INTERNATIONAL TECHNOLOGY CORPORATION

Project No. 519200
July 1995

01189

**Final Report – Volume I**

# Ash Landfill Immediate Response
# Seneca Army Depot
# Romulus, New York

Contract No. DACW45-94-D-0054
Delivery Order No. 01

Prepared for:
U.S. Army Corps of Engineers
Omaha District
215 N. 17th Street
Omaha, Nebraska 68102-4978

Prepared by:
IT Corporation
140 Allen's Creek Road
Suite 150
Rochester, NY 14618
(716) 271-6430

**RESPONSIVE TO THE NEEDS OF ENVIRONMENTAL MANAGEMENT**

INTERNATIONAL TECHNOLOGY CORPORATION

# TRANSMITTAL LETTER

IT Corporation
140 Allens Creek Road Suite 150
Rochester, New York 14618
(716) 271-6430

August 9, 1995

Dear Sirs and Madam:

Please find enclosed the Draft document of the Final Report to the Seneca Army Depot Activity Ash Landfill Immediate Response Measure project. This document is submitted as part of the Ash Landfill project at the Seneca Army Depot Activity, Romulus, New York under U.S. Army Corps of Engineers, Omaha District Contract No. DACW45-94-D-0054, Delivery Order No. 01.

The Final Report presents a summary of the project performance from the initiation of site activities in August of 1994 to the completion of field activities in June, 1995. Activities summarized in this report include Phase 1 site delineation tasks, Phase 2 mobilization, the Start-Up/Prove-Out Event, site operations, modifications to the project Work Plan, soil, wastewater, debris and air sampling, wastewater treatment and discharge, and other activities conducted over the course of the project.

This Final Report is a Draft document and IT anticipates fielding comments on the Report in the coming weeks. Questions concerning this document can be addressed to Mr. Peter Coutts or Mr. Jeffrey Korb of IT Corporation at (716) 271-6430.

Respectfully,

IT CORPORATION

Jeffrey D. Korb
Technical Manager

for Peter W. Coutts
Site Manager

JDK:PWC:jdk
Encl.

U.S. Army Corps of Engineers
Attn: A. Winslow
Building 527, Third Floor
Offutt AFB, Nebraska 68113
(3 copies)

U.S. Army Corps of Engineers
Attn: CEHND-PM-EP (Suever)
106 Wynn Drive
Huntsville, Alabama 35805-1957
(2 copies)

U.S. Army Corps of Engineers
Attn: CENAN-CO-E (Ashcraft)
26 Federal Plaza
New York, New York 10278-0090
(1 copy)

Seneca Army Depot
Attn: DEH (S. Absolom)
Environmental Coordinator
Seneca Army Depot
Romulus, New York 14541-5001
(1 copy)

Ms. Carla Struble
U.S. Environmental Protection Agency
Emergency and Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866
(1 copy)

Mr. Douglas Wehner
Project Manager
IT Corporation
11499 Chester Road
Cincinnati, Ohio 45246
(1 copy)

Mr. Peter Coutts
Site Manager
IT Corporation
140 Allens Creek Road
Rochester, New York 14618
(1 copy)

Mr. Kamal K. Gupta, P.E.
Div. of Haz. Waste Remediation
Room 223A
New York State Department
of Environmental Conservation
50 Wolf Road
Albany, N.Y. 12233-7010
(1 copy)

Mr. Daniel Geraghty
Bureau of Env. Exposure Investigation
Room 205
New York State Department of Health
2 University Place
Albany, N.Y. 12203-3313
(1 copy)

Mr. Robert Scott
Permit Administrator
New York State Department
of Environmental Conservation
Region 8 Office
6274 East Avon-Lima Road
Avon, New York 14414
(1 copy)

# Final Report

## Seneca Army Depot Activity
## Romulus, New York

Prepared for:

U.S. Army Corps of Engineers
Omaha District
215 North 17th Street
Omaha, Nebraska 68102-4978

Prepared by:

IT Corporation
140 Allens Creek Road
Rochester, New York 14618

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August 1995

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# List of Acronyms

| | |
|---|---|
| **AMP** | Air Monitoring Plan |
| **BFI** | Browning-Ferris Industries |
| **CaO** | Calcium oxide or lime (agricultural) |
| **cfm** | Cubic feet per minute |
| **CFR** | Congressional Federal Register |
| **COC** | Chemical of Concern |
| **CRZ** | Contaminant Reduction Zone |
| **CSAP** | Chemical Sampling and Analysis Plan |
| **°F** | Degrees Fahrenheit |
| **DNAPL** | Dense, non-aqueous phase liquid |
| **1,2-DCE** | 1,2-Dichloroethene |
| **ESI** | Parsons Engineering Science, Inc. |
| **EST** | Eastern Standard Time |
| **gpm** | Gallons per minute |
| **GC** | Gas chromatograph |
| **HDPE** | High density polyethylene |
| **IRM** | Immediate Response Measure |
| **IT** | IT Corporation |
| **Kodak** | Eastman Kodak Company- Chemical Quality Services |
| **LPG** | Liquid propane gas |
| **LTTD** | Low Temperature Thermal Desorption |
| **MET** | Meteorological |
| **NPL** | National Priorities List |
| **NTU** | Nephelometric Turbidity Unit |
| **NYCRR** | New York Code of Rules and Regulations |
| **NYS ASP** | New York State Analytical Services Protocol |
| **NYSDEC** | New York State Department of Environmental Conservation |
| **NYSDOH** | New York State Department of Health |
| **OSHA** | Occupational Safety and Health Administration |
| **$PM_{10}$** | Particulate Matter (less than ten microns in size) |
| **ppb** | Parts per billion |
| **ppm** | Parts per million |
| **PPE** | Personal Protective Equipment |
| **PCB** | Polychlorinated biphenyls |
| **PAH** | Polynucleated aromatic hydrocarbon |
| **PQL** | Practical Quantitation Limit |
| **POTW** | Publicly Owned Treatment Works |
| **QA/QC** | Quality Assurance/Quality Control |
| **Recra** | Recra Environmental Laboratories |
| **RPD** | Relative Percent Difference |
| **RI** | Remedial Investigation |
| **RCRA** | Resource Conservation and Recovery Act |
| **SEDA** | Seneca Army Depot Activity |
| **TOGS** | Technical and Operational Guidance Series |
| **TSDF** | Treatment Storage and Disposal Facility |
| **TDS** | Total Dissolved Solids |
| **TSP** | Total Suspended Particulate |
| **TCLP** | Toxicity Characteristic Leaching Procedure |
| **TCE** | Trichloroethene |
| **USACE** | United States Army Corps of Engineers |
| **USEPA** | United States Environmental Protection Agency |
| **VOC** | Volatile Organic Compound |

## Project Narrative

The Seneca Army Depot Activity (SEDA) facility is located in Romulus, New York near the eastern shore of Seneca Lake, where it was constructed in 1941. The Ash Landfill site encompasses approximately 130 acres of the 10,587 acre Seneca Army Depot Activity and is situated near the southwestern corner of the facility. The site consists of an abandoned landfill area, including the Ash Landfill and the Non-Combustible Landfill, a burned out incinerator building and stack, and a nearby cooling pond. SEDA was constructed in 1941 and has been owned and operated by the Department of the Army since that time.

From 1941 to 1990 uncontaminated trash was burned in series of burn pits, with the ash material buried in the landfill area. From 1974, all incinerated ash was buried in the landfill. In addition, the landfill likely received other depot wastes during this period. Wastes were cooled in cooling ponds, and, once filled, the waste and fly ash were transported to the Ash Landfill.

A series of investigations at the Ash Landfill site have been performed over recent years in order to assess possible adverse environmental impacts associated with the Ash Landfill and past facility operations in the surrounding area. Of immediate concern noted during these investigations was a potential groundwater contamination problem occurring at or near the Ash Landfill area. The Seneca Army Depot Activity was listed on the National Priorities List (NPL) in July of 1989 based on the threats posed by contaminated soils and debris that was suspected to be the source of groundwater contamination at the Ash Landfill site.

In order to remediate the groundwater problem, an Immediate Response Measure (IRM) was implemented under the Rapid Response contract of the U.S. Army Corps of Engineers, Omaha District. IT Corporation (IT) was selected as the IRM contractor to implement the remedial action at the Ash Landfill. The IRM at the Ash Landfill included treatment of the contaminated soil utilizing a Low Temperature Thermal Desorption (LTTD) system. Soil from the landfill site was to be excavated, treated by the LTTD system to remove the source of contamination, confirmed clean by analytical testing, and then placed in the excavated areas as backfill.

Originally, the soil material in the Ash Landfill site that would require excavation was expected to cover approximately 78,000 square feet (2 acres) of the old landfill site. Soil borings around the landfill area indicated that this measurement was approximately correct. Depth to bedrock in the vicinity was expected to be 7-10 feet below grade. The total amount of soil to be excavated and treated during the IRM was estimated at 23,000 tons of material.

For the first step of the project, IT prepared detailed work plans to implement the IRM, including a review of the scope of work and the development of sampling and analysis, health and safety, air monitoring, erosion, dust control, debris handling, excavation, backfilling, compaction and grading, site control and security plans.

The IRM project was divided into two separate phases, Phases 1 and 2. Phase 1 activities were designed to investigate and delineate site conditions prior to the start of the IRM. Phase 1 site delineation was accomplished by reviewing site drawings and historical documentation and completing a series of soil borings around the perimeter of the two main excavation areas at the Ash Landfill. The borings established exactly where the limits of contaminated soils would be excavated. In addition, Phase 1 included a baseline monitoring program to measure typical background levels at the Ash Landfill of particulates, volatile organic compounds (VOCs), and polynucleated aromatic hydrocarbons (PAHs). An on-site meteorological station was also installed and monitored. IT initiated Phase 1 activities on August 27, 1994 and activities were completed on September 30, 1994. During this Phase, IT utilized small two or three man crews to perform the work. A drilling subcontractor was utilized to complete the soil borings.

Phase 2 activities comprised the majority of the IRM project, including site mobilization, start-up/prove-out testing, excavating, treatment operations, backfilling, and, finally, site demobilization and restoration. Activities and events that occurred during the project for each of these tasks are fully outlined and summarized in the text of the Final Report.

IT began site mobilization and setup activities in late September, 1994. All equipment, vehicles and structures were brought on site and set-up. The LTTD system subcontractor, FERtech Environmental, assembled the LTTD unit. Excavation areas were fenced in, perimeter monitoring stations constructed and activated, soil material staging areas established, decontamination areas built, and grading activities were initiated during this time frame. Mobilization was completed by October 31, 1994.

After completion of most of the site mobilization tasks, an extensive prove-out test was performed to ensure the LTTD subcontractor could start-up, check out, operate, and shutdown all equipment associated with Low Temperature Thermal Desorption unit. The prove-out test event required running 1500 tons of excavated material through the LTTD unit, with a set of minimum performance requirements to be met. IT demonstrated that the unit met all applicable performance standards including being able to treat 500 tons of material continuously, to operate at a maintained temperature of over 800 degrees Fahrenheit (°F), and have air emissions below applicable state and federal thresholds. The prove-out included segregation of processed materials, debris handling, treatment of soils using LTTD technology, air pollution control, and verification testing of treated soils and air emissions. The prove-out was started on October 31st and was completed on November 8, 1994. Both IT and the LTTD subcontractor had full project crews on site during this event.

For the daily site operations of excavation, treatment, staging, and backfilling soil, IT constructed staging cells for both contaminated and treated soils. Staging areas were leveled by bulldozer, buttressed by sand, and lined with high density polyethylene (HDPE) liners. While staged, piles of soil were covered by 6-mil reinforced poly sheeting to help prevent blowing and dispersion of soil material. The exclusion zone, where the excavation and treatment took place, was delineated by snow fence and caution tape to restrict human/natural habitat traffic. A decontamination trailer controlled access to the excluded work area and office

trailers and equipment trailers were positioned in the support zone.

Soil in the two excavation areas, Area A and Area B, was excavated, fed through a shaker/screen to remove large debris, and then loaded into a hopper to feed the LTTD system. The soil material passed via conveyor through a propane-fired rotary dryer to be treated. Once treated in the dryer, the soil was transferred on a belt to the clean soil staging area, where it was tested, and ultimately backfilled into the original excavation. The LTTD system averaged approximately 15 tons/hour throughput, operating at a temperature range of 800-900 °F. Excavation of Area B proceeded first and was completed by mid-December 1994. Area A was started in mid-December and was completely excavated by June of 1995. Excavations proceeded in an east to westerly direction.

In addition to the treatment of the Ash Landfill soil material, there also existed wastewater and air dispersion concerns at the project site. Infiltration groundwater, precipitation and runoff, and water generated from other project operations were handled and treated during site operations. IT planned for this contingency by siting a water treatment plant at the Ash Landfill site. Water was collected and pumped from the excavation to the water treatment system via a series of tanks, treated, and then discharged to a nearby field. IT performed periodic testing of the water to ensure that it was properly treated and met discharge criteria. Air dispersion of VOCs and particulate matter generated from project operations were monitored with three perimeter monitoring stations set up around the project area. These stations housed instrumentation to collect ambient samples of particulate matter and volatile organic compounds. Real-time monitoring was performed at the stations and alarms were installed at each location in order to provide adequate warning of excessive particulate matter migrating from the project area and to implement dust suppression steps.

Excavation and treatment operations continued nominally through mid-December, 1994, as Area B soils were successfully treated and backfilled. Area A excavation activities commenced with the initiation of Area B backfill operations. At this time, inclement weather began to effect daily operations at the project site. During the excavation of Area A, significant precipitation events and groundwater infiltration caused some difficulty in soil excavation and screening operations. The high soil moisture levels caused plugging and caking in the soil material screening and LTTD material feed processes, creating operational problems in maintaining the LTTD system feed rate. In addition, high water table conditions created problems in the dewatering and storage of the wastewater. Collected water, both in the open excavation area and in the Baker storage tanks, also began to freeze as the winter set in at the project site. Together, these problems were solved, as IT was able to continue soil screening and processing by adding lime to the soil thus decreasing the moisture content and altering the physical properties of the soil. The pumping and treatment of the collected water was continued as the containerized water was heated with explosion proof floating tank heaters. In summary, project activities continued throughout the winter as work was conducted under worst case weather scenarios from November 1994 through February 1995.

During the course of the project, site operations were temporarily shut down for several

periods. Most of these events occurred over short time periods of a few hours or days and were attributable to small equipment breakdowns and necessary maintenance activities. In addition, the project discontinued work during the holiday season from December 17, 1994 to January 4, 1995. However, two events did occur that caused extended shut down of project operations. The first was the default of the LTTD subcontractor in early February 1995, causing project work to cease for approximately two weeks. IT rectified this situation by taking over operations of the LTTD system in order to complete the project. At the end of April, 1995, LTTD plant operations were temporarily suspended while awaiting additional funding to complete project operations. The LTTD plant work stoppage lasted 23 days.

Area A excavation and treatment activities neared completion at the end of May 1995. The final day of LTTD operations was June 12, 1995. After that, a two week period of site demobilization and site restoration commenced.

Site demobilization consisted of the break down and shipment of all site structures and equipment off site, removal of site utilities, and the discontinuation of perimeter monitoring. Site restoration activities included completing the backfilling of all treated soil material, removal of artificial project structures such as berms and liners, grading of excavation and other project site areas and hydroseeding these areas with grass. IT completed all of these tasks and all personnel and equipment was demobilized from the Ash Landfill project site on June 22, 1995.

At the completion of the project, IT has submitted a comprehensive Final Report of the Ash Landfill IRM project.

In summary, IT successfully implemented the Ash Landfill IRM, as prescribed in the USACE Scope of Services document and the IT project Work Plan. A total of approximately 35,000 tons (455,000 cubic yards) of soil material was excavated and treated from Areas A and B at the Ash Landfill site. IT treated this soil material with zero (0) batch reruns. The only materials that required disposal off-site were debris consisting of personnel protective equipment and the less than 0.37 percent (130 tons) debris generated from landfill excavation operations. Sampling and analysis of excavated and treated soil material indicates that the Ash Landfill soils were successfully treated to meet the VOC clean-up criteria for the project.

# 1.0 Introduction

This Final Report summarizes the activities performed by IT Corporation (IT) in support of the U.S. Army Corps of Engineers (USACE) Omaha District Seneca Army Depot Activity (SEDA) Ash Landfill Immediate Response Measure (IRM) remediation project. The report reviews all project related activities and tasks and presents data generated for the entire project. Field activities were initiated on August 27, 1994 and completed on June 22, 1995. This Final Report has been submitted by IT in compliance with the project Work Plan and Scope of Services for the Rapid Response IRM at the Seneca Army Depot Activity in Romulus, New York. This Report has been prepared to provide a project summary for the USACE Omaha District and to meet requirements detailed in Delivery Order No. 01, under Rapid Response contract number DACW45-94-D-0054.

The Seneca Army Depot facility is located in Romulus, New York near the eastern shore of Seneca Lake, where it was constructed in 1941. The Ash Landfill site encompasses approximately 130 acres of the 10,587 acre Seneca Army Depot Activity facility and is situated near the southwestern corner of the facility. The site consists of the abandoned landfill area, including the Ash Landfill and the Non-Combustible Landfill, a burned out incinerator building and stack, and a nearby cooling pond.

SEDA was constructed in 1941 and has been owned and operated by the Department of the Army since that time. Prior to construction of the depot, the site was used for farming activities. From 1941 to 1974, uncontaminated trash was burned in a series of burn pits east of the abandoned incinerator building. During the time period of 1941 until the late 1950's or early 1960's the ash from the refuse burning pits was buried in the Ash Landfill. The landfill likely also received other depot wastes. The incinerator was built in 1974 and took the place of the open burning pits. Between 1974 and 1979, materials intended for disposal were transported to the incinerator. Nearly all of the approximately 18 tons of refuse generated per week on the depot were incinerated. The source for the refuse was domestic waste from depot activities and family housing. Large items which could not be burned were disposed of at the non-combustible fill landfill. For reference, Figure 1-1 shows the location of SEDA; Figure 1-2 shows the Ash Landfill location within SEDA; Figure 1-3 delineates the Areas of Concern at the Ash Landfill site; and Figure 1-4 presents

the Ash Landfill Site Plan.

The Seneca Army Depot Activity was listed on the National Priorities List (NPL) in July of 1989 based on threats posed by contaminated soils and debris that form the source of groundwater contamination at the Ash Landfill site. The IRM implemented at the Ash Landfill included treatment of contaminated soil material utilizing Low Temperature Thermal Desorption (LTTD). Soil from the landfill site was excavated, treated, tested and then backfilled into the excavated areas. In addition to the treatment of the soil; groundwater, precipitation and water generated from decontamination operations was also handled and treated during site operations.

Section 2.0 of this Final Report provides an overview of project activities as performed in the field and details modifications to the Work Plan implemented by IT. Sampling and analysis activities conducted during the project are summarized in Section 3.0. In Section 4.0, general conclusions for the Final Report are presented. The Appendices for the Final Report contain the multitude of correspondence, data, and field logs generated during the project. These include:

Appendix A Quality Control Work Orders and Reports
Appendix B Sample Collection Logs
Appendix C Chains of Custody
Appendix D Soil Analytical Data
Appendix E Water Analytical Data
Appendix F Air Analytical Data/Air Field Logs
Appendix G Field Activity Daily Logs
Appendix H Tailgate Safety Meeting Forms
Appendix I Low Temperature Thermal Desorption System Operating Logs
Appendix J On-Site Meteorological Data
Appendix K Project Permits and Authorizations
Appendix L Excavation Debris Waste Profile
Appendix M Equipment Inspection Logs
Appendix N Project Correspondence
Appendix O Photographs

Digital copies of all the analytical data and supporting documentation included as part of the USEPA data packages have been saved on computer disk and distributed to select individuals as part of this Report.

# 2.0 Project Performance

An overview of the Ash Landfill project performance is presented in this Section. The narrative discusses field activities from mobilization through demobilization, as well as unique or special tasks performed, additional work beyond the original scope of services, and problems encountered in the field and associated corrective actions. In addition, a summary of pertinent issues regarding project safety performance and project quality assurance implementation are presented.

The activities described in this Section are based upon the directives outlined in the IT Work Plan, submitted in August, 1994 and approved by the USACE in September, 1994. Specific project activities discussed below include:

- Phase 1 activities: site delineation and baseline monitoring program;
- Mobilization and site set-up activities;
- Start-Up/Prove-Out Event;
- Site operations during the remedial action;
- Demobilization activities; and,
- Site restoration activities.

Other subtasks conducted during the project are also introduced, such as soil sampling, dewatering and water treatment activities, perimeter and work zone air monitoring, on-site meteorological data collection, and debris handling. This Final Report documents project activities performed and completed from August 27, 1994 through June 22, 1995.

## 2.1 Project Objectives

The Ash Landfill Immediate Response Measure project was commenced in order to treat contaminated soils at the Ash Landfill project site to acceptable clean-up levels and remove a potential source of groundwater contamination. Activities that were undertaken to meet the objectives of the project are presented below. The objectives of the Ash Landfill remedial project include:

- Confirm the extent of the known soil contamination areas in order to delineate with confidence the removal of all contaminated soils and debris for treatment;

- Treat contaminated soils by low temperature thermal desorption to remove

volatile organic compounds (VOCs) to prescribed treatment levels and to reduce concentrations of polynucleated aromatic hydrocarbons (PAHs) present in the soils;

- Backfill the Ash Landfill with treated soil; and,
- Measure and control the dispersion of air pollution resulting from project activities.

The Ash Landfill IRM was intended to treat contaminated soils in defined areas of the site to prescribed treatment clean-up levels. Once the LTTD system effectively treated the soils, as confirmed by the collection of soil samples, the soils were returned to the excavation and backfilled to complete the remedial action. Water collected from the excavation area(s) was treated by air stripping and particulate filtration. The treated water was then discharged, after confirmatory water sampling, to the ground surface. Air dispersion of VOCs, PAHs, and particulate matter generated by project activities were monitored by perimeter air monitoring stations and direct-read monitoring in the work zone. Localized meteorological conditions were recorded by an on-site meteorological station.

## 2.2 Project Scope of Work

The project scope of work was initially presented in the USACE Scope of Services document and the IT Ash Landfill Work Plan, issued August 1994. IT implemented the project as described in the original scope of work. Several changes to the project scope of work were encountered in the field and required modification to the original Work Plan. Subsequent project-specific addenda and variances are discussed in detail in Section 2.5.

## 2.3 Summary of Work Performed

In the sections below, IT outlines the tasks and activities performed as part of the scope of work at the Ash Landfill site. The activities described comprise the main project requirements completed by IT in compliance with the project Work Plan.

The project was conducted in two separate phases. Phase 1 of the Ash Landfill IRM project involved further delineation of the two areas to be remediated. Phase 2 consisted primarily of site mobilization, site preparation, remediation activities and site restoration. The performance of these phases are summarized below.

### 2.3.1 Phase 1- Site Delineation/Soil Boring Program

IT performed the Phase 1 Soil Boring Program and attendant soil sampling on the perimeter of the two Ash Landfill excavation cells to confirm that the proposed limits of excavation met project Work Plan requirements. The pre-established Work Plan requirements mandate that the concentrations of volatile and semi-volatile compounds present in the site soils on the perimeter of the former landfill cells are less than site-specific compound cleanup levels.

The objective of the Phase 1 Soil Boring Program was to further define the extent of the areas to be excavated and remediated during Phase 2 activities. During the period of September 27, 1994 through September 30, 1994, soil samples were obtained along the perimeter of the two areas to be excavated (Areas A and B). A total of 31 soil borings, each set at 50 foot intervals and set back a distance of 2 feet from the previously delineated perimeters of Areas A and B, were completed. Each boring was augered to the top of bedrock, with two to three discrete samples per boring submitted for field gas chromatograph (GC) and subsequent laboratory analysis.

Details of implementation and results of the Phase 1 Soil Boring Program are presented in the Soil Borings Letter Report, submitted by IT in November 1994.

The following conclusions were reached as a result of Phase 1 activities :

- Overburden (till) thickness appears to decrease towards the northwest in the area of the former Ash Landfill;
- Field GC screening of soil samples resulted in no volatile target compounds detected at concentrations in excess of soil cleanup levels;
- Although the Phase 2 response action performance standards were not driven by semivolatile criteria, concentrations of semivolatile constituents above soil cleanup levels were found in samples from four (4) boring locations (SB102, SB105, SB119, and SB 129); and,
- Concentrations of 1,2-dichloroethene (1,2-DCE) were detected at greater than cleanup levels in samples from two (2) boring locations (SB108 and SB129).

### 2.3.2 Phase 1- Baseline Monitoring Program

The Baseline Monitoring Program was part of the first phase of the Ash Landfill IRM project. The Baseline Monitoring Program activities were undertaken prior to the start of other project tasks in order to investigate site perimeter monitoring conditions and establish baseline ambient concentrations of air contaminants of concern. The results of the monitoring program were used to establish the technically appropriate locations for the perimeter air monitoring stations surrounding the Ash Landfill area for Phase 2 operations. The monitoring results also identified ambient background levels of the air contaminants of concern for the Ash Landfill area. Details of the implementation of the baseline program and monitoring results are presented in the Final Baseline Monitoring Program Report, issued by IT in October, 1994.

In summary, the baseline program was completed over a seven day period from August 31, 1994 to September 7, 1994. Ambient air sampling was initiated on September 2, 1994 for a period of 24 hours. Sampling recommenced on September 6-7, 1994 with two consecutive 24 hour periods. The baseline monitoring station was established approximately 100 feet away from the abandoned incinerator building at the Ash Landfill site, generally downwind from the contaminated area of the landfill. The monitoring station housed the sampling equipment that collected ambient samples via the following USEPA testing protocols:

- TO-14 SUMMA®-passivated canister with flow regulator
- $PM_{10}$ high volume sampler
- TO-13 sampler with PUF/XAD-2 resin cartridge

Monitoring equipment was placed on the station scaffold, set-up, and calibrated according to U.S. Environmental Protection Agency (USEPA) method requirements and/or manufacturer's instructions. Sampling and analytical protocols for the ambient data collection followed appropriate USEPA reference methods and Compendium Methods, as listed above. $PM_{10}$ samples and TO-13 samples were collected over 24 hour sampling periods. TO-14 VOC samples were collected over twelve hour sampling periods. Periodic real-time monitoring with a photoionization detector and a total dust monitor was also performed while ambient samples were collected.

In addition, IT also installed the on-site meteorological station at the Ash Landfill project

site in order to collect localized weather data to support project ambient monitoring operations during Phase 2 of the project. The meteorological station constructed for this project consisted of a ten meter tower with specialized measurement sensors, including:

- wind direction vane
- wind speed sensor/anemometer
- temperature gauge
- relative humidity sensor
- barometric pressure gauge, and
- precipitation gauge

All sensors were connected to a datalog computer to record the localized weather readings for the duration of the project. These measurements were compared to performance criteria in the project Work Plan to determine the validity of the meteorological data. The meteorological station was located according to USEPA siting criteria and was positioned generally upwind from project work areas, as indicated from available prevalent wind direction data (see ESI RI Report, October, 1993). Set-up and calibration of meteorological sensors was performed by IT on August 27-28, 1994. Meteorological data collection commenced on August 28, 1994.

### *2.3.3 Phase 2- Site Mobilization/Set-Up*

Site mobilization for the Ash Landfill IRM project began on September 26, 1994, with site preparation activities continuing through October 31, 1994. Prior to the start of on-site activities, a site orientation and security procedure meeting was held by Seneca Army Depot representatives for the site mobilization crew which included the USACE site representative, the IT Site Manager, site supervisors and the Quality Assurance/ Quality Control (QA/QC) and Health and Safety Officers.

Mobilization activities primarily included site preparatory work as outlined in the project Work Plan and site mobilization scope of work. Site preparation crews performed a series of tasks, including mobilization of earth-moving equipment, installation of the field offices, break trailer, and decontamination facilities, installation of utilities and support equipment, mobilization of the water treatment system, the construction of lined and bermed soil staging areas, and the assembly of perimeter air monitoring stations. Electric, water, and telephone utilities were established at the Ash Landfill site with the aid of SEDA personnel. Figures 2-1 and 2-2 present the process schematics for the LTTD system and the water

treatment unit respectively. Documentation of site activities were recorded by photographing field tasks and are presented in Appendix O.

Site preparation activities began by grading the office/parking lot area, LTTD unit staging area, and several soil staging areas utilizing a Caterpillar D-3 dozer and a Caterpillar 966 front end loader. In order to access the parking lot, culverts were installed at both the south and west ends of the parking lot. Culverts were also placed between the LTTD unit and soil staging areas to allow direct access to the designated areas. Surface and soil grading, spreading of rock and sand in the staging areas, construction of the exclusion zone and contaminant reduction zone (CRZ), as well as the construction of an equipment decontamination pad were completed as required by the project Work Plan. The remaining primary site set-up tasks were completed by mid-October. These tasks included constructing a berm around the fuel tank foundation, installing the fuel tank, receiving, positioning, and installing various pumps, poly-tanks, liners and underlayments, and setting up three perimeter air monitoring stations.

The waste water treatment system was constructed, wired and plumbed during site set-up. Six Baker storage tanks were positioned and plumbed to the water treatment plant. All associated piping was pressure tested with potable water. Potable water was used to operate, test and optimize plant efficiency prior to actual treatment runs.

Excavation Areas A and B were delineated and exclusion zones defined by installing orange snow fence around the perimeter of both areas, set back five feet from the Phase 1 boring locations.

On October 6, 1994, the mobilization/set-up activities of the LTTD unit began. These activities included transporting the equipment to the site, mobilizing the operating personnel and siting and constructing the LTTD plant and support equipment. Mobilization of the LTTD unit continued through October 31, 1994, which marked the completion of site mobilization/set-up activities.

### *2.3.4 Phase 2- Start-Up/Prove-Out Event*

Phase 2 remedial activities of the Ash Landfill IRM project were initiated with the Start-Up/Prove-Out Event. The Start-Up/Prove-Out Event activities served as a method to

determine the operating capabilities and conditions for the LTTD unit prior to the start of full-scale production and treatment of contaminated soil material. The Start-Up/Prove-Out Event was developed to determine if the LTTD system would be able to treat contaminated soil material at the Ash Landfill project site to pre-determined clean-up levels, as outlined in the project Work Plan. Activities completed during the Event included the start-up of the LTTD system, test feed runs with soil material, and verification of proper LTTD operation by testing of untreated and processed soils and air emissions. Additional information on the Start-Up/Prove-Out Event and the results of the verification testing are available in the Final Start-Up/Prove-Out Event Report, submitted by IT in January 1995.

Results of the Start-Up/Prove-Out Event, including operational data, soil sample results, and air emissions data, provided the evidence and information needed to ensure that the LTTD system would be able to appropriately treat contaminated soils and would not generate adverse environmental impacts in the form of unclean soils or air emissions.

The Start-Up/Prove-Out Event demonstrated that the LTTD system was capable of operating at an appropriate level to meet the performance and operating requirements of the project Work Plan. The Event required that the LTTD system successfully treat 1500 tons of soil material, including 500 tons of material without interruption. Acceptable performance was defined as meeting treatment criteria outlined in the project Work Plan with a production rate sufficient to ensure completion of all soil treatment activities at the Ash Landfill site by the scheduled project completion date. In addition to the above, the LTTD treatment unit was required to demonstrate that it is fully operational and that it can successfully reduce air emissions with the existing air pollution control equipment design.

The LTTD system was first started on October 31, 1994 at approximately 1700 hours and successfully completed treatment of the first 150 tons of soil material on the morning of November 1, 1994. Severe weather conditions in the form of heavy rainfall continued from October 31st through to the afternoon of November 2, 1994, initially hampering efforts to de-bug and troubleshoot the LTTD system during the start-up action. The LTTD unit averaged 13.3 tons per hour processing rate for the first 150 tons of material, compared to the minimum average treatment rate of 15 tons per hour estimated in the project Work Plan. Operating temperatures during the time period to process this material ranged from 811-930 °F, with an average of 861 °F.

LTTD process operational parameters for the remainder of the Start-Up/Prove-Out Event (treatment to completion of 1500 cumulative tons) were also measured. From 0700 hours on November 1st through the end of November 3rd, the LTTD unit treated a total of 570.1 tons of material and averaged 14.7 tons per hour processing rate; from 0000 hours on November 4th to the end of November 7th, the LTTD unit treated a total of 543.5 tons of soil and averaged 14.8 tons per hour processing rate (with a significant rise in production rate, i.e., averaging 18 tons/hr., on November 7th); and at 1700 hours on November 8th when the 1500 ton goal was reached, the LTTD system processed 191 tons and averaged 18.3 tons per hour processing rate. Operating temperatures for the first 1500 tons of soil material treated ranged from 800-1050 °F, with an average of 875 °F.

As was expected, the LTTD system experienced equipment problems, operational difficulties, and process downtime during start-up activities and the remainder of the Start-Up/Prove-Out Event. The reasons for these problems varied, including:

- system equipment failures requiring maintenance and repair time;
- material feed handling problems; obstruction of feed hopper, crusher, and conveyor mechanisms because of high moisture and clay content of soil material

Another goal for the Start-Up/Prove-Out Event was for the LTTD system to successfully treat a minimum of 500 tons of soil material at a continuous rate. The five hundred tons of continuous soil treatment by the LTTD system was achieved from 0600 hours on November 4th through 1700 hours on November 8, 1994, where a running total of 535.5 tons of material was successfully treated. Three separate non-working or off shifts were included in this time frame. Over the entire course of the Start-Up/Prove-Out Event (October 31-November 8), the LTTD system was operational for 89 hours out of a possible 199 hours. Process downtime, as summarized above, included approximately 38 hours for repair and maintenance activities; a total of 42 hours for non-working, off shift time; and 23 hours down due to severe inclement weather at the beginning of the Event. Soil processed and treated during the Start-Up/Prove-Out Event totalled 1454.6 tons, as recorded from 1800 hours on October 31, 1994 to 1700 hours on November 8, 1994.

### *2.3.5 Phase 2- Site Operations*

Full site operations were initiated on October 18, 1994, and continued until June 22, 1995.

Site operations coincided with the completion of site mobilization/set up, through the Start-Up/Prove-Out Event and completion of site demobilization and restoration. Site operations began with the excavation of Area B. Soil excavated from the area was screened for debris through a Read Screen All vibrating screen. The debris was segregated and the screened soil transported by a rubber tired loader to the contaminated soil staging area. From this point, contaminated soil was fed into the LTTD unit via a rubber tired loader or track excavator. Once processed through the LTTD unit, treated soil was staged in 150 ton stockpiles in one of two designated treated soil staging areas. A sample technician was responsible for sampling the individual 150 ton treated soil stockpiles for parameters specified in the Chemical Sampling and Analysis Plan (CSAP). Data received from the laboratories were reviewed to ensure that the respective soil piles passed cleanup criteria and could be backfilled. Once the data was reviewed and authorization was granted by the on site QA/QC Officer, soil piles were transported to either Area A or B as backfill.

Dewatering activities were performed throughout the excavation and backfill operations. The excavation was dewatered using 2, 4 and 6-inch dri-prime centrifugal trash pumps. All water generated as a result of dewatering operations was collected and stored in four 20,000 gallon Baker storage tanks. The collected water was treated in batch fashion by particulate filtration and air stripping. Treated water was collected in two adjacent Baker storage tanks and subsequently sampled in 40,000 gallon batches for parameters specified in the wastewater discharge permit. Analytical results received from the laboratories were reviewed by the on site QA/QC Officer. Once acceptable results were achieved, the treated water was discharged.

Air monitoring was performed at perimeter monitoring stations and real time air monitoring was conducted within the exclusion zone. Perimeter monitoring instrumentation was installed with visual and audio alarms to indicate if action levels were exceeded, in which case, corrective actions such as dust suppression, were initiated.

#### *2.3.5.1 Excavation Activities*

Excavation activities at the Ash Landfill site commenced once the extent of soil material to be removed was delineated and the exclusion zone had been constructed. Excavation activities occurred primarily on a 12 hour per day, 7 day per week basis.

The areas of excavation were separated into two separate zones, denoted as Area A and Area B, as shown in Figure 1-4. Area A was estimated at 55,250 square feet in size and Area B as 26,650 square feet. Soil removal began in Area B with the use of a Caterpillar E120 track excavator. Excavation Areas A and B were excavated starting from the eastern fringes and moving in a westward direction. The excavation proceeded in this manner to ensure that material was removed and backfilled in an upgradient to a downgradient direction. Excavated material was stockpiled by the E120 excavator and subsequently transported and loaded directly into a Reed Screen All by a Caterpillar 966 rubber tired loader. The material was processed through the vibrating screen to segregate soil feed material from large debris. Soil feed material was transported with the 966 loader to the LTTD feed material staging area where it was stockpiled and covered with 6-mil reinforced poly sheeting. The rejected debris was transported via rubber tired loader to a designated debris pile and covered and secured with 6-mil reinforced poly sheeting.

Soil removal within the excavation areas proceeded until semi-competent bedrock was encountered. Actual depths varied across the excavation areas but typically ranged from approximately seven to ten feet below grade. Resting above the bedrock were distinct layers of weathered shale, dense glacial till, an ash and fill/debris horizon, and a silt-loam cover. Soil properties varied, ranging from primarily fine silts and clays to lesser amounts of fine sand and trace amounts of fine gravel. Debris constituted 0.37 percent (130 tons) of the total excavated material by volume and consisted primarily of concrete, iron, tires, wood fragments and plastic. When an excavation grid was completely removed, the bottom of the excavated area was repeatedly scraped and dragged with the blade of a dozer until approximately 18 to 24 inches of weathered shale had been removed from the excavation floor. This procedure was performed and photo-documented to confirm that semi-competent bedrock had been encountered.

