAST alt. w=Withdrawn from IRIS or HEAST e=EPA-ECAO provisional o=Other EPA documents* *Basis of RBC: c=carcinogenic effects n=noncarcinogenic effects.*

| Contaminant | CAS | RfDo mg/kg/d | RfDi mg/kg/d | CPSo kg·d/mg | CPSi kg·d/mg | VOC | Tap water µg/L | Ambient air µg/m3 | Fish mg/kg | Industrial soil mg/kg | Residential soil mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acephate | 30560191 | 4.00E-03 i | | 8.70E-03 i | | | 7.7 c | 0.72 c | 0.36 c | 330 c | 73 c |
| Acetaldehyde | 75070 | | 2.57E-03 i | | 7.70E-03 i | | 94 n | 0.81 c | | | |
| Acetochlor | 34256821 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Acetone | 67641 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| Acetone cyanohydrin | 75865 | 7.00E-02 h | 2.86E-03 e | | | | 2600 n | 10 n | 95 n | 72000 n | 5500 n |
| Acetonitrile | 75078 | 6.00E-03 i | 1.43E-02 e | | | | 220 n | 52 n | 8.1 n | 6100 n | 470 n |
| Acetophenone | 98862 | 1.00E-01 i | 5.71E-06 w | | | *** | 0.042 n | 0.021 n | 140 n | 100000 n | 7800 n |
| Acifluorfen | 62476599 | 1.30E-02 i | | | | | 470 n | 47 n | 18 n | 13000 n | 1000 n |
| Acrolein | 107028 | 2.00E-02 h | 5.71E-06 i | | | | 730 n | 0.021 n | 27 n | 20000 n | 1600 n |
| Acrylamide | 79061 | 2.00E-04 i | | 4.50E+00 i | 4.55E+00 i | | 0.015 c | 0.0014 c | 0.0007 c | 0.64 c | 0.14 c |
| Acrylic acid | 79107 | 5.00E-01 i | 1.00E-03 i | | | | 18000 n | 3.7 n | 680 n | 510000 n | 39000 n |
| Acrylonitrile | 107131 | 1.00E-03 h | 5.71E-04 i | 5.40E-01 i | 2.38E-01 i | | 0.12 c | 0.026 c | 0.0058 c | 5.3 c | 1.2 c |
| Alachlor | 15972608 | 1.00E-02 i | | 8.00E-02 h | | | 0.84 c | 0.078 c | 0.039 c | 36 c | 8 c |
| Alar | 1596845 | 1.50E-01 i | | | | | 5500 n | 550 n | 200 n | 150000 n | 12000 n |
| Aldicarb | 116063 | 1.00E-03 i | | | | | 37 n | 3.7 n | 1.4 n | 1000 n | 78 n |
| Aldicarb sulfone | 1646884 | 1.00E-03 i | | | | | 37 n | 3.7 n | 1.4 n | 1000 n | 78 n |
| Aldrin | 309002 | 3.00E-05 i | | 1.70E+01 i | 1.71E+01 i | | 0.004 c | 0.00037 c | 0.00019 c | 0.17 c | 0.038 c |
| Ally | 74223646 | 2.50E-01 i | | | | | 9100 n | 910 n | 340 n | 260000 n | 20000 n |
| Allyl alcohol | 107186 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Allyl chloride | 107051 | 5.00E-02 w | 2.86E-04 i | | | | 1800 n | 1 n | 68 n | 51000 n | 3900 n |
| Aluminum phosphide | 20859738 | 4.00E-04 i | | | | | 15 n | 1.5 n | 0.54 n | 410 n | 31 n |
| Amdro | 67485294 | 3.00E-04 i | | | | | 11 n | 1.1 n | 0.41 n | 310 n | 23 n |
| Ametryn | 834128 | 9.00E-03 i | | | | | 330 n | 33 n | 12 n | 9200 n | 700 n |
| m-Aminophenol | 591275 | 7.00E-02 h | | | | | 2600 n | 260 n | 95 n | 72000 n | 5500 n |
| 4-Aminopyridine | 504245 | 2.00E-05 h | | | | | 0.73 n | 0.073 n | 0.027 n | 20 n | 1.6 n |
| Amitraz | 33089611 | 2.50E-03 i | | | | | 91 n | 9.1 n | 3.4 n | 2600 n | 200 n |
| Ammonia | 7664417 | | 2.86E-02 i | | | | 1000 n | 100 n | | | |
| Ammonium sulfamate | 7773060 | 2.00E-01 i | | | | | 7300 n | 730 n | 270 n | 200000 n | 16000 n |
| Aniline | 62533 | | 2.86E-04 i | 5.70E-03 i | | | 10 n | 1 n | 0.55 c | 500 c | 110 c |
| Antimony and compounds | 7440360 | 4.00E-04 i | | | | | 15 n | 1.5 n | 0.54 n | 410 n | 31 n |
| Antimony pentoxide | 1314609 | 5.00E-04 h | | | | | 18 n | 1.8 n | 0.68 n | 510 n | 39 n |
| Antimony potassium tartrate | 304610 | 9.00E-04 h | | | | | 33 n | 3.3 n | 1.2 n | 920 n | 70 n |
| Antimony tetroxide | 1332316 | 4.00E-04 h | | | | | 15 n | 1.5 n | 0.54 n | 410 n | 31 n |
| Antimony trioxide | 1309644 | 4.00E-04 h | | | | | 15 n | 1.5 n | 0.54 n | 410 n | 31 n |
| Apollo | 74115245 | 1.30E-02 i | | | | | 470 n | 47 n | 18 n | 13000 n | 1000 n |
| Aramite | 140578 | 5.00E-02 h | | 2.50E-02 i | 2.49E-02 i | | 2.7 c | 0.25 c | 0.13 c | 110 c | 26 c |
| Arsenic | 7440382 | 3.00E-04 i | | | | | 11 n | 1.1 n | 0.41 n | 310 n | 23 n |
| Arsenic (as carcinogen) | 7440382 | | | 1.75E+00 i | 1.51E+01 i | | 0.038 c | 0.00041 c | 0.0018 c | 1.6 c | 0.37 c |
| Arsine | 7784421 | | 1.43E-05 i | | | | 0.52 n | 0.052 n | | | |
| Assure | 76578148 | 9.00E-03 i | | | | | 330 n | 33 n | 12 n | 9200 n | 700 n |
| Asulam | 3337711 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| Atrazine | 1912249 | 3.50E-02 i | | 2.22E-01 h | | | 0.3 c | 0.028 c | 0.014 c | 13 c | 2.9 c |

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| Contaminant | CAS | RfDo mg/kg/d | RfDi mg/kg/d | CPSo kg·d/mg | CPSi kg·d/mg | VOC | Tap water µg/L | Ambient air µg/m3 | Fish mg/kg | Industrial soil mg/kg | Residential soil mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Avermectin B1 | 65195553 | 4.00E-04 i | | | | | 15 n | 1.5 n | 0.54 n | 410 n | 31 n |
| Azobenzene | 103333 | | | 1.10E-01 i | 1.08E-01 i | | 0.61 c | 0.058 c | 0.029 c | 26 c | 5.8 c |
| Barium and compounds | 7440393 | 7.00E-02 i | 1.43E-04 e | | | | 2600 n | 0.52 n | 95 n | 72000 n | 5500 n |
| Baygon | 114261 | 4.00E-03 i | | | | | 150 n | 15 n | 5.4 n | 4100 n | 310 n |
| Bayleton | 43121433 | 3.00E-02 i | | | | | 1100 n | 110 n | 41 n | 31000 n | 2300 n |
| Baythroid | 68359375 | 2.50E-02 i | | | | | 910 n | 91 n | 34 n | 26000 n | 2000 n |
| Benefin | 1861401 | 3.00E-01 i | | | | | 11000 n | 1100 n | 410 n | 310000 n | 23000 n |
| Benomyl | 17804352 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| Bentazon | 25057890 | 2.50E-03 i | | | | | 91 n | 9.1 n | 3.4 n | 2600 n | 200 n |
| Benzaldehyde | 100527 | 1.00E-01 i | | | | *** | 610 n | 370 n | 140 n | 100000 n | 7800 n |
| Benzene | 71432 | | 1.71E-03 e | 2.90E-02 i | 2.90E-02 i | *** | 0.36 c | 0.22 c | 0.11 c | 99 c | 22 c |
| Benzenethiol | 108985 | 1.00E-05 h | | | | | 0.37 n | 0.037 n | 0.014 n | 10 n | 0.78 n |
| Benzidine | 92875 | 3.00E-03 i | | 2.30E+02 i | 2.35E+02 i | | 0.00029 c | 0.000027 c | 0.000014 c | 0.012 c | 0.0028 c |
| Benzoic acid | 65850 | 4.00E+00 i | | | | | 150000 n | 15000 n | 5400 n | 1000000 n | 310000 n |
| Benzotrichloride | 98077 | | | 1.30E+01 i | | | 0.0052 c | 0.00048 c | 0.00024 c | 0.22 c | 0.049 c |
| Benzyl alcohol | 100516 | 3.00E-01 h | | | | | 11000 n | 1100 n | 410 n | 310000 n | 23000 n |
| Benzyl chloride | 100447 | | | 1.70E-01 i | | *** | 0.062 c | 0.037 c | 0.019 c | 17 c | 3.8 c |
| Beryllium and compounds | 7440417 | 5.00E-03 i | | 4.30E+00 i | 8.40E+00 i | | 0.016 c | 0.00075 c | 0.00073 c | 0.67 c | 0.15 c |
| Bidrin | 141662 | 1.00E-04 i | | | | | 3.7 n | 0.37 n | 0.14 n | 100 n | 7.8 n |
| Biphenthrin (Talstar) | 82657043 | 1.50E-02 i | | | | | 550 n | 55 n | 20 n | 15000 n | 1200 n |
| 1,1-Biphenyl | 92524 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| Bis(2-chloroisopropyl)ether | 39638329 | 4.00E-02 i | | 7.00E-02 h | 3.50E-02 h | *** | 0.26 c | 0.18 c | 0.045 c | 41 c | 9.1 c |
| Bis(chloromethyl)ether | 542881 | | | 2.20E+02 i | 2.17E+02 i | *** | 0.000049 c | 0.000029 c | 0.000014 c | 0.013 c | 0.0029 c |
| Bis(2-chloro-1-methylethyl)ether | | | | 7.00E-02 w | 7.00E-02 w | | 0.96 c | 0.089 c | 0.045 c | 41 c | 9.1 c |
| Bis(2-ethylhexyl)phthalate (DEHP) | 117817 | 2.00E-02 i | | 1.40E-02 i | | | 4.8 c | 0.45 c | 0.23 c | 200 c | 46 c |
| Bis(chloroethyl)ether | 111444 | | | 1.10E+00 i | 1.16E+00 i | *** | 0.0092 c | 0.0054 c | 0.0029 c | 2.6 c | 0.58 c |
| Bisphenol A | 80057 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| Boron (and borates) | 7440428 | 9.00E-02 i | 5.71E-03 h | | | | 3300 n | 21 n | 120 n | 92000 n | 7000 n |
| Boron trifluoride | 7637072 | | 2.00E-04 h | | | | 7.3 n | 0.73 n | | | |
| Bromodichloromethane | 75274 | 2.00E-02 i | | 6.20E-02 i | | *** | 0.17 c | 0.1 c | 0.051 c | 46 c | 10 c |
| Bromoethene | 593602 | | | | 1.10E-01 h | *** | 0.096 c | 0.057 c | | | |
| Bromoform (tribromomethane) | 75252 | 2.00E-02 i | | 7.90E-03 i | 3.85E-03 i | *** | 2.4 c | 1.6 c | 0.4 c | 360 c | 81 c |
| Bromomethane | 74839 | 1.40E-03 i | 1.43E-03 i | | | *** | 8.7 n | 5.2 n | 1.9 n | 1400 n | 110 n |
| 4-Bromophenyl phenyl ether | 101553 | 5.80E-02 o | | | | | 2100 n | 210 n | 78 n | 59000 n | 4500 n |
| Bromophos | 2104963 | 5.00E-03 h | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Bromoxynil | 1689845 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Bromoxynil octanoate | 1689992 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| 1,3-Butadiene | 106990 | | | | 9.80E-01 i | *** | 0.011 c | 0.0064 c | | | |
| 1-Butanol | 71363 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| Butyl benzyl phthalate | 85687 | 2.00E-01 i | | | | | 7300 n | 730 n | 270 n | 200000 n | 16000 n |
| Butylate | 2008415 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| sec-Butylbenzene | 135988 | 1.00E-02 e | | | | *** | 61 n | 37 n | 14 n | 10000 n | 780 n |

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| Contaminant | CAS | RfDo mg/kg/d | RfDi mg/kg/d | CPSo kg·d/mg | CPSi kg·d/mg | VOC | Tap water µg/L | Ambient air µg/m3 | Fish mg/kg | Industrial soil mg/kg | Residential soil mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| tert-Butylbenzene | 104518 | 1.00E-02 e | | | | *** | 61 n | 37 n | 14 n | 10000 n | 780 n |
| Butylphthalyl butylglycolate | 85701 | 1.00E+00 i | | | | | 37000 n | 3700 n | 1400 n | 1000000 n | 78000 n |
| Cacodylic acid | 75605 | 3.00E-03 h | | | | | 110 n | 11 n | 4.1 n | 3100 n | 230 n |
| Cadmium and compounds | 7440439 | 5.00E-04 i | | | 6.30E+00 i | | 18 n | 0.00099 c | 0.68 n | 510 n | 39 n |
| Caprolactam | 105602 | 5.00E-01 i | | | | | 18000 n | 1800 n | 680 n | 510000 n | 39000 n |
| Captafol | 2425061 | 2.00E-03 i | | 8.60E-03 h | | | 7.8 c | 0.73 c | 0.37 c | 330 c | 74 c |
| Captan | 133062 | 1.30E-01 i | | 3.50E-03 h | | | 19 c | 1.8 c | 0.9 c | 820 c | 180 c |
| Carbaryl | 63252 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| Carbazole | 86748 | | | 2.00E-02 h | | | 3.4 c | 0.31 c | 0.16 c | 140 c | 32 c |
| Carbofuran | 1563662 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Carbon disulfide | 75150 | 1.00E-01 i | 2.86E-03 h | | | *** | 21 n | 10 n | 140 n | 100000 n | 7800 n |
| Carbon tetrachloride | 56235 | 7.00E-04 i | 5.71E-04 e | 1.30E-01 i | 5.25E-02 i | *** | 0.16 c | 0.12 c | 0.024 c | 22 c | 4.9 c |
| Carbosulfan | 55285148 | 1.00E-02 i | | | | | 370 n | 37 n | 14 n | 10000 n | 780 n |
| Carboxin | 5234684 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| Chloral | 75876 | 2.00E-03 i | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| Chloramben | 133904 | 1.50E-02 i | | | | | 550 n | 55 n | 20 n | 15000 n | 1200 n |
| Chloranil | 118752 | | | 4.03E-01 h | | | 0.17 c | 0.016 c | 0.0078 c | 7.1 c | 1.6 c |
| Chlordane | 57749 | 6.00E-05 i | | 1.30E+00 i | 1.29E+00 i | | 0.052 c | 0.0049 c | 0.0024 c | 2.2 c | 0.49 c |
| Chlorimuron-ethyl | 90982324 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Chlorine | 7782505 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| Chlorine dioxide | 10049044 | | 5.71E-05 i | | | | 2.1 n | 0.21 n | | | |
| Chloroacetaldehyde | 107200 | 6.90E-03 o | | | | | 250 n | 25 n | 9.3 n | 7100 n | 540 n |
| Chloroacetic acid | 79118 | 2.00E-03 h | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| 2-Chloroacetophenone | 532274 | | 8.57E-06 i | | | | 0.31 n | 0.031 n | | | |
| 4-Chloroaniline | 106478 | 4.00E-03 i | | | | | 150 n | 15 n | 5.4 n | 4100 n | 310 n |
| Chlorobenzene | 108907 | 2.00E-02 i | 5.71E-03 e | | | *** | 39 n | 21 n | 27 n | 20000 n | 1600 n |
| Chlorobenzilate | 510156 | 2.00E-02 i | | 2.70E-01 h | 2.70E-01 h | | 0.25 c | 0.023 c | 0.012 c | 11 c | 2.4 c |
| p-Chlorobenzoic acid | 74113 | 2.00E-01 h | | | | | 7300 n | 730 n | 270 n | 200000 n | 16000 n |
| 4-Chlorobenzotrifluoride | 98566 | 2.00E-02 h | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| 2-Chloro-1,3-butadiene | 126998 | 2.00E-02 e | 2.00E-03 h | | | *** | 14 n | 7.3 n | 27 n | 20000 n | 1600 n |
| 1-Chlorobutane | 109693 | 4.00E-01 h | | | | *** | 2400 n | 1500 n | 540 n | 410000 n | 31000 n |
| Chlorodifluoromethane | 75456 | | 1.43e+01 i | | | *** | 87000 n | 52000 n | | | |
| Chloroethane | 75003 | 4.00E-01 e | 2.86E+00 i | | | *** | 8600 n | 10000 n | 540 n | 410000 n | 31000 n |
| 2-Chloroethyl vinyl ether | 110758 | 2.50E-02 o | | | | *** | 150 n | 91 n | 34 n | 26000 n | 2000 n |
| Chloroform | 67663 | 1.00E-02 i | | 6.10E-03 i | 8.05E-02 i | *** | 0.15 c | 0.078 c | 0.52 c | 470 c | 100 c |
| Chloromethane | 74873 | | | 1.30E-02 h | 6.30E-03 h | *** | 1.4 c | 0.99 c | 0.24 c | 220 c | 49 c |
| 4-Chloro-2,2-methylaniline hydrochloride | 3165933 | | | 4.60E-01 h | | | 0.15 c | 0.014 c | 0.0069 c | 6.2 c | 1.4 c |
| 4-Chloro-2-methylaniline | 95692 | | | 5.80E-01 h | | | 0.12 c | 0.011 c | 0.0054 c | 4.9 c | 1.1 c |
| beta-Chloronaphthalene | 91587 | 8.00E-02 i | | | | | 2900 n | 290 n | 110 n | 82000 n | 6300 n |
| o-Chloronitrobenzene | 88733 | | | 2.50E-02 h | | *** | 0.42 c | 0.25 c | 0.13 c | 110 c | 26 c |
| p-Chloronitrobenzene | 100005 | | | 1.80E-02 h | | *** | 0.59 c | 0.35 c | 0.18 c | 160 c | 35 c |
| 2-Chlorophenol | 95578 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Chloropropane | 75296 | | 2.86E-02 h | | | *** | 170 n | 100 n | | | |
| Chlorothalonil | 1897456 | 1.50E-02 i | | 1.10E-02 h | | | 6.1 c | 0.57 c | 0.29 c | 260 c | 58 c |
| o-Chlorotoluene | 95498 | 2.00E-02 i | | | | *** | 120 n | 73 n | 27 n | 20000 n | 1600 n |
| Chlorpropham | 101213 | 2.00E-01 i | | | | | 7300 n | 730 n | 270 n | 200000 n | 16000 n |
| Chlorpyrifos | 2921882 | 3.00E-03 i | | | | | 110 n | 11 n | 4.1 n | 3100 n | 230 n |
| Chlorpyrifos-methyl | 5598130 | 1.00E-02 h | | | | | 370 n | 37 n | 14 n | 10000 n | 780 n |
| Chlorsulfuron | 64902723 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| Chlorthiophos | 60238564 | 8.00E-04 h | | | | | 29 n | 2.9 n | 1.1 n | 820 n | 63 n |
| Chromium III and compounds | 16065831 | 1.00E+00 i | 5.71E-07 w | | | | 37000 n | 0.0021 n | 1400 n | 1000000 n | 78000 n |
| Chromium VI and compounds | 7440473 | 5.00E-03 i | | | 4.20E+01 i | | 180 n | 0.00015 c | 6.8 n | 5100 n | 390 n |
| Coal tar | 8001589 | | | | 2.20E+00 w | | | 0.0028 c | | | |
| Cobalt | 7440484 | 6.00E-02 e | | | | | 2200 n | 220 n | 81 n | 61000 n | 4700 n |
| Coke Oven Emissions | 8007452 | | | | 2.17E+00 i | | | 0.0029 c | | | |
| Copper and compounds | 7440508 | 3.71E-02 h | | | | | 1400 n | 140 n | 50 n | 38000 n | 2900 n |
| Crotonaldehyde | 123739 | 1.00E-02 w | | 1.90E+00 h | 1.90E+00 w | | 0.035 c | 0.0033 c | 0.0017 c | 1.5 c | 0.34 c |
| Cumene | 98828 | 4.00E-02 i | 2.57E-03 h | | | | 1500 n | 9.4 n | 54 n | 41000 n | 3100 n |
| Cyanides: | | | | | | | | | | | |
| Barium cyanide | 542621 | 1.00E-01 w | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| Calcium cyanide | 592018 | 4.00E-02 i | | | | | 1500 n | 150 n | 54 n | 41000 n | 3100 n |
| Copper cyanide | 544923 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Cyanazine | 21725462 | 2.00E-03 h | | 8.40E-01 h | | | 0.08 c | 0.0075 c | 0.0038 c | 3.4 c | 0.76 c |
| Cyanogen | 460195 | 4.00E-02 i | | | | | 1500 n | 150 n | 54 n | 41000 n | 3100 n |
| Cyanogen bromide | 506683 | 9.00E-02 i | | | | | 3300 n | 330 n | 120 n | 92000 n | 7000 n |
| Cyanogen chloride | 506774 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| Free cyanide | 57125 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Hydrogen cyanide | 74908 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Potassium cyanide | 151508 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| Potassium silver cyanide | 506616 | 2.00E-01 i | | | | | 7300 n | 730 n | 270 n | 200000 n | 16000 n |
| Silver cyanide | 506649 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| Sodium cyanide | 143339 | 4.00E-02 i | | | | | 1500 n | 150 n | 54 n | 41000 n | 3100 n |
| Zinc cyanide | 557211 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| Cyclohexanone | 108941 | 5.00E+00 i | | | | *** | 30000 n | 18000 n | 6800 n | 1000000 n | 390000 n |
| Cyclohexlamine | 108918 | 2.00E-01 i | | | | | 7300 n | 730 n | 270 n | 200000 n | 16000 n |
| Cyhalothrin/Karate | 68085858 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Cypermethrin | 52315078 | 1.00E-02 i | | | | | 370 n | 37 n | 14 n | 10000 n | 780 n |
| Cyromazine | 66215278 | 7.50E-03 i | | | | | 270 n | 27 n | 10 n | 7700 n | 590 n |
| Dacthal | 1861321 | 5.00E-01 i | | | | | 18000 n | 1800 n | 680 n | 510000 n | 39000 n |
| Dalapon | 75990 | 3.00E-02 i | | | | | 1100 n | 110 n | 41 n | 31000 n | 2300 n |
| Danitol | 39515418 | 5.00E-04 w | | | | | 18 n | 1.8 n | 0.68 n | 510 n | 39 n |
| DDD | 72548 | | | 2.40E-01 i | | | 0.28 c | 0.026 c | 0.013 c | 12 c | 2.7 c |
| DDE | 72559 | | | 3.40E-01 i | | | 0.2 c | 0.018 c | 0.0093 c | 8.4 c | 1.9 c |
| DDT | 50293 | 5.00E-04 i | | 3.40E-01 i | 3.40E-01 i | | 0.2 c | 0.018 c | 0.0093 c | 8.4 c | 1.9 c |

