

BROOKHAVEN NATIONAL LABORATORY
ANIMAL/CHEMICAL PITS AND GLASS HOLES
REMEDIAL ACTION CLOSURE REPORT
OPERABLE UNIT I

DRAFT
VERSION No. 1

OCTOBER 1997

<i>Prepared For:</i>	Brookhaven National Laboratory Office of Environmental Restoration
<i>Prepared By:</i>	P.W. Grosser Consulting Engineer & Hydrogeologist, P.C. Enviro/Consultants Group, Ltd.

EXECUTIVE SUMMARY

As part of the overall Operable Unit I activities at Brookhaven National Laboratory (BNL), remediation of the Chemical Holes was conducted during the summer of 1997. The project was performed as a removal action under the BNL Interagency Agreement among The United States Department of Energy (DOE), the United States Environmental Protection Agency (USEPA) and the New York State Department of Environmental Conservation (NYSDEC). The Chemical Holes Project consists of the remediation of a total of 55 waste pits in two distinct areas known as the Glass Holes area and the Animal/Chemical Pits area. Based upon historical records, the waste pits contained in these areas are believed to have been used for the disposal of chemical wastes. Evidence of groundwater contamination down gradient from these areas and a test excavation conducted in the Glass Holes area in 1994 that exhumed laboratory glassware containing liquids, supported the need for remedial action.

The overall objectives of the remedial action were to eliminate potential sources of soil and groundwater contamination by excavating buried waste, debris and associated soils from the known waste pits, and restore the site as closely as possible to original conditions.

Based upon the findings of previous studies conducted in the area, work plans and health and safety plans for the project were prepared and compiled by BNL in May of 1997. Site excavation activities were completed by September of 1997.

In general, the locations of the waste pits were accurately identified by the previous studies, however the pits were found to be an average of 3.5 feet wider and 6.25 feet deeper than anticipated. While the actual volume of waste debris was an average of 30 cubic yards per pit less than anticipated, the average volume of contaminated soil was an average of 143 cubic yards more per pit than anticipated. The most significant impact on the project was the increase in contaminated soil volume which totaled more than 8,600 cubic yards, nearly 7,000 more than anticipated. The major factors

that contributed to the additional soil were the discovery of four additional pits, the larger pit sizes and the additional contaminated soil that required removal in order to meet the project clean up objectives.

Remedial actions taken at the Chemical Holes have satisfied the overall project objective of eliminating potential sources of contamination by excavating buried waste, debris and associated contaminated soils from the waste pits. The waste, debris and contaminated soil contained in the 55 waste pits were completely removed, remediating the pits to within the established project clean-up goals. Additionally, the procedures and protocols established for the safe excavation and handling of waste materials were found to be effective as demonstrated by the safe and timely completion of the excavation and processing phases of the project.

Final disposal of the resulting wastes will begin in October 1997. Completion of the waste disposal phase is contingent upon the availability of acceptable treatment/disposal facilities to accommodate the waste materials as well as available funding. Site restoration activities will be completed following off site disposal of wastes. Prior to off site disposal, the waste, including stockpiled soil, will be temporarily stored on site in accordance with appropriate federal, state and local regulations. Groundwater monitoring activities will continue as part of the overall Operable Unit I activities.

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LIST OF ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygiene
AGS	Alternating Gradient Synchrotron
AIDS	Acquired Immune Deficiency Syndrome
AL	Action Level
AOC	Area of Concern
ARARs	Applicable or Relevant and Appropriate Requirements
BNL	Brookhaven National Laboratory
CDM	Camp, Dresser, McKee Federal Programs Corporation
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CPR	Cardiopulmonary Resuscitation
CRZ	Contamination Reduction Zone
DCA	1,1-Dichloroethane
DEET	n,n-Diethyltoluamide
DOE	Department of Energy
DOT	Department of Transportation
D&M	Dames and Moore
ECAO	Environmental Criteria and Assessment Office
E/CGI	Enviro/Consultants Group, Ltd.
ECP	Environmental Compliance Group (BNL S&EP)
EMT	Emergency Medical Technician
EPQA	EP Quality Assurance (BNL S&EP)
ERM	Environmental Resources Management - Northeast
ES&H	Environmental Safety & Health
EZ	Exclusion Zone
HBV	Hepatitis B Virus
HWMF	Hazardous Waste Management Facility
HWMS	Hazardous Waste Management Section (BNL S&EP)
IDLH	Immediately Dangerous to Life and Health
IHG	Industrial Hygiene Group (BNL S&EP)
IL	Intrim Landfill
IRIS	Integrated Risk Information System
ISG	Industrial Safety Group (BNL S&EP)
mg/l	milligrams per liter
mg/kg	milligrams per kilogram
NIOSH	National Institute of Occupational Safety and Health
NPL	National Priority List
NRR	Noise Reduction Rating
NYCRR	New York Code of Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health

O&M	Operation and Maintenance
OER	BNL Office of Environmental Restoration
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
OVA	Organic Vapor Analysis
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl's
PCE	Tetrachloroethylene
pCi/g	pico curies per gram
pCi/l	pico curies per liter
P.E.	BNL Plant Engineering
PID	Photo ionization Detector
ppb	Parts per billion (ug/kg r ug/l)
PPE	Personal Protective Equipment
ppm	Parts per million (mg/kg or mg/l)
PWGC	P.W. Grosser Consulting Engineer and Hydrogeologist, P.C.
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurancy Project Plan
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RME	Reasonable Maximum Exposure
ROD	Record of Decision
RWP	Radiation Work Permit
S&EP	Safety and Environmental Protection Division (BNL)
SAP	Sampling and Analysis Plan
SCDHS	Suffolk County Department of Health Services
SOP	Standard Operation Procedures
SWMU	Solid Waste Management Unit
TCA	1,1,1-Trichloroethane
TCE	Trichloroethene
TLV	Threshold Limit Value
TPHC	Total Petroleum Hydrocarbons
TWA	Time Weighted Average
U.S. EPA	United States Environmental Protection Agency
ug/l	micrograms per liter
VOC	Volatile Organic Compound

1.0 INTRODUCTION

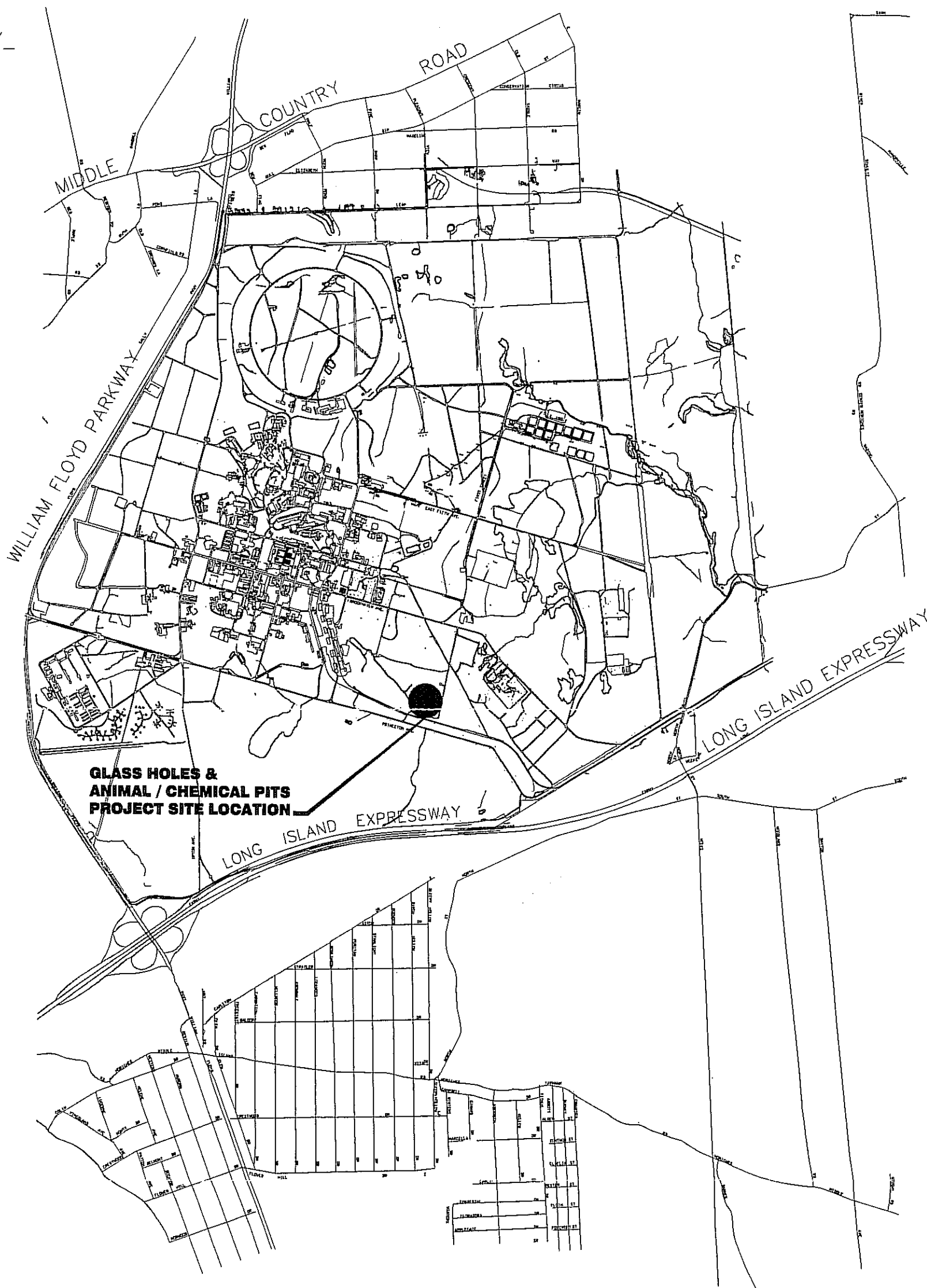
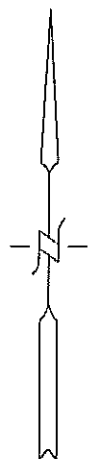
The Chemical Holes Remedial Action Closure Report has been prepared by P.W. Grosser Consulting Engineer & Hydrogeologist, P.C. (PWGC) and Enviro/Consultants Group, Ltd. (E/CGL) for the Brookhaven National Laboratory (BNL) Office of Environmental Restoration (OER). The report documents the remedial action, findings and partial site restoration activities associated with the Chemical Holes Project conducted between May and September 1997. The report does not include documentation relating to final waste characterization and disposal as those activities are currently on going. Documentation of these efforts will be prepared and submitted under separate cover.

The closure report addresses each of the 55 waste pits individually with a summary table of findings pertaining to waste excavation and waste processing. These summary tables are contained in the body of the report. Analytical data from waste processing and endpoint soil sampling has been reduced, summarized and tabulated and is appended to this report. Complete data sets were not available for all pits at the time the Draft report was prepared. Complete data packages will be included with the Final report.

This report is also supplemented with two additional volumes. Volume 2 contains the analytical data reports for the endpoint soil samples. As of the preparation of this report, final, validated analytical reports were not available. Therefore, Volume 2 is not included with this Draft report. These reports will be included with the Final report. Volume 3 contains the field engineer's daily reports as well as processing information.

1.1 Site Description and History

The Chemical Holes Project consists of two distinct areas known as the Glass Holes area and the Animal/Chemical Pits (A/C Pits) area. These areas are referred to collectively as the Chemical Holes and are located in a secluded, wooded zone in the south central portion of BNL (see Figure No. 1 and Appendix D Photo #1). This portion of the BNL site is part of Operable Unit I which has historically been used for waste disposal and also includes the Former Landfill, Interim Landfill and



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**BROOKHAVEN NATIONAL LABORATORY
GENERAL SITE PLAN & PROJECT LOCATION**
for the
**ANIMAL/CHEMICAL PITS & GLASS HOLES
REMEDIAL ACTION CLOSURE REPORT**

Figure No:

1

Date: 9/18/07

Prepared By: PKB

Project No: BNL9705

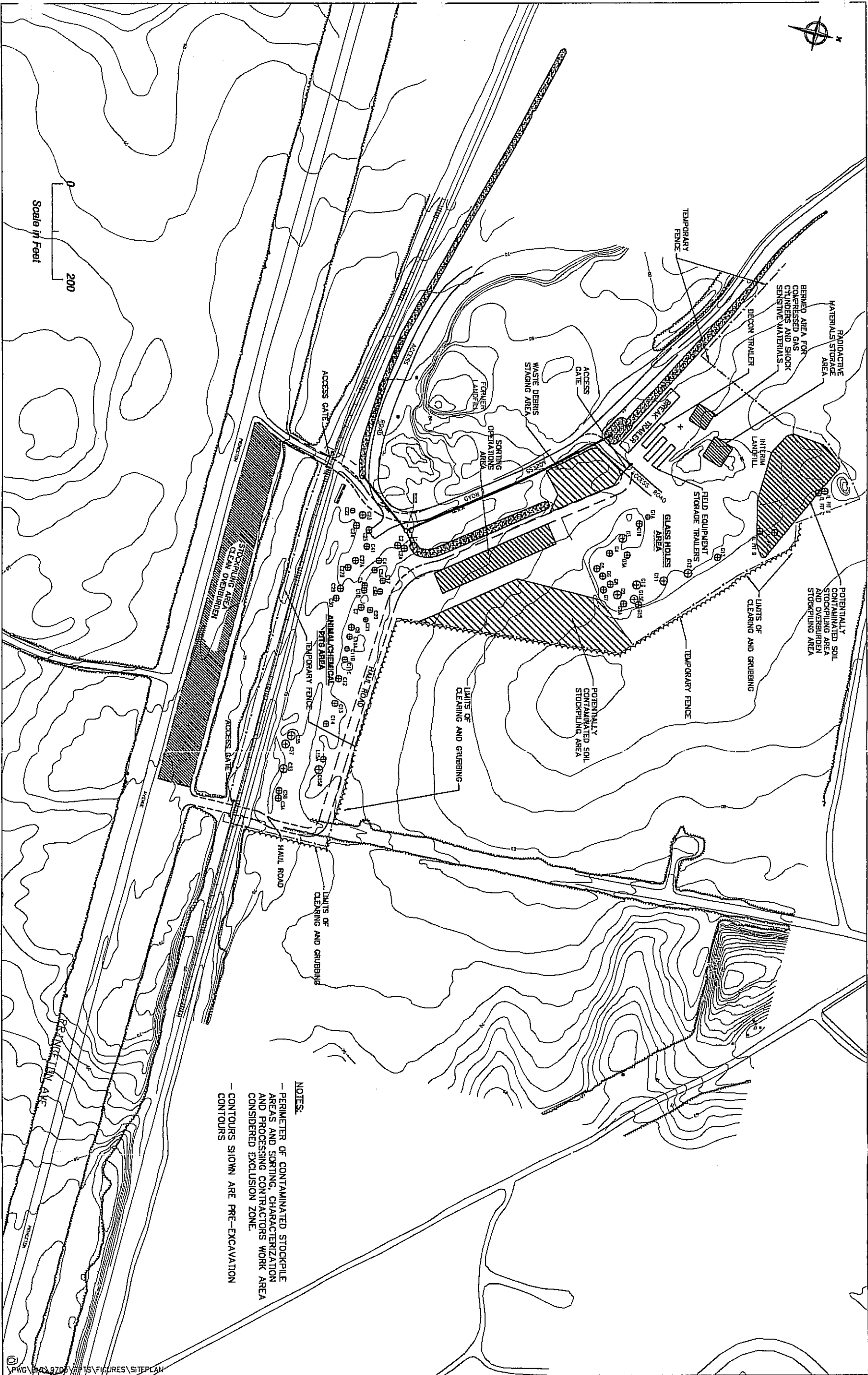
Slit Trench. Currently, the Former Landfill and Slit Trench are capped. The Interim Landfill cap construction is scheduled for completion in the fall of 1997.

The A/C Pits are contained in an area of approximately 3 acres (see Figure No. 2 and Appendix D Photos #4, #5 and #7). Anecdotal evidence suggests approximately 33 pits were dug using a clamshell and crane during the 1960s for the disposal of chemical wastes and animal carcasses. Maximum depths of waste debris in the pits was believed to be 15 feet. The bulk of the laboratory chemicals was believed to consist of acids and bases, although a variety of other chemicals may also have been disposed of in the pits. Pit disposal practices reportedly consisted of pit excavation, and then alternating backfill with wastes and soil cover until the pit was nearly full. The pits were then capped with a soil cover, and another pit excavated.

The Glass Holes are situated in an area of approximately 2 acres (see Figure No. 2 and Appendix D Photos #3, #6 and #8). Previous reports prepared for this area identified 18 pits in the Glass Holes area (CDM Federal Programs Corporation, 1992b). Previous reports also suggest that pits were excavated and used for waste disposal between 1966 and 1981 (SAIC, 1992), but aerial photographs indicate clearing activities as early as the late 50s (CDM Federal Programs Corporation, 1992b). The physical features of these pits and their use are assumed identical to those in the A/C Pits area. Additional isolated pits exist to the north of the Glass Holes area and are referred to as the Interim Landfill or "IL" pits. The types of wastes disposed of in the Glass Holes and IL pits were also assumed to be the same as those disposed of in the A/C Pits.

The history of the two areas was obtained from the *Supplemental Characterization Report for the Animal/Chemical Pits and Glass Holes Areas at Brookhaven National Laboratory* prepared by Argonne National Laboratory in April 1997.

The primary drivers for a remedial action at the Glass Holes area and A/C Pits are historical records that indicate that chemical wastes may have been disposed of in the pits, evidence of groundwater contamination down gradient from the pits (CDM Federal Programs Corporation, 1995a), and a test



NOTES:
- PERIMETER OF CONTAMINATED STOCKPILE AREAS AND SORTING, CHARACTERIZATION AND PROCESSING CONTRACTORS WORK AREA CONSIDERED EXCLUSION ZONE.
- CONTOURS SHOWN ARE PRE-EXCAVATION CONTOURS

© PWG 8706 11/97 TS FIGURES SITE PLAN

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**BROOKHAVEN NATIONAL LABORATORY
SITE PLAN
for the
ANIMAL/CHEMICAL PITS AND GLASS HOLES
REMEDIAL ACTION CLOSURE REPORT**

Figure No:	2
Date:	9/30/97
Prepared By:	PKS
Project No:	BNL8706

excavation in the Glass Holes area that exhumed laboratory glassware containing liquids. These liquids had been characterized (Science and Technology, 1994), but may not have been representative of liquids in other pits. The potential for groundwater contamination is of principle concern because the site overlays a sole source aquifer system that provides much of Suffolk County's water supplies.

Separate work plans and health and safety plans for the remediation and restoration of the A/C Pits and Glass Holes areas were prepared and compiled by BNL in May of 1997. The plans were used as technical guidance documents for project activities and are specifically referred to in section 2.1 of this document.

Remediation of both the A/C Pits and Glass Holes areas began in May of 1997. The objectives of the remedial effort were to remove the waste debris and associated contaminated materials from the areas of concern, characterize, process, sort and dispose of the excavated materials and restore the areas to original conditions and background levels. The corrective actions resulted in the successful remediation of the 51 known waste pits as well as 4 additional pits discovered during the remedial process. Site remediation activities were completed by September of 1997. Final disposition of the resulting wastes will begin in October 1997. Completion of the waste disposal phase is contingent upon the availability of acceptable treatment/disposal facilities to accommodate the waste materials as well as available funding. Site restoration activities will be completed following off site disposal of wastes. Prior to off site disposal, the waste, including stockpiled soil, will be temporarily stored on site in accordance with appropriate federal, state and local regulations. Groundwater monitoring activities will continue as part of the overall Operable Unit I activities.

1.2 Project Objectives

The overall objective of the remedial action was to eliminate potential sources of contamination by excavating buried waste debris and associated contaminated soils from the known waste pits and restore the site to as near as possible to natural conditions. Additional objectives included:

- ensuring worker health and safety

- waste minimization
- completing the project in a timely and efficient manner
- providing thorough documentation of effort for regulatory review and project closure

2.0 PROJECT TECHNICAL APPROACH AND ORGANIZATION

2.1 Supporting Documents

Detailed descriptions of planned work activities and health and safety procedures were prepared under the supervision of BNL OER in the spring of 1997 under two separate covers, *Chemical Holes Integrated Work Plan* and *Chemical Holes Project Health & Safety Plans*. The following documents comprised the plans and were used as guidance documents for project activities:

- *Chemical Holes Project Integrated Work Plan* - prepared by BNL OER, May 1997
- *Excavation Plan for the Glass Holes & Animal/Chemical Pits* - prepared by PWGC and E/CGL, May 1997
- *Work Plan for Sorting, Processing and Characterization for the Chemical Holes Project at Brookhaven National Laboratory* - prepared by Dames & Moore, May 1997
- *Chemical Holes Project Field Sampling Plan* - prepared by Dames & Moore, May 1997
- *Removal Action VI - AOC 2B and 2C Animal/Chemical Pits and Glass Holes Project Waste Management Plan* - prepared by BNL OER, May 1997
- *Health and Safety Plan for the Excavation of Wastes at the Chemical/Animal Pits and Glass Holes Excavation of Wastes* - prepared by ERM-NE, May 1997
- *Animal/Chemical and Glass Holes Project Safety, Health, and Emergency Response Plan* - prepared by Dames & Moore, May 1997
- *Addendum 1 Hazards Analysis and Procedures for Potentially Shock-Sensitive Containers and for Potentially Degraded Pressurized Gas Cylinders to Animal/Chemical and Glass Holes Project Safety, Health, and Emergency Response Plan* - prepared by Dames & Moore, May 1997

The documents listed below contain the historical information, results of prior investigations and evaluations of remedial alternatives upon which the project was based.