#### *2.3.5.2 Material Feed Preparation*

LTTD material feed preparation became a necessary component of daily site operations to ensure maximum LTTD plant production rates. Plant production rates were significantly impacted due to high soil moisture and clay contents. The saturated silty clay material became very plastic in nature, causing significant material feed handling problems. Material feed systems within the plant experienced problems with material plugging feed hoppers and screens, clinging to belts and rollers causing subsequent belt tracking problems,

and caking within the rotary dryer.

IT received approval to add a one percent agricultural lime (CaO) mixture to the pretreated soil material. The lime was first admixed with a Telescreen Super Shredder. The lime was added to the shredder feed hopper in a percent by weight basis. The material passed through the shredder where mixing of the soil feed material and the agricultural lime occurred. Feed material was prepared in this manner until significant precipitation events caused the material to become saturated to a point where shredder feed prep production rates became inadequate. To improve feed production rates, the soil feed material and lime was admixed in the feed material staging area using a Caterpillar E120 track excavator. Material feed preparation continued in this manner until project completion.

Addition of agricultural lime to the feed material physically altered the properties of the clay, causing the material to break up, thus allowing excess water to evaporate. The lime admix alleviated many of the plant feed material handling problems and as a result, substantially increased LTTD plant production rates throughout the remainder of the project.

#### *2.3.5.3 LTTD Operations*

Operation and maintenance of the LTTD unit and processing of impacted soils occurred on a twenty-four hour, seven day per week schedule. A summary of the LTTD unit operation and performance is provided below. Appendix I contains the LTTD system Operating Log records.

##### *2.3.5.3.1 LTTD System Overview*

The LTTD system constructed for this project included the following primary process components: a feed hopper/separator, conveyer system, vibrating screen, impact crusher for oversized material, on-line belt scale, rotary dryer heated by propane gas, baghouse for particulate filtration, thermal oxidizer for VOC emission control, treated soil cooler and reconstitution mill, and a treated soil stacker and conveyer system. A process flow diagram for the LTTD system is shown in Figure 2-3.

The LTTD system was fed by a front-end loader or excavator at the feeder/separator unit, which handled the soil material and crushed it to the correct size for entry into the dryer.

The material entered the rotary dryer and was heated to approximately 800-900 °F. The material then passed out of the dryer, through the reconstitution mill, and onto the conveyor system which deposits the treated soil in 150 ton stockpiles. Heated off-gas emissions from the soil treatment process are captured and carried to the baghouse, which removes the particulate matter present in the air stream via primary and secondary filter fabrics. Collected particulate fines are recycled back to the rotary dryer for retreatment. The particulate free off-gas is fed into the thermal oxidizer, where the volatilized contaminants are destroyed by heating the air stream to temperatures approaching 1400 °F. The air stream is then exhausted from a 42 inch diameter, 56 foot tall stack.

The LTTD system was first started on October 31, 1994 at approximately 1700 hours. After completion of the Start-Up/Prove-Out Event, records of the LTTD system operating conditions and processing information were collected.

Treatment of the soil material continued throughout Phase 2 activities until all of Areas A and B were excavated and processed soils were confirmed clean and backfilled. The LTTD unit processing rate averaged over 15 tons per hour during unit operation over the project period. Operating temperatures during this time period ranged from 800-900 °F, with an average temperature of 856 °F.

During the project performance, the LTTD system experienced some operational difficulties and process downtime. These problems were varied, including: 1) obstruction of feed hopper, crusher, and conveyor mechanisms because of high moisture and clay content of soil material; 2) system equipment failures requiring maintenance and repair time; and, 3) labor difficulties resulting from the subcontractor's default.

#### *2.3.5.3.2 Material Sizing/Handling Systems*

Impacted soil was loaded into the LTTD's feed hopper by a front end loader or track excavator. The feed hopper is mounted with a bar type grizzly which pre-screens feed material. The hopper acts as a temporary on-line storage and regulates the volume of impacted soil entering the LTTD's vibrating screen. Material which passes through the grizzly pre-screener into the hopper is transferred to the vibrating screen. Material which passes through the screen falls directly into a vertical wall bin and onto the flat pan of a variable speed slat feeder. Material which does not pass through the vibrating screen

(rejected) enters an on-line impact crusher for size reduction. When the oversized material is crushed it falls onto the crusher belt for discharge. Once discharged, the material is picked up by a rubber tired loader and re-introduced into the feed hopper.

#### *2.3.5.3.3 Belt Scale System*

Material on the slat feeder is deposited onto a fixed speed slinger conveyer which delivers the feed material to the rotary dryer. The slinger conveyer is equipped with a weigh bridge which includes a speed pick-up sensor and gravity take-up to enhance scale accuracy. The weigh indicator, which is located in the LTTD's control room, provides both running weight and total accumulative weight of the material traveling across the belt scale. The scale was calibrated prior to production runs by a certified scale calibrator represented by the belt manufacturer.

#### *2.3.5.3.4 Rotary Dryer System*

The LTTD's rotary dryer measured 22 feet in length and 64 inches in diameter. The heat source for the dryer was liquid propane gas (LPG) fired in a Hauck Starjet burner rated at 30 MMBtu per hour. Inside the LTTD's rotary dryer, the contaminated soil, which moves countercurrent to the hot off-gas stream, is heated to temperatures averaging 800-900 °F.

The operating temperatures of the LTTD's rotary dryer is controlled automatically via a composite average of the thermocouples located in the dryer chamber. The first thermocouple is located in the material discharge chute of the dryer and reads the treated soils discharge temperature. The remaining two thermocouples are located in the rotary dryer exhaust gas discharge ductwork/hood. These thermocouples read the exhaust gas stream temperature and work in conjunction with the first thermocouple to automatically control the LTTD's rotary dryer burner firing rate by adjusting the position of the motor operated valves in the fuel and combustion air feed lines. Each thermocouple provides continuous temperature indication at the control room for the LTTD's operator inspection. Additionally, the soil discharge and exhaust gas temperature are continuously recorded on a strip chart for documentation.

The internal flight mechanism in the dryer lift and spread soil across the diameter of the dryer to thoroughly expose soil particles to the heated air stream generated by the burner ensuring proper removal of organic contaminants from the soil material.

#### 2.3.5.3.5 Treated Soil Discharge/Stockpiling Systems

The treated soil exiting the LTTD's rotary dryer is mixed with water in a reconstitution mill to control dust and to cool the hot soil with dryer exit temperatures of 800-900 °F. The water is applied with a series of spray nozzles that are strategically located throughout the reconstitution mill. The steam generated in the mill as a result of the hot soil contacting the water, complete with the airborne particulate matter, is collected in a hood, mixed with exhaust gas from the thermal oxidizer, and ducted back to filterhouse for particulate matter removal prior to introduction to the thermal oxidizer for secondary treatment. The treated and cooled soil from the reconstitution mill is discharged onto the reconstitution mill conveyer belt. The treated soil is then transferred onto a radial stacking conveyer belt which delivers the decontaminated soil to the 150 ton stockpile.

#### 2.3.5.3.6 Baghouse System

The off-gases exiting the LTTD's rotary dryer are exhausted into the primary collector (knock-out-box) for initial particulate matter removal. From the primary collector, the off-gases enter the filter fabric collector (also known as the filterhouse or baghouse) where further fines removal is accomplished prior to entering the LTTD's thermal oxidizer. Inside the baghouse, the fines, which are collected onto the filter bags are removed by pulsing air onto each individual filter bag. The filtering of airborne fines is controlled by a pressure drop across the baghouse from the clean to the unclean side. The differential pressure is automatically controlled by increasing or decreasing the cleaning cycle time, or bag pulsations, inside the baghouse.

The fines removed during both stages inside the primary and secondary collectors of the baghouse are gathered into a hopper in the bottom of the baghouse. The hopper is equipped with a fixed speed slat conveyer and auger which delivers all collected fines to a common discharge point. The fines collected are discharged into a rotary vane feeder and metered into a discharge line which is connected to a mechanical (auger) return mechanism. This system returns all collected fines to the rotary dryer for decontamination and discharge to the reconstitution mill.

#### 2.3.5.3.7 Thermal Oxidizer System

The particulate free off-gases from the baghouse are blown into the LTTD's thermal oxidizer via the baghouse exhaust fan rated at 12,000 cubic feet per minute (cfm), which

imparts a slightly negative pressure to the up-stream equipment including the baghouse and rotary dryer. An electrically actuated damper located in the fan's discharge line regulates the off-gas flow into the thermal oxidizer. The temperature of the off-gases to the afterburner is displayed and permanently recorded inside the control room. Inside the thermal oxidizer, the volatized contaminants are destroyed by applying the necessary heat for oxidation, typically 1400 °F or greater. The thermal oxidizer is operated on liquid propane gas used to fire a total air burner. The combustion air for the thermal oxidizer is provided by the burner air blower. The operating temperature of the thermal oxidizer is controlled automatically via a composite average of the thermocouples located in the afterburner chamber. These units read the afterburner gas stream temperature and work to automatically control the burner output (firing rate) by adjusting the position of the valves in the fuel and combustion air feed lines. A continuous temperature display for the thermal oxidizer is located in the control room and is also permanently recorded on a strip recorder.

#### 2.3.5.4 FERtech Environmental Default

The LTTD subcontractor, FERtech Environmental Inc., declared bankruptcy on February 2, 1995. All FERtech personnel departed the project site at this time and all personnel and vehicle access privileges were subsequently revoked. LTTD operations ceased and the LTTD plant and support equipment remained on site. Excavation and other project support activities continued while IT pursued a legal determination on how to proceed.

After receiving a final legal determination, IT mobilized a support crew on February 14, 1995 to operate the LTTD unit and complete the project scope. Full production recommenced on February 20, 1995. During this event, the LTTD system was shut down for a period of 23 days.

#### 2.3.5.5 Dewatering Activities

Excavation dewatering was accomplished with the use of 2, 4 and 6-inch dri-prime centrifugal trash pumps. Water generated as a result of dewatering operations was pumped directly from the excavation area to one of four 20,000 gallon Baker storage tanks. Dewatering operations were typically initiated immediately preceding a scheduled backfill event. Total amount of wastewater treated by the water treatment system during the project was 921,136 gallons. Six batches of wastewater (240,000 gallons) required retreatment.

From the beginning of the project, a seasonal rise in groundwater elevations and high levels of precipitation impacted excavation dewatering efforts. Groundwater elevations approached surface grade in some areas (e.g., Area A wetland). IT excavated a diversion ditch upgradient from the excavation areas and along the eastern perimeter of the excavation areas to intercept surface water sheet flow. The diversion ditch prevented surface water from entering the excavation areas and channeled it to historic surface water discharge points away from the excavation areas.

The total storage capacity for wastewater generated as a result of dewatering operations was limited to 80,000 total gallons. Because of this limited capacity, IT constructed earthen dikes within the excavated areas so that one area or grid could be dewatered, and subsequently backfilled, by pumping water over the diked area into the adjacent excavated grid.

Clay drainage tiles were encountered during excavation operations. These tiles, reportedly installed prior to the SEDA's existence by immigrant farmers, drained upland areas into the excavation areas. IT personnel removed and/or plugged the broken drainage tiles in order to limit drainage flow.

As temperatures dropped, surface ice which had formed over the water filled excavated areas was broken and removed with the E120 excavator and placed at the edge of the open excavation. The ice was placed in areas such that when melting occurred, the meltwater would drain back into the excavation.

As the project progressed, it became apparent that additional influent capacity was required. IT constructed a 500,000 gallon ModuTank storage container to increase dewatering storage capacity by 625 percent.

#### *2.3.5.6 Backfill Activities*

Backfilling of treated soil commenced once acceptable analytical results were obtained from confirmatory soil samples. The backfilling material came from individual 150 ton treated soil stockpiles from the post treatment staging area. Prior to each backfill event, the excavation area was dewatered and the excavation floor scraped and dragged until semi-competent bedrock was encountered. The excavation floor was photographed to document

that all residual material had been removed and that backfilled material would be placed directly on semi-competent material.

Each backfilling event began with the staging of multiple soil stockpiles which had been cleared for backfill in the post treatment staging area. The staged stockpiles were transported by rubber tired loaders to the perimeter of the excavation grid to be backfilled. Once dewatering of the excavation grid had been completed and the excavation floor scraped, the clean soil was placed into the excavation grid in lifts and compacted with a Caterpillar D5 dozer. The initial few lifts of material were placed in the excavation in an expedient manner to order to ensure that clean backfill material could be placed and compacted in the excavation cell prior to groundwater intrusion.

#### *2.3.5.7 Wastewater Treatment*

IT received authorization from the NYSDEC to discharge treated water on September 12, 1994. Treated water was discharged from an air stripping and particulate filtration system. Wastewaters generated from site operations, including precipitation, excavation dewatering, and decontamination operations, were treated in batch fashion, with batch treatment performed for every 40,000 gallons of water collected. Influent and effluent samples were analyzed for a pre-set list of chemicals of concern (COCs), as indicated on the wastewater effluent discharge authorization. Acceptable analytical results allowed discharge of water to an existing drainage swale and field located on the western side of West Smith Farm Road. If analytical results were unacceptable, the water was re-treated. In the event that the wastewater continued to fail the effluent requirements, the water would be sent to an acceptable Publicly Owned Treatment Works (POTW) for discharge.

Discharge criteria under the discharge authorization were based on requirements outlined in Title 6 of the New York Code of Rules and Regulations (NYCRR) Parts 700-705 and Technical and Operational Guidance Series (TOGS) v. 1.1.1, "Ambient Water Quality Standards and Guidance Values," October 1993.

The initial process design of the wastewater treatment system consisted of :

- two 20,000 gallon influent storage tanks
- 25 micron particulate bag filter
- Carbonair STAT 80 low profile air stripper equipped with six aeration trays

- two 20,000 effluent storage tanks

A vapor phase carbon treatment system was added prior to unit mobilization to additionally treat and polish offgas emissions. The offgas system consisted of an in-line duct heater to reduce relative humidity in the vapor stream and a GPC 48 vapor phase carbon adsorber to treat the offgas. The GPC 48 contained 2500 pounds of vapor phase carbon.

Significant modifications to wastewater handling and treatment operations occurred throughout the entirety of the project and are addressed in detail in Sections 2.5.1 and 2.5.2.

### *2.3.6 Site Demobilization*

Demobilization activities at the Ash Landfill began in early April 1995 during site operations and progressively increased until the completion of the project in June 1995. The primary tasks performed during this phase of the project were decontamination of equipment, demobilization of all resources, and preparation for site restoration. General procedures, such as documentation, decontamination, and inspection of equipment, were performed by the on site Health & Safety Officer during daily site operations. Documentation of demobilization activities, and additional references to detailed equipment inspections, were completed by the on site QA/QC Officer and submitted with the QA/QC Rapid Response Daily Reports, which are included in Appendix A of this Report.

Demobilization of the Ash Landfill site required decontamination of potentially contaminated equipment. A decontamination area was constructed on the northwest end of the exclusion zone to allow for the entry/exit of equipment. The decontamination facility was constructed with a bermed depression which allowed for the collection of water and residual soil generated as a result of decontamination events. The accumulated decontamination water/soil was pumped into 20,000 gallon Baker storage tanks, treated through the water treatment plant, and eventually discharged into the adjacent field north of the project site. The decontamination facility was also utilized for the decontamination of pumps, tools and other miscellaneous equipment that may have been potentially contaminated. IT utilized a portable high pressure steam washer for all decontamination operations.

As site operation activities decreased, more equipment was demobilized to allow for

optimal efficiency. Selected pieces of heavy equipment were decontaminated and demobilized throughout this phase of the project. Procedures for decontamination of heavy equipment were followed as specified in the project Work Plan. The Health & Safety Officer was responsible for ensuring that all equipment leaving the site had been decontaminated properly. These procedures included an inspection of the equipment along with accompanying documentation of the inspection results. This documentation included confirmatory signatures from the IT Site Manager, Site Supervisor, Health & Safety Officer, and respective equipment company representative.

Field support equipment was demobilized in a similar fashion to the heavy equipment. The Baker storage tanks used in influent/effluent water storage were extracted of solid residue and triple-rinsed with the portable steam pressure washer. Each Baker tank was visually inspected by the Health & Safety Officer, and documentation completed and signed by the required personnel. Initially, decontamination water generated from these activities was collected and pumped into separate Baker tanks and treated through the wastewater treatment plant. However, as the last Baker tanks were being demobilized, 600 gallon poly tanks were used as temporary storage for the pretreated decontamination water. A direct discharge permit for these water treatment activities was granted by the NYSDEC in order to complete demobilization of the tanks. Therefore, it was unnecessary to containerize the treated water. Upon completion of the site equipment decontamination, the 600 gallon poly storage tanks were steam rinsed and the decontamination water treated and directly discharged. Other equipment demobilized in this manner were the framing and panels for the ModuTank. The separate ModuTank pool liners were disposed of off-site as non-hazardous debris.

Concurrent with the demobilization of equipment was the demobilization of many other resources that also required proper decontamination, cleaning and documentation. These resources included the office, break and decontamination trailers, instruments and equipment used for air monitoring, utilities, and miscellaneous structures. Equipment and structures were inventoried, documented, and cleaned prior to being removed off-site. Government property was inventoried and returned to the USACE and the Seneca Army Depot. Specific references to these individual tasks can be found within the Rapid Response QA/QC Daily Reports included in Appendix A.

The final phase of these activities included the demobilization of the LTTD unit. Preliminary dismantling of the LTTD unit began on June 8, 1995. A crane, which was required for the dismantling of the unit, was brought on site to complete the demobilization of the LTTD system. The LTTD unit was disassembled, decontaminated and shipped off site. Decontamination water was captured by a temporary containment berm that was constructed. The decontamination water was pumped into a 600 gallon poly tank and transported to the water treatment system. During dismantling and decontamination of the LTTD system, inspections were conducted and documentation completed for verification of receipt items, parts and structures leaving the site. Demobilization of the LTTD unit was completed on June 13, 1995.

### *2.3.7 Site Restoration*

Site restoration activities began on the final week of operations at the Ash Landfill site. Once backfill activities were complete and demobilization of the major pieces of equipment, including the LTTD unit, had occurred, the tasks of regrading and revegetation began. Prior to regrading the site, a thorough inspection was made to insure that all debris, such as poly liners and excavated debris (concrete, steel, etc.), had been properly removed. Regrading tasks began by placing a final grade on the excavation areas. These activities were performed using a Caterpillar D-5H LGP dozer. A depression was cut in the northwest section of Area A to reconstruct the wetland area. Efforts were made, using original site elevation maps, to ensure that grades were returned to previous levels and site topography resembled predisturbed conditions. Drainage ditches along the western perimeter of the site, as well as those that previously existed in the exclusion zone, were also restored. In addition, the grading was performed such that grooves ran perpendicular to any possible surface water sheet flow, reducing potential surface erosion.

Revegetation of the site conformed to specifications provided in the project Work Plan. All areas disturbed by field activities were reseeded. IT estimates that approximately 7.5 acres of the site had been disturbed by field operations and required grading and reseeding. These areas were reseeded over a period of two days through the use of hydroseeding. Seeding was spread uniformly, covering all areas where vegetation had previously grown. After the seeding process was complete, proper maintenance and protection of the growing area was initiated to assure that germination would occur. Photographs of the hydroseeding operation were taken which document these activities (see Appendix O).

## 2.4 Debris Disposal

Debris generated during the Ash Landfill remedial activities consisted of waste personal protective equipment (PPE) and material generated during excavation activities of that could not be treated in the LTTD unit (excavation activity debris), wastewater treatment debris, and general construction and demolition debris (C&D).

The debris generated from September 1994 through June 1995 was stored on site pending waste classification and ultimate disposal.

### 2.4.1 Construction and Demolition Debris

Construction and demolition debris generated during Ash Landfill demobilization activities consisted of waste wood and other construction-related materials used in establishing the various support zone structures. This material was collected and transported to the SEDA scrap wood material storage area for disposal.

### 2.4.2 Wastewater Treatment Debris

Debris generated as a result of wastewater treatment activities at the Ash Landfill site consisted of spent vapor phase carbon, particulate bag treatment filters, and influent holding tank liners. The vapor phase carbon unit was characterized for disposal by CarbonAir Inc. CarbonAir utilized Ash Landfill wastewater treatment process knowledge and pretreated wastewater analytical data to ship the carbon unit to a regeneration facility as a nonhazardous waste. The wastewater treatment filters and the influent wastewater holding tank liners were combined with the excavation activity debris and disposed as per the protocol discussed in the following section.

### 2.4.3 Excavation Activity Debris

The debris from excavation Areas A and B consisted of large boulders, concrete, metal piping, tires, glass, and large pieces of wood. The excavation area debris was collected during the course of the project activities from September 1994 through June 1995 and stored within the exclusion zone. In addition, all PPE and wastewater treatment unit filters were collected and securely stored at the project site in the support zone. The debris remained on site pending sampling and offsite disposal arrangements.

Two composite samples, Debris-1 and Debris-2, consisting of representative samples of the

excavation debris, PPE, and wastewater treatment filters were collected in order to characterize the debris for disposal. The debris analytical data was evaluated and compared to Resource Conservation and Recovery Act (RCRA) solid and hazardous waste criteria as specified in 6 NYCRR Parts 371 and 373 and Title 40 of the Congressional Federal Register (CFR) Parts 260 and 261. Based on the total concentration of trichloroethene (TCE) in the Debris-1 sample, the debris was considered a potential RCRA D040 characteristic waste. Since the RCRA toxicity characteristic values are based on leachability, a decision was made between IT, USACE and SEDA representatives to pursue analyzing the debris by Toxicity Characteristic Leaching Procedure (TCLP) TCE. The TCLP TCE analytical data resulted in TCE not detected above the Practical Quantitation Limit (PQL) rendering the debris characterized as a non-hazardous waste.

Debris disposal arrangements were made with Browning-Ferris Industries (BFI). All applicable waste profile information was completed by IT and approved by the USACE, SEDA representatives, and BFI representatives. Final waste profile approval occurred in June 1995. BFI disposal trucks arrived at SEDA for transportation of approximately 150 tons of debris to the NYSDEC Part 360 permitted Niagara Recycling Center and Landfill in Niagara Falls, New York. Appendix L contains the debris waste profile package and associated paperwork. Section 3.3 presents a summary of the debris analytical results.

## 2.5 Modifications to Work Plan

Several modifications to operations or existing procedures occurred throughout the duration of the project. Modifications to the project Work Plan were approved by the appropriate regulating agencies prior to implementation. Significant modifications are discussed in this section.

### 2.5.1 Dewatering Operations

Because of the unseasonably warm temperatures, high precipitation rates and rising water table conditions, the amount of water to be treated continually increased throughout the fall and winter of 1994. Excavation and backfill operations were impacted because it became increasingly difficult to treat, analyze and discharge the increased volume of wastewater in an efficient manner. The 40,000 gallon treated effluent storage capacity did not provide sufficient capacity. The treatment, analysis and subsequent discharge of wastewater could not keep pace with excavation dewatering operations. To alleviate this problem, IT

mobilized two additional 20,000 effluent storage tanks on February 2, 1995.

The volume of wastewater generated as a result of dewatering operations continued to exceed predetermined estimates. For this reason, IT requested approval to modify pretreated wastewater storage procedures. IT requested and received approval to construct a 500,000 gallon ModuTank storage container. The ModuTank was designed with both a primary HDPE and secondary liner to meet secondary containment requirements. The ModuTank also came equipped with a floating HDPE cover designed to prevent emissions from the containerized wastewaters.

### *2.5.2 Wastewater Handling and Treatment Operations*

Modifications to the project Work Plan regarding the handling and treatment of all site generated wastewaters are discussed in this section.

IT modified the wastewater treatment system design prior to mobilization based on NYSDEC comments regarding air stripper emissions (see October 4, 1995 correspondence in Appendix K). A vapor phase carbon treatment system was added to address concerns regarding the potential presence of dense, non-aqueous phase liquids (DNAPLs) in the collected groundwater. The process modification consisted of a five (5) kiloWatt in-line duct heater added to reduce relative humidity in the vapor stream prior to entering a GPC 48 vapor phase carbon adsorber to treat the offgas. The GPC 48 contained 2,500 pounds of vapor phase carbon.

IT mobilized two additional 20,000 storage tanks to the site prior to plant startup to allow for a total of 80,000 gallons influent and 40,000 gallons effluent storage capacity.

IT submitted a addendum dated November 7, 1994 to the September 12th discharge request which addressed the treatment and subsequent handling of wastewater containing inorganic constituents. The addendum was submitted in response to NYSDEC comments regarding the discharge criteria or acceptable concentrations of inorganic constituents to be discharged to the ground surface. Acceptable concentrations for inorganic constituents would be determined by comparing analytical results against Drinking Water Standards, Groundwater Standards and Class D Surface Water Standards as requested by the NYSDEC. Treated wastewaters would be required to meet the most stringent of these three standards for each

individual constituent analyzed.

In an attempt to further reduce inorganic concentrations and to comply with the more stringent discharge criteria, IT added an additional five (5) micron particulate bag filter to the treatment train. This particulate filter was added to the effluent side of the air stripper to polish the treated wastewater prior to being staged into the two 20,000 gallon effluent tanks.

On November 28, 1994, IT submitted a second addendum to the September 12th request for authorization to discharge treated water. This addendum proposed the following modifications:

- The point of discharge for treated wastewater could be relocated from the existing drainage swale to a topographically low area situated within a field northeast of the water treatment unit;
- Class GA Groundwater Effluent Standards (6 NYCRR Part 703.6) could be used as discharge criteria for inorganic constituents;
- A variance in wastewater discharge criteria for iron could be established based on background iron concentrations;
- Only treated wastewater or effluent stream analysis be required prior to batch discharge, given that treated values, not pre-treated values govern whether discharge criteria have been met; and,
- The treatment system could be modified by changing the particulate filter sizing from 25 and 5 micron filters to 5 and 1 micron filters respectively, to further reduce iron concentrations in the treated water prior to discharge.

IT submitted a third addendum to the September 12, 1994 request for authorization to discharge treated water on December 1, 1994. This addendum was submitted as a request for approval to transport and dispose of treated wastewater at the SEDA POTW. Under the requirements of the original discharge authorization, treated wastewater was analyzed for volatile organic compounds (Method 601/602, semivolatile organic compounds (Method 625), total metals (Method 6010/7000) and total cyanide. Analytical results for the first 40,000 gallons of treated wastewater met promulgated Class GA Groundwater Effluent Standards (6 NYCRR Part 703.6) for all constituents monitored with the exception of iron.

Iron concentrations exceeded Class GA Groundwater Effluent criteria of 0.3 parts per million (ppm) with a reported iron value of 9.1 ppm. For this reason, IT requested a modification to transport and dispose of the treated wastewater at the SEDA POTW.

On December 13, 1995, a 3500 gallon tank truck began transporting site generated water to the SEDA POTW. Over the next ten days, 35,536 gallons of water were discharged into a designated SEDA POTW manway. The NYSDEC also requested that a 6-hour composite sample be taken four days after the initial discharge and on day 8 of the discharge. Results of these analysis can be found in Section 3.2.3 of this text.

The need to discharge site generated water also occurred during site demobilization of the water treatment plant. The NYSDEC and SEDA were informed that site generated water could no longer be treated by the on-site water treatment system. IT requested that this water, which was representative of water previously discharged, be discharged into the SEDA POTW. After receiving approval from the NYSDEC, the water contained in 600 gallon poly tanks was transported, via a rubber tire front end loader, to the designated SEDA POTW manway. Approximately 2,000 gallons of generated water was discharged into the manway between June 14th and June 21, 1995. POTW influent water samples were not required as a condition of this discharge.

On December 14, 1994, IT received approval for a variance from the NYSDEC for the discharge criteria for iron. The discharge criteria was raised from 0.3 ppm to 0.8 ppm. This increase was based on naturally occurring concentrations observed in background monitoring wells. The NYSDEC requested that turbidity be monitored for the duration of the project as high solids and turbidity influence iron concentrations.

On January 31, 1995, IT requested authorization to modify the existing procedure for treating and discharging wastewater generated as a result of ongoing dewatering operations. Wastewater had previously been successfully treated at a flow rate of approximately 45 gallons per minute (gpm). Given apparent elevated concentrations of volatile organic constituents in the pretreated water from the Area A excavation and the lower water temperatures, removal efficiencies for the air stripper had been reduced accordingly. Treated wastewater discharge criteria was exceeded on two separate occasions for 1,2-dichloroethene and total dissolved solids (TDS). TDS was dismissed as a concern because

when discharged, the water becomes naturally filtered when infiltrating through the overburden soils prior to entering the groundwater regime. As a result, IT requested and received approval to treat and discharge water by reducing water treatment flow rates from 45 to approximately 25 gpm to achieve proper removal efficiencies for volatile organic constituents. If the treated wastewater failed to meet discharge criteria after the first pass through the treatment system, the treated water was retreated and discharged directly to the ground surface. A confirmatory sample was obtained from the end of the treatment train and analyzed for the constituents which had previously failed the discharge criteria. Analytical results from the second treatment were not required prior to discharge. Under this scenario, IT retreated six batches of water for a total of 240,000 gallons that were retreated.

IT relocated the treated wastewater discharge point based on a March 31, 1995 request from the NYSDEC. The treated water had previously been discharged into a topographic low area situated approximately 150 feet northeast of the wastewater treatment plant. This location is in the proximity of a groundwater plume that potentially could be influenced by the discharge and infiltration of the treated water. The new discharge point was located approximately 750 feet northeast of the wastewater treatment plant.

On April 28, 1995, IT requested and subsequently received authorization to modify the existing procedure for treating and discharging wastewater as a result of ongoing dewatering operations. Containerized wastewater had previously been treated and discharged as water generated as a result of dewatering operations was collected into a ModuTank storage container. The water was then transferred into one 20,000 gallon surge tank prior to treatment, where the water passed through a 5-micron particulate filter prior to entering the air stripper. The treated water passed through a 1-micron particulate filter prior to being staged into the six 20,000 gallon effluent storage tanks. Treated water was discharged in 40,000 gallon batches when analytical data demonstrated that permit conditions have been met.

IT requested to modify the above procedure from a batch operation to a continuous treatment and discharge operation. Process flow rates were reduced from 25 to 20 gpm in order to accommodate the continuous treatment. Treated wastewater was discharged directly to a topographically low area situated 750 feet to the northeast. Treated water was

sampled twice a week from the discharge line to demonstrate that permit conditions were being met.

### 2.5.3 Excavation and Backfill Operations

The project Work Plan stipulated that excavation Areas A and B would be gridded into 75 foot by 75 foot excavation cells. These cell areas were established to minimize potential fugitive emissions from the open excavation areas. On October 13, 1994, IT requested and received NYSDEC authorization to expand, if necessary, the excavation cell areas from the original 75 foot by 75 foot areas to an unlimited open excavation area. Compliance with the predetermined ambient air action levels for particulates and VOC emissions would still be required.

### 2.5.4 Operational Modifications

Per requirements outlined in the project Work Plan, treated soil stockpiles were covered with six (6) mil reinforced black poly sheeting and secured until the sample technician received acceptable analytical results that allowed the release of the soil pile as clean backfill. In the event that the treated soils demonstrated elevated PAH levels and did not pass TCLP regulatory levels for metals, the treated soil was staged in the metals contaminated staging area and handled at a later time when the final disposition method was determined. All soils staged in this area were covered with six mil reinforced black poly sheeting and secured.

On November 25, 1995, IT requested and received approval to modify the above procedure for covering treated soil piles. IT requested that the requirement to continuously cover and secure treated soil piles be waived. Because the treated soil piles had been processed through the LTTD unit at a temperature of 800 to 900 °F, volatilization of organic constituents from the treated piles was no longer a concern. In addition, the treated piles were typically backfilled immediately after receipt of analytical results, therefore, it was operationally prohibitive to stage, cover and backfill on a continual basis. IT agreed to wet the treated piles to provide sufficient dust control as part of this measure.

#### 2.5.4.1 Operational Changes Due to Inclement Weather

Alternative procedures for excavation, staging, and processing of soils were deemed necessary due to high precipitation rates and rising groundwater table conditions. On

January 18, 1995, IT requested and subsequently received approval to implement the following operational changes from the project Work Plan:

- Area A treated soil stockpiles for which all analytical results had been received and which were cleared for backfill could be stockpiled onto the top of Area B;
- Area A could be excavated and staged in a multiple grid fashion. This removal and subsequent staging would allow the soil to be "freeze-dried" prior to processing through the LTTD unit. The LTTD was able to process frozen material but could not efficiently process the saturated material; and,
- Processed material could be backfilled in a multiple grid fashion. Treated soils from Area A were stockpiled onto the top of Area B prior to backfilling activities in Area A. The increased stockpile area allowed for reduced number of backfilling and associated dewatering events in Area A. This in turn resulted in a reduced volume of wastewater which needed to be managed and treated.

On January 30, 1995, IT requested and received approval to allow the addition of a one percent agricultural lime (CaO) mixture to the pretreated soil in order to improve material handling through the LTTD process feed system. The pretreatment soil material was highly saturated and also contained a high percentage of clay. The lime addition was necessary to physically alter the plasticity of the clay, which in turn caused the material to break up, allowing the excess water in the material to evaporate. The one percent agricultural lime did not alter the pH of the soil material and the "heat of hydration" problem associated with quick lime (CaOH) was not a concern.

In order to complete the lime and soil material mixing, IT mobilized a Telescreen shredder to mix feed material with the agricultural lime. The shredder was used for approximately two weeks in this fashion. Feed material was prepped in this manner until the increasing soil moisture content and plasticity of the feed material further reduced process rates and precluded use of the shredder. Feed material was subsequently prepped by mixing the agricultural lime and pretreated soils with an excavator.

### *2.5.5 Modifications to Sampling Strategy*

In addition to the modifications to site operations, minor changes were effected in the sampling approach, as described below.

### 2.5.5.1 Treated Soil Piles

Per requirements outlined in the project Work Plan, TCLP metal soil samples were to be collected from the treated soil piles at a rate of one composite sample for every 750 tons of treated soil. The treated soil was stored in the metals staging area until preliminary analytical results confirmed the soil could be backfilled. Because it was previously determined that the treated soil pile staging area would be insufficient to store multiple 750 ton stockpiles while awaiting analytical results, IT requested and received approval to modify the TCLP metal soil sampling requirements. The modification included collection of one TCLP metal composite soil sample per the volume of soil treated within one 24 hour LTTD operation period. This sampling rate would enable the treatment activities to operate continuously without causing project excavation and backfill delays.

On March 21,1995, SEDA, in cooperation with IT, requested that the sampling frequency for treated soil be decreased from every 150 tons of treated material to one sample every 900 tons, representing approximately two days of LTTD operation. This request was based on the consistency of the data generated to date. Approval was granted by the NYSDEC to sample once every 450 tons of treated soil or approximately one sample per day.

### 2.5.5.2 Excavation Floor Confirmatory Soil Sampling

Per requirements outlined in the project Work Plan, confirmatory soil samples were required to be collected from the floor of the excavation at a rate of one sample for every 2500 yards of material excavated. On November 1, 1994 IT received approval to modify the confirmatory soil sampling requirements by being allowed to continue excavation until semi-competent bedrock had been encountered. Approximately 18 inches to 24 inches of weathered bedrock (shale) typically was removed before semi-competent bedrock was encountered. IT scraped the excavation floor with the dozer blade to remove the bulk of remaining loose fractured shale. The limits of the excavation area were then documented with photographs. Because of the overexcavation into bedrock and photographic documentation, the confirmatory soil sampling was no longer required at this point.

### 2.5.6 Modifications to the Air Program

The air program at the Ash Landfill project site primarily included provisions for emissions permitting of the LTTD system and water treatment unit, a scope to perform emission monitoring during the Start-Up/Start-Up/Prove-Out Event, and perimeter monitoring

activities for the duration of the project. Specific air program requirements and procedures are outlined in the project Work Plan and the Air Monitoring Plan (AMP). The completion of the air program tasks and activities identified in the AMP are documented in previous project reports (e.g., Baseline Monitoring Report; Start-Up/Prove-Out Event Report; and Mid-Project Data Report) as well as in project documentation and field notes (see Appendix F and Appendix N). Changes or variances to the Work Plan and AMP regarding implementation of the air program during the Ash Landfill IRM project are discussed below.

IT provided amendments to the AMP in response to comments received from the USACE, NYSDEC, and NYSDOH on the project Work Plan in September 1994. The amendments to the AMP proposed by IT were agreed to between the parties and incorporated into the working version of the final project Work Plan document as an Addendum to the Air Monitoring Plan. The amendments included:

- Further explanation of the design of the perimeter ambient monitoring activities
- Clarification of the minimum monitoring requirements for Phase 2 activities
- Development of a contingency plan for the perimeter monitoring program
- Creation of a Contingency Response paradigm/decision flow diagram: and,
- Additional definition of preventative maintenance protocols.

The amendments addressed questions raised about the original AMP submittal. Development of the contingency plan and contingency response flow diagram allowed IT to minimize project down-time due to instrument failure, inclement weather or other circumstance and provide a basis to re-start perimeter monitoring and LTTD plant operations. The protocol for preventative maintenance outlined the exact steps site personnel were to follow for continuous maintenance of ambient monitoring equipment at the perimeter monitoring stations and meteorological station.

Emissions from LTTD operation and the water treatment system were required to meet the substantive requirements of NYSDEC air regulations governing these types of operations. IT submitted permit authorization requests for both units in order to demonstrate that emissions from these operations would be satisfactorily below threshold levels and not constitute a risk to public health. The permit authorization packages (see Appendix K), which included the basic information required for the NYSDEC emission permit forms, as

per 6 NYCRR Part 201, were reviewed by the NYSDEC. Both authorizations were approved. One addition to the water treatment authorization was implemented by IT: a carbon adsorption unit was added to polish emissions prior to release to the atmosphere at the request of the NYSDEC.