*Sources: i=IRIS h=HEAST a=HEAST alt. w=Withdrawn from IRIS or HEAST e=EPA-ECAO provisional o=Other EPA documents* *Basis of RBC: c=carcinogenic effects n=noncarcinogenic effects.*

| Contaminant | CAS | RfDo mg/kg/d | RfDi mg/kg/d | CPSo kg·d/mg | CPSi kg·d/mg | VOC | Tap water µg/L | Ambient air µg/m3 | Fish mg/kg | Industrial soil mg/kg | Residential soil mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Decabromodiphenyl ether | 1163195 | 1.00E-02 i | | | | *** | 61 n | 37 n | 14 n | 10000 n | 780 n |
| Demeton | 8065483 | 4.00E-05 i | | | | | 1.5 n | 0.15 n | 0.054 n | 41 n | 3.1 n |
| Diallate | 2303164 | | | 6.10E-02 h | | *** | 0.17 c | 0.1 c | 0.052 c | 47 c | 10 c |
| Diazinon | 333415 | 9.00E-04 h | | | | | 33 n | 3.3 n | 1.2 n | 920 n | 70 n |
| 1,4-Dibromobenzene | 106376 | 1.00E-02 i | | | | *** | 61 n | 37 n | 14 n | 10000 n | 780 n |
| Dibromochloromethane | 124481 | 2.00E-02 i | | 8.40E-02 i | | *** | 0.13 c | 0.075 c | 0.038 c | 34 c | 7.6 c |
| 1,2-Dibromo-3-chloropropane | 96128 | | 5.71E-05 i | 1.40E+00 h | 2.42E-03 h | *** | 0.048 c | 0.21 n | 0.0023 c | 2 c | 0.46 c |
| 1,2-Dibromoethane | 106934 | | 5.71E-05 h | 8.50E+01 i | 7.70E-01 i | *** | 0.00075 c | 0.0081 c | 0.000037 c | 0.034 c | 0.0075 c |
| Dibutyl phthalate | 84742 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| Dicamba | 1918009 | 3.00E-02 i | | | | | 1100 n | 110 n | 41 n | 31000 n | 2300 n |
| 1,2-Dichlorobenzene | 95501 | 9.00E-02 i | 5.71E-02 a | | | *** | 370 n | 210 n | 120 n | 92000 n | 7000 n |
| 1,3-Dichlorobenzene | 541731 | 8.90E-02 o | | | | *** | 540 n | 320 n | 120 n | 91000 n | 7000 n |
| 1,4-Dichlorobenzene | 106467 | | 2.29E-01 i | 2.40E-02 h | | *** | 0.44 c | 0.26 c | 0.13 c | 120 c | 27 c |
| 3,3'-Dichlorobenzidine | 91941 | | | 4.50E-01 i | | | 0.15 c | 0.014 c | 0.007 c | 6.4 c | 1.4 c |
| 1,4-Dichloro-2-butene | 764410 | | | | 9.30E+00 h | *** | 0.0011 c | 0.00067 c | | | |
| Dichlorodifluoromethane | 75718 | 2.00E-01 i | 5.71E-02 a | | | *** | 390 n | 210 n | 270 n | 200000 n | 16000 n |
| 1,1-Dichloroethane | 75343 | 1.00E-01 h | 1.43E-01 a | | | *** | 810 n | 520 n | 140 n | 100000 n | 7800 n |
| 1,2-Dichloroethane (EDC) | 107062 | | 2.86E-03 a | 9.10E-02 i | 9.10E-02 i | *** | 0.12 c | 0.069 c | 0.035 c | 31 c | 7 c |
| 1,1-Dichloroethylene | 75354 | 9.00E-03 i | | 6.00E-01 i | 1.75E-01 i | *** | 0.044 c | 0.036 c | 0.0053 c | 4.8 c | 1.1 c |
| 1,2-Dichloroethylene (cis) | 156592 | 1.00E-02 h | | | | *** | 61 n | 37 n | 14 n | 10000 n | 780 n |
| 1,2-Dichloroethylene (trans) | 156605 | 2.00E-02 i | | | | *** | 120 n | 73 n | 27 n | 20000 n | 1600 n |
| 1,2-Dichloroethylene (mixture) | 540590 | 9.00E-03 h | | | | *** | 55 n | 33 n | 12 n | 9200 n | 700 n |
| 2,4-Dichlorophenol | 120832 | 3.00E-03 i | | | | | 110 n | 11 n | 4.1 n | 3100 n | 230 n |
| 2,4-Dichlorophenoxyacetic Acid (2,4-D) | 94757 | 1.00E-02 i | | | | *** | 61 n | 37 n | 14 n | 10000 n | 780 n |
| 4-(2,4-Dichlorophenoxy)butyric Acid | 94826 | 8.00E-03 i | | | | | 290 n | 29 n | 11 n | 8200 n | 630 n |
| 1,2-Dichloropropane | 78875 | | 1.14E-03 i | 6.80E-02 h | | *** | 0.16 c | 0.092 c | 0.046 c | 42 c | 9.4 c |
| 2,3-Dichloropropanol | 616239 | 3.00E-03 i | | | | | 110 n | 11 n | 4.1 n | 3100 n | 230 n |
| 1,3-Dichloropropene | 542756 | 3.00E-04 i | 5.71E-03 i | 1.75E-01 h | 1.30E-01 h | *** | 0.077 c | 0.048 c | 0.018 c | 16 c | 3.7 c |
| Dichlorvos | 62737 | 5.00e-04 i | 1.43E-04 i | 2.90E-01 i | | | 0.23 c | 0.022 c | 0.011 c | 9.9 c | 2.2 c |
| Dicofol | 115322 | | | 4.40E-01 w | | | 0.15 c | 0.014 c | 0.0072 c | 6.5 c | 1.5 c |
| Dicyclopentadiene | 77736 | 3.00E-02 h | 5.71E-05 a | | | *** | 0.42 n | 0.21 n | 41 n | 31000 n | 2300 n |
| Dieldrin | 60571 | 5.00E-05 i | | 1.60E+01 i | 1.61E+01 i | | 0.0042 c | 0.00039 c | 0.0002 c | 0.18 c | 0.04 c |
| Diesel emissions | | | 1.43E-03 i | | | | 52 n | 5.2 n | | | |
| Diethyl phthalate | 84662 | 8.00E-01 i | | | | | 29000 n | 2900 n | 1100 n | 820000 n | 63000 n |
| Diethylene glycol, monobutyl ether | 112345 | | 5.71E-03 h | | | | 210 n | 21 n | | | |
| Diethylene glycol, monoethyl ether | 111900 | 2.00E+00 h | | | | | 73000 n | 7300 n | 2700 n | 1000000 n | 160000 n |
| Diethylforamide | 617845 | 1.10E-02 h | | | | | 400 n | 40 n | 15 n | 11000 n | 860 n |
| Di(2-ethylhexyl)adipate | 103231 | 6.00E-01 i | | 1.20E-03 i | | | 56 c | 5.2 c | 2.6 c | 2400 c | 530 c |
| Diethylstilbestrol | 56531 | | | 4.70E+03 h | | | 0.000014 c | 1.30E-06 c | 6.70E-07 c | 0.00061 c | 0.00014 c |
| Difenzoquat (Avenge) | 43222486 | 8.00E-02 i | | | | | 2900 n | 290 n | 110 n | 82000 n | 6300 n |
| Diflubenzuron | 35367385 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Diisopropyl methylphosphonate (DIMP) | 1445756 | 8.00E-02 i | | | | | 2900 n | 290 n | 110 n | 82000 n | 6300 n |

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| Contaminant | CAS | RfDo mg/kg/d | RfDi mg/kg/d | CPSo kg·d/mg | CPSi kg·d/mg | VOC | Tap water µg/L | Ambient air µg/m3 | Fish mg/kg | Industrial soil mg/kg | Residential soil mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dimethipin | 55290647 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Dimethoate | 60515 | 2.00E-04 i | | | | | 7.3 n | 0.73 n | 0.27 n | 200 n | 16 n |
| 3,3'-Dimethoxybenzidine | 119904 | | | 1.40E-02 h | | | 4.8 c | 0.45 c | 0.23 c | 200 c | 46 c |
| Dimethyl phthalate | 131113 | 1.00E+01 h | | | | | 370000 n | 37000 n | 14000 n | 1000000 n | 780000 n |
| Dimethyl terephthalate | 120616 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| Dimethylamine | 124403 | | 5.71E-06 w | | | | 0.21 n | 0.021 n | | | |
| 2,4-Dimethylaniline hydrochloride | 21436964 | | | 5.80E-01 h | | | 0.12 c | 0.011 c | 0.0054 c | 4.9 c | 1.1 c |
| 2,4-Dimethylaniline | 95681 | | | 7.50E-01 h | | | 0.09 c | 0.0083 c | 0.0042 c | 3.8 c | 0.85 c |
| N-N-Dimethylaniline | 121697 | 2.00E-03 i | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| 3,3'-Dimethylbenzidine | 119937 | | | 9.20E+00 h | | | 0.0073 c | 0.00068 c | 0.00034 c | 0.31 c | 0.069 c |
| N,N-Dimethylformamide | 68122 | 1.00E-01 h | 8.57E-03 i | | | | 3700 n | 31 n | 140 n | 100000 n | 7800 n |
| 1,1-Dimethylhydrazine | 57147 | | | 2.60E+00_ | 3.50E+00_ | | 0.026 c | 0.0018 c | 0.0012 c | 1.1 c | 0.25 c |
| 1,2-Dimethylhydrazine | 540738 | | | 3.70E+01 w | 3.70E+01 w | | 0.0018 c | 0.00017 c | 0.000085 c | 0.077 c | 0.017 c |
| 2,4-Dimethylphenol | 105679 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| 2,6-Dimethylphenol | 576261 | 6.00E-04 i | | | | | 22 n | 2.2 n | 0.81 n | 610 n | 47 n |
| 3,4-Dimethylphenol | 95658 | 1.00E-03 i | | | | | 37 n | 3.7 n | 1.4 n | 1000 n | 78 n |
| 1,2-Dinitrobenzene | 528290 | 4.00E-04 h | | | | | 15 n | 1.5 n | 0.54 n | 410 n | 31 n |
| 1,3-Dinitrobenzene | 99650 | 1.00E-04 i | | | | | 3.7 n | 0.37 n | 0.14 n | 100 n | 7.8 n |
| 1,4-Dinitrobenzene | 100254 | 4.00E-04 h | | | | | 15 n | 1.5 n | 0.54 n | 410 n | 31 n |
| 4,6-Dinitro-o-cyclohexyl phenol | 131895 | 2.00E-03 i | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| 2,4-Dinitrophenol | 51285 | 2.00E-03 i | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| Dinitrotoluene mixture | | | | 6.80E-01 i | | | 0.099 c | 0.0092 c | 0.0046 c | 4.2 c | 0.94 c |
| 2,4-Dinitrotoluene | 121142 | 2.00E-03 i | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| 2,6-Dinitrotoluene | 606202 | 1.00E-03 h | | | | | 37 n | 3.7 n | 1.4 n | 1000 n | 78 n |
| Dinoseb | 88857 | 1.00E-03 i | | | | | 37 n | 3.7 n | 1.4 n | 1000 n | 78 n |
| di-n-Octyl phthalate | 117840 | 2.00E-02 h | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| 1,4-Dioxane | 123911 | | | 1.10E-02 i | | | 6.1 c | 0.57 c | 0.29 c | 260 c | 58 c |
| Diphenamid | 957517 | 3.00E-02 i | | | | | 1100 n | 110 n | 41 n | 31000 n | 2300 n |
| Diphenylamine | 122394 | 2.50E-02 i | | | | | 910 n | 91 n | 34 n | 26000 n | 2000 n |
| 1,2-Diphenylhydrazine | 122667 | | | 8.00E-01 i | 7.70E-01 i | | 0.084 c | 0.0081 c | 0.0039 c | 3.6 c | 0.8 c |
| Diquat | 85007 | 2.20E-03 i | | | | | 80 n | 8 n | 3 n | 2200 n | 170 n |
| Direct black 38 | 1937377 | | | 8.60E+00 h | | | 0.0078 c | 0.00073 c | 0.00037 c | 0.33 c | 0.074 c |
| Direct blue 6 | 2602462 | | | 8.10E+00 h | | | 0.0083 c | 0.00077 c | 0.00039 c | 0.35 c | 0.079 c |
| Direct brown 95 | 16071866 | | | 9.30E+00 h | | | 0.0072 c | 0.00067 c | 0.00034 c | 0.31 c | 0.069 c |
| Disulfoton | 298044 | 4.00E-05 i | | | | | 1.5 n | 0.15 n | 0.054 n | 41 n | 3.1 n |
| 1,4-Dithiane | 505293 | 1.00E-02 i | | | | | 370 n | 37 n | 14 n | 10000 n | 780 n |
| Diuron | 330541 | 2.00E-03 i | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| Dodine | 2439103 | 4.00E-03 i | | | | | 150 n | 15 n | 5.4 n | 4100 n | 310 n |
| Endosulfan | 115297 | 6.00E-03 h | | | | | 220 n | 22 n | 8.1 n | 6100 n | 470 n |
| Endothall | 145733 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Endrin | 72208 | 3.00E-04 i | | | | | 11 n | 1.1 n | 0.41 n | 310 n | 23 n |
| Epichlorohydrin | 106898 | 2.00E-03 h | 2.86E-04 i | 9.90E-03 i | 4.20E-03 i | | 6.8 c | 1 n | 0.32 c | 290 c | 65 c |

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| Contaminant | CAS | RfDo mg/kg/d | RfDi mg/kg/d | CPSo kg·d/mg | CPSi kg·d/mg | VOC | Tap water µg/L | Ambient air µg/m3 | Fish mg/kg | Industrial soil mg/kg | Residential soil mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Epoxybutane | 106887 | | 5.71E-03 i | | | | 210 n | 21 n | | | |
| Ethephon (2-chloroethyl phosphonic acid) | 16672870 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Ethion | 563122 | 5.00E-04 i | | | | | 18 n | 1.8 n | 0.68 n | 510 n | 39 n |
| 2-Ethoxyethanol acetate | 111159 | 3.00E-01 a | | | | | 11000 n | 1100 n | 410 n | 310000 n | 23000 n |
| 2-Ethoxyethanol | 110805 | 4.00E-01 h | 5.71E-02 i | | | | 15000 n | 210 n | 540 n | 410000 n | 31000 n |
| Ethyl acrylate | 140885 | | | 4.80E-02 h | | | 1.4 c | 0.13 c | 0.066 c | 60 c | 13 c |
| EPTC (S-Ethyl dipropylthiocarbamate) | 759944 | 2.50E-02 i | | | | | 910 n | 91 n | 34 n | 26000 n | 2000 n |
| Ethyl ether | 60297 | 2.00E-01 i | | | | *** | 1200 n | 730 n | 270 n | 200000 n | 16000 n |
| Ethyl methacrylate | 97632 | 9.00E-02 h | | | | | 3300 n | 330 n | 120 n | 92000 n | 7000 n |
| Ethyl acetate | 141786 | 9.00E-01 i | | | | | 33000 n | 3300 n | 1200 n | 920000 n | 70000 n |
| Ethylbenzene | 100414 | 1.00E-01 i | 2.86E-01 i | | | *** | 1300 n | 1000 n | 140 n | 100000 n | 7800 n |
| Ethylene cyanohydrin | 109784 | 3.00E-01 h | | | | | 11000 n | 1100 n | 410 n | 310000 n | 23000 n |
| Ethylene diamine | 107153 | 2.00E-02 h | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Ethylene glycol | 107211 | 2.00E+00 i | | | | | 73000 n | 7300 n | 2700 n | 1000000 n | 160000 n |
| Ethylene glycol, monobutyl ether | 111762 | | 5.71E-03 h | | | | 210 n | 21 n | | | |
| Ethylene oxide | 75218 | | | 1.02E+00 h | 3.50E-01 h | | 0.066 c | 0.018 c | 0.0031 c | 2.8 c | 0.63 c |
| Ethylene thiourea (ETU) | 96457 | 8.00E-05 i | | 1.19E-01 h | | | 0.57 c | 0.053 c | 0.027 c | 24 c | 5.4 c |
| Ethyl p-nitrophenyl phenylphosphorothioate | 2104645 | 1.00E-05 i | | | | | 0.37 n | 0.037 n | 0.014 n | 10 n | 0.78 n |
| Ethylnitrosourea | 759739 | | | 1.40E+02 w | | | 0.00048 c | 0.000045 c | 0.000023 c | 0.02 c | 0.0046 c |
| Ethylphthalyl ethyl glycolate | 84720 | 3.00E+00 i | | | | | 110000 n | 11000 n | 4100 n | 1000000 n | 230000 n |
| Express | 10120 | 8.00E-03 i | | | | | 290 n | 29 n | 11 n | 8200 n | 630 n |
| Fenamiphos | 22224926 | 2.50E-04 i | | | | | 9.1 n | 0.91 n | 0.34 n | 260 n | 20 n |
| Fluometuron | 2164172 | 1.30E-02 i | | | | | 470 n | 47 n | 18 n | 13000 n | 1000 n |
| Fluoride | 7782414 | 6.00E-02 i | | | | | 2200 n | 220 n | 81 n | 61000 n | 4700 n |
| Fluoridone | 59756604 | 8.00E-02 i | | | | | 2900 n | 290 n | 110 n | 82000 n | 6300 n |
| Flurprimidol | 56425913 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Flutolanil | 66332965 | 6.00E-02 i | | | | | 2200 n | 220 n | 81 n | 61000 n | 4700 n |
| Fluvalinate | 69409945 | 1.00E-02 i | | | | | 370 n | 37 n | 14 n | 10000 n | 780 n |
| Folpet | 133073 | 1.00E-01 i | | 3.50E-03 i | | | 19 c | 1.8 c | 0.9 c | 820 c | 180 c |
| Fomesafen | 72178020 | | | 1.90E-01 i | | | 0.35 c | 0.033 c | 0.017 c | 15 c | 3.4 c |
| Fonofos | 944229 | 2.00E-03 i | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| Formaldehyde | 50000 | 2.00E-01 i | | | 4.55E-02 i | | 7300 n | 0.14 c | 270 n | 200000 n | 16000 n |
| Formic Acid | 64186 | 2.00E+00 h | | | | | 73000 n | 7300 n | 2700 n | 1000000 n | 160000 n |
| Fosetyl-al | 39148248 | 3.00E+00 i | | | | | 110000 n | 11000 n | 4100 n | 1000000 n | 230000 n |
| Furan | 110009 | 1.00E-03 i | | | | | 37 n | 3.7 n | 1.4 n | 1000 n | 78 n |
| Furazolidone | 67458 | | | 3.80E+00 h | | | 0.018 c | 0.0016 c | 0.00083 c | 0.75 c | 0.17 c |
| Furfural | 98011 | 3.00E-03 i | 1.43E-02 a | | | | 110 n | 52 n | 4.1 n | 3100 n | 230 n |
| Furium | 531828 | | | 5.00E+01 h | | | 0.0013 c | 0.00013 c | 0.000063 c | 0.057 c | 0.013 c |
| Furmecyclox | 60568050 | | | 3.00E-02 i | | | 2.2 c | 0.21 c | 0.11 c | 95 c | 21 c |
| Glufosinate-ammonium | 77182822 | 4.00E-04 i | | | | | 15 n | 1.5 n | 0.54 n | 410 n | 31 n |
| Glycidaldehyde | 765344 | 4.00E-04 i | 2.86E-04 h | | | | 15 n | 1 n | 0.54 n | 410 n | 31 n |
| Glyphosate | 1071836 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |

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| Contaminant | CAS | RfDo mg/kg/d | RfDi mg/kg/d | CPSo kg·d/mg | CPSi kg·d/mg | VOC | Tap water µg/L | Ambient air µg/m3 | Fish mg/kg | Industrial soil mg/kg | Residential soil mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Haloxyfop-methyl | 69806402 | 5.00E-05 i | | | | | 1.8 n | 0.18 n | 0.068 n | 51 n | 3.9 n |
| Harmony | 79277273 | 1.30E-02 i | | | | | 470 n | 47 n | 18 n | 13000 n | 1000 n |
| HCH (alpha) | 319846 | | | 6.30E+00 i | 6.30E+00 i | | 0.011 c | 0.00099 c | 0.0005 c | 0.45 c | 0.1 c |
| HCH (beta) | 319857 | | | 1.80E+00 i | 1.80E+00 i | | 0.037 c | 0.0035 c | 0.0018 c | 1.6 c | 0.35 c |
| HCH (gamma) Lindane | 58899 | 3.00E-04 i | | 1.30E+00 h | | | 0.052 c | 0.0048 c | 0.0024 c | 2.2 c | 0.49 c |
| HCH-technical | 608731 | | | 1.80E+00 i | 1.79E+00 i | | 0.037 c | 0.0035 c | 0.0018 c | 1.6 c | 0.35 c |
| Heptachlor | 76448 | 5.00E-04 i | | 4.50E+00 i | 4.55E+00 i | *** | 0.0023 c | 0.0014 c | 0.0007 c | 0.64 c | 0.14 c |
| Heptachlor epoxide | 1024573 | 1.30E-05 i | | 9.10E+00 i | 9.10E+00 i | *** | 0.0012 c | 0.00069 c | 0.00035 c | 0.31 c | 0.07 c |
| Hexabromobenzene | 87821 | 2.00E-03 i | | | | *** | 12 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| Hexachlorobenzene | 118741 | 8.00E-04 i | | 1.60E+00 i | 1.61E+00 i | *** | 0.0066 c | 0.0039 c | 0.002 c | 1.8 c | 0.4 c |
| Hexachlorobutadiene | 87683 | 2.00E-04 h | | 7.80E-02 i | 7.70E-02 i | *** | 0.14 c | 0.081 c | 0.04 c | 37 c | 8.2 c |
| Hexachlorocyclopentadiene | 77474 | 7.00E-03 i | 2.00E-05 h | | | *** | 0.15 n | 0.073 n | 9.5 n | 7200 n | 550 n |
| Hexachlorodibenzo-p-dioxin mixture | 19408743 | | | 6.20E+03 i | 4.55E+03 i | | 0.000011 c | 1.40E-06 c | 5.10E-07 c | 0.00046 c | 0.0001 c |
| Hexachloroethane | 67721 | 1.00E-03 i | | 1.40E-02 i | 1.40E-02 i | *** | 0.75 c | 0.45 c | 0.23 c | 200 c | 46 c |
| Hexachlorophene | 70304 | 3.00E-04 i | | | | | 11 n | 1.1 n | 0.41 n | 310 n | 23 n |
| Hexahydro-1,3,5-trinitro-1,3,5-triazine | 121824 | 3.00E-03 i | | 1.10E-01 i | | | 0.61 c | 0.057 c | 0.029 c | 26 c | 5.8 c |
| n-Hexane | 110543 | 6.00E-02 h | 5.71E-02 i | | | *** | 350 n | 210 n | 81 n | 61000 n | 4700 n |
| Hexazinone | 51235042 | 3.30E-02 i | | | | | 1200 n | 120 n | 45 n | 34000 n | 2600 n |
| Hydrazine, hydrazine sulfate | 302012 | | | 3.00E+00 i | 1.71E+01 i | | 0.022 c | 0.00037 c | 0.0011 c | 0.95 c | 0.21 c |
| Hydrogen chloride | 7647010 | | 2.00E-03 i | | | | 73 n | 7.3 n | | | |
| Hydrogen sulfide | 7783064 | 3.00E-03 i | 2.57E-04 i | | | | 110 n | 0.94 n | 4.1 n | 3100 n | 230 n |
| Hydroquinone | 123319 | 4.00E-02 h | | | | | 1500 n | 150 n | 54 n | 41000 n | 3100 n |
| Imazalil | 35554440 | 1.30E-02 i | | | | | 470 n | 47 n | 18 n | 13000 n | 1000 n |
| Imazaquin | 81335377 | 2.50E-01 i | | | | | 9100 n | 910 n | 340 n | 260000 n | 20000 n |
| Iprodione | 36734197 | 4.00E-02 i | | | | | 1500 n | 150 n | 54 n | 41000 n | 3100 n |
| Isobutanol | 78831 | 3.00E-01 i | | | | *** | 1800 n | 1100 n | 410 n | 310000 n | 23000 n |
| Isophorone | 78591 | 2.00E-01 i | | 9.50E-04 i | | | 71 c | 6.6 c | 3.3 c | 3000 c | 670 c |
| Isopropalin | 33820530 | 1.50E-02 i | | | | | 550 n | 55 n | 20 n | 15000 n | 1200 n |
| Isopropyl methyl phosphonic acid | 1832548 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| Isoxaben | 82558507 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| Kepone | 143500 | | | 1.80E+01 e | | | 0.0037 c | 0.00035 c | 0.00018 c | 0.16 c | 0.035 c |
| Lactofen | 77501634 | 2.00E-03 i | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| Lead (tetraethyl) | 78002 | 1.00E-07 i | | | | | 0.0037 n | 0.00037 n | 0.00014 n | 0.1 n | 0.0078 n |
| Linuron | 330552 | 2.00E-03 i | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| Lithium | 7439932 | 2.00E-02 e | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Londax | 83056996 | 2.00E-01 i | | | | | 7300 n | 730 n | 270 n | 200000 n | 16000 n |
| Malathion | 121755 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Maleic anhydride | 108316 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| Maleic hydrazide | 123331 | 5.00E-01 i | | | | | 18000 n | 1800 n | 680 n | 510000 n | 39000 n |
| Malononitrile | 109773 | 2.00E-05 h | | | | | 0.73 n | 0.073 n | 0.027 n | 20 n | 1.6 n |
| Mancozeb | 8018017 | 3.00E-02 h | | | | | 1100 n | 110 n | 41 n | 31000 n | 2300 n |
| Maneb | 12427382 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |

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| Contaminant | CAS | RfDo mg/kg/d | RfDi mg/kg/d | CPSo kg·d/mg | CPSi kg·d/mg | VOC | Tap water µg/L | Ambient air µg/m3 | Fish mg/kg | Industrial soil mg/kg | Residential soil mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Manganese and compounds | 7439965 | 5.00E-03 i | 1.43e-05 i | | | | 180 n | 0.052 n | 6.8 n | 5100 n | 390 n |
| Mephosfolan | 950107 | 9.00E-05 h | | | | | 3.3 n | 0.33 n | 0.12 n | 92 n | 7 n |
| Mepiquat chloride | 24307264 | 3.00E-02 i | | | | | 1100 n | 110 n | 41 n | 31000 n | 2300 n |
| Mercury (inorganic) | 7439976 | 3.00E-04 h | 8.57E-05 h | | | | 11 n | 0.31 n | 0.41 n | 310 n | 23 n |
| Mercury (methyl) | 22967926 | 3.00E-04 i | | | | | 11 n | 1.1 n | 0.41 n | 310 n | 23 n |
| Merphos | 150505 | 3.00E-05 i | | | | | 1.1 n | 0.11 n | 0.041 n | 31 n | 2.3 n |
| Merphos oxide | 78488 | 3.00E-05 i | | | | | 1.1 n | 0.11 n | 0.041 n | 31 n | 2.3 n |
| Metalaxyl | 57837191 | 6.00E-02 i | | | | | 2200 n | 220 n | 81 n | 61000 n | 4700 n |
| Methacrylonitrile | 126987 | 1.00E-04 i | 2.00E-04 a | | | | 3.7 n | 0.73 n | 0.14 n | 100 n | 7.8 n |
| Methamidophos | 10265926 | 5.00E-05 i | | | | | 1.8 n | 0.18 n | 0.068 n | 51 n | 3.9 n |
| Methanol | 67561 | 5.00E-01 i | | | | | 18000 n | 1800 n | 680 n | 510000 n | 39000 n |
| Methidathion | 950378 | 1.00E-03 i | | | | | 37 n | 3.7 n | 1.4 n | 1000 n | 78 n |
| Methomyl | 16752775 | 2.50E-02 i | | | | | 910 n | 91 n | 34 n | 26000 n | 2000 n |
| Methoxychlor | 72435 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| 2-Methoxyethanol acetate | 110496 | 2.00E-03 a | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| 2-Methoxyethanol | 109864 | 1.00E-03 h | 5.71E-03 i | | | | 37 n | 21 n | 1.4 n | 1000 n | 78 n |
| 2-Methoxy-5-nitroaniline | 99592 | | | 4.60E-02 h | | | 1.5 c | 0.14 c | 0.069 c | 62 c | 14 c |
| Methyl acetate | 79209 | 1.00E+00 h | | | | | 37000 n | 3700 n | 1400 n | 1000000 n | 78000 n |
| Methyl acrylate | 96333 | 3.00E-02 a | | | | | 1100 n | 110 n | 41 n | 31000 n | 2300 n |
| 2-Methylaniline hydrochloride | 636215 | | | 1.80E-01 h | | | 0.37 c | 0.035 c | 0.018 c | 16 c | 3.5 c |
| 2-Methylaniline | 95534 | | | 2.40E-01 h | | | 0.28 c | 0.026 c | 0.013 c | 12 c | 2.7 c |
| Methyl chlorocarbonate | 79221 | 1.00E+00 w | | | | | 37000 n | 3700 n | 1400 n | 1000000 n | 78000 n |
| 4-(2-Methyl-4-chlorophenoxy) butyric acid | 94815 | 1.00E-02 i | | | | | 370 n | 37 n | 14 n | 10000 n | 780 n |
| 2-Methyl-4-chlorophenoxyacetic acid | 94746 | 5.00E-04 i | | | | | 18 n | 1.8 n | 0.68 n | 510 n | 39 n |
| 2-(2-Methyl-14-chlorophenoxy)propionic acid | 93652 | 1.00E-03 i | | | | | 37 n | 3.7 n | 1.4 n | 1000 n | 78 n |
| Methylcyclohexane | 108872 | | 8.57E-01 h | | | | 31000 n | 3100 n | | | |
| Methylene bromide | 74953 | 1.00E-02 a | | | | *** | 61 n | 37 n | 14 n | 10000 n | 780 n |
| Methylene chloride | 75092 | 6.00E-02 i | 8.57E-01 h | 7.50E-03 i | 1.64E-03 i | *** | 4.1 c | 3.8 c | 0.42 c | 380 c | 85 c |
| 4,4'-Methylene bis(2-chloroaniline) | 101144 | 7.00E-04 h | | 1.30E-01 h | 1.30E-01 h | | 0.52 c | 0.048 c | 0.024 c | 22 c | 4.9 c |
| 4,4'-Methylenebisbenzeneamine | 101779 | | | 2.50E-01 w | | | 0.27 c | 0.025 c | 0.013 c | 11 c | 2.6 c |
| 4,4'-Methylene bis(N,N'-dimethyl)aniline | 101611 | | | 4.60E-02 i | | | 1.5 c | 0.14 c | 0.069 c | 62 c | 14 c |
| 4,4'-Methylenediphenyl isocyanate | 101688 | | 5.71E-06 i | | | *** | 0.035 n | 0.021 n | | | |
| Methyl ethyl ketone | 78933 | 6.00E-01 i | 2.86E-01 i | | | | 22000 n | 1000 n | 810 n | 610000 n | 47000 n |
| Methyl hydrazine | 60344 | | | 1.10E+00_ | | | 0.061 c | 0.0057 c | 0.0029 c | 2.6 c | 0.58 c |
| Methyl isobutyl ketone | 108101 | 8.00E-02 h | 2.29E-02 a | | | | 2900 n | 84 n | 110 n | 82000 n | 6300 n |
| Methyl methacrylate | 80626 | 8.00E-02 h | | | | | 2900 n | 290 n | 110 n | 82000 n | 6300 n |
| 2-Methyl-5-nitroaniline | 99558 | | | 3.30E-02 h | | | 2 c | 0.19 c | 0.096 c | 87 c | 19 c |
| Methyl parathion | 298000 | 2.50E-04 i | | | | | 9.1 n | 0.91 n | 0.34 n | 260 n | 20 n |
| 2-Methylphenol (o-cresol) | 95487 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| 3-Methylphenol (m-cresol) | 103394 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| 4-Methylphenol (p-cresol) | 106445 | 5.00E-03 h | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Methyl styrene (mixture) | 25013154 | 6.00E-03 a | 1.14E-02 a | | | *** | 60 n | 42 n | 8.1 n | 6100 n | 470 n |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| Methyl styrene (alpha) | 98839 | 7.00E-02 e | | | | *** | 430 n | 260 n | 95 n | 72000 n | 5500 n |
| Methyl tertbutyl ether (MTBE) | 1634044 | 5.00E-03 e | 8.57E-01 i | | | *** | 180 n | 3100 n | 6.8 n | 5100 n | 390 n |
| Metolaclor (Dual) | 51218452 | 1.50E-01 h | | | | | 5500 n | 550 n | 200 n | 150000 n | 12000 n |
| Metribuzin | 21807649 | 2.50E-02 i | | | | | 910 n | 91 n | 34 n | 26000 n | 2000 n |
| Mirex | 2385855 | 2.00E-04 i | | 1.80E+00 w | | | 0.037 c | 0.0035 c | 0.0018 c | 1.6 c | 0.35 c |
| Molinate | 2212671 | 2.00E-03 i | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| Molybdenum | 7439987 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Monochloramine | 10599903 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| Naled | 300765 | 2.00E-03 i | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| 2-Naphthylamine | 91598 | | | 1.30e+02 e | | | 0.00052 c | 0.000048 c | 0.000024 c | 0.022 c | 0.0049 c |
| Napropamide | 15299997 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| Nickel refinery dust | | | | | 8.40E-01 i | | | 0.0075 c | | | |
| Nickel (soluble salts) | 7440020 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Nickel subsulfide | 12035722 | | | | 1.70E+00 i | | | 0.0037 c | | | |
| Nitrapyrin | 1929824 | 1.50E-03 w | | | | | 55 n | 5.5 n | 2 n | 1500 n | 120 n |
| Nitrate | 14797558 | 1.60E+00 i | | | | | 58000 n | 5800 n | 2200 n | 1000000 n | 130000 n |
| Nitric Oxide | 10102439 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| Nitrite | 14797650 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| 2-Nitroaniline | 88744 | 6.00E-05 w | 5.71E-05 h | | | | 2.2 n | 0.21 n | 0.081 n | 61 n | 4.7 n |
| 3-Nitroaniline | 99092 | 3.00E-03 o | | | | | 110 n | 11 n | 4.1 n | 3100 n | 230 n |
| 4-Nitroaniline | 100016 | 3.00E-03 o | | | | | 110 n | 11 n | 4.1 n | 3100 n | 230 n |
| Nitrobenzene | 98953 | 5.00E-04 i | 5.71E-04 e | | | *** | 3.4 n | 2.1 n | 0.68 n | 510 n | 39 n |
| Nitrofurantoin | 67209 | 7.00E-02 h | | | | | 2600 n | 260 n | 95 n | 72000 n | 5500 n |
| Nitrofurazone | 59870 | | | 1.50E+00 h | 9.40E+00 h | | 0.045 c | 0.00067 c | 0.0021 c | 1.9 c | 0.43 c |
| Nitrogen dioxide | 10102440 | 1.00E+00 i | | | | | 37000 n | 3700 n | 1400 n | 1000000 n | 78000 n |
| Nitroguanidine | 556887 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| 4-Nitrophenol | 100027 | 6.20E-02 o | | | | | 2300 n | 230 n | 84 n | 63000 n | 4800 n |
| 2 Nitropropane | 79469 | | 5.71E-03 i | | 9.40E+00 h | | 210 n | 0.00067 c | | | |
| N-Nitrosodi-n-butylamine | 924163 | | | 5.40E+00 i | 5.60E+00 i | | 0.012 c | 0.0011 c | 0.00058 c | 0.53 c | 0.12 c |
| N-Nitrosodiethanolamine | 1116547 | | | 2.80E+00 i | | | 0.024 c | 0.0022 c | 0.0011 c | 1 c | 0.23 c |
| N-Nitrosodiethylamine | 55185 | | | 1.50E+02 i | 1.51E+02 i | | 0.00045 c | 0.000041 c | 0.000021 c | 0.019 c | 0.0043 c |
| N-Nitrosodimethylamine | 62759 | | | 5.10E+01 i | 4.90E+01 i | | 0.0013 c | 0.00013 c | 0.000062 c | 0.056 c | 0.013 c |
| N-Nitrosodiphenylamine | 86306 | | | 4.90E-03 i | | | 14 c | 1.3 c | 0.64 c | 580 c | 130 c |
| N-Nitroso di-n-propylamine | 621647 | | | 7.00E+00 i | | | 0.0096 c | 0.00089 c | 0.00045 c | 0.41 c | 0.091 c |
| N-Nitroso-N-methylethylamine | 10595956 | | | 2.20E+01 i | | | 0.0031 c | 0.00028 c | 0.00014 c | 0.13 c | 0.029 c |
| N-Nitrosopyrrolidine | 930552 | | | 2.10E+00 i | 2.13E+00 i | | 0.032 c | 0.0029 c | 0.0015 c | 1.4 c | 0.3 c |
| m-Nitrotoluene | 99081 | 1.00E-02 h | | | | *** | 61 n | 37 n | 14 n | 10000 n | 780 n |
| o-Nitrotoluene | 88722 | 1.00E-02 h | | | | *** | 61 n | 37 n | 14 n | 10000 n | 780 n |
| p-Nitrotoluene | 99990 | 1.00E-02 h | | | | *** | 61 n | 37 n | 14 n | 10000 n | 780 n |
| Norflurazon | 27314132 | 4.00E-02 i | | | | | 1500 n | 150 n | 54 n | 41000 n | 3100 n |
| NuStar | 85509199 | 7.00E-04 i | | | | | 26 n | 2.6 n | 0.95 n | 720 n | 55 n |
| Octabromodiphenyl ether | 32536520 | 3.00E-03 i | | | | | 110 n | 11 n | 4.1 n | 3100 n | 230 n |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| Octahydro-1357-tetranitro-1357-tetrazocine | 2691410 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| Octamethylpyrophosphoramide | 152169 | 2.00E-03 h | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| Oryzalin | 19044883 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| Oxadiazon | 19666309 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Oxamyl | 23135220 | 2.50E-02 i | | | | | 910 n | 91 n | 34 n | 26000 n | 2000 n |
| Oxyfluorfen | 42874033 | 3.00E-03 i | | | | | 110 n | 11 n | 4.1 n | 3100 n | 230 n |
| Paclobutrazol | 76738620 | 1.30E-02 i | | | | | 470 n | 47 n | 18 n | 13000 n | 1000 n |
| Paraquat | 1910425 | 4.50E-03 i | | | | | 160 n | 16 n | 6.1 n | 4600 n | 350 n |
| Parathion | 56382 | 6.00E-03 h | | | | | 220 n | 22 n | 8.1 n | 6100 n | 470 n |
| Pebulate | 1114712 | 5.00E-02 h | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| Pendimethalin | 40487421 | 4.00E-02 i | | | | | 1500 n | 150 n | 54 n | 41000 n | 3100 n |
| Pentabromo-6-chloro cyclohexane | 87843 | | | 2.30E-02 h | | | 2.9 c | 0.27 c | 0.14 c | 120 c | 28 c |
| Pentabromodiphenyl ether | 32534819 | 2.00E-03 i | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| Pentachlorobenzene | 608935 | 8.00E-04 i | | | | *** | 4.9 n | 2.9 n | 1.1 n | 820 n | 63 n |
| Pentachloronitrobenzene | 82688 | 3.00E-03 i | | 2.60E-01 h | | *** | 0.041 c | 0.024 c | 0.012 c | 11 c | 2.5 c |
| Pentachlorophenol | 87865 | 3.00E-02 i | | 1.20E-01 i | | | 0.56 c | 0.052 c | 0.026 c | 24 c | 5.3 c |
| Permethrin | 52645531 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| Phenmedipham | 13684634 | 2.50E-01 i | | | | | 9100 n | 910 n | 340 n | 260000 n | 20000 n |
| Phenol | 108952 | 6.00E-01 i | | | | | 22000 n | 2200 n | 810 n | 610000 n | 47000 n |
| m-Phenylenediamine | 108452 | 6.00E-03 i | | | | | 220 n | 22 n | 8.1 n | 6100 n | 470 n |
| p-Phenylenediamine | 106503 | 1.90E-01 h | | | | | 6900 n | 690 n | 260 n | 190000 n | 15000 n |
| Phenylmercuric acetate | 62384 | 8.00E-05 i | | | | | 2.9 n | 0.29 n | 0.11 n | 82 n | 6.3 n |
| 2-Phenylphenol | 90437 | | | 1.94E-03 h | | | 35 c | 3.2 c | 1.6 c | 1500 c | 330 c |
| Phorate | 298022 | 2.00E-04 h | | | | | 7.3 n | 0.73 n | 0.27 n | 200 n | 16 n |
| Phosmet | 732116 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Phosphine | 7803512 | 3.00E-04 i | 8.57E-06 h | | | | 11 n | 0.031 n | 0.41 n | 310 n | 23 n |
| Phosphorus (white) | 7723140 | 2.00E-05 i | | | | | 0.73 n | 0.073 n | 0.027 n | 20 n | 1.6 n |
| p-Phthalic acid | 100210 | 1.00E+00 h | | | | | 37000 n | 3700 n | 1400 n | 1000000 n | 78000 n |
| Phthalic anhydride | 85449 | 2.00E+00 i | 3.43E-01 h | | | | 73000 n | 1300 n | 2700 n | 1000000 n | 160000 n |
| Picloram | 1918021 | 7.00E-02 i | | | | | 2600 n | 260 n | 95 n | 72000 n | 5500 n |
| Pirimiphos-methyl | 29232937 | 1.00E-02 i | | | | | 370 n | 37 n | 14 n | 10000 n | 780 n |
| Polybrominated biphenyls | | 7.00E-06 h | | 8.90E+00 h | | | 0.0076 c | 0.0007 c | 0.00035 c | 0.32 c | 0.072 c |
| Polychlorinated biphenyls (PCBs) | 1336363 | | | 7.70E+00 i | | | 0.0087 c | 0.00081 c | 0.00041 c | 0.37 c | 0.083 c |
| Aroclor 1016 | 12674112 | 7.00E-05 i | | | | | 2.6 n | 0.26 n | 0.095 n | 72 n | 5.5 n |
| Polychlorinated terphenyls (PCTs) | | | | 4.50E+00 e | | | 0.015 c | 0.0014 c | 0.0007 c | 0.64 c | 0.14 c |
| Polynuclear aromatic hydrocarbons | | | | | | | | | | | |
| Acenaphthene | 83329 | 6.00E-02 i | | | | | 2200 n | 220 n | 81 n | 61000 n | 4700 n |
| Anthracene | 120127 | 3.00E-01 i | | | | | 11000 n | 1100 n | 410 n | 310000 n | 23000 n |
| Benzo[a]pyrene | 50328 | | | 7.30E+00 i | 6.10E+00 h | | 0.0092 c | 0.001 c | 0.00043 c | 0.39 c | 0.088 c |
| Benzo[b]fluoranthene | 205992 | | | 7.30E-01 e | 6.10E-01 e | | 0.092 c | 0.01 c | 0.0043 c | 3.9 c | 0.88 c |
| Benzo[k]fluoranthene | 207089 | | | 7.30E-02 e | 6.10E-02 e | | 0.92 c | 0.1 c | 0.043 c | 39 c | 8.8 c |
| Benz[a]anthracene | 56553 | | | 7.30E-01 e | 6.10E-01 e | | 0.092 c | 0.01 c | 0.0043 c | 3.9 c | 0.88 c |

*Sources: i=IRIS h=HEAST a=HEAST alt. w=Withdrawn from IRIS or HEAST e=EPA-ECAO provisional o=Other EPA documents* *Basis of RBC: c=carcinogenic effects n=noncarcinogenic effects.*

| Contaminant | CAS | RfDo mg/kg/d | RfDi mg/kg/d | CPSo kg·d/mg | CPSi kg·d/mg | VOC | Tap water µg/L | Ambient air µg/m3 | Fish mg/kg | Industrial soil mg/kg | Residential soil mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chrysene | 218019 | | | 7.30E-03 e | 6.10E-03 e | | 9.2 c | 1 c | 0.43 c | 390 c | 88 c |
| Dibenz[ah]anthracene | 53703 | | | 7.30E+00 e | 6.10E+00 e | | 0.0092 c | 0.001 c | 0.00043 c | 0.39 c | 0.088 c |
| Fluoranthene | 206440 | 4.00E-02 i | | | | | 1500 n | 150 n | 54 n | 41000 n | 3100 n |
| Fluorene | 86737 | 4.00E-02 i | | | | | 1500 n | 150 n | 54 n | 41000 n | 3100 n |
| Indeno[1,2,3-cd]pyrene | 193395 | | | 7.30E-01 e | 6.10E-01 e | | 0.092 c | 0.01 c | 0.0043 c | 3.9 c | 0.88 c |
| Naphthalene | 91203 | 4.00E-02 w | | | | | 1500 n | 150 n | 54 n | 41000 n | 3100 n |
| Pyrene | 129000 | 3.00E-02 i | | | | | 1100 n | 110 n | 41 n | 31000 n | 2300 n |
| Prochloraz | 67747095 | 9.00E-03 i | | 1.50E-01 i | | | 0.45 c | 0.042 c | 0.021 c | 19 c | 4.3 c |
| Profluralin | 26399360 | 6.00E-03 h | | | | | 220 n | 22 n | 8.1 n | 6100 n | 470 n |
| Prometon | 1610180 | 1.50E-02 i | | | | | 550 n | 55 n | 20 n | 15000 n | 1200 n |
| Prometryn | 7287196 | 4.00E-03 i | | | | | 150 n | 15 n | 5.4 n | 4100 n | 310 n |
| Pronamide | 23950585 | 7.50E-02 i | | | | | 2700 n | 270 n | 100 n | 77000 n | 5900 n |
| Propachlor | 1918167 | 1.30E-02 i | | | | | 470 n | 47 n | 18 n | 13000 n | 1000 n |
| Propanil | 709988 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Propargite | 2312358 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Propargyl alcohol | 107197 | 2.00E-03 i | | | | | 73 n | 7.3 n | 2.7 n | 2000 n | 160 n |
| Propazine | 139402 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Propham | 122429 | 2.00E-02 i | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Propiconazole | 60207901 | 1.30E-02 i | | | | | 470 n | 47 n | 18 n | 13000 n | 1000 n |
| Propylene glycol | 57556 | 2.00E+01 h | | | | | 730000 n | 73000 n | 27000 n | 1000000 n | 1000000 n |
| Propylene glycol, monoethyl ether | 52125538 | 7.00E-01 h | | | | | 26000 n | 2600 n | 950 n | 720000 n | 55000 n |
| Propylene glycol, monomethyl ether | 107982 | 7.00E-01 h | 5.71E-01 i | | | | 26000 n | 2100 n | 950 n | 720000 n | 55000 n |
| Propylene oxide | 75569 | | 8.57E-03 i | 2.40E-01 i | 1.29E-02 i | | 0.28 c | 0.49 c | 0.013 c | 12 c | 2.7 c |
| Pursuit | 81335775 | 2.50E-01 i | | | | | 9100 n | 910 n | 340 n | 260000 n | 20000 n |
| Pydrin | 51630581 | 2.50E-02 i | | | | | 910 n | 91 n | 34 n | 26000 n | 2000 n |
| Pyridine | 110861 | 1.00E-03 i | | | | | 37 n | 3.7 n | 1.4 n | 1000 n | 78 n |
| Quinalphos | 13593038 | 5.00E-04 i | | | | | 18 n | 1.8 n | 0.68 n | 510 n | 39 n |
| Quinoline | 91225 | | | 1.20E+01 h | | | 0.0056 c | 0.00052 c | 0.00026 c | 0.24 c | 0.053 c |
| Resmethrin | 10463868 | 3.00E-02 i | | | | | 1100 n | 110 n | 41 n | 31000 n | 2300 n |
| Ronnel | 299843 | 5.00E-02 h | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |
| Rotenone | 83794 | 4.00E-03 i | | | | | 150 n | 15 n | 5.4 n | 4100 n | 310 n |
| Savey | 78587050 | 2.50E-02 i | | | | | 910 n | 91 n | 34 n | 26000 n | 2000 n |
| Selenious Acid | 7783008 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Selenium | 7782492 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Selenourea | 630104 | 5.00E-03 h | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Sethoxydim | 74051802 | 9.00E-02 i | | | | | 3300 n | 330 n | 120 n | 92000 n | 7000 n |
| Silver and compounds | 7440224 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Simazine | 122349 | 5.00E-03 i | | 1.20E-01 h | | | 0.56 c | 0.052 c | 0.026 c | 24 c | 5.3 c |
| Sodium azide | 26628228 | 4.00E-03 i | | | | | 150 n | 15 n | 5.4 n | 4100 n | 310 n |
| Sodium diethyldithiocarbamate | 148185 | 3.00E-02 i | | 2.70E-01 h | | | 0.25 c | 0.023 c | 0.012 c | 11 c | 2.4 c |
| Sodium fluoroacetate | 62748 | 2.00E-05 i | | | | | 0.73 n | 0.073 n | 0.027 n | 20 n | 1.6 n |
| Sodium metavanadate | 13718268 | 1.00E-03 h | | | | | 37 n | 3.7 n | 1.4 n | 1000 n | 78 n |