- *Brookhaven National Laboratory Chemical/Animal/Glass Holes Evaluation of Alternatives* - prepared by CDM Federal Programs Corporation, April 1997

- *Brookhaven National Laboratory Final Report, Engineering Evaluation/Cost Analysis for Landfill Closure Action, Operable Unit I, Volume 1* - prepared by CDM Federal Programs Corporation, March 29, 1995
- *Supplemental Characterization Report for the Animal/Chemical Pits and Glass Holes Areas at Brookhaven National Laboratory, Upton, New York, Final Report* - prepared by Environmental Assessment Division, Argonne National Laboratory, April 1997
- *Brookhaven National Laboratory Draft Integrated Geophysical Report for Chemical/Animal and Glass Hole Area (AOC 2B and 2C)* - prepared by Idaho National Engineering Laboratory - December 13, 1995
- *Ground Penetrating Radar Investigation at the Animal-Chemical Pit, Final Report* - prepared by J.J. Daniels, August 15, 1996
- *Removal Action VI - Glass Holes (Area of Concern 2C) Investigation of Derived Waste, Waste Characterization - Task Order No. 2, Draft Report* - prepared by Science and Technology, Inc., June 1996

During the course of the project, situations arose in the field that were not specifically addressed in the project plans. In order to document procedures for such situations, or deviations from the project plans, *Work Instructions* were prepared by the project management team. The *Work Instruction* provided a description of the situation and detailed instructions regarding procedures. The *Work Instructions* were kept in the field trailer in a bound notebook and serve as an attachment to the *Integrated Work Plan*. Copies of the *Work Instructions* are provided in Volume 3 of this report.

2.2 Project Organization and Responsibility

The BNL facility is owned by the United States Department of Energy (USDOE) who provided full time project regulatory oversight. The United States Environmental Protection Agency (USEPA), New York State Department of Environmental Conservation (NYSDEC) and the Suffolk County Department of Health Services (SCDHS) also provided oversight of the project including review of project plans and technical guidance. Additionally, the NYSDEC and SCDHS provided periodic field oversight to ensure compliance with state and local regulations and quality assurance checks

through the collection of split end point samples.

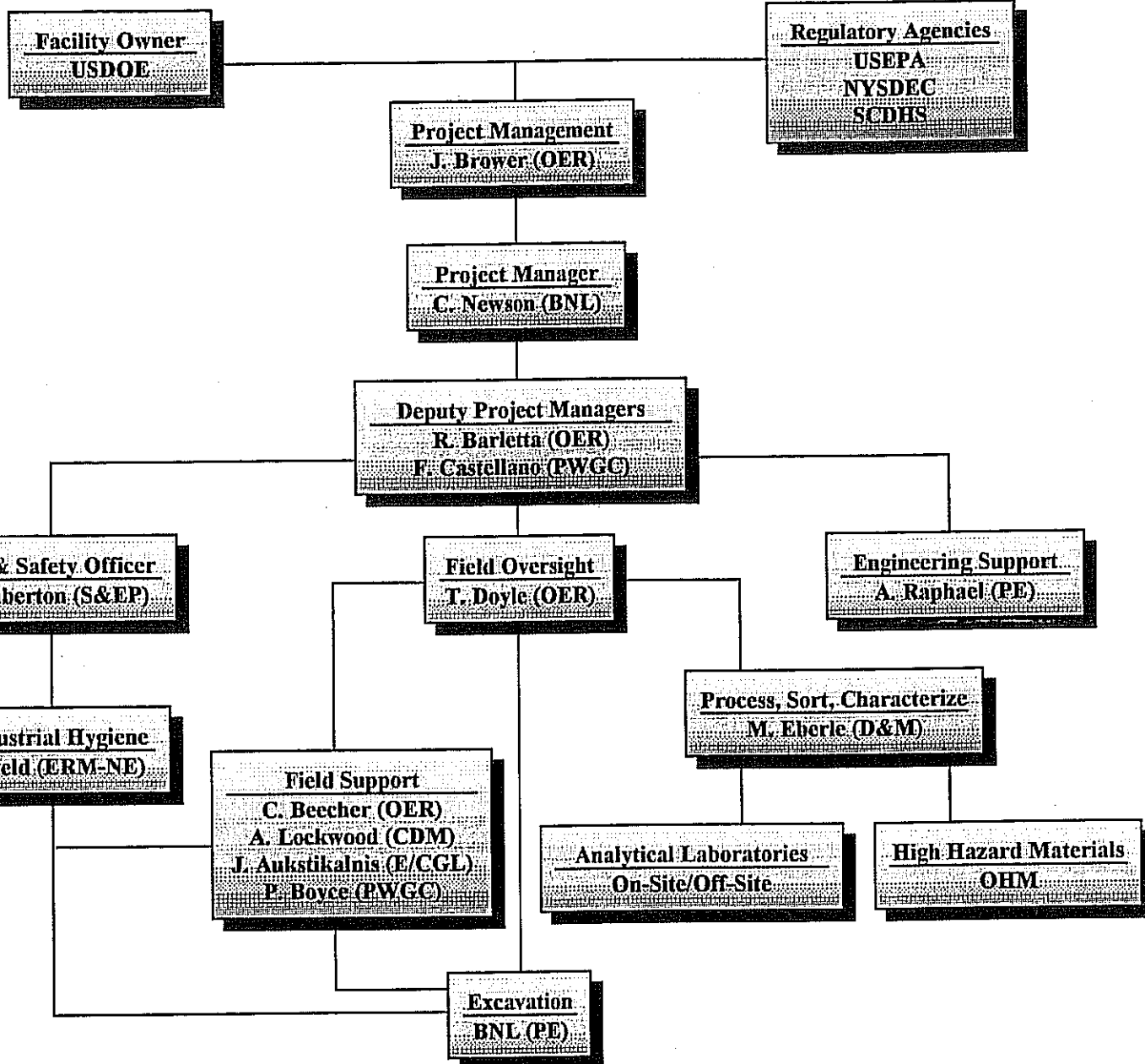
BNL's OER has provided overall project coordination and management of the Chemical Holes project including the previous investigations of the areas of concern, evaluation of the remedial alternatives and the preparation of the technical guidance documents to conduct the remedial action. OER also served as the primary liaison between BNL, USDOE, USEPA, NYSDEC and SCDHS. Utilizing the staff and resources of BNL as well as a number of BNL approved subconsultants and contractors, OER guided the remedial action to successful completion.

Field excavation of pits and site preparation and restoration was carried out by BNL staff from Plant Engineering and Grounds. The sorting, processing and characterization of excavated materials was performed by Dames & Moore under contract to BNL. High hazard and shock sensitive materials handling was performed by OHM Remediation Services Corp. under subcontract to Dames & Moore. Project health and safety responsibilities were undertaken by BNL Safety & Environmental Protection with field support provided by ERM-Northeast under subcontract to BNL. Field oversight was handled by OER personnel with support from several subcontractors including CDM Federal Programs Corporation, P.W. Grosser Consulting Engineer & Hydrogeologist, P.C. and Enviro/Consultants Group, Ltd. The project organizational structure is illustrated in Figure No. 3.

Disposal of recovered waste debris and associated potentially contaminated materials shall be conducted by a subcontractor (yet to be selected) once the materials are characterized.

2.3 Process Description

Based upon the *Evaluation of Alternatives* report (see section 2.1 for reference), the principal remedial action for the Chemical Holes was excavation of waste and associated potentially contaminated materials. Once potentially contaminated materials were excavated from a pit, they were processed, sorted, characterized and then stockpiled for final characterization and disposal. Soils at the bottom of the pit were then sampled and analyzed for compliance with the project clean up goals.



USDOE - United States Department of Energy
 USEPA - United States Environmental Protection Agency
 NYSDEC - New York State Department of Environmental Conservation
 SCDHS - Suffolk County Department of Health Services
 BNL - Brookhaven National Laboratory
 OER - Office of Environmental Restoration
 S&EP - Safety and Environmental Protection
 PE - Plant Engineering
 PWGC - P.W. Grosser Consulting Engineer & Hydrogeologist, P.C.
 E/CGL - Enviro/Consultants Group, Ltd.
 ERM-NE - ERM Northeast
 CDM - Camp Dresser & McKee
 D&M - Dames & Moore
 OHM - OHM Remedial Services Corp.

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BROOKHAVEN NATIONAL LABORATORY
ORGANIZATIONAL STRUCTURE

for the
CHEMICAL/ANIMAL PITS & GLASS HOLES
REMEDIAL ACTION CLOSURE REPORT

Figure No:

3

Date: 9/18/97

Prepared By: PKB

Project No: BNL 9705

The excavation process first involved removing topsoil and overburden materials from above the waste pits (see Appendix D Photo #5). These materials were stockpiled on site as potentially clean and sampled at a frequency of 1 per 500 cubic yards to determine if they were acceptable for use as backfill or required processing as potentially contaminated materials.

Once the overburden materials were removed, the waste pits were then excavated using a hydraulic excavator (see Appendix D Photos #3, #4 and #6). Excavated waste materials were screened at the pits with field instruments for radioactivity (beta and gamma emissions), volatile organic compounds (total) and mercury vapor. Shock sensitive materials, such as crystallized materials in containers, amber bottles with liquids and compressed gas cylinders detected at the pits were manually segregated by the Shock Sensitive Materials technician and transported to the on site bermed ("blast proof") area (see Figure No. 2 and Photo #2) where the materials were temporarily stored until they were properly characterized for ultimate disposal. Visible containers with liquids and specific items yielding elevated field instrument responses encountered at the pits were also removed from the waste stream at the waste pits. Waste materials not separated at the waste pits were placed in roll off containers or dump trucks and transported to the on site screening and sorting area (see Appendix D Photo #8) where they were staged prior to sorting.

With waste materials visually removed from the pits and no indications of contamination present (i.e. visibly stained soil, total VOC and mercury vapor headspace readings or rad responses), endpoint or confirmatory soil samples were collected from the bottom of the pit. Pending the results of the endpoint sample analyses, the individual pits were either considered remediated and backfilled with suitable stockpiled overburden materials or additional excavation of contaminated soil was performed and sampling process repeated. This process continued until the endpoint sampling results were within the soil clean up goals established for the project. Refer to section 2.4 for more detailed information regarding confirmatory sampling and project clean up goals.

Excavated waste materials were processed at the sorting area (see Appendix D Photo #8). From the waste pits, waste material was transported to the sorting area and dumped into a process feed

stockpile. Larger objects such as miscellaneous metals were removed from the feed stockpile and placed directly into waste debris roll offs. Remaining stockpiled waste materials were then mechanically sorted into 2" diameter or smaller material and greater than 2" diameter material using a mechanical shaker and screen. Materials were taken from the feed stockpile and placed into a hopper from which they were conveyed via belt to a mechanical shaker and screen. The waste material was additionally monitored (for radioactivity, total VOCs and mercury vapor) and hand sorted (for potentially shock sensitive materials, containers with liquids, etc.) on the conveyor belt prior to reaching the mechanical shaker and screen. Once the materials reached the mechanical shaker and screen, the 2" diameter or smaller materials passed through the screen and into 20 cubic yard roll off containers or dump trucks. Materials greater than 2" in diameter passed over the screen and into a separate 20 cubic yard roll off container.

The 2" diameter or smaller materials consisted primarily of soil, small stones, broken glass and other various sharps including syringes, blood vials and hypodermic plungers. Samples of soil from the waste pits were collected from the conveyor belt at a frequency of 1 per 25 cubic yards and analyzed by Dames & Moore technicians in the on site laboratory. This data, coupled with instrument readings collected at the pit and on the conveyor belt was used to direct the processed soil to a specific stockpile with similar characteristics (i.e. potentially hazardous, potentially non-hazardous, potentially radioactive and potentially mixed). The processed soil stockpiles were located in the laydown areas set up across the site (see Appendix D Photos #6, #8 and #9). These soils will be further sampled for characterization utilizing off site laboratories to determine appropriate disposal pathways.

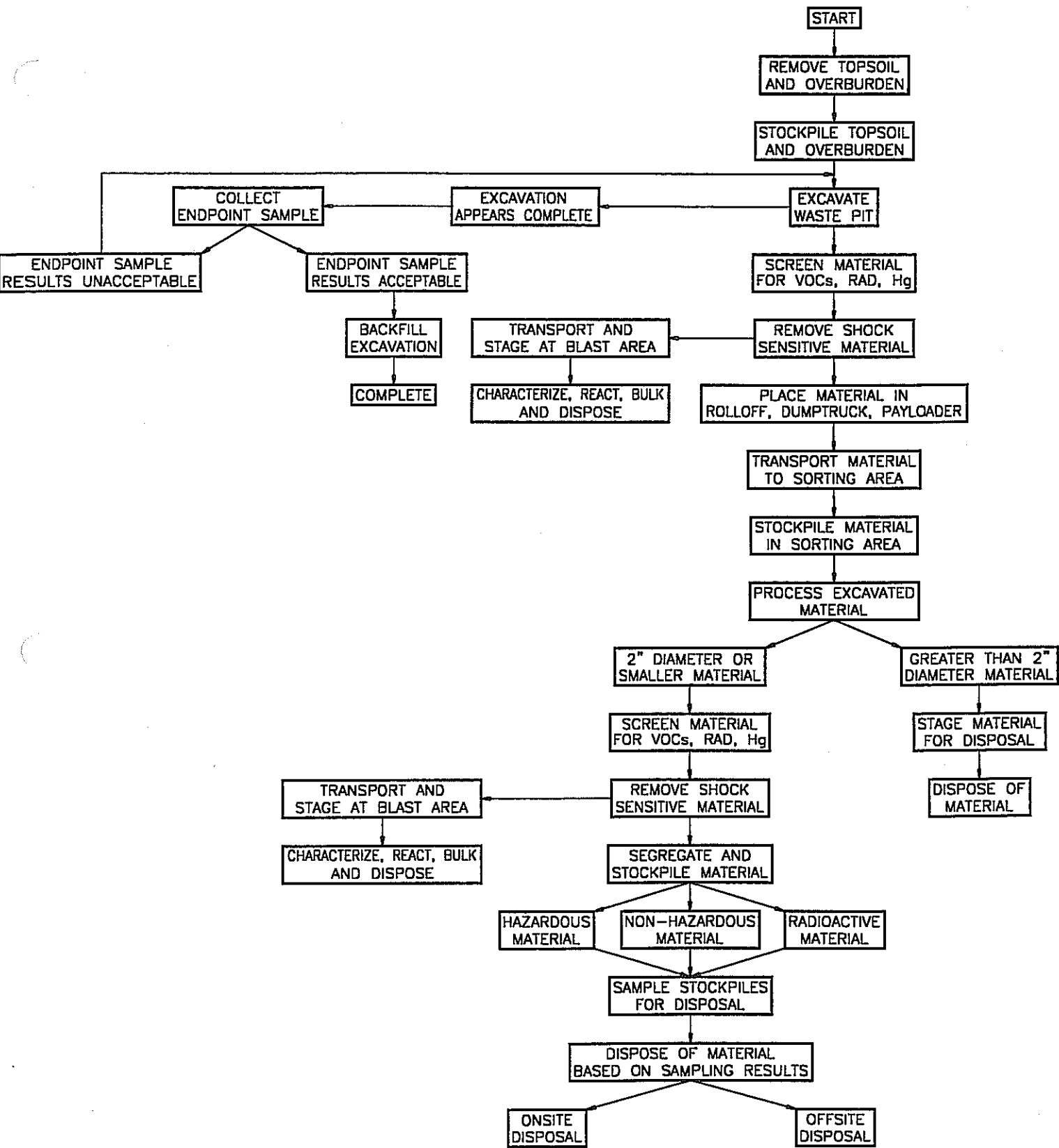
Materials greater than 2" diameter or waste debris materials, consisting mostly of large, empty glass bottles, jars, drums, plastic containers and bags, bones and miscellaneous plastics, metals and glass were fed directly to roll off containers. Once full, the roll off containers containing waste debris materials were removed from the sorting area and stored in roll off containers in the waste debris staging area northwest of the sorting operation (see Figure No. 2 and Appendix D Photo #9) or in debris stockpiles. A process flow diagram is illustrated in Figure No. 4.

Once the excavation and preliminary screening and sorting was complete, secondary sorting, bulking and packaging of the waste materials was performed to further reduce and consolidate wastes for final disposal. These efforts are detailed in section 5.0. Final disposal of materials excavated from the Glass Holes and A/C Pits shall be addressed once the final characterization of the wastes are complete. Documentation of disposal activities shall be submitted under a separate cover.

2.4 Confirmatory Sampling and Project Clean Up Goals

To insure an effective excavation effort, confirmatory soil samples (also referred to as endpoint samples or post excavation samples) were collected from the base of each pit by Dames & Moore. The sample was collected from the pit bottom using an excavator and transferred to the appropriate laboratory glassware. For a detailed description of the confirmatory sample collection procedures please refer to Appendix C of the *Integrated Work Plan*. The samples were submitted to an independent, New York State certified laboratory to be analyzed for volatile and semi volatile organic compounds, inorganic compounds, pesticides, herbicides, PCB's and radionuclides. The analytical results were then compared to the project clean up goals for each parameter reported. If sample results reported each of the compounds within the project clean up goals, the pit was backfilled. In the event that a specific compound exceeded a project clean up goal, additional soil was excavated from the base of the pit and the process repeated until the confirmatory sample results complied with the clean up goals. A complete listing of the specific compounds included in the confirmatory soil analyses and corresponding clean up goals are included in Table numbers 2.1 through 2.6.

The project clean up goals were achieved in each of the 55 pits as demonstrated by the confirmatory sampling data. Confirmatory soil sample results from the 21 pits in the Glass Holes area are detailed in Tables C4 through C9 contained in Appendix C. Results from the 34 pits in the A/C pits are detailed in Tables C13 through C18 contained in Appendix C. Complete data packages for each pit was not available at the time the Draft report was prepared. Complete data packages will be included with the Final report.



2.5 Regulatory Oversight and Quality Assurance

As part of their oversight and quality assurance responsibilities, the NYSDEC and SCDHS randomly split confirmatory samples from a number of pits. Please refer to the Daily Reports contained in Volume 3 for specific pits. The analyses performed by these agencies differed slightly from those performed by Dames & Moore. A complete listing of the analyses performed by each agency is included in Table numbers 2.1 through 2.6.

While not all of the chemical compounds included in the NYSDEC suite of analyses matched those contained in the Dames & Moore suite of analyses, the NYSDEC primary compounds of concern were included and therefore required no additional evaluation. The SCDHS however, required an expanded list of volatile organic compounds that was not included in either the NYSDEC or the Dames & Moore suite of analyses. Most of these compounds were constituents of gasoline and other related petroleum products. In order to identify the SCDHS volatile organic compounds of concern, the off site analytical laboratory contracted by Dames & Moore performed an evaluation of the "tentatively identified compounds" (TIC's). TIC's identified by the volatile organic compound analysis were quantified by the laboratory and reported. Based upon a review of the analytical data received to date, no TIC's were detected by the volatile organic compound analysis. As of the preparation of this Draft report, final, validated raw analytical reports from Dames & Moore, NYSDEC and SCDHS were not available. These reports will be included as Volume 2 of the Final report.

Table No. 2.3 - Inorganics Cleanup Objectives

Brookhaven National Laboratory, Upton, New York Animal/Chemical Pits and Glass Holes Remedial Action Closure Report

Dames & Moore - Off Site	Cleanup Objective ppm	Dames & Moore - On Site	Cleanup Objective ppm	*NYSDEC	Cleanup Objective ppm	*****SCDHS	Cleanup Objective ppm
Aluminum	**16461	Arsenic	**2.8	Aluminum	SB	Arsenic	7.5
Antimony	**13.1	Chromium	*50	Antimony	SB	Beryllium	1.6
Arsenic	**2.8	Cobalt	**3	Arsenic	7.5 or SB	Cadmium	1
Barium	**29.9	Copper	**6.5	Barium	300 or SB	Chromium	10
Beryllium	**0.43	Iron	**14429	Beryllium	0.16 or SB	Copper	25
Cadmium	*10	Lead	*400	Cadmium	1 or SB	Lead	100
Calcium	**434	Manganese	**2122	Calcium	SB	Mercury	0.1
Chromium	*50	Mercury	**1.84	Chromium	10 or SB	Nickel	13
Cobalt	**3	Nickel	**11.5	Cobalt	30 or SB	Silver	5
Copper	**6.5	Zinc	**22.4	Copper	25 or SB		
Cyanide	**8.9			Cyanide	SB		
Iron	**14429			Iron	2000 or SB		
Lead	*400			Lead	SB		
Magnesium	**2122			Magnesium	SB		
Manganese	**148			Manganese	SB		
Mercury	**1.84			Mercury	0.1		
Nickel	**11.5			Nickel	13 or SB		
Potassium	**628			Potassium	SB		
Selenium	**0.41			Selenium	2 or SB		
Silver	**2			Silver	SB		
Sodium	**196			Sodium	SB		
Thallium	**0.35			Thallium	SB		
Vanadium	**25.2			Vanadium	150 or SB		
Zinc	**22.4			Zinc	20 or SB		

* - Cleanup levels from NYSDEC TAGM #4046.

** - Cleanup levels and site background levels calculated by CDM Federal Programs.

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

**** - As per NYSDEC TAGM #4046, Total VOCs < 10 ppm, Total Non-Carcinogenic Semi-Volatiles < 5 ppm, Individual Non-Carcinogenic Semi-Volatiles < 50 ppm, and Total Carcinogenic Semi-Volatiles < 10 ppm

***** - As per Article 12 of the Suffolk County Sanitary Code.

SB - Site background.

NA - not applicable.

Table No. 2.4 - Pesticides and Herbicides Cleanup Objectives

**Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits and Glass Holes Remedial Action Closure Report**

*Dames & Moore - Off Site	Cleanup Objective ppm	*Dames & Moore - On Site	Cleanup Objective ppm	*NYSDEC	Cleanup Objective ppm	SCDHS	Cleanup Objective ppm
Aldrin	41.1	Pesticides (total)	5	Aldrin	41.1		
alpha-BHC	110			alpha-BHC	110		
beta-BHC	200			beta-BHC	200		
delta-BHC	300			delta-BHC	300		
Chlorodane	540			alpha-chlordane	540		
2,4-D	500			gamma-chlordane	540		
4,4'-DDD	2900			2,4-D	500		
4,4'-DDE	2100			4,4'-DDD	2900		
4,4'-DDT	2100			4,4'-DDE	2100		
Dieldrin	44			4,4'-DDT	2100		
Endosulfan I	900			Dieldrin	44		
Endosulfan II	900			Endosulfan I	900		
Endosulfan sulfate	1000			Endosulfan II	900		
Endrin	100			Endosulfan sulfate	1000		
Endrin keytone	NA			Endrin	100		
gamma-BHC (Lindane)	60			Endrin keytone	NA		
gamma-chlorodane	540			gamma-BHC (Lindane)	60		
Heptachlor	100			Heptachlor	100		
Heptachlor epoxide	20			Heptachlor epoxide	20		
Methoxychlor	***			Methoxychlor	***		
Mitotane	N/A			Silvex	700		
Parathion	1200			Toxaphene	N/A		
Pyridine	NA			2,4,5-T	1900		
Silvex	700			Arcolor-1016	NA		
Toxaphene	N/A			Arcolor-1221	NA		
2,4,5-T	1900			Arcolor-1232	NA		
2,3,7,8 tetrachlorodibenzo-p-dioxin	1			Arcolor-1242	NA		
				Arcolor-1248	NA		
				Arcolor-1254	NA		
				Arcolor-1260	NA		

* - Cleanup levels from NYSDEC TAGM #4046.