Perimeter monitoring activities were initiated at the beginning of the project after the Baseline Monitoring program was completed and the perimeter stations were sited. Several minor variances from the AMP were implemented for the perimeter monitoring portion of the air program, including the changing out of direct-read particulate monitoring instrumentation approximately half way through the project because of the difficulties in operating the equipment in cold weather (IT began using a climate-controlled unit of the same manufacturer); instituting perimeter walk-throughs of the site perimeter with direct-read monitoring instruments on a two hour rotational schedule as a method to provide total project site coverage of particulate and VOC dispersion; and continuation of reference method sampling activities beyond the agreed-to trial period time frame.

### 2.6 Project Health and Safety Performance

All personnel working on-site were responsible for continuous adherence to the Site Specific Health & Safety Plan developed as part of the project Work Plan. An on-site Health & Safety Officer was present to enforce all safety procedures contained within the Site Specific Health & Safety Plan.

The Health & Safety Plan was regarded as a dynamic document that progressively evolved. As more information became available, amendments were generated. Initially, the on-site Health & Safety Officer was present 24-hours per day for field activities. However, approved modifications to the project Work Plan reduced these activities to 12-hours per day. In addition, the IT Health & Safety Manager mandated that each employee take at a minimum of one day off each work week.

During site mobilization/set-up activities, the Health & Safety Officer was responsible for stocking personal protective clothing, inspecting equipment, such as, the crane used to assemble the LTTD unit, inspecting the propane lines that were connected to the LTTD unit, determining evacuation routes, constructing diagrams indicating the location of the local hospital and emergency phone numbers, arranging emergency assistance with the

Seneca Army Depot, placing first aid kits and fire extinguishers throughout the site, establishing the exclusion zone, contamination reduction zone and the support zone, and inspecting personnel training and medical records to ensure compliance.

The Health & Safety Officer was active during site operations conducting tailgate safety meetings, assuring that the respiratory program was being implemented, that decontamination procedures were being performed as specified, and assisted with the exclusion zone air monitoring. Modifications to the real time air monitoring protocol were implemented several times during site operations. Results of these amendments included the upgrade of PPE from Level C to Level B for excavation activities (Details of these events can be found in Section _____of this text). The Health & Safety Officer worked in conjunction with the on-site QA/QC Officer on performance and operation of real time air monitoring instrumentation. Calibration logs and air monitoring logs were maintained regularly and submitted to the QA/QC Officer with the daily report. The Health & Safety daily report included, but was not limited to, the following: field activity daily logs, calibration logs, air monitoring logs, hot work permits, confined space permits, equipment inspection logs, site inspection reports, etc. Incidences for symptoms of exposure or stress, upgrading or downgrading the level of personal protection, employee injury reports and unexpected situations were documented accordingly and submitted with the daily report.

During site demobilization activities the Health & Safety Officer was responsible for ensuring that all equipment leaving the site had been decontaminated accordingly. Documentation of these activities was taken and submitted with the daily reports. Other activities and responsibilities included an inventory for the remaining materials on-site, downgrading (with the approval of the Health & Safety Manager) the level of protection for certain activities, as well as, normal daily responsibilities. Documentation of Tailgate Safety Meetings, Field Activity Daily Logs, and Equipment Inspection Logs can be found in Appendices G, H and M.

### *2.6.1 Utility Pole Installation*

During the performance of the health and safety responsibilities at the Ash Landfill project site, an unexpected event occurred which is summarized below.

On September 29, 1994 an event occurred during the excavation of utility pole holes.

While an auger truck was drilling base holes for the utility poles being erected on site, the real time air monitoring equipment registered elevated values for VOC's in and around the boreholes. The vicinity in which the elevated readings were occurring was allowed to ventilate. As a result of the elevated VOC readings, the auger truck was decontaminated. A soil sample was then taken and analyzed by a gas chromatograph. The GC results indicated the soil to be free of volatile organic constituents. Continuous real time air monitoring was also performed during these operations.

### *2.6.2 Vinyl Chloride Contamination*

On January 16, 1995, during Area A excavation activities, real time air monitoring detected high levels of VOC contamination in the vicinity of SEDA Monitoring Well No. 44. Excavation activities within the suspect area of contamination were discontinued until further investigations could be performed. A series of Drager tube samples were taken indicating that the suspect VOC was vinyl chloride.

As a result one confirmatory soil sample (PT-A2-VC) was collected and delivered to a laboratory for vinyl chloride analysis. After further discussions between the Health and Safety Manager and the Health and Safety Officer a decision was made to collect a second sample to better identify the source of contamination. PT-A2-VC2 was delivered to the laboratory and analyzed for halogenated hydrocarbons.

Analytical data confirmed levels of vinyl chloride at 5 ppb (below PQL but above the method detection limit) in sample PT-A2-VC and 25 ppb in PT-A2-VC2. In addition PT-A2-VC2 contained concentrations of benzene; 1,1-dichloroethane; 1,1-dichloroethene; 1,2-dichloroethene; ethylbenzene; toluene; trichloroethene; and total xylenes at 42 ppb, 24 ppb (below PQL but above the method detection limit), 13 ppb (below PQL but above the method detection limit), 52,000 ppb, 36 ppb, 160 ppb, 310 ppb, and 230 ppb respectively.

Based on the analytical results, the on site Health and Safety Officer, in consultation with the Health and Safety Manager and Site Manager, upgraded the exclusion zone protection level from OSHA level C to level B. This resulted in the utilization of pressurized air lines for the remaining excavation activities in the confirmed area of contamination. Real time air monitoring continued within the excavator during these activities. Along with these requirements the following Health and Safety guidelines were specified:

- the level of PPE will be downgraded if the HNU DL-101 readings drop below 5.0 ppm for an unspecified time. The unspecified time will be the at the discretion of the Health & Safety Manager;

- if the level of PPE is downgraded from Level B to Level C, and during excavation activities vinyl chloride is detected with colorimetric tubes, the level of PPE will be upgraded to Level B; and,

- excavation activities can be downgraded to Level C if a given area was verified by the Remedial Investigation (RI) that no detection of vinyl chloride was identified in soil or water analysis for that given area.

In addition, soil excavated from the suspected area of concern was screened for vinyl chloride prior to transport to the material feed prep staging area. Air monitoring activities were performed by the Health & Safety Officer in Level B PPE. This precautionary measure enabled the remaining field crew to continue site operations in Level C PPE.

### *2.7 Quality Assurance/Quality Control (QA/QC)*

The QA/QC duties were performed by an on-site QA/QC Officer for the duration of Ash Landfill IRM field operations. The QA/QC officer was responsible for sufficient inspections and tests of all items of work, including that of subcontractors, to ensure conformance with the project Work Plan with respect to the quality of materials, workmanship, construction and remediation finish, functional performance, and identification. The QA/QC program included four phases of inspections and test: preparatory, initial, follow-up and safety. All inspections and tests results were recorded in the Rapid Response Daily Report. Records were maintained on QA/QC operations, activities, and tests performed including the work of suppliers and subcontractors. These records were included in the Rapid Response Daily Report Form and indicated a description of trades working on the project; the number of personnel working; the weather conditions encountered; and delays encountered; and acknowledgment of deficiencies noted, along with corrective actions taken on current and previous deficiencies.

The on site QA/QC Officer also had the responsibility for field sampling (soil, water, and debris) and air monitoring activities. Initially, these positions were filled by separate individuals. However, due to efforts to reduce project costs and increase project efficiency, these positions were combined into a single sampling technician with responsibility for all

sampling activities. The QA/QC Officer was responsible for ensuring sampling procedures were being performed in conformance with the CSAP and project Work Plan. All samples shipped to the laboratory for analysis included chain-of-custody and cooler receipt forms which were reviewed by the QA/QC Officer. Field notes were maintained along with sample collection logs documenting each sampling event.

Communication between the on site QA/QC Officer and the Project Chemist were ongoing throughout field operations. The Project Chemist served as the laboratory liaison with responsibilities including negotiating soil and wastewater analytical concerns between the state agency, laboratories and project activities, providing soil and wastewater analytical data interpretation according to project cleanup criteria, characterizing and managing debris for disposal according to federal and state regulations and providing oversight in field sampling activities to ensure that site sampling and analysis procedures were being followed properly. The on-site QA/QC Officer and the Project Chemist worked closely to ensure these activities were executed as stated in the project Work Plan. After interpreting the analytical data and proper quality assurance/quality control procedures were followed, the Project Chemist would inform the on-site QA/QC Officer whether or not the treated soil and/or water passed site specific clean-up criteria. The QA/QC Officer was responsible for the field management of these media.

Modifications to the project Work Plan occurred continually throughout the project. The QA/QC Officer worked closely with the IT Site Manager and Technical Manager to ensure proper quality assurance/quality control standards were being met during these changes. The QA/QC Officer also communicated occasionally with the state agency on such issues. Modifications to the project Work Plan are discussed in Section 2.5 of this Report.

The QA/QC Officer was also responsible for reporting progress, changes, deficiencies, and corrective actions on a daily, weekly and monthly basis. These reports, including the Rapid Response Daily Work Order which listed activities to be performed the following work day, were provided and approved by the USACE on-site representative on a timely basis. These reports included information such as:

- Rapid Response Daily Report and Work Order
- LTTD unit production logs, strip chart and control room operator logs
- correspondence

- permit status
- preparatory, initial, follow-up and safety inspections
- weekly meeting minutes
- field activity daily logs for several on-site activities
- tailgate safety meeting
- hot work permits
- confined space permits
- equipment inspection logs
- calibration logs
- air monitoring results
- sample collection logs
- excavation tracking spread sheets and diagrams
- analytical sample results
- chain-of-custody forms, and
- localized meteorological data.

All of this data is found in the Report as part of the Appendices.

# 3.0 Project Sample Collection/Data Summary

Data results from the samples collected from different media during the Ash Landfill IRM project are presented below. The project Work Plan and CSAP, previously submitted, outlined the basic requirements for the sampling and analysis activities to be performed for the Ash Landfill project. The sampling program included samples for the following media:

- soil samples, pre- and post-treatment
- water samples, pre- and post-treatment
- samples from collected landfill debris
- ambient air samples, in the work zone and at the site perimeter

IT project personnel were responsible for the collection of samples from these media during project operations. Below, a brief summary of the sampling methodology for the types of samples collected and a review of the data results is presented. Documentation of sample collection and chain of custody for these samples are presented in Appendices B and C.

## 3.1 Soil

The Ash Landfill soil sampling activities occurred from September 1994 through June 1995. Samples were collected during a series of remedial events including: Phase 1- Site Delineation, Start-Up/Prove-Out, Post-Proveout, Confirmatory Sampling, and Demobilization.

All soil samples were analyzed following New York State Analytical Services Protocol (NYS ASP) and/or U.S. Environmental Protection Agency Solid Waste 846 (USEPA SW846) methodology. All soil samples were collected as specified in the project Work Plan and the CSAP with the following variations:

- TCLP metal samples were taken one for every 24 hours of treated soil as opposed to one for every 750 cubic yards of treated soil. This modification to the work plan occurred due to treated soil staging area limitations; and,

- TCLP metal analytical methodology changed from NYS ASP to SW846 in December 1994 in order to expedite preliminary analytical turn around time and reduce analytical costs.

- Sampling frequency for treated soil was decreased in March from one sample every 150 tons of treated material to one sample every 450 tons, representing one sample per day of LTTD unit operation.

Soil samples were collected and analyzed for site-specific volatiles and semivolatiles and TCLP metals. The soil sample collection protocol and analytical data are summarized in the following sections. Soil analytical data for the Ash Landfill project are included in Appendix D.

### 3.1.1 Phase 1- Site Delineation Soils

Site delineation/soil boring samples were collected from September 27 through September 30, 1994. A total of 31 soil boring locations, consisting of two to three samples each, were obtained along the perimeter of excavation Areas A and B.

The soil samples were submitted to Recra Environmental laboratory (Recra) for analysis of site-specific volatiles and semivolatiles. The analytical results were compared to the site-specific cleanup levels in order to determine the extent of excavation to occur during Phase 2 remedial activities. The site-specific cleanup levels are specified in the Ash Landfill Work Plan and in Table 3-1. All detected constituent concentrations were below site-specific action levels with the exception of five boring locations (SB108, 7ft - 9ft; SB129, 0ft-2ft and 6ft - 7ft; SB102, 0ft-4ft; SB105, 0ft-2ft; and SB119, 0ft-4ft and 4ft-6ft). These samples contained 1,2-dichloroethene and various semivolatile constituents in concentrations ranging from 310 parts per billion (ppb) to 550 ppb for 1,2 DCE and 160 ppb to 26,000 ppb for semivolatiles. Detailed information regarding site delineation/soil boring activities is discussed in the Soil Borings-Ash Landfill Report, dated November 1994.

### 3.1.2 Start-Up/Prove-Out Event Soils

Start-Up/Prove-Out Event soil samples were collected from November 1 through November 8, 1994. A total of 20 soil samples were collected and analyzed for site-specific volatiles and semivolatiles. In addition, one TCLP metal post-treatment sample for eight toxicity characteristic metals and one total lead pre-treatment sample were collected. Soil samples were submitted to Recra and Eastman Kodak Company-Chemicals Quality Services (Kodak) for analysis.

The volatile/semivolatile analytical data was compared against the site-specific cleanup

levels to determine if the LTTD unit was meeting treatment criteria prior to beginning full soil remedial and treatment processes. All ten pretreated soil samples contained volatile and/or semivolatile constituents at concentrations exceeding cleanup levels. Treatment proved to be successful in removal of the detected volatiles to below the constituent practical quantitation limits. However, three treated soil samples (T-B1-5, T-B1-6, and T-B1-8) contained semivolatiles at concentrations exceeding cleanup levels.

The TCLP metal analytical data was compared against the RCRA metal toxicity characteristic levels to determine if the treated soil could be backfilled into the appropriate excavation area. The TCLP metal sample contained concentrations of four toxicity characteristic metals but at concentrations below the toxicity characteristic values. Therefore, the Start-Up/Prove-Out Event resulted in the LTTD unit operating successfully while showing that the treated soil met both site-specific cleanup criteria and RCRA metal toxicity characteristic criteria for backfill within the excavation. Additional information on the Start-Up/Prove-Out Event is presented in the Start-Up/Prove-Out Event Report dated November 1994. Tables 3-2 and 3-3 contains a complete summary of the analytical results.

### *3.1.3 Post-Prove-Out Soils*

Post-Prove-Out soil samples were collected from November 10, 1994 through June 7, 1995. A total of 68 treated soil samples representative of excavation Area B and 185 treated soil samples representative of excavation Area A were collected over the course of the project. In addition, QA/QC samples consisting of trip blanks, equipment blanks, open field blanks, and sample duplicates were collected. Table 3-2 presents soil analytical data for volatile and semivolatile compounds, and Table 3-3 presents a summary of the soil TCLP (metals) data for the project.

Soil samples were sent to Recra, Kodak, and/or Quanterra Environmental Services laboratories. Each sample was analyzed for site-specific volatiles and semivolatiles and TCLP metals. The volatile and semivolatile analytical results were evaluated versus the site-specific cleanup levels in order to determine if the soil was successfully treated to levels below cleanup criteria or if the treated soil needed to be re-treated in the LTTD unit prior to backfill. The TCLP metal analytical data was compared against the RCRA metal toxicity characteristic levels to determine if the treated soil could be backfilled into the excavation area.

The results from the laboratory analyses of treated soil samples are presented below. In all treated soil samples, volatile constituents were successfully treated to below cleanup levels. Semivolatiles are still present in the treated soil samples at significantly reduced concentrations.

All volatile constituents detected in the treated samples, with the exception of three samples (T-A1-9, T-A1-25, and T-A1-79), were not detected in concentrations greater than the PQLs. Four out of the five site specific volatiles (1,2-dichloroethene, toluene, and xylene) were detected at concentrations ranging from 0.1 ppb (below PQLs but above method detection limits) to 46 ppb. The three samples containing volatiles (trichloroethene and/or 1,2-dichloroethene) at concentrations above PQLs were obtained from excavation Area A treated soil. It should be noted that some of the detected volatiles are suspect laboratory method blank contamination as qualified in the analytical data (see Section 3.6).

Semivolatiles were detected at varying concentrations in all treated samples. All ten target semivolatile compounds were detected at concentrations ranging from 0.74 ppb to 3500 ppb. Four of the site specific semivolatiles [benzo(a)anthracene, benzo(a)pyrene, chrysene, and dibenzo(a,h)anthracene] were detected in concentrations exceeding their site-specific cleanup levels. Benzo(a)anthracene, benzo(a)pyrene, chrysene, and dibenzo(a,h)anthracene ranged in concentration from 15 ppb to 860 ppb and were detected in approximately forty percent of the treated samples. It should be noted that some of the detected semivolatiles are suspect laboratory method blank contamination and/or estimated concentrations as qualified in the analytical data (see Section 3.6).

The TCLP metal analytical data revealed all eight toxicity characteristic metals detected with none of the concentrations exceeding toxicity characteristic levels. The metals ranged in concentrations from 0.21 ppb to 1780 ppb.

### *3.1.4 Confirmatory Soil Samples*

Three composite soil samples were collected from the side walls of excavation Areas A and B and analyzed for volatiles and/or semivolatiles. The samples were taken due to the representative Site Delineation-Phase 1 soil borings (SB129, SB105, and SB108) containing volatile and/or semivolatile concentrations exceeding site specific cleanup levels. As a result, excavation Areas A and B (at the SB129, SB105, and SB108 locations) were

excavated an additional three feet vertical to the horizontal of the previously delineated excavation boundaries.

The analytical results were evaluated to determine if the new excavation boundaries were significant to meet project cleanup objectives. Sample ID C-SB-129R contained volatiles trichloroethene at 15 ppb (with suspect method blank contamination) and 1,2-dichloroethene at 47 ppb. All of the semivolatiles were detected, with the exception of napthalene, bis(2-ethylhexyl)phthalate, and indeno(1,2,3-cd)pyrene, at concentrations ranging from 5.9 ppb (below PQL but above the method detection limit) to 230 ppb. None of these constituent concentrations exceed site specific cleanup levels. Sample ID C-SB-105R contained all of the semivolatiles, with the exception of napthalene and indeno(1,2,3-cd)pyrene, at concentrations ranging from 46 ppb to 260 ppb. Of the detected semivolatiles, only benzo(a)pyrene at 106 ppb (below PQL but above the method detection limit) and dibenzo(a,h)anthracene at 46 ppb exceed their site-specific cleanup level. Sample ID C-SB-105R was not analyzed for volatiles. Sample ID C-SB-108R did not contain volatile concentrations above PQLs and was not analyzed for semivolatiles. Table 3-4 presents a summary of the Phase 1-Site Delineation/Soil Boring Soil Program analytical data comparison.

### *3.1.5 Emergency/Vinyl Chloride Soil Samples*

During excavation activities within excavation Area A, an incident occurred where real time health and safety air monitoring detected high levels of contamination. Excavation activities within the suspect area of contamination were discontinued until further investigations could occur. Drager tube samples were taken revealing suspect vinyl chloride contamination in the soil and in the breathing zone. As a result one confirmatory soil sample (PT-A2-VC) was collected and delivered to a laboratory for vinyl chloride analysis. After further discussions between the Health and Safety Manager and the Health and Safety Officer a decision was made to collect a second sample to better identify the source of contamination. PT-A2-VC2 was sent to the laboratory for halogenated hydrocarbon analysis.

Analytical data confirmed levels of vinyl chloride at 5 ppb (below PQL but above the method detection limit) in sample PT-A2-VC and 25 ppb in PT-A2-VC2. In addition PT-A2-VC2 contained concentrations of benzene; 1,1-dichloroethane; 1,1-dichloroethene; 1,2-

dichloroethene; ethylbenzene; toluene; trichloroethene; and total xylenes at 42 ppb, 24 ppb (below PQL but above the method detection limit), 13 ppb (below PQL but above the method detection limit), 52000 ppb, 36 ppb, 160 ppb, 310 ppb, and 230 ppb respectively. Additional information on this incident is presented in Section 2.6, Project Health and Safety. Table 3-5 summarizes the analytical data.

### *3.1.6 Demobilization Soil Sample*

One composite sample (Decon-S) was taken from the decontamination pad containing waste sludge/soil generated during Ash Landfill demobilization activities. The sample was submitted to Recra and Quanterra laboratories for analysis of the site-specific volatiles and semivolatiles and the TCLP metals. The analytical results were compared against the site-specific cleanup levels and the RCRA toxicity characteristic levels in order to determine if the sludge/soil could be released to surface of excavation Area A or disposed at an offsite treatment, storage, and disposal facility (TSDF).

Of the five site specific volatiles, only trichloroethene was detected in the sludge/soil sample at 9 ppb (below PQL but above the method detection limit). Three of the semivolatiles were detected at concentrations ranging from 6 ppb to 14 ppb. None of the detected constituent concentrations exceeded the cleanup levels. In addition, three of the TCLP metals (arsenic, barium, and lead) were detected at concentration of 12 ppb, 860 (B) ppb, and 119 ppb. The metal concentrations do not exceed the RCRA toxicity characteristic values.

Based on the analytical results and USACE approval, IT, in coordination with SEDA representatives, released the material to the surface of Ash Landfill excavation Area A.

## *3.2 Water*

The Ash Landfill water sampling activities occurred from November 1994 through June 1995. The water samples are representative of numerous water handling activities that occurred during the Ash Landfill remedial project including wastewater treatment, treated water discharge monitoring activities, and samples for the SEDA POTW.

All water samples were analyzed following USEPA SW846 methodology. All water samples were collected as specified in the project Work Plan and the CSAP. Modifications

are specified in Section 2.5.

Water samples were collected and analyzed for the site-specific treated water NYSDEC discharge permit constituents including volatiles, semivolatiles, metals, and various classical chemistry parameters. The water sample collection process and analytical data are summarized in the following sections. Water analytical data for the project are included in Appendix E.

### *3.2.1 Wastewater Samples*

Wastewater samples were collected from November 1994 to May 1994. A total of 29 wastewater samples were obtained over the course of the project. Two pre-treatment and two post-treatment samples were collected during the initial stages of the project in order to evaluate the extent of contamination in the wastewater and the wastewater treatment unit performance. Once it was determined that the wastewater treatment unit was functioning properly, only treated wastewater samples were collected. In addition, QA/QC samples were taken including trip blanks, one equipment blank, one open field blank, and one sample duplicate.

Wastewater samples were sent to Recra for analysis of volatiles, semivolatiles, metals, and classical chemistry parameters as defined in the site specific wastewater discharge permit. The analytical results were evaluated versus the site-specific discharge permit constituent levels in order to determine if the treated water could be directly discharged to an adjacent field or if retreatment was necessary. Table 3-6 introduces the water discharge criteria permit authorization levels.

Results from the wastewater sample analyses are presented below. All wastewater samples were treated successfully to constituent concentrations below permit discharge requirements. Four 20,000 gallon batches of treated wastewater had to be re-treated and resampled prior to discharge in order to meet permit requirements. These sample IDs are C-12-4, C-12-5, C-12-6, and C-12-11 with corresponding resample sample Ids C-12-4B, C-12-5B, C-12-6B, and C-12-11B.

Analytical results of the two pre-treatment samples (sample IDs D-12-1 and D-34-1) reveal detection of volatiles, metals, and classical chemistry parameters. Sample ID D-12-1

contained trichloroethene, 1,2-dichloroethene, chloroform, benzene, toluene, and total xylenes at 2.6 ppb, 7.1 ppb, 1.4 ppb, 0.25 ppb, 0.28 ppb, and 2.01 ppb respectively. Barium, chromium, cobalt, iron, lead, magnesium, manganese, nickel, sodium, vanadium, and zinc were detected in D-12-1 at concentrations ranging from 10.6 ppb to 19600 ppb. In addition various classical parameters were detected. Sample ID D-34-1 contained trichloroethene, 1,2-dichloroethene, ethylbenzene, and total xylenes at 2.7 ppb, 5.9 ppb, 3.9 ppb, and 38.28 ppb respectively. Barium, chromium, copper, iron, lead, magnesium, manganese, mercury, sodium, vanadium and zinc were detected at 70.3 ppb, 9.3 ppb, 14.2 ppb, 5850 ppb, 19 ppb, 5860 ppb, 102 ppb, 0.20 ppb, 9450 ppb, 10.7 ppb, and 226 ppb respectively. Various classical parameters were also detected in this sample.

The corresponding post-treatment sample, C-12-1, revealed no volatiles detected above PQLs. Antimony, arsenic, barium, cadmium, chromium, cobalt, copper, hexavalent chromium, iron, magnesium, manganese, nickel, vanadium, and zinc were detected at 2.5 ppb, 4.5 ppb, 94 ppb, 13 ppb, 2.0 ppb, 42 ppb, 5.5 ppb, 9100 ppb, 20 ppb, 6500 ppb, 170 ppb, 14 ppb, 14 ppb, and 360 ppb respectively. The second post-treatment sample (C-12-2) was analyzed for iron only due to the high content of iron in the previous treated sample. The analytical result for iron was 800 ppb showing a reduction in the concentration of iron.

Analytical data of the remaining post-treatment samples (Sample IDs C-12-3 through C-12-19, C-DD-1, C-DD1-2, and C-DD1-3) revealed seven out of the twelve volatiles (trichloroethene; 1,2-dichloroethene; 1,1,1-trichloroethane; benzene; toluene; ethylbenzene; and total xylenes) detected at concentrations ranging from 0.22 ppb to 25 ppb. Aluminum, arsenic, cadmium, chromium, copper, iron, lead, and zinc were detected out of the twelve metal constituents. The metals ranged in concentrations from 0.27 ppb (estimated) to 1050 ppb. In addition, total dissolved solids and turbidity were reported at ranges of 307 parts per million (ppm) to 578 ppm and 3.5 nephelometric turbidity unit (NTU) to 34 NTU respectively.

The four retreated wastewater samples (C-12-4B, C-12-5B, C-12-6B, and C-12-11B) were analyzed for 1,2-dichloroethene and/or TDS due to the permit exceedances of these parameters in the initial treated samples. The concentrations of 1,2-dichloroethene and TDS ranged from 0.44 ppb to 2.1 ppb and 522 ppm to 555 ppm respectively. Table 3-7 and Table 3-8 present a comprehensive summary of project wastewater analytical results.

### 3.2.2 Monitoring Well Samples

In compliance with the NYSDEC discharge permit authorization requirement of monitoring background conditions and the treated wastewater discharge impact on local overburden groundwater, groundwater samples were collected from SEDA Monitoring Well No. 34. A total of six groundwater samples were collected from January 1994 to February 1994.. The samples were obtained within twenty-four hours after discharge of treated wastewater. The samples (MW34-1 through MW34-6) were sent to Recra and analyzed for iron, TDS, and turbidity. The analytical results were recorded and submitted to the NYSDEC for review and comment.

All six groundwater samples revealed detections of iron, TDS, and turbidity. Iron ranged in concentration of 710 ppb to 22400 ppb. TDS and turbidity were detected at ranges of 373 ppm to 468 ppm and 37 NTU to 200 NTU respectively. Table 3-9 shows a summary of the monitoring well water analytical results.

### 3.2.3 POTW Treated Wastewater Samples

Pending receipt of the Ash Landfill wastewater discharge permit authorization, IT made arrangements for disposal of approximately 40,000 gallons of Ash Landfill treated wastewater at the local SEDA POTW. After discharge of the treated wastewater, the SEDA POTW requested IT collect two POTW influent water samples in order to evaluate the impact of the additional wastewater on the POTW treated wastewater effluent stream.

The samples were submitted to Kodak laboratory for analysis of metals following USEPA SW846 methodology. The analytical results were sent to the SEDA POTW for review. As shown in Table 3-9, Sample ID SEDA-POTW-1 contained concentrations of aluminum at 1.3 ppb, antimony at 0.002 ppb, cadmium at 0.002 ppb, chromium at 0.003 ppb, copper at 0.20 ppb, iron at 1.7 ppb, lead at 0.02 ppb, mercury at 0.0002 ppb, silver at 0.09 ppb, and zinc at 0.2 ppb. Sample ID SEDA- POTW-2 contained aluminum at 0.10 ppb, cadmium at 0.001 ppb, copper at 0.02 ppb, iron at 0.20 ppb, and zinc at 0.04 ppb.

## 3.3 Debris

Debris generated during the remedial activities at the Ash Landfill site consisted of waste PPE and any material generated during excavation activities of excavation Areas A and B that could not be treated in the LTTD unit. The debris was composited during the course

of the project activities from September 1994 through June 1995 and stored on site pending sampling and ultimate disposal at an offsite TSDF.

Two composite debris samples (Debris-1 and Debris-2) were collected consisting of the excavation debris and PPE. Debris-1 was collected on January 26, 1995 and sent to Recra for analysis of volatiles, semivolatiles, polychlorinated biphenyls (PCBs), herbicides, pesticides, metals, and various classical chemistry parameters. Debris-2 was collected on March 17, 1995 and sent to Recra for analysis of TCLP TCE only. The samples were analyzed following USEPA SW846 methodology.

The results of the debris sample analytical data was reviewed in order to properly characterize the debris for disposal at an offsite TSDF. As shown in Table 3-10, Debris-1 analytical data revealed concentrations of TCE at 11 ppm, toluene at 0.69 ppm, total xylenes at 0.055 ppm (above the method detection limit but above the PQL), arsenic at 1.6 ppm, barium at 0.28 ppm, beryllium at 0.28 ppm, chromium at 11.3 ppm, copper at 13,5 ppm, lead at 24.3 ppm, nickel at 12.1 ppm, vanadium at 8.7 ppm, and zinc at 11.9 ppm. Debris-2 revealed TCLP TCE not detected at or above the PQL of 0.008 ppm.

### *3.4 Perimeter Air Monitoring*

Perimeter monitoring activities commenced in September, 1994, prior to the completion of the Start-Up/Prove-Out Event. Perimeter stations were located around the site based on data analyzed from the Baseline Monitoring Program performed in September, 1994. Each monitoring station housed the sampling equipment to perform the appropriate sample collection protocol outlined in the AMP, as follows:

- $PM_{10}$ high volume sampler
- Total Suspended Particulate (TSP) sampler
- Direct-read VOC monitor
- Direct-read particulate monitor

Monitoring equipment was placed on a scaffold and calibrated according to USEPA method requirements and/or manufacturer's instructions.

Sampling and analytical protocols for the ambient data collection followed appropriate USEPA reference methods. $PM_{10}$ samples and TSP samples were collected over 24 hour

sampling periods. $PM_{10}$ filter samples were analyzed for particulate matter (particulate matter less than or equal to 10 microns in size). TSP filter samples were collected and analyzed for lead content only. Direct, real-time monitoring with a photoionization detector and dust monitor was also performed while ambient samples were collected. Direct-read VOC monitors collected samples frequently, but were typically recorded over two hour sampling periods for total VOC concentration. Particulate matter direct-read monitors collected data over fifteen minute, two hour, and 24 hour periods for total particulate matter.

Concentrations of VOCs and particulate matter were collected as part of the perimeter monitoring activities. Analytical and direct-read data are presented in Appendix F. A summary of the data from the perimeter ambient air monitoring activities are presented in Tables 3-11 and 3-12.

Data retrieval exceeded the program requirement of 90 percent.

Perimeter monitoring for $PM_{10}$ and TSP data was discontinued by agreement between the USACE, IT, and the NYSDEC on February 14, 1995. The monitoring results from the perimeter samples adequately demonstrated that no significant migration of particulate matter was being released by site activities and no public health threat was evident. Real-time data collection for both particulate and VOCs continued at the perimeter stations for the remainder of the project.

For the ambient air analytical results, concentrations of particulate matter collected via the $PM_{10}$ sampler ranged from 0.04 microns per cubic meter ($ug/m^3$) to 299.5 $ug/m^3$ in the collected samples, with an average respirable dust concentration of 19.56 $ug/m^3$. TSP samples, collected for lead analysis, reported lead concentrations ranging from 0.014 $ug/m^3$ to 0.027 $ug/m^3$, with an average lead concentration found in the air of 0.02 $ug/m^3$.

Real-time monitoring for both particulate matter and VOCs was performed on a periodic schedule while the other sampling was also being conducted. Monitoring results for the particulate matter measurements and VOC concentrations are included in Appendix F. Real-time monitoring results for particulate matter ranged from 0-23,000 $ug/m^3$ with an average of 28.4 $ug/m^3$. VOC concentrations measured at all three stations ranged from a

maximum of 3.1 parts per million (ppm) to a minimum of 0 ppm above background levels. VOC concentrations averaged 0.9 ppm for the duration of the project.

### 3.5 On-Site Meteorological Observation

The on-site meteorological (MET) station constructed for this project consists of a ten (10) meter retractable aluminum tower with specialized measurement sensors required by the AMP attached to the tower. These sensors include:

- wind direction vane
- wind speed sensor/anemometer
- temperature gauge
- relative humidity sensor
- barometric pressure gauge, and
- precipitation gauge

All sensors met the required performance criteria outlined in the AMP. The MET station sensors recorded measurements every 5 minutes and averaged these readings over a hourly period. Julian date and eastern standard time (EST) were kept continuously by the datalog system. The MET station was located away from obstructions that could influence wind measurements and was upwind from project work areas, as indicated from available prevalent wind direction data (see ESI RI Report, October, 1993). Data collection commenced on August 28, 1994 and ended on June 16, 1995 when the meteorological station was dismantled during demobilization activities.

The on-site meteorological system collected localized measurements of wind speed, wind direction, relative humidity, barometric pressure, temperature, and precipitation levels. Meteorological parameter measurements collected during project operations and activities showed no significant deviation from expected norms for the immediate vicinity. The on-site MET station performed well and achieved project quality objectives stated in the AMP with greater than 90 percent retrieval. Meteorological data for the project and project windroses are included in Appendix J.

Meteorological measurements include temperature readings ranging from a high of 88.8 °F at 1600 hours on June 7, 1995 to a low of -1 °F at 0700 hours on January 29, 1995. The average temperature for the project performance period was 44.09 °F. Total precipitation recorded for the period was as expected, but several instances of greater than one inch of

rain was evidenced during the project. Wind speed and wind direction data indicate that, over the project timeframe, the predominant wind came from due south, with only a slight tendency for winds from the north-northwest area generally. Appendix J contains several windrose diagrams that graphically portray wind direction and wind speed as recorded by the on-site meteorological station for the entire project, at the time of the Mid-Project Report (from project start through to December 17, 1994), and for the Baseline Monitoring Program portion of the project. These windroses provide a representation of the local wind conditions for each specific reporting period.

### 3.6 Data Verification and Validation

The data generated from sampling and analysis activities were subject to quality assurance and quality control requirements as presented in the project Work Plan. Specific requirements for the sampling and analytical reference methods utilized for this project are presented in the CSAP included as part of the Ash Landfill IRM Work Plan.

#### 3.6.1 Data Verification

Quality-assurance objectives for the investigation were met through a real-time comprehensive QA and data validation program encompassing sampling through data and analysis reporting. A brief summary of the QA/QC protocols and the data quality information is presented below:

- Detailed sample collection and handling protocols;
- Calibration of instrumentation and apparatus;
- Sample analysis in association with specific QC activities, such as blank and duplicate analyses;
- Data reduction, validation, and reporting;
- Documentation of the sampling and analytical program; and
- Internal quality control.

Data verification steps included field quality checks of field data and sampling logs, calculation checks, and daily data reporting to the project QA/QC Officer on site. More in-depth review of the data was undertaken in the data validation activities described below.

#### 3.6.2 Data Validation

Specific steps for this task were undertaken at the analytical laboratory, as method and

instrument blanks, calibration checks, and duplicate sample analyses were completed for the sample sets. A portion of the soil analytical data (~25 percent) underwent further validation. The data validation resulted in the generation of several QA/QC tables. The validation was performed in accordance with the following guidance documents:

- "Test Methods for Evaluating Solid Waste, Physical/Chemical methods," U.S. EPA SW-846, 3rd Revised Edition, November 1986.
- "Laboratory Data Validation, Functional Guidelines for Evaluation Inorganic/organic Analysis," U.S. EPA 7/88 and 2/88.
- Chemical Sampling and Analysis Plan, Ash Landfill IRM Work Plan, Appendix, August 1994.

The data validation for chemical analysis is summarized below. QA/QC data summaries used for data validation are included in Tables 3-13 through 3-15.

### 3.6.2.1 General Comments

The analytical program was conducted in accordance with CSAP for the project Work Plan. This data validation section pertains only to soil analytical results. A portion of volatile (8240), semivolatile (8270), and TCLP Metals results were validated. Samples which had associated blanks show contamination will only be qualified by the laboratory indicating that blank contamination exists. The 5x and 10x rule was not used to evaluate the extent of the blank contamination and its effect on the sample results. Holding time will not be summarized due to the rapid turn around time used for the project, making it very unlikely that any samples were analyzed past their specified holding time.

### 3.6.1.2 Analytical Methods

The samples followed the analytical methods outlines in the CSAP for the project Work Plan. All analyses were conducted according to the USEPA procedures.

### 3.6.2.3 Volatiles Analyses

Samples analyzed for volatiles by method 8240 were evaluated in three major categories: surrogate recovery, precision (% relative difference), and accuracy (% recovery). QA/QC information for 140 sample results were summarized and recorded in Table 3-13. Although there were some isolated cases of values outside QC limits, no extra qualification of the

data was necessary.

### 3.6.2.4 Semivolatile Analysis

Samples analyzed for semivolatiles by Method 8270 were evaluated in three major categories: surrogate recovery, precision (% relative difference), and accuracy (% recovery). QA/QC information for ~ 120 sample results were summarized and recorded in Table 3-14. Although there were some cases which values were outside QC limits, the exceedances were not severe or systematic enough to cause the data to be further qualified. Due to the large variation in types of samples analyzed in the 8270 method (i.e., acids, basis, and neutrals), more variance in the validation process is allowed.