*Sources: i=IRIS h=HEAST a=HEAST alt. w=Withdrawn from IRIS or HEAST e=EPA-ECAO provisional o=Other EPA documents* *Basis of RBC: c=carcinogenic effects n=noncarcinogenic effects.*

| Contaminant | CAS | RfDo mg/kg/d | RfDi mg/kg/d | CPSo kg·d/mg | CPSi kg·d/mg | VOC | Tap water µg/L | Ambient air µg/m3 | Fish mg/kg | Industrial soil mg/kg | Residential soil mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Strontium, stable | 7440246 | 6.00E-01 i | | | | | 22000 n | 2200 n | 810 n | 610000 n | 47000 n |
| Strychnine | 57249 | 3.00E-04 i | | | | | 11 n | 1.1 n | 0.41 n | 310 n | 23 n |
| Styrene | 100425 | 2.00E-01 i | 2.86E-01 i | | | *** | 1600 n | 1000 n | 270 n | 200000 n | 16000 n |
| Systhane | 88671890 | 2.50E-02 i | | | | | 910 n | 91 n | 34 n | 26000 n | 2000 n |
| 2,3,7,8-TCDD (dioxin) | 1746016 | | | 1.56E+05 h | 1.16E+05 h | | 4.30E-07 c | 5.40E-08 c | 2.00E-08 c | 0.000018 c | 4.10E-06 c |
| Tebuthiuron | 34014181 | 7.00E-02 i | | | | | 2600 n | 260 n | 95 n | 72000 n | 5500 n |
| Temephos | 3383968 | 2.00E-02 h | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Terbacil | 5902512 | 1.30E-02 i | | | | | 470 n | 47 n | 18 n | 13000 n | 1000 n |
| Terbufos | 13071799 | 2.50E-05 h | | | | | 0.91 n | 0.091 n | 0.034 n | 26 n | 2 n |
| Terbutryn | 886500 | 1.00E-03 i | | | | | 37 n | 3.7 n | 1.4 n | 1000 n | 78 n |
| 1,2,4,5-Tetrachlorobenzene | 95943 | 3.00E-04 i | | | | *** | 1.8 n | 1.1 n | 0.41 n | 310 n | 23 n |
| 1,1,1,2-Tetrachloroethane | 630206 | 3.00E-02 i | | 2.60E-02 i | 2.59E-02 i | *** | 0.41 c | 0.24 c | 0.12 c | 110 c | 25 c |
| 1,1,2,2-Tetrachloroethane | 79345 | | | 2.00E-01 i | 2.03E-01 i | *** | 0.052 c | 0.031 c | 0.016 c | 14 c | 3.2 c |
| Tetrachloroethylene (PCE) | 127184 | 1.00E-02 i | | 5.20E-02 e | 2.03E-03 e | *** | 1.1 c | 3.1 c | 0.061 c | 55 c | 12 c |
| 2,3,4,6-Tetrachlorophenol | 58902 | 3.00E-02 i | | | | | 1100 n | 110 n | 41 n | 31000 n | 2300 n |
| p,a,a,a-Tetrachlorotoluene | 5216251 | | | 2.00E+01 h | | *** | 0.00053 c | 0.00031 c | 0.00016 c | 0.14 c | 0.032 c |
| Tetrachlorovinphos | 961115 | 3.00E-02 i | | 2.40E-02 h | | | 2.8 c | 0.26 c | 0.13 c | 120 c | 27 c |
| Tetraethyldithiopyrophosphate | 3689245 | 5.00E-04 i | | | | | 18 n | 1.8 n | 0.68 n | 510 n | 39 n |
| Thallic oxide | 1314325 | 7.00E-05 w | | | | | 2.6 n | 0.26 n | 0.095 n | 72 n | 5.5 n |
| Thallium | | | | | | | | | | | |
| Thallium acetate | 563688 | 9.00E-05 i | | | | | 3.3 n | 0.33 n | 0.12 n | 92 n | 7 n |
| Thallium carbonate | 6533739 | 8.00E-05 i | | | | | 2.9 n | 0.29 n | 0.11 n | 82 n | 6.3 n |
| Thallium chloride | 7791120 | 8.00E-05 i | | | | | 2.9 n | 0.29 n | 0.11 n | 82 n | 6.3 n |
| Thallium nitrate | 10102451 | 9.00E-05 i | | | | | 3.3 n | 0.33 n | 0.12 n | 92 n | 7 n |
| Thallium selenite | 12039520 | 9.00E-05 w | | | | | 3.3 n | 0.33 n | 0.12 n | 92 n | 7 n |
| Thallium sulfate | 7446186 | 8.00E-05 i | | | | | 2.9 n | 0.29 n | 0.11 n | 82 n | 6.3 n |
| Thiobencarb | 28249776 | 1.00E-02 i | | | | | 370 n | 37 n | 14 n | 10000 n | 780 n |
| 2-(Thiocyanomethylthio)-benzothiazole | 21564170 | 3.00E-02 h | | | | | 1100 n | 110 n | 41 n | 31000 n | 2300 n |
| Thiofanox | 39196184 | 3.00E-04 h | | | | | 11 n | 1.1 n | 0.41 n | 310 n | 23 n |
| Thiophanate-methyl | 23564058 | 8.00E-02 i | | | | | 2900 n | 290 n | 110 n | 82000 n | 6300 n |
| Thiram | 137268 | 5.00E-03 i | | | | | 180 n | 18 n | 6.8 n | 5100 n | 390 n |
| Tin and compounds | | 6.00E-01 h | | | | | 22000 n | 2200 n | 810 n | 610000 n | 47000 n |
| Toluene | 108883 | 2.00E-01 i | 1.14E-01 w | | | *** | 750 n | 420 n | 270 n | 200000 n | 16000 n |
| Toluene-2,4-diamine | 95807 | | | 3.20E+00 h | | | 0.021 c | 0.002 c | 0.00099 c | 0.89 c | 0.2 c |
| Toluene-2,5-diamine | 95705 | 6.00E-01 h | | | | | 22000 n | 2200 n | 810 n | 610000 n | 47000 n |
| Toluene-2,6-diamine | 823405 | 2.00E-01 h | | | | | 7300 n | 730 n | 270 n | 200000 n | 16000 n |
| p-Toluidine | 106490 | | | 1.90E-01 h | | | 0.35 c | 0.033 c | 0.017 c | 15 c | 3.4 c |
| Toxaphene | 8001352 | | | 1.10E+00 i | 1.12E+00 i | | 0.061 c | 0.0056 c | 0.0029 c | 2.6 c | 0.58 c |
| Tralomethrin | 66841256 | 7.50E-03 i | | | | | 270 n | 27 n | 10 n | 7700 n | 590 n |
| Triallate | 2303175 | 1.30E-02 i | | | | | 470 n | 47 n | 18 n | 13000 n | 1000 n |
| Triasulfuron | 82097505 | 1.00E-02 i | | | | | 370 n | 37 n | 14 n | 10000 n | 780 n |
| 1,2,4-Tribromobenzene | 615543 | 5.00E-03 i | | | | *** | 30 n | 18 n | 6.8 n | 5100 n | 390 n |

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| Contaminant | CAS | RfDo mg/kg/d | RfDi mg/kg/d | CPSo kg·d/mg | CPSi kg·d/mg | VOC | Tap water µg/L | Ambient air µg/m3 | Fish mg/kg | Industrial soil mg/kg | Residential soil mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tributyltin oxide (TBTO) | 56359 | 3.00E-05 i | | | | | 1.1 n | 0.11 n | 0.041 n | 31 n | 2.3 n |
| 2,4,6-Trichloroaniline hydrochloride | 33663502 | | | 2.90E-02 h | | | 2.3 c | 0.22 c | 0.11 c | 99 c | 22 c |
| 2,4,6-Trichloroaniline | 634935 | | | 3.40E-02 h | | | 2 c | 0.18 c | 0.093 c | 84 c | 19 c |
| 1,2,4-Trichlorobenzene | 120821 | 1.00E-02 i | 5.71e-02 h | | | *** | 190 n | 210 n | 14 n | 10000 n | 780 n |
| 1,1,1-Trichloroethane | 71556 | 9.00E-02 w | 2.86E-01 w | | | *** | 1300 n | 1000 n | 120 n | 92000 n | 7000 n |
| 1,1,2-Trichloroethane | 79005 | 4.00E-03 i | | 5.70E-02 i | 5.60E-02 i | *** | 0.19 c | 0.11 c | 0.055 c | 50 c | 11 c |
| Trichloroethylene (TCE) | 79016 | 6.00E-03 e | | 1.10E-02 w | 6.00E-03 e | *** | 1.6 c | 1 c | 0.29 c | 260 c | 58 c |
| Trichlorofluoromethane | 75694 | 3.00E-01 i | 2.00E-01 e | | | *** | 1300 n | 730 n | 410 n | 310000 n | 23000 n |
| 2,4,5-Trichlorophenol | 95954 | 1.00E-01 i | | | | | 3700 n | 370 n | 140 n | 100000 n | 7800 n |
| 2,4,6-Trichlorophenol | 88062 | | | 1.10E-02 i | 1.09E-02 i | | 6.1 c | 0.57 c | 0.29 c | 260 c | 58 c |
| 2,4,5-Trichlorophenoxyacetic acid | 93765 | 1.00E-02 i | | | | | 370 n | 37 n | 14 n | 10000 n | 780 n |
| 2-(2,4,5-Trichlorophenoxy)propionic acid | 93721 | 8.00E-03 i | | | | | 290 n | 29 n | 11 n | 8200 n | 630 n |
| 1,1,2-Trichloropropane | 598776 | 5.00E-03 i | | | | *** | 30 n | 18 n | 6.8 n | 5100 n | 390 n |
| 1,2,3-Trichloropropane | 96184 | 6.00E-03 i | | 7.00e+00 i | | *** | 0.0015 c | 0.00089 c | 0.00045 c | 0.41 c | 0.091 c |
| 1,2,3-Trichloropropene | 96195 | 5.00E-03 h | | | | *** | 30 n | 18 n | 6.8 n | 5100 n | 390 n |
| 1,1,2-Trichloro-1,2,2- trifluoroethane | 76131 | 3.00E+01 i | 8.57E+00 h | | | *** | 59000 n | 31000 n | 41000 n | 1000000 n | 1000000 n |
| Tridiphane | 58138082 | 3.00E-03 i | | | | | 110 n | 11 n | 4.1 n | 3100 n | 230 n |
| Triethylamine | 121448 | | 2.00E-03 i | | | | 73 n | 7.3 n | | | |
| Trifluralin | 1582098 | 7.50E-03 i | | 7.70E-03 i | | | 8.7 c | 0.81 c | 0.41 c | 370 c | 83 c |
| 1,2,4-Trimethylbenzene | 95636 | 5.00e-04 e | | | | *** | 3 n | 1.8 n | 0.68 n | 510 n | 39 n |
| 1,3,5-Trimethylbenzene | 108678 | 4.00e-04 e | | | | *** | 2.4 n | 1.5 n | 0.54 n | 410 n | 31 n |
| Trimethyl phosphate | 512561 | | | 3.70E-02 h | | | 1.8 c | 0.17 c | 0.085 c | 77 c | 17 c |
| 1,3,5-Trinitrobenzene | 99354 | 5.00E-05 i | | | | | 1.8 n | 0.18 n | 0.068 n | 51 n | 3.9 n |
| Trinitrophenylmethylnitramine | 479458 | 1.00E-02 h | | | | | 370 n | 37 n | 14 n | 10000 n | 780 n |
| 2,4,6-Trinitrotoluene | 118967 | 5.00E-04 i | | 3.00E-02 i | | | 2.2 c | 0.21 c | 0.11 c | 95 c | 21 c |
| Uranium (soluble salts) | 7440611 | 3.00E-03 i | | | | | 110 n | 11 n | 4.1 n | 3100 n | 230 n |
| Vanadium | 7440622 | 7.00E-03 h | | | | | 260 n | 26 n | 9.5 n | 7200 n | 550 n |
| Vanadium pentoxide | 1314621 | 9.00E-03 i | | | | | 330 n | 33 n | 12 n | 9200 n | 700 n |
| Vanadium sulfate | 36907423 | 2.00E-02 h | | | | | 730 n | 73 n | 27 n | 20000 n | 1600 n |
| Vernam | 1929777 | 1.00E-03 i | | | | | 37 n | 3.7 n | 1.4 n | 1000 n | 78 n |
| Vinclozolin | 50471448 | 2.50E-02 i | | | | | 910 n | 91 n | 34 n | 26000 n | 2000 n |
| Vinyl acetate | 108054 | 1.00E+00 h | 5.71E-02 i | | | | 37000 n | 210 n | 1400 n | 1000000 n | 78000 n |
| Vinyl bromide | 593602 | | 8.57E-04 i | | | *** | 5.2 n | 3.1 n | | | |
| Vinyl chloride | 75014 | | | 1.90E+00 h | 3.00E-01 h | *** | 0.019 c | 0.021 c | 0.0017 c | 1.5 c | 0.34 c |
| Warfarin | 81812 | 3.00E-04 i | | | | | 11 n | 1.1 n | 0.41 n | 310 n | 23 n |
| m-Xylene | 108323 | 2.00E+00 h | 2.00E-01 w | | | *** | 1400 n | 730 n | 2700 n | 1000000 n | 160000 n |
| o-Xylene | 95476 | 2.00E+00 h | 2.00E-01 w | | | *** | 1400 n | 730 n | 2700 n | 1000000 n | 160000 n |
| p-Xylene | 106423 | | 8.57E-02 w | | | *** | 520 n | 310 n | | | |
| Xylene (mixed) | 1330207 | 2.00E+00 i | | | | *** | 12000 n | 7300 n | 2700 n | 1000000 n | 160000 n |
| Zinc | 7440666 | 3.00E-01 i | | | | | 11000 n | 1100 n | 410 n | 310000 n | 23000 n |
| Zinc phosphide | 1314847 | 3.00E-04 i | | | | | 11 n | 1.1 n | 0.41 n | 310 n | 23 n |
| Zineb | 12122677 | 5.00E-02 i | | | | | 1800 n | 180 n | 68 n | 51000 n | 3900 n |

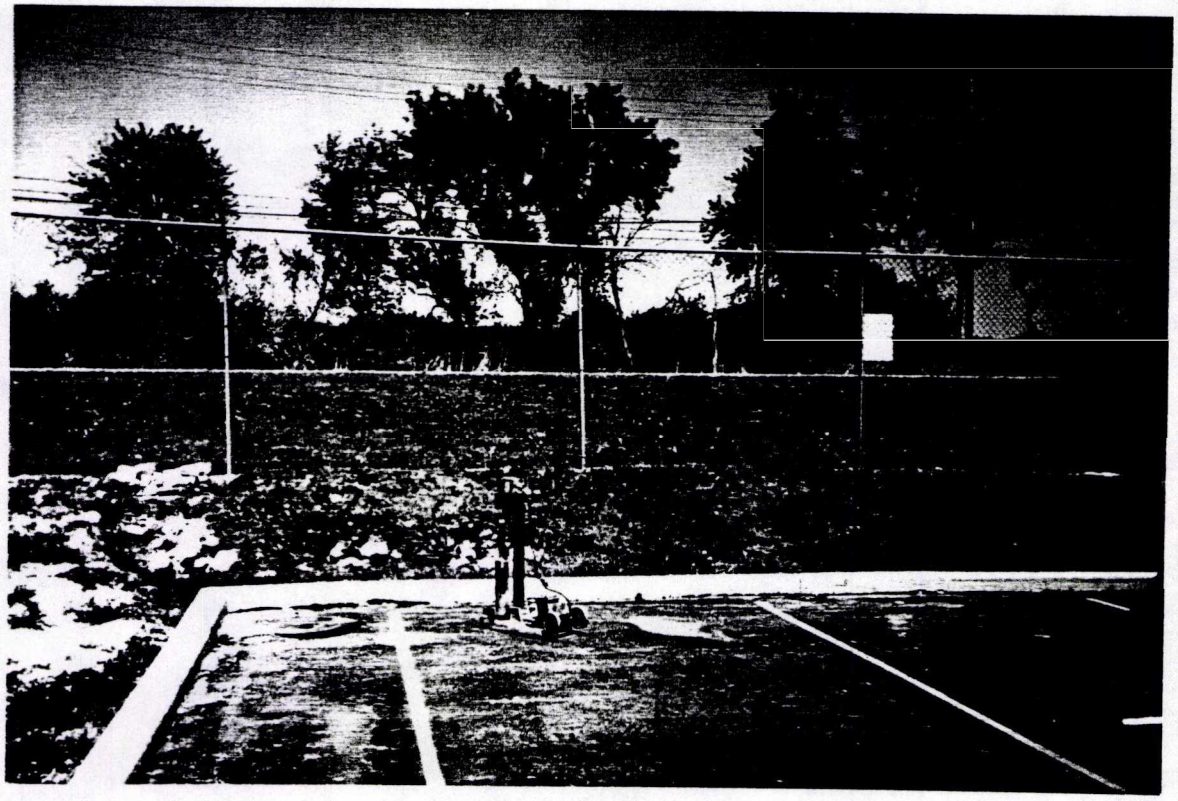
# APPENDIX L

# PHOTOGRAPHS

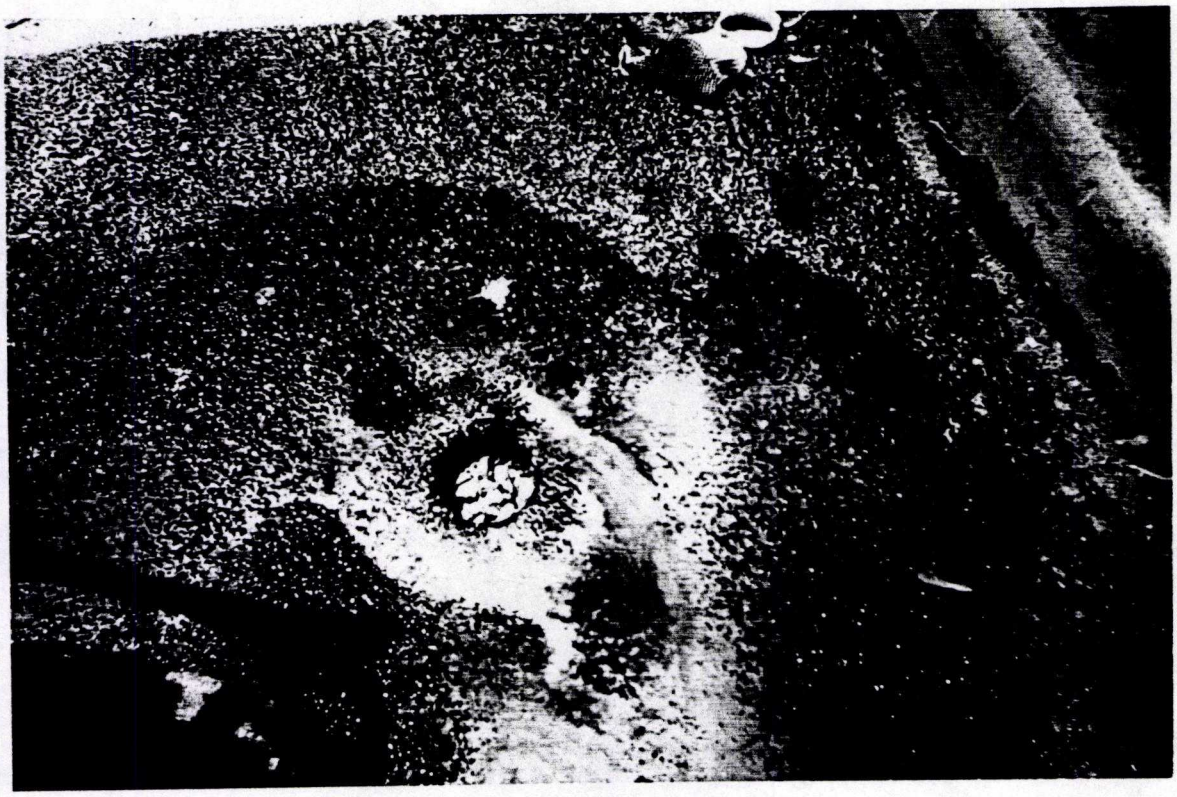


Recycled Paper

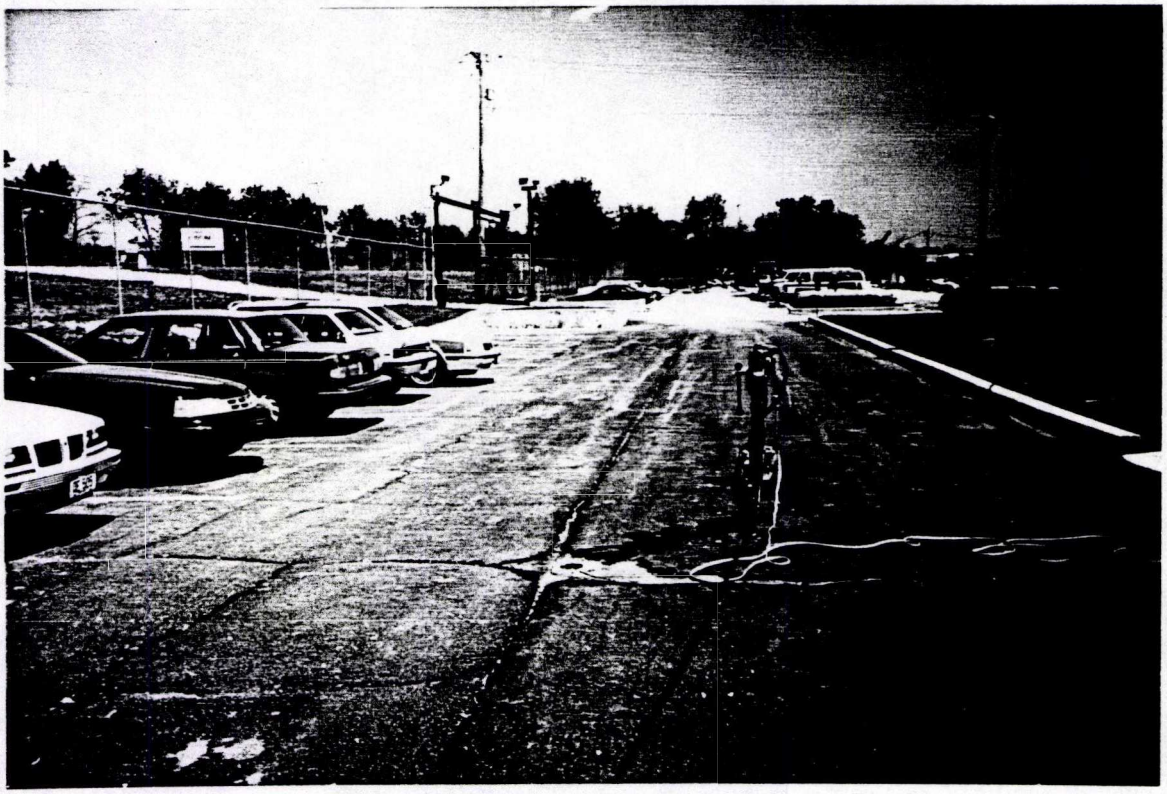
▲ Core Machine at SB-1, looking west.



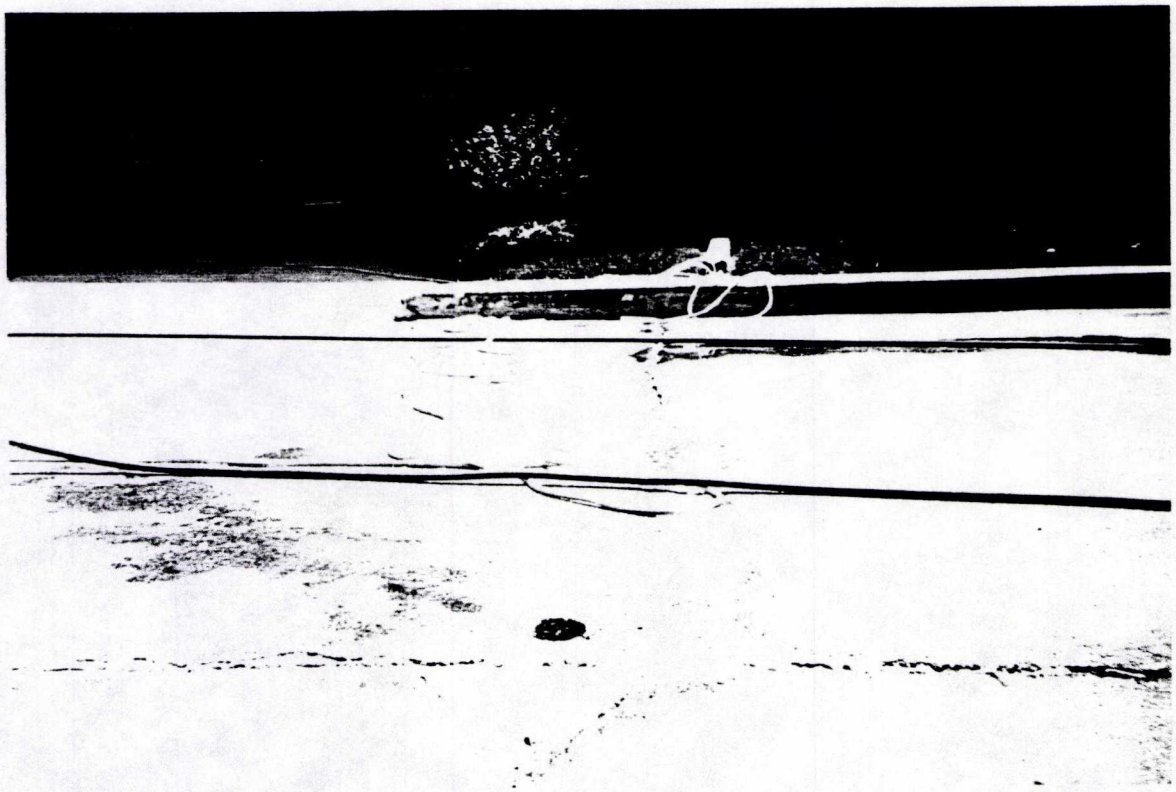
▲ Core Machine at SB-1, looking north



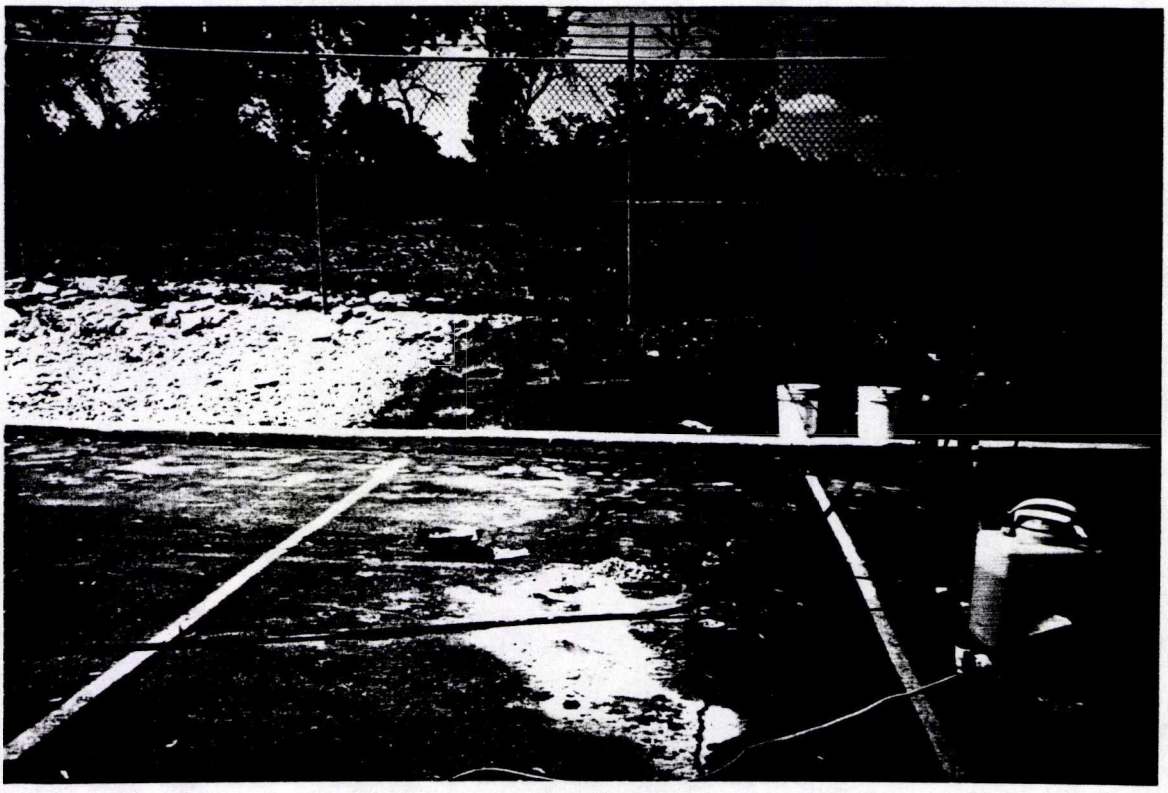
▲ View of SB-1 core asphalt, then limestone fill