** - Cleanup levels and site background levels calculated by CDM Federal Programs.

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

**** - As per NYSDEC TAGM #4046, Total VOCs < 10 ppm, Total Non-Carcinogenic Semi-Volatiles < 5 ppm, Individual Non-Carcinogenic Semi-Volatiles < 50 ppm, and Total Carcinogenic Semi-Volatiles < 10 ppm.

***** - As per Article 12 of the Suffolk County Sanitary Code:

NA - not applicable.

Table No. 2.5 - Radionuclides Cleanup Objectives

**Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits and Glass Holes Remedial Action Closure Report**

**Dames & Moore - Off Site	Cleanup Objective pCi/g	**Dames & Moore - On Site	Cleanup Objective pCi/g	NYSDEC	Cleanup Objective pCi/g	SCDHS	Cleanup Objective pCi/g
Gross Alpha	44.4	Gross Alpha	44.4	C14	NA		
Gross Beta	47.6	Gross Beta	47.6				
Strontium-90	15	Strontium-90	15				
Cobalt-60	3356	Cobalt-60	3356				
Cesium-137	67	Cesium-137	67				
Uranium-238	11	Uranium-238	11				

Table No. 2.6 - Polychlorinated Biphenols (PCBs) Cleanup Objectives

**Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits and Glass Holes Remedial Action Closure Report**

*Dames & Moore - Off Site	Cleanup Objective ppm	*Dames & Moore - On Site	Cleanup Objective ppm	*NYSDEC	Cleanup Objective ppm	SCDHS	Cleanup Objective ppm
PCBs (total) surface	1	PCBs (total) surface	5	PCBs (total) surface	1		
PCBs (total) sub-surface	10	PCBs (total) sub-surface	NA	PCBs (total) sub-surface	10		

* - Cleanup levels from NYSDEC TAGM #4046.

** - Cleanup levels and site background levels calculated by CDM Federal Programs.

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

**** - As per NYSDEC TAGM #4046, Total VOCs < 10 ppm, Total Non-Carcinogenic Semi-Volatiles < 5 ppm, Individual Non-Carcinogenic Semi-Volatiles < 50 ppm, and Total Carcinogenic Semi-Volatiles < 10 ppm.

***** - As per Article 12 of the Suffolk County Sanitary Code.

NA - not applicable.

Table No. 2.1 - Volatile Organic Compounds Cleanup Objectives

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits and Glass Holes Remedial Action Closure Report

*Dames & Moore - Off Site	Cleanup Objective ppb	*Dames & Moore - On Site	Cleanup Objective ppb	*NYSDEC	Cleanup Objective ppb	****SCDHS	Cleanup Objective ppb
Acetone	200	Acetone	200	Acetone	200	Acetone	200
Benzene	60	Benzene	60	Benzene	60	Benzene	60
Benzoic Acid	2700	2-butanone	300	Bromodichloromethane	NA	Bromobenzene	800
2-butanone	300	Carbon disulfide	2700	Bromoform	NA	Bromochloromethane	200
Carbon disulfide	2700	Carbon tetrachloride	600	Bromomethane	NA	Bromodichloromethane	200
Carbon tetrachloride	600	Chlorobenzene	1700	2-butanone	300	Bromoform	600
Chlorobenzene	1700	Chloroform	300	Carbon disulfide	2700	n-butylbenzene	NA
Chloroethane	1900	1,1-dichloroethane	200	Carbon tetrachloride	600	sec-butylbenzene	NA
Chloroform	300	1,2-dichloroethane	100	Chlorobenzene	1700	tert-butylbenzene	NA
Dibromochloromethane	N/A	1,1-dichloroethene	400	Chloroethane	1900	Carbon tetrachloride	600
1,2-dichlorobenzene	7900	1,2-dichloroethene (trans)	300	Chloroform	300	Chlorobenzene	1700
1,3-dichlorobenzene	1600	1,2-dichloroethene (cis)	250	Chloromethane	NA	Chloroethane	1900
1,4-dichlorobenzene	8500	1,3-dichloropropane	300	1,1-dichloroethane	200	Chloroform	300
1,1-dichloroethane	200	Ethylbenzene	5500	1,2-dichloroethane	100	Chlorotoluene	1800
1,2-dichloroethane	100	4-methyl-2-pentanone	1000	1,1-dichloroethene	400	Dibromochloromethane	200
1,1-dichloroethene	400	Tetrachloroethene	1400	1,2-dichloroethene	NA	1,2-dibromo-3-chloropropane	300
1,2-dichloroethene (trans)	300	1,1,1-trichloroethane	800	1,2-dichloropropane	NA	1,2-dibromoethane	200
1,2-dichloroethene (cis)	250	1,1,2,2-tetrachloroethane	600	cis-1,3-dichloropropene	300	Dibromoethane	200
1,3-dichloropropane	300	1,2,3-trichloropropane	400	trans-1,3-dichloropropene	250	o-(1,2)-dichlorobenzene	7900
Ethylbenzene	5500	Toluene	3400	Ethylbenzene	5500	m-(1,3)-dichlorobenzene	1600
113 freon	6000	Trichloroethene	1500	2-hexanone	NA	1,4-dichlorobenzene	8500
Methylene chloride	100	Vinyl chloride	700	Methylene chloride	100	Dichlorodifluoromethane	300
Methyl ethyl ketone	N/A	Xylenes (total)	200	4-methyl-2-pentanone	1000	1,1-dichloroethane	200
4-methyl-2-pentanone	1000		1200	Styrene	NA	1,2-dichloroethane	100
Tetrachloroethene	1400			Tetrachloroethene	1400	1,2-dichloroethene	400
1,1,1-trichloroethane	800			1,1,1-trichloroethane	800	cis-1,2-dichloroethene	300
1,1,2,2-tetrachloroethane	600			1,1,2-trichloroethane	NA	trans-1,2-dichloroethene	300
1,2,3-trichloropropane	400			1,1,2,2-tetrachloroethane	600	1,2-dichloropropane	300
1,2,4-trichlorobenzene	3400			Toluene	1500	1,3-dichloropropane	300
Toluene	1500			Trichloroethene	700	2,2-dichloropropane	300
Trichloroethene	700			Vinyl chloride	200	1,1-dichloropropene	2400
Vinyl chloride	200			Xylenes (total)	1200	cis-1,3-dichloropropene	2400
Xylenes (total)	1200					trans-1,3-dichloropropene	2400
						p-diethylbenzene	3800
						Ethylbenzene	5500
						p-ethyltoluene	1800
						Freon 113	6000
						Hexachlorobutadiene	300
						Isopropylbenzene	2600
						p-isopropyltoluene	3900
						Methylene chloride	100
						MTBE	600
						Methyl ethyl ketone	300
						Methyl isobutyl ketone	300
						Naphthalene	10000
						n-propylbenzene	300
						Styrene	10000
						1,1,1,2-tetrachloroethane	600
						1,1,2,2-tetrachloroethane	600
						Tetrachloroethene	1400
						1,2,4,5-tetramethylbenzene	10000
						Toluene	1500
						1,2,3-trichlorobenzene	10000
						1,2,4-trichlorobenzene	3400
						1,1,1-trichloroethane	800
						1,1,2-trichloroethane	300
						Trichloroethene	700
						Trichlorofluoromethane	800
						1,2,3-trichloropropane	400
						1,2,4-trimethylbenzene	2400
						1,3,5-trimethylbenzene	2600
						Vinyl chloride	200
						Xylene(s)	1200

* - Cleanup levels from NYSDEC TAGM #4046.
** - Cleanup levels and site background levels calculated by CDM Federal Programs.
*** - As per NYSDEC TAGM #4046, Total Pesticides < 10 ppm
**** - As per NYSDEC TAGM #4046, Total VOCs < 10 ppm, Total Non-Carcinogenic Semi-Volatiles < 5 ppm, Individual Non-Carcinogenic Semi-Volatiles < 50 ppm, and Total Carcinogenic Semi-Volatiles < 10 ppm.
***** - As per Article 12 of the Suffolk County Sanitary Code.
NA - not applicable.

Table No. 2.2 - Semi-Volatile Organic Compounds Cleanup Objectives

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits and Glass Holes Remedial Action Closure Report

*Dames & Moore - Off Site	Cleanup Objective ppb	*Dames & Moore - On Site	Cleanup Objective ppb	*NYSDEC	Cleanup Objective ppb	****SCDHS	Cleanup Objective ppb
Acenaphthene	****50000	SVOCs (total)	50000	Acenaphthene	****50000	Acenaphthene	50000
Acenaphthylene	41000			Acenaphthylene	41000	Anthracene	50000
Aniline	100			Anthracene	****50000	Benzo(a)anthracene	3000
Anthracene	****50000			Benzo(a)anthracene	224	Benzo(b)fluoranthene	1100
Benzo(a)anthracene	224			Benzo(a)pyrene	61	Benzo(k)fluoranthene	1100
Benzo(a)pyrene	61			Benzo(b)fluoranthene	224	Benzo(g,h,i)perylene	50000
Benzo(b)fluoranthene	224			Benzo(g,h,i)perylene	****50000	Benzo(a)pyrene	11000
Benzo(g,h,i)perylene	****50000			Benzo(k)fluoranthene	224	Chrysene	400
Benzo(k)fluoranthene	224			bis(2-chloroethyl)ether	NA	Dibenzo(a,h)anthracene	50000
bis(2-ethylhexyl)phthalate	****50000			bis(2-chloroethoxy)methane	NA	Fluoranthene	50000
Butylbenzophthalate	****50000			bis(2-ethylhexyl)phthalate	****50000	Fluorene	50000
Chrysene	400			4-bromophenyl-phenylether	NA	Indeno(1,2,3-cd)pyrene	3200
4-chloroaniline	220			Butylbenzophthalate	****50000	Phenanthrene	50000
4-chloro-3-methylphenol	240			Carbazole	NA	Pyrene	50000
2-chlorophenol	800			2-chloronaphthalene	NA		
Cresol (total)	N/A			2-chlorophenol	800		
Dibenzofuran	6200			4-chlorophenyl-phenylether	NA		
Dibenzo(a,h)anthracene	14			Chrysene	400		
3,3'-dichlorobenzidine	NA			4-chloroaniline	220		
2,4-dichlorophenol	400			4-chloro-3-methylphenol	240		
2,4-dinitrophenol	200			Dibenzofuran	6200		
2,4-dinitrotoluene	NA			Dibenzo(a,h)anthracene	14		
2,6-dinitrotoluene	1000			1,2-dichlorobenzene	NA		
Diethylphthalate	7100			1,3-dichlorobenzene	NA		
Dimethylphthalate	2000			1,4-dichlorobenzene	NA		
Di-n-butyl phthalate	8100			3,3'-dichlorobenzidine	NA		
Di-n-octyl phthalate	****50000			2,4-dichlorophenol	400		
Fluoranthene	****50000			Diethylphthalate	7100		
Fluorene	****50000			2,4-Dimethylphenol	NA		
Hexachlorobenzene	410			Dimethylphthalate	2000		
Hexachlorobutadiene	NA			4,6-dinitro-2-methylphenol	NA		
Hexachloroethane	NA			2,4-dinitrophenol	200		
Indeno(1,2,3-cd)pyrene	3200			N-nitrosodiphenylamine	NA		
Isophorone	4400			2,4-dinitrotoluene	NA		
2-methylnaphthalene	36400			2,6-dinitrotoluene	1000		
2-methylphenol	100			Di-n-octyl phthalate	****50000		
4-methylphenol	900			Fluoranthene	****50000		
Naphthalene	13000			Fluorene	****50000		
Nitrobenzene	200			Hexachlorobenzene	410		
2-nitroaniline	430			Hexachlorobutadiene	NA		
2-nitrophenol	330			Hexachlorocyclopentadiene	NA		
4-nitrophenol	100			Hexachloroethane	NA		
3-nitroaniline	500			Indeno(1,2,3-cd)pyrene	3200		
Pentachlorophenol	1000			Isophorone	4400		
Phenanthrene	****50000			2-methylnaphthalene	36400		
Phenol	30			2-methylphenol	100		
Pyrene	****50000			4-methylphenol	900		
2,4,5-trichlorophenol	100			Naphthalene	13000		
2,4,6-trichlorophenol	NA			Nitrobenzene	200		
				2-nitroaniline	430		
				2-nitrophenol	330		
				4-nitrophenol	100		
				4-nitroaniline	NA		
				N-nitroso-di-n-propylamine	NA		
				2,2'-oxybis(1-chloropropane)	NA		
				Pentachlorophenol	1000		
				Phenanthrene	****50000		
				Phenol	30		
				Pyrene	****50000		
				1,2,4-trichlorobenzene	NA		
				2,4,5-trichlorophenol	100		
				2,4,6-trichlorophenol	NA		

* - Cleanup levels from NYSDEC TAGM #4046.
** - Cleanup levels and site background levels calculated by CDM Federal Programs.
*** - As per NYSDEC TAGM #4046, Total Pesticides < 10 ppm
**** - As per NYSDEC TAGM #4046, Total VOCs < 10 ppm, Total Non-Carcinogenic Semi-Volatiles < 5 ppm, Individual Non-Carcinogenic Semi-Volatiles < 50 ppm, and Total Carcinogenic Semi-Volatiles < 10 ppm.
***** - As per Article 12 of the Suffolk County Sanitary Code.
NA - not applicable.

3.0 PIT EXCAVATIONS IN THE GLASS HOLES

The following section describes the remediation of the 21 pits contained in the Glass Holes area. Prior to excavation activities, there was believed to be a total of 18 pits in this area. One additional pit (IL Pit A) did not contain waste material and is suspected to be the result of a survey error. The other two additional pits (IL Pits C and D) were encountered during the construction of the Interim Landfill Capping project. The locations of the 21 pits remediated in the Glass Holes area are illustrated in Figure 5.

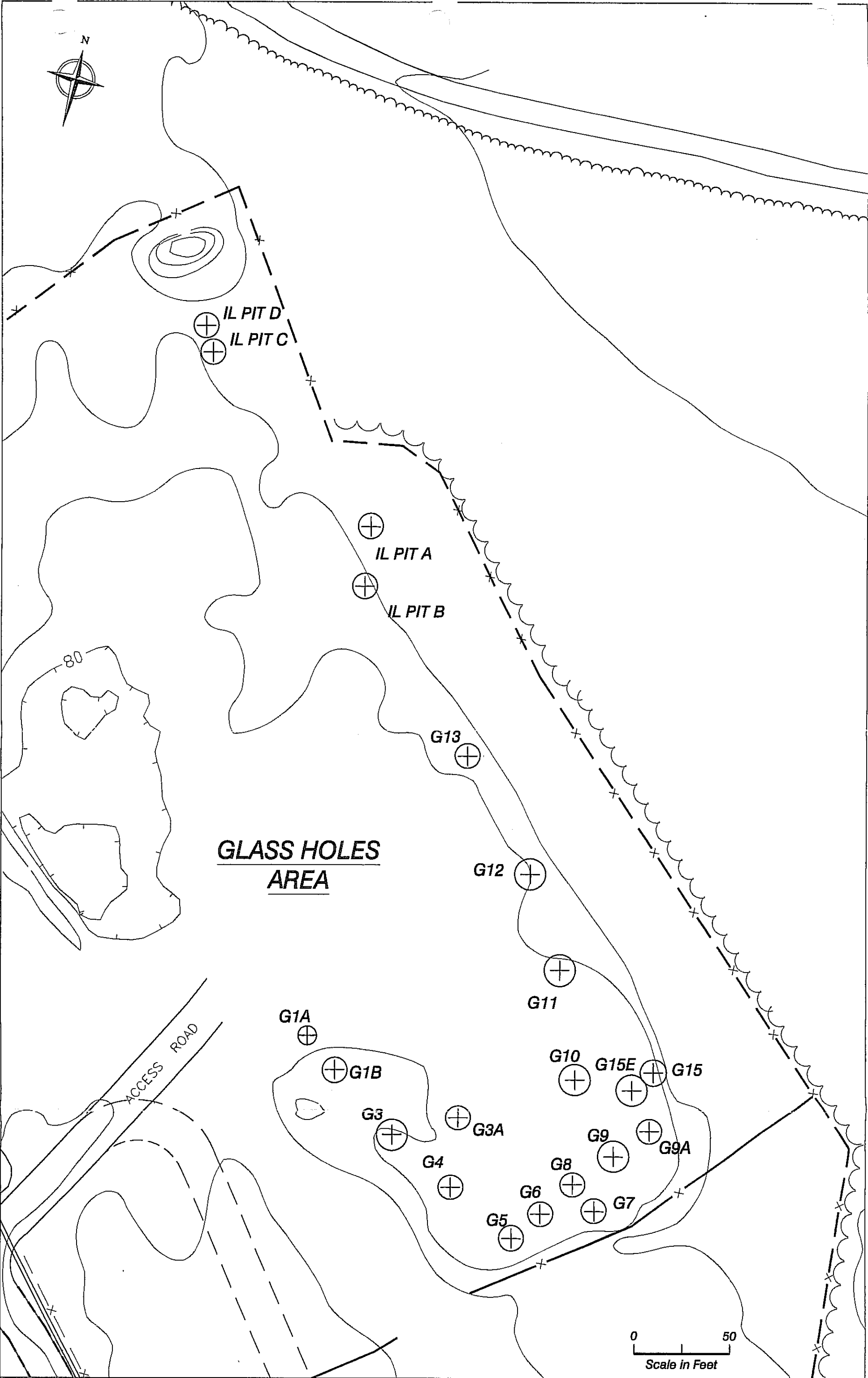
In general, the waste materials removed from the pits in the Glass Holes area were characterized by glass and plastic containers, jars, compressed gas cylinders, miscellaneous metal and debris. The 18 pits that were located using geophysical techniques in earlier studies were found to be accurately identified with respect to location of pit centers, however the average depth of the pits was approximately 18 feet as opposed to 13 feet. Pit diameters on average were found to be approximately 20 feet as opposed to an average anticipated diameter of 14 feet.

3.1 Glass Holes Initial Characterization Data

The Glass Holes area pits were investigated and delineated prior to excavation through the use of multiple technologies which included ground penetrating radar (GPR), geophysical surveys utilizing electromagnetics and sub-surface sampling involving direct push technology (Geoprobe). Summaries of these investigations for the Glass Holes area pits are presented in Appendix A of this report on a pit by pit basis. Specific parameters that were investigated included pit diameter, depth to top and bottom of waste, the presence of metals, volatile/semi-volatile organic compounds and radionuclides. Based on these parameters estimates were made as to types and quantities of waste debris likely to be encountered in each pit.

3.2 Glass Holes Remedial Action

Excavation activities in the Glass Holes area began June 9, 1997 and continued through July 18, 1997. Additional Glass Holes area excavations were conducted between September 5, 1997 through September 12, 1997 during the construction of the Interim Landfill cap as IL Pits C and D were



discovered. Further exploratory trenching was done in the area of IL Pits C and D and the Interim Landfill to ensure that no additional pits existed. The Glass Holes area pits were generally found to be 5 feet deeper and 6 feet wider than originally anticipated. Waste debris and associated potentially contaminated soils were excavated from the Glass Holes area pits, processed, sorted stockpiled and characterized for disposal as illustrated in Figure No.4, the process flow diagram.

3.3 Waste Generated from the Glass Holes

An estimated 326 cubic yards of waste debris was recovered from the Glass Holes area pits. The associated potentially contaminated soil that was excavated in conjunction with the waste debris is estimated at 3,852 cubic yards and was segregated into four separate stockpile classifications which included; potentially non-hazardous soil, potentially hazardous soil, potentially radioactive soil and potentially mixed soil (displaying properties of both hazardous and radioactive wastes). These potential soil classifications were based on field screening, the criteria of which are presented in Table No. 5.1a of Section 5 of this report. No potentially radioactive or potentially mixed soils were excavated from the Glass Holes area pits. Approximately 1,467 cubic yards of potentially non-hazardous soil and 2,385 cubic yards of potentially hazardous soil were segregated and stockpiled.

The primary types of waste debris excavated from the Glass Holes area pits included but were not limited to the following; glass bottles of various sizes, shapes, colors and conditions (i.e. full of liquid, partially full empty, intact, broken, etc...), plastic containers, syringes, needles, jars, blood vials, compressed gas cylinders, metallic drums, cans and miscellaneous glass, metals and plastics. Notable excavated items included a partially full cylinder containing a green colored, radioactive liquid identified as uranium 235 from pit G9A, an activated steel block from pit G4, large quantities of sharps such as syringes and needles from IL Pit B and the bentonite grout encapsulated waste monolith of pit G11. The Table No.'s 3.1.a through 3.18 describe the findings of each of the Glass Holes area pits in detail.