### 3.6.2.5 Inorganic (TCLP Metals) Analyses

Samples were analyzed for metals after undergoing a TCLP extraction and were evaluated using control sample recovery, and matrix spike/duplicate % Relative Percent Difference (RPD) and % recovery. Control sample recoveries were all within set QC limits for the samples checked (~ 50). However, several of the spike samples showed % recoveries outside QC limits, and one batch showed very high % RPD. The following actions were taken in order to properly qualify the data:

- If the spike recovery is >125% and the reported sample results are < IDL, the data is acceptable for use.
- If the spike recovery is >125% or <75% and the sample results are > IDL, qualify the data for these samples are estimated (J).
- If the spike recovery falls within the range of 30-74% and the sample results are <IDL, qualify the data for these samples as estimated (UJ).
- If spike recovery results fail <30% and the sample results are <IDL, qualify the data for these samples are unusable (R).
- If duplicate analysis (% RPD) results for a particular analyte fall outside the appropriate control windows, qualify the results for that analyte in all associated samples of the same matrix as estimated (J).

The QA/QC summary for the inorganic (TCLP) analyses is shown in Table 3-15.

# 4.0 Conclusions

At the completion of the Ash Landfill Immediate Response Measure at the Seneca Army Depot Activity in Romulus, New York, IT Corporation has successfully met all material requirements of the Scope of Service document and the project Work Plan, as agreed to between the U.S. Army Corps of Engineers, Omaha District, IT Corporation, the Seneca Army Depot Activity, and the regulatory agencies of record, including the U.S. Environmental Protection Agency, Region II, the New York State Department of Environmental Conservation and the New York State Department of Health. With this Final Report, IT has provided complete documentation that we have met all substantive objectives of the project Work Plan. These include:

- Confirmed the extent of the soil contamination areas to delineate with confidence the removal of all contaminated soils and debris for treatment;
- During a period of inclement weather; successfully treated 35,000 tons of contaminated soils by Low Temperature Thermal Desorption (LTTD) to remove volatile organic compounds (VOCs) to prescribed treatment levels and to reduce concentrations of polynucleated aromatic hydrocarbons (PAHs) present in the soils;
- Completed backfilling the Ash Landfill with treated soil material; and,
- Restored and revegetated the site to predisturbed conditions;
- Achieved control over potential dispersion of particulate matter and VOCs generated or released by project activities as demonstrated in the perimeter monitoring data record.

**TABLE 3-1**
**SITE SPECIFIC CLEANUP LEVELS**
**ASH LANDFILL**
**SENECA ARMY DEPOT ACTIVITY**
Romulus, New York

| Site Specific Compounds | Site Specific Cleanup Levels (ppb) |
|---|---|
| Volatiles | |
| Trichloroethene | 700 |
| 1,2-Dichloroethene | 300 |
| Vinyl Chloride | 200 |
| Toluene | 1,500 |
| Total Xylenes | 1,200 |
| Semivolatiles | |
| Napthalene | 13,000 |
| Phenanthrene | 50,000 |
| Fluoranthene | 50,000 |
| Pyrene | 50,000 |
| Bis(2-ethylhexyl)phthalate | 50,000 |
| Indeno(1,2,3-cd)pyrene | 3,200 |
| Benzo(a)anthracene | 220 |
| Chrysene | 400 |
| Benzo(a)pyrene | 61 |
| Dibenz(a,h)anthracene | 14 |

ppb - parts per billion

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trip Blank (10/31/94) | PT-B1-1 | T-B1-1 | Trip Blank (11/1/94) | PT-B1-2 | T-B1-2 RE | PT-B1-3 | T-B1-3 RE | Trip Blank (11/1/94) | PT-B1-4 |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥10 | 180 D | ND≥11 | ND≥10 | 130 D | ND≥12 | 20 | ND≥12 | ND≥10 | 220 D |
| 1,2-Dichloroethene (total) | ND≥10 | 300 D | ND≥11 | ND≥10 | 180 D | ND≥12 | 29 | ND≥12 | ND≥10 | **520 D*** |
| Vinyl chloride | ND≥10 | 21 | ND≥11 | ND≥10 | 5 J | ND≥12 | 8 J | ND≥12 | ND≥10 | 36 |
| Toluene | ND≥10 | 2 J | ND≥11 | ND≥10 | 2 J | ND≥12 | ND≥12 | 2 J | ND≥10 | 2 J |
| Total Xylenes | ND≥10 | 3 J | ND≥11 | ND≥10 | ND≥12 | ND≥12 | ND≥12 | ND≥12 | ND≥10 | 2 J |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | ND ≥ 660 | ND≥660 | NA | 63 J | ND≥660 | ND≥660 | ND≥660 | NA | ND > 660 |
| Phenanthrene | NA | ND≥660 | ND≥660 | NA | 180 J | ND≥660 | 67 J | ND≥660 | NA | 170 J |
| Fluoranthene | NA | ND≥660 | ND≥660 | NA | 290 J | ND≥660 | 110 J | ND≥660 | NA | 230 J |
| Pyrene | NA | ND≥660 | ND≥660 | NA | 270 J | ND≥660 | 110 J | ND≥660 | NA | 200 J |
| Bis(2-ethylhexyl)phthalate | NA | ND≥660 | ND≥660 | NA | 190 J | ND≥660 | 50 J | ND≥660 | NA | 85 J |
| Indeno(1,2,3-cd)pyrene | NA | ND≥660 | ND≥660 | NA | 377 J | ND≥660 | ND≥660 | ND≥660 | NA | 56 J |
| Benzo(a)anthracene | NA | **320*** | 24 | NA | **290*** | 5.0 J | 100 | 25 | NA | 200 |
| Chrysene | NA | 350 | 39 | NA | 270 | ND≥12 | 95 | 17 | NA | 200 |
| Benzo(a)pyrene | NA | **400*** | 30 | NA | **230*** | ND≥21 | **87*** | 17 J | NA | **230 B*** |
| Dibenzo(a,h)anthracene | NA | **110*** | ND≥18 | NA | **ND≥18*** | **ND≥18*** | **17 J*** | **ND≥18*** | NA | **81 B*** |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-B1-4 | PT-B1-5 | Trip Blank (11/4/94) | T-B1-5 | PT-B1-6 | T-B1-6 | Trip Blank (11/7/94) | PT-B1-7 | T-B1-7 | PT-B1-8 |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥11 | 52 | ND≥10 | ND≥11 | 150 D | ND≥10 | ND≥10 | 260 B | ND≥11 | 150 |
| 1,2-Dichloroethene (total) | ND≥11 | 78 | ND≥10 | 1 J | 210 D | ND≥10 | ND≥10 | **650 B*** | ND≥11 | **610*** |
| Vinyl chloride | ND≥11 | 4 J | ND≥10 | ND≥11 | 65 | ND≥10 | ND≥10 | 28 J | ND≥11 | 32 J |
| Toluene | ND≥11 | ND≥11 | ND≥10 | 2 J | 1 J | 2 J | ND≥10 | 1 J | ND≥11 | 1 J |
| Total Xylenes | ND≥11 | ND≥11 | ND≥10 | ND≥11 | 4 J | ND≥10 | ND≥10 | ND≥55 | ND≥11 | ND≥49 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | ND≥660 | 42 J | NA | ND≥660 | 180 J | ND≥660 | NA | 92 J | ND≥660 | 100 J |
| Phenanthrene | ND≥660 | 180 J | NA | ND≥660 | 290 J | ND≥660 | NA | 280 J | ND≥660 | 240 J |
| Fluoranthene | ND≥660 | 290 J | NA | ND≥660 | 360 J | 42 J | NA | 430 J | ND≥660 | 340 J |
| Pyrene | ND≥660 | 280 J | NA | ND≥660 | 320 J | ND≥660 | NA | 330 J | ND≥660 | 280 J |
| Bis(2-ethylhexyl)phthalate | 520 J | 70 J | NA | ND≥660 | 88 J | ND≥660 | NA | 110 J | 400 J | 130 J |
| Indeno(1,2,3-cd)pyrene | ND≥660 | 73 J | NA | ND≥660 | 93 J | ND≥660 | NA | 110 J | ND≥660 | 90 J |
| Benzo(a)anthracene | 16 | **260*** | NA | 41 | **260*** | 29 | NA | **490*** | 32 | **560*** |
| Chrysene | 9.4 J | 120 | NA | 74 | 250 | 41 | NA | **480*** | 61 | 400 |
| Benzo(a)pyrene | 16 JB | **110 B*** | NA | 40 B | **240 B*** | 38 B | NA | **220*** | 21 J | **400*** |
| Dibenzo(a,h)anthracene | **ND≥18*** | 8.8 JB | NA | **27 B*** | 7.7 JB | **30 B*** | NA | **100*** | 11 J | **84*** |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York



| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-B1-8 | T-B1-8 duplicate | Equipment Blank | Field Blank | Trip Blank (11/7/94) | PT-B1-9 | T-B1-9 | PT-B1-10 | Trip Blank (11/7/94) | T-B1-10 |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥12 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | 160 | ND≥12 | 82 B | ND≥10 | ND≥11 |
| 1,2-Dichloroethene (total) | ND≥12 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | **610*** | ND≥12 | 200 | ND≥10 | ND≥11 |
| Vinyl chloride | ND≥12 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | 25 J | ND≥12 | 3 J | ND≥10 | ND≥11 |
| Toluene | 1 J | 1 J | ND≥10 | ND≥10 | ND≥10 | ND≥53 | 1 J | 0.6 J | ND≥10 | ND≥11 |
| Total Xylenes | ND≥12 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥53 | ND≥12 | ND≥11 | ND≥10 | ND≥11 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | ND≥660 | ND≥660 | ND≥10 | NA | NA | 140 J | ND≥660 | 250 J | NA | 37 J |
| Phenanthrene | 53 J | 47 J | ND≥10 | NA | NA | 560 J | 120 J | 470 J | NA | 47 J |
| Fluoranthene | 61 J | 70 J | ND≥10 | NA | NA | 900 | 190 J | 700 | NA | 54 J |
| Pyrene | 62 J | 53 J | ND≥10 | NA | NA | 680 | 120 J | 520 J | NA | 47 J |
| Bis(2-ethylhexyl)phthalate | ND≥660 | ND≥660 | ND≥10 | NA | NA | 200 J | 30 J | 190 J | NA | ND≥660 |
| Indeno(1,2,3-cd)pyrene | 49 J | 40 J | ND≥10 | NA | NA | 270 J | 99 J | 190 J | NA | ND≥660 |
| Benzo(a)anthracene | 38 | 81 | ND≥0.16 | NA | NA | 98 B | 18 B | 210 B | NA | 5.9 J |
| Chrysene | 40 | 61 | ND≥0.17 | NA | NA | 110 | 16 | 220 | NA | ND≥12 |
| Benzo(a)pyrene | 40 | 61 | ND≥0.31 | NA | NA | **100 B*** | 22 B | **200 B*** | NA | ND≥21 |
| Dibenzo(a,h)anthracene | **22*** | **27*** | ND≥0.27 | NA | NA | **21*** | **ND≥18*** | **26*** | NA | **ND≥18*** |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York



| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trip Blank (11-12-94) | T-B1-11 | T-B2-1 | T-B2-2 | T-B2-3 | T-B2-4 | T-B2-5 | Trip Blank (11-14-94) | T-B2-6 RE | T-B2-7 RE |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND≥11 |
| 1,2-Dichloroethene (total) | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND≥11 |
| Vinyl chloride | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND≥11 |
| Toluene | ND≥10 | ND≥10 | 0.1 J | 2 J | ND≥10 | ND≥11 | 0.1 J | ND≥10 | ND≥11 | ND≥11 |
| Total Xylenes | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND≥11 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | ND≥660 | ND≥660 | ND≥660 | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 |
| Phenanthrene | NA | ND≥660 | 54 J | 64 J | 110 J | 92 J | 56 J | NA | 36 J | 42 J |
| Fluoranthene | NA | ND≥660 | 86 J | 94 J | 110 J | 140 J | 87 J | NA | 50 J | 62 J |
| Pyrene | NA | ND≥660 | 61 J | 69 J | 82 J | 110 J | 64 J | NA | ND≥660 | 43 J |
| Bis(2-ethylhexyl)phthalate | NA | ND≥660 | ND≥660 | ND≥660 | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 |
| Indeno(1,2,3-cd)pyrene | NA | ND≥660 | ND≥660 | ND≥660 | ND≥660 | 52 J | ND≥660 | NA | ND≥660 | ND≥660 |
| Benzo(a)anthracene | NA | 31 | 130 | 110 | 45 | 82 | 65 | NA | 20 | 28 |
| Chrysene | NA | 33 | 85 | 80 | 35 | 83 | 46 | NA | 19 | 27 |
| Benzo(a)pyrene | NA | 26 | **63*** | **68*** | 32 | 77* | 49 | NA | 18 JB | 20 JB |
| Dibenzo(a,h)anthracene | NA | **15 J*** | **32*** | **40*** | **18 J*** | **42*** | **29*** | NA | **ND≥18*** | **ND≥18*** |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-B2-8 | Trip Blank (11-15-94) | T-B2-9 | T-B2-10 | T-B2-11 | Trip Blank (11-16-94) | T-B2-12 | T-B2-12 duplicate | T-B2-13 | T-B2-14 |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | ND≥11 | ND≥11 |
| 1,2-Dichloroethene (total) | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | ND≥11 | ND≥11 |
| Vinyl chloride | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | ND≥11 | ND≥11 |
| Toluene | 1 J | ND≥10 | 0.1 J | 1 J | ND≥10 | 4 BJ | ND≥11 | ND≥11 | ND≥11 | ND≥11 |
| Total Xylenes | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | 1 J | ND≥11 | ND≥11 | ND≥11 | ND≥11 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | ND≥660 |
| Phenanthrene | 33 J | NA | 32 J | ND≥660 | 39 J | NA | 110 J | 130 J | 91 J | 70 J |
| Fluoranthene | 42 J | NA | 42 J | 28 J | 59J | NA | 184 J | 230 J | 160 J | 94 J |
| Pyrene | ND≥660 | NA | ND≥660 | ND≥660 | 37 J | NA | 80 J | 100 J | 74 J | 43 J |
| Bis(2-ethylhexyl)phthalate | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | ND≥660 |
| Indeno(1,2,3-cd)pyrene | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | 48 J | ND≥660 |
| Benzo(a)anthracene | 29 | NA | 16 | 16 | 34 | NA | 61 B | 120 B | 77 B | 37 B |
| Chrysene | 17 | NA | 20 | 19 | 44 | NA | 33 B | 68 B | 79 B | 38 B |
| Benzo(a)pyrene | 17 JB | NA | 15 J | 15 J | 39 | NA | 29 B | **71 B*** | **93 B*** | 31 B |
| Dibenzo(a,h)anthracene | **ND≥18*** | NA | **ND≥18*** | **ND≥18*** | **ND≥18*** | NA | 9 J | **17 J*** | **78*** | 11 J |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Equipment Blank | Field Blank | C-SB-129R | Trip Blank (11-17-94) | T-B2-15 | T-B2-16 | Trip Blank (11-18-94) | T-B2-17 | T-B2-18 | T-B2-19 |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥10 | ND≥10 | 15 B | 0.8 JB | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥11 |
| 1,2-Dichloroethene (total) | ND≥10 | ND≥10 | 47 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥11 |
| Vinyl chloride | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥11 |
| Toluene | 1.0 JB | 0.80 JB | ND≥11 | 2.0 JB | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥11 |
| Total Xylenes | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥11 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | ND≥10 | NA | ND≥660 | NA | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 |
| Phenanthrene | ND≥10 | NA | 130 J | NA | 78 J | 77 J | NA | 81 J | 97 J | 94 J |
| Fluoranthene | ND≥10 | NA | 230 J | NA | 110 J | 110 J | NA | 120 J | 160 J | 142 J |
| Pyrene | ND≥10 | NA | 100 J | NA | 55 J | 56 J | NA | 55 J | 79 J | 66 J |
| Bis(2-ethylhexyl)phthalate | ND≥10 | NA | ND≥660 | NA | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 |
| Indeno(1,2,3-cd)pyrene | ND≥10 | NA | ND≥660 | NA | ND≥660 | 33 J | NA | 38 J | ND≥660 | 33 J |
| Benzo(a)anthracene | 0.062 JB | NA | 21 B | NA | 97 | 18 | NA | 24 | 78 | 88 |
| Chrysene | ND≥0.17 | NA | 10 JB | NA | 38 | 6.5 J | NA | 33 | 87 | 120 |
| Benzo(a)pyrene | ND≥ 0.31 | NA | 6.5 JB | NA | 35 | 5.2 J | NA | 11 JB | 49 B | **63 *JB** |
| Dibenzo(a,h)anthracene | ND≥ 0.27 | NA | 5.9 J | NA | **ND≥18*** | **ND≥18*** | NA | 6.1 J | **22*** | **27*** |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York



| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-B2-20 | T-B3-1 | Trip Blank (11-19-94) | T-B3-2 | T-B3-3 | T-B3-4 RE | Trip Blank (11-23-94) | T-B3-5 RE | T-B3-6 | Trip Blank (11-23-94) |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥11 | ND≥11 | 1 BJ | ND≥11 | 0.7 JB | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 |
| 1,2-Dichloroethene (total) | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 |
| Vinyl chloride | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 |
| Toluene | 2 BJ | ND≥11 | 4 BJ | 3 BJ | 4 BJ | ND≥11 | 0.60 J | ND≥11 | ND≥11 | 2 BJ |
| Total Xylenes | ND≥11 | ND≥11 | ND≥10 | ND≥11 | 2 J | ND≥11 | ND≥10 | ND≥11 | ND≥11 | 0.8 BJ |
| Semivolatiles | | | | | | | | | | |
| Napthalene | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | NA |
| Phenanthrene | 95 J | 49 J | NA | 46 J | 68 J | 33 J | NA | ND≥660 | ND≥660 | NA |
| Fluoranthene | 148 J | 60 J | NA | 64 J | 79 J | 34 J | NA | ND≥660 | ND≥660 | NA |
| Pyrene | 74 J | 34 J | NA | 33 J | 37 J | ND≥660 | NA | ND≥660 | ND≥660 | NA |
| Bis(2-ethylhexyl)phthalate | ND ≥ 660 | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | NA |
| Indeno(1,2,3-cd)pyrene | 53 J | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | NA |
| Benzo(a)anthracene | 78 | 92 | NA | 46 | 46 | 31 | NA | 2.9 JB | 25 B | NA |
| Chrysene | 97 | 120 | NA | 50 | 61 | 39 | NA | ND≥12 | 19 B | NA |
| Benzo(a)pyrene | 43 B | 41 B | NA | 21 JB | 19 JB | 11 JB | NA | 6.2 J | ND≥21 | NA |
| Dibenzo(a,h)anthracene | **22*** | **15 J*** | NA | 7.5 J | **ND≥21*** | **21*** | NA | **ND≥18*** | **ND≥18*** | NA |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-B3-7 RE | T-B3-8 | T-B3-9 RE | T-B4-1 | T-B4-2 | Trip Blank (11-27-94) | T-B4-3 RE | T-B4-4 RE | T-B4-5 RE | T-B4-5 duplicate RE |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥11 | ND≥11 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | 1.0 J | ND≥11 | ND≥11 |
| 1,2-Dichloroethene (total) | ND≥11 | ND≥11 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥12 | ND≥11 | ND≥11 |
| Vinyl chloride | ND≥11 | ND≥11 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥12 | ND≥11 | ND≥11 |
| Toluene | ND≥11 | 3 BJ | ND≥11 | 3 BJ | 2 BJ | ND≥10 | 2 J | 4 J | ND≥11 | 6 J |
| Total Xylenes | ND≥11 | ND≥11 | ND≥11 | 2 BJ | ND≥11 | 0.6 J | ND≥11 | ND≥12 | ND≥11 | ND≥11 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | ND≥660 | ND≥660 | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | ND≥660 |
| Phenanthrene | ND≥660 | 43 J | 47 J | 41 J | 37 J | NA | 41 J | 48 J | 67 J | 55 J |
| Fluoranthene | ND≥660 | 56 J | 54 J | 39 J | 36 J | NA | 45 J | 58 J | 74 J | 61 J |
| Pyrene | ND≥660 | 33 J | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | 47 J | 37 J |
| Bis(2-ethylhexyl)phthalate | ND≥660 | 43 JB | ND≥660 | ND≥660 | ND≥660 | NA | 106 J | ND≥660 | ND≥660 | ND≥660 |
| Indeno(1,2,3-cd)pyrene | ND≥660 | ND≥660 | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | ND≥660 |
| Benzo(a)anthracene | ND≥11 | 58 B | 37 B | 47 B | 64 B | NA | 110 B | 99 B | 170 B | 120 B |
| Chrysene | 3.7 JB | 85 B | 34 B | 31 B | 98 B | NA | 46 B | 38 B | 57 B | 44 B |
| Benzo(a)pyrene | ND≥21 | 13 J | 30 | 14 J | ND≥21 | NA | 55 | 40 | **81*** | **65*** |
| Dibenzo(a,h)anthracene | **ND≥18*** | **20*** | 7.5 J | 6.6 J | **ND≥18*** | NA | **18 J*** | 8.3 J | **44*** | **24*** |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-B4-6 | T-B4-7 RE | T-B4-8 RE | EB-B4-5 | FB-B4-5 | Trip Blank (11-28-94) | T-B4-9 | T-B4-10 RE | Trip Blank (11-28-94) | T-B4-11 |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥12 | ND≥11 | ND≥10 | ND≥12 |
| 1,2-Dichloroethene (total) | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥12 | ND≥11 | ND≥10 | ND≥12 |
| Vinyl chloride | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥12 | ND≥11 | ND≥10 | ND≥12 |
| Toluene | 2 J | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥12 | ND≥11 | ND≥10 | ND≥12 |
| Total Xylenes | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥12 | ND≥11 | ND≥10 | ND≥12 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | ND≥660 | ND≥660 | ND≥660 | ND≥10 | NA | NA | ND≥660 | ND≥660 | NA | ND≥660 |
| Phenanthrene | 53 J | ND≥660 | ND≥660 | ND≥10 | NA | NA | ND≥660 | ND≥660 | NA | ND≥660 |
| Fluoranthene | 65 J | ND≥660 | ND≥660 | ND≥10 | NA | NA | ND≥660 | ND≥660 | NA | ND≥660 |
| Pyrene | 36 J | ND≥660 | ND≥660 | ND≥10 | NA | NA | ND≥660 | ND≥660 | NA | ND≥660 |
| Bis(2-ethylhexyl)phthalate | ND≥660 | ND≥660 | ND≥660 | ND≥10 | NA | NA | ND≥660 | ND≥660 | NA | ND≥660 |
| Indeno(1,2,3-cd)pyrene | ND≥660 | ND≥660 | ND≥660 | ND≥10 | NA | NA | ND≥660 | ND≥660 | NA | ND≥660 |
| Benzo(a)anthracene | 77 B | 55 B | 25 B | ND≥0.16 | NA | NA | 5.7 JB | 6.5 JB | NA | 5.0 J |
| Chrysene | 28 B | 20 B | 9.0 JB | ND≥0.17 | NA | NA | ND≥12 | 4.3 JB | NA | ND≥12 |
| Benzo(a)pyrene | 23 | 20 J | 12 J | ND≥0.31 | NA | NA | 6.9 J | ND≥21 | NA | 7.7 JB |
| Dibenzo(a,h)anthracene | 11 J | **ND≥18*** | **ND≥18*** | ND≥0.27 | NA | NA | **ND≥18*** | **ND≥18*** | NA | **ND≥18*** |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trip Blank (12-1-94) | T-B4-12 RE | Trip Blank (12-2-94) | T-B4-13 | T-B4-14 | T-B4-15 | Trip Blank (12-3-94) | T-B4-16 | T-B4-17 | T-B4-18 RE |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥10 | ND≥12 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | ND≥12 |
| 1,2-Dichloroethene (total) | ND≥10 | ND≥12 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | ND≥12 |
| Vinyl chloride | ND≥10 | ND≥12 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | ND≥12 |
| Toluene | ND≥10 | ND≥12 | ND≥10 | 2 J | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | 2 J |
| Total Xylenes | ND≥10 | ND≥12 | 2J | ND≥11 | ND≥11 | ND≥10 | 2J | ND≥11 | ND≥11 | 2 J |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 |
| Phenanthrene | NA | ND≥660 | NA | 59 J | 93 J | 123 J | NA | 100 J | 92 J | 73 J |
| Fluoranthene | NA | ND≥660 | NA | 101 J | 143 J | 200 J | NA | 160 J | 150 J | 120 J |
| Pyrene | NA | ND≥660 | NA | 48 J | 73 J | 97 J | NA | 140 J | 80 J | 67 J |
| Bis(2-ethylhexyl)phthalate | NA | 610 J | NA | 404 J | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 |
| Indeno(1,2,3-cd)pyrene | NA | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 |
| Benzo(a)anthracene | NA | 5.0 J | NA | 20 B | **233 B*** | 35 B | NA | 160 B | 170 B | 150 B |
| Chrysene | NA | ND≥12 | NA | 48 | 96 | 60 | NA | 66 | 71 | 58 |
| Benzo(a)pyrene | NA | 7.7 JB | NA | 36 | **70*** | **120*** | NA | **79 B*** | **98 B*** | **70 B*** |
| Dibenzo(a,h)anthracene | NA | **ND≥21*** | NA | **ND≥18*** | **ND≥18*** | **21*** | NA | **46*** | **65*** | **19 J*** |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York



| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-A1-1 | T-A1-1 duplicate | T-A1-2 RE | T-A1-3 | EB-B4-18 | FB-B4-18 | Trip Blank (12-5-94) | T-A1-4 RE | Trip Blank (12-5-94) | T-A1-5 RE |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥11 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥11 |
| 1,2-Dichloroethene (total) | ND≥11 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥11 |
| Vinyl chloride | ND≥11 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥11 |
| Toluene | ND≥11 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥11 |
| Total Xylenes | ND≥11 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥11 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | ND≥660 | 190 J | ND≥660 | ND≥660 | ND≥10 | NA | NA | ND≥660 | NA | ND≥660 |
| Phenanthrene | 79 J | 160 J | 120 J | 170 J | ND≥10 | NA | NA | 210 J | NA | 180 J |
| Fluoranthene | 132 J | 150 J | 210 J | 290 J | ND≥10 | NA | NA | 480 J | NA | 300 J |
| Pyrene | 79 J | 103 J | 120 J | 170 J | ND≥10 | NA | NA | 300 J | NA | 190 J |
| Bis(2-ethylhexyl)phthalate | 840 | ND≥660 | ND≥660 | ND≥660 | ND≥10 | NA | NA | ND≥660 | NA | ND≥660 |
| Indeno(1,2,3-cd)pyrene | ND≥660 | 85 J | ND≥660 | 200 J | ND≥10 | NA | NA | 330 J | NA | 220 J |
| Benzo(a)anthracene | 130 B | 170 B | 140 B | **440 B*** | 0.079 J | NA | NA | 96 B | NA | **510 B*** |
| Chrysene | 61 | 130 | 86 | 280 | ND≥0.17 | NA | NA | 180 | NA | 300 |
| Benzo(a)pyrene | **68 B*** | **140 B*** | **87 B*** | **330 B*** | ND≥0.31 | NA | NA | **81 B*** | NA | **420 B*** |
| Dibenzo(a,h)anthracene | **20 J*** | **67*** | **45*** | **260*** | ND≥0.32 | NA | NA | **84*** | NA | **230*** |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York



| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trip Blank (12-7-94) | T-A1-6 RE | Trip Blank (12-8-94) | T-A1-7 RE | Trip Blank (12-8-94) | T-A1-8 | Trip Blank (12-15-94) | T-A1-9 | Trip Blank (12-17-94) | T-A1-10 |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥12 | ND≥10 | 10 J | ND≥10 | ND≥11 |
| 1,2-Dichloroethene (total) | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | 2 J | ND≥10 | 12 | ND≥10 | ND≥11 |
| Vinyl chloride | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥12 | ND≥10 | ND≥11 | ND≥10 | ND≥11 |
| Toluene | ND≥10 | ND≥11 | ND≥10 | 3 BJ | ND≥10 | 2 J | ND≥10 | ND≥11 | ND≥10 | ND≥11 |
| Total Xylenes | ND≥10 | ND≥11 | ND≥10 | 1.0 J | ND≥10 | ND≥12 | ND≥10 | ND≥11 | ND≥10 | ND≥11 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | ND≥660 | NA | 56 J | NA | 53 J | NA | 450 J | NA | 77 J |
| Phenanthrene | NA | 110 J | NA | 110 J | NA | 110 J | NA | 2200 | NA | 420 J |
| Fluoranthene | NA | 160 J | NA | 99 J | NA | 140 J | NA | 2500 | NA | 480 J |
| Pyrene | NA | 92 J | NA | 85 J | NA | 140 J | NA | 1800 | NA | 260 J |
| Bis(2-ethylhexyl)phthalate | NA | 290 J | NA | ND≥660 | NA | ND≥660 | NA | 120 JB | NA | 130 J |
| Indeno(1,2,3-cd)pyrene | NA | 96 J | NA | 150 J | NA | 210 J | NA | 930 J | NA | 150 J |
| Benzo(a)anthracene | NA | 180 B | NA | **370 B*** | NA | **350 B*** | NA | **760 B*** | NA | 150 B |
| Chrysene | NA | 110 B | NA | 170 | NA | 170 | NA | **490 B*** | NA | 140 B |
| Benzo(a)pyrene | NA | **110 B*** | NA | **350 B*** | NA | **390 B*** | NA | **800 B*** | NA | **170 B*** |
| Dibenzo(a,h)anthracene | NA | **34*** | NA | **ND≥18*** | NA | **420 B*** | NA | **400*** | NA | **89 B*** |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trip Blank (1/5/95) | T-A1-11 RE | Trip Blank (1/9/95) | T-A1-12 | T-A1-12 duplicate RE | T-A1-13 RE | T-A1-14 RE | T-A1-15 RE | EB-A1-13 | FB-A1-13 |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | 2 J | ND≥10 | ND≥10 |
| 1,2-Dichloroethene (total) | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | 3J | 2 J | ND≥10 | ND≥10 |
| Vinyl chloride | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥10 |
| Toluene | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | 3 J | ND≥10 | ND≥10 |
| Total Xylenes | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥10 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | ND≥660 | 87 J | ND≥10 | NA |
| Phenanthrene | NA | 319 J | NA | 470 J | 290 J | 160 J | 120 J | 150 J | ND≥10 | NA |
| Fluoranthene | NA | 510 J | NA | 770 J | 510 J | 220 J | 100 J | 120 J | ND≥10 | NA |
| Pyrene | NA | 310 J | NA | 460 J | 290 J | 120 J | 100 J | 130 J | ND≥10 | NA |
| Bis(2-ethylhexyl)phthalate | NA | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | ND≥660 | ND≥660 | 2.2 J | NA |
| Indeno(1,2,3-cd)pyrene | NA | 260 | NA | 660 | 390 J | 150 | 220 J | 250 J | ND≥10 | NA |
| Benzo(a)anthracene | NA | 100 B | NA | **650 B*** | **330 B*** | 13 B | **250 B*** | **340 B*** | ND≥0.16 | NA |
| Chrysene | NA | 57 B | NA | **440 B*** | 220 B | 18 B | 210 B | 180 B | ND≥0.17 | NA |
| Benzo(a)pyrene | NA | **65 B*** | NA | **620 B*** | **350 B*** | ND≥21 | **610 B*** | **500 B*** | ND≥0.31 | NA |
| Dibenzo(a,h)anthracene | NA | **36*** | NA | **340*** | **230*** | **47*** | **ND≥18*** | **ND≥18*** | ND≥0.32 | NA |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trip Blank (1/11/95) | T-A1-16 | T-A1-17 RE | T-A1-18 | Trip Blanks (1/12/95) | T-A1-19 | T-A1-20 RE | Trip Blank (1/13/95) | T-A1-21 RE | T-A1-22 |
| Volatiles | | | | | | | | | | |
| Trichloroethene | 0.4 J | 1 J | 2 J | 0.80 J | ND≥10 | 3 BJ | 3 BJ | ND≥10 | ND≥11 | ND≥11 |
| 1,2-Dichloroethene (total) | ND≥10 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | 3 J | 5 J | ND≥10 | ND≥11 | ND≥11 |
| Vinyl chloride | ND≥10 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 |
| Toluene | ND≥10 | ND≥11 | 3 J | ND≥11 | ND≥10 | 7 BJ | 3BJ | ND≥10 | ND≥11 | ND≥11 |
| Total Xylenes | ND≥10 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | 2 J | ND≥11 | ND≥10 | ND≥11 | ND≥11 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | ND≥660 | ND≥660 | 80 J | NA | 60 J | 43 J | NA | 54 J | ND≥660 |
| Phenanthrene | NA | 130 J | 150 J | 380 J | NA | 330 J | 64 J | NA | 100 J | 58 J |
| Fluoranthene | NA | 130 J | 180 J | 500 J | NA | 360 J | 57 J | NA | 100 J | ND≥660 |
| Pyrene | NA | 100 J | 120 J | 340 J | NA | 280 J | 45 J | NA | 75 J | ND≥660 |
| Bis(2-ethylhexyl)phthalate | NA | 130 J | ND≥660 | 100 J | NA | ND≥660 | ND≥660 | NA | ND≥660 | 1950 |
| Indeno(1,2,3-cd)pyrene | NA | 190 J | 100 J | 390 J | NA | 420 J | ND≥660 | NA | 130 J | 93 J |
| Benzo(a)anthracene | NA | **410 B*** | **270 B** | **320 B*** | NA | 210 | 130 | NA | **310 B*** | 49 B |
| Chrysene | NA | 320 B | 160 B | 300 B | NA | 130 B | 74 B | NA | 110 B | 96 B |
| Benzo(a)pyrene | NA | **550 B*** | **260 B*** | **400 B*** | NA | **180*** | **130*** | NA | **240 B*** | **160 B*** |
| Dibenzo(a,h)anthracene | NA | **310*** | **190*** | **250*** | NA | **ND≥18*** | **ND≥18*** | NA | **240*** | **230*** |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York



| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Trip Blanks (1/16/95) | T-A1-23 RE | T-A1-24 | Trip Blank (1/16/95) | T-A1-25 | EB-A1-M15 | Trip Blank (1/17/95) | T-A1-26 RE | T-A1-26 duplicate |
| Volatiles | | | | | | | | | |
| Trichloroethene | ND≥10 | ND≥11 | ND≥11 | ND≥10 | 4 J | ND≥10 | ND≥10 | ND≥11 | ND≥11 |
| 1,2-Dichloroethene (total) | ND≥10 | ND≥11 | ND≥11 | ND≥10 | 12 | ND≥10 | ND≥10 | ND≥11 | ND≥11 |
| Vinyl chloride | ND≥10 | ND≥11 | ND≥11 | ND≥10 | 7 J | ND≥10 | ND≥10 | ND≥11 | ND≥11 |
| Toluene | ND≥10 | ND≥11 | ND≥11 | ND≥10 | 2 J | 1J | ND≥10 | ND≥11 | ND≥11 |
| Total Xylenes | ND≥10 | ND≥11 | ND≥11 | ND≥10 | 2 J | ND≥10 | ND≥10 | ND≥11 | ND≥11 |
| Semivolatiles | | | | | | | | | |
| Napthalene | NA | ND≥660 | ND≥660 | NA | 89 J | NA | NA | ND≥660 | ND≥660 |
| Phenanthrene | NA | 93 J | 87 J | NA | 580 J | NA | NA | 68J | 50 J |
| Fluoranthene | NA | 130 J | 100 J | NA | 550 J | NA | NA | 83 J | 55 J |
| Pyrene | NA | 89 J | 110 J | NA | 680 | NA | NA | 60 J | 40 J |
| Bis(2-ethylhexyl)phthalate | NA | ND≥660 | ND≥660 | NA | 78 J | NA | NA | ND≥660 | 63 J |
| Indeno(1,2,3-cd)pyrene | NA | 140 J | 210 J | NA | 290 J | NA | NA | 59 J | 35 J |
| Benzo(a)anthracene | NA | **250 B*** | 68 B | NA | **520 B*** | NA | NA | 110 B | 79 B |
| Chrysene | NA | 205 B | 98 B | NA | 320 B | NA | NA | 130 B | 88 B |
| Benzo(a)pyrene | NA | **320 B*** | **530 B*** | NA | **860 B*** | NA | NA | **190 B*** | 59 B |
| Dibenzo(a,h)anthracene | NA | **270*** | **480*** | NA | **990*** | NA | NA | **270*** | **180*** |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York



| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T-A1-27 | FB-A1-27 | EB-A1-M16 | Trip Blank (1/19/95) | T-A1-28 | T-A1-29 | T-A1-30 | Trip Blank (1/20/95) | T-A1-31 RE |
| Volatiles | | | | | | | | | |
| Trichloroethene | ND≥11 | ND≥10 | NA | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 |
| 1,2-Dichloroethene (total) | ND≥11 | ND≥10 | NA | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 |
| Vinyl chloride | ND≥11 | ND≥10 | NA | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 |
| Toluene | ND≥11 | 1J | NA | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 |
| Total Xylenes | ND≥11 | ND≥10 | NA | ND≥10 | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 |
| Semivolatiles | | | | | | | | | |
| Napthalene | ND≥660 | NA | ND≥10 | NA | ND≥660 | ND≥660 | ND ≥ 660 | NA | ND ≥ 660 |
| Phenanthrene | 77 J | NA | ND≥10 | NA | 72 J | 71 J | 67 J | NA | 40 J |
| Fluoranthene | 110 J | NA | ND≥10 | NA | 72 J | 58 J | 80 J | NA | 37 J |
| Pyrene | 82 J | NA | ND≥10 | NA | 68 J | 48 J | 72 J | NA | 33 J |
| Bis(2-ethylhexyl)phthalate | ND≥660 | NA | ND≥10 | NA | ND≥660 | ND≥660 | ND ≥ 660 | NA | ND≥660 |
| Indeno(1,2,3-cd)pyrene | 88 J | NA | ND≥10 | NA | 88 J | 44 J | 76 J | NA | 34 J |
| Benzo(a)anthracene | 110 B | NA | 0.067 JB | NA | 110 B | 77 B | 150 B | NA | 80 B |
| Chrysene | 130 B | NA | ND≥0.17 | NA | 100 B | 65 B | 120 B | NA | 63 B |
| Benzo(a)pyrene | **240 B*** | NA | ND≥0.31 | NA | **150 B*** | **140 B*** | **210 B*** | NA | **89 B*** |
| Dibenzo(a,h)anthracene | **310*** | NA | ND≥0.27 | NA | **110*** | **ND≥18*** | **ND≥18*** | NA | **79*** |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York



| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-A1-32 RE | Trip Blank (1/23/95) | T-A1-33 RE | C-SB-105R | Trip Blank (1/26/95) | T-A1-34 | T-A1-35 | T-A1-36 | Trip Blank (1/27/95) | T-A1-37 |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥11 | ND≥10 | ND≥11 | NA | ND≥10 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥11 |
| 1,2-Dichloroethene (total) | ND≥11 | ND≥10 | ND≥11 | NA | ND≥10 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥11 |
| Vinyl chloride | ND≥11 | ND≥10 | ND≥11 | NA | ND≥10 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥11 |
| Toluene | ND≥11 | ND≥10 | ND≥11 | NA | ND≥10 | ND≥11 | ND≥11 | ND≥11 | ND≥10 | ND≥11 |
| Total Xylenes | ND≥11 | ND≥10 | ND≥11 | NA | ND≥10 | | ND≥11 | ND≥11 | ND≥10 | ND≥11 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | ND ≥ 660 | NA | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 |
| Phenanthrene | 34 J | NA | 120 J | 170 J | NA | 51 J | 35 J | 46 J | NA | 46 J |
| Fluoranthene | 33 J | NA | 170 J | 260 J | NA | 64 J | 44 J | 50 J | NA | 45 J |
| Pyrene | 33 J | NA | 88 J | 210 J | NA | 33 J | 33 J | 33 J | NA | 33 J |
| Bis(2-ethylhexyl)phthalate | ND ≥ 660 | NA | 35 J | 56 J | NA | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 |
| Indeno(1,2,3-cd)pyrene | 660 | NA | ND≥660 | ND≥660 | NA | ND≥660 | ND≥660 | ND≥660 | NA | ND≥660 |
| Benzo(a)anthracene | 65 B | NA | 130 B | 110 B | NA | 25 | 62 | 34 | NA | 83 |
| Chrysene | 61 B | NA | 130 B | 110 B | NA | 240 | 42 | 72 | NA | 47 |
| Benzo(a)pyrene | 60 B | NA | **110 B*** | **106 B*** | NA | 37 | **82*** | 33 | NA | 47 |
| Dibenzo(a,h)anthracene | **65*** | NA | **98*** | **46*** | NA | **33*** | **ND≥18*** | **31*** | NA | **110*** |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York



| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trip Blank (1/30/95) | T-A1-38 | T-A1-39 RE | EB-A1-39 | Trip Blank (2/1/95) | T-A1-40 | T-A1-40 duplicate RE | FB-A1-40 | T-A1-41 RE | Trip Blank (2/2/95) |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥10 | ND≥10 | 1 J | ND≥10 | ND≥10 | 0.8 J | 2.0 J | ND≥10 | ND≥11 | ND≥10 |
| 1,2-Dichloroethene (total) | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | 2.0 J | ND≥10 | ND≥11 | ND≥10 |
| Vinyl chloride | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥10 |
| Toluene | 0.5J | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥10 |
| Total Xylenes | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥10 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | ND≥660 | ND≥660 | ND≥10 | NA | ND≥660 | ND≥660 | NA | ND≥660 | NA |
| Phenanthrene | NA | ND≥660 | 100 J | ND≥10 | NA | 47 J | 75 J | NA | 51 J | NA |
| Fluoranthene | NA | ND≥660 | 120 J | ND≥10 | NA | 42 J | 73 J | NA | 49 J | NA |
| Pyrene | NA | ND≥660 | 75 J | ND≥10 | NA | 33 J | 43 J | NA | 33 J | NA |
| Bis(2-ethylhexyl)phthalate | NA | ND≥660 | ND≥660 | ND≥10 | NA | ND≥660 | ND≥660 | NA | ND≥660 | NA |
| Indeno(1,2,3-cd)pyrene | NA | ND≥660 | ND≥660 | ND≥10 | NA | ND≥660 | ND≥660 | NA | ND≥660 | NA |
| Benzo(a)anthracene | NA | 15 B | 97 B | 0.13 J | NA | 52 B | 54 B | NA | 120 B | NA |
| Chrysene | NA | 15 | 89 | 0.13 JB | NA | 59 | 47 | NA | 120 | NA |
| Benzo(a)pyrene | NA | 11 B | **140 B*** | ND ≥ 1.1 | NA | **84*** | **67*** | NA | **120*** | NA |
| Dibenzo(a,h)anthracene | NA | **ND≥18*** | **ND≥18*** | ND ≥ 0.27 | NA | **77*** | **ND≥18*** | NA | **ND≥18*** | NA |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-A1-42 | Trip Blank (2/3/95) | T-A1-43 | Trip Blank (2/8/95) | Trip Blank (2/21/95) | T-A1-44 | T-A1-45 | Trip Blank (2/22/95) | T-A1-46 RE | Trip Blank (2/23/95) |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | 2 BJ | ND≥11 | ND≥10 | ND≥10 | ND≥10 |
| 1,2-Dichloroethene (total) | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | 1 J | ND≥11 | ND≥10 | ND≥10 | ND≥10 |
| Vinyl chloride | ND≥11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND ≥ 11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 |
| Toluene | 2 J | ND≥10 | ND≥11 | ND≥10 | 0.7J | 0.9 J | ND≥11 | ND≥10 | ND≥10 | ND≥10 |
| Total Xylenes | 0.7 J | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND ≥ 11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | ND≥660 | NA | ND≥660 | NA | NA | 160 | 170 | NA | ND ≥ 34 | NA |
| Phenanthrene | 46 J | NA | 66 J | NA | NA | 120 | ND ≥ 75 | NA | 18 | NA |
| Fluoranthene | 50 J | NA | 67 J | NA | NA | 140 | 76 | NA | ND ≥ 6.9 | NA |
| Pyrene | 33 J | NA | ND≥660 | NA | NA | 310 | 170 | NA | ND ≥ 6.9 | NA |
| Bis(2-ethylhexyl)phthalate | ND≥660 | NA | ND≥660 | NA | NA | 1600 | ND ≥ 1500 | NA | ND ≥ 340 | NA |
| Indeno(1,2,3-cd)pyrene | ND≥660 | NA | ND≥660 | NA | NA | ND ≥ 7.5 | ND ≥ 7.5 | NA | ND ≥ 1.8 | NA |
| Benzo(a)anthracene | 140 B | NA | 120 B | NA | NA | 57 | 27 | NA | 1.3 | NA |
| Chrysene | 130 | NA | 110 | NA | NA | 53 | 40 | NA | ND ≥ 5.2 | NA |
| Benzo(a)pyrene | **140*** | NA | **150*** | NA | NA | 42 | 15 | NA | ND ≥ 0.69 | NA |
| Dibenzo(a,h)anthracene | **43*** | NA | **ND≥18*** | NA | NA | 5.8 | ND ≥ 4.4 | NA | ND ≥ 1.0 | NA |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-A1-47 RE | T-A1-47R | T-A1-48 | T-A1-48R | Trip Blank (2/24/95) | T-A1-49 | T-A1-49R | T-A1-50 | Trip Blank (2/27/95) | T-A1-51 RE |
| Volatiles | | | | | | | | | | |
| Trichloroethene | 1 BJ | NA | ND ≥11 | NA | ND≥10 | ND≥11 | NA | ND≥11 | ND≥10 | ND≥11 |
| 1,2-Dichloroethene (total) | ND ≥10 | NA | 0.6 J | NA | ND≥10 | ND≥11 | NA | ND≥11 | ND≥10 | ND≥11 |
| Vinyl chloride | ND ≥10 | NA | ND ≥11 | NA | ND≥10 | ND≥11 | NA | ND≥11 | ND≥10 | ND≥11 |
| Toluene | 2 J | NA | ND ≥11 | NA | ND≥10 | ND≥11 | NA | ND≥11 | ND≥10 | 6J |
| Total Xylenes | ND ≥10 | NA | ND ≥11 | NA | ND≥10 | ND≥11 | NA | ND≥11 | ND≥10 | ND≥11 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | 190 | NA | 130 | NA | NA | 160 | 230 | NA | 140 |
| Phenanthrene | NA | ND ≥18 | NA | 24 | NA | NA | 59 | 51 | NA | 38 |
| Fluoranthene | NA | 72 | NA | 15 | NA | NA | 47 | 50 | NA | 34 |
| Pyrene | NA | 79 | NA | 8.3 | NA | NA | 63 | 41 | NA | 24 |
| Bis(2-ethylhexyl)phthalate | NA | ND ≥350 | NA | ND≥360 | NA | NA | ND≥360 | 2000 | NA | 1500 |
| Indeno(1,2,3-cd)pyrene | NA | 11 | NA | ND≥1.8 | NA | NA | 25 | 17 | NA | 9.3 |
| Benzo(a)anthracene | NA | 30 | NA | 5.5 | NA | NA | 25 | 33 | NA | 23 |
| Chrysene | NA | 27 | NA | 6.1 | NA | NA | 23 | 26 | NA | 22 |
| Benzo(a)pyrene | NA | 34 | NA | 3.1 | NA | NA | 24 | 41 | NA | 23 |
| Dibenzo(a,h)anthracene | NA | 7.9 | NA | ND≥1.1 | NA | NA | 9.8 | 7.4 | NA | 2.3 |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-A1-52 RE | Trip Blank (3/1/95) | T-A1-53 | T-A1-53 Duplicate RE | Trip Blank (3/2/95) | T-A1-54 RE | FB-A1-54 | Trip Blank (3/3/95) | T-A1-55 | EB-A1-55 |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥11 | ND≥10 | 1 J | 1 J | ND≥10 | ND≥11 | ND≥10 | ND≥10 | 0.9 J | ND ≥ 0.20 |
| 1,2-Dichloroethene (total) | ND≥11 | ND≥10 | 1 J | ND ≥ 11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | 0.5 J | ND ≥ 0.20 |
| Vinyl chloride | ND≥11 | ND≥10 | ND ≥ 11 | ND ≥ 11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND ≥ 0.20 |
| Toluene | ND≥11 | ND≥10 | 6 J | 6 J | ND≥10 | 3J | ND≥10 | ND≥10 | ND≥11 | ND ≥ 0.20 |
| Total Xylenes | ND≥11 | ND≥10 | ND ≥ 11 | ND ≥ 11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND ≥ 0.20 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | 100 | NA | 180 | 180 | NA | 130 | NA | NA | 130 | ND≥2.0 |
| Phenanthrene | 32 | NA | 61 | 62 | NA | 28 | NA | NA | 100 | ND≥0.50 |
| Fluoranthene | 25 | NA | 51 | 57 | NA | 20 | NA | NA | 110 | ND≥0.20 |
| Pyrene | 32 | NA | 8.4 | 18 | NA | ND≥7.3 | NA | NA | 84 | ND≥0.20 |
| Bis(2-ethylhexyl)phthalate | 1200 | NA | 1300 | 1400 | NA | 560 | NA | NA | 2200 | ND≥10 |
| Indeno(1,2,3-cd)pyrene | 6.1 | NA | 8.0 | 1.8 | NA | ND≥1.9 | NA | NA | ND≥1.8 | ND≥0.050 |
| Benzo(a)anthracene | 18 | NA | 25 | 26 | NA | 8.9 | NA | NA | 48 | ND≥0.020 |
| Chrysene | 18 | NA | 22 | 53 | NA | 5.9 | NA | NA | 31 | ND≥0.15 |
| Benzo(a)pyrene | 12 | NA | 19 | 17 | NA | 5.7 | NA | NA | 47 | ND≥0.020 |
| Dibenzo(a,h)anthracene | 4.2 | NA | 3.8 | 4.2 | NA | 1.6 | NA | NA | 10 | ND≥0.030 |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trip Blank (3/6/95) | T-A1-56 RE | T-A1-57 RE | T-A1-58 RE | T-A1-59 RE | T-A1-60 RE | Trip Blank (3/7/95) | T-A1-61 | Trip Blank (3/8/95) | Trip Blank (3/10/95) |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| 1,2-Dichloroethene (total) | ND≥10 | 2J | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Vinyl chloride | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Toluene | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Total Xylenes | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | 64 | ND≥36 | ND≥34 | ND ≥ 36 | 150 | NA | 35 | NA | NA |
| Phenanthrene | NA | ND≥18 | ND≥19 | ND≥18 | ND ≥ 18 | ND≥19 | NA | ND≥18 | NA | NA |
| Fluoranthene | NA | ND≥7.0 | 7.7 | ND≥7.0 | ND ≥ 7.2 | 19 | NA | ND≥7.1 | NA | NA |
| Pyrene | NA | ND≥7.0 | ND≥7.3 | ND≥7.0 | ND ≥ 7.2 | ND≥7.3 | NA | ND≥7.1 | NA | NA |
| Bis(2-ethylhexyl)phthalate | NA | ND≥340 | ND≥360 | ND≥340 | ND ≥ 360 | ND≥360 | NA | ND≥350 | NA | NA |
| Indeno(1,2,3-cd)pyrene | NA | ND≥1.8 | ND≥1.9 | ND≥1.8 | ND ≥ 1.8 | ND≥1.9 | NA | ND≥1.8 | NA | NA |
| Benzo(a)anthracene | NA | 2.7 | 2.3 | 2.3 | 2.2 | 6.1 | NA | 1.4 | NA | NA |
| Chrysene | NA | ND≥5.2 | ND≥5.5 | ND≥5.2 | ND ≥ 5.4 | 7.1 | NA | ND≥5.3 | NA | NA |
| Benzo(a)pyrene | NA | 0.76 | 1.2 | 0.99 | 1.2 | 2.8 | NA | 0.88 | NA | NA |
| Dibenzo(a,h)anthracene | NA | ND≥1.0 | ND≥1.1 | ND≥1.0 | ND ≥ 1.1 | 1.1 | NA | ND≥1.1 | NA | NA |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trip Blank (3/13/95) | T-A1-62 RE | T-A1-63 RE | T-A1-64 | T-A1-65 RE | Trip Blank (3/14/95) | T-A1-66 | T-A1-67 | Trip Blank (3/15/95) | T-A1-68 RE |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥10 | ND≥10 | ND≥11 | 1.0 J | ND ≥ 10 | ND≥10 | ND ≥ 11 | ND ≥ 10 | ND≥10 | ND ≥ 10 |
| 1,2-Dichloroethene (total) | ND≥10 | ND≥10 | ND≥11 | 2.0 J | ND ≥ 10 | ND≥10 | ND ≥ 11 | ND ≥ 10 | ND≥10 | ND ≥ 10 |
| Vinyl chloride | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND ≥ 10 | ND≥10 | ND ≥ 11 | ND ≥ 10 | ND≥10 | ND ≥ 10 |
| Toluene | ND≥10 | ND≥10 | ND≥11 | 3.0 J | ND ≥ 10 | ND≥10 | ND ≥ 11 | 2 J | ND≥10 | ND ≥ 10 |
| Total Xylenes | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND ≥ 10 | ND≥10 | ND ≥ 11 | ND ≥ 10 | ND≥10 | ND ≥ 10 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | ND≥33 | ND≥35 | ND≥35 | ND≥33 | NA | 88 | 190 | NA | ND≥35 |
| Phenanthrene | NA | 22 | 31 | 27 | ND≥17 | NA | 40 | 41 | NA | 18 |
| Fluoranthene | NA | 24 | 29 | 20 | 8.3 | NA | 56 | 55 | NA | 17 |
| Pyrene | NA | ND≥6.9 | ND≥7.2 | ND≥7.2 | ND≥6.8 | NA | 21 | 26 | NA | ND≥7.2 |
| Bis(2-ethylhexyl)phthalate | NA | 730 | 1100 | 750 | ND≥330 | NA | 1100 | 1300 | NA | 450 |
| Indeno(1,2,3-cd)pyrene | NA | 6.3 | 12 | 3.6 | ND≥1.7 | NA | 27 | 13 | NA | 2.1 |
| Benzo(a)anthracene | NA | 7.6 | 14 | 7.4 | 2.1 | NA | 27 | 19 | NA | 3.7 |
| Chrysene | NA | 11 | 18 | 7.6 | ND≥5.1 | NA | 36 | ND≥5.6 | NA | ND≥5.4 |
| Benzo(a)pyrene | NA | 3.7 | 18 | 4.0 | 0.74 | NA | 33 | 29 | NA | 1.6 |
| Dibenzo(a,h)anthracene | NA | 1.1 | 6.0 | 2.5 | ND≥1.0 | NA | 9.9 | 2.3 | NA | ND≥1.1 |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trip Blank (3/16/95) | T-A1-69 RE | T-A1-70 | T-A1-70 duplicate | Trip Blank (3/17/95) | T-A1 71 | FB-A1-71 | EB-A1-71 | T-A1-72 | T-A1-73 |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥10 | ND ≥ 10 | ND ≥ 11 | ND ≥ 11 | ND≥10 | 0.8 J | ND≥10 | ND≥10 | ND≥11 | ND≥11 |
| 1,2-Dichloroethene (total) | ND≥10 | ND ≥ 10 | ND ≥ 11 | ND ≥ 11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND≥11 |
| Vinyl chloride | ND≥10 | ND ≥ 10 | ND ≥ 11 | ND ≥ 11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | ND≥11 | ND≥11 |
| Toluene | ND≥10 | ND ≥ 10 | ND ≥ 11 | ND ≥ 11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | 1 J | ND≥11 |
| Total Xylenes | ND≥10 | ND ≥ 10 | ND ≥ 11 | ND ≥ 11 | ND≥10 | ND≥11 | ND≥10 | ND≥10 | 0.9 J | ND≥11 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | 170 | ND≥140 | 100 | NA | 100 | NA | ND≥2.0 | 280 | 160 |
| Phenanthrene | NA | 57 | ND≥74 | 39 | NA | 36 | NA | ND≥0.50 | 38 | 64 |
| Fluoranthene | NA | 75 | 120 | 52 | NA | 43 | NA | ND≥0.20 | 47 | 98 |
| Pyrene | NA | 170 | 130 | 130 | NA | 110 | NA | ND≥0.20 | 130 | 96 |
| Bis(2-ethylhexyl)phthalate | NA | 470 | ND≥1400 | 530 | NA | 500 | NA | ND≥10 | 470 | 2000 |
| Indeno(1,2,3-cd)pyrene | NA | 6.1 | ND≥7.4 | 5.6 | NA | 7.5 | NA | ND≥0.050 | 5.9 | 15 |
| Benzo(a)anthracene | NA | 30 | 44 | 24 | NA | 18 | NA | ND≥0.020 | 22 | 34 |
| Chrysene | NA | ND≥5.4 | ND≥22 | ND≥5.4 | NA | ND≥5.6 | NA | ND≥0.15 | ND≥5.4 | 26 |
| Benzo(a)pyrene | NA | 21 | 35 | 28 | NA | 22 | NA | ND≥0.20 | 24 | 28 |
| Dibenzo(a,h)anthracene | NA | 4.8 | 7.9 | 4.5 | NA | 2.9 | NA | ND≥0.030 | 4.8 | 6.8 |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York



| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trip Blank (3/20/95) | T-A1-74 | T-A1-75 | T-A1-76 | T-A1-77 | T-A1-78 | Trip Blank (3/22/95) | T-A1-79 | T-A1-80 RE | Trip Blank (3/24/95) |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND ≥ 11 | ND≥10 | ND≥10 | 46 | 3 J | ND≥10 |
| 1,2-Dichloroethene (total) | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND ≥ 11 | ND≥10 | ND≥10 | 16 | ND≥10 | ND≥10 |
| Vinyl chloride | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND ≥ 11 | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥10 |
| Toluene | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND ≥ 11 | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥10 |
| Total Xylenes | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND ≥ 11 | ND≥10 | ND≥10 | ND≥11 | ND≥10 | ND≥10 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | 92 | 270 | 350 | 180 | 210 | NA | 49 J | 190 | NA |
| Phenanthrene | NA | 32 | 44 | 45 | 29 | 46 | NA | 350 | 81 | NA |
| Fluoranthene | NA | 37 | 56 | 65 | 29 | 56 | NA | 380 | 77 | NA |
| Pyrene | NA | 32 | 35 | 41 | 29 | 39 | NA | 240 | 92 | NA |
| Bis(2-ethylhexyl)phthalate | NA | 930 | 1500 | 1800 | 890 | 1400 | NA | 3500 | 930 | NA |
| Indeno(1,2,3-cd)pyrene | NA | 2.7 | 10 | 16 | ND≥1.8 | 12 | NA | ND≥7.5 | 8.9 | NA |
| Benzo(a)anthracene | NA | 15 | 24 | 32 | 13 | 25 | NA | 140 | 29 | NA |
| Chrysene | NA | 15 | 19 | 23 | 13 | 20 | NA | 170 | 16 | NA |
| Benzo(a)pyrene | NA | 7.4 | 17 | 31 | 6.5 | 19 | NA | **130*** | 26 | NA |
| Dibenzo(a,h)anthracene | NA | ND ≥ 1.0 | 3.8 | 4.4 | 1.4 | 2.7 | NA | **41*** | 3.4 | NA |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-A1-81 RE | T-A1-82 RE | Trip Blank (3/27/95) | T-A1-83 RE | T-A1-84 | Trip Blank (3/28/95) | T-A1-85 RE | T-A1-85 duplicate RE | FB-A1-85 | Trip Blank (3/30/95) |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | 2 J | ND≥10 | ND≥10 |
| 1,2-Dichloroethene (total) | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | 2 J | ND≥10 | ND≥10 |
| Vinyl chloride | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥10 |
| Toluene | 2BJ | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥10 |
| Total Xylenes | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥11 | ND≥11 | ND≥10 | ND≥10 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | 84 | 84 | NA | 55 | ND≥40 | NA | 85 | 90 | NA | NA |
| Phenanthrene | 18 | 32 | NA | 24 | ND≥21 | NA | 25 | 26 | NA | NA |
| Fluoranthene | 24 | 39 | NA | 29 | 17 | NA | 24 | 31 | NA | NA |
| Pyrene | 15 | 29 | NA | 17 | 12 | NA | 28 | 32 | NA | NA |
| Bis(2-ethylhexyl)phthalate | ND≥350 | ND≥370 | NA | ND≥360 | ND≥400 | NA | 440 | 450 | NA | NA |
| Indeno(1,2,3-cd)pyrene | ND≥1.8 | 5.2 | NA | 3.8 | ND≥2.1 | NA | ND≥1.9 | ND≥1.9 | NA | NA |
| Benzo(a)anthracene | 8.3 | 14 | NA | 12 | 6.7 | NA | 9.3 | 12 | NA | NA |
| Chrysene | 11 | 14 | NA | 12 | 6.7 | NA | ND≥5.5 | ND≥5.5 | NA | NA |
| Benzo(a)pyrene | 5.9 | 10 | NA | 9.6 | 4.0 | NA | 5.7 | 5.7 | NA | NA |
| Dibenzo(a,h)anthracene | 1.5 | 2.2 | NA | 1.7 | ND≥1.2 | NA | ND≥1.1 | ND≥1.1 | NA | NA |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York



| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-A1-86 RE | EB-A1-86 | Trip Blank (4/1/95) | T-A1-87 RE | T-A1-86R | EB-A1-86R | Trip Blank (4/4/95) | T-A1-88 | Trip Blank (4/6/95) | T-A1-89 RE |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥11 | ND≥10 | ND≥10 | ND≥11 | NA | NA | ND≥10 | ND≥11 | ND≥10 | ND≥11 |
| 1,2-Dichloroethene (total) | ND≥11 | ND≥10 | ND≥10 | ND≥11 | NA | NA | ND≥10 | ND≥11 | ND≥10 | ND≥11 |
| Vinyl chloride | ND≥11 | ND≥10 | ND≥10 | ND≥11 | NA | NA | ND≥10 | ND≥11 | ND≥10 | ND≥11 |
| Toluene | ND≥11 | ND≥10 | ND≥10 | ND≥11 | NA | NA | ND≥10 | ND≥11 | ND≥10 | ND≥11 |
| Total Xylenes | ND≥11 | ND≥10 | ND≥10 | ND≥11 | NA | NA | ND≥10 | ND≥11 | ND≥10 | ND≥11 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | NA | NA | 66 | 80 | ND≥2.0 | NA | 160 | NA | 110 |
| Phenanthrene | NA | NA | NA | 28 | 20 | ND≥0.50 | NA | 47 | NA | 35 |
| Fluoranthene | NA | NA | NA | 36 | 32 | ND≥0.20 | NA | 53 | NA | 35 |
| Pyrene | NA | NA | NA | 25 | 23 | ND≥0.20 | NA | 42 | NA | 16 |
| Bis(2-ethylhexyl)phthalate | NA | NA | NA | 520 | 510 | ND≥10 | NA | 570 | NA | 450 |
| Indeno(1,2,3-cd)pyrene | NA | NA | NA | 2.8 | 3.2 | ND≥0.050 | NA | 4.1 | NA | 3.2 |
| Benzo(a)anthracene | NA | NA | NA | 13 | 13 | ND≥0.020 | NA | 17 | NA | 11 |
| Chrysene | NA | NA | NA | 12 | 12 | ND≥0.15 | NA | 14 | NA | 11 |
| Benzo(a)pyrene | NA | NA | NA | 7.0 | 9.4 | ND≥0.020 | NA | 11 | NA | 7.9 |
| Dibenzo(a,h)anthracene | NA | NA | NA | 1.4 | 1.1 | ND≥0.030 | NA | 1.2 | NA | 1.5 |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trip Blank (4/10/95) | Trip Blank (4/11/95) | T-A1-90 RE | T-A1-91 RE | Trip Blank (5/7/95) | T-A1 92 | Trip Blank (5/9/95) | T-A1-93 | C-SB-108R | Trip Blank (5/10/95) |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | ND≥10 |
| 1,2-Dichloroethene (total) | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | ND≥10 |
| Vinyl chloride | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | ND≥10 |
| Toluene | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | ND≥10 |
| Total Xylenes | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥11 | ND≥11 | ND≥10 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | NA | 140 | 470 | NA | 100 | NA | 110 | NA | NA |
| Phenanthrene | NA | NA | ND≥71 | 110 | NA | 27 | NA | 22 | NA | NA |
| Fluoranthene | NA | NA | ND≥28 | 120 | NA | 28 | NA | 25 | NA | NA |
| Pyrene | NA | NA | ND≥28 | 88 | NA | 26 | NA | 21 | NA | NA |
| Bis(2-ethylhexyl)phthalate | NA | NA | ND≥1400 | ND≥1400 | NA | ND≥350 | NA | ND≥360 | NA | NA |
| Indeno(1,2,3-cd)pyrene | NA | NA | ND≥7.1 | ND≥7.3 | NA | 3.4 | NA | ND≥1.8 | NA | NA |
| Benzo(a)anthracene | NA | NA | 9.9 | 32 | NA | 9.5 | NA | 8.0 | NA | NA |
| Chrysene | NA | NA | 21MI | **590 MI*** | NA | ND≥5.4 | NA | 7.2 | NA | NA |
| Benzo(a)pyrene | NA | NA | 3.7 | 9.6 | NA | 5.5 | NA | 7.2 | NA | NA |
| Dibenzo(a,h)anthracene | NA | NA | ND≥4.2 | ND≥4.3 | NA | 1.5 | NA | 1.7 | NA | NA |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-A1-94 | Trip Blank (5/11/95) | Trip Blank (5/12/95) | T-A1-95 | Trip Blank (5/13/95) | T-A1-96 | T-A1-97 | Trip Blank (5/16/95) | T-A1-98 | Trip Blank (5/17/95) |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥54 | ND≥10 | ND≥10 | ND≥54 | ND≥10 | ND≥53 | ND≥51 | ND≥10 | ND≥53 | ND≥10 |
| 1,2-Dichloroethene (total) | ND≥54 | ND≥10 | ND≥10 | ND≥54 | ND≥10 | ND≥53 | ND≥51 | ND≥10 | ND≥53 | ND≥10 |
| Vinyl chloride | ND≥54 | ND≥10 | ND≥10 | ND≥54 | ND≥10 | ND≥53 | ND≥51 | ND≥10 | ND≥53 | ND≥10 |
| Toluene | ND≥54 | ND≥10 | ND≥10 | ND≥54 | ND≥10 | ND≥53 | ND≥51 | ND≥10 | 6J | ND≥10 |
| Total Xylenes | ND≥54 | ND≥10 | ND≥10 | ND≥54 | ND≥10 | ND≥53 | ND≥51 | ND≥10 | ND≥53 | ND≥10 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | 56 | NA | NA | 39 | NA | 73 | 120 | NA | 88 | NA |
| Phenanthrene | ND≥19 | NA | NA | ND≥19 | NA | ND≥18 | ND≥18 | NA | 19 | NA |
| Fluoranthene | 8.6 | NA | NA | ND≥7.6 | NA | 7.5 | 16 | NA | 22 | NA |
| Pyrene | ND≥7.6 | NA | NA | ND≥7.6 | NA | 12 | 11 | NA | 18 | NA |
| Bis(2-ethylhexyl)phthalate | ND≥370 | NA | NA | ND≥370 | NA | ND≥350 | ND≥360 | NA | 560 | NA |
| Indeno(1,2,3-cd)pyrene | ND≥1.9 | NA | NA | ND≥1.9 | NA | 1.9 | ND≥1.8 | NA | 3.8 | NA |
| Benzo(a)anthracene | 2.8 | NA | NA | ND≥0.76 | NA | 3.1 | 7.2 | NA | 11 | NA |
| Chrysene | ND≥5.6 | NA | NA | ND≥5.6 | NA | 130 MI | 240 MI | NA | 200 MI | NA |
| Benzo(a)pyrene | 2.0 | NA | NA | ND≥0.76 | NA | 1.2 | 3.0 | NA | 7.9 | NA |
| Dibenzo(a,h)anthracene | ND≥1.1 | NA | NA | ND≥1.1 | NA | ND≥1.1 | ND≥1.1 | NA | 1.8 | NA |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-A1-99 | Trip Blank (5/18/95) | T-A1-100 | Trip Blank (5/19/95) | T-A1-101 | Trip Blank (5/21/95) | T-A1-102 | T-A1-103 | T-A1-103 duplicate | FB-A1-103 |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥49 | ND≥10 | ND≥46 | ND≥10 | ND≥50 | ND≥10 | ND≥48 | ND≥46 | ND≥50 | ND≥10 |
| 1,2-Dichloroethene (total) | ND≥49 | ND≥10 | ND≥46 | ND≥10 | ND≥50 | ND≥10 | ND≥48 | ND≥46 | ND≥50 | ND≥10 |
| Vinyl chloride | ND≥49 | ND≥10 | ND≥46 | ND≥10 | ND≥50 | ND≥10 | ND≥48 | ND≥46 | ND≥50 | ND≥10 |
| Toluene | ND≥49 | ND≥10 | ND≥46 | ND≥10 | ND≥50 | ND≥10 | ND≥48 | ND≥46 | ND≥50 | ND≥10 |
| Total Xylenes | ND≥49 | ND≥10 | ND≥46 | ND≥10 | ND≥50 | ND≥10 | ND≥48 | ND≥46 | ND≥50 | ND≥10 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | 130 | NA | NA | NA | 140 | NA | 130 | 170 | 200 | NA |
| Phenanthrene | 30 | NA | NA | NA | 18 | NA | 20 | 38 | 42 | NA |
| Fluoranthene | 33 | NA | NA | NA | 17 | NA | 16 | 42 | 43 | NA |
| Pyrene | 39 | NA | NA | NA | 21 | NA | 16 | 52 | 42 | NA |
| Bis(2-ethylhexyl)phthalate | ND≥350 | NA | NA | NA | 450 | NA | 400 | 750 | 730 | NA |
| Indeno(1,2,3-cd)pyrene | 4.5 | NA | NA | NA | ND≥1.8 | NA | ND≥1.9 | 3.9 | 3.0 | NA |
| Benzo(a)anthracene | 13 | NA | NA | NA | 6.7 | NA | 6.8 | 17 | 18 | NA |
| Chrysene | 14 | NA | NA | NA | 250 MI | NA | 290 MI | **410 MI*** | **510 MI*** | NA |
| Benzo(a)pyrene | 14 | NA | NA | NA | 4.9 | NA | 4.3 | 14 | 14 | NA |
| Dibenzo(a,h)anthracene | 2.7 | NA | NA | NA | 1.2 | NA | ND≥1.1 | 2.9 | 3.1 | NA |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York



| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | EB-A1-103 | T-A1-100R2 (5/25/95) | Trip Blank (5/25/95) | T-A1-104 | Trip Blank (5/26/95) | T-A1-105 | Trip Blank (5/27/95) | T-A1-106 | T-A1-107 | Trip Blank (5/31/95) |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥10 | NA | ND≥10 | ND≥54 | ND≥10 | ND≥54 | ND≥10 | ND≥52 | ND≥53 | ND≥10 |
| 1,2-Dichloroethene (total) | ND≥10 | NA | ND≥10 | ND≥54 | ND≥10 | ND≥54 | ND≥10 | ND≥52 | ND≥53 | ND≥10 |
| Vinyl chloride | ND≥10 | NA | ND≥10 | ND≥54 | ND≥10 | ND≥54 | ND≥10 | ND≥52 | ND≥53 | ND≥10 |
| Toluene | ND≥10 | NA | ND≥10 | ND≥54 | ND≥10 | ND≥54 | ND≥10 | ND≥52 | ND≥53 | ND≥10 |
| Total Xylenes | ND≥10 | NA | ND≥10 | ND≥54 | ND≥10 | ND≥54 | ND≥10 | ND≥52 | ND≥53 | ND≥10 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | ND≥2.0 | ND≥36 | NA | ND≥36 | NA | ND≥36 | NA | 150 | 220 | NA |
| Phenanthrene | ND≥0.50 | 23 | NA | 24 | NA | 26 | NA | 29 | 39 | NA |
| Fluoranthene | ND≥0.20 | 29 | NA | 27 | NA | 39 | NA | 25 | 39 | NA |
| Pyrene | ND≥0.20 | 25 | NA | 18 | NA | 34 | NA | 24 | 76 | NA |
| Bis(2-ethylhexyl)phthalate | ND≥10 | 980 | NA | 980 | NA | 1200 | NA | 550 | 860 | NA |
| Indeno(1,2,3-cd)pyrene | ND≥0.050 | 4.9 | NA | 4.9 | NA | 9.5 | NA | 2.7 | 4.8 | NA |
| Benzo(a)anthracene | ND≥0.020 | 11 | NA | 12 | NA | 20 | NA | 12 | 21 | NA |
| Chrysene | ND≥0.15 | 13 | NA | 9.2 | NA | 23 | NA | **430 MI*** | **550 MI*** | NA |
| Benzo(a)pyrene | ND≥0.020 | 8.6 | NA | 6.8 | NA | 13 | NA | 6.8 | 16 | NA |
| Dibenzo(a,h)anthracene | ND≥0.030 | 2.8 | NA | 1.7 | NA | 3.8 | NA | 1.7 | 3.1 | NA |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T-A1-108 | Trip Blank (6/1/95) | T-A1-109 | Trip Blank (6/2/95) | T-A1-110 | Trip Blank (6/4/95) | T-A1-111 | T-A1-112 | Trip Blank (6/6/95) | T-A1-113 |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥54 | ND≥10 | ND≥48 | ND≥10 | ND≥54 | ND≥10 | ND≥54 | ND≥51 | ND≥10 | ND≥54 |
| 1,2-Dichloroethene (total) | ND≥54 | ND≥10 | ND≥48 | ND≥10 | ND≥54 | ND≥10 | ND≥54 | ND≥51 | ND≥10 | ND≥54 |
| Vinyl chloride | ND≥54 | ND≥10 | ND≥48 | ND≥10 | ND≥54 | ND≥10 | ND≥54 | ND≥51 | ND≥10 | ND≥54 |
| Toluene | ND≥54 | ND≥10 | ND≥48 | ND≥10 | ND≥54 | ND≥10 | ND≥54 | ND≥51 | ND≥10 | ND≥54 |
| Total Xylenes | ND≥54 | ND≥10 | ND≥48 | ND≥10 | ND≥54 | ND≥10 | ND≥54 | ND≥51 | ND≥10 | ND≥54 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | 170 | NA | 340 | NA | 220 | NA | 110 | 300 | NA | 310 |
| Phenanthrene | 33 | NA | 44 | NA | 52 | NA | 18 J | 41 | NA | 42 |
| Fluoranthene | 30 | NA | 42 | NA | 48 | NA | 20 | 34 | NA | 34 |
| Pyrene | 64 | NA | 74 | NA | 110 | NA | 30 | 79 | NA | 72 |
| Bis(2-ethylhexyl)phthalate | 750 | NA | 1300 | NA | 1400 | NA | 540 | 860 | NA | 1100 |
| Indeno(1,2,3-cd)pyrene | 2.0 | NA | 5.1 | NA | 4.2 | NA | 5.3 | 5.6 | NA | 2.2 |
| Benzo(a)anthracene | 12 | NA | 19 | NA | 22 | NA | 10 | 15 | NA | 14 |
| Chrysene | ND≥5.4 | NA | **560 MI*** | NA | **610 MI*** | NA | 280 MI | **670 MI*** | NA | **700 MI*** |
| Benzo(a)pyrene | 16 | NA | 12 | NA | 30 | NA | 8.0 | 15 | NA | 10 |
| Dibenzo(a,h)anthracene | 3.6 | NA | 3.7 | NA | 5.6 | NA | 1.6 | 3.0 | NA | 2.5 |

See notes at end of table

# TABLE 3-2
# SOIL VOLATILE AND SEMIVOLATILE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York



| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | |
|---|---|---|---|---|---|
| | Trip Blank (6/7/95) | T-A1-114 | T-A1-115 | Trip Blank (6/22/95) | Decon-S |
| Volatiles | | | | | |
| Trichloroethene | ND≥10 | ND≥56 | ND≥50 | ND≥10 | 9 J |
| 1,2-Dichloroethene (total) | ND≥10 | ND≥56 | ND≥50 | ND≥10 | ND ≥ 60 |
| Vinyl chloride | ND≥10 | ND≥56 | ND≥50 | ND≥10 | ND ≥ 60 |
| Toluene | ND≥10 | ND≥56 | ND≥50 | ND≥10 | ND ≥ 60 |
| Total Xylenes | ND≥10 | ND≥56 | ND≥50 | ND≥10 | ND ≥ 60 |
| Semivolatiles | | | | | |
| Napthalene | NA | 190 | 190 | NA | ND≥43 |
| Phenanthrene | NA | 23 | 25 | NA | ND≥22 |
| Fluoranthene | NA | 23 | 24 | NA | 14 |
| Pyrene | NA | 23 | 19 | NA | 14 |
| Bis(2-ethylhexyl)phthalate | NA | ND≥370 | 380 | NA | ND≥430 |
| Indeno(1,2,3-cd)pyrene | NA | 2.8 | ND≥1.9 | NA | ND≥2.2 |
| Benzo(a)anthracene | NA | 14 | 14 | NA | 6.0 |
| Chrysene | NA | ND≥5.6 | ND≥5.6 | NA | ND≥6.6 |
| Benzo(a)pyrene | NA | 7.5 | 9.0 | NA | ND≥5.0 |
| Dibenzo(a,h)anthracene | NA | 1.9 | 4.2 | NA | ND≥1.3 |

Notes:

B - Indicates constituent also detected in the associated method blank.
D - Dilution concentration
EB - Equipment blank
FB - Open field blank
J - Indicates an estimated value. Concentration above the method detection limit (MDL) but below the practical quantitation limit (PQL).
MI - Indicates an estimated concentration due to matirx interference.
NA - Not applicable
ND - Indicates constituent not detected at or above the stated PQL.
PT - Pre-treated sample
RE - Indicates voaltile analysis reextracted and reanalyzed due to interference.
T - Treated sample
***(BOLD)** - Indicates constituent concentration detected above site specific cleanup levels or not detected at a PQL above the cleanup level.