▲ View looking east at SB-2, note cracks in asphalt



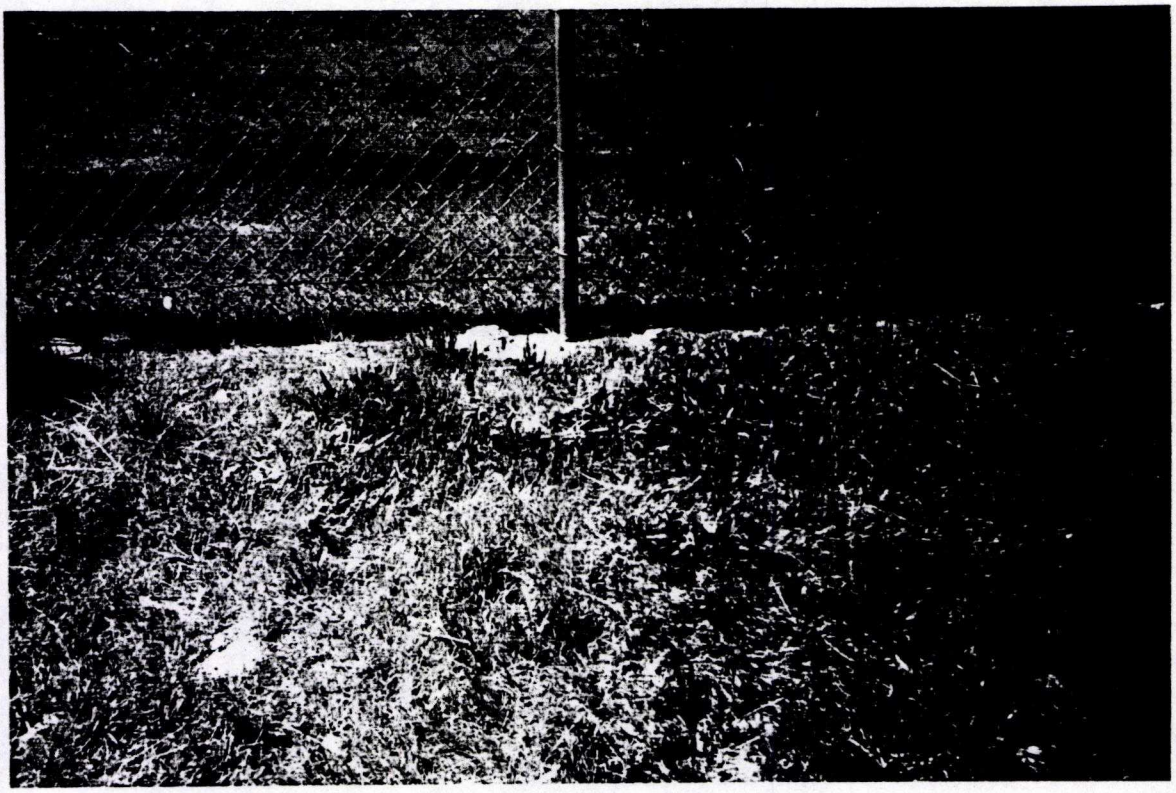
▲ Looking south at SB-2, towards office



▲ Looking north at SB-3

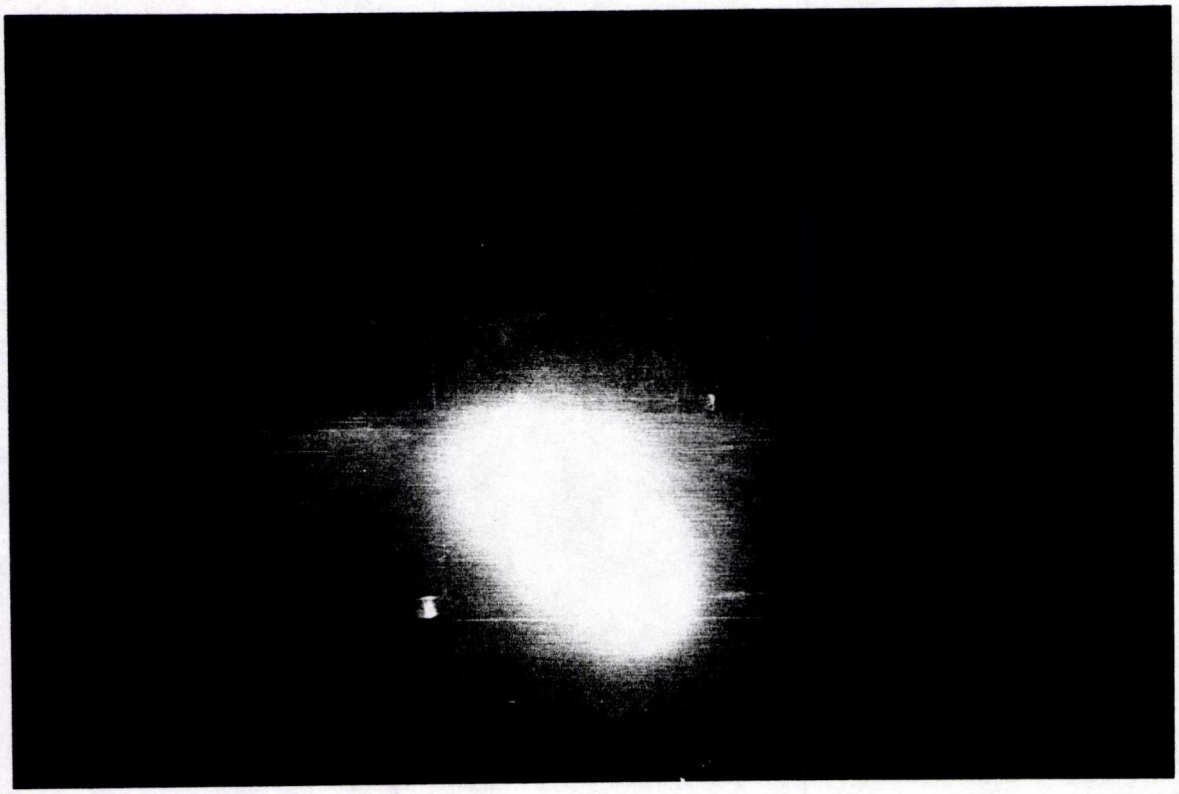
▲ Looking east at SB-3

▲ Close-up of SB-3



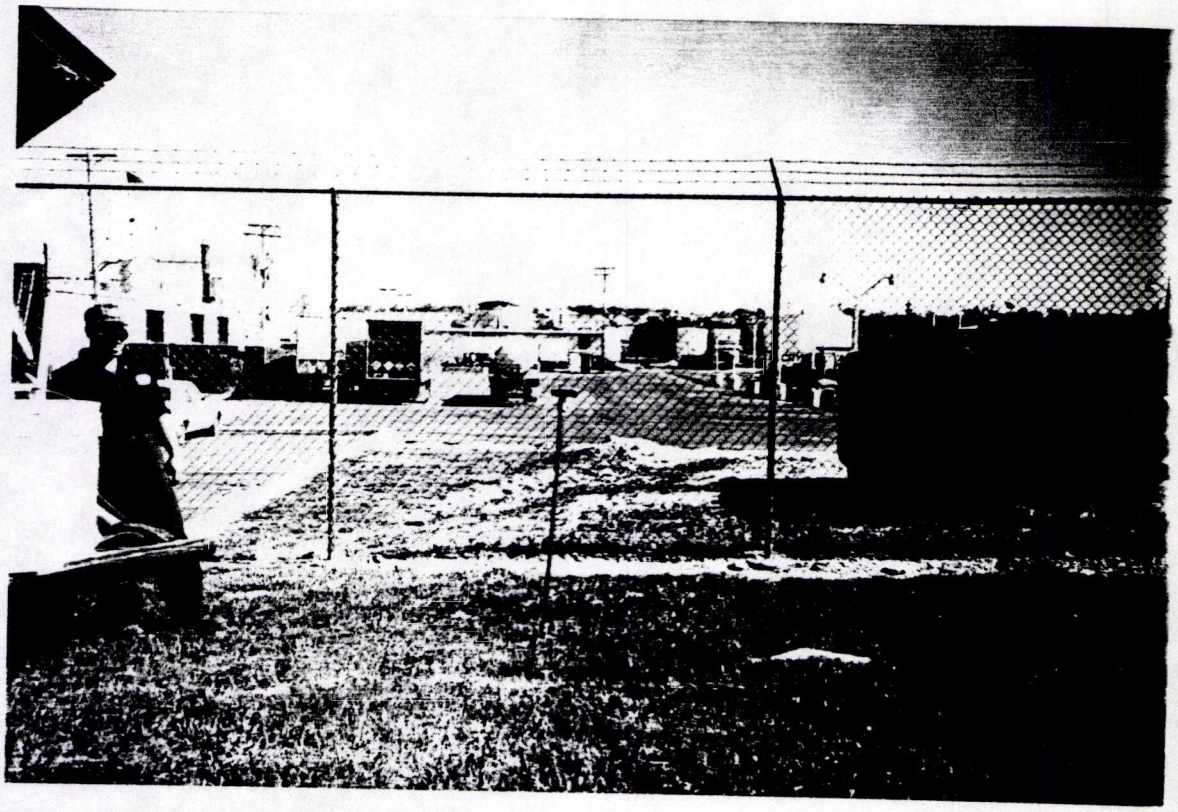
▲ Looking north at SB-4, fence in background, boring 4 feet from fence

◄ Looking west at SB-4, note gate in background

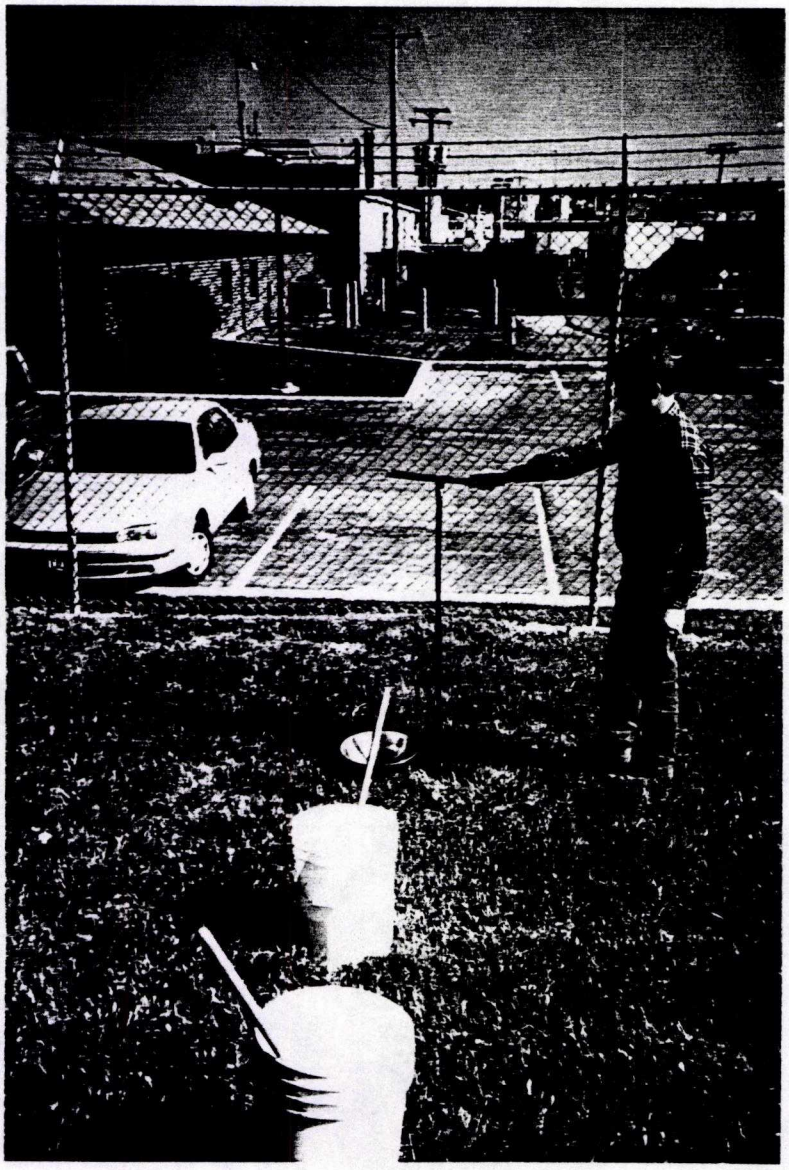


▲ Looking east at SB-5, (poor exposure)