TABLE No. 3.1.a - IL PIT A - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	June 9, 1997
Date waste excavation completed	June 10, 1997
Date pit backfilled	June 30, 1997
Diameter (estimated)	
Depth to top of waste (estimated)	No waste encountered.
Depth to bot. of waste (estimated)	No waste encountered. Stopped excavating @ 14 feet.
Orig. surface elev of pit center (GPS)	84.501 ft AMSL
BNL Coordinates EAST	395498.00
BNL Coordinates NORTH	77745.00
Volume of waste material processed	0 Cu. Yd.
Volume of waste debris sorted	0 Cu. Yd.
Volume of soil segregated	0 Cu. Yd.
Containers recovered with liquid	0
Description of waste debris	None
Radioactive materials	None
Segregated soil classification (stockpile designation)	None
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 3.1.b - IL PIT B - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	June 10, 1997
Date waste excavation completed	June 12, 1997
Date pit backfilled	June 30, 1997
Diameter (estimated)	15 ft
Depth to top of waste (estimated)	2 - 3 ft from original grade
Depth to bot. of waste (estimated)	20 ft from original grade
Orig. surface elev of pit center (GPS)	
BNL Coordinates EAST	
BNL Coordinates NORTH	
Volume of waste material processed	129 Cu. Yd.
Volume of waste debris sorted	20 Cu. Yd.
Volume of soil segregated	109 Cu. Yd.
Containers recovered with liquid	100
Description of waste debris	syringes, needles, blood vials, metallic drums, compressed gas cylinders, empty glass bottles, vials and jars of various sizes and colors, partially full glass bottles containing liquids, broken glass, plastic containers, miscellaneous metals and plastics
Radioactive materials	
Segregated soil classification (stockpile designation)	Non-hazardous
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 3.1.c - IL PIT C - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	September 5, 1997
Date waste excavation completed	September 11, 1997
Date pit backfilled	
Diameter (estimated)	30 ft
Depth to top of waste (estimated)	5 - 6 ft
Depth to bot. of waste (estimated)	25 ft from original grade
Orig. surface elev of pit center (GPS)	
BNL Coordinates EAST	
BNL Coordinates NORTH	
Volume of waste material processed	260 Cu. Yd.
Volume of waste debris sorted	15 Cu. Yd.
Volume of soil segregated	245 Cu. Yd.
Containers recovered with liquid	122
Description of waste debris	glass bottles, medical related debris, syringes, plungers, blood vials, partially filled lab packs
Radioactive materials	None
Segregated soil classification (stockpile designation)	Non-hazardous
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 3.1.d - IL PIT D - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	September 11, 1997
Date waste excavation completed	September 12, 1997
Date pit backfilled	
Diameter (estimated)	20 feet
Depth to top of waste (estimated)	5 - 6 ft from original grade
Depth to bot. of waste (estimated)	18 ft from original grade
Orig. surface elev of pit center (GPS)	
BNL Coordinates EAST	
BNL Coordinates NORTH	
Volume of waste material processed	260 Cu. Yd.
Volume of waste debris sorted	15 Cu. Yd.
Volume of soil segregated	245 Cu. Yd.
Containers recovered with liquid	122
Description of waste debris	glass bottles
Radioactive materials	None
Segregated soil classification (stockpile designation)	Non-hazardous
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 3.2 - G1A - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 1, 1997
Date waste excavation completed	July 2, 1997
Date pit backfilled	July 23, 1997
Diameter (estimated)	30 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	16 ft from original grade
Orig. surface elev of pit center (GPS)	81.532 ft AMSL
BNL Coordinates EAST	395488.06
BNL Coordinates NORTH	77663.83
Volume of waste material processed	
Volume of waste debris sorted	
Volume of soil segregated	
Containers recovered with liquid	
Description of waste debris	
Radioactive materials	None
Segregated soil classification (stockpile designation)	
Volume of backfill	170 Cu. Yd.

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 3.3 - G1B - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	June 30, 1997
Date waste excavation completed	July 1, 1997
Date pit backfilled	July 23, 1997
Diameter (estimated)	20 ft
Depth to top of waste (estimated)	5 ft from original grade
Depth to bot. of waste (estimated)	20 ft from original grade
Orig. surface elev of pit center (GPS)	81.322 ft AMSL
BNL Coordinates EAST	395492.47
BNL Coordinates NORTH	77658.39
Volume of waste material processed	180 Cu. Yd.
Volume of waste debris sorted	12 Cu. Yd.
Volume of soil segregated	168 Cu. Yd.
Containers recovered with liquid	122
Description of waste debris	glass bottles, sharps, jars, vials, metallic drums, metal containers, miscellaneous plastics, metals and glass
Radioactive materials	None
Segregated soil classification (stockpile designation)	128 Cu. Yd. Hazardous 40 Cu. Yd. Non-hazardous
Volume of backfill	140 Cu. Yd.

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 3.4 - G3 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	June 19, 1997
Date waste excavation completed	June 27, 1997
Date pit backfilled	July 31, 1997
Diameter (estimated)	25 ft
Depth to top of waste (estimated)	2 - 3 ft from original grade
Depth to bot. of waste (estimated)	20 ft from original grade
Orig. surface elev of pit center (GPS)	80.997 ft AMSL
BNL Coordinates EAST	395501.66
BNL Coordinates NORTH	77647.82
Volume of waste material processed	152 Cu. Yd.
Volume of waste debris sorted	13 Cu. Yd.
Volume of soil segregated	139 Cu. Yd.
Containers recovered with liquid	76
Description of waste debris	glass bottles, sharps, jars, vials, metallic drums, metal containers, miscellaneous plastics, metals and glass
Radioactive materials	55 gallon drum placed in overpack at pit
Segregated soil classification (stockpile designation)	Hazardous
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 3.5 - G3A - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	June 18, 1997
Date waste excavation completed	June 18, 1997
Date pit backfilled	July 2, 1997
Diameter (estimated)	20 ft
Depth to top of waste (estimated)	2 - 3 ft from original grade
Depth to bot. of waste (estimated)	15 ft from original grade
Orig. surface elev of pit center (GPS)	80.741 ft AMSL
BNL Coordinates EAST	395512.27
BNL Coordinates NORTH	77650.61
Volume of waste material processed	60 Cu. Yd.
Volume of waste debris sorted	10 Cu. Yd.
Volume of soil segregated	50 Cu. Yd.
Containers recovered with liquid	50
Description of waste debris	glass bottles, broken glass, plastic containers, cans, compressed gas cylinders, miscellaneous metals, plastics and glass
Radioactive materials	None
Segregated soil classification (stockpile designation)	Non-hazardous/sharps
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 3.6 - G4 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 3, 1997
Date waste excavation completed	July 3, 1997
Date pit backfilled	July 23, 1997
Diameter (estimated)	16 ft
Depth to top of waste (estimated)	3 - 4 ft from original grade
Depth to bot. of waste (estimated)	18 ft from original grade
Orig. surface elev of pit center (GPS)	80.364 ft AMSL
BNL Coordinates EAST	395511.08
BNL Coordinates NORTH	77639.36
Volume of waste material processed	38 Cu. Yd.
Volume of waste debris sorted	2 Cu. Yd.
Volume of soil segregated	36 Cu. Yd.
Containers recovered with liquid	20
Description of waste debris	glass bottles, sharps, jars, vials, metallic drums, metal containers, miscellaneous plastics, metals and glass
Radioactive materials	activated steel block placed in B-25 container
Segregated soil classification (stockpile designation)	Hazardous
Volume of backfill	150 Cu. Yd.

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 3.7 - G5 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 9, 1997
Date waste excavation completed	July 9, 1997
Date pit backfilled	July 18, 1997
Diameter (estimated)	20 ft
Depth to top of waste (estimated)	2 - 3 ft from original grade
Depth to bot. of waste (estimated)	14 - 16 ft from original grade
Orig. surface elev of pit center (GPS)	79.964 ft AMSL
BNL Coordinates EAST	395520.89
BNL Coordinates NORTH	77631.22
Volume of waste material processed	58 Cu. Yd.
Volume of waste debris sorted	4 Cu. Yd.
Volume of soil segregated	54 Cu. Yd.
Containers recovered with liquid	30
Description of waste debris	glass bottles, sharps, jars, vials, metal containers, miscellaneous plastics, metals and glass
Radioactive materials	None
Segregated soil classification (stockpile designation)	Hazardous
Volume of backfill	190 Cu. Yd.

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 3.8 - G6 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 9, 1997
Date waste excavation completed	July 9, 1997
Date pit backfilled	July 18, 1997
Diameter (estimated)	20 ft
Depth to top of waste (estimated)	2 - 3 ft from original grade
Depth to bot. of waste (estimated)	14 - 16 ft from original grade
Orig. surface elev of pit center (GPS)	80.197 ft AMSL
BNL Coordinates EAST	395525.55
BNL Coordinates NORTH	77634.99
Volume of waste material processed	227 Cu. Yd.
Volume of waste debris sorted	13 Cu. Yd.
Volume of soil segregated	214 Cu. Yd.
Containers recovered with liquid	99
Description of waste debris	glass bottles, sharps, jars, vials, metal containers, miscellaneous plastics, metals and glass
Radioactive materials	None
Segregated soil classification (stockpile designation)	Hazardous
Volume of backfill	120 Cu. Yd.

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 3.9 - G7 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 7, 1997
Date waste excavation completed	July 8, 1997
Date pit backfilled	
Diameter (estimated)	20 ft
Depth to top of waste (estimated)	1 - 2 ft from original grade
Depth to bot. of waste (estimated)	17 ft from original grade
Orig. surface elev of pit center (GPS)	80.252 ft AMSL
BNL Coordinates EAST	395534.14
BNL Coordinates NORTH	77635.50
Volume of waste material processed	569 Cu. Yd.
Volume of waste debris sorted	29 Cu. Yd.
Volume of soil segregated	540 Cu. Yd.
Containers recovered with liquid	282
Description of waste debris	glass bottles, sharps, jars, vials, metallic drums, metal containers, miscellaneous plastics, metals and glass
Radioactive materials	
Segregated soil classification (stockpile designation)	493 Cu. Yd. Hazardous 47 Cu. Yd. Non-hazardous
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 3.10 - G8 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 8, 1997
Date waste excavation completed	July 8, 1997
Date pit backfilled	July 18, 1997
Diameter (estimated)	20 ft
Depth to top of waste (estimated)	1 - 2 ft from original grade
Depth to bot. of waste (estimated)	17 ft from original grade
Orig. surface elev of pit center (GPS)	80.315 ft AMSL
BNL Coordinates EAST	395530.68
BNL Coordinates NORTH	77639.78
Volume of waste material processed	195 Cu. Yd.
Volume of waste debris sorted	9 Cu. Yd.
Volume of soil segregated	186 Cu. Yd.
Containers recovered with liquid	76
Description of waste debris	glass bottles, sharps, jars, vials, metallic drums, metal containers, miscellaneous plastics, metals and glass
Radioactive materials	
Segregated soil classification (stockpile designation)	174 Cu. Yd. Hazardous 12 Cu. Yd. Non-hazardous
Volume of backfill	85 Cu. Yd.

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 3.11 - G9 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 1, 1997
Date waste excavation completed	July 2, 1997
Date pit backfilled	August 13, 1997
Diameter (estimated)	
Depth to top of waste (estimated)	1 ft from original grade
Depth to bot. of waste (estimated)	
Orig. surface elev of pit center (GPS)	80.817 ft AMSL
BNL Coordinates EAST	395537.21
BNL Coordinates NORTH	77644.42
Volume of waste material processed	
Volume of waste debris sorted	
Volume of soil segregated	
Containers recovered with liquid	
Description of waste debris	
Radioactive materials	
Segregated soil classification (stockpile designation)	
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 3.12 - G9A - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	June 19, 1997
Date waste excavation completed	July 1, 1997
Date pit backfilled	
Diameter (estimated)	
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	19 ft from original grade
Orig. surface elev of pit center (GPS)	81.050 ft AMSL
BNL Coordinates EAST	395542.96
BNL Coordinates NORTH	77648.43
Volume of waste material processed	388 Cu. Yd.
Volume of waste debris sorted	43 Cu. Yd.
Volume of soil segregated	345 Cu. Yd.
Containers recovered with liquid	192
Description of waste debris	glass bottles, sharps, jars, vials, compressed gas cylinders, metal containers, miscellaneous plastics, metals and glass
Radioactive materials	U ²³⁵ liquid in stainless steel cylinder
Segregated soil classification (stockpile designation)	235 Cu. Yd. Hazardous 110 Cu. Yd. Non-hazardous
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 3.13 - G10 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 3, 1997
Date waste excavation completed	July 7, 1997
Date pit backfilled	August 15, 1997
Diameter (estimated)	20 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	16 ft from original grade
Orig. surface elev of pit center (GPS)	81.178 ft AMSL
BNL Coordinates EAST	395531.05
BNL Coordinates NORTH	77656.80
Volume of waste material processed	184 Cu. Yd.
Volume of waste debris sorted	10 Cu. Yd.
Volume of soil segregated	174 Cu. Yd.
Containers recovered with liquid	45
Description of waste debris	glass bottles
Radioactive materials	None
Segregated soil classification (stockpile designation)	72 Cu. Yd. Hazardous 102 Cu. Yd. Non-hazardous
Volume of backfill	133 Cu. Yd.

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 3.14 - G11 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 10, 1997
Date waste excavation completed	July 18, 1997
Date pit backfilled	July 28, 1997
Diameter of excavation (estimated)	40 ft
Depth to top of waste (estimated)	5 ft from original grade
Depth to bot. of waste (estimated)	25 ft from original grade
Orig. surface elev of pit center (GPS)	82.257 ft AMSL
BNL Coordinates EAST	395528.61
BNL Coordinates NORTH	77674.12
Volume of waste material processed	772 Cu. Yd.
Volume of waste debris sorted	51 Cu. Yd. (non-encapsulated)
Volume of soil segregated	721 Cu. Yd.
Containers recovered with liquid	80
Description of waste debris	glass bottles, jars, compressed gas cylinders, miscellaneous metals and plastics, broken glass, concrete
Radioactive materials	
Segregated soil classification (stockpile designation)	Hazardous
Volume of backfill	

Pit G-11 was stabilized/encapsulated by grout injection. Encapsulated waste measured approximately 12' x 12' x 12' (1,728 ft³ or 64 Cu. Yd.). Free or non-encapsulated waste materials were found around and under the grouted monolith.

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 3.15 - G12 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	June 12, 1997
Date waste excavation completed	June 16, 1997
Date pit backfilled	July 14, 1997
Diameter (estimated)	18 ft
Depth to top of waste (estimated)	4 - 6 ft from original grade
Depth to bot. of waste (estimated)	18 ft from original grade
Orig. surface elev of pit center (GPS)	82.201 ft AMSL
BNL Coordinates EAST	395523.83
BNL Coordinates NORTH	77689.55
Volume of waste material processed	128 Cu. Yd.
Volume of waste debris sorted	20 Cu. Yd.
Volume of soil segregated	108 Cu. Yd.
Containers recovered with liquid	100
Description of waste debris	laboratory equipment, 30 gallon drums, 5 gallon containers, 55 gallon drums, compressed gas cylinders of various sizes, bottles, jars, vials of various sizes and colors, miscellaneous metals, plastics and glass
Radioactive materials	3 sources of fixed radiation - placed in overpacks at pit
Segregated soil classification (stockpile designation)	Non-hazardous
Volume of backfill	295 Cu. Yd.

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Daines & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 3.16 - G13 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	June 16, 1997
Date waste excavation completed	June 17, 1997
Date pit backfilled	July 1, 1997
Diameter (estimated)	17 ft
Depth to top of waste (estimated)	1 - 2 ft from original grade
Depth to bot. of waste (estimated)	16 ft from original grade
Orig. surface elev of pit center (GPS)	82.168 ft AMSL
BNL Coordinates EAST	395513.73
BNL Coordinates NORTH	77708.39
Volume of waste material processed	258 Cu. Yd.
Volume of waste debris sorted	30 Cu. Yd.
Volume of soil segregated	228 Cu. Yd.
Containers recovered with liquid	150
Description of waste debris	glass bottles, broken glass, vials, jars, miscellaneous metals, plastics and glass, many bottles containing liquids
Radioactive materials	None
Segregated soil classification (stockpile designation)	Non-hazardous
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 3.17 - G15 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	June 18, 1997
Date waste excavation completed	June 18, 1997
Date pit backfilled	August 15, 1997
Diameter (estimated)	20 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	18 - 20 ft from original grade
Orig. surface elev of pit center (GPS)	81.240 ft AMSL
BNL Coordinates EAST	395543.61
BNL Coordinates NORTH	77657.96
Volume of waste material processed	168 Cu. Yd.
Volume of waste debris sorted	22 Cu. Yd.
Volume of soil segregated	146 Cu. Yd.
Containers recovered with liquid	110
Description of waste debris	glass bottles, jars, compressed gas cylinders
Radioactive materials	None
Segregated soil classification (stockpile designation)	35 Cu. Yd. Hazardous 111 Cu. Yd. Non-hazardous
Volume of backfill	133 Cu. Yd.

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 3.18 - G15E - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 3, 1997
Date waste excavation completed	July 7, 1997
Date pit backfilled	August 15, 1997
Diameter (estimated)	15 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	16 ft from original grade
Orig. surface elev of pit center (GPS)	81.030 ft AMSL
BNL Coordinates EAST	395540.12
BNL Coordinates NORTH	77655.13
Volume of waste material processed	152 Cu. Yd.
Volume of waste debris sorted	8 Cu. Yd.
Volume of soil segregated	144 Cu. Yd.
Containers recovered with liquid	90
Description of waste debris	glass bottles, jars, compressed gas cylinders
Radioactive materials	None
Segregated soil classification (stockpile designation)	84 Cu. Yd. Hazardous 60 Cu. Yd. Non-hazardous
Volume of backfill	133 Cu. Yd.

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

4.0 PIT EXCAVATIONS IN THE ANIMAL/CHEMICAL HOLES

A total of 34 pits were remediated in the A/C Pits area. One additional pit (pit C2A) was encountered near the western end of the A/C Pits area. This pit was originally reported as an anomaly but was found to contain waste materials consistent with the other A/C Pits. The locations of the 34 pits remediated in the A/C Pits area are illustrated in Figure 6.

Waste materials in the A/C Pits consisted of glass and plastic containers, jars, drums, metal debris, animal bones, compressed gas cylinders and plastic bags containing animal remains. Mercury was consistently found in intact bottles as well as in the soils in the A/C Pits and routinely required additional soil excavation from the pits to reach clean endpoint samples. Previous investigations accurately located pit centers, however, pit depths were found to average over 21 feet with a few pits reaching 30 plus feet as opposed to an anticipated average depth of 14 feet. An average diameter of over 14 feet was observed as opposed to the anticipated average diameter of 12 to 13 feet. The larger pit sizes resulted in the generation of more waste than anticipated. Refer to section 5.0 for a detailed discussion of anticipated versus actual waste.

4.1 Animal/Chemical Pits Initial Characterization Data

Like the Glass Holes, the A/C Pits were also investigated and delineated prior to excavation through the use of multiple technologies which included ground penetrating radar (GPR), geophysical surveys utilizing electromagnetics and sub-surface sampling involving direct push technology (Geoprobe). Summaries of these investigations for the A/C Pits are presented in Appendix B of this report on a pit by pit basis. Specific parameters that were investigated included pit diameter, depth to top and bottom of waste, the presence of metals, volatile/semi-volatile organic compounds and radionuclides. Based on these parameters estimates were made as to types and quantities of waste debris suspected to be encountered in each pit.

4.2 Animal/Chemical Pits Remedial Action

Excavation activities in the A/C Pits began June 9, 1997 and continued through August 19, 1997. The A/C Pits were generally found to be 7 feet deeper and 1 to 2 feet wider than originally

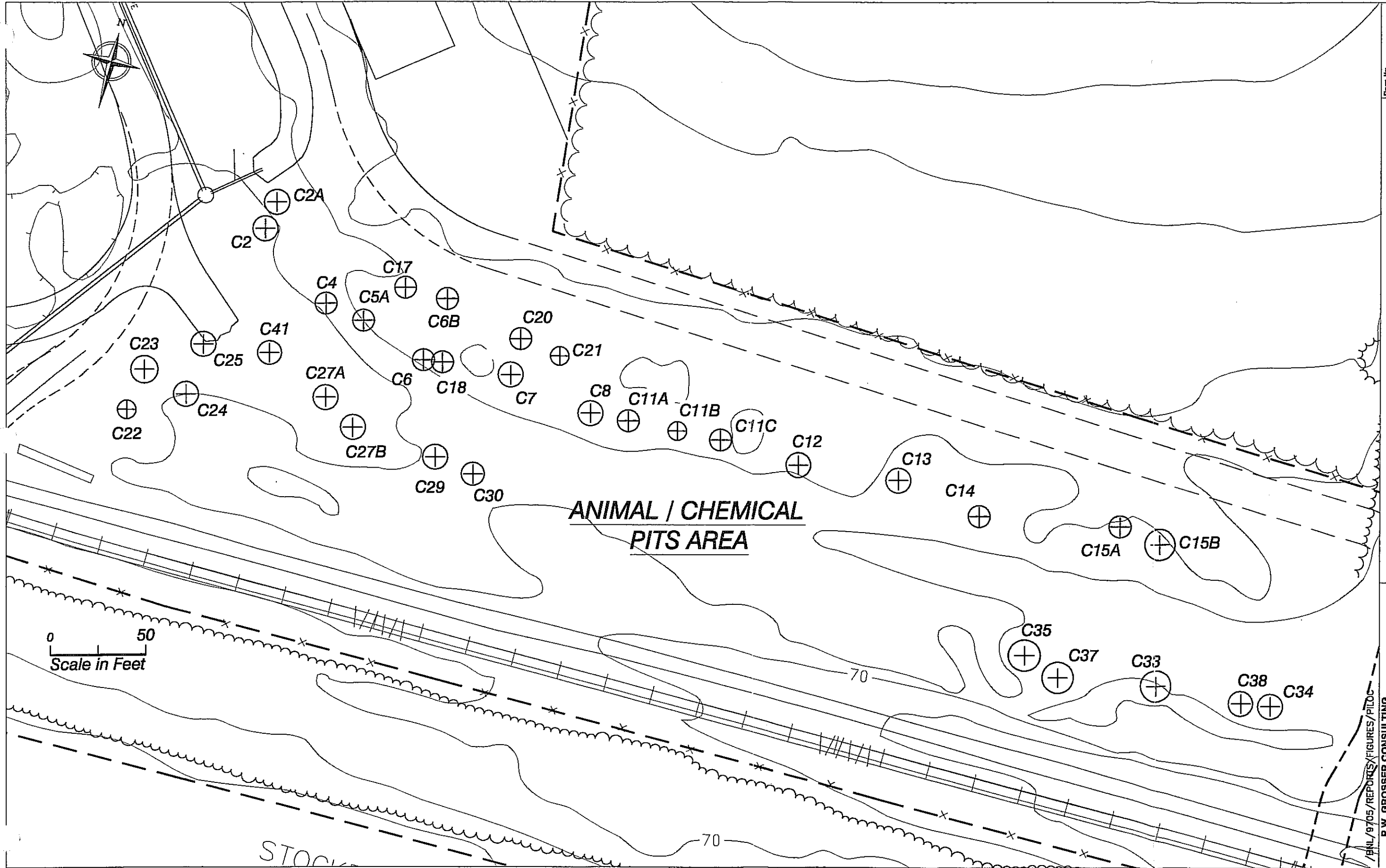


Figure No.