# TABLE 3-3
# SOIL METALS DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Analytical Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PT-B1-1 | T-B1-M1 | T-B1-M2 | T-B2-M1 | T-B2-M2 | T-B2-M3 | T-B2-M4 | T-B2-M5 | T-B2-M6 | T-B2-M7 |
| TCLP Metals | | | | | | | | | | |
| Arsenic | NA | 10.2 | 7.4 BJ | 9.8 BJ | 7.5 BJ | 6.6 B | 7.0B | 6.0B | 8.2B | 7.0B |
| Barium | NA | 1010 | 840 BJ | 835 J | 800 J | 746 | 700 | 824 | 833 | 714 |
| Cadmium | NA | 5.5 | 5.1 J | ND≥5.0 J | ND≥5.0 J | 31 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Chromium | NA | ND ≥ 5.0 | ND ≥ 10 J | ND≥10 J | ND≥10 J | ND ≥ 10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Lead | Total Lead =47 ppm | 390 | 350 J | 244 J | 262 J | 154 | 198 | 84 | ND≥30 | ND≥30 |
| Mercury | NA | ND ≥ 0.20 | ND ≥ 0.2 J | ND≥0.20 J | ND≥0.20 J | ND ≥ 0.20 | ND≥0.20 | ND≥0.20 | ND≥0.40 | ND≥0. 20 |
| Selenium | NA | ND ≥ 15 | ND ≥ 3.0 J | 13.2 J | 13.8 J | 13.2 | ND≥30 | ND≥30 | ND ≥ 30 | ND≥3.0 |
| Silver | NA | ND ≥ 5.0 | ND ≥ 0.2 J | ND≥10 J | ND≥10 J | ND ≥ 10 | ND≥0.30 | ND≥0.30 | ND≥0.30 | ND≥0.30 |

See Notes At End of Table

# TABLE 3-3
# SOIL METALS DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Analytical Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T-B3-M8 | T-B3-M9 | T-B3-M10 | T-B3-M11 | T-B4-M12 | T-B4-M13 | T-B4-M14 | EB-B4-5 | T-B4-M15 |
| TCLP Metals | | | | | | | | | |
| Arsenic | 4.0B | 4 B | 4.0 B | 5.0 B | ND ≥ 4.0 | 5.0 B | 4.0 BJ | ND≥4.0 | 6.0 BJ |
| Barium | 679 | 1780 | 877 | ND≥20 | 751 | 871 | 860 J | 47B | 919 J |
| Cadmium | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 J | ND≥10 | ND≥10 J |
| Chromium | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 J | ND≥10 | ND≥10 J |
| Lead | 49 | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 J | ND≥30 | ND≥30 J |
| Mercury | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 J | ND≥0.2 | ND≥0. 2 J |
| Selenium | ND≥3.0 | ND≥5.0 | ND≥50 | ND≥50 | ND≥5.0 | ND≥50 | ND≥50 J | ND≥5.0 | ND≥50 J |
| Silver | ND≥0.30 | ND≥0.50 | ND≥0.50 | ND≥0.50 | ND≥0.50 | ND≥0.50 | ND≥0.5 J | ND≥0.5 | ND≥0.5 J |

| Analytical Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T-B4-M16 | T-B4-M17 | T-B4-M18 | EB-B4-18 | T-A1-M1 | T-A1-M2 | T-A1-M3 | T-A1-M4 | T-A1-M5 |
| TCLP Metals | | | | | | | | | |
| Arsenic | ND≥4.0 J | 4.0 BJ | ND≥4.0 J | ND≥4.0 | 5.7 B J | 8.3 BJ | 9.0 BJ | 7.0 BJ | 7.1 BJ |
| Barium | 1000 J | 838 J | 898 J | ND≥20 | 820 J | 1060 J | 986 J | 1100 J | 923 J |
| Cadmium | ND≥10 J | ND≥10 J | ND≥10J | ND≥10 | ND≥10 J | 16 J | ND≥10 R | ND≥10 R | ND≥10 R |
| Chromium | ND≥10 J | ND≥10 J | ND≥10 J | ND≥10 | ND≥10 J | ND≥10 R | ND≥10 R | ND≥10 R | ND≥10 R |
| Lead | ND≥30 J | ND≥30 J | ND≥30 J | ND≥2.0 | 60.8 J | 181 J | 66 J | 268 J | 97.8 J |
| Mercury | ND≥0.20 J | ND≥0.20 J | ND≥0.20 J | ND≥0.2 | ND≥0.2 J | ND≥0.40 R | ND≥0.40 R | ND≥0.40 R | ND≥40 R |
| Selenium | ND≥5.0 J | ND≥5.0 J | ND≥5.0 J | ND≥5.0 | ND≥5.0 J | ND≥4.0 R | ND≥4.0 R | ND≥4.0 R | ND≥4.0 R |
| Silver | ND≥0.50 J | ND≥0.50 J | ND≥10 J | ND≥10 | ND≥0.50 J | ND≥0.50 R | ND≥0.50 R | ND≥0.50 R | ND≥0.50 R |

See Notes At End of Table

# TABLE 3-3
# SOIL METALS DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Analytical Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T-A1-M6 | T-A1-M7 | T-A1-M8 | T-A1-M9 | T-A1-M10 | EB-A1-13 | T-A1-M11 | T-A1-M12 | T-A1-M13 |
| TCLP Metals | | | | | | | | | |
| Arsenic | 4.4 BJ | ND≥4.0 | 12 | 8.0 B | 16 | ND≥4.0 | 10 B | 17 | 10.1 J |
| Barium | 1030 J | 905 | 860 B | 1260 | 1130 | ND≥20 | 1460 | 1950 | 884 J |
| Cadmium | ND≥10 R | ND≥10 | ND≥10 | 18 | 10 | ND≥10 | 11.1 | 10 | ND≥4.0 J |
| Chromium | ND≥10 R | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | 10 | ND≥10 | ND≥5.0 J |
| Lead | 214 J | 57 | 119 | 124 | 134 | ND≥30 | 401 | 222 | 25.1 J |
| Mercury | ND≥0.40 R | ND≥0.40 | ND≥0.40 | 0.69 | ND≥0.40 | ND≥0.4 | 0.67 | ND≥0.40 | 0.63 J |
| Selenium | 6.8 J | ND≥5.0 | ND≥5.0 | ND ≥ 5.0 | 13.2 | ND≥5.0 | ND≥5.0 | 17.6 | 10.1 J |
| Silver | 0.86 BJ | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 J |

| Analytical Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T-A1-M14 | T-A1-M15 | EB-A1-M15 | T-A1-M16 | T-A1-M17 | T-A1-M18 | T-A1-M19 | T-A1-M20 | T-A1-M21 |
| TCLP Metals | | | | | | | | | |
| Arsenic | 9.4 BJ | 13.1 J | ND≥5.0 | ND≥5.0 J | 11.3 J | 5.1 BJ | 11.0 | 4.0 B | 4.0 B |
| Barium | 1070 J | 939 J | ND≥10 | 832 J | 1040 J | 714 EJ | 664 E | 715 E | 826 E |
| Cadmium | 4.9 BJ | 4.3 BJ | ND≥4.0 | 5.2 J | 7.9 J | 3.1 J | 5.1 | ND≥10 | ND≥10 |
| Chromium | ND ≥ 5.0 J | ND≥5.0 J | ND≥5.0 | ND≥5.0 J | ND≥5.0 J | ND≥0.70 J | ND≥5.0 | ND≥10 | ND≥10 |
| Lead | 61.9 J | 18.7 J | ND≥3.0 | 22 J | 27.9 J | 10.6 J | 38.8 | ND≥30 | ND≥30 |
| Mercury | 0.83 J | ND≥0.40 J | ND≥0.40 | ND≥0.40 J | ND≥0.40 J | ND≥0.40 J | ND≥0.40 | 0.78 | 0.87 |
| Selenium | 7.6 J | 11.5 J | ND≥5.0 | 11 J | ND≥5.0 J | ND≥4.0 J | ND≥4.0 | ND≥4.0 | ND≥4.0 |
| Silver | ND≥10 J | ND≥10 J | ND≥10 | ND≥10 J | ND≥10 J | ND≥10 J | ND≥10 | ND≥0.50 | ND≥0.50 |

See Notes At End of Table

# TABLE 3-3
# SOIL METALS DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Analytical Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T-A1-M22 | EB-A1-39 | T-A1-M23 | T-A1-M23 duplicate | T-A1-M24 | T-A1-M25 | T-A1-M26 | T-A1-M27 | T-A1-M28 |
| TCLP Metals | | | | | | | | | |
| Arsenic | 7.0 BJ | ND≥4.0 | ND≥4.0 R | 12.6 J | 14 J | 5.0 BJ | 6.0 BJ | 5.0 BJ | ND≥4.0 R |
| Barium | 723 J | ND≥40 | 874 J | 913 J | 778 J | 870 J | 769 J | 769 J | 734 J |
| Cadmium | ND≥10 R | ND≥10 | ND≥10 R | ND≥10 R | ND≥10 R | ND≥10 | ND≥10 | ND≥10 | ND≥10 R |
| Chromium | ND≥10 R | ND≥10 | ND≥10 R | ND≥10 R | ND≥10 R | ND≥10 | ND≥10 | ND≥10 | ND≥10 R |
| Lead | 67 J | ND≥40 | 41.4 J | ND≥40 R | ND≥ 40 R | 47 J | ND≥30 | ND≥30 | ND≥30 R |
| Mercury | ND≥0.40 R | ND≥0.2 | ND≥0.40 R | ND≥0.40 R | ND≥0.20 R | ND≥0.40 | 0.68 J | ND≥0.40 | ND≥0.40 R |
| Selenium | ND≥3.0 R | ND≥2.3 | ND≥3.0 R | ND≥3.0 R | ND≥3.0 R | ND≥3.0 | ND≥3.0 | 7.9 J | ND≥5.0 R |
| Silver | ND≥10 R | ND≥0.5 | ND≥0.50 R | ND≥0.50 R | ND≥0.50 R | ND≥10 | ND≥10 | ND≥10 | ND≥10 R |

| Analytical Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T-A1-M28 Duplicate | EB-A1-55 | T-A1-M29 | T-A1-M30 | T-A1-M31 | T-A1-M32 | T-A1-M33 | T-A1-M33 duplicate | EB-A1-71 |
| TCLP Metals | | | | | | | | | |
| Arsenic | ND≥4.0 R | 0.99B | 4.0 BJ | 7.8 BJ | 53.6 | 8.2 B | 7.0B | 6.0B | ND≥4.0 |
| Barium | 741 J | ND≥10 | 636 J | 515 J | 593 | 735 | 783 | 794 | ND≥40 |
| Cadmium | ND≥10 R | ND≥1.7 | ND≥10 R | ND≥10 R | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Chromium | ND≥10 R | ND≥3.3 | ND≥10 R | ND≥10 R | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Lead | ND≥30 R | 4.4 | ND≥30 R | ND≥30 R | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥2.0 |
| Mercury | ND≥0.40 R | 0.21 | ND ≥0.40 R | ND ≥ 0.40 R | ND≥0.40 | ND≥0.40 | ND≥0.40 | ND≥0.40 | ND≥0.40 |
| Selenium | 8.0 J | ND≥1.0 | ND≥5.0 R | ND≥5.0 R | 9.0 | ND≥5.0 | ND≥5.0 | ND≥5.0 | ND≥5.0 |
| Silver | ND≥10 R | ND≥3.3 | ND≥10 R | ND≥10 R | ND≥10 | ND≥0.50 | ND≥10 | ND≥10 | ND≥10 |

See Notes At End of Table

# TABLE 3-3
# SOIL METALS DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Analytical Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T-A1-M34 | T-A1-M35 | T-A1-M36 | T-A1-M37 | T-A1-M38 | T-A1-M38 duplicate | T-A1-M39 | EB-A1-86 | T-A1-M40 |
| TCLP Metals | | | | | | | | | |
| Arsenic | 5.0B | 4.0B | 4.0B | 8.0B | 4.0B | ND≥4.0 | ND≥4.0 | ND≥4.0 | ND≥4.0 |
| Barium | 644 | 566 | 612 | 596 | 678 | 707 | 737 | ND≥40 | 665 |
| Cadmium | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | 12.7 | ND≥10 | ND≥10 | ND≥10 |
| Chromium | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | 22 | ND≥10 | ND≥10 | ND≥10 |
| Lead | ND≥30 | 37 | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 |
| Mercury | ND≥0.40 | ND≥0.40 | ND≥0.40 | ND≥0.40 | ND≥0.40 | ND≥0.40 | ND≥0.40 | ND≥0.40 | 0.97 |
| Selenium | ND≥5.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 |
| Silver | ND≥10 | ND≥10 | 20 | ND≥10 | 25.9 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |

| Analytical Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T-A1-M41 | T-A1-M42 | T-A1-M43 | T-A1-M44 | T-A1-M45 | T-A1-M46 | T-A1-M47 | T-A1-M48 | T-A1-M49 |
| TCLP Metals | | | | | | | | | |
| Arsenic | 4.0 B | ND≥4.0 | ND≥4.0 | 4.0 B | 4.0 B | ND≥4.0 | 8.0 B | 5.0 B | 4.0 B |
| Barium | 576 | 593 | 568 | 689 | 583 | 617 | 624 | 582 | 608 |
| Cadmium | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Chromium | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Lead | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 |
| Mercury | ND≥0.40 | ND≥0.40 | ND≥0.40 | ND≥0.40 | ND≥0.40 | ND≥0.40 | ND≥0.40 | ND≥0.20 | ND≥0.20 |
| Selenium | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 |
| Silver | ND≥10 | ND≥10 | ND≥0.50 | ND≥0.50 | ND≥10 | ND≥10 | ND≥0.50 | ND≥10 | ND≥10 |

See Notes At End of Table

# TABLE 3-3
# SOIL METALS DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York
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| Analytical Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T-A1-M50 | T-A1-M51 | T-A1-M52 | T-A1-M53 | T-A1-M54 | T-A1-M55 | T-A1-M56 | T-A1-M56 Duplicate | EB-A1-103 |
| TCLP Metals | | | | | | | | | |
| Arsenic | 4.0 B | 5.0 B | ND≥4.0 | 5.0 B | ND≥4.0 | ND≥4.0 | ND≥4.0 | 5.0 B | ND≥4.0 |
| Barium | 646 | 624 | 592 | 608 | 625 | 509 | 567 | 572 | ND≥30 |
| Cadmium | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Chromium | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Lead | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 | ND≥30 |
| Mercury | 0.48 | ND≥0.40 | ND≥0.40 | ND≥0.40 | ND≥0.40 | ND≥0.4 | ND≥0.4 | ND≥0.40 | ND≥0.4 |
| Selenium | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | 3.0B | ND≥3.0 | 3.0B | ND≥3.0 | ND≥3.0 |
| Silver | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥0.5 | ND≥0.5 | ND≥0.5 | ND≥0.5 | ND≥0.50 |

| Analytical Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T-A1-M57 | T-A1-M58 | T-A1-M59 | T-A1-M60 | T-A1-M61 | T-A1-M62 | T-A1-M63 | T-A1-M64 | T-A1-M65 |
| TCLP Metals | | | | | | | | | |
| Arsenic | 5.0 B | 4.0 B | 5.0 B | ND ≥ 4.0 | ND≥4.0 | 6.0 B | ND≥4.0 | 9.0B | 4.0 B |
| Barium | 544 | 751 | 754 | 588 | 715 | 752 | 724 | 611 | 588 |
| Cadmium | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Chromium | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Lead | ND≥30 | ND≥30 | 814 | ND≥30 | 90 | 30 | ND≥30 | ND≥30 | ND≥30 |
| Mercury | ND≥0.4 | ND≥0.4 | ND≥0.4 | ND≥0.4 | ND≥0.4 | ND≥0.4 | ND≥0.4 | ND≥0.4 | ND≥0.4 |
| Selenium | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 |
| Silver | ND≥10 | ND≥0.5 | ND≥0.5 | ND≥0.5 | ND≥10 | ND≥0.5 | ND≥0.5 | ND≥0.5 | ND≥0.5 |

See Notes At End of Table

# TABLE 3-3
# SOIL METALS DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Analytical Compounds | Sample Identification and Constituent Concentration(ppb) | | | |
|---|---|---|---|---|
| | T-A1-M66 | T-A1-M67 | T-A1-M68 | Decon-SM |
| TCLP Metals | | | | |
| Arsenic | 6.0 B | ND≥4.0 | 5.0 B | 8.0 B |
| Barium | 683 | 211 | 669 | 884 |
| Cadmium | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Chromium | ND≥10 | ND≥10 | ND≥10 | ND≥10 |
| Lead | ND≥30 | ND≥90 | ND≥90 | 57 |
| Mercury | ND≥0.4 | ND≥0.4 | ND≥0.4 | ND≥0.4 |
| Selenium | ND≥3.0 | ND≥3.0 | ND≥3.0 | ND≥3.0 |
| Silver | ND≥0 .5 | ND≥5.0 | ND≥0.50 | ND≥10 |

Notes:

B - Indicates a value greater than or equal to the instrument detection limit, but less than the contract required detection limit.
E - Indicates a value estimated or not reported due to the presence of interference.
J - Qualified as estimated due to poor percent recovery of relative percent difference. See QA/QC summary tables.
ND - Indicates constituent not detected at or above the stated practical quantitation limit (PQL).
ppb - parts per billion
ppm - parts per million
R - Indicates sample results are unusable due to very low spike recoveries in associated QA/QC samples. See QA/QC summary tables.
TCLP - Toxicity Characteristic Leaching Procedure

**TABLE 3-4**
**PHASE I SOIL BORING AND CONFIRMATORY SOIL SAMPLE**
**ANALYTICAL DATA COMPARISON**
**ASH LANDFILL**
**SENECA ARMY DEPOT ACTIVITY**
**Romulus, New York**


(Sample Dates: Phase I - October, 1994 and Confirmatory Samples - November 1994, January 1995, and May, 1995)

| Analytical Compounds | Site Specific Cleanup Levels (ppb) | Phase I Soil Boring Data (ppb) | | | Confirmatory Excavation Wall Sample Data (ppb) |
|---|---|---|---|---|---|
| | | SB129(RE) 0 to 2 ft | SB129(RE) 2 to 4 ft | SB129 6 to 7 ft | C-SB-129R (0 to 7 ft) |
| Volatiles | | | | | |
| Trichloroethene | 700 | 17 | ND ≥ 12 | 99 D | 15 B |
| 1,2-Dichloroethene | 300 | ND ≥ 11 | 20 | 200 D | 47 |
| Vinyl chloride | 200 | ND ≥ 11 | ND≥ 12 | 4 J | ND ≥ 11 |
| Toluene | 1,500 | ND ≥ 11 | ND ≥ 12 | ND ≥10 | ND ≥ 11 |
| Total Xylenes | 1,200 | ND ≥ 11 | ND ≥ 12 | ND ≥ 10 | ND ≥ 11 |
| Semivolatiles | | | | | |
| Bis(2-ethylhexyl)phthalate | 50,000 | 1300 | ND≥540 | 320 J | ND≥660 |
| Pyrene | 50,000 | 2700 | ND≥540 | ND≥550 | 100 J |
| Fluoranthene | 50,000 | 4300 | ND≥540 | ND≥550 | 230 J |
| Phenanthrene | 50,000 | 560 J | ND≥540 | ND≥550 | 130 J |
| Benzo(a)pyrene | 61 | **1800*** | **ND≥540*** | **ND≥550*** | 6.5 BJ |
| Indeno(1,2,3-cd)pyrene | 3200 | 1200 | ND≥540 | ND≥550 | ND≥660 |
| Napthalene | 13,000 | ND≥570 | ND≥540 | ND≥550 | ND≥660 |
| Chrysene | 400 | **1800*** | **ND≥540*** | **ND≥550*** | 10 BJ |
| Benzo(a)anthracene | 220 | **1600*** | **ND≥540*** | **ND≥550*** | 21 B |
| Dibenzo(a,h)anthracene | 14 | **ND≥570*** | **ND≥540*** | **ND≥550*** | 5.9 J |

See Notes at end of Table

**TABLE 3-4**
**PHASE I SOIL BORING AND CONFIRMATORY SOIL SAMPLE**
**ANALYTICAL DATA COMPARISON**
**ASH LANDFILL**
**SENECA ARMY DEPOT ACTIVITY**
**Romulus, New York**


(Sample Dates: Phase I - October, 1994 and Confirmatory Samples - November 1994, January 1995, and May 1995)

| Analytical Compounds | Site Specific Cleanup Levels (ppb) | Phase I Soil Boring Data (ppb) | | | Confirmatory Excavation Wall Sample Data (ppb) |
|---|---|---|---|---|---|
| | | SB105 0 to 2 ft | SB105 2 to 4 ft | SB105(RE) 2 to 4 ft duplicate | C-SB-105 R (0 to 4 ft) |
| Volatiles | | | | | |
| Trichloroethene | 700 | ND≥11 | 13 | 15 B | NA |
| 1,2-Dichloroethene | 300 | ND≥11 | 19 | 3 J | NA |
| Vinyl chloride | 200 | ND≥11 | 12 | 5 J | NA |
| Toluene | 1,500 | ND≥11 | 14 | 11 J | NA |
| Total Xylenes | 1,200 | ND≥11 | ND≥12 | 2 J | NA |
| Semivolatiles | | | | | |
| Bis(2-ethylhexyl)phthalate | 50,000 | ND≥560 | ND≥570 | 9000 D | 56 J |
| Pyrene | 50,000 | 5300 D | ND≥570 | 19,000 D | 210 J |
| Fluoranthene | 50,000 | 12,000 D | ND≥570 | 21,000 D | 260 J |
| Phenanthrene | 50,000 | 3400 D | ND≥570 | 12,000 D | 170 J |
| Benzo(a)pyrene | 61 | **6900 D*** | **ND≥570*** | **8900 D*** | **106 B*** |
| Indeno(1,2,3-cd)pyrene | 3200 | **3700*** | ND≥570 | **3800**** | ND≥660 |
| Napthalene | 13,000 | ND≥560 | ND≥570 | 300 J | ND≥660 |
| Chrysene | 400 | **3900 D*** | **ND≥570*** | **3500 DJ*** | 110 B |
| Benzo(a)anthracene | 220 | **4600 D*** | **ND≥570*** | **6800 D*** | 110 B |
| Dibenzo(a,h)anthracene | 14 | **ND≥560*** | **ND≥570*** | **440 J*** | **46*** |

See Notes at end of Table

**TABLE 3-4**
**PHASE I SOIL BORING AND CONFIRMATORY SOIL SAMPLE**
**ANALYTICAL DATA COMPARISON**
**ASH LANDFILL**
**SENECA ARMY DEPOT ACTIVITY**
**Romulus, New York**


(Sample Dates: Phase I - October, 1994 and Confirmatory Samples - November 1994, January 1995, and May 1995)

| Analytical Compounds | Site Specific Cleanup Levels (ppb) | Phase I Soil Boring Data (ppb) | | | | Confirmatory Excavation Wall Sample Data (ppb) |
|---|---|---|---|---|---|---|
| | | SB108 0 to 2 ft | SB108 2 to 4 ft | SB108 2 to 4 ft duplicate | SB108 7 to 9 ft | C-SB-108R |
| Volatiles | | | | | | |
| Trichloroethene | 700 | ND≥12 | 4 J | 4 J | 480 D | ND≥11 |
| 1,2-Dichloroethene | 300 | ND≥12 | 2 J | 2 J | **550 D** * | ND≥11 |
| Vinyl chloride | 200 | ND≥12 | ND≥11 | ND≥11 | 3 J | ND≥11 |
| Toluene | 1,500 | 3 J | 2 J | 2 J | ND≥11 | ND≥11 |
| Total Xylenes | 1,200 | ND≥12 | ND≥11 | ND≥11 | ND≥11 | ND≥11 |
| Semivolatiles | | | | | | |
| Bis(2-ethylhexyl)phthalate | 50,000 | ND≥580 | ND≥560 | ND≥560 | ND≥560 | NA |
| Pyrene | 50,000 | ND≥580 | ND≥560 | ND≥560 | ND≥560 | NA |
| Fluoranthene | 50,000 | ND≥580 | ND≥560 | ND≥560 | ND≥560 | NA |
| Phenanthrene | 50,000 | **ND≥580*** | ND≥560 | ND≥560 | ND≥560 | NA |
| Benzo(a)pyrene | 61 | ND≥580 | **ND≥560*** | **ND≥560*** | **ND≥560*** | NA |
| Indeno(1,2,3-cd)pyrene | 3200 | ND≥580 | ND≥560 | ND≥560 | ND≥560 | NA |
| Napthalene | 13,000 | ND≥580 | ND≥560 | ND≥560 | ND≥560 | NA |
| Chrysene | 400 | **ND≥580*** | **ND≥560*** | **ND≥560*** | **ND≥560*** | NA |
| Benzo(a)anthracene | 220 | **ND≥580*** | **ND≥560*** | **ND≥560*** | **ND≥560*** | NA |
| Dibenzo(a,h)anthracene | 14 | **ND≥580*** | **ND≥560*** | **ND≥560*** | **ND≥560*** | NA |

Notes:
B - Indicates constituent also detected in the associated method blank
D - Dilution concentration
J - Indicates an estimated value. Concentration above the method detection limit (MDL) but below the practical quantitation limit (PQL).
NA - Not applicable
ND - Indicates constituent not detected at or above the stated PQL.
RE - Indicates volatile analysis re-extracted and reanalyzed due to interference.
ppb - parts per billion
SB - Soil Boring
* **(Bold)** - Constituent concentration is above the site specific cleanup level or not detected at a PQL above the cleanup level.

# TABLE 3-5
# EMERGENCY SOIL SAMPLE DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | |
|---|---|---|
| | PT-A2-VC RE | PT-A2-VC2 |
| Volatiles | | |
| Benzene | NA | 42 |
| 1,1-Dichloroethane | NA | 24 J |
| 1,1-Dichloroethene | NA | 13 J |
| Ethylbenzene | NA | 36 |
| Trichloroethene | NA | 310 |
| 1,2-Dichloroethene (total) | NA | 52000 D |
| Vinyl chloride | 5 J | 25000 D |
| Toluene | NA | 160 |
| Total Xylenes | NA | 230 |

Notes:
D - Dilution
J - Indicates an estimated value. Constituent concentration detected above the method detection limit but below the practical quantitation limit.
NA - Not applicable
ppb - Parts per billion
RE - Indicates the sample was re-extracted and reanalyzed due to interference.

# TABLE 3-6
# TREATED WASTEWATER PERMIT DISCHARGE LEVELS
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York

| Treated Wastewater Permit Constituents | Permit levels (ppb) |
|---|---|
| Volatiles | |
| Trichloroethene | 10 |
| 1,2-Dichloroethene | 5.0 |
| Vinyl Chloride | 5.0 |
| Chloroform | 7.0 |
| 1,1-Dichloroethene | 5.0 |
| 1,1-Dichloroethane | 5.0 |
| 1,1,1-Trichloroethane | 5.0 |
| Tetrachloroethene | 5.0 |
| Benzene | 0.70 |
| Toluene | 5.0 |
| Ethylbenzene | 5.0 |
| Total Xylenes | 5.0 |
| Semivolatiles | |
| Napthalene | 10 |
| Phenol | 8 |
| Diethyl phthalate | 50 |
| Di-n-butylphthalate | 770 |
| Metals | |
| Aluminum | 2000 |
| Antimony | 10 |
| Arsenic | 50 |
| Cadmium | 20 |
| Chromium | 100 |
| Copper | 1000 |
| Iron | 800 |
| Lead | 50 |
| Mercury | 4 |
| Nickel | 2000 |
| Silver | 100 |
| Zinc | 5000 |
| Classical Chemistry | |
| Total Cyanide | 400 |
| pH | 6.5 - 8.5 |
| Oil & Grease | 15 ppm |
| TDS | 500 ppm |
| Turbidity | 50 NTU |

Notes:
ppb - Parts per billion
ppm - Parts per million
NTU - Nephelometric Turbidity Unit
TDS - Total Dissolved Solids

**TABLE 3-7**
**PRE-TREATED/ASSOCIATED TREATED WATER DATA SUMMARY**
**ASH LANDFILL**
**SENECA ARMY DEPOT ACTIVITY**
Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | |
|---|---|---|---|---|
| | D-12-1 | D-34-1 | C-12-1 | C-12-2 |
| Volatiles | | | | |
| Trichloroethene | 2.6 | 2.7 | ND≥0.20 | NA |
| 1,2-Dichloroethene (total) | **6.9*** | **5.7*** | ND≥0.20 | NA |
| Vinyl Chloride | ND≥1.0 | ND≥1.0 | ND≥1.0 | NA |
| Chloroform | 1.4 | ND≥0.20 | ND≥0.20 | NA |
| 1,1-Dichloroethene | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA |
| 1,1-Dichloroethane | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA |
| 1,1,1-Trichloroethane | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA |
| Tetrachloroethene | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA |
| Benzene | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA |
| Toluene | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA |
| Ethyl benzene | ND≥0.20 | 3.9 | ND≥0.20 | NA |
| Total Xylenes | 1.81 | **30*** | ND≥0.20 | NA |
| Semivolatiles | | | | |
| Napthalene | ND≥10 | ND≥10 | ND≥10 | NA |
| Pentachlorophenol | ND≥25 | ND≥25 | ND≥51 | NA |
| Phenol | ND≥10 | ND≥10 | ND≥10 | NA |
| 4-Methylphenol | ND≥10 | ND≥10 | ND≥10 | NA |
| 2-Methylnapthalene | ND≥10 | ND≥10 | ND≥10 | NA |
| Diethyl phthalate | ND≥10 | ND≥10 | ND≥10 | NA |
| Di-n-butylphthalate | 0.6 J | 0.6 J | ND≥10 | NA |
| Classical Chemistry | | | | |
| Chloride | 35.6 ppm | 25.5 ppm | NA | NA |
| Nitrate | 0.15 ppm | 0.13 ppm | NA | NA |
| pH | 7.62 | 7.60 | NA | NA |
| Specific Conductivity | 246 | 240 | NA | NA |
| Sulfate | 5.2 ppm | 33.6 ppm | NA | NA |
| Total Cyanide | NA | NA | NA | NA |
| Total Phosphorous | 0.34 ppm | 0.23 ppm | ND≥10 | NA |
| Turbidity | **400 NTU*** | **315 NTU*** | NA | NA |

See notes at end of table.

# TABLE 3-7
## PRE-TREATED/ASSOCIATED TREATED WATER DATA SUMMARY
## ASH LANDFILL
## SENECA ARMY DEPOT ACTIVITY
Romulus, New York


| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | |
|---|---|---|---|---|
| | D-12-1 | D-34-1 | C-12-1 | C-12-2 |
| Metals | | | | |
| Antimony | ND≥2.5 | ND≥2.5 | 2.3 B | NA |
| Arsenic | ND≥1.5 | ND≥1.5 | 4.4 B | NA |
| Barium | 212 | 70.3 B | 94.4 B | NA |
| Beryllium | ND≥1.5 | ND≥1.5 | ND≥1.5 | NA |
| Cadmium | ND≥2.5 | ND≥2.5 | ND≥0.20 | NA |
| Chromium | 41.5 | 9.3 | 12.9 | NA |
| Cobalt | 10.6 B | ND≥5.0 | 2.0 B | NA |
| Copper | ND≥5.0 | 14.2 | 41.5 | NA |
| Hexavalent Chromium | N/A | N/A | 11.1 | NA |
| Iron | **19600*** | **5850*** | **9100*** | 800 |
| Lead | **70*** | 19.0 | 20 | NA |
| Magnesium | 9980 | 5860 | 6490 | NA |
| Manganese | 333 | 102 | 174 | NA |
| Mercury | ND≥0.20 | 0.20 | ND≥0.20 | NA |
| Nickel | 29.8 | ND≥10.0 | 14.3 B | NA |
| Selenium | ND≥15.0 | ND≥1.5 | ND≥15.0 | NA |
| Silver | ND≥5.0 | ND≥5.0 | ND≥0.10 | NA |
| Sodium | 11900 | 9450 | 20500 | NA |
| Vanadium | 54.1 | 10.7 B | 13.6 B | NA |
| Zinc | 712 | 226 | 357 | NA |
| Soluble Metals | | | | |
| Antimony | ND≥2.5 | ND≥2.5 | NA | NA |
| Arsenic | ND≥1.5 | ND≥1.5 | NA | NA |
| Barium | 83.2 B | 83 B | NA | NA |
| Beryllium | ND≥1.5 | ND≥1.5 | NA | NA |
| Cadmium | ND≥2.5 | ND≥2.5 | NA | NA |
| Chromium | 11.4 | 9.9 | NA | NA |
| Cobalt | ND≥5.0 | ND≥5.0 | NA | NA |
| Copper | 7.2 B | 6.0 B | NA | NA |
| Iron | **5300*** | **5110*** | NA | NA |
| Lead | 16 | 16 | NA | NA |
| Magnesium | 5940 | 6600 | NA | NA |
| Manganese | 72 | 77 | NA | NA |
| Mercury | ND≥0.20 | 0.22 | NA | NA |
| Nickel | ND≥10 | ND≥10 | NA | NA |
| Selenium | ND≥1.5 | ND≥1.5 | NA | NA |
| Silver | ND≥5.0 | ND≥5.0 | NA | NA |
| Sodium | 11,200 | 16200 | NA | NA |
| Vanadium | 14.4 B | 12.8 B | NA | NA |
| Zinc | 215 | 244 | NA | NA |

Notes:

***(Bold)** - Indicates constituent concentration exceeds the treated wastewater discharge permit level.

B - Inorganic parameters. Indicates estimated concentration, detected above the Method Detection Limit (MDL) but below the Practical Quantitation Limit (PQL).

C - Indicates sample collected from "clean"/treated water frac tanks.

D - Indicates sample collected from "dirty"/pretreated water frac tanks.

J - Estimated concentration. Indicates the constituent concentration detected above the MDL but below the PQL.

NA - Not analyzed.

ND - Indicates not detected at or above the stated PQL.