▲ Looking south at SB-6

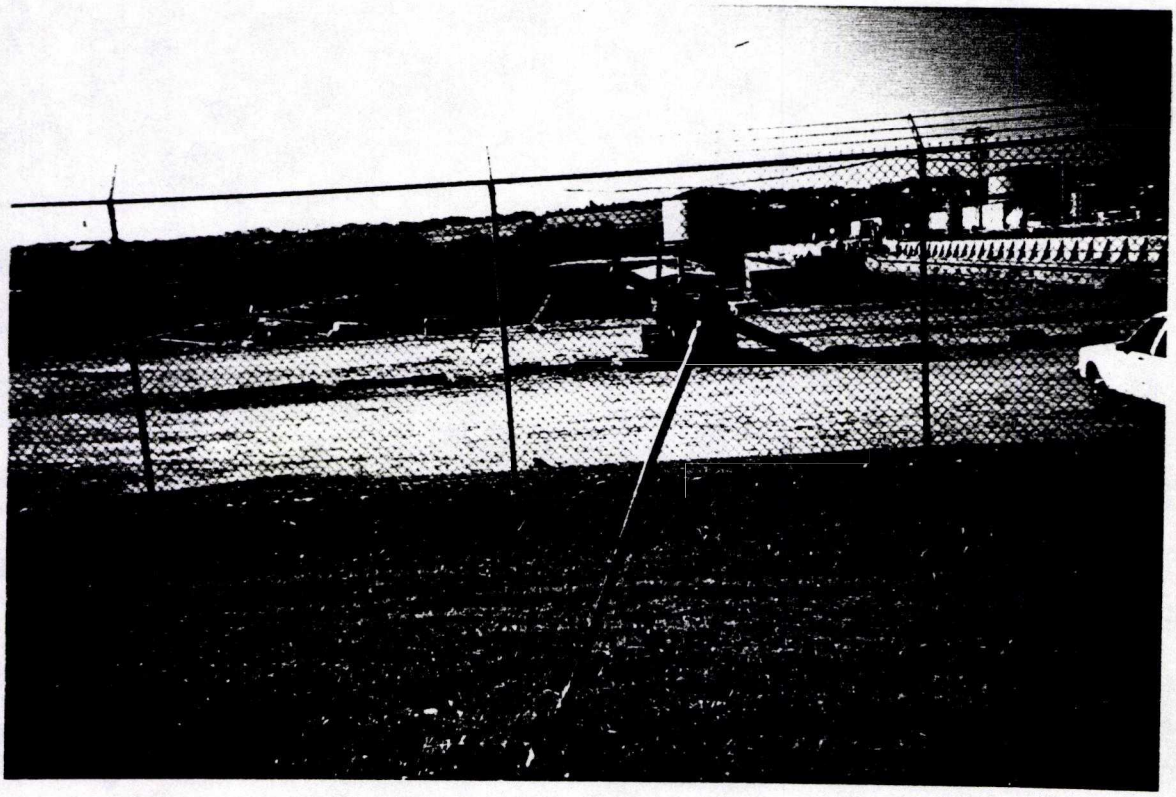


▲ Looking south at SB-7



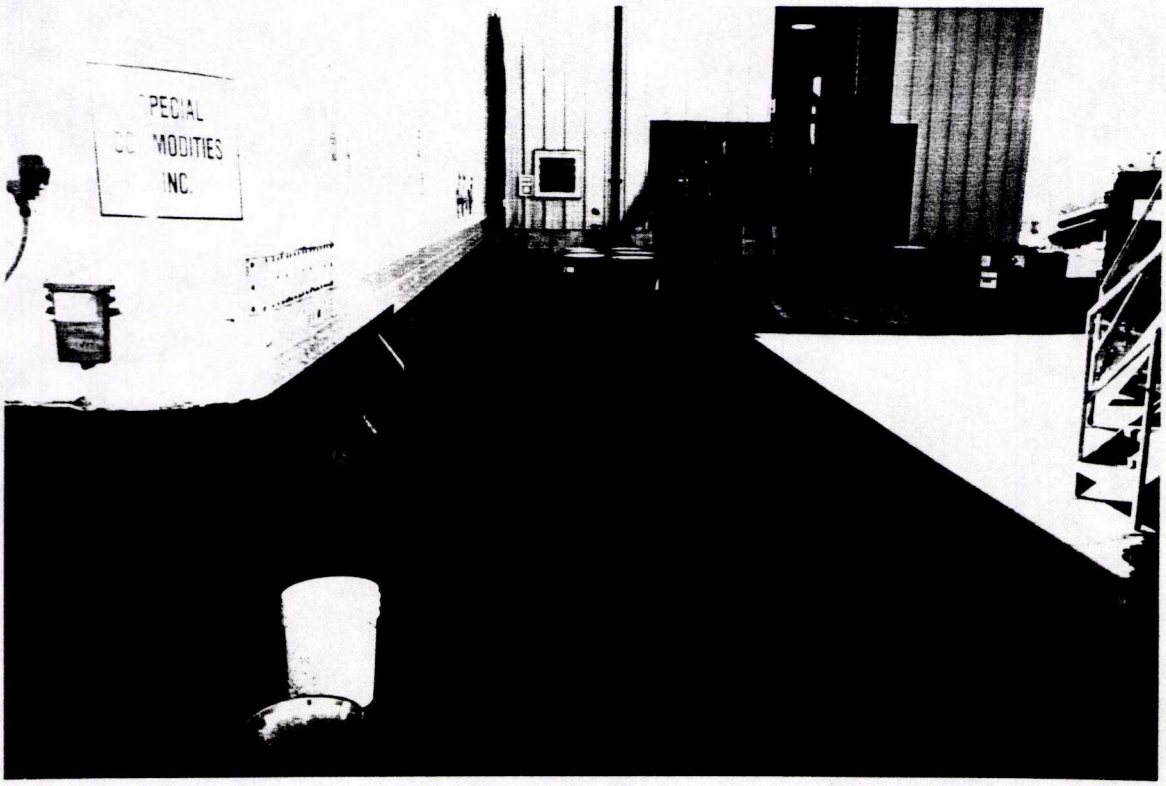
◄ Looking south at SB-8

▲ Looking south at SB-9

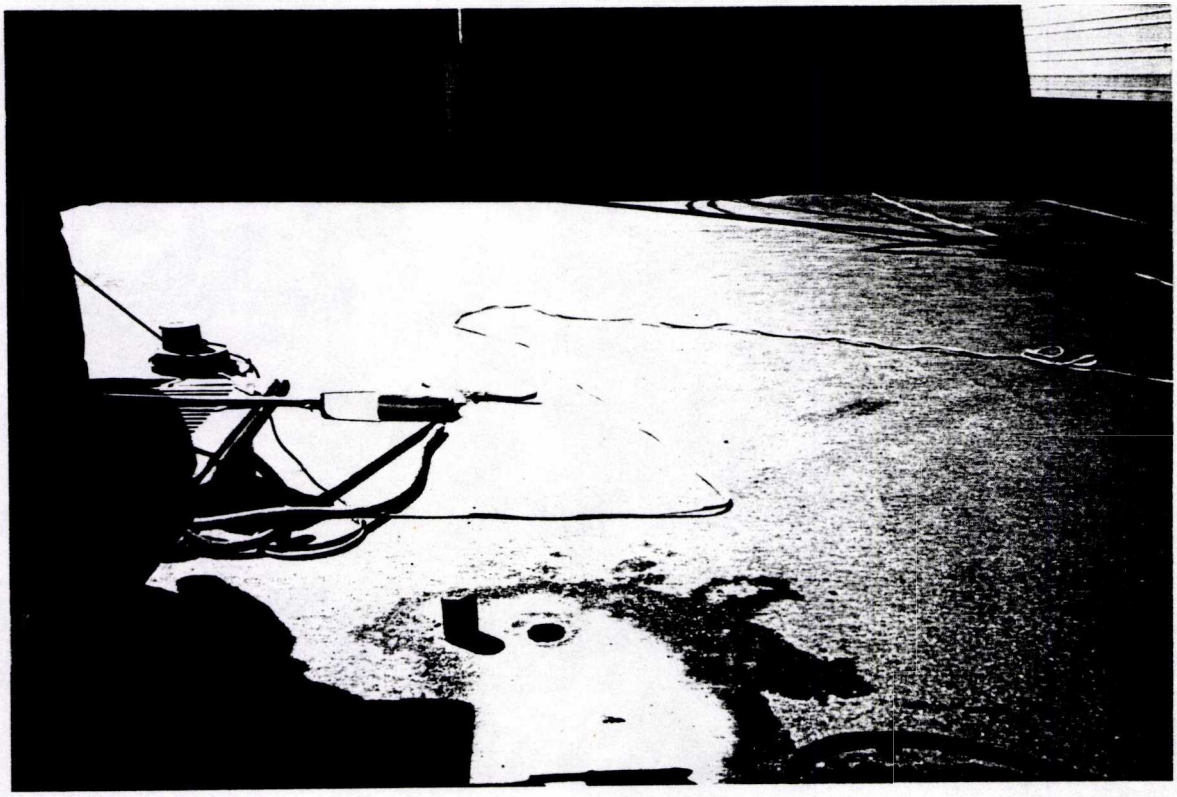


▲ Looking south at SB-10

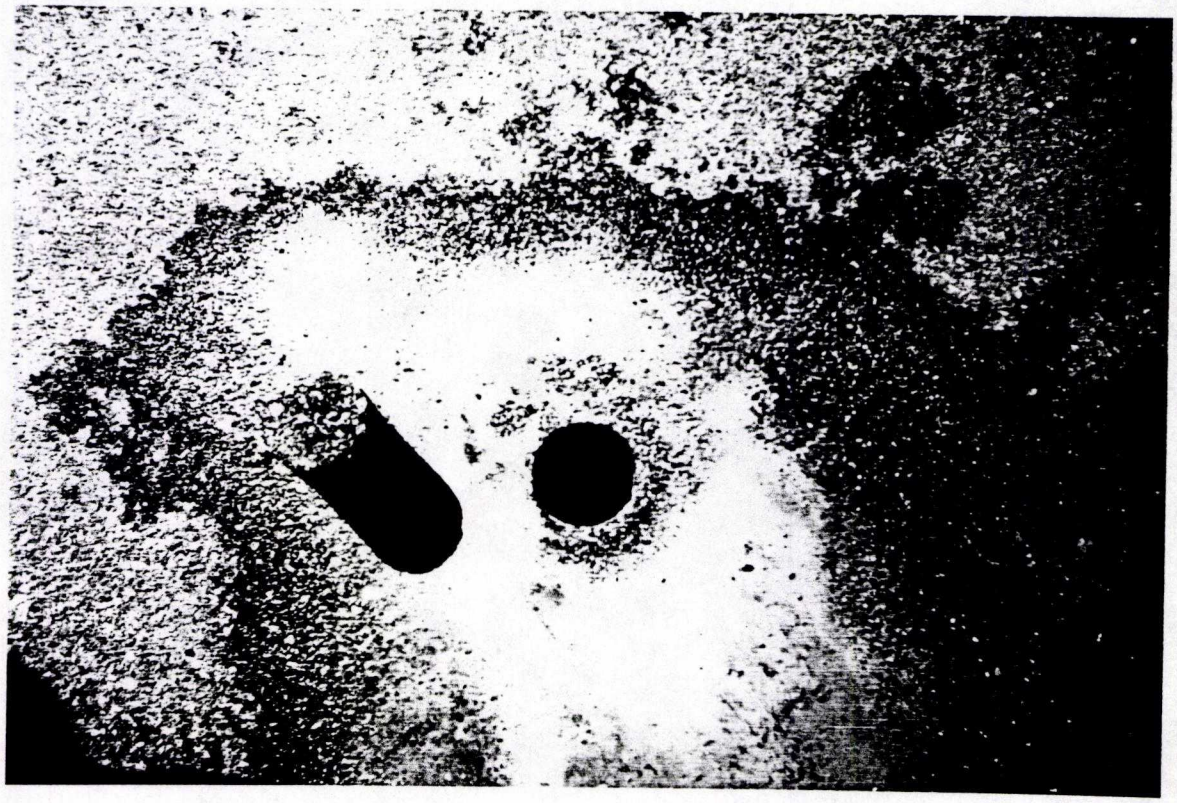
▲ Looking south at SB-11



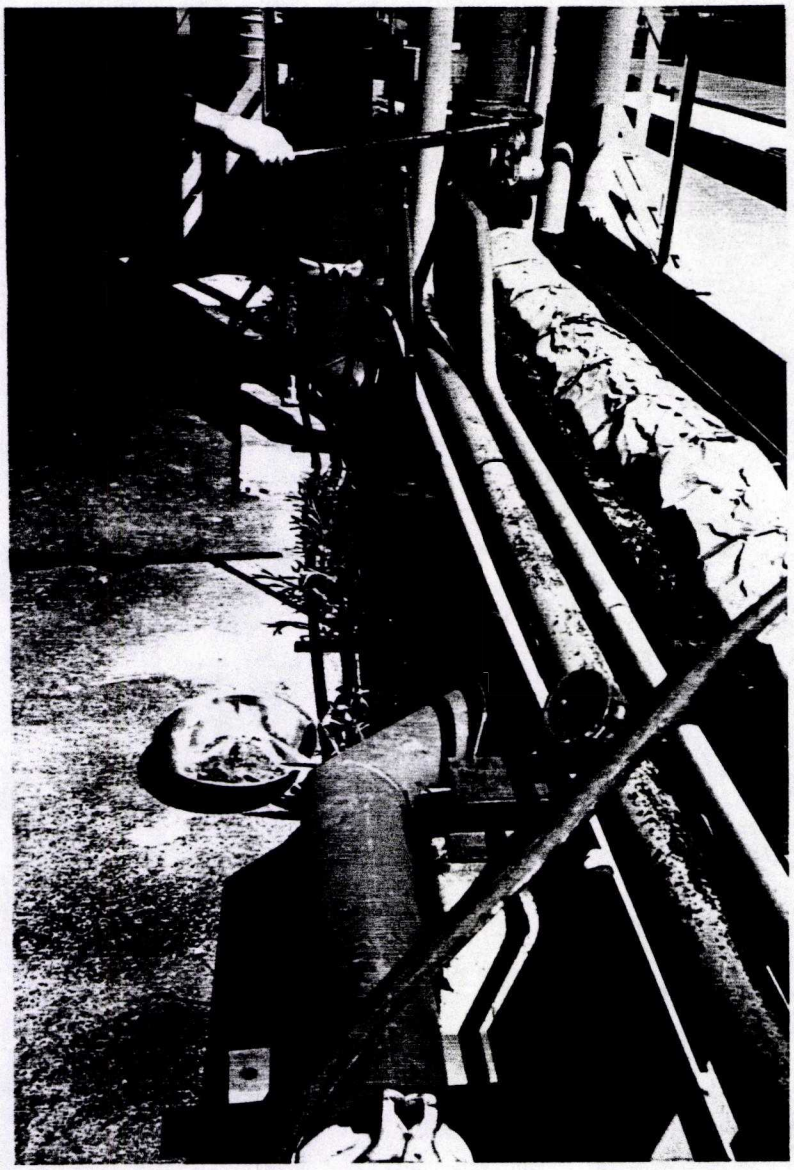

▲ Looking south at SB-11, toward drum crushing Unit



▲ Looking south at SB-12

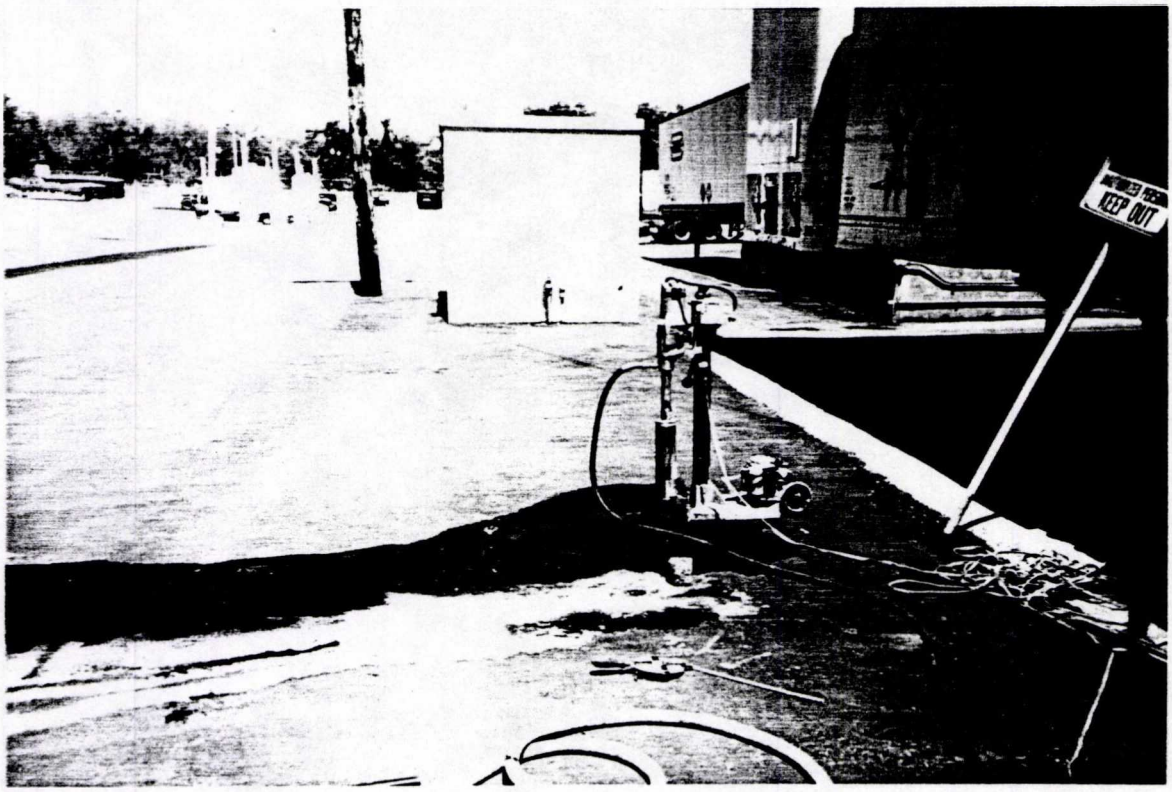


▲ Looking south at SB-12, prior to sampling and second coring



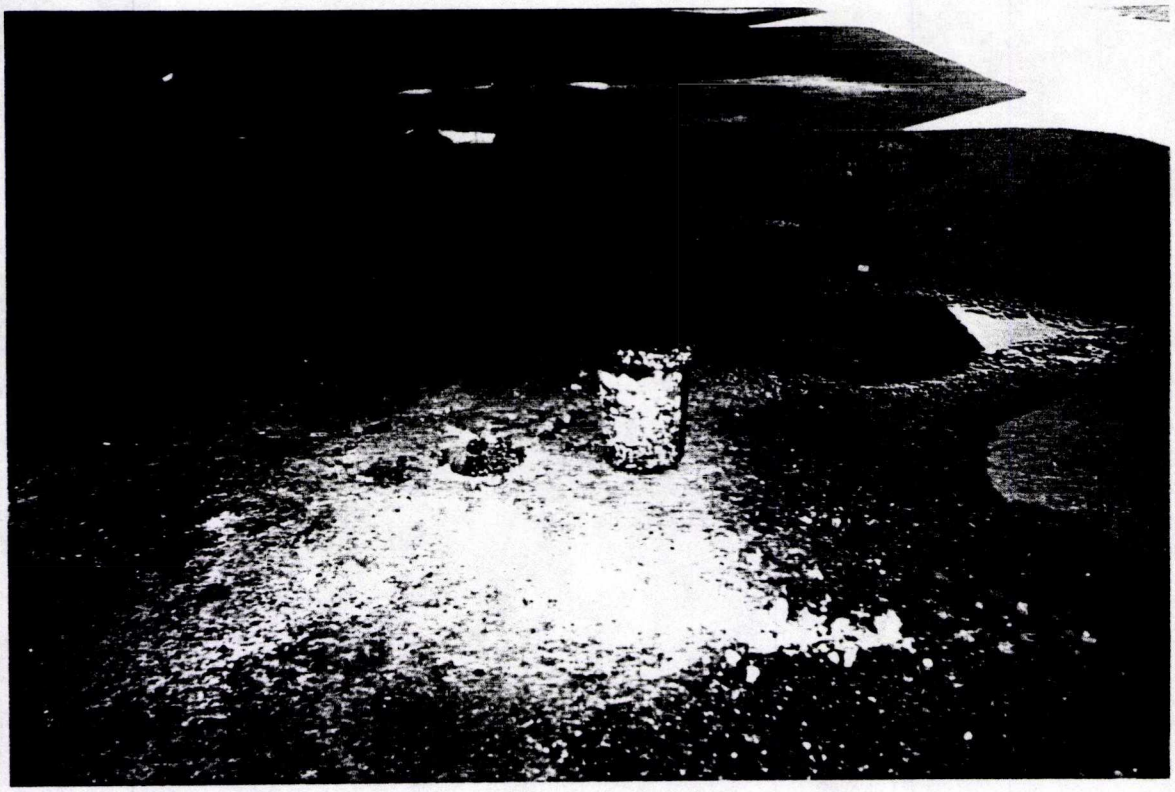
◄ Looking north at SB-13

▼ Looking north towards gate with SB-13 in foreground

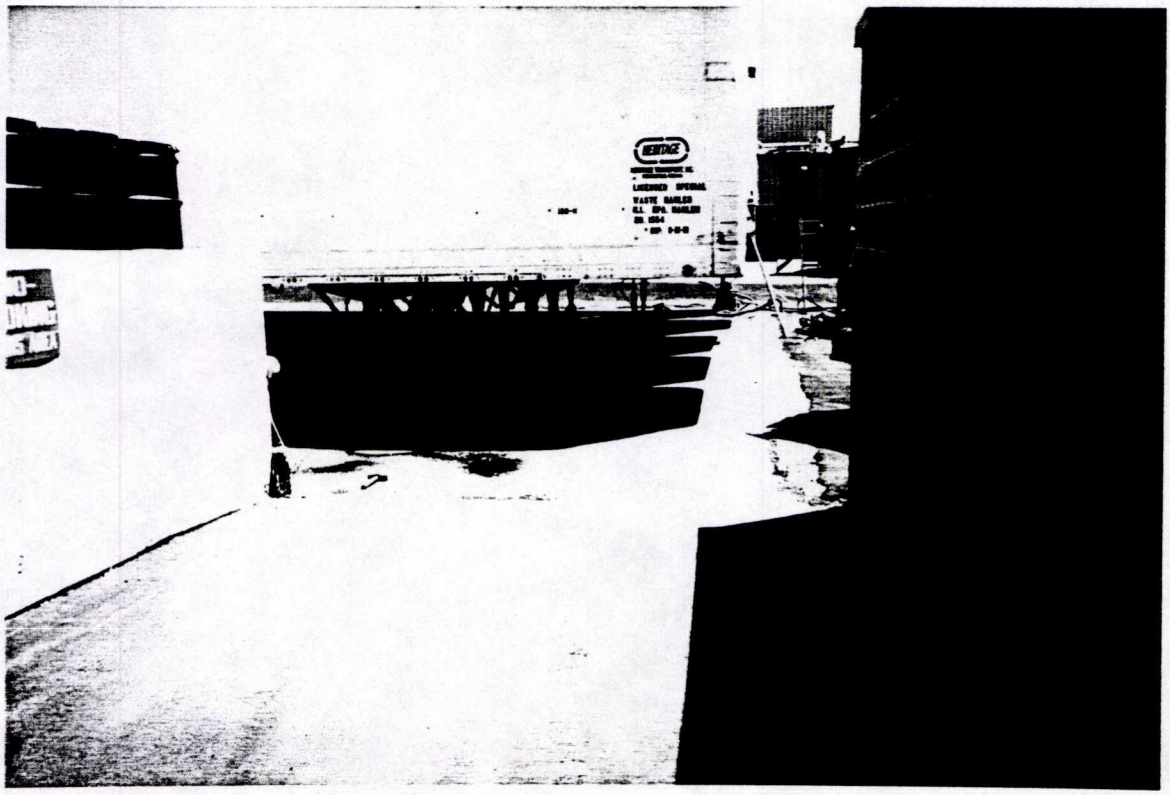



▲ View north with SB-14 in foreground

▲ Close-up of SB-15 (picture did not take)



▲ Close-up of SB-15, looking south



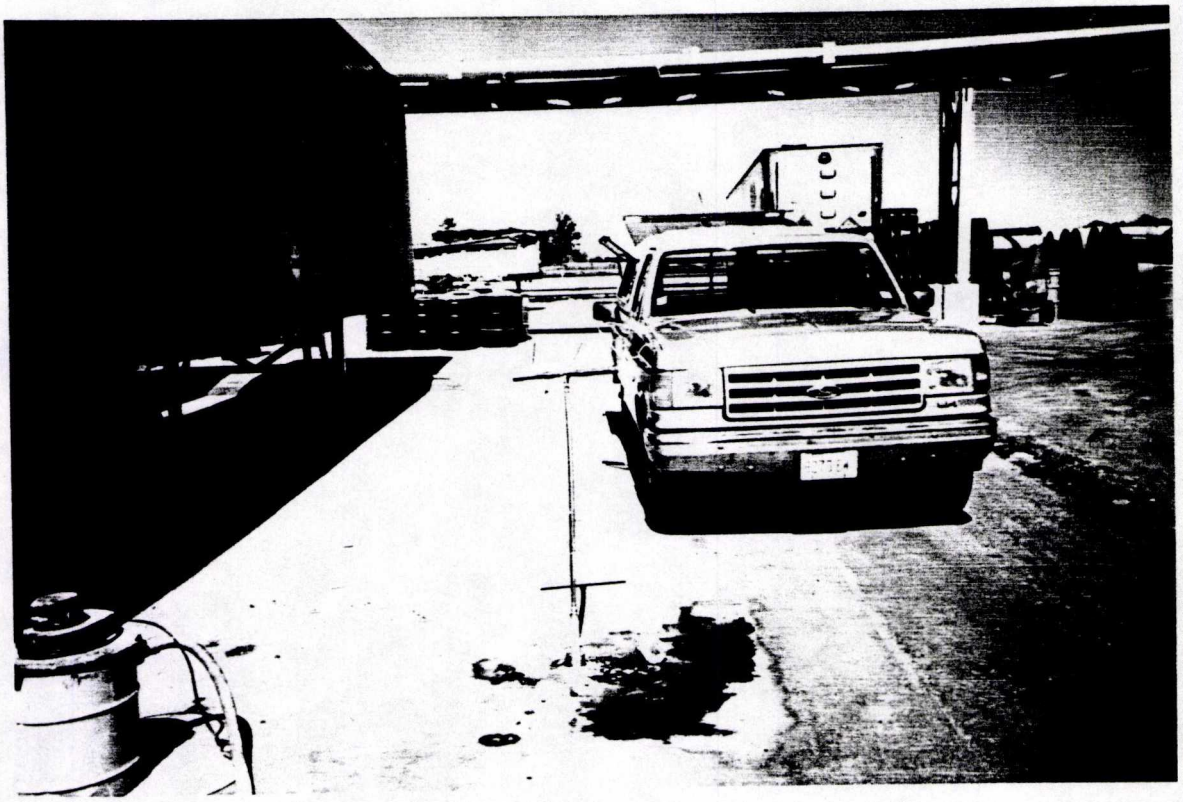

▲ Looking south, SB-15 beneath first trailer

▲ View east between trailers, SB-16 in foreground

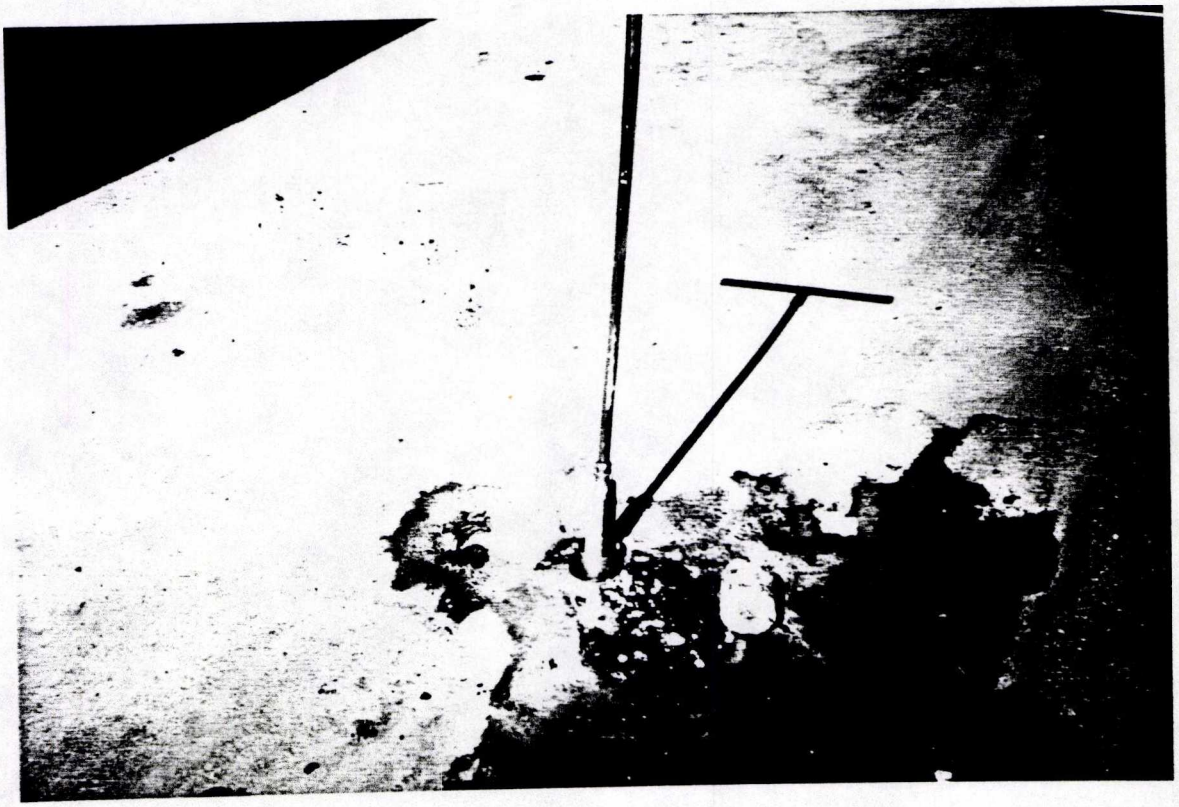
▲ Close-up of asphalt/concrete core from SB-17

▲ Looking east at SB-17, note rebar protruding from asphalt

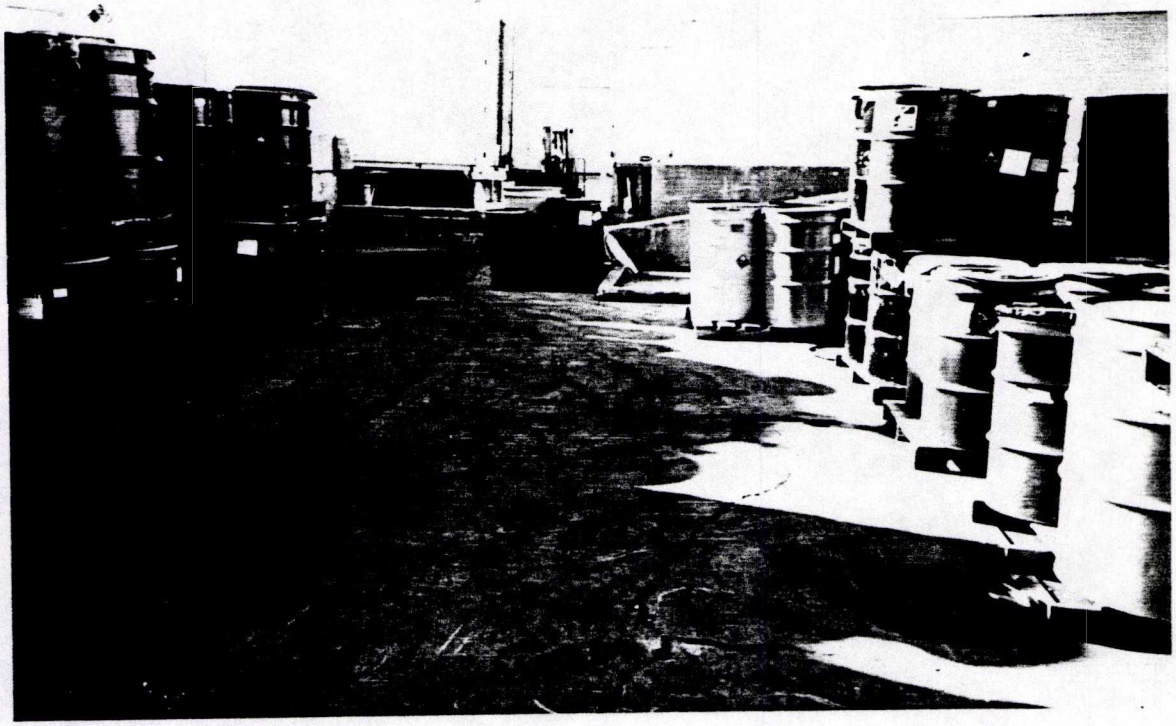
▲ Looking west, SB-18 in foreground



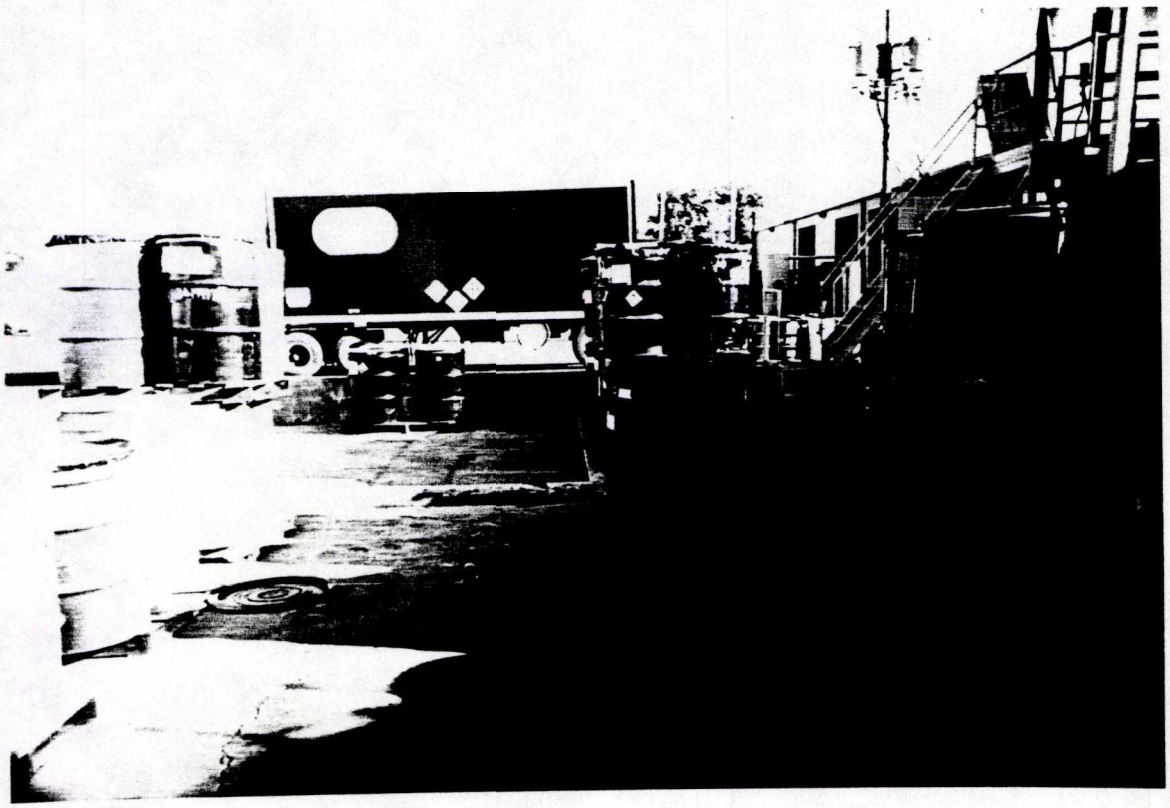
▲ Looking east at SB-19



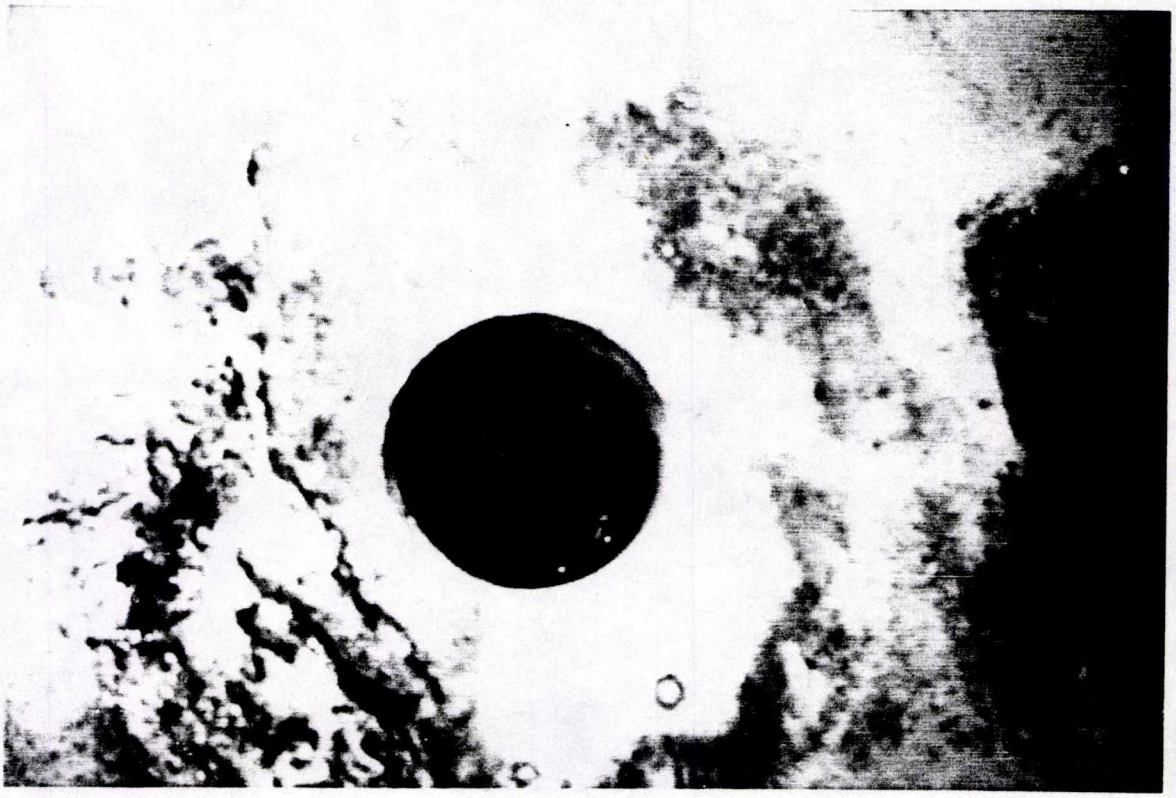
▲ Close-up of SB-19, note depression adjacent to boring