6

Date 9/20/97

Designed By PWB

Project No. BNL9705

BROOKHAVEN NATIONAL LABORATORY
ANIMAL / CHEMICAL PITS SITE PLAN
 for the
ANIMAL/CHEMICAL PITS AND GLASS HOLES
REMEDIAL ACTION CLOSURE REPORT

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/BNL/9705/REPORTS/FIGURES/PILOC

anticipated. Waste debris and associated potentially contaminated soils were excavated from the A/C Pits, processed, sorted stockpiled and characterized for disposal as illustrated in Figure No.4, the process flow diagram.

4.3 Waste Generated from the Animal/Chemical Pits

An approximate 161 cubic yards of waste debris were recovered from the A/C Pits. The associated potentially contaminated soil that was excavated in conjunction with the waste debris is estimated at 4,261 cubic yards and was segregated into four separate stockpile classifications which included; potentially non-hazardous soil, potentially hazardous soil, potentially radioactive soil and potentially mixed soil (displaying properties of both hazardous and radioactive wastes). These potential soil classifications were based on field screening, the criteria of which are presented in Table No. 5.1a of Section 5 of this report. Approximately 75 cubic yards of potentially non-hazardous soil, 1,727 cubic yards of potentially hazardous soil, 1,569 cubic yards of potentially radioactive soil and 890 cubic yards of potentially mixed soil were segregated and stockpiled.

The principal types of waste debris recovered from the A/C Pits included but were not limited to the following; animal bones, animal carcasses, animal remains (i.e. flesh, fur, feces, blood, etc...), plastic bags, glass bottles, plastic containers, compressed gas cylinders, metallic drums, blood vials, jars, free elemental mercury and miscellaneous glass, plastics and metals. Notable wastes encountered in the A/C Pits included liquid bromine in intact bottles from pits C8, C11C, C23 and C24, the large size and extent of waste in pits C15A and C15B and incinerator ash found in pit C22. Table No.'s. 4.1 through 4.33 describe the findings of each of the A/C Pits in detail.

TABLE No. 4.1 - C2 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 13, 1997
Date waste excavation completed	August 14, 1997
Date pit backfilled	
Diameter (estimated)	10 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	18 ft from original grade
Orig. surface elev of pit center (GPS)	73.153 ft AMSL
BNL Coordinates EAST	395506.08
BNL Coordinates NORTH	77503.25
Volume of waste material processed	
Volume of waste debris sorted	
Volume of soil segregated	
Containers recovered with liquid	
Description of waste debris	glass bottles, plastic bags with animal remains, large metal objects
Radioactive materials	
Segregated soil classification (stockpile designation)	
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 4.1.a - C2A - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 14, 1997
Date waste excavation completed	August 14, 1997
Date pit backfilled	
Diameter (estimated)	8 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	15 ft from original grade
Orig. surface elev of pit center (GPS)	
BNL Coordinates EAST	
BNL Coordinates NORTH	
Volume of waste material processed	
Volume of waste debris sorted	
Volume of soil segregated	
Containers recovered with liquid	
Description of waste debris	
Radioactive materials	
Segregated soil classification (stockpile designation)	
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 4.2 - C4 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 13, 1997
Date waste excavation completed	August 13, 1997
Date pit backfilled	
Diameter (estimated)	8 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	18 ft from original grade
Orig. surface elev of pit center (GPS)	73.008 ft AMSL
BNL Coordinates EAST	395515.69
BNL Coordinates NORTH	77491.20
Volume of waste material processed	112 Cu Yd
Volume of waste debris sorted	4 Cu Yd
Volume of soil segregated	108 Cu Yd
Containers recovered with liquid	55
Description of waste debris	plastic bags with animal remains, metal debris glass bottles
Radioactive materials	
Segregated soil classification (stockpile designation)	Radioactive
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.3 - C5A - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 5, 1997
Date waste excavation completed	August 6, 1997
Date pit backfilled	
Diameter (estimated)	10 - 12 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	25 ft from original grade
Orig. surface elev of pit center (GPS)	73.281 ft AMSL
BNL Coordinates EAST	395521.69
BNL Coordinates NORTH	77488.47
Volume of waste material processed	50 Cu. Yd.
Volume of waste debris sorted	2 Cu. Yd.
Volume of soil segregated	48 Cu. Yd.
Containers recovered with liquid	14
Description of waste debris	metal, glass bottles, plastic bags with animal remains
Radioactive materials	
Segregated soil classification (stockpile designation)	Radioactive
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.4 - C6 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 29, 1997
Date waste excavation completed	July 30, 1997
Date pit backfilled	
Diameter (estimated)	12 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	16 ft from original grade
Orig. surface elev of pit center (GPS)	73.825 ft AMSL
BNL Coordinates EAST	395531.34
BNL Coordinates NORTH	77482.11
Volume of waste material processed	
Volume of waste debris sorted	
Volume of soil segregated	
Containers recovered with liquid	
Description of waste debris	Hg, animal remains, cylinders, bags, bottles
Radioactive materials	
Segregated soil classification (stockpile designation)	
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.5 - C6B - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 12, 1997
Date waste excavation completed	August 13, 1997
Date pit backfilled	
Diameter (estimated)	13 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	21 ft from original grade
Orig. surface elev of pit center (GPS)	75.147 ft AMSL
BNL Coordinates EAST	395535.16
BNL Coordinates NORTH	77491.95
Volume of waste material processed	127 Cu. Yd.
Volume of waste debris sorted	5 Cu. Yd.
Volume of soil segregated	122 Cu. Yd.
Containers recovered with liquid	37
Description of waste debris	glass/plastic containers/bottles, plastic bags with animal remains, sharps, broken glass
Radioactive materials	
Segregated soil classification (stockpile designation)	24 Cu. Yd. Radioactive 30 Cu. Yd. Hazardous 68 Cu. Yd. Mixed
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 4.6 - C7 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 24, 1997
Date waste excavation completed	July 25, 1997
Date pit backfilled	
Diameter (estimated)	14 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	25 - 27 ft from original grade
Orig. surface elev of pit center (GPS)	74.291 ft AMSL
BNL Coordinates EAST	395545.25
BNL Coordinates NORTH	77479.75
Volume of waste material processed	161 Cu. Yd.
Volume of waste debris sorted	3 Cu. Yd.
Volume of soil segregated	158 Cu. Yd.
Containers recovered with liquid	35
Description of waste debris	
Radioactive materials	plastic bags with animal remains
Segregated soil classification (stockpile designation)	Radioactive
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 4.7 - C8 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 6, 1997
Date waste excavation completed	August 8, 1997
Date pit backfilled	
Diameter (estimated)	10 - 12 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	29 - 30 ft from original grade
Orig. surface elev of pit center (GPS)	74.787 ft AMSL
BNL Coordinates EAST	395558.01
BNL Coordinates NORTH	77473.54
Volume of waste material processed	147 Cu. Yd.
Volume of waste debris sorted	3 Cu. Yd.
Volume of soil segregated	144 Cu. Yd.
Containers recovered with liquid	120
Description of waste debris	2 bottles of liquid mercury, 3 bottles of liquid bromine, plastic bags with animal remains, glass bottles, laboratory equipment
Radioactive materials	
Segregated soil classification (stockpile designation)	Radioactive
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 4.8 - C11A - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 4, 1997
Date waste excavation completed	August 5, 1997
Date pit backfilled	
Diameter (estimated)	12 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	22 ft from original grade
Orig. surface elev of pit center (GPS)	74.399 ft AMSL
BNL Coordinates EAST	395563.99
BNL Coordinates NORTH	77472.39
Volume of waste material processed	50 Cu. Yd.
Volume of waste debris sorted	2 Cu. Yd.
Volume of soil segregated	48 Cu. Yd.
Containers recovered with liquid	13
Description of waste debris	plastic bags with animal remains, free elemental Hg
Radioactive materials	
Segregated soil classification (stockpile designation)	Radioactive
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 4.9 - C11B - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 4, 1997
Date waste excavation completed	August 5, 1997
Date pit backfilled	
Diameter (estimated)	10 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	21 ft from original grade
Orig. surface elev of pit center (GPS)	73.730 ft AMSL
BNL Coordinates EAST	395571.83
BNL Coordinates NORTH	77470.70
Volume of waste material processed	82 Cu. Yd.
Volume of waste debris sorted	4 Cu. Yd.
Volume of soil segregated	78 Cu. Yd.
Containers recovered with liquid	46
Description of waste debris	plastic bags with animal remains, free elemental Hg, test tubes
Radioactive materials	animal remains - 150 μ R/hr
Segregated soil classification (stockpile designation)	Hazardous
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.10 - C11C - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 30, 1997
Date waste excavation completed	August 20, 1997
Date pit backfilled	
Diameter (estimated)	15 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	15 ft from original grade
Orig. surface elev of pit center (GPS)	74.032 ft AMSL
BNL Coordinates EAST	395578.72
BNL Coordinates NORTH	77469.28
Volume of waste material processed	199 Cu. Yd.
Volume of waste debris sorted	7 Cu. Yd.
Volume of soil segregated	192 Cu. Yd.
Containers recovered with liquid	20
Description of waste debris	liquid bromine, metal, plastic bags with animal remains, glass bottles, liquid Hg
Radioactive materials	
Segregated soil classification (stockpile designation)	Mixed
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.11 - C12 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 28, 1997
Date waste excavation completed	July 29, 1997
Date pit backfilled	
Diameter (estimated)	20 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	28 ft from original grade
Orig. surface elev of pit center (GPS)	74.13 ft AMSL
BNL Coordinates EAST	395591.12
BNL Coordinates NORTH	77465.27
Volume of waste material processed	817 Cu. Yd.
Volume of waste debris sorted	18 Cu. Yd.
Volume of soil segregated	799 Cu. Yd.
Containers recovered with liquid	178
Description of waste debris	free elemental Hg, glass bottles, animal remains
Radioactive materials	40 mR/hr
Segregated soil classification (stockpile designation)	Radioactive
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.12 - C13 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 22, 1997
Date waste excavation completed	July 23, 1997
Date pit backfilled	
Diameter (estimated)	18 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	27 ft from original grade
Orig. surface elev of pit center (GPS)	73.494 ft AMSL
BNL Coordinates EAST	395607.08
BNL Coordinates NORTH	77462.85
Volume of waste material processed	75 Cu. Yd.
Volume of waste debris sorted	3 Cu. Yd.
Volume of soil segregated	72 Cu. Yd.
Containers recovered with liquid	20
Description of waste debris	animal carcasses, metallic tubing, drums, glassware, metal cans, sheet metal, bones
Radioactive materials	low levels
Segregated soil classification (stockpile designation)	Hazardous
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.13 - C14 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 17, 1997
Date waste excavation completed	August 14, 1997
Date pit backfilled	
Diameter (estimated)	30 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	33 - 35 ft from original grade
Orig. surface elev of pit center (GPS)	69.760 ft AMSL
BNL Coordinates EAST	395620.04
BNL Coordinates NORTH	77457.12
Volume of waste material processed	219 Cu. Yd.
Volume of waste debris sorted	12 Cu. Yd.
Volume of soil segregated	207 Cu. Yd.
Containers recovered with liquid	70
Description of waste debris	glass bottles, plastic bags with animal remains, cylinders, drums, glass, laboratory equipment
Radioactive materials	soil
Segregated soil classification (stockpile designation)	Hazardous
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.14 - C15A - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	June 13, 1997
Date waste excavation completed	June 16, 1997
Date pit backfilled	July 18, 1997
Diameter (estimated)	12 - 15 ft
Depth to top of waste (estimated)	3 - 4 ft from original grade
Depth to bot. of waste (estimated)	20 ft from original grade
Orig. surface elev of pit center (GPS)	73.104 ft AMSL
BNL Coordinates EAST	395642.47
BNL Coordinates NORTH	77455.47
Volume of waste material processed	266 Cu. Yd.
Volume of waste debris sorted	23 Cu. Yd.
Volume of soil segregated	243 Cu. Yd.
Containers recovered with liquid	196
Description of waste debris	plastic bags with animal remains, metal, glass bottles, jars, stainless steel 35 gallon drum
Radioactive materials	none
Segregated soil classification (stockpile designation)	Hazardous
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.15 - C15B - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	June 9, 1997
Date waste excavation completed	June 18, 1997
Date pit backfilled	July 18, 1997
Diameter (estimated)	
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	+30 ft from original grade
Orig. surface elev of pit center (GPS)	72.880 ft AMSL
BNL Coordinates EAST	395648.94
BNL Coordinates NORTH	77452.61
Volume of waste material processed	148 Cu. Yd.
Volume of waste debris sorted	9 Cu. Yd.
Volume of soil segregated	139 Cu. Yd.
Containers recovered with liquid	58
Description of waste debris	plastic bags with animal remains, glass bottles, metal
Radioactive materials	soil and waste debris 2x background
Segregated soil classification (stockpile designation)	Hazardous
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.16 - C17 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 12, 1997
Date waste excavation completed	August 12 ,1997
Date pit backfilled	
Diameter (estimated)	12 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	21 ft from original grade
Orig. surface elev of pit center (GPS)	74.350 ft AMSL
BNL Coordinates EAST	395528.47
BNL Coordinates NORTH	77493.72
Volume of waste material processed	138 Cu. Yd.
Volume of waste debris sorted	5 Cu. Yd.
Volume of soil segregated	133 Cu. Yd.
Containers recovered with liquid	64
Description of waste debris	asbestos, plastic bags with animal remains, sharps, miscellaneous metals, wire
Radioactive materials	none
Segregated soil classification (stockpile designation)	101 Cu. Yd. Hazardous 32 Cu. Yd. Mixed
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.17 - C18 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 30, 1997
Date waste excavation completed	August 8, 1997
Date pit backfilled	
Diameter (estimated)	20 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	28 ft from original grade
Orig. surface elev of pit center (GPS)	73.92 ft AMSL
BNL Coordinates EAST	395534.37
BNL Coordinates NORTH	77481.78
Volume of waste material processed	
Volume of waste debris sorted	
Volume of soil segregated	
Containers recovered with liquid	
Description of waste debris	
Radioactive materials	
Segregated soil classification (stockpile designation)	
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.18 - C20 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 11, 1997
Date waste excavation completed	August 12, 1997
Date pit backfilled	August 15, 1997
Diameter (estimated)	12 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	21 ft from original grade
Orig. surface elev of pit center (GPS)	75.216 ft AMSL
BNL Coordinates EAST	395546.87
BNL Coordinates NORTH	77485.53
Volume of waste material processed	148 Cu. Yd.
Volume of waste debris sorted	4 Cu. Yd.
Volume of soil segregated	144 Cu. Yd.
Containers recovered with liquid	33
Description of waste debris	stainless steel 55 gallon drums, acid bottles, metal containers, HCl, H ₂ SO ₄ , Nitric acid, plastic bags with animal remains
Radioactive materials	none
Segregated soil classification (stockpile designation)	84 Cu. Yd. Hazardous 60 Cu. Yd. Mixed
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 4.19 - C21 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 11, 1997
Date waste excavation completed	August 11, 1997
Date pit backfilled	
Diameter (estimated)	12 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	20 - 21 ft from original grade
Orig. surface elev of pit center (GPS)	75.275 ft AMSL
BNL Coordinates EAST	395553.12
BNL Coordinates NORTH	77482.74
Volume of waste material processed	110 Cu. Yd.
Volume of waste debris sorted	2 Cu. Yd.
Volume of soil segregated	108 Cu. Yd.
Containers recovered with liquid	22
Description of waste debris	plastic bags with animal remains, metallic drums/containers, miscellaneous metals
Radioactive materials	18" x 24" laboratory tray 200 μ R/hr placed in Radioactive materials bag at pit
Segregated soil classification (stockpile designation)	84 Cu. Yd. Hazardous 24 Cu. Yd. Mixed
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.20 - C22 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 7, 1997
Date waste excavation completed	August 7, 1997
Date pit backfilled	August 15, 1997
Diameter (estimated)	12 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	25 ft from original grade
Orig. surface elev of pit center (GPS)	71.165 ft AMSL
BNL Coordinates EAST	395483.85
BNL Coordinates NORTH	77474.20
Volume of waste material processed	147 Cu. Yd.
Volume of waste debris sorted	3 Cu. Yd.
Volume of soil segregated	144 Cu. Yd.
Containers recovered with liquid	60
Description of waste debris	ash, miscellaneous metals and plastics, glass bottles
Radioactive materials	6" x 6" piece of metal 60 mR/hr placed in B25 container
Segregated soil classification (stockpile designation)	Radioactive
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.21 - C23 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 8, 1997
Date waste excavation completed	August 11, 1997
Date pit backfilled	August 15, 1997
Diameter (estimated)	15 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	20 ft from original grade
Orig. surface elev of pit center (GPS)	71.434 ft AMSL
BNL Coordinates EAST	395486.71
BNL Coordinates NORTH	77480.66
Volume of waste material processed	99 Cu. Yd.
Volume of waste debris sorted	3 Cu. Yd.
Volume of soil segregated	96 Cu. Yd.
Containers recovered with liquid	20
Description of waste debris	1/2 gallon of liquid bromine, miscellaneous metals, glass bottles
Radioactive materials	
Segregated soil classification (stockpile designation)	Radioactive
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.22 - C24 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 11, 1997
Date waste excavation completed	August 19, 1997
Date pit backfilled	
Diameter (estimated)	15 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	18 ft from original grade
Orig. surface elev of pit center (GPS)	71.726 ft AMSL
BNL Coordinates EAST	395493.40
BNL Coordinates NORTH	77476.70
Volume of waste material processed	109 Cu. Yd.
Volume of waste debris sorted	4 Cu. Yd.
Volume of soil segregated	105 Cu. Yd.
Containers recovered with liquid	14
Description of waste debris	liquid bromine, miscellaneous metals, plastic bags with animal remains, glass bottles
Radioactive materials	
Segregated soil classification (stockpile designation)	33 Cu. Yd. Hazardous 72 Cu. Yd. Mixed
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.23 - C25 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 11, 1997
Date waste excavation completed	August 12, 1997
Date pit backfilled	August 15, 1997
Diameter (estimated)	12 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	15 ft from original grade
Orig. surface elev of pit center (GPS)	71.588 ft AMSL
BNL Coordinates EAST	395496.18
BNL Coordinates NORTH	77484.74
Volume of waste material processed	132 Cu. Yd.
Volume of waste debris sorted	4 Cu. Yd.
Volume of soil segregated	128 Cu. Yd.
Containers recovered with liquid	31
Description of waste debris	plastic bags with animal remains, metal debris
Radioactive materials	
Segregated soil classification (stockpile designation)	59 Cu. Yd. Hazardous 69 Cu. Yd. Mixed
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 4.24 - C27A - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 4, 1997
Date waste excavation completed	August 5, 1997
Date pit backfilled	
Diameter (estimated)	12 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	20 ft from original grade
Orig. surface elev of pit center (GPS)	72.510 ft AMSL
BNL Coordinates EAST	395515.62
BNL Coordinates NORTH	77476.15
Volume of waste material processed	82 Cu. Yd.
Volume of waste debris sorted	4 Cu. Yd.
Volume of soil segregated	78 Cu. Yd.
Containers recovered with liquid	45
Description of waste debris	metal, glass bottles, plastic bags with animal remains
Radioactive materials	
Segregated soil classification (stockpile designation)	Hazardous
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.25 - C27B - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 4, 1997
Date waste excavation completed	August 4, 1997
Date pit backfilled	
Diameter (estimated)	15 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	20 ft from original grade
Orig. surface elev of pit center (GPS)	72.424 ft AMSL
BNL Coordinates EAST	395519.97
BNL Coordinates NORTH	77471.29
Volume of waste material processed	78 Cu. Yd.
Volume of waste debris sorted	2 Cu. Yd.
Volume of soil segregated	76 Cu. Yd.
Containers recovered with liquid	44
Description of waste debris	sparse
Radioactive materials	radioactive soil 60 Cu. Yd.
Segregated soil classification (stockpile designation)	Hazardous
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.26 - C29 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 28, 1997
Date waste excavation completed	July 29, 1997
Date pit backfilled	
Diameter (estimated)	14 ft
Depth to top of waste (estimated)	3 ft from original grade
Depth to bot. of waste (estimated)	23 ft from original grade
Orig. surface elev of pit center (GPS)	72.782 ft AMSL
BNL Coordinates EAST	395533.19
BNL Coordinates NORTH	77466.52
Volume of waste material processed	153 Cu. Yd.
Volume of waste debris sorted	9 Cu. Yd.
Volume of soil segregated	144 Cu. Yd.
Containers recovered with liquid	72
Description of waste debris	piping, bottles, hydrofluoric acid
Radioactive materials	none
Segregated soil classification (stockpile designation)	120 Cu. Yd. Hazardous 24 Cu. Yd. Mixed
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.27 - C30 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 28, 1997
Date waste excavation completed	July 28, 1997
Date pit backfilled	
Diameter (estimated)	12 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	20 ft from original grade
Orig. surface elev of pit center (GPS)	72.785 ft AMSL
BNL Coordinates EAST	395539.19
BNL Coordinates NORTH	77463.80
Volume of waste material processed	
Volume of waste debris sorted	
Volume of soil segregated	
Containers recovered with liquid	
Description of waste debris	sparse plastic bags with animal remains, glass bottles
Radioactive materials	none
Segregated soil classification (stockpile designation)	
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 4.28 - C33 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 10, 1997
Date waste excavation completed	July 11, 1997
Date pit backfilled	August 13, 1997
Diameter (estimated)	
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	
Orig. surface elev of pit center (GPS)	71.378 ft AMSL
BNL Coordinates EAST	395648.28
BNL Coordinates NORTH	77429.94
Volume of waste material processed	238 Cu. Yd.
Volume of waste debris sorted	7 Cu. Yd.
Volume of soil segregated	231 Cu. Yd.
Containers recovered with liquid	45
Description of waste debris	bottles containing liquid Hg, acids, bases, drums
Radioactive materials	
Segregated soil classification (stockpile designation)	91 Cu. Yd. Hazardous 140 Cu. Yd. Mixed
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.29 - C34 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 7, 1997
Date waste excavation completed	July 8, 1997
Date pit backfilled	August 13, 1997
Diameter (estimated)	16 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	16 ft from original grade
Orig. surface elev of pit center (GPS)	70.997 ft AMSL
BNL Coordinates EAST	395666.86
BNL Coordinates NORTH	77426.67
Volume of waste material processed	109 Cu. Yd.
Volume of waste debris sorted	4 Cu. Yd.
Volume of soil segregated	105 Cu. Yd.
Containers recovered with liquid	14
Description of waste debris	liquid Hg
Radioactive materials	barrel
Segregated soil classification (stockpile designation)	33 Cu. Yd. Hazardous 72 Cu. Yd. Mixed
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 4.30 - C35 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 15, 1997
Date waste excavation completed	July 16, 1997
Date pit backfilled	August 13, 1997
Diameter (estimated)	22 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	18 ft from original grade
Orig. surface elev of pit center (GPS)	71.119 ft AMSL
BNL Coordinates EAST	395627.62
BNL Coordinates NORTH	77434.82
Volume of waste material processed	204 Cu. Yd.
Volume of waste debris sorted	8 Cu. Yd.
Volume of soil segregated	196 Cu. Yd.
Containers recovered with liquid	38
Description of waste debris	elemental Hg, animal remains, bones
Radioactive materials	
Segregated soil classification (stockpile designation)	87 Cu. Yd. Hazardous 37 Cu. Yd. Non-hazardous 72 Cu. Yd. Mixed
Volume of backfill	

- Pit dimensions estimated by field engineers.
- Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- Description of waste debris provided by field engineers.
- Radioactive materials description provided by field engineers.
- Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- Backfill volume estimated by field engineers.