NTU - Nephelometric Turbidity Unit

ppb - Parts per billion

ppm - Parts per million

**TABLE 3-8**
**TREATED WASTEWATER DATA SUMMARY**
**ASH LANDFILL**
**SENECA ARMY DEPOT ACTIVITY**
**Romulus, New York**
(Page 1 of 6)

| Site Specific Compounds | Sample Identification and Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trip Blank (1-5-95) | C-12-3 | Trip Blank (1-13-95) | C-12-4 | Trip Blank (1-19-95) | C-12-4B | Trip Blank (1-22-95) | C-12-5 | Trip Blank 1-26-95 | C-12-5B |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥0.20 | ND≥0.20 | ND≥0.20 | 2.8 | NA | NA | ND≥0.20 | 2.7 | NA | NA |
| 1,2-Dichloroethene (total) | ND≥0.20 | ND≥0.20 | ND≥0.20 | **12*** | ND≥0.20 | 0.83 | ND≥0.20 | **10*** | ND≥0.20 | 2.1 |
| Vinyl Chloride | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | NA | NA | ND≥1.0 | ND≥1.0 | NA | NA |
| Chloroform | ND≥0.20 | ND≥0.20 | 0.67 | ND≥0.20 | NA | NA | ND≥0.20 | ND≥0.20 | NA | NA |
| 1,1-Dichloroethene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | NA | ND≥0.20 | ND≥0.20 | NA | NA |
| 1,1-Dichloroethane | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | NA | ND≥0.20 | ND≥0.20 | NA | NA |
| 1,1,1-Trichloroethane | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | NA | ND≥0.20 | ND≥0.20 | NA | NA |
| Tetrachloroethene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | NA | ND≥0.20 | ND≥0.20 | NA | NA |
| Benzene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | NA | ND≥0.20 | ND≥0.20 | NA | NA |
| Toluene | ND≥0.20 | ND≥0.20 | ND≥0.20 | 0.53 | NA | NA | ND≥0.20 | ND≥0.20 | NA | NA |
| Ethyl benzene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | NA | ND≥0.20 | ND≥0.20 | NA | NA |
| Total Xylenes | ND≥0.20 | ND≥0.20 | ND≥0.20 | 1.1 | NA | NA | ND≥0.20 | ND≥0.20 | NA | NA |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | ND≥10 | NA | ND≥10 | NA | NA | NA | ND≥10 | NA | NA |
| Phenol | NA | ND≥8.0 | NA | ND≥8.0 | NA | NA | NA | ND≥8.0 | NA | NA |
| Diethyl phthalate | NA | 0.5 J | NA | 0.30 J | NA | NA | NA | ND≥10 | NA | NA |
| Di-n-butylphthalate | NA | 0.2 BJ | NA | 0.40 J | NA | NA | NA | ND≥10 | NA | NA |
| Metals | | | | | | | | | | |
| Aluminum | NA | 584 | NA | 542 | NA | NA | NA | 605 | NA | NA |
| Antimony | NA | ND≥6.0 | NA | ND≥4.0 | NA | NA | NA | ND≥10 | NA | NA |
| Arsenic | NA | 5.0 B | NA | ND≥5.0 | NA | NA | NA | ND≥1.0 | NA | NA |
| Cadmium | NA | ND≥5.0 | NA | ND≥5.0 | NA | NA | NA | ND≥1.2 | NA | NA |
| Chromium | NA | ND≥10 | NA | ND≥10 | NA | NA | NA | 3.2 | NA | NA |
| Copper | NA | 12 B | NA | ND≥10 | NA | NA | NA | 5.0 B | NA | NA |
| Iron | NA | 532 | NA | 388 | NA | NA | NA | 450 | NA | NA |
| Lead | NA | 4.0 | NA | ND≥30 | NA | NA | NA | ND≥7.5 | NA | NA |
| Mercury | NA | ND≥0.20 | NA | ND≥0.20 | NA | NA | NA | ND≥0.20 | NA | NA |
| Nickel | NA | ND≥20 | NA | ND≥20 | NA | NA | NA | 7.8 B | NA | NA |
| Silver | NA | ND≥10 | NA | ND≥10 | NA | NA | NA | ND≥2.5 | NA | NA |
| Zinc | NA | 90 | NA | 41.1 | NA | NA | NA | 73.2 | NA | NA |
| Classical Chemistry | | | | | | | | | | |
| Total Cyanide | NA | ND≥10 | NA | ND≥10 | NA | NA | NA | ND≥10 | NA | NA |
| pH | NA | 7.47 | NA | 7.89 | NA | NA | NA | 8.03 | NA | NA |
| Oil & Grease | NA | ND≥5.0 ppm | NA | ND≥5.0 ppm | NA | NA | NA | ND≥5.0 ppm | NA | NA |
| TDS | NA | 307 ppm | NA | **578 ppm*** | NA | **555 ppm*** | NA | **536 ppm*** | NA | **522 ppm*** |
| Turbidity | NA | 34 NTU | NA | 9.8 NTU | NA | NA | NA | 9.8 NTU | NA | NA |

See notes at end of table.

**TABLE 3-8**
**TREATED WASTEWATER DATA SUMMARY**
**ASH LANDFILL**
**SENECA ARMY DEPOT ACTIVITY**
**Romulus, New York**
(Page 2 of 6)

| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Trip Blank (1-27-95) | C-12-6 | Trip Blank (2-2-95) | C-12-6B | C-12-7 | Trip Blank (2-8-95) | C-12-8 | C-12-8 duplicate | FB-12-8 | Trip Blank (2-21-95) |
| Volatiles | | | | | | | | | | |
| Trichloroethene | ND≥0.20 | 3.2 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| 1,2-Dichloroethene (total) | ND≥0.20 | **25*** | ND≥0.20 | 0.73 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| Vinyl Chloride | ND≥1.0 | ND≥1.0 | ND≥1.0 | NA | ND≥1.0 | ND≥0.10 | ND≥1.0 | ND≥1.0 | ND≥0.10 | ND≥0.10 |
| Chloroform | 0.68 | ND≥0.20 | 0.67 | NA | ND≥0.20 | 0.92 | ND≥0.20 | ND≥0.20 | 0.85 | 0.95 |
| 1,1-Dichloroethene | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| 1,1-Dichloroethane | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| 1,1,1-Trichloroethane | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| Tetrachloroethene | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| Benzene | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 | ND≥0.20 | 0.26 | ND≥0.20 | ND≥0.20 |
| Toluene | 0.25 | 1.4 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | 0.22 |
| Ethyl benzene | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 | 0.29 | 0.40 | ND≥0.20 | ND≥0.20 |
| Total Xylenes | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | NA | ND≥10 | NA | NA | ND≥10 | NA | 0.60 J | 0.50 J | NA | NA |
| Phenol | NA | ND≥8.0 | NA | NA | ND≥8.0 | NA | ND≥8.0 | ND≥8.0 | NA | NA |
| Diethyl phthalate | NA | ND≥10 | NA | NA | ND≥10 | NA | 0.40 J | 0.40 J | NA | NA |
| Di-n-butylphthalate | NA | ND≥10 | NA | NA | ND≥10 | NA | 0.70 J | 0.70 J | NA | NA |
| Metals | | | | | | | | | | |
| Aluminum | NA | 889 | NA | NA | 1050 | NA | 740 | 384 | NA | NA |
| Antimony | NA | ND≥10.0 | NA | NA | **19*** | NA | 6.1 B | 8.0 B | NA | NA |
| Arsenic | NA | 0.9 B | NA | NA | 1.0 B | NA | ND≥3.0 | ND≥3.0 | NA | NA |
| Cadmium | NA | ND≥1.2 | NA | NA | 0.27 B | NA | ND≥0.4 | ND≥0.4 | NA | NA |
| Chromium | NA | 0.77 B | NA | NA | 5.5 | NA | ND≥0.70 | ND≥0.7 | NA | NA |
| Copper | NA | 3.7 B | NA | NA | 2.9 B | NA | ND≥1.6 | ND≥1.6 | NA | NA |
| Iron | NA | 442 | NA | NA | 652 | NA | 537 | 235 | NA | NA |
| Lead | NA | ND≥7.5 | NA | NA | 2.5 | NA | 2.1 B | 3.0 | NA | NA |
| Mercury | NA | ND≥0.20 | NA | NA | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 | NA | NA |
| Nickel | NA | ND≥5.0 | NA | NA | 5.0 B | NA | ND≥20.0 | ND≥20 | NA | NA |
| Silver | NA | ND≥2.5 | NA | NA | ND≥2.5 | NA | ND≥10 | ND≥10 | NA | NA |
| Zinc | NA | 32.1 | NA | NA | 39.2 | NA | 38.4 | 27.3 | NA | NA |
| Classical Chemistry | | | | | | | | | | |
| Total Cyanide | NA | ND≥10 | NA | NA | ND≥10 | NA | ND≥10 | ND≥10 | NA | NA |
| pH | NA | 7.55 | NA | NA | 7.97 | NA | 7.66 | 6.5 | NA | NA |
| Oil & Grease | NA | ND≥5.0 ppm | NA | NA | ND≥5.0 ppm | NA | ND≥5.0 ppm | ND≥5.0 ppm | NA | NA |
| TDS | NA | 435 ppm | NA | NA | 446 ppm | NA | 435 ppm | **508 ppm*** | NA | NA |
| Turbidity | NA | 9.4 NTU | NA | NA | 16 NTU | NA | 23 NTU | 28.5 NTU | NA | NA |

See notes at end of table.

**TABLE 3-8**
**TREATED WASTEWATER DATA SUMMARY**
**ASH LANDFILL**
**SENECA ARMY DEPOT ACTIVITY**
**Romulus, New York**
(Page 3 of 6)

| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | C-12-9 | Trip Blank (3-8-95) | C-12-10 | Trip Blank (3-10-95) | C-12-11 | Trip Blank (3-15-95) | C-12-11B | C-12-12 | Trip Blank (3-18-95) |
| Volatiles | | | | | | | | | |
| Trichloroethene | 3.3 | ND≥0.20 | ND≥0.20 | ND≥0.20 | 5.1 | ND≥0.20 | NA | 0.58 | ND≥0.20 |
| 1,2-Dichloroethene (total) | 3.6 | ND≥0.20 | ND≥0.20 | ND≥0.20 | 11* | ND≥0.20 | 0.44 | 3.2 | ND≥0.20 |
| Vinyl Chloride | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | NA | ND≥1.0 | ND≥1.0 |
| Chloroform | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 |
| 1,1-Dichloroethene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 |
| 1,1-Dichloroethane | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 |
| 1,1,1-Trichloroethane | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 |
| Tetrachloroethene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 |
| Benzene | ND≥0.2 | ND≥0.20 | 0.29 | ND≥0.20 | ND≥0.2 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 |
| Toluene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | 0.25 | ND≥0.20 | NA | 0.32 | 0.78 |
| Ethyl benzene | ND≥0.20 | ND≥0.20 | 1.1 | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 |
| Total Xylenes | 1.5 | ND≥0.20 | 1.0 | ND≥0.20 | ND≥0.20 | ND≥0.20 | NA | ND≥0.20 | ND≥0.20 |
| Semivolatiles | | | | | | | | | |
| Napthalene | 0.10 J | NA | 0.40 J | NA | ND≥10 | NA | NA | ND≥10 | NA |
| Phenol | ND≥8.0 | NA | ND≥8.0 | NA | ND≥8.0 | NA | NA | ND≥8.0 | NA |
| Diethyl phthalate | 0.40 J | NA | 0.40 J | NA | 0.40 J | NA | NA | 0.30 J | NA |
| Di-n-butylphthalate | 0.60 J | NA | 0.70 J | NA | 0.50 J | NA | NA | 0.80 J | NA |
| Metals | | | | | | | | | |
| Aluminum | 155 | NA | 394 | NA | 757 | NA | NA | 236 | NA |
| Antimony | ND≥13.3 | NA | ND≥10 | NA | ND≥10 | NA | NA | 1.3 B | NA |
| Arsenic | ND≥1.3 | NA | ND≥1.3 | NA | ND≥1.3 | NA | NA | 1.6 B | NA |
| Cadmium | ND≥1.7 | NA | ND≥1.7 | NA | ND≥5.0 | NA | NA | ND≥0.33 | NA |
| Chromium | ND≥3.3 | NA | ND≥3.3 | NA | ND≥3.3 | NA | NA | ND≥3.3 | NA |
| Copper | ND≥3.3 | NA | 3.3 B | NA | 3.3 B | NA | NA | 1.7 B | NA |
| Iron | 134 | NA | 406 | NA | 639 | NA | NA | 176 | NA |
| Lead | 0.67 B | NA | 0.52 B | NA | 0.67 B | NA | NA | 0.57 B | NA |
| Mercury | ND≥0.20 | NA | ND≥0.20 | NA | ND≥0.20 | NA | NA | ND≥0.20 | NA |
| Nickel | 7.7 B | NA | ND≥6.7 | NA | ND≥6.7 | NA | NA | ND≥0.33 | NA |
| Silver | ND≥0.17 | NA | ND≥3.3 | NA | ND≥10 | NA | NA | ND≥1.0 | NA |
| Zinc | 9.3 | NA | 14.3 | NA | 17 | NA | NA | 15.6 | NA |
| Classical Chemistry | | | | | | | | | |
| Total Cyanide | ND≥10 | NA | 17.5 | NA | ND≥10 | NA | NA | ND≥10 | NA |
| pH | 7.48 | NA | 7.91 | NA | 7.84 | NA | NA | 7.74 | NA |
| Oil & Grease | ND≥5.0 ppm | NA | ND≥5.0 ppm | NA | ND≥5.0 ppm | NA | NA | ND≥5.0 ppm | NA |
| TDS | **517 ppm*** | NA | 345 ppm | NA | 321 ppm | NA | NA | 365 ppm | NA |
| Turbidity | 3.9 NTU | NA | 11 NTU | NA | 19 NTU | NA | NA | 7.0 NTU | NA |

See notes at end of table.

**TABLE 3-8**
**TREATED WASTEWATER DATA SUMMARY**
**ASH LANDFILL**
**SENECA ARMY DEPOT ACTIVITY**
**Romulus, New York**
(Page 4 of 6)

| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | C-12-13 | Trip Blank (4-10-95) | C-12-14 | Trip Blank (4-11-95) | C-12-15 | Trip Blank (4-18-95) | C-12-16 | Trip Blank (4-20-95) | C-12-17 | Trip Blank (4-21-95) |
| Volatiles | | | | | | | | | | |
| Trichloroethene | 0.22 | ND≥0.20 | 2.4 | ND≥0.20 | 4.0 | ND≥0.20 | 0.88 | ND≥0.20 | 0.52 | ND≥0.20 |
| 1,2-Dichloroethene (total) | 0.31 | ND≥0.20 | 1.9 | ND≥0.20 | **5.2*** | ND≥0.20 | 0.33 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| Vinyl Chloride | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 |
| Chloroform | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| 1,1-Dichloroethene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| 1,1-Dichloroethane | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| 1,1,1-Trichloroethane | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| Tetrachloroethene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| Benzene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| Toluene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| Ethyl benzene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | 0.84 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| Total Xylenes | 0.45 | ND≥0.20 | 1.0 | ND≥0.20 | 0.64 | ND≥0.20 | **6.0*** | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| Semivolatiles | | | | | | | | | | |
| Napthalene | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA |
| Phenol | ND≥8.0 | NA | 3 J | NA | ND≥8 | NA | ND≥8 | NA | ND≥8 | NA |
| Diethyl phthalate | 0.30 J | NA | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA |
| Di-n-butylphthalate | 0.70 J | NA | ND≥10 | NA | 0.40 J | NA | ND≥10 | NA | ND≥10 | NA |
| Metals | | | | | | | | | | |
| Aluminum | 283 | NA | 355 | NA | 226 | NA | 377 | NA | 108 | NA |
| Antimony | 0.81 B | NA | 0.55 B | NA | 3.9 B | NA | **17.2 B*** | NA | **12.7 B*** | NA |
| Arsenic | 0.68 B | NA | 1.3 B | NA | 0.53 B | NA | ND≥1.3 | NA | 38.3 | NA |
| Cadmium | ND≥0.33 | NA | ND≥0.33 | NA | ND≥0.33 | NA | ND≥1.7 | NA | ND≥1.7 | NA |
| Chromium | ND≥3.3 | NA | ND≥0.33 | NA | ND≥0.33 | NA | ND≥3.3 | NA | ND≥3.3 | NA |
| Copper | 1.4 B | NA | 0.9 B | NA | 10 | NA | 4.7 B | NA | ND≥3.3 | NA |
| Iron | 188 | NA | 262 | NA | 197 | NA | 228 | NA | 84.7 | NA |
| Lead | 0.67 B | NA | 0.75 B | NA | 1.2 | NA | 1.3 | NA | ND≥0.67 | NA |
| Mercury | ND≥0.20 | NA | ND≥0.20 | NA | ND≥0.20 | NA | ND≥0.20 | NA | ND≥0.20 | NA |
| Nickel | ND≥0.33 | NA | ND≥0.33 | NA | ND≥0.33 | NA | 7.7 B | NA | ND≥6.7 | NA |
| Silver | ND≥1.0 | NA | ND≥3.3 | NA | ND≥3.3 | NA | ND≥0.17 | NA | ND≥0.17 | NA |
| Zinc | 9.8 | NA | 6.9 | NA | 6.0 B | NA | 12.6 | NA | ND≥5.0 | NA |
| Classical Chemistry | | | | | | | | | | |
| Total Cyanide | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA |
| pH | 7.83 | NA | 7.58 | NA | 7.71 | NA | 8.0 | NA | 7.69 | NA |
| Oil & Grease | 12 ppm | NA | ND≥5.0 ppm | NA | ND≥5.0 ppm | NA | ND≥5.0 ppm | NA | ND≥5.0 ppm | NA |
| TDS | 341 ppm | NA | 387 ppm | NA | 408 ppm | NA | 439 ppm | NA | 387 ppm | NA |
| Turbidity | 4.0 NTU | NA | 19 NTU | NA | 10 NTU | NA | 16 NTU | NA | 4.0 NTU | NA |

See notes at end of table.

**TABLE 3-8**
**TREATED WASTEWATER DATA SUMMARY**
**ASH LANDFILL**
**SENECA ARMY DEPOT ACTIVITY**
**Romulus, New York**
(Page 5 of 6)

| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | C-12-18 | Trip Blank (4-27-95) | C-12-19 | Trip Blank (5-5-95) | C-DD-1 | Trip Blank (5-09-95) | C-DD1-2 | Trip Blank (5-11-95) | C-DD1-3 |
| Volatiles | | | | | | | | | |
| Trichloroethene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | 1.6 | ND≥0.20 | 1.3 | ND≥0.20 | ND≥0.20 |
| 1,2-Dichloroethene (total) | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | 2.0 | ND≥0.20 | 1.1 | ND≥0.20 | ND≥0.20 |
| Vinyl Chloride | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 | ND≥1.0 |
| Chloroform | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| 1,1-Dichloroethene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| 1,1-Dichloroethane | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| 1,1,1-Trichloroethane | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | 0.31 | ND≥0.20 | ND ≥ 0.20 | ND≥0.20 | ND≥0.20 |
| Tetrachloroethene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 |
| Benzene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | 0.25 | ND≥0.20 | 1.1* | ND≥0.20 | ND≥0.20 |
| Toluene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | 0.26 | ND≥0.20 | 0.30 | ND≥0.20 | 0.23 |
| Ethyl benzene | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | 0.28 |
| Total Xylenes | 0.73 | ND≥0.20 | 6.0* | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | ND≥0.20 | 0.85 |
| Semivolatiles | | | | | | | | | |
| Napthalene | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA | ND≥10 |
| Phenol | ND≥8 | NA | ND≥8 | NA | ND≥8 | NA | ND≥8 | NA | ND≥8 |
| Diethyl phthalate | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA | ND≥10 |
| Di-n-butylphthalate | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA | ND≥10 |
| Metals | | | | | | | | | |
| Aluminum | 82.6 | NA | 223 | NA | 300 | NA | 152 B | NA | 745 |
| Antimony | ND≥10 | NA | 14 B* | NA | ND≥10 | NA | ND≥6.0 | NA | ND≥2.0 |
| Arsenic | 1.3 B | NA | ND≥1.3 | NA | ND≥1.3 | NA | ND≥4.0 | NA | 1.3 B |
| Cadmium | ND≥1.7 | NA | ND≥1.7 | NA | ND≥3.3 | NA | ND≥5.0 | NA | ND≥1.7 |
| Chromium | ND≥3.3 | NA | ND≥3.3 | NA | ND≥3.3 | NA | ND≥10 | NA | ND≥3.3 |
| Copper | 4.8 B | NA | 4.3 B | NA | 3.7 | NA | ND≥10 | NA | ND≥3.3 |
| Iron | 56.7 | NA | 223 | NA | 220 | NA | 103 | NA | 536 |
| Lead | ND≥0.67 | NA | 1.0 | NA | 0.67 | NA | ND≥2.0 | NA | 2.0 |
| Mercury | ND≥0.20 | NA | ND≥0.20 | NA | ND≥0.40 | NA | ND≥0.20 | NA | ND≥0.20 |
| Nickel | ND≥6.7 | NA | ND≥6.7 | NA | 6.7 | NA | ND≥20 | NA | ND≥6.7 |
| Silver | ND≥0.17 | NA | ND≥3.3 | NA | ND≥3.3 | NA | ND≥0.50 | NA | ND≥3.3 |
| Zinc | 5.4 B | NA | 13.7 | NA | 8.3 | NA | ND≥15 | NA | 10 |
| Classical Chemistry | | | | | | | | | |
| Total Cyanide | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA | ND≥10 | NA | ND≥10 |
| pH | 7.63 | NA | 7.85 | NA | 7.84 | NA | 7.79 | NA | 8.04 |
| Oil & Grease | ND≥5.0 ppm | NA | ND≥5.0 ppm | NA | ND≥5.0 ppm | NA | ND≥5.0 ppm | NA | ND≥5.0 ppm |
| TDS | 396 ppm | NA | 415 ppm | NA | 388 ppm | NA | 433 ppm | NA | 394 ppm |
| Turbidity | 3.5 NTU | NA | 14 NTU | NA | 16 NTU | NA | 3.6 NTU | NA | 19 NTU |

See notes at end of table.

**TABLE 3-8**
**TREATED WASTEWATER DATA SUMMARY**
**ASH LANDFILL**
**SENECA ARMY DEPOT ACTIVITY**
**Romulus, New York**


Notes:

***(Bold)** - Indicates constituent concentration exceeds the treated wastewater discharge permit level.
B - Inorganic parameters. Indicates estimated concentration, detected above the Method Detection Limit (MDL) but below the Practical Quantitation Limit (PQL).
Organic parameters. Indicates constituent concentration detected in the associated method blank.
C - Indicates sample collected from "clean"/treated water frac tanks.
FB - Open field blank
J - Estimated concentration. Indicates the constituent concentration is detected above the MDL but below the PQL.
NA - Not analyzed.
ND - Indicates not detected at or above the stated practical quantitation limit.
NTU - Nephelometric Turbidity Unit
ppb - Parts per billion
ppm - Parts per million
TDS - Total Dissolved Solids

# TABLE 3-9
# POTW AND MONITORING WELL WATER DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York

| Site Specific Compounds | Sample Identification and Constituent Concentration (ppb) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | SEDA-POTW-1 (ppm) | SEDA-POTW-2 (ppm) | MW34-1 | MW34-2 | MW34-3 | MW34-4 | MW34-5 | MW34-6 |
| Metals | | | | | | | | |
| Aluminum | 1.3 | 0.1 | NA | NA | NA | NA | NA | NA |
| Cobalt | ND ≥0.005 | NA | NA | NA | NA | NA | NA | NA |
| Copper | 0.2 | 0.02 | NA | NA | NA | NA | NA | NA |
| Iron | 1.7 | 0.2 | 1750 | 710 | 11800 | 22400 | 9300 | 6480 |
| Nickel | ND ≥0.005 | ND ≥0.005 | NA | NA | NA | NA | NA | NA |
| Silver | 0.09 | ND ≥0.001 | NA | NA | NA | NA | NA | NA |
| Vanadium | ND ≥0.0025 | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 0.2 | 0.04 | NA | NA | NA | NA | NA | NA |
| Arsenic | ND ≥0.012 | ND ≥0.012 | NA | NA | NA | NA | NA | NA |
| Chromium | 0.003 | ND ≥0.0025 | NA | NA | NA | NA | NA | NA |
| Lead | 0.02 | ND ≥0.0005 | NA | NA | NA | NA | NA | NA |
| Cadmium | 0.002 | 0.001 | NA | NA | NA | NA | NA | NA |
| Antimony | 0.002 | ND ≥0.0025 | NA | NA | NA | NA | NA | NA |
| Mercury | 0.0002 | ND ≥0.0001 | NA | NA | NA | NA | NA | NA |
| Classical Chemistry | | | | | | | | |
| TDS | NA | NA | 405 ppm | 447 ppm | 468 ppm | 422 ppm | 416 ppm | 373 ppm |
| Turbidity | NA | NA | 37 NTU | 75 NTU | 174 NTU | 200 NTU | 105 NTU | 64 NTU |

Notes:
ppb - parts per billion
ppm - parts per million
MW - monitoring well
NA - Not analyzed
ND - Indicates compound not detected at or above the stated practical quantitation limit.
NTU - Nephelometric Turbidity Unit
POTW - Publically Owned Treatment Works.

# TABLE 3-10
# DEBRIS ANALYTICAL DATA SUMMARY
# ASH LANDFILL
# SENECA ARMY DEPOT ACTIVITY
## Romulus, New York



| Sample Identification | Analytical Constituents | Constituent Concentration (ppm) |
|---|---|---|
| Debris-1 | Total Volatiles | |
| | Acetone | ND≥0.50 |
| | Benzene | ND≥0.25 |
| | Carbon Disulfide | ND≥0.25 |
| | Carbon Tetrachloride | ND≥0.25 |
| | Chlorobenzene | ND≥0.25 |
| | Chloroform | ND≥0.25 |
| | 1,4-Dichlorobenzene | ND≥0.25 |
| | 1,2-Dichloroethane | ND≥0.25 |
| | 1,1-Dichloroethene | ND≥0.25 |
| | Ethyl acetate | ND≥1.0 |
| | Ethylbenzene | ND≥0.25 |
| | Ethyl ether | ND≥0.25 |
| | Methylene chloride | ND≥0.25 |
| | Methyl ethyl ketone | ND≥0.50 |
| | Methyl isobutyl ketone | ND≥0.50 |
| | Tetrachloroethene | ND≥0.25 |
| | 1,1,1-Trichloroethane | ND≥0.25 |
| | 1,1,2-Trichloroethane | ND≥0.25 |
| | Trichloroethene | **11 D** |
| | Trichorofluoromethane | ND≥0.25 |
| | 1,1,2-Trichloro-1,2,2-Trifluoromethane | ND≥0.25 |
| | Toluene | **0.69** |
| | Total Xylenes | **0.055 J** |
| | Vinyl Chloride | ND≥0.50 |
| | N-Butanol | ND≥0.86 |
| | Isobutanol | ND≥0.86 |
| | Methanol | ND≥0.86 |
| | Total Semivolatiles | |
| | m - Cresol | ND≥0.33 |
| | p - Cresol | ND≥0.33 |
| | o - Cresol | ND≥0.33 |
| | Total Cresol | ND≥0.33 |
| | Cyclohexanone | ND≥0.25 |
| | 2,4-Dinitrotoluene | ND≥0.33 |
| | Hexachlorobenzene | ND≥0.33 |
| | Hexachloro-1,3-butadiene | ND≥0.33 |
| | Hexachloroethane | ND≥0.33 |
| | Nitrobenzene | ND≥0.33 |
| | Pentachlorophenol | ND≥1.6 |
| | Pyridine | ND≥0.33 |
| | 2,4,5-Trichlorophenol | ND≥0.33 |
| | 2,4,6-Trichlorophenol | ND≥0.33 |

See notes at end of table

**TABLE 3-10**
**DEBRIS ANALYTICAL DATA SUMMARY**
**ASH LANDFILL**
**SENECA ARMY DEPOT ACTIVITY**
**Romulus, New York**
(Page 2 of 3)

| Sample Identification | Analytical Constituents | Constituent Concentration (ppm) |
|---|---|---|
| Debris-1 | TCLP Pesticides | |
| | Heptachlor | ND≥0.0020 |
| | Heptachlor Epoxide | ND≥0.0020 |
| | Chlordane | ND≥0.01 |
| | Endrin | ND≥0.0020 |
| | Lindane | ND≥0.0020 |
| | Methoxychlor | ND≥0.01 |
| | Toxaphene | ND≥0.020 |
| | TCLP Herbicides | |
| | 2,4-D | ND≥0.0020 |
| | 2,4,5-TP | ND≥0.0020 |
| | PCBs | |
| | Aroclor 1016 | ND≥0.040 |
| | Aroclor 1221 | ND≥0.080 |
| | Aroclor 1232 | ND≥0.040 |
| | Aroclor 1242 | ND≥0.040 |
| | Aroclor 1248 | ND≥0.040 |
| | Aroclor 1254 | ND≥0.040 |
| | Aroclor 1260 | ND≥0.040 |
| | Total Metals | |
| | Antimony | ND≥0.47 |
| | Arsenic | 1.4 |
| | Barium | **30.4** |
| | Beryllium | **0.24** |
| | Cadmium | ND≥0.24 |
| | Chromium | **9.7** |
| | Copper | **11.6** |
| | Lead | **20.8** |
| | Mercury | ND≥0.09 |
| | Nickel | **10.4** |
| | Selenium | ND≥0.14 |
| | Silver | ND≥0.47 |
| | Thallium | ND≥0.19 |
| | Vanadium | **7.4** |
| | Zinc | **10200** |

See notes at end of table

**TABLE 3-10**
**DEBRIS ANALYTICAL DATA SUMMARY**
**ASH LANDFILL**
**SENECA ARMY DEPOT ACTIVITY**
**Romulus, New York**


| Sample Identification | Analytical Constituents | Constituent Concentration (ppm) |
|---|---|---|
| Debris-1 | Classical Chemistry | |
| | Flashpoint | >200°F |
| | Amenable Cyanide | ND≥10 |
| | Reactive Cyanide | ND≥10 |
| | Sulfide | ND≥2.0 |
| | Reactive Sulfide | ND≥10 |
| | Percent Solids | 89.5% |
| | Percent Water (Moisture) | 14.1% |
| | Percent Ash | 9.5% |
| | Total Phenols | 0.64 |
| | Total Organic Halides | 4.8 |
| | Total Organic Nitrogen | 18.3 |
| | Total Organic Carbon | 2120 |
| | BTU/lb | 11200 BTU/lb |
| Debris-2 | TCLP Trichloroethene | ND≥0.008 |

Notes:
BTU - British Thermal Units
D - Result based on a laboratory dilution.
J - Indicates an estimated value. Concentration above the method detection limit but below the practical quantitation limit (PQL).
ND - not deteeted at the stated PQL.
ppb - parts per billion
ppm - parts per million
TCLP - Toxicity Characteristic Leaching Procedure

TABLE 3-11
Seneca Army Depot Activity, Romulus, New York
U.S. Army Corps of Engineers, Omaha District
Maximum, Minimum and Average Values for $PM_{10}$ and Lead Monitoring

| | $PM_{10}$ | | | Lead | | |
|---|---|---|---|---|---|---|
| Station | Maximum | Minimum | Average | Maximum | Minimum | Average |
| 1 | 147.3 | 0.04 | 17.9 | 0.022 | 0.019 | 0.021 |
| 2 | 299.5 | 2.95 | 26.2 | 0.027 | 0.014 | 0.020 |
| 3 | 78.3 | 1.92 | 16.8 | 0.026 | 0.015 | 0.020 |

TABLE 3-12
Seneca Army Depot Activity, Romulus, New York
U.S. Army Corps of Engineers, Omaha District
Maximum, Minimum and Average Values for Direct-Read Monitoring

| | Particulate Matter ($ug/m^3$) | | | VOC (ppm) | | |
|---|---|---|---|---|---|---|
| Station | Maximum | Minimum | Average | Maximum | Minimum | Average |
| 1 | 23000 | 0.0 | 37.9 | 3.1 | 0.0 | 0.9 |
| 2 | 1600 | 0.0 | 21.2 | 2.7 | 0.0 | 0.9 |
| 3 | 1400 | 0.0 | 26.0 | 2.8 | 0.0 | 0.9 |

TABLE 3-13
SUMMARY OF QA/QC FOR VOLITILES (8240) ANALYSES
ASH LANDFILL INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK


| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD[a] | Accuracy % Recovery |
| | QC Limits[b] 59-138 | | QC Limits[b] 21-24 | QC Limits[b] 59-139 |
| PT-B1-1 | 96-102 | PT-B1-9 MS/MSD | 10-20 | 54*-90 |
| PT-B1-2 | 95-110 | | | |
| PT-B1-3 | 93-106 | | | |
| PT-B1-4 | 95-106 | | | |
| PT-B1-5 | 93-107 | | | |
| PT-B1-6 | 96-109 | | | |
| PT-B1-7 | 98-110 | | | |
| PT-B1-8 | 98-108 | | | |
| PT-B1-9 | 98-102 | | | |
| T-B1-1 | 89-108 | | | |
| T-B1-2 | 79-121 | | | |
| T-B1-3 | 80-122 | | | |
| T-B1-4 | 92-109 | | | |
| T-B1-5 | 74-115 | | | |
| T-B1-6 | 77-127 | | | |
| T-B1-7 | 87-110 | | | |
| T-B1-8 | 94-109 | | | |
| T-B1-8 DUP | 88-107 | | | |
| T-B1-9 | 88-108 | | | |

See notes at end of table.

TABLE 3-13
SUMMARY OF QA/QC FOR VOLITILES (8240) ANALYSES
ASH LANDFILL INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK


| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD[a] | Accuracy % Recovery |
| | QC Limits[a] 59-138 | | QC Limits[a] 21-24 | QC Limits[a] 59-139 |
| T-B3-2 | 90-135 | T-B4-6 MS/MSD | 2-44* | 64-125 |
| T-B3-3 | 72-118 | | | |
| T-B3-4 | 71-119 | | | |
| T-B3-5 | 76-115 | | | |
| T-B3-6 | 83-105 | | | |
| T-B3-7 | 87-138 | | | |
| T-B3-8 | 68-109 | | | |
| T-B3-9 | 70-142 | | | |
| T-B4-1 | 75-122 | | | |
| T-B4-2 | 66-109 | | | |
| T-B4-3 | 76-104 | | | |
| T-B4-4 | 85-121 | | | |
| T-B4-5 | 66-152* | | | |
| T-B4-5 DUP | 64-162* | | | |
| T-B4-6 | 90-105 | | | |

See notes at end of table.

TABLE 3-13
SUMMARY OF QA/QC FOR VOLITILES (8240) ANALYSES
ASH LANDFILL INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK


| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD[4] | Accuracy % Recovery |
| | QC Limits[3] 59-138 | | QC Limits[3] 21-24 | QC Limits[3] 59-139 |
| C-SB-129R | 75-102 | T-B2-14 MS/MSD | 0-16 | 59*-104 |
| T-B2-10 | 82-110 | | | |
| T-B2-11 | 74-117 | | | |
| T-B2-12 | 77-105 | | | |
| T-B2-12 DUP | 89-109 | | | |
| T-B2-13 | 73-113 | | | |
| T-B2-14 | 75-118 | | | |
| T-B2-15 (TREAT SOIL) | 92-109 | | | |
| T-B2-16 (TREAT SOIL) | 74-111 | | | |
| T-B2-17 | 71-102 | | | |
| T-B2-18 | 76-114 | | | |
| T-B2-19 | 73-104 | | | |
| T-B2-20 | 78-101 | | | |
| T-B2-9 | 83-109 | | | |
| T-B3-1 | 72-106 | | | |

See notes at end of table.

TABLE 3-13
SUMMARY OF QA/QC FOR VOLITILES (8240) ANALYSES
ASH LANDFILL INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK


| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD[a] | Accuracy % Recovery |
| | QC Limits[b] 59-138 | | QC Limits[b] 21-24 | QC Limits[b] 59-139 |
| T-A1-1 | 76-123 | T-B4-17 MS/MSD | 2-3 | 94-107 |
| T-A1-1 DUP | 80-113 | | | |
| T-B4-10 | 49*-144* | | | |
| T-B4-11 | 77-119 | | | |
| T-B4-12 | 57-138 | | | |
| T-B4-13 | 80-110 | | | |
| T-B4-14 | 86-104 | | | |
| T-B4-15 | 82-106 | | | |
| T-B4-16 | 89-104 | | | |
| T-B4-17 | 85-105 | T-B4-9 MS/MSD | 0-2 | 100-110 |
| T-B4-18 | 80-113 | | | |
| T-B4-7 | 79-112 | | | |
| T-B4-8 | 72-117 | | | |
| T-B4-9 | 59-128 | | | |
| T-A1-10 | 80-111 | MATRIX SPIKE BLANK/MSBL DUP | 2 | 92-99 |
| T-A1-9 | 93-104 | | | |

See notes at end of table.

TABLE 3-13
SUMMARY OF QA/QC FOR VOLITILES (8240) ANALYSES
ASH LANDFILL INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK


| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD[a] | Accuracy % Recovery |
| | QC Limits[b] 59-138 | | QC Limits[b] 21-24 | QC Limits[b] 59-139 |
| T-A1-11 | 71-115 | T-A1-12 MS/MSD | 7-10 | 79-138 |
| T-A1-12 | 73-122 | | | |
| T-A1-12 DUP | 72-121 | | | |
| T-A1-13 | 67-122 | | | |
| T-A1-14 | 72-119 | | | |
| T-A1-15 | 81-112 | | | |
| T-A1-16 | 84-108 | | | |
| T-A1-17 | 64-128 | | | |
| T-A1-18 | 84-111 | | | |
| T-A1-19 | 86-112 | | | |
| T-A1-20 | 65-131 | | | |
| T-A1-2 | 80-112 | T-A1-8 MS/MSD | 3-13 | 93-109 |
| T-A1-3 | 81-107 | | | |
| T-A1-4 | 81-104 | | | |
| T-A1-5 | 76-115 | | | |
| T-A1-6 | 59-138 | | | |
| T-A1-7 | 80-111 | | | |
| T-A1-8 | 87-108 | | | |

See notes at end of table.