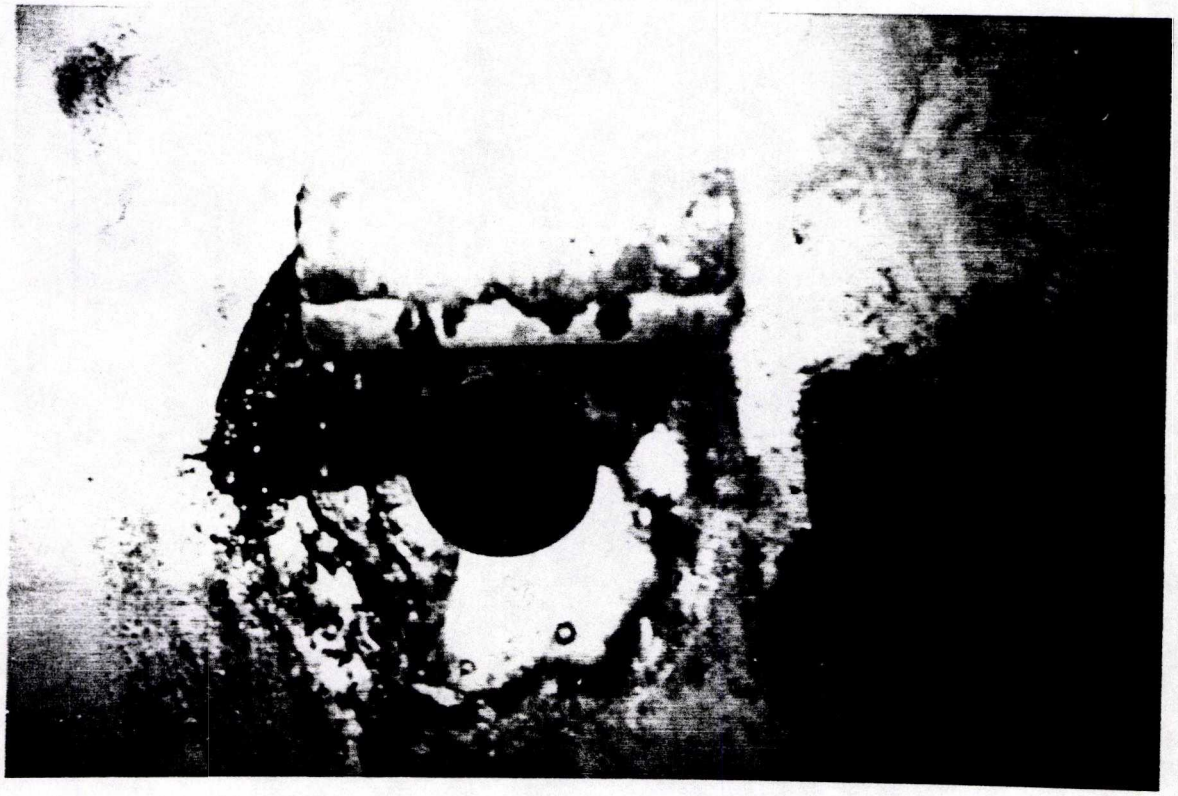
▲ View south of outdoor Container Storage Area



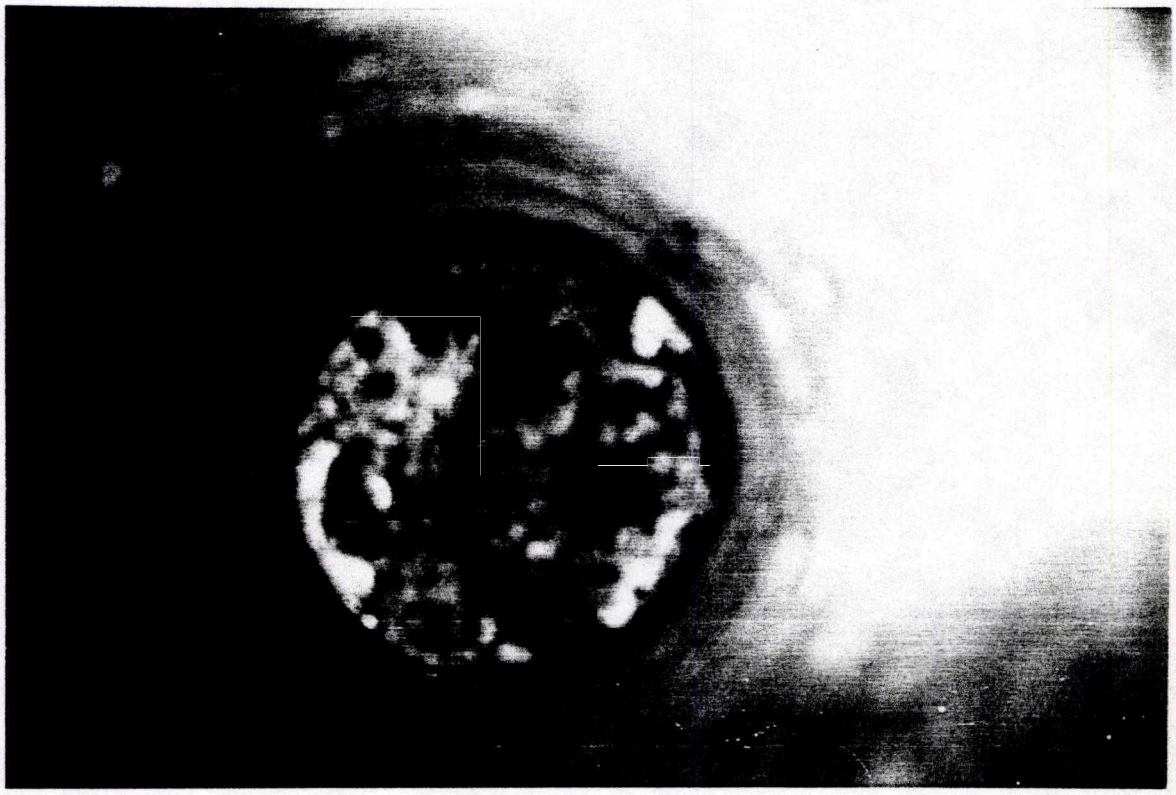
▲ View north of outdoor Container Storage Area



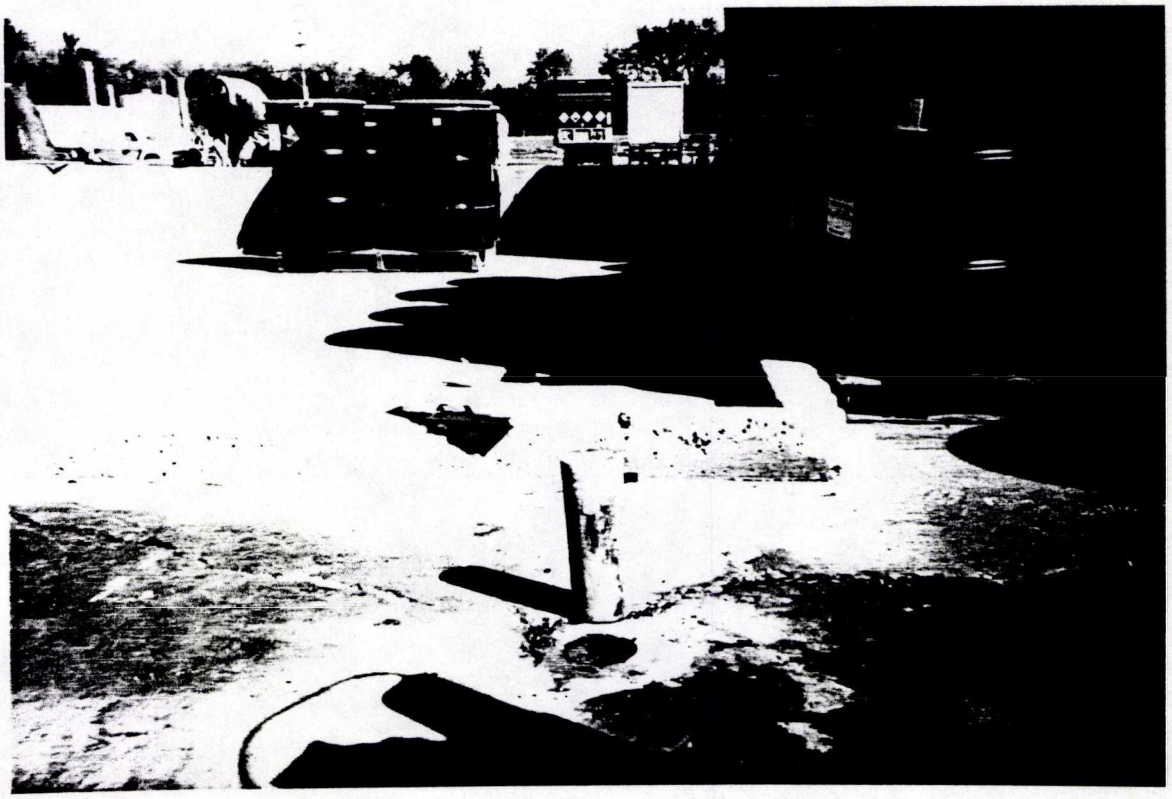
▲ Close-up shot of SB-20 showing core hole with bedrock at base of core



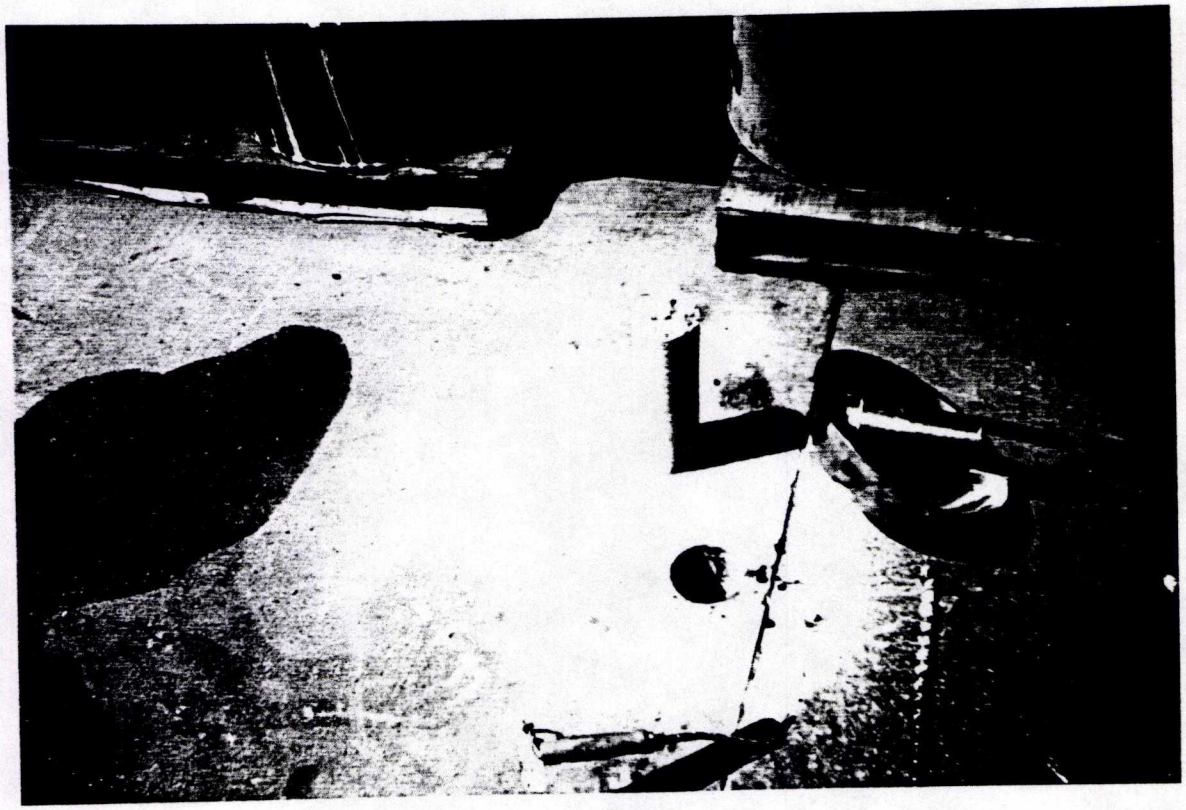
▲ Close-up shot of SB-20 showing core with bedrock at base of core



▲ Close-up shot of SB-20 showing core hole with bedrock at base of core

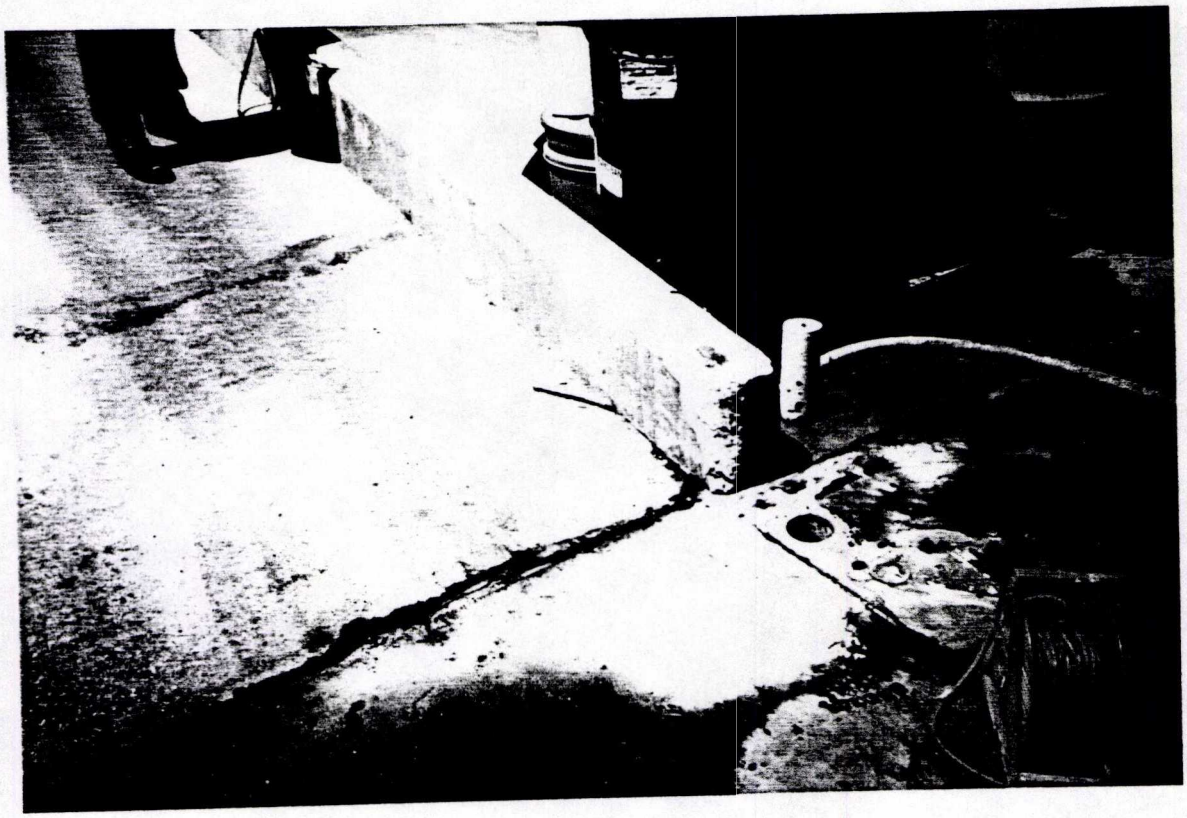


▲ View north at SB-21, note core thickness



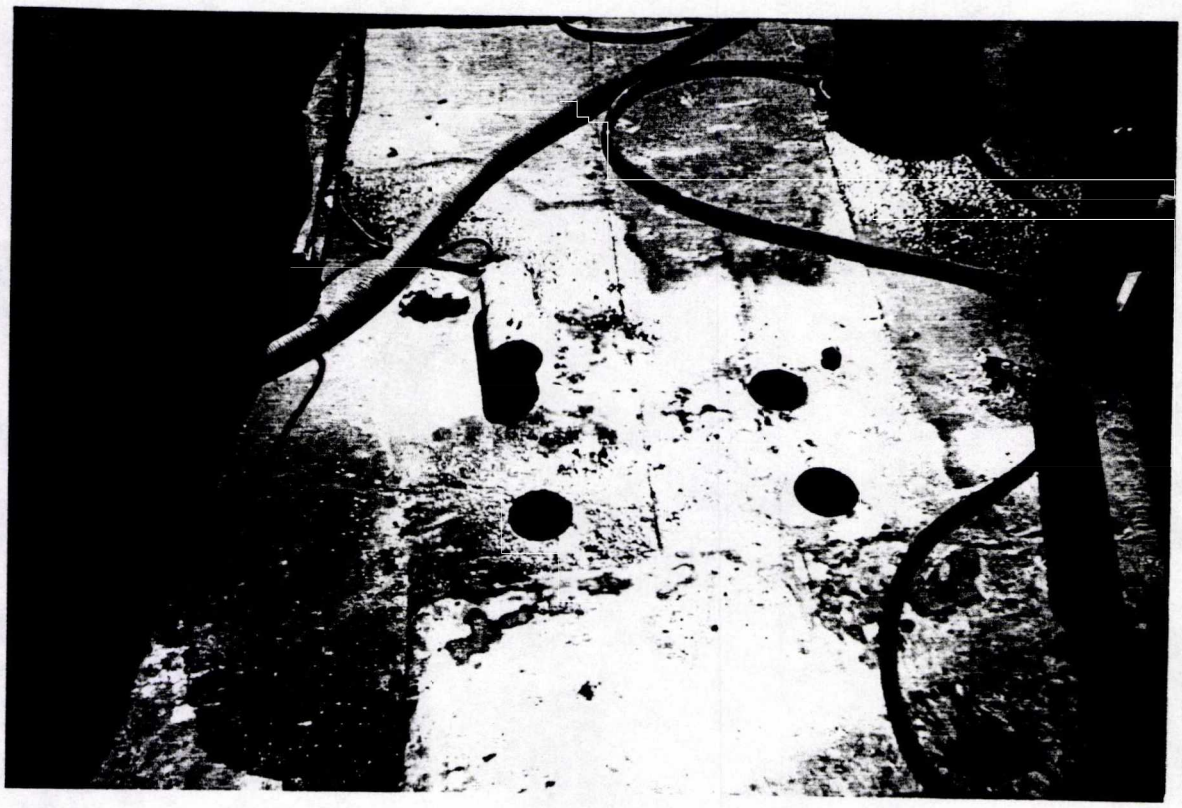
▲ Close-up shot of SB-22

▲ View north at SB-23

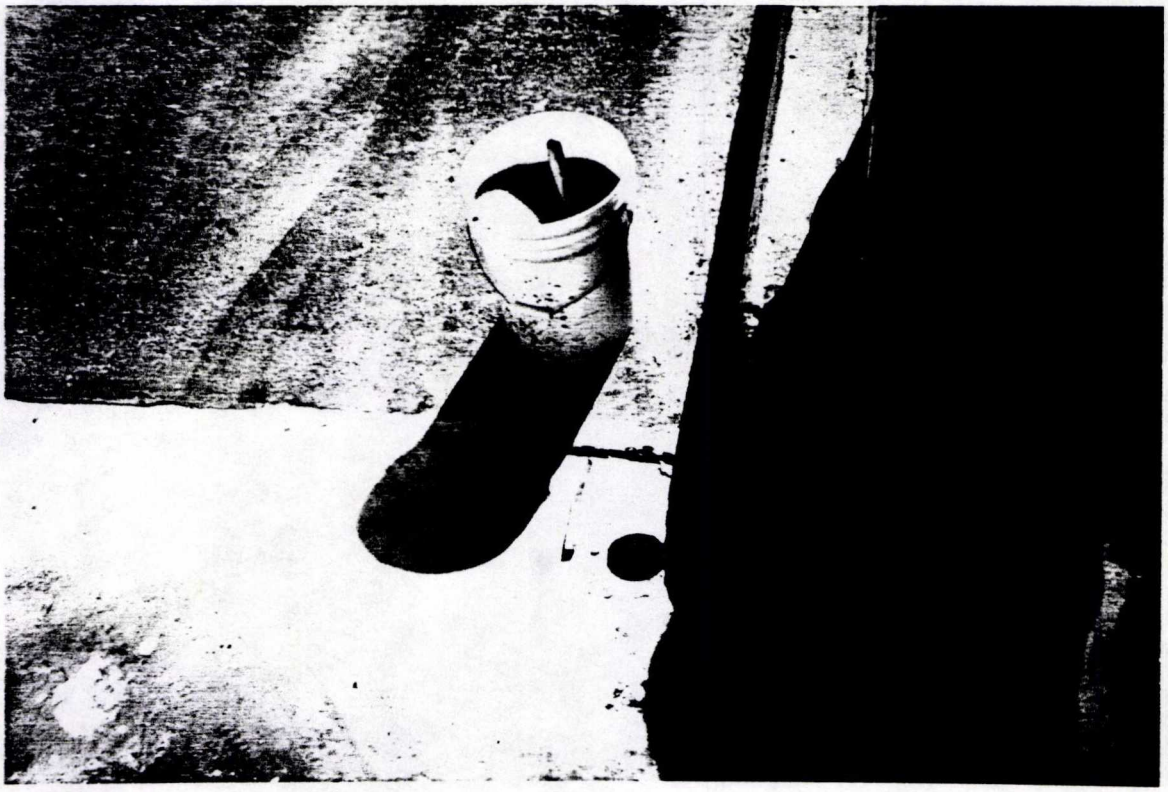


▲ Close-up shot of SB-24

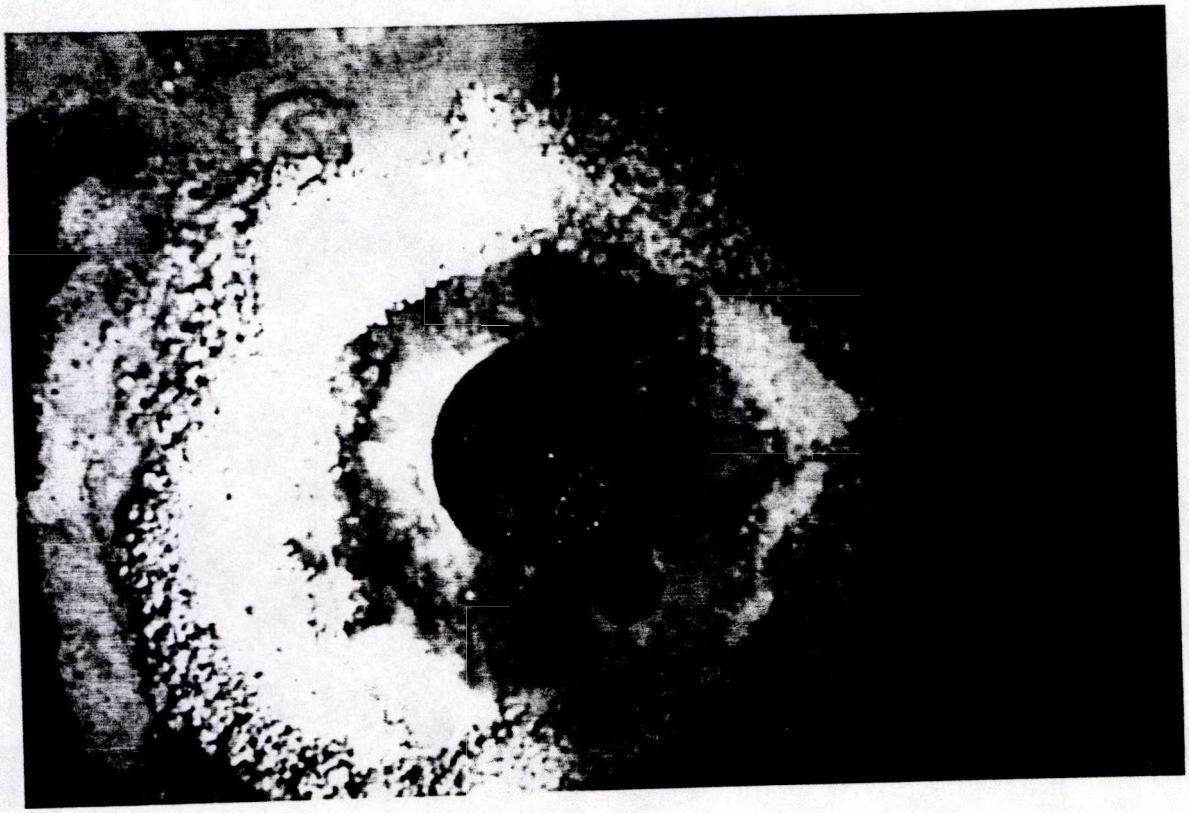
▲ Close-up of SB-22, with additional corings



▲ Close-up shot of SB-23, with additional corings



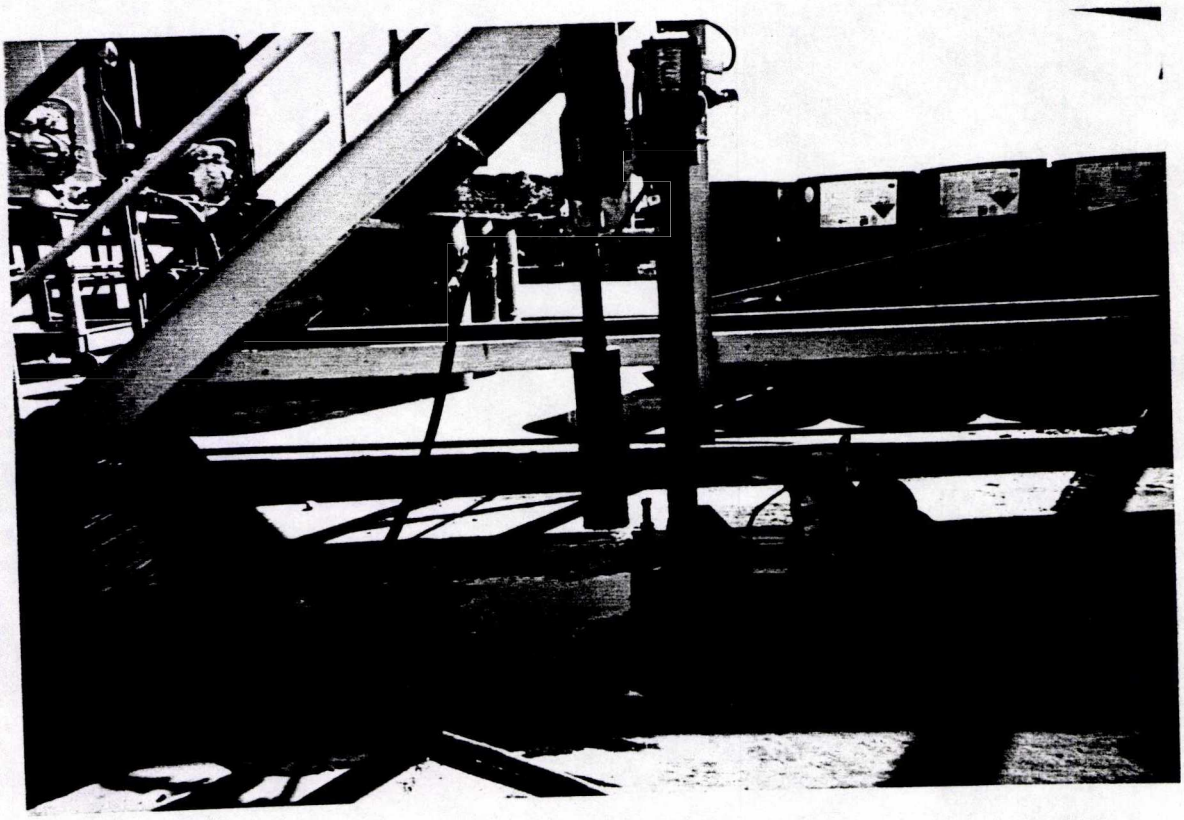
▲ Close-up shot of SB-24, with additional corings



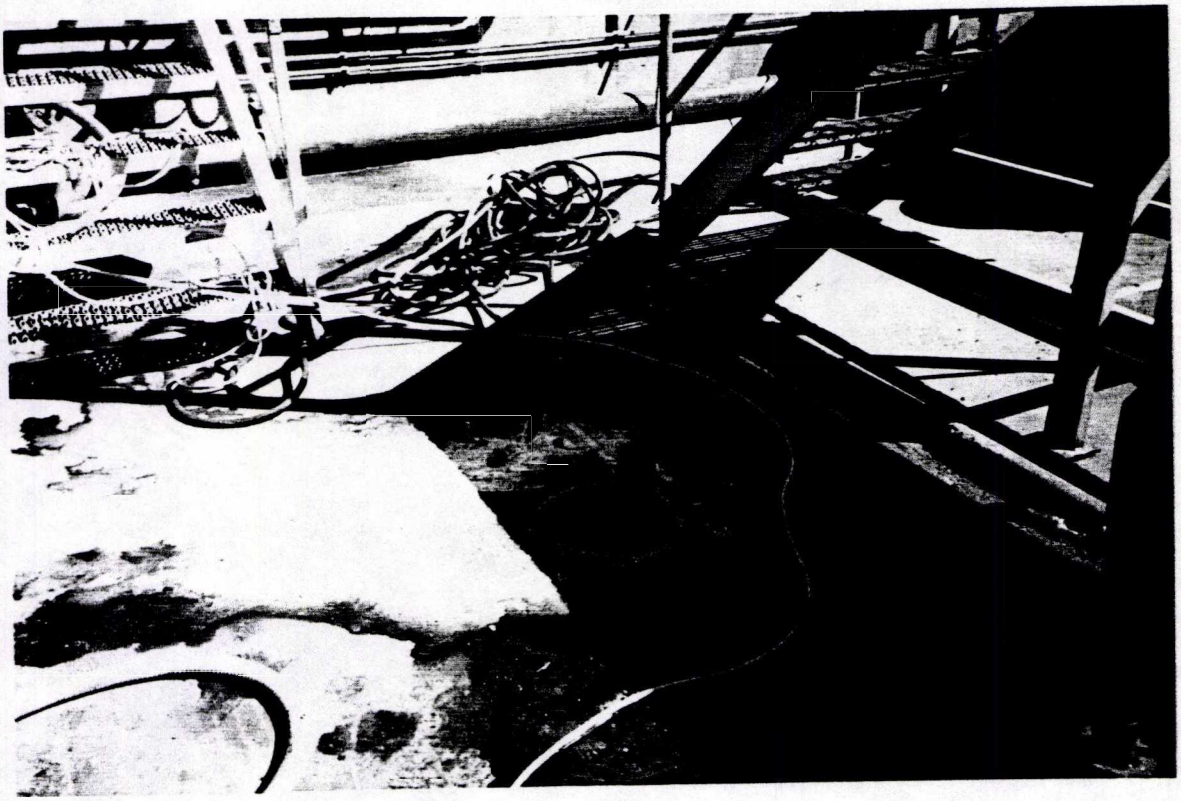
▲ Close-up shot of SB-26, note bedrock at base of core hole

▲ View to north at SB-24, View to north at SB-26, note drum crusher in background

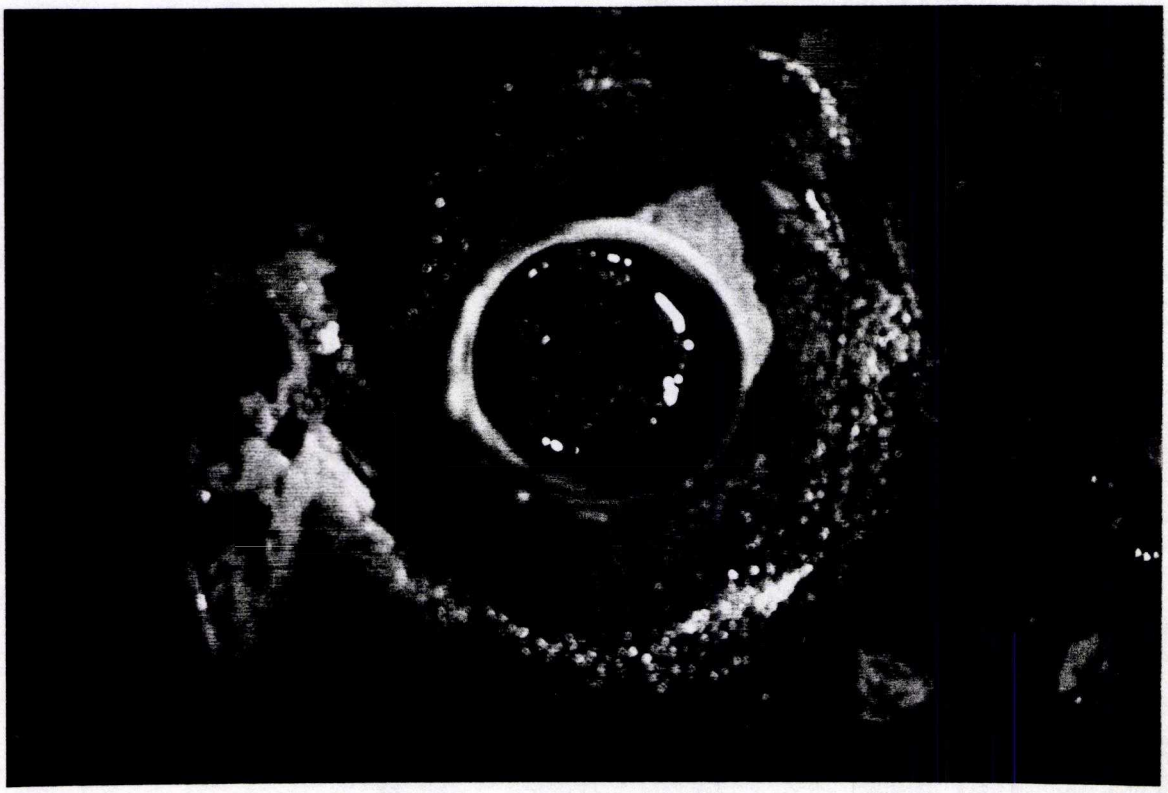
▲ View of concrete core and underlying bedrock core from SB-26



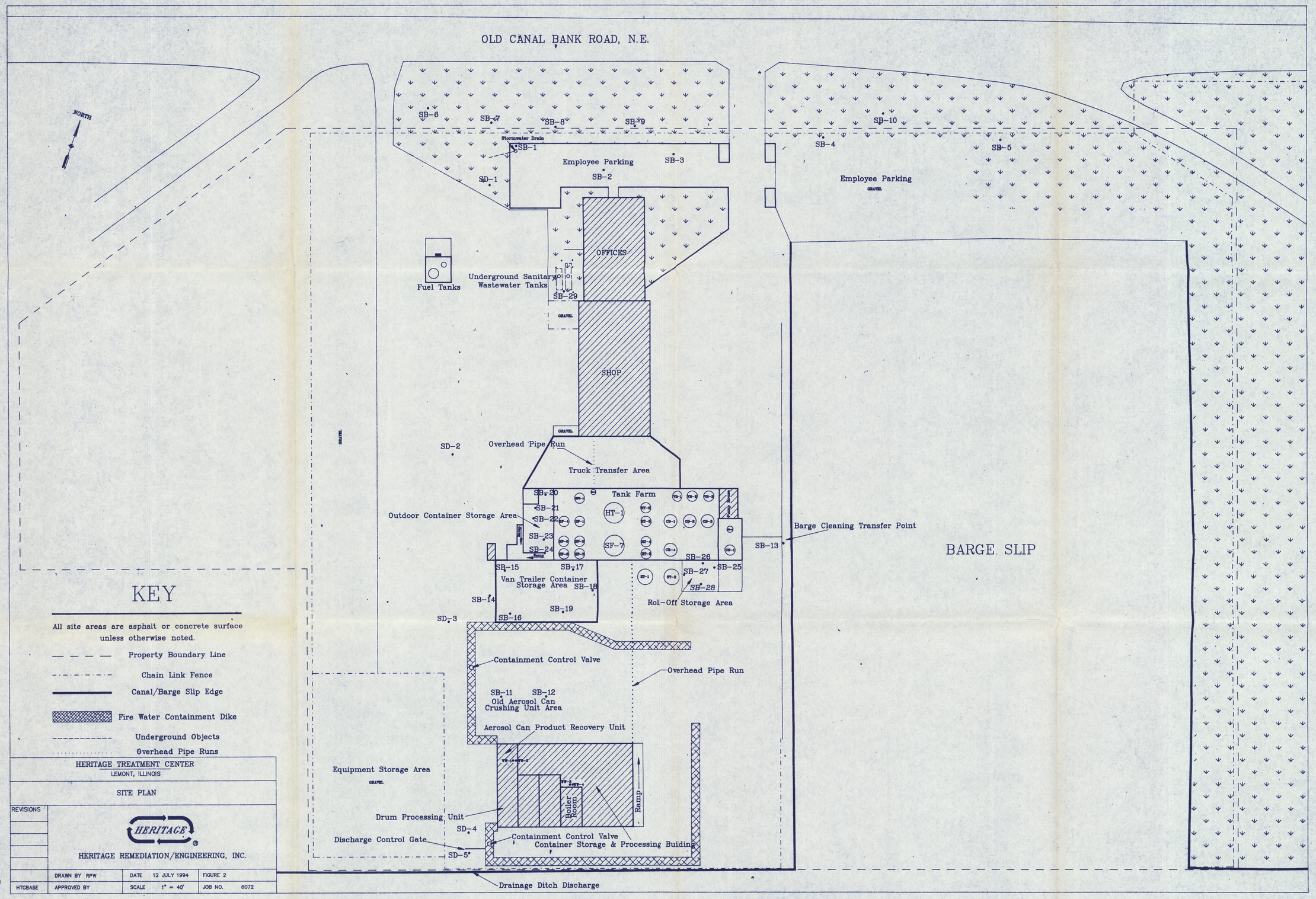
▲ View east at SB-25



▲ View of Northeast at SB-25, note core



▲ Close-up of SB-27, note bedrock at base of core hole




# KEY

All site areas are asphalt or concrete surface unless otherwise noted.

- Property Boundary Line
- Chain Link Fence
- Canal/Barge Slip Edge
- Fire Water Containment Dike
- Underground Objects
- Overhead Pipe Runs

HERITAGE TREATMENT CENTER
LEMONT, ILLINOIS

SITE PLAN

REVISIONS

HERITAGE

HERITAGE REMEDIATION/ENGINEERING, INC.

| | | | |
|---|---|---|---|
| | DRAWN BY RPW | DATE 12 JULY 1994 | FIGURE 2 |
| HTCBASE | APPROVED BY | SCALE 1" = 40' | JOB NO. 6072 |

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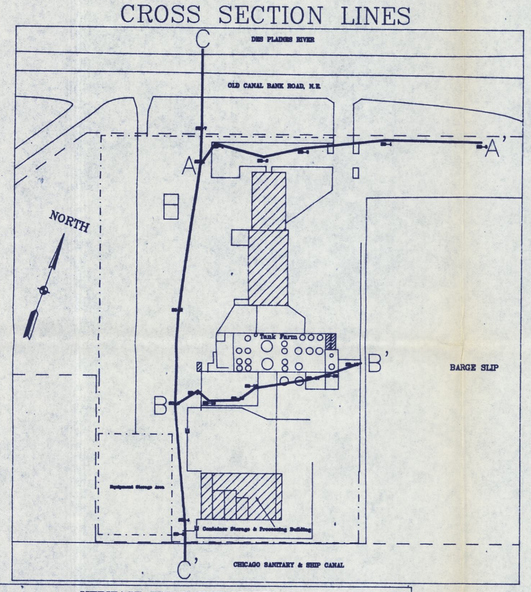
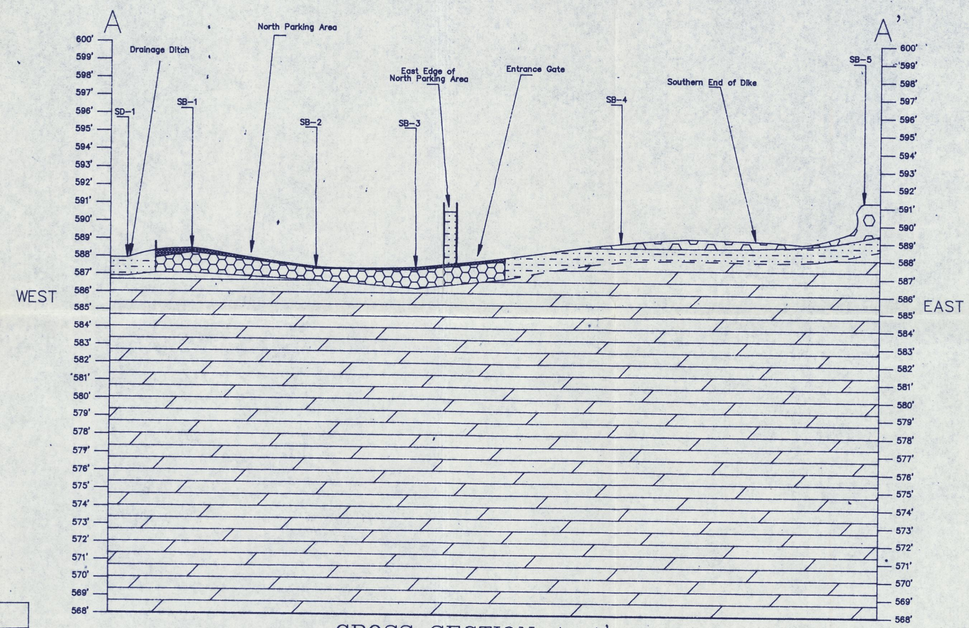
IEPA BUR.
PERMIT SECTION

## SYMBOL KEY

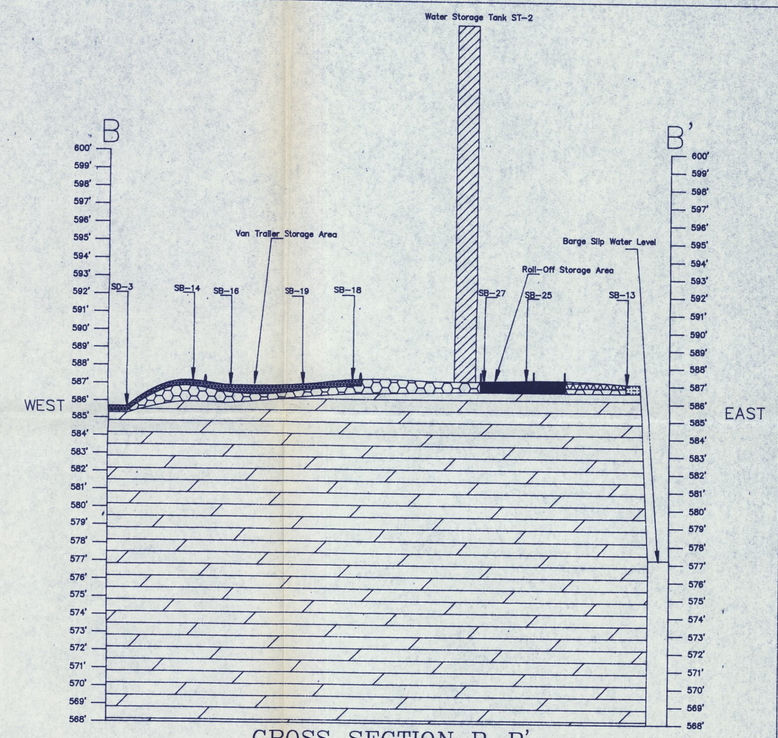
- ASPHALT
- CRUSHED LIMESTONE
- DIKE MATERIAL
- SOIL
- CONCRETE
- DOLOMITE BEDROCK

## CROSS SECTION LINES

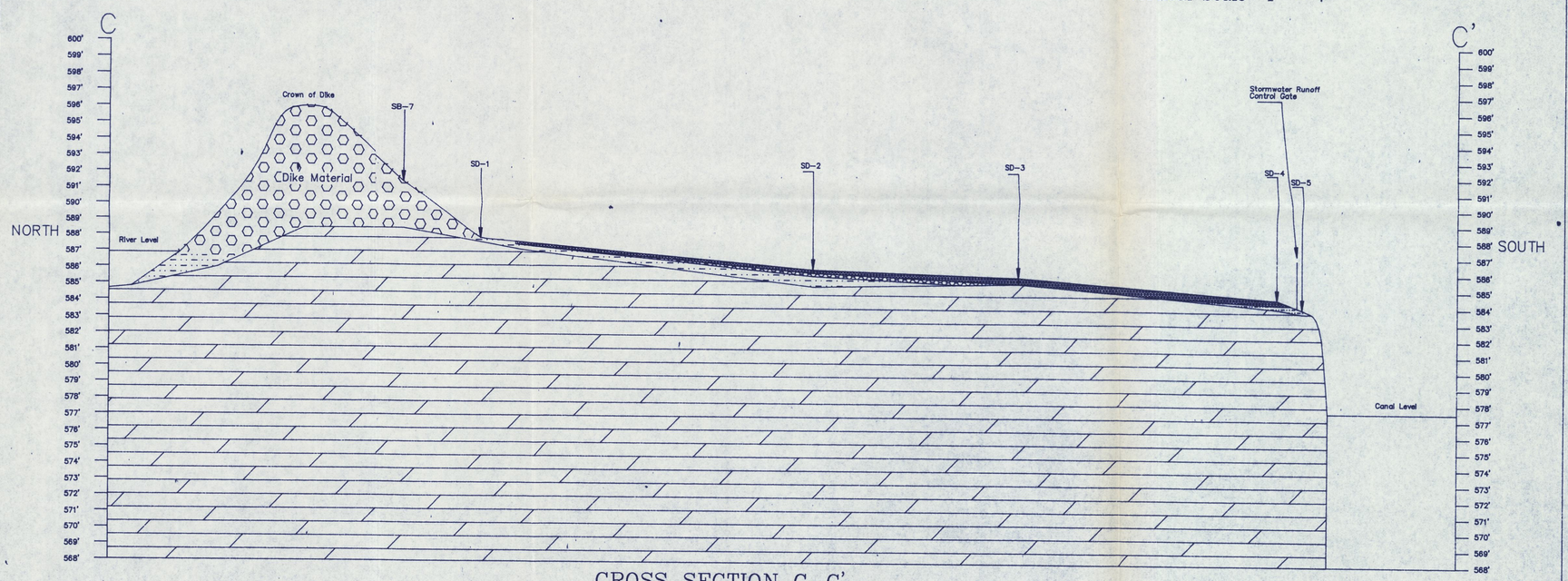



CROSS SECTION A–A'
Horizontal Scale 1" = 50'
Vertical Scale 1" = 4'




CROSS SECTION B–B'
Horizontal Scale 1" = 50'
Vertical Scale 1" = 4'




CROSS SECTION C–C'
Horizontal Scale 1" = 50'
Vertical Scale 1" = 4'

HERITAGE TREATMENT CENTER
LEMONT, ILLINOIS

GEOLOGIC CROSS SECTIONS

| REVISIONS | | | |
|---|---|---|---|
| | HERITAGE ENVIRONMENTAL SERVICES, INC. | | |
| | DRAWN BY RPW | DATE 15 JULY 1994 | FIGURE 3 |
| HTCXSEC | APPROVED BY | SEE KEY FOR SCALE | JOB NO. 6702 |

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PERMIT SECTION