TABLE No. 4.31 - C37 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 14, 1997
Date waste excavation completed	July 14, 1997
Date pit backfilled	August 13, 1997
Diameter (estimated)	15 ft
Depth to top of waste (estimated)	2 ft from original grade
Depth to bot. of waste (estimated)	14 ft from original grade
Orig. surface elev of pit center (GPS)	71.237 ft AMSL
BNL Coordinates EAST	395632.52
BNL Coordinates NORTH	77431.26
Volume of waste material processed	96 Cu. Yd.
Volume of waste debris sorted	4 Cu. Yd.
Volume of soil segregated	92 Cu. Yd.
Containers recovered with liquid	25
Description of waste debris	
Radioactive materials	
Segregated soil classification (stockpile designation)	54 Cu. Yd. Hazardous 38 Cu. Yd. Non-hazardous
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.32 - C38 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	July 9, 1997
Date waste excavation completed	July 9, 1997
Date pit backfilled	August 13, 1997
Diameter (estimated)	18 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	18 ft from original grade
Orig. surface elev of pit center (GPS)	71.161 ft AMSL
BNL Coordinates EAST	395662.05
BNL Coordinates NORTH	77427.10
Volume of waste material processed	
Volume of waste debris sorted	
Volume of soil segregated	
Containers recovered with liquid	
Description of waste debris	bottles, animal carcasses and remains
Radioactive materials	
Segregated soil classification (stockpile designation)	
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

TABLE No. 4.33 - C41 - PIT DESCRIPTION

Pit Parameter	Quantity / Description
Date waste excavation began	August 12, 1997
Date waste excavation completed	August 12, 1997
Date pit backfilled	
Diameter (estimated)	12 ft
Depth to top of waste (estimated)	
Depth to bot. of waste (estimated)	18 ft from original grade
Orig. surface elev of pit center (GPS)	71.896 ft AMSL
BNL Coordinates EAST	395506.71
BNL Coordinates NORTH	77483.34
Volume of waste material processed	126 Cu. Yd.
Volume of waste debris sorted	3 Cu. Yd.
Volume of soil segregated	123 Cu. Yd.
Containers recovered with liquid	30
Description of waste debris	plastic bags with animal remains, needles, blood vials
Radioactive materials	
Segregated soil classification (stockpile designation)	58 Cu. Yd. Hazardous 65 Cu. Yd. Mixed
Volume of backfill	

- ▶ Pit dimensions estimated by field engineers.
- ▶ Processed materials quantities interpolated from Dames & Moore Daily Report - Sorting Summary and field engineers' daily reports.
- ▶ Description of waste debris provided by field engineers.
- ▶ Radioactive materials description provided by field engineers.
- ▶ Segregated soil classification based on field instrument screening by D&M and ERM-NE.
- ▶ Backfill volume estimated by field engineers.

5.0 WASTE MANAGEMENT

5.1 Summary of Wastes Generated

The remediation of the 55 waste pits generated more than 8,600 cubic yards of soil, nearly 500 cubic yards of debris, approximately 1,000 pounds of animal carcasses and more than 3,200 bottles containing liquids. A breakdown of the wastes generated on a pit by pit basis is detailed in Table No. 5.1. The field screening criteria used to direct processed material (soil) to specific stockpiles is presented in Table No. 5.1a.

Table No. 5.2 compares the anticipated waste volumes to the actual. The locations of the pits as determined by the previous geophysical studies were found to be accurate. However, the pits were found to be an average of 3.5 feet wider and 6.25 feet deeper than anticipated. While the actual volume of waste debris was an average of 30 cubic yards per pit less than anticipated, the average volume of contaminated soil was an average of 143 cubic yards more per pit than anticipated. The most significant impact on the project was the increase in contaminated soil volume which totaled more than 8,600 cubic yards, nearly 7,000 more than anticipated. The major factors that contributed to the additional soil were the four additional pits, the larger pit sizes and the additional contaminated soil that required removal in order to meet the project clean up objectives.

5.2 Secondary Sorting, Bulking and Packaging

Upon completion of the preliminary processing and sorting, secondary sorting, bulking and packaging activities were conducted in order to prepare materials for final off site disposal. These activities are still being conducted and will be documented in the Final report. Following is a description of the secondary sorting, bulking and packaging activities conducted prior to the preparation of this Draft report.

5.2.1 Animal Carcasses

During the preliminary processing operation, a large number of plastic bags containing animal carcasses were separated from the debris waste stream. In order to avoid unnecessary storage of exhumed animal carcasses, this waste stream was the first to be prepared for disposal. In addition

to the carcasses, the plastic bags were also observed to contain laboratory instrumentation (tubing, scissors, test tubes, etc.). These materials required segregation from the carcasses in order to properly characterize the waste stream. Segregation of these materials was performed by opening and sorting through each individual plastic bag. The animal carcasses were then packaged into 13 fiber drums. An estimated 1,000 pounds of animal carcasses were generated. Final disposal is scheduled for mid October 1997.

5.2.2 Liquids

An estimated total of 3,286 containers with visible liquids were removed from the waste stream during the preliminary processing and sorting phase of the project. These containers were transported to and temporarily stored in a separate liquid bulking area until the preliminary processing and sorting was complete. The liquids were then bulked together based upon chemical characteristics determined through the use of field test kits. For more detail regarding the characterization and bulking procedures for liquids, please refer to Appendix C of the *Integrated Work Plan*. The total volume of and final characterization of the recovered liquids was not available as of the preparation of this Draft report. This information will be included in the Final report.

5.2.3 Shock Sensitive Materials

Potentially shock sensitive materials were removed from the waste stream at the pit excavation as well as during the preliminary processing and sorting. These materials included compressed gas cylinders, bottles with visible crystals and brown/amber bottles. Once isolated, these materials were transported and temporarily stored at the on site bermed ("blast proof") area until the preliminary processing and sorting was complete (see Figure 2 and Appendix D Photo #2).

Cylinders were further evaluated by the Shock Sensitive Materials technicians and sorted based upon positive pressurization. Of the estimated 300 compressed gas cylinders removed from the waste stream, 90% were determined to be decommissioned or inert based upon the presence of intentional punctures in the cylinder walls or holes resulting from degradation. The remaining 10% believed to be under pressure were transported to the on site Hazardous Waste Management area awaiting

final decommissioning.

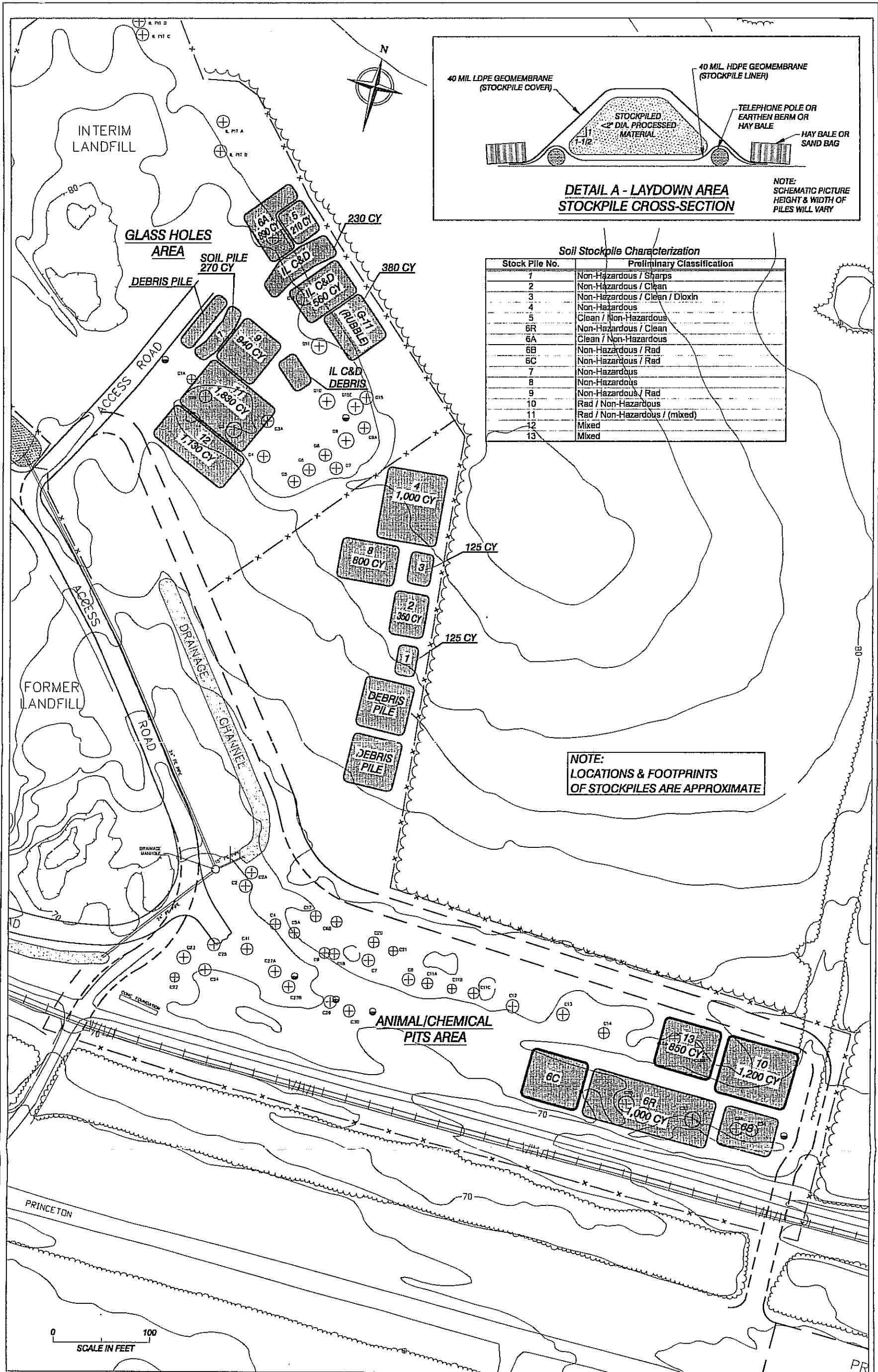
Brown/ amber bottles and bottles with visible crystal formations were opened remotely by the Shock Sensitive Materials technicians. The procedure involved an electronic, remote controlled opening device capable of unscrewing bottle tops or drilling holes into potentially shock sensitive containers. The device is enclosed in protective shielding and is monitored remotely via video surveillance. Refer to the *Work Instructions* contained in Volume 3 for more detail regarding remote opening procedures.

None of the containers segregated were found to be shock sensitive. Resulting liquids from these bottles were directed to the liquid bulking area and handled as described in section 5.2.2.

5.3 Contaminated Soil and Debris Stockpiles

Processed material (consisting primarily of soil), was directed to a specific soil stockpile based upon field screening performed at the pit during excavation and at the sorting area during processing, and on site laboratory analyses. On site laboratory analytical results used to characterize soils for stockpiling are summarized on a pit by pit basis in Table No.'s C1 through C3 and C10 through C12 contained in Appendix C. These samples were collected at a frequency of 1 per 25 cubic yards during the sorting operation. The results contained in Appendix C are presented as ranges for the samples collected from a particular pit. All of the processed material analytical data was not available at the time the Draft report was prepared. Complete data packages will be included in the Final report. The field screening criteria used to direct processed material (soil) to specific stockpiles is presented in Table No. 5.1a. Soil and debris stockpile locations, estimated quantities and potential quality are illustrated on Figure 7.

These stockpiles are currently being sampled and characterized for off site disposal. Final disposal of the resulting wastes will begin in October 1997. Completion of the waste disposal phase is contingent upon the availability of acceptable treatment/disposal facilities to accommodate the waste materials as well as available funding. Site restoration activities will be completed following off site



BHL 9705\REPORTS\FIGURES\STOCKPILE

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**BROOKHAVEN NATIONAL LABORATORY
PROCESSED MATERIALS STOCKPILES PLAN
for the
ANIMAL/CHEMICAL PITS AND GLASS HOLES
REMEDIAL ACTION CLOSURE PLAN**

Figure No:

7

Date: 9/30/97

Prepared By: PKD

Project No: BHL9705

disposal of wastes. Prior to off site disposal, the waste, including stockpiled soil, will be temporarily stored on site in accordance with appropriate federal, state and local regulations. The detail included in Figure 7 illustrates the configuration of the soil stockpile construction. A procedure for inspecting and maintaining the soil stockpiles during the disposal phase is currently being prepared and will be included with the Final report. Stockpiles found not to be in compliance with the above referenced detail will be corrected.

Table No. 5.1 - Animal/Chemical Pits and Glass Holes Post Excavation Summary Information

Brookhaven National Laboratory, Upton, New York
Animal Chemical Pits and Glass Holes Remedial Action Closure Report

Pit ID	Date Started	Date Completed	Date Backfilled	*Diameter (ft)	*Depth (ft)	**Volume of Material (Cu Yd)	**Volume of Waste Debris (Cu Yd)	**Volume of Soil (Cu Yd)	***Stockpile Classification				*Volume Backfill (Cu Yd)	**Containers w/Liquid
									Potentially Non-Haz Soil (Cu Yd)	Potentially Hazardous Soil (Cu Yd)	Potentially Rad Soil (Cu Yd)	Potentially Mixed Soil (Cu Yd)		
IL Pit A	6/9/97	6/10/97	6/30/97	10	14	0	0	0	0	0	0	0		0
IL Pit B	6/10/97	6/12/97	6/30/97	15	20	129	20	109	109	0	0	0		100
IL Pit C	9/5/97	9/11/97		30	25	260	15	245	245	0	0	0		122
IL Pit D	9/11/97	9/12/97		20	18	260	15	245	245	0	0	0		123
G1A	7/1/97	7/2/97	7/23/97	30	16								170	
G1B	6/30/97	7/1/97	7/23/97	20	20	180	12	168	40	128	0	0	140	122
G3	6/19/97	6/27/97	7/31/97	25	20	152	13	139	0	139	0	0		76
G3A	6/18/97	6/18/97	7/2/97	20	15	60	10	50	50	0	0	0		50
G4	7/3/97	7/3/97	7/23/97	16	18	38	2	36	0	36	0	0	150	20
G5	7/9/97	7/9/97	7/18/97	20	16	58	4	54	0	54	0	0	190	30
G6	7/9/97	7/9/97	7/18/97	20	16	227	13	214	0	214	0	0	120	99
G7	7/7/97	7/8/97		20	17	569	29	540	47	493	0	0		282
G8	7/8/97	7/8/97	7/18/97	20	17	195	9	186	12	174	0	0	85	76
G9	7/1/97	7/2/97	8/13/97	14	18									
G9A	6/19/97	7/1/97		16	19	388	43	345	110	235	0	0		192
G10	7/3/97	7/7/97	8/15/97	20	16	184	10	174	102	72	0	0	133	45
G11	7/10/97	7/18/97	7/28/97	40	25	772	51	721	0	721	0	0		80
G12	6/12/97	6/16/97	7/14/97	18	18	128	20	108	108	0	0	0	295	100
G13	6/16/97	6/17/97	7/1/97	17	16	258	30	228	228	0	0	0		150
G15	6/18/97	6/18/97	8/15/97	20	20	168	22	146	111	35	0	0	133	110
G15E	7/3/97	7/7/97	8/15/97	15	16	152	8	144	60	84	0	0	133	90
C2	8/13/97	8/14/97		10	18									
C2A	8/14/97	8/14/97		8	15									
C4	8/13/97	8/13/97		8	18	112	4	108	0	0	108	0		55
C5A	8/5/97	8/6/97		12	25	50	2	48	0	0	48	0		14
C6	7/29/97	7/30/97		12	16									
C6B	8/12/97	8/13/97		13	21	127	5	122	0	30	24	68		37
C7	7/24/97	7/25/97		14	27	161	3	158	0	0	158	0		35
C8	8/6/97	8/8/97		12	30	147	3	144	0	0	144	0		120
C11A	8/4/97	8/5/97		12	22	50	2	48	0	0	48	0		13
C11B	8/4/97	8/5/97		10	21	82	4	78	0	78	0	0		46
C11C	7/30/97	8/20/97		15	15	199	7	192	0	0	0	192		20
C12	7/28/97	7/29/97		20	28	817	18	799	0	0	799	0		178
C13	7/22/97	7/23/97		18	27	75	3	72	0	72	0	0		20
C14	7/17/97	8/14/97		30	35	219	12	207	0	207	0	0		70
C15A	6/13/97	6/16/97	7/18/97	15	20	266	23	243	0	243	0	0		196
C15B	6/9/97	6/18/97	7/18/97	25	30	148	9	139	0	139	0	0		58
C17	8/12/97	8/12/97		12	21	138	5	133	0	101	0	32		64
C18	7/30/97	8/8/97		20	28									
C20	8/11/97	8/12/97	8/15/97	12	21	148	4	144	0	84	0	60		33
C21	8/11/97	8/11/97		12	21	110	2	108	0	84	0	24		22
C22	8/7/97	8/7/97	8/15/97	12	25	147	3	144	0	0	144	0		60
C23	8/8/97	8/11/97	8/15/97	15	20	99	3	96	0	0	96	0		20
C24	8/11/97	8/19/97		15	18	109	4	105	0	33	0	72		14
C25	8/11/97	8/12/97	8/15/97	12	15	132	4	128	0	59	0	69		31
C27A	8/4/97	8/5/97		12	20	82	4	78	0	78	0	0		45
C27B	8/4/97	8/4/97		15	20	78	2	76	0	76	0	0		44
C29	7/28/97	8/18/97		14	23	153	9	144	0	120	0	24		72
C30	7/28/97	7/28/97		12	20									
C33	7/10/97	7/11/97	8/13/97	10	12	238	7	231	0	91	0	140		45
C34	7/7/97	7/8/97	8/13/97	16	16	109	4	105	0	33	0	72		14
C35	7/15/97	7/16/97	8/13/97	22	18	204	8	196	37	87	0	72		38
C37	7/14/97	7/14/97	8/13/97	15	14	96	4	92	38	54	0	0		25
C38	7/9/97	7/9/97	8/13/97	18	18									
C41	8/12/97	8/12/97		12	18	126	3	123	0	58	0	65		30
Totals						8600	487	8113	1542	4112	1569	890	1549	3286

* Pit diameters, depths and backfill volumes estimated by project field engineers.
** Volumes/quantities of processed materials and stockpile classifications determined by Dames & Moore.
*** See Table No. 5.1a for Stockpile Classification Criteria.

A blank cell indicates no data presently available.

Table No. 5.2 - Animal/Chemical Pits and Glass Holes Anticipated vs. Actual Waste Parameters

**Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits and Glass Holes Remedial Action Closure Report**

Pit ID	GPS/SURVEY DATA			ANTICIPATED WASTE PARAMETERS					ACTUAL WASTE PARAMETERS					DIFFERENCE BETWEEN ACTUAL & ANTICIPATED				
	BNL Coordinates		Grade Elevation (ft AMSL)	Diameter (ft)	Depth to Bottom (ft)	Total Volume (Cu Yd)	Volume of Waste Debris (Cu Yd)	Volume of Soil (Cu Yd)	Diameter (ft)	Depth to Bottom (ft)	Total Volume (Cu Yd)	Volume of Waste Debris (Cu Yd)	Volume of Soil (Cu Yd)	Diameter (ft)	Depth to Bottom (ft)	Total Volume (Cu Yd)	Volume of Waste Debris (Cu Yd)	Volume of Soil (Cu Yd)
	EAST (m)	NORTH (m)																
IL Pit A	395498.00	77745.00	84.501	NA	NA	NA	NA	NA	10	14	0	0	0	NA	NA	NA	NA	NA
IL Pit B	NA	NA	NA	NA	NA	NA	NA	NA	15	20	129	20	109	NA	NA	NA	NA	NA
IL Pit C	NA	NA	NA	NA	NA	NA	NA	NA	30	25	260	15	245	NA	NA	NA	NA	NA
IL Pit D	NA	NA	NA	NA	NA	NA	NA	NA	20	18	260	15	245	NA	NA	NA	NA	NA
G1A	395488.06	77663.83	81.532	9.84	12.10	34.06	12.90	21.16	30	16				20.16	3.9			
G1B	395492.47	77658.39	81.322	13.12	16.07	79.91	46.11	33.80	20	20	180	12	168	6.88	3.93	100.09	-34.11	134.20
G3	395501.66	77647.82	80.997	16.40	13.77	108.08	58.59	51.49	25	20	152	13	139	8.60	6.23	43.92	-43.59	87.51
G3A	395512.27	77650.61	80.741	13.12	11.48	57.64	37.99	19.65	20	15	60	10	50	6.88	3.52	2.36	-27.99	30.35
G4	395511.08	77639.36	80.364	13.12	16.07	79.91	40.61	39.30	16	18	38	2	36	2.88	1.93	-41.91	-38.81	-3.30
G5	395520.89	77631.22	79.964	13.12	16.40	81.22	49.78	31.44	20	16	58	4	54	6.88	-0.40	-23.22	-45.78	22.56
G6	395525.55	77634.99	80.197	13.12	13.78	68.12	34.06	34.06	20	16	227	13	214	6.88	2.22	158.88	-21.06	179.94
G7	395534.14	77635.50	80.252	13.12	12.79	64.19	31.44	32.75	20	17	569	29	540	6.88	4.21	504.81	-2.44	507.25
G8	395530.68	77639.78	80.315	13.12	12.79	64.19	31.44	32.75	20	17	195	9	186	6.88	4.21	130.81	-22.44	153.25
G9	395537.21	77644.42	80.817	16.40	14.10	110.04	45.85	64.19	14	18								
G9A	395542.96	77648.43	81.050	13.12	11.81	58.95	19.65	39.30	16	19	388	43	345		7.19	329.05	23.35	305.70
G10	395531.05	77656.80	81.178	16.40	12.46	98.25	45.85	52.40	20	16	184	10	174	3.60	3.54	85.75	-35.85	121.60
G11	395528.61	77674.12	82.257	16.40	12.46	98.25	35.37	62.88	40	25	772	51	721	23.60	12.54	673.75	15.63	658.12
G12	395523.83	77689.55	82.201	16.40	15.74	123.14	72.05	51.09	18	18	128	20	108	1.60	2.26	4.86	-52.05	56.91
G13	395513.73	77708.39	82.168	13.12	11.81	58.95	26.20	32.75	17	16	258	30	228	3.88	4.19	199.05	3.80	195.25
G15	395543.61	77657.96	81.240	13.78	11.81	65.50	19.65	45.85	20	20	168	22	146	6.22	8.19	102.50	2.35	100.15
G15E	395540.12	77655.13	81.030	16.40	11.15	86.46	23.58	62.88	15	16	152	8	144	-1.40	4.85	65.54	-15.58	81.12
C2	395506.08	77503.25	73.153	13.12	13.12	65.50	49.78	15.72	10	18				-3.12	4.88			
C2A	NA	NA	NA	NA	NA	NA	NA	NA	8	15				NA	NA	NA	NA	NA
C4	395515.69	77491.20	73.008	11.48	14.43	55.02	30.13	24.89	8	18	112	4	108	-3.48	3.57	56.98	-26.13	83.11
C5A	395521.69	77488.47	73.281	11.48	15.09	57.64	37.99	19.65	12	25	50	2	48	0.52	9.91	-7.64	-35.99	28.35
C6	395531.34	77482.11	73.825	11.48	13.77	52.4	26.2	26.2	12	16				0.52	2.23			
C6B	395535.16	77491.95	75.147	11.48	12.46	47.16	32.75	14.41	13	21	127	5	122	1.52	8.54	79.84	-27.75	107.59
C7	395545.25	77479.75	74.291	13.12	15.09	75.98	45.85	30.13	14	27	161	3	158	0.88	11.91	85.02	-42.85	127.87
C8	395558.01	77473.54	74.787	13.12	15.09	75.98	45.85	30.13	12	30	147	3	144	-1.12	14.91	71.02	-42.85	113.87
C11A	395563.99	77472.39	74.399	11.48	12.14	47.16	19.65	27.51	12	22	50	2	48	0.52	9.86	2.84	-17.65	20.49
C11B	395571.83	77470.70	73.730	9.84	14.10	39.30	22.93	16.37	10	21	82	4	78	0.16	6.90	42.70	-18.93	61.63
C11C	395578.72	77469.28	74.032	11.48	14.10	53.71	31.44	22.27	15	15	199	7	192	3.52	0.90	145.29	-24.44	169.73
C12	395591.12	77465.27	74.130	13.12	12.14	60.26	40.61	19.65	20	28	817	18	799	6.88	15.86	756.74	-22.61	779.35
C13	395607.08	77462.85	73.494	13.12	13.78	69.43	44.54	24.89	18	27	75	3	72	4.88	13.22	5.57	-41.54	47.11
C14	395620.04	77457.12	69.760	11.48	16.07	61.57	39.30	22.27	30	35	219	12	207	18.52	18.93	157.43	-27.30	184.73
C15A	395642.47	77455.47	73.104	11.48	15.42	58.95	36.68	22.27	15	20	266	23	243	3.52	4.58	207.05	-13.68	220.73
C15B	395648.94	77452.61	72.880	16.40	12.46	99.56	52.40	47.16	25	30	148	9	139		17.54	48.44	-43.40	91.84
C17	395528.47	77493.72	74.350	11.48	12.46	47.16	32.75	14.41	12	21	138	5	133	0.52	8.54	90.84	-27.75	118.59
C18	395534.37	77481.78	73.920	11.48	13.78	53.40	26.20	27.20	20	28				8.52	14.22			
C20	395546.87	77485.53	75.216	11.48	16.07	61.57	40.61	20.96	12	21	148	4	144	0.52	4.93	86.43	-36.61	123.04
C21	395553.12	77482.74	75.275	9.84	12.14	34.06	17.03	17.03	12	21	110	2	108	2.16	8.86	75.94	-15.03	90.97
C22	395483.85	77474.20	71.165	9.84	15.09	43.23	31.44	11.79	12	25	147	3	144	2.16	9.91	103.77	-28.44	132.21
C23	39486.71	77480.66	71.434	14.43	16.07	95.63	61.57	34.06	15	20	99	3	96	0.57	3.93	3.37	-58.57	61.94
C24	395493.40	77476.70	71.726	13.12	15.09	75.98	45.85	30.13	15	18	109	4	105	1.88	2.91	33.02	-41.85	74.87
C25	395496.18	77484.74	71.588	13.12	15.09	75.98	45.85	30.13	12	15	132	4	128	-1.12	-0.09	56.02	-41.85	97.87
C27A	395515.62	77476.15	72.510	13.12	15.09	76.98	45.85	31.13	12	20	82	4	78	-1.12	4.91	5.02	-41.85	46.87
C27B	395519.97	77471.29	72.424	13.12	15.09	75.98	45.85	30.13	15	20	78	2	76	1.88	4.91	2.02	-43.85	45.87
C29	395533.19	77466.52	72.782	13.12	16.07	81.22	56.33	24.89	14	23	153	9	144	0.88	6.93	71.78	-47.33	119.11
C30	395539.19	77463.80	72.785	12.14	14.10	61.57	44.54	17.03	12	20				-0.14	5.90			
C33	395648.28	77429.94	71.378	16.40	14.10	111.35	68.12	43.23	10	12	238	7	231	-6.40	-2.10	126.65	-61.12	187.77
C34	395666.88	77426.67	70.997	13.12	13.12	65.50	36.68	28.82	16	16	109	4	105	2.88	2.88	43.50	-32.68	76.18
C35	395627.62	77434.82	71.119	16.40	14.10	112.66	68.12	44.54	22	18	204	8	196	5.60	3.90	91.34	-60.12	151.46
C37	395632.52	77431.26	71.237	16.40	13.12	104.80	60.26	44.54	15	14	86	4	92	-1.40	0.88	-8.80	-56.26	47.46
C38	395662.05	77427.10	71.161	13.12	12.47	62.88	34.06	28.82	18	18				4.88	5.53			
C41	395506.71	77483.34	71.896	12.47	15.09	66.81	40.61	26.20	12	18	126	3	123	-0.47	2.91	69.19	-37.61	96.80
Totals						3563.24	1986.94	1576.30			8600.00	487.00	8113.00					
Average				13.16	13.88	71.26	39.74	31.53	16.65	19.93	182.98	10.36	172.62	3.53	6.25	112.27	-30.47	142.74

Pit diameters, depths and backfill volumes estimated by project field engineers.
 Volumes of processed materials determined by Dames & Moore.
 - Indicates that actual parameter was smaller than or less than anticipated parameter.

A blank cell indicates no data presently available.
 NA - Not Applicable.

Table No. 5.1a - Dames & Moore Field Screening Criteria for Preliminary Soil Classification

**Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits and Glass Holes Remedial Action Closure Report**

Parameter	Analysis/Observation	Sample	Units	Potential Soil Classification				
				Clean	Non-Hazardous	Hazardous	Radiological	Mixed
VOCs	PID/OVA	Bucket Screen	ppm	< 1	< 5	> 5	< 5	> 5
		Headspace	ppm	< 1	< 100	> 100	< 100	> 100
SVOCs/Pest./PCBs	Observation	Bucket Screen		No Staining	Stained, no residue on gloves	Stained, residue on gloves	No Staining	Staining
Metals	XRF	Bucket Screen						
	Lead		mg/kg	< 400	< 400	> 400	< 400	> 400
	Mercury		mg/kg	< 1.8	> 1.8 - < 4.0	> 4	< 4	> 4
Mercury	MVA	Bucket Screen	µg/m ³	< 1	< 1	> 1	< 1	> 1
		Headspace	µg/m ³	< 1	< 10	> 10	< 1	> 10
RAD	ESP-2	Bucket Screen						
	Gross Beta			< 2x BG	< 2x BG	< 2x BG	> 2x BG	> 2x BG
	Ludlum 19							
	Gross Gamma			< 2x BG	< 2x BG	< 2x BG	> 2x BG	> 2x BG

Soil segregated into one of four categories based on screening criteria described in table.

If soil had both radiological and hazardous characteristics the soil was segregated as mixed waste.

VOCs - Volatile Organic Compounds

SVOCs - Semivolatile Organic Compounds

PID - Photoionization Detector

OVA - Flame Ionization Detector

XRF- X-Ray Fluorescence Analyzer

MVA - Mercury Vapor Analyzer

BG - site back ground (typically 12 - 16 µRem/hr)

6.0 CONCLUSIONS

The remedial actions taken at the Chemical Holes have satisfied the overall project objective of eliminating potential sources of contamination by excavating buried waste debris and associated contaminated soils from the 51 known as well as 4 newly discovered waste pits. The waste debris contained in the fifty five waste pits was completely removed. Additionally, the fifty five waste pits were remediated to within the established project clean up goals for soil as demonstrated by the confirmatory sampling data. The confirmatory sampling data was further supported by results from split samples collected and analyzed by the NYSDEC and SCDHS. Further, the procedures and protocols established for the safe excavation and handling of waste materials were also found to be effective as demonstrated by the safe and timely completion of the excavation and processing phases of the project.

In general, the locations of the waste pits were accurately identified by the previous studies, however the pits were found to be an average of 3.5 feet wider and 6.25 feet deeper than anticipated. While the actual volume of waste debris was an average of 30 cubic yards per pit less than anticipated, the average volume of contaminated soil was an average of 143 cubic yards more per pit than anticipated. The most significant impact on the project was the increase in contaminated soil volume which totaled more than 8,600 cubic yards, nearly 7,000 more than anticipated. The major factors that contributed to the additional soil were the discovery of four additional pits, the larger pit sizes and the additional contaminated soil that required removal in order to meet the project clean up objectives..

Final disposal of the resulting wastes will begin in October 1997. Completion of the waste disposal phase is contingent upon the availability of acceptable treatment/disposal facilities to accommodate the waste materials as well as available funding. Site restoration activities will be completed following off site disposal of wastes. Prior to off site disposal, the waste, including stockpiled soil, will be temporarily stored on site in accordance with appropriate federal, state and local regulations. A more detailed account of the resulting waste streams will be included in the follow up report documenting the final waste characterization, disposal and site restoration

APPENDIX A

PIT INITIAL CHARACTERIZATION

GLASS HOLES

Information Obtained From:

- *Brookhaven National Laboratory Chemical/Animal/Glass Holes Evaluation of Alternatives - prepared by CDM Federal Programs Corporation, April 1997*
- *Brookhaven National Laboratory Final Report, Engineering Evaluation/Cost Analysis for Landfill Closure Action, Operable Unit I, Volume 1- prepared by CDM Federal Programs Corporation, March 29, 1995*
- *Supplemental Characterization Report for the Animal/Chemical Pits and Glass Holes Areas at Brookhaven National Laboratory, Upton, New York, Final Report - prepared by Environmental Assessment Division, Argonne National Laboratory, April 1997*
- *Brookhaven National Laboratory Draft Integrated Geophysical Report for Chemical/Animal and Glass Hole Area (AOC 2B and 2C) - prepared by Idaho National Engineering Laboratory - December 13, 1995*
- *Ground Penetrating Radar Investigation at the Animal-Chemical Pit, Final Report - prepared by J.J. Daniels, August 15, 1996*
- *Removal Action VI - Glass Holes (Area of Concern 2C) Investigation of Derived Waste, Waste Characterization - Task Order No. 2, Draft Report - prepared by Science and Technology, Inc., June 1996*

PIT # - IL

CENTER POINT:

EAST:	395498.00
NORTH:	77745.00

PIT SIZE:

PIT DIAMETER:	FT
DEPTH TO TOP OF WASTE:	FT
DEPTH TO BOTTOM OF WASTE:	FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	84.501	FT
ELEVATION TOP OF WASTE:		FT
ELEVATION BOTTOM OF WASTE:		FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	CU YD
ESTIMATED VOLUME OF WASTE:	CU YD

GPR COMMENTS:

NO TESTING.

GEOPROBE RESULTS: NO PROBES TAKEN.

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDES</u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - G1A

CENTER POINT:

EAST:	395488.06
NORTH:	77663.83

PIT SIZE:

PIT DIAMETER:	9.84 FT
DEPTH TO TOP OF WASTE:	6.9 FT
DEPTH TO BOTTOM OF WASTE:	12.1 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	81.532 FT
ELEVATION TOP OF WASTE:	74.632 FT
ELEVATION BOTTOM OF WASTE:	69.432 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	34.06 CU YD
ESTIMATED VOLUME OF WASTE:	12.9 CU YD

EM COMMENTS:

POSSIBLE SINGLE LARGE METAL OBJECT OR GROUPED SMALLER OBJECTS. DEPTH TO PRINCIPAL METALIC OBJECTS: 3-6 FT.

GPR COMMENTS:

PIT IS WELL DEFINED Laterally, within 1.5 FT.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	Sr90: .52 pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - G1B

CENTER POINT:

EAST:	395492.47
NORTH:	77658.39

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	6.88 FT
DEPTH TO BOTTOM OF WASTE:	16.07 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	81.322 FT
ELEVATION TOP OF WASTE:	74.442 FT
ELEVATION BOTTOM OF WASTE:	65.252 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	79.91 CU YD
ESTIMATED VOLUME OF WASTE:	46.11CU YD

EM COMMENTS:

POSSIBLE SINGLE LARGE METAL OBJECT OR GROUPED SMALLER OBJECTS. DEPTH TO PRINCIPAL METALIC OBJECTS: 4-8 FT.

GPR COMMENTS:

MAY CONTAIN LARGE OBJECTS

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDIES</i></u>
SLANT:	NONE	NONE	Sr90: .53 pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - G3

CENTER POINT:

EAST:	395501.66
NORTH:	77647.82

PIT SIZE:

PIT DIAMETER:	16.40 FT
DEPTH TO TOP OF WASTE:	6.56 FT
DEPTH TO BOTTOM OF WASTE:	13.77 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	80.997 FT
ELEVATION TOP OF WASTE:	74.437 FT
ELEVATION BOTTOM OF WASTE:	67.227 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	108.08 CU YD
ESTIMATED VOLUME OF WASTE:	56.59 CU YD

EM COMMENTS:

POSSIBLE MORE THAN ONE LARGE METALLIC OBJECT OR GROUPED OBJECTS IN SEPARATE LOCATIONS. DEPTH TO PRINCIPAL METALIC OBJECTS: 3-7 FT.

GPR COMMENTS:

FAIRLY BROAD, EXTENSIVE PIT

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDIES</u>
SLANT:	NONE	NONE	NONE
VERTICAL:	MERCURY 910 UG/KG	NONE	NONE

PIT # - G3A

CENTER POINT:

EAST: 395512.27
NORTH: 77650.61

PIT SIZE:

PIT DIAMETER: 13.12 FT
DEPTH TO TOP OF WASTE: 3.94 FT
DEPTH TO BOTTOM OF WASTE: 11.48 FT

ELEVATIONS:

EXISTING GRADE ELEVATION: 80.741 FT
ELEVATION TOP OF WASTE: 76.801 FT
ELEVATION BOTTOM OF WASTE: 69.261 FT

VOLUME:

ESTIMATED VOLUME OF SOIL: 57.64 CU YD
ESTIMATED VOLUME OF WASTE: 37.99 CU YD

GPR COMMENTS:

SMALL SHALLOW PIT, LOW VOLUME OF WASTE.

GEOPROBE RESULTS: NO PROBE TAKEN**METALS****VOC/SVOC****RADIONUCLIDES**

SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - G4

CENTER POINT:

EAST:	395511.08
NORTH:	77639.36

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	7.87 FT
DEPTH TO BOTTOM OF WASTE:	16.07 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	80.364	FT
ELEVATION TOP OF WASTE:	72.494	FT
ELEVATION BOTTOM OF WASTE:	64.294	FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	79.91 CU YD
ESTIMATED VOLUME OF WASTE:	40.61 CU YD

EM COMMENTS:

POSSIBLE MORE THAN ONE LARGE METALLIC OBJECT OR GROUPED OBJECTS IN SEPARATE LOCATIONS. DEPTH TO PRINCIPAL METALIC OBJECTS: 2-4 FT.

GPR COMMENTS:

PIT HAS CLEAR BOUNDARIES AND WASTE AT DEPTH.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDIES</i></u>
SLANT:	NONE	NONE	Bi214: 0.6 pCi/g K40: 5.4 pCi/g Sr90: 3.94 pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - G5

CENTER POINT:

EAST:	395520.89
NORTH:	77631.22

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	6.56 FT
DEPTH TO BOTTOM OF WASTE:	16.40 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	79.964 FT
ELEVATION TOP OF WASTE:	73.404 FT
ELEVATION BOTTOM OF WASTE:	63.564 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	81.22 CU YD
ESTIMATED VOLUME OF WASTE:	49.78 CU YD

GPR COMMENTS:

PIT MAY BE SHALLOWER THAN ESTIMATE.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDES</u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	U238: 2.18 pCi/g

PIT # - G6

CENTER POINT:

EAST:	395525.55
NORTH:	77634.99

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	7.22 FT
DEPTH TO BOTTOM OF WASTE:	13.78 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	80.197 FT
ELEVATION TOP OF WASTE:	72.977 FT
ELEVATION BOTTOM OF WASTE:	66.417 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	68.12 CU YD
ESTIMATED VOLUME OF WASTE:	34.06 CU YD

EM COMMENTS:

POSSIBLE MORE THAN ONE LARGE METALLIC OBJECT OR GROUPED OBJECTS IN SEPARATE LOCATIONS. DEPTH TO PRINCIPAL METALIC OBJECTS: 3-5FT.

GPR COMMENTS:

WASTE SCATTERED. PIT IS IRREGULAR IN SHAPE.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDIES</u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - G7

CENTER POINT:

EAST:	395534.14
NORTH:	77635.50

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	6.56 FT
DEPTH TO BOTTOM OF WASTE:	12.79 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	80.252 FT
ELEVATION TOP OF WASTE:	73.692 FT
ELEVATION BOTTOM OF WASTE:	67.462 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	64.19 CU YD
ESTIMATED VOLUME OF WASTE:	31.44 CU YD

EM COMMENTS:

POSSIBLE SINGLE LARGE METAL OBJECT OR GROUPED SMALLER OBJECTS. DEPTH TO PRINCIPAL METALIC OBJECTS: 3-5 FT.

GPR COMMENTS:

WIDE SHALLOW PIT, MAY MERGE WITH PIT #8 MAY EXTEND BEYOND SE BOUNDARY.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDIES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - G8

CENTER POINT:

EAST:	395530.68
NORTH:	77639.78

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	6.56 FT
DEPTH TO BOTTOM OF WASTE:	12.79 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	80.315 FT
ELEVATION TOP OF WASTE:	73.755 FT
ELEVATION BOTTOM OF WASTE:	67.525 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	64.19 CU YD
ESTIMATED VOLUME OF WASTE:	31.44 CU YD

GPR COMMENTS:

VOLUME & DEPTH SAME AS PIT #7 . COMBINED WASTE WITH PIT #7.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - G9

CENTER POINT:

EAST:	395537.21
NORTH:	77644.42

PIT SIZE:

PIT DIAMETER:	16.40 FT
DEPTH TO TOP OF WASTE:	8.20 FT
DEPTH TO BOTTOM OF WASTE:	14.10 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	80.817 FT
ELEVATION TOP OF WASTE:	72.617 FT
ELEVATION BOTTOM OF WASTE:	66.717 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	110.04 CU YD
ESTIMATED VOLUME OF WASTE:	45.85 CU YD

EM COMMENTS:

POSSIBLE SCATTERED SMALL METALLIC OBJECTS.
DEPTH TO PRINCIPAL METALIC OBJECTS: 2-4 FT.

GPR COMMENTS:

DEPTH ESTIMATE IS UNCERTAIN.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDIES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - G9A

CENTER POINT:

EAST:	395542.96
NORTH:	77648.43

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	7.87 FT
DEPTH TO BOTTOM OF WASTE:	11.81 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	81.050 FT
ELEVATION TOP OF WASTE:	73.180 FT
ELEVATION BOTTOM OF WASTE:	69.240 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	58.95 CU YD
ESTIMATED VOLUME OF WASTE:	19.65 CU YD

GPR COMMENTS:

SHALLOW AND WELL DEFINED PIT.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDES</u>
SLANT:	NONE	NONE	Sr90: .69pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - G10

CENTER POINT:

EAST:	395531.05
NORTH:	77656.80

PIT SIZE:

PIT DIAMETER:	16.40 FT
DEPTH TO TOP OF WASTE:	6.56 FT
DEPTH TO BOTTOM OF WASTE:	12.46 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	81.178 FT
ELEVATION TOP OF WASTE:	74.618 FT
ELEVATION BOTTOM OF WASTE:	68.718 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	98.25 CU YD
ESTIMATED VOLUME OF WASTE:	45.85 CU YD

GPR COMMENTS:

SHALLOW AND BROAD. PREVIOUSLY PARTIALLY EXCAVATED.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - G11

CENTER POINT:

EAST: 395528.61
NORTH: 77674.12

PIT SIZE:

PIT DIAMETER: 16.40 FT
DEPTH TO TOP OF WASTE: 7.87 FT
DEPTH TO BOTTOM OF WASTE: 12.46 FT

ELEVATIONS:

EXISTING GRADE ELEVATION: 82.257 FT
ELEVATION TOP OF WASTE: 74.387 FT
ELEVATION BOTTOM OF WASTE: 69.797 FT

VOLUME:

ESTIMATED VOLUME OF SOIL: 98.25 CU YD
ESTIMATED VOLUME OF WASTE: 35.37 CU YD

EM COMMENTS:

POSSIBLE SINGLE LARGE METAL OBJECT OR GROUPED SMALLER
OBJECTS. DEPTH TO PRINCIPAL METALIC OBJECTS: 2-4 FT.

GPR COMMENTS:

NONE PIT HAS BEEN PREVOIUSLY GROUTED NO ACTION TO BE
TAKEN NOW.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDIES</u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - G12

CENTER POINT:

EAST: 395523.83
NORTH: 77689.55

PIT SIZE:

PIT DIAMETER: 16.40 FT
DEPTH TO TOP OF WASTE: 6.56 FT
DEPTH TO BOTTOM OF WASTE: 15.74 FT

ELEVATIONS:

EXISTING GRADE ELEVATION: 82.201 FT
ELEVATION TOP OF WASTE: 75.641 FT
ELEVATION BOTTOM OF WASTE: 66.461 FT

VOLUME:

ESTIMATED VOLUME OF SOIL: 123.14 CU YD
ESTIMATED VOLUME OF WASTE: 72.05 CU YD

EM COMMENTS:

POSSIBLE ONE LARGE METALLIC OBJECT OR GROUPED OBJECTS.
DEPTH TO PRINCIPAL METALIC OBJECTS: 4-6 FT.

GPR COMMENTS:

EXTENSIVE PIT, MAY BE TWO PITS COMBINED.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDIES</u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - G13

CENTER POINT:

EAST:	395513.73
NORTH:	77708.39

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	6.56 FT
DEPTH TO BOTTOM OF WASTE:	11.81 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	82.168 FT
ELEVATION TOP OF WASTE:	75.608 FT
ELEVATION BOTTOM OF WASTE:	70.358 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	58.95 CU YD
ESTIMATED VOLUME OF WASTE:	26.20 CU YD

GPR COMMENTS:

DIMENSIONS OF PIT ARE UNCLEAR.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - G15

CENTER POINT:

EAST:	395543.61
NORTH:	77657.96

PIT SIZE:

PIT DIAMETER:	13.78 FT
DEPTH TO TOP OF WASTE:	7.87 FT
DEPTH TO BOTTOM OF WASTE:	11.81 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	81.240 FT
ELEVATION TOP OF WASTE:	73.370 FT
ELEVATION BOTTOM OF WASTE:	69.430 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	65.50 CU YD
ESTIMATED VOLUME OF WASTE:	19.65 CU YD

GPR COMMENTS:

WELL DEFINED PIT.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - G15E

CENTER POINT:

EAST:	395540.12
NORTH:	77655.13

PIT SIZE:

PIT DIAMETER:	16.40 FT
DEPTH TO TOP OF WASTE:	8.20 FT
DEPTH TO BOTTOM OF WASTE:	11.15 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	81.030 FT
ELEVATION TOP OF WASTE:	72.830 FT
ELEVATION BOTTOM OF WASTE:	69.880 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	86.46 CU YD
ESTIMATED VOLUME OF WASTE:	23.58 CU YD

GPR COMMENTS:

SIMILAR TO PIT #15, WELL DEFINED.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

APPENDIX B

INITIAL PIT CHARACTERIZATION

ANIMAL/CHEMICAL PITS

Information Obtained From:

- *Brookhaven National Laboratory Chemical/Animal/Glass Holes Evaluation of Alternatives - prepared by CDM Federal Programs Corporation, April 1997*
- *Brookhaven National Laboratory Final Report, Engineering Evaluation/Cost Analysis for Landfill Closure Action, Operable Unit I, Volume 1- prepared by CDM Federal Programs Corporation, March 29, 1995*
- *Supplemental Characterization Report for the Animal/Chemical Pits and Glass Holes Areas at Brookhaven National Laboratory, Upton, New York, Final Report - prepared by Environmental Assessment Division, Argonne National Laboratory, April 1997*
- *Brookhaven National Laboratory Draft Integrated Geophysical Report for Chemical/Animal and Glass Hole Area (AOC 2B and 2C) - prepared by Idaho National Engineering Laboratory - December 13, 1995*
- *Ground Penetrating Radar Investigation at the Animal-Chemical Pit, Final Report - prepared by J.J. Daniels, August 15, 1996*
- *Removal Action VI - Glass Holes (Area of Concern 2C) Investigation of Derived Waste, Waste Characterization - Task Order No. 2, Draft Report - prepared by Science and Technology, Inc., June 1996*

PIT # - C2

CENTER POINT:

EAST: 395506.08
NORTH: 77503.25

PIT SIZE:

PIT DIAMETER: 13.12 FT
DEPTH TO TOP OF WASTE: 3.28 FT
DEPTH TO BOTTOM OF WASTE: 13.12 FT

ELEVATIONS:

EXISTING GRADE ELEVATION: 73.153 FT
ELEVATION TOP OF WASTE: 69.873 FT
ELEVATION BOTTOM OF WASTE: 60.033 FT

VOLUME:

ESTIMATED VOLUME OF SOIL: 65.50 CU YD
ESTIMATED VOLUME OF WASTE: 49.78 CU YD

GPR COMMENTS:

ESTIMATES OF WASTE ARE HIGHLY ACCURATE.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDES</u>
	MERCURY		
SLANT:	340 ug/kg	NONE	NONE
VERTICAL:	130 ug/kg	NONE	NONE

PIT # - C4

CENTER POINT:

EAST: 395515.69
NORTH: 77491.20

PIT SIZE:

PIT DIAMETER: 11.48 FT
DEPTH TO TOP OF WASTE: 6.56 FT
DEPTH TO BOTTOM OF WASTE: 14.43 FT

ELEVATIONS:

EXISTING GRADE ELEVATION: 73.008 FT
ELEVATION TOP OF WASTE: 66.448 FT
ELEVATION BOTTOM OF WASTE: 58.578 FT

VOLUME:

ESTIMATED VOLUME OF SOIL: 55.02 CU YD
ESTIMATED VOLUME OF WASTE: 30.13 CU YD

EM COMMENTS:

POSSIBLE SINGLE LARGE METALLIC OBJECT OR GROUPED SMALLER OBJECTS. DEPTH TO PRINCIPAL METALLIC OBJECTS: 4-6 FT.

GPR COMMENTS:

PIT IS WELL DEFINED.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - C5A

CENTER POINT:

EAST: 395521.69
NORTH: 77488.47

PIT SIZE:

PIT DIAMETER: 11.48 FT
DEPTH TO TOP OF WASTE: 5.25 FT
DEPTH TO BOTTOM OF WASTE: 15.09 FT

ELEVATIONS:

EXISTING GRADE ELEVATION: 73.281 FT
ELEVATION TOP OF WASTE: 68.031 FT
ELEVATION BOTTOM OF WASTE: 58.191 FT

VOLUME:

ESTIMATED VOLUME OF SOIL: 57.64 CU YD
ESTIMATED VOLUME OF WASTE: 37.99 CU YD

EM COMMENTS:

POSSIBLE SINGLE LARGE METAL OBJECT OR GROUPED SMALLER
OBJECTS. DEPTH TO PRINCIPAL METALIC OBJECTS: 4-5 FT.

GPR COMMENTS:

SMALL WELL DEFINED PIT.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDIES</u>
	MERCURY		
SLANT:	1400 ug/kg	NONE	NONE
VERTICAL:	330 ug/kg	NONE	NONE

PIT # - C6

CENTER POINT:

EAST: 395531.34
NORTH: 77482.11

PIT SIZE:

PIT DIAMETER: 11.48 FT
DEPTH TO TOP OF WASTE: 6.89 FT
DEPTH TO BOTTOM OF WASTE: 13.77 FT

ELEVATIONS:

EXISTING GRADE ELEVATION: 73.825 FT
ELEVATION TOP OF WASTE: 66.935 FT
ELEVATION BOTTOM OF WASTE: 60.055 FT

VOLUME:

ESTIMATED VOLUME OF SOIL: 52.40 CU YD
ESTIMATED VOLUME OF WASTE: 26.20 CU YD

EM COMMENTS:

SUGGESTS SCATTERED RELATIVELY SMALL METAL OBJECTS.
DEPTH TO PRINCIPAL METALLIC OBJECTS: 2-4 FT.

GPR COMMENTS:

SIMILAR TO PIT C6B, EXCAVATE WITH PIT # C18.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDIES</u>
SLANT:	NONE	NONE	Sr90: .47 pCi/g
VERTICAL:	NONE	NONE	U238: 1.96 pCi/g

PIT # - C6B

CENTER POINT:

EAST:	395535.16
NORTH:	77491.95

PIT SIZE:

PIT DIAMETER:	11.48 FT
DEPTH TO TOP OF WASTE:	6.88 FT
DEPTH TO BOTTOM OF WASTE:	12.46 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	75.147 FT
ELEVATION TOP OF WASTE:	68.267 FT
ELEVATION BOTTOM OF WASTE:	62.687 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	47.16 CU YD
ESTIMATED VOLUME OF WASTE:	32.75 CU YD

EM COMMENTS:

POSSIBLE SINGLE LARGE METAL OBJECT OR GROUPED SMALLER OBJECTS. DEPTH TO PRINCIPAL METALLIC OBJECTS: 6-7 FT.

GPR COMMENTS:

NO DATA AVAILABLE.

GEOPROBE RESULTS: NO PROBES TAKEN.

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDIES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - C7

CENTER POINT:

EAST:	395545.25
NORTH:	77479.75

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	5.90 FT
DEPTH TO BOTTOM OF WASTE:	15.09 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	74.291 FT
ELEVATION TOP OF WASTE:	68.391 FT
ELEVATION BOTTOM OF WASTE:	61.171 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	75.98 CU YD
ESTIMATED VOLUME OF WASTE:	45.85 CU YD

EM COMMENTS:

SUGGESTS SCATTERED RELATIVELY SMALL METAL OBJECTS.
DEPTH TO PRINCIPAL METALLIC OBJECTS: 3-7 FT.

GPR COMMENTS:

OVAL IN SHAPE, CONTAINS 2 LARGE OBJECTS AS WELL AS SMALLER.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	Sr90: .39pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - C8

CENTER POINT:

EAST:	395558.01
NORTH:	77473.54

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	5.90 FT
DEPTH TO BOTTOM OF WASTE:	15.09 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	74.787 FT
ELEVATION TOP OF WASTE:	68.887 FT
ELEVATION BOTTOM OF WASTE:	59.697 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	75.98 CU YD
ESTIMATED VOLUME OF WASTE:	45.85 CU YD

EM COMMENTS:

SUGGESTS SCATTERED RELATIVELY SMALL METAL OBJECTS.
DEPTH TO PRINCIPAL METALLIC OBJECTS: 2-4 FT.

GPR COMMENTS:

WELL DEFINED PIT BOUNDARIES.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
	MERCURY		
SLANT:	810 ug/kg	NONE	NONE
VERTICAL:	140 ug/kg	NONE	NONE

PIT # - C11A

CENTER POINT:

EAST: 395563.99
NORTH: 77472.39

PIT SIZE:

PIT DIAMETER: 11.48 FT
DEPTH TO TOP OF WASTE: 6.89 FT
DEPTH TO BOTTOM OF WASTE: 12.14 FT

ELEVATIONS:

EXISTING GRADE ELEVATION: 74.399 FT
ELEVATION TOP OF WASTE: 67.509 FT
ELEVATION BOTTOM OF WASTE: 62.919 FT

VOLUME:

ESTIMATED VOLUME OF SOIL: 47.16 CU YD
ESTIMATED VOLUME OF WASTE: 19.65 CU YD

EM COMMENTS:

POSSIBLE SINGLE LARGE METALLIC OBJECT OR GROUPED SMALLER OBJECTS. DEPTH TO PRINCIPAL METALLIC OBJECTS: 3-7 FT.

GPR COMMENTS:

WELL DEFINED PIT BOUNDARIES, OVERALL SMALL PIT.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDIES</u>
	MERCURY		
SLANT:	220 ug/kg	NONE	K40: 7.8 pCi/g Sr90: .55 pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - C11B

CENTER POINT:

EAST:	395571.83
NORTH:	77470.70

PIT SIZE:

PIT DIAMETER:	9.84 FT
DEPTH TO TOP OF WASTE:	5.90 FT
DEPTH TO BOTTOM OF WASTE:	14.10 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	73.730 FT
ELEVATION TOP OF WASTE:	67.830 FT
ELEVATION BOTTOM OF WASTE:	59.630 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	39.30 CU YD
ESTIMATED VOLUME OF WASTE:	22.93 CU YD

EM COMMENTS:

POSSIBLY MORE THAN ONE LARGE METAL OBJECT OR GROUPED OBJECTS IN SEPARATE LOCATIONS. DEPTH TO PRINCIPAL METALIC OBJECTS: 4-7 FT.

GPR COMMENTS:

BROAD PIT WITH COMPLEX CONTENTS. BOTTOM OF WASTE NOT CLEARLY DEFINED.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDIES</u>
SLANT:	MERCURY 515 ug/kg CADMIUM 130 ug/kg	NONE	K40: 11 pCi/g Sr90: .6 pCi/g Cs137: 4.31 pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - C11C

CENTER POINT:

EAST: 395578.72
NORTH: 77469.28

PIT SIZE:

PIT DIAMETER: 11.48 FT
DEPTH TO TOP OF WASTE: 5.90 FT
DEPTH TO BOTTOM OF WASTE: 14.10 FT

ELEVATIONS:

EXISTING GRADE ELEVATION: 74.032 FT
ELEVATION TOP OF WASTE: 68.132 FT
ELEVATION BOTTOM OF WASTE: 59.932 FT

VOLUME:

ESTIMATED VOLUME OF SOIL: 53.71 CU YD
ESTIMATED VOLUME OF WASTE: 31.44 CU YD

EM COMMENTS:

POSSIBLE SINGLE LARGE METAL OBJECT OR GROUPED SMALLER
OBJECTS. DEPTH TO PRINCIPAL METALIC OBJECTS: 5-7 FT.

GPR COMMENTS:

SHARP PIT BOUNDARIES.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDIES</u>
SLANT:	NONE	NONE	Sr90: .6 pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - C12

CENTER POINT:

EAST:	395591.12
NORTH:	77465.27

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	3.94 FT
DEPTH TO BOTTOM OF WASTE:	12.14 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	74.13 FT
ELEVATION TOP OF WASTE:	70.19 FT
ELEVATION BOTTOM OF WASTE:	61.99 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	60.26 CU YD
ESTIMATED VOLUME OF WASTE:	40.61 CU YD

EM COMMENTS:

POSSIBLE SINGLE LARGE METALLIC OBJECT OR GROUPED SMALLER OBJECTS. DEPTH TO PRINCIPAL METALLIC OBJECTS: 7-10 FT.

GPR COMMENTS:

SHARP PIT BOUNDARIES, CONTENTS DISPERSED IN PIT.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDIES</u>
SLANT:	CADMIUM 1,200 ug/kg	NONE	Sr90: .6 pCi/g BETA 110 pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - C13

CENTER POINT:

EAST: 395607.08
NORTH: 77462.85

PIT SIZE:

PIT DIAMETER: 13.12 FT
DEPTH TO TOP OF WASTE: 4.92 FT
DEPTH TO BOTTOM OF WASTE: 13.78 FT

ELEVATIONS:

EXISTING GRADE ELEVATION: 73.494 FT
ELEVATION TOP OF WASTE: 68.574 FT
ELEVATION BOTTOM OF WASTE: 59.714 FT

VOLUME:

ESTIMATED VOLUME OF SOIL: 69.43 CU YD
ESTIMATED VOLUME OF WASTE: 44.54 CU YD

EM COMMENTS:

POSSIBLY MORE THAN ONE LARGE METAL OBJECT OR GROUPED
OBJECTS IN SEPARATE LOCATIONS. DEPTH TO PRINCIPAL METALIC
OBJECTS: 4-6 FT.

GPR COMMENTS:

BROAD COMPLEX PIT WITH WELL DEFINED BOUNDARIES.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDIES</u>
SLANT:	CADMIUM 1,200 ug/kg	NONE	U238: 4.09 pCi/g
	MERC 530 ug/kg		BETA 110 pCi/g
	LEAD 42,000 ug/kg		
VERTICAL:	NONE	NONE	NONE

PIT # - C14

CENTER POINT:

EAST:	395620.04
NORTH:	77457.12

PIT SIZE:

PIT DIAMETER:	11.48 FT
DEPTH TO TOP OF WASTE:	5.90 FT
DEPTH TO BOTTOM OF WASTE:	16.07 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	69.760	FT
ELEVATION TOP OF WASTE:	63.86	FT
ELEVATION BOTTOM OF WASTE:	53.69	FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	61.57 CU YD
ESTIMATED VOLUME OF WASTE:	39.30 CU YD

EM COMMENTS:

POSSIBLE SINGLE LARGE METAL OBJECT OR GROUPED SMALLER OBJECTS. DEPTH TO PRINCIPAL METALIC OBJECTS: 6-7 FT.

GPR COMMENTS:

SHARP BOUNDARIES, LARGE DEEP PIT.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDIES</i></u>
SLANT:	MERC 13,000 ug/kg	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - C15A

CENTER POINT:

EAST: 395642.47
NORTH: 77455.47

PIT SIZE:

PIT DIAMETER: 11.48 FT
DEPTH TO TOP OF WASTE: 5.90 FT
DEPTH TO BOTTOM OF WASTE: 15.42 FT

ELEVATIONS:

EXISTING GRADE ELEVATION: 73.104 FT
ELEVATION TOP OF WASTE: 67.204 FT
ELEVATION BOTTOM OF WASTE: 57.684 FT

VOLUME:

ESTIMATED VOLUME OF SOIL: 58.95 CU YD
ESTIMATED VOLUME OF WASTE: 36.68 CU YD

EM COMMENTS:

POSSIBLY MORE THAN ONE LARGE METAL OBJECT OR GROUPED
OBJECTS IN SEPARATE LOCATIONS. DEPTH TO PRINCIPAL METALIC
OBJECTS: 4-7 FT.

GPR COMMENTS:

SHARP BOUNDARIES, PIT MAY ONLY BE 14 FEET DEEP.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDIES</u>
SLANT:	NONE	NONE	Sr90: .78 pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - C15B

CENTER POINT:

EAST:	395648.94
NORTH:	77452.61

PIT SIZE:

PIT DIAMETER:	16.40 FT
DEPTH TO TOP OF WASTE:	5.90 FT
DEPTH TO BOTTOM OF WASTE:	12.46 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	72.880	FT
ELEVATION TOP OF WASTE:	66.98	FT
ELEVATION BOTTOM OF WASTE:	60.42	FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	99.56 CU YD
ESTIMATED VOLUME OF WASTE:	52.40 CU YD

GPR COMMENTS:

SHARP BOUNDARIES.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - C17

CENTER POINT:

EAST:	395528.47
NORTH:	77493.72

PIT SIZE:

PIT DIAMETER:	11.48 FT
DEPTH TO TOP OF WASTE:	3.94 FT
DEPTH TO BOTTOM OF WASTE:	12.46 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	74.350	FT
ELEVATION TOP OF WASTE:	70.41	FT
ELEVATION BOTTOM OF WASTE:	61.89	FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	47.16 CU YD
ESTIMATED VOLUME OF WASTE:	32.75 CU YD

GPR COMMENTS:

NONE .

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - C18

CENTER POINT:

EAST:	395534.37
NORTH:	77481.78

PIT SIZE:

PIT DIAMETER:	11.48 FT
DEPTH TO TOP OF WASTE:	3.94 FT
DEPTH TO BOTTOM OF WASTE:	13.78 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	73.92	FT
ELEVATION TOP OF WASTE:	69.984	FT
ELEVATION BOTTOM OF WASTE:	60.14	FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	53.40 CU YD
ESTIMATED VOLUME OF WASTE:	26.20 CU YD

GPR COMMENTS:

SHALLOW WELL DEFINED PIT, EXCAVATE WITH PIT C6.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	Sr90: .59pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - C20

CENTER POINT:

EAST:	395546.87
NORTH:	77485.53

PIT SIZE:

PIT DIAMETER:	11.48 FT
DEPTH TO TOP OF WASTE:	5.58 FT
DEPTH TO BOTTOM OF WASTE:	16.07 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	75.216 FT
ELEVATION TOP OF WASTE:	69.636 FT
ELEVATION BOTTOM OF WASTE:	59.146 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	61.57 CU YD
ESTIMATED VOLUME OF WASTE:	40.61 CU YD

EM COMMENTS:

SUGGESTS SCATTERED RELATIVELY SMALL METAL OBJECTS.
DEPTH TO PRINCIPAL METALLIC OBJECTS: 2-5 FT.

GPR COMMENTS:

WELL DEFINED PIT, A FEW LARGE OBJECTS CONTAINED WITHIN.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDIES</i></u>
SLANT:	NONE	NONE	Sr90: .42 pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - C21

CENTER POINT:

EAST: 395553.12
NORTH: 77482.74

PIT SIZE:

PIT DIAMETER: 9.84 FT
DEPTH TO TOP OF WASTE: 5.90 FT
DEPTH TO BOTTOM OF WASTE: 12.14 FT

ELEVATIONS:

EXISTING GRADE ELEVATION: 75.275 FT
ELEVATION TOP OF WASTE: 69.375 FT
ELEVATION BOTTOM OF WASTE: 63.135 FT

VOLUME:

ESTIMATED VOLUME OF SOIL: 34.06 CU YD
ESTIMATED VOLUME OF WASTE: 17.03 CU YD

EM COMMENTS:

SUGGESTS SCATTERED RELATIVELY SMALL METAL OBJECTS.
DEPTH TO PRINCIPAL METALLIC OBJECTS: 2-4 FT.

GPR COMMENTS:

SHALLOW PIT WITH SIMPLE CONTENTS.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - C22

CENTER POINT:

EAST:	395483.85
NORTH:	77474.20

PIT SIZE:

PIT DIAMETER:	9.84 FT
DEPTH TO TOP OF WASTE:	3.94 FT
DEPTH TO BOTTOM OF WASTE:	15.09 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	71.165 FT
ELEVATION TOP OF WASTE:	67.225 FT
ELEVATION BOTTOM OF WASTE:	56.075 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	43.23 CU YD
ESTIMATED VOLUME OF WASTE:	31.44 CU YD

GPR COMMENTS:

PIT IS WELL DEFINED. MAY CONTAIN METALS