TABLE 3-13
SUMMARY OF QA/QC FOR VOLITILES (8240) ANALYSES
ASH LANDFILL INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK


| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD[a] | Accuracy % Recovery |
| | QC Limits[a] 59-138 | | QC Limits[a] 21-24 | QC Limits[a] 59-139 |
| PT-B1-10 | 100-107 | T-B1-10 MS/MSD | 13 | 63-109 |
| T-B1-10 | 82-115 | | | |
| T-B1-11 | 80-111 | | | |
| T-B2-1 | 87-109 | | | |
| T-B2-2 | 73-119 | | | |
| T-B2-3 | 83-110 | | | |
| T-B2-4 | 86-110 | | | |
| T-B2-5 | 79-115 | | | |
| T-B2-6 | 81-112 | | | |
| T-B2-7 | 74-116 | | | |
| T-B2-8 | 80-107 | | | |
| T-A1-26 | 66-127 | T-A1-28 MS/MSD | 2-4 | 85-115 |
| T-A1-26 DUP | 72-120 | | | |
| T-A1-27 | 81-107 | | | |
| T-A1-21 | 68-121 | | | |
| T-A1-22 | 74-116 | | | |
| T-A1-23 | 72-118 | | | |
| T-A1-24 | 74-117 | | | |
| T-A1-25 | 88-108 | | | |
| T-A1-28 | 73-118 | | | |
| T-A1-29 | 74-109 | | | |
| T-A1-30 | 76-116 | | | |
| PT-A2-VC | 94-111 | | | |
| PT-A2-VC2 | 95-116 | | | |

See notes at end of table.

TABLE 3-13
SUMMARY OF QA/QC FOR VOLITILES (8240) ANALYSES
ASH LANDFILL INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK


| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD* | Accuracy % Recovery |
| | QC Limits¹ 59-138 | | QC Limits¹ 21-24 | QC Limits¹ 59-139 |
| T-A1-31 | 67-128 | T-A1-37 MS/MSD | 0-11 | 78-104 |
| T-A1-32 | 65-130 | | | |
| T-A1-33 | 60-126 | | | |
| T-A1-34 | 79-106 | | | |
| T-A1-35 | 71-119 | | | |
| T-A1-36 | 80-111 | | | |
| T-A1-37 | 81-104 | | | |
| T-A1-38 | 58-124 | T-A1-38 MS/MSD | 9-12 | 86-154* |
| T-A1-39 | 63-133 | | | |
| T-A1-40 | 69-119 | | | |
| T-A1-40 DUP | 63-130 | | | |
| T-A1-41 | 69-125 | | | |
| T-A1-42 | 83-112 | | | |
| T-A1-43 | 83-107 | | | |

See notes at end of table.

TABLE 3-13
SUMMARY OF QA/QC FOR VOLITILES (8240) ANALYSES
ASH LANDFILL INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK


| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD[a] | Accuracy % Recovery |
| | QC Limits[b] 59-138 | | QC Limits[b] 21-24 | QC Limits[b] 59-139 |
| T-A1-44 | 87-111 | MATRIX SPIKE BLANK/MSB DUP | 2 | 89-96 |
| T-A1-45 | 86-107 | | | |
| T-A1-46 | 58-126 | | | |
| T-A1-47 | 84-108 | | | |
| T-A1-48 | 88-105 | | | |
| T-A1-49 | 86-114 | | | |
| T-A1-50 | 91-114 | | | |
| T-A1-51 | 60-150* | | | |
| T-A1-52 | 66-136 | | | |
| DEBRIS-1 | 97-105 | MSB/MSB DUP | 0-4 | 92-112 |

See notes at end of table.

TABLE 3-13
SUMMARY OF QA/QC FOR VOLITILES (8240) ANALYSES
ASH LANDFILL INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK


| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD* | Accuracy % Recovery |
| | QC Limits[1] 59-138 | | QC Limits[1] 21-24 | QC Limits[1] 59-139 |
| T-A1-53 | 70-122 | T-A1-53 MS/MSD | 18-19 | 61*-104 |
| T-A1-53 DUP | 73-121 | | | |
| T-A1-54 | 62-125 | | | |
| T-A1-55 | 76-118 | | | |
| T-A1-56 | 53*-152* | | | |
| T-A1-57 | 66-122 | | | |
| T-A1-58 | 43*-173* | | | |
| T-A1-59 | 48*-149* | | | |
| T-A1-60 | 63-126 | | | |
| T-A1-61 | 64-115 | | | |

RPD* Indicates relative percent difference.
QC limits from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," U.S. EPA SW-846, 3rd Revised Edition, November 1986
* Indicates value outside QC limits.

See notes at end of table.

# TABLE 3-14
# SUMMARY OF QA/QC FOR SEMIVOLITILES (8270) ANALYSES
# ASH LANDFILL INVESTIGATION
# SENECA ARMY DEPOT
# ROMULUS, NEW YORK
# (Page 1 of 6)

| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD[a] | Accuracy % Recovery |
| | QC Limits[a] 18-137 | | QC Limits[a] 19-50 | QC Limits[a] 11-142 |
| PT-B1-1 | 37-49 | T-B1-7 MS/MSD | 2-28 | 9*-63 |
| T-B1-1 | 559-69 | | | |
| PT-B1-2 | 47-67 | | | |
| T-B1-2 | 34-52 | | | |
| PT-B1-3 | 45-60 | | | |
| T-B1-3 | 48-68 | | | |
| PT-B1-4 | 46-51 | | | |
| T-B1-4 | 46-55 | | | |
| PT-B1-5 | 31-39 | | | |
| PT-B1-6 | 45-56 | | | |
| T-B1-5 | 36-47 | | | |
| T-B1-6 | 40-55 | | | |
| PT-B1-7 | 48-53 | | | |
| T-B1-7 | 50-57 | | | |
| PT-B1-8 | 39-46 | | | |
| T-B1-8 | 47-59 | | | |
| T-B1-8 DUP | 48-59 | | | |
| PT-B1-9 | 90-110 | | | |
| PT-B1-10 | 81-107 | | | |
| T-B1-9 | 90-112 | | | |

See notes at end of table.

# TABLE 3-14
# SUMMARY OF QA/QC FOR SEMIVOLITILES (8270) ANALYSES
# ASH LANDFILL INVESTIGATION
# SENECA ARMY DEPOT
# ROMULUS, NEW YORK
# (Page 2 of 6)

| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD[a] | Accuracy % Recovery |
| | QC Limits[b] 18-137 | | QC Limits[b] 19-50 | QC Limits[b] 11-142 |
| T-B1-10 | 85-92 | T-B2-14 MS/MSD | 9-30 | 57-97* |
| T-B1-11 | 62-71 | | | |
| T-B2-1 | 56-66 | | | |
| T-B2-2 | 65-78 | | | |
| T-B2-3 | 68-76 | | | |
| T-B2-4 | 75-86 | | | |
| T-B2-5 | 45-54 | | | |
| T-B2-6 | 36-57 | | | |
| T-B2-7 | 41-62 | | | |
| T-B2-8 | 40-48 | | | |
| T-B2-9 | 43-52 | | | |
| T-B2-10 | 38-45 | | | |
| T-B2-11 | 35-40 | | | |
| T-B2-12 | 61-89 | | | |
| T-B2-13 | 74-101 | | | |
| T-B2-14 | 83-117* | | | |
| T-B2-12 DUP | 101-133 | | | |
| C-SB-129R | 79-97 | | | |
| T-B2-15 | 83-110 | | | |
| T-B2-16 | 83-110 | | | |

See notes at end of table.

# TABLE 3-14
# SUMMARY OF QA/QC FOR SEMIVOLITILES (8270) ANALYSES
# ASH LANDFILL INVESTIGATION
# SENECA ARMY DEPOT
# ROMULUS, NEW YORK
# (Page 3 of 6)

| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD[a] | Accuracy % Recovery |
| | QC Limits[b] 18-137 | | QC Limits[b] 19-50 | QC Limits[b] 11-142 |
| T-B2-17 | 86-103 | T-B4-9 MS/MSD | 8-66* | 22-86 |
| T-B2-18 | 83-103 | | | |
| T-B2-19 | 63-95 | | | |
| T-B2-20 | 76-100 | | | |
| T-B3-1 | 59-86 | | | |
| T-B3-2 | 63-90 | | | |
| T-B3-3 | 63-94 | | | |
| T-B3-4 | 39-65 | | | |
| T-B3-7 | 59-72 | | | |
| T-B3-8 | 47-63 | | | |
| T-B3-9 | 61-75 | | | |
| T-B4-1 | 77-98 | | | |
| T-B4-2 | 61-81 | | | |
| T-B4-3 | 79-104 | | | |
| T-B4-4 | 86-111 | | | |
| T-B4-5 | 76-99 | | | |
| T-B4-5 DUP | 70-95 | | | |
| T-B4-6 | 76-98 | | | |
| T-B4-7 | 57-79 | | | |
| T-B4-8 | 84-120* | | | |
| T-B3-5 | 72-106 | | | |
| T-B3-6 | 40-82 | | | |
| T-B4-9 | 55-86 | | | |
| T-B4-10 | 40-75 | | | |

See notes at end of table.

# TABLE 3-14
# SUMMARY OF QA/QC FOR SEMIVOLITILES (8270) ANALYSES
# ASH LANDFILL INVESTIGATION
# SENECA ARMY DEPOT
# ROMULUS, NEW YORK
# (Page 4 of 6)

| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD* | Accuracy % Recovery |
| | QC Limits¹ 18-137 | | QC Limits¹ 19-50 | QC Limits¹ 11-142 |
| T-B4-11 | 77-93 | T-B4-17 MS/MSD | 6-16 | 64-100* |
| T-B4-13 | 78-87 | | | |
| T-B4-14 | 87-94 | | | |
| T-B4-15 | 99-105 | | | |
| T-B4-16 | 94-102 | | | |
| T-B4-17 | 78-88 | | | |
| T-B4-18 | 79-88 | | | |
| T-A1-1 | 72-85 | | | |
| T-A1-1 DUP | 86-98 | | | |
| T-A1-2 | 55-65 | | | |
| T-A1-3 | 58-68 | | | |
| T-A1-4 | 81-90 | | | |
| T-A1-5 | 68-77 | | | |
| T-A1-6 | 98-119 | | | |
| T-A1-7 | 85-92 | | | |
| T-A1-8 | 89-105 | | | |
| T-A1-9 | 65-83 | | | |
| T-A1-10 | 84-99 | | | |

See notes at end of table.

# TABLE 3-14
# SUMMARY OF QA/QC FOR SEMIVOLITILES (8270) ANALYSES
# ASH LANDFILL INVESTIGATION
# SENECA ARMY DEPOT
# ROMULUS, NEW YORK
# (Page 5 of 6)

| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD[a] | Accuracy % Recovery |
| | QC Limits[b] 18-137 | | QC Limits[b] 19-50 | QC Limits[b] 11-142 |
| T-A1-11 | 51-91 | T-A1-12 MS/MSD | 0-15 | 52-110* |
| T-A1-12 | 85-110 | | | |
| T-A1-12 DUP | 48-73 | | | |
| T-A1-13 | 63-90 | | | |
| T-A1-14 | 81-114 | | | |
| T-A1-15 | 76-105 | | | |
| T-A1-16 | 88-98 | | | |
| T-A1-17 | 91-105 | | | |
| T-A1-18 | 106-115* | | | |
| T-A1-19 | 97-117 | | | |
| T-A1-20 | 87-93 | | | |
| T-A1-21 | 92-111 | | | |
| T-A1-22 | 88-99 | | | |
| T-A1-23 | 59-68 | | | |
| T-A1-24 | 80-90 | | | |
| T-A1-25 | 77-95 | | | |

See notes at end of table.

# TABLE 3-14
# SUMMARY OF QA/QC FOR SEMIVOLITILES (8270) ANALYSES
# ASH LANDFILL INVESTIGATION
# SENECA ARMY DEPOT
# ROMULUS, NEW YORK
# (Page 6 of 6)

| Sample I.D. | Surrogate % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD[a] | Accuracy % Recovery |
| | QC Limits[b] 18-137 | | QC Limits[b] 19-50 | QC Limits[b] 11-142 |
| T-A1-26 | 81-103 | T-A1-38 MS/MSD | 9-110* | 7*-94* |
| T-A1-26 DUP | 64-84 | | | |
| T-A1-27 | 80-98 | | | |
| T-A1-28 | 99-127* | | | |
| T-A1-29 | 81-118* | | | |
| T-A1-30 | 77-108 | | | |
| T-A1-31 | 78-104 | | | |
| T-A1-32 | 79-113 | | | |
| T-A1-33 | 65-95 | | | |
| C-SB-105R | 91-109 | | | |
| T-A1-34 | 76-103 | | | |
| T-A1-35 | 79-108 | | | |
| T-A1-36 | 75-101 | | | |
| T-A1-37 | 66-81 | | | |
| T-A1-38 | 29-79 | | | |
| T-A1-39 | 76-93 | | | |
| T-A1-40 | 52-67 | | | |
| T-A1-40 DUP | 81-95 | | | |
| T-A1-41 | 70-84 | | | |
| T-A1-42 | 48-54 | | | |
| T-A1-43 | 62-71 | | | |

[a] "RPD" indicates relative percent difference.
[b] QC limits from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," U.S. EPA SW-846, 3rd Revised Edition, November 1986.
* Indicates value outside QC limits.

See notes at end of table.

TABLE 3-15
SUMMARY OF QA/QC FOR INORGANICS (METALS) ANALYSES
ASH LANDFILL INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK
(Page 1 of 2)

| Sample I.D. | Control Sample % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD[a] | Accuracy % Recovery |
| | QC Limits[b] 80-120 | | QC Limits[b] 0-20 | QC Limits[b] 80-120 |
| T-A1-M2 | 93-111 | T-A1-M6 S | NR[c] | 12*-103 |
| T-A1-M3 | | | | |
| T-A1-M4 | | | | |
| T-A1-M5 | | | | |
| T-A1-M6 | | | | |
| T-A1-M7 | 98-114 | NA[d] | NA | NA |
| T-A1-M8 | | | | |
| T-A1-M9 | 86-112 | T-A1-M12 S | NR | 88-106 |
| T-A1-M10 | | | | |
| T-A1-M11 | | | | |
| T-A1-M12 | | | | |
| T-A1-M13 | 82-103 | T-A1-M16 S/D | 1-200* | 83-104 |
| T-A1-M14 | | | | |
| T-A1-M15 | | | | |
| T-A1-M16 | | | | |
| T-A1-M17 | | | | |
| T-A1-M18 | | | | |
| T-A1-M19 | 87-114 | T-A1-M21 S | NR | 90-106 |
| T-A1-M20 | | | | |
| T-A1-M21 | | | | |
| T-A1-M22 | 92-116 | T-A1-M22 S/D | NR | 15*-103 |
| T-A1-M23 | | | | |
| T-A1-M23 DUP | | | | |
| T-A1-M24 | | | | |
| T-A1-M25 | 80-119 | BLKSPK1 | NR | 78*-108 |
| T-A1-M26 | | BLKSPK2 | | |
| T-A1-M27 | | | | |

See notes at end of table.

TABLE 3-15
SUMMARY OF QA/QC FOR INORGANICS (METALS) ANALYSES
ASH LANDFILL INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK
(Page 2 of 2)

| Sample I.D. | Control Sample % Recovery | Corresponding Batch QA/QC Sample I.D. | Matrix Spike/Duplicate | |
|---|---|---|---|---|
| | | | Precision % RPD[a] | Accuracy % Recovery |
| | QC Limits[b] 80-120 | | QC Limits[b] 0-20 | QC Limits[b] 80-120 |
| T-A1-M28 | 97-110 | A1-M28 S | NR[c] | 0*-100 |
| T-A1-M28 DUP | | | | |
| T-A1-M29 | | | | |
| T-A1-M30 | | | | |
| T-B1-M1 | 84-95 | NA[d] | NA | NA |
| T-B1-M2 | 88-115 | T-B2-M3 S | NR | 40*-98 |
| T-B2-M1 | | | | |
| T-B2-M2 | | | | |
| T-B2-M3 | | | | |
| T-B2-M4 | 88-116 | BLKSPK 1/2 | NR | 91-104 |
| T-B2-M5 | | | | |
| T-B2-M6 | | | | |
| T-B2-M7 | | | | |
| T-B3-M8 | | | | |
| T-B3-M9 | 89-104 | T-B3-M9 S/D | 0-3 | 90-109 |
| T-B3-M10 | | | | |
| T-B3-M11 | | | | |
| T-B3-M12 | | | | |
| T-B3-M13 | | | | |
| T-B4-M14 | 90-116 | T-B4-M17 S | NR | 60*-150 |
| T-B4-M15 | | | | |
| T-B4-M16 | | | | |
| T-B4-M17 | | | | |
| T-B4-M18 | | | | |
| T-A1-M1 | | | | |

[a] "RPD" indicates relative percent difference.
[b] QC limits from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," U.S. EPA SW-846, 3rd Revised Edition, November 1986
[c] "NR" indicates not reported by the laboratory.
[d] "NA" indicates not analyzed.
* Indicates value outside QC limits.

| DRAWN BY | DJB | CHECKED BY | | 8/16/95 | DRAWING NUMBER |
|---|---|---|---|---|---|
| | 8/1/95 | APPROVED BY | | 8/24/95 | 519200-A1 |

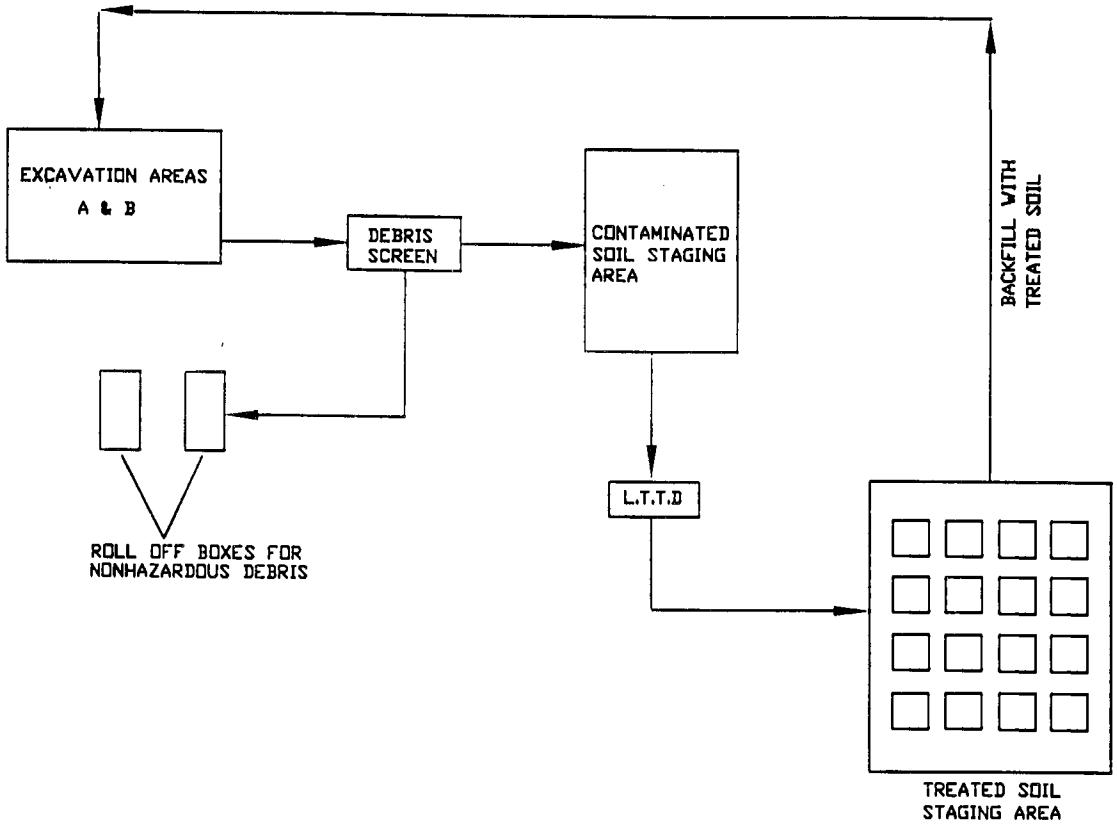


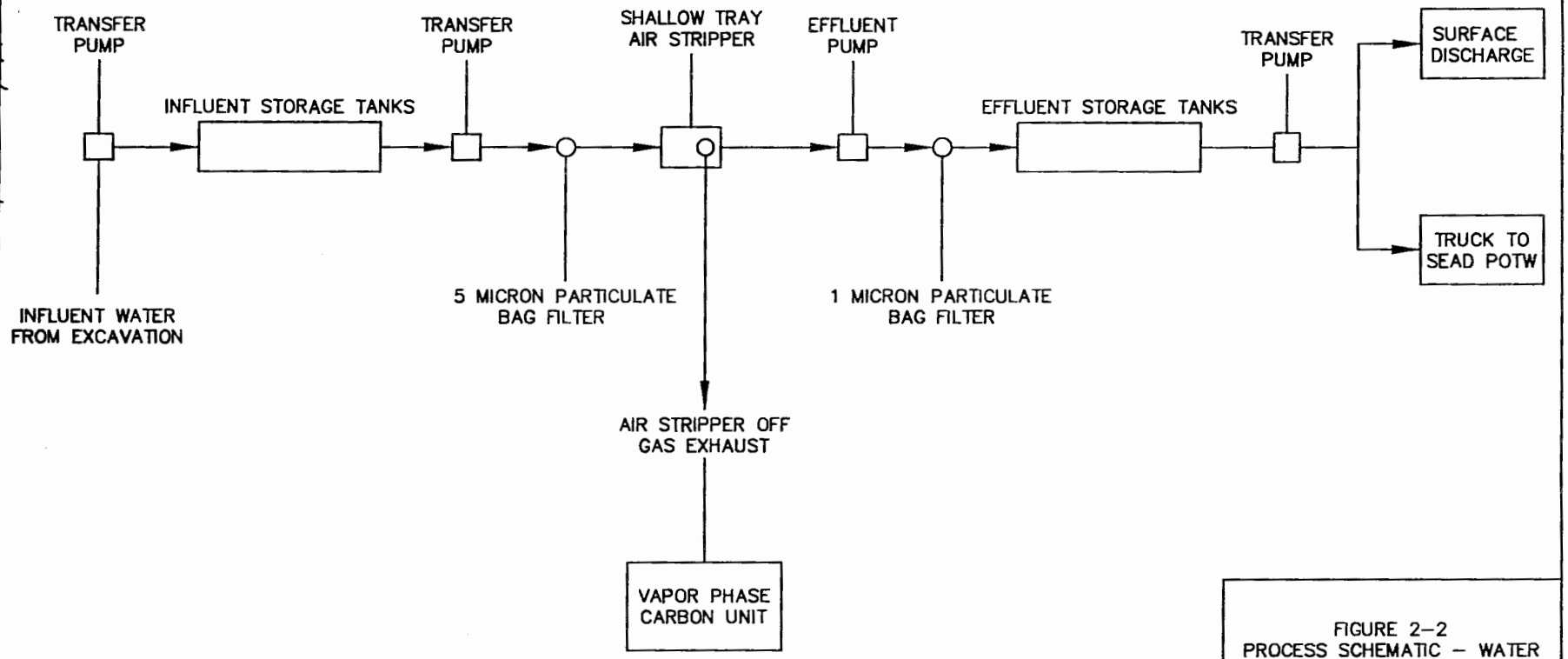

FIGURE 2-1
PROCESS SCHEMATIC – SOIL

PREPARED FOR

SENECA ARMY DEPOT
ROMULUS, NEW YORK

INTERNATIONAL TECHNOLOGY CORPORATION

132298




DRAWN BY: EGW 8/1/95
CHECKED BY: 8/9/95
APPROVED BY: 8/9/95
DRAWING NUMBER: 519200-A3

FIGURE 2-2
PROCESS SCHEMATIC – WATER
PREPARED FOR
SENECA ARMY DEPOT
ROMULUS, NEW YORK

INTERNATIONAL TECHNOLOGY CORPORATION

132298

| DRAWN BY | CHECKED BY | DRAWING NUMBER |
|---|---|---|
| EGW 8/1/95 | APPROVED BY | 519200-A2 |

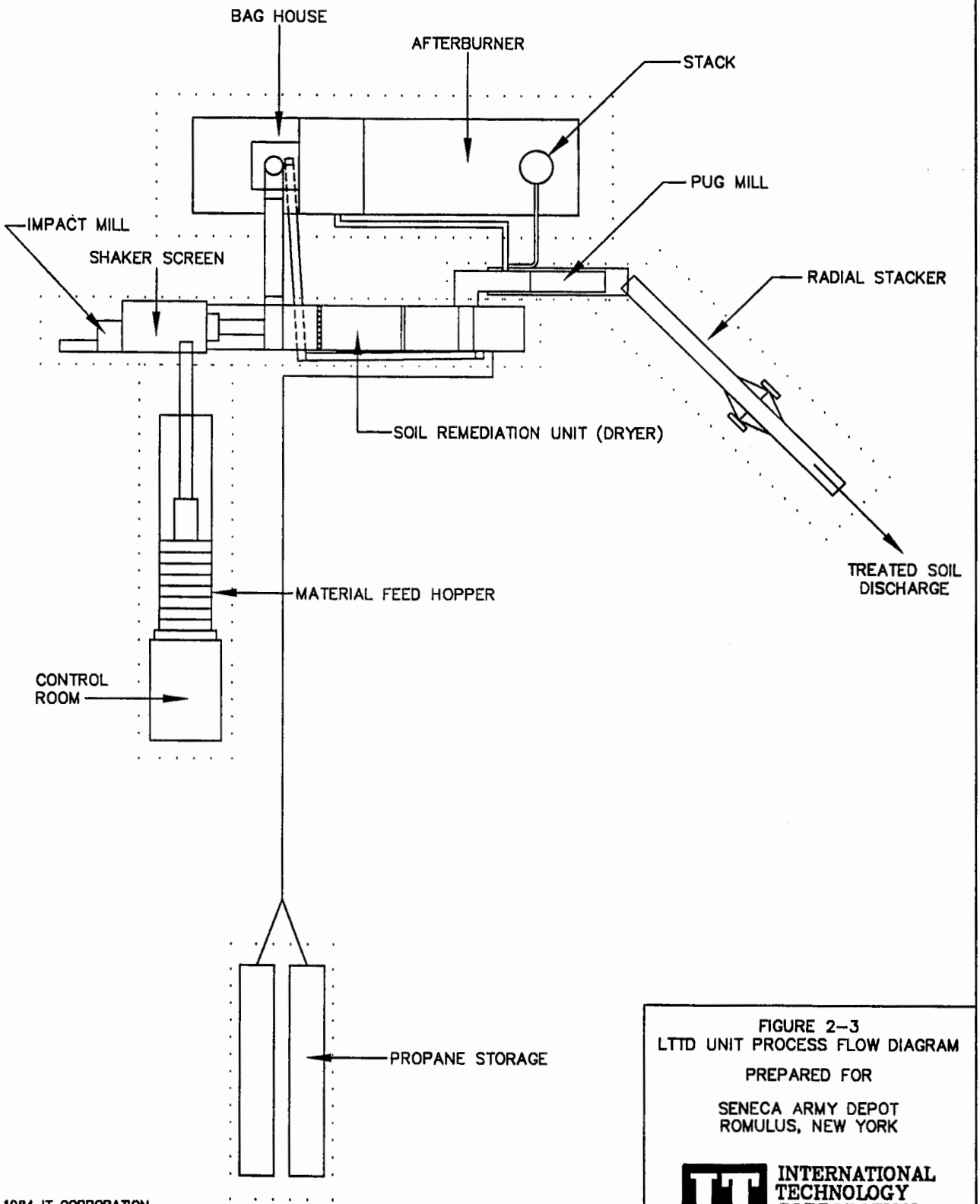



FIGURE 2-3
LTTD UNIT PROCESS FLOW DIAGRAM

PREPARED FOR

SENECA army DEPOT
ROMULUS, NEW YORK

INTERNATIONAL TECHNOLOGY CORPORATION

132298

| | | |
|---|---|---|
| DRAWING NUMBER | 519200-B1 | |
| CHECKED BY | JBC | 8/6/95 |
| APPROVED BY | JMC | 8/6/95 |
| EGW | 8/1/95 | |
| DRAWN BY | | |

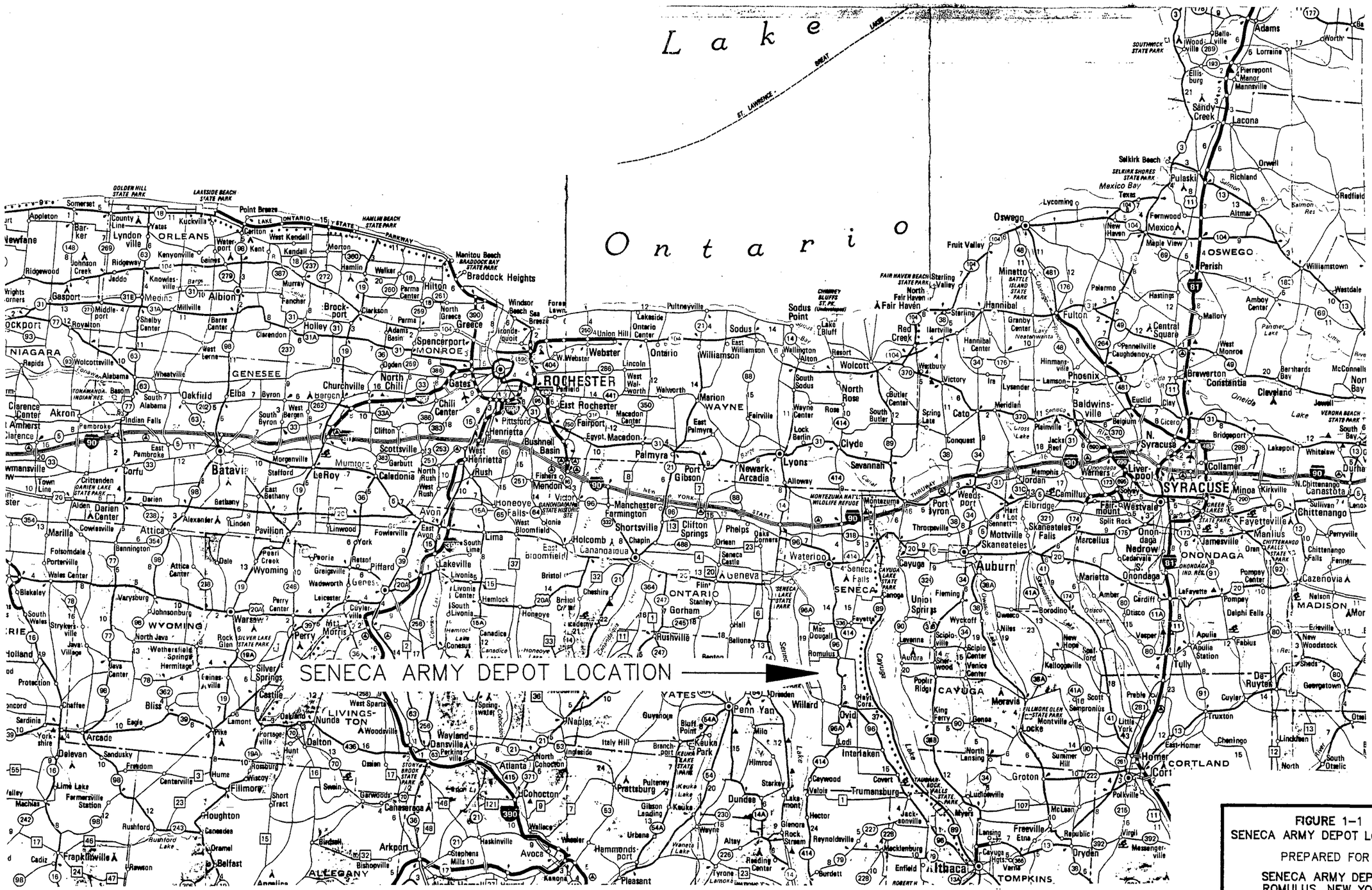



FIGURE 1-1
SENECA ARMY DEPOT LOCATION

PREPARED FOR

SENECA ARMY DEPOT
ROMULUS, NEW YORK

INTERNATIONAL TECHNOLOGY CORPORATION

132298

| DRAWN BY | EGW | CHECKED BY | JDK | DRAWING NUMBER | 519200-B2 |
|---|---|---|---|---|---|
| | 7/31/95 | APPROVED BY | PWC | | |

ASH LANDFILL LOCATION

REFERENCES:
U.S.G.S. 7.5 MINUTE TOPOGRAPHIC MAP
DRESDEN QUADRANGLE
GENEVA SOUTH QUADRANGLE
OVID QUADRANGLE
ROMULUS QUADRANGLE



"DO NOT SCALE THIS DRAWING"

SCALE
0 2000 4000 FEET

NEW YORK

QUADRANGLE LOCATIONS

FIGURE 1-2
SENECA ARMY DEPOT
ASH LANDFILL LOCATION

PREPARED FOR

SENECA ARMY DEPOT
ROMULUS, NEW YORK

INTERNATIONAL TECHNOLOGY CORPORATION

132298

| | | |
|---|---|---|
| DRAWN BY | EGW | 7/28/95 |
| CHECKED BY | | |
| APPROVED BY | | |
| DRAWING NUMBER | 519200-B3 | |

ASH LANDFILL

AREA A

AREA B

SB102 0FT-4FT
DIBENZO(A,H)ANTHRACENE 380
BENZO(A)PYRENE 22,000
INDENO(1,2,3-CD)PYRENE 8,600
CHRYSENE 26,000

N 995158.21
E 420363.05

SB119 0FT-2FT
BENZO(A)PYRENE 2,800
INDENO(1,2,3-CD)PYRENE 3,500
CHRYSENE 1,600
BENZO(A)ANTHRACENE 2,200

SB119 4FT-6FT
BENZO(A)PYRENE 160
BENZO(A)ANTHRACENE 340

N 995102.30
E 420352.88

N 994917.56
E 420324.00

N 994898.21
E 420332.13

N 994952.46
E 420307.23

N 994882.25
E 420318.68

N 995268.24
E 420275.63

N 994986.50
E 420259.46

SB129 0FT-2FT
BENZO(A)PYRENE 1,800
CHRYSENE 1,800
BENZOANTHRACENE 1,600

SB129 6FT-7FT
1,2-DICHLOROETHENE 310

SB105 0FT-2FT
INDENO(1,2,3-CD)PYRENE 3,700
BENZO(A)PYRENE 6,900
CHRYSENE 3,900
BENZO(A)ANTHRACENE 4,600

N 995013.61
E 420206.24

N 995243.07
E 420174.01

N 994855.99
E 420175.48

N 994994.74
E 420128.90

N 994860.98
E 420144.62

N 995190.73
E 420089.65

N 994883.19
E 420130.02

N 994956.09
E 420114.69

SB108 7FT-9FT
1,2-DICHLOROETHENE 550

N 995003.71
E 420075.93

N 995037.25
E 420050.02

SB-101 SB-102 SB-103 SB-104 SB-105 SB-106 SB-107 SB-108 SB-109 SB-110 SB-111 SB-112 SB-113 SB-114 SB-115 SB-116 SB-117 SB-118 SB-119 SB-120 SB-121 SB-122 SB-123 SB-124 SB-125 SB-126 SB-127 SB-128 SB-129 SB-130 SB-131

N 995000

E 420000

SCALE
0 50 100 FEET

NOTES:

1. SB-102, SB-105, SB-108, AND SB-129 OVEREXCAVATED BY APPROXIMATELY THREE FEET, DUE TO ELEVATED PAH CONCENTRATIONS, AS REQUESTED BY NYSDEC. CONFIRMATORY SIDEWALL SAMPLES WERE TAKEN FROM EACH SOIL BORING LOCATION EXCEPT SB-102. REFER TO MEMORANDUM SUBJECT "OVEREXCAVATION OF AREA "A" SOIL BORINGS SB-102 AND SB-105" FOUND IN APPENDIX N PROJECT CORRESPONDENCE.

2. FIGURE BASED ON ENGINEERING-SCIENCE, INC. FIGURE 3, "AREA OF CONCERN REMEDIATION PLAN," JUNE 1994.

LEGEND

| | |
|---|---|
| SB-101 CHRYSENE 500 | SOIL BORING WITH CLEAN-UP LEVEL EXCEEDANCES (PPB) |
| | WATER MAIN |
| | ASH LANDFILL |
| | EXCAVATION BOUNDARY |
| | FORMER REFUSE PITS |
| | WETLAND |

SCALE: 1" = 50'

FIGURE 1-3
AREAS OF CONCERN AT ASH LANDFILL

PREPARED FOR

SENECA ARMY DEPOT
ROMULUS, NEW YORK

INTERNATIONAL TECHNOLOGY CORPORATION

132298

| | | |
|---|---|---|
| DRAWING NUMBER | 519200-B4 | |
| DRAWN BY | EGW | 7/31/95 |
| CHECKED BY | CDL | 8/7/95 |
| APPROVED BY | [illegible] | 8/7/95 |

FRAC TANKS

AIR MONITORING STATION #1

WATER TREATMENT PLANT

MET STATION

FRAC TANKS

MODUTANK STORAGE CONTAINER

E 420000

DECON PAD

AREA A

CONTAMINATED SOIL STAGING AREA

AIR MONITORING STATION #3

N 995000

CONEX STORAGE

AREA B

WEST PATROL ROAD

PROPANE TANKS

LTTD UNIT

BAG HOUSE

POST-TREATMENT SOIL STAGING AREA

POST-TREATMENT SOIL STAGING AREA

EXCLUSION ZONE FENCE

OFFICE TRAILER

DECON TRAILERS

FUEL STATION

PIT AREA

AIR MONITORING STATION #2

SCALE

0 75 150 FEET

BREAK TRAILER

ABANDONED INCINERATOR BUILDING

PARKING AREA

SMOKE SHACK

OFFICE TRAILERS

CONEX STORAGE

DUMPSTER

WEST SMITH FARM ROAD

FIGURE 1-4
SITE PLAN

PREPARED FOR

SENECA ARMY DEPOT
ROMULUS, NEW YORK

INTERNATIONAL TECHNOLOGY CORPORATION

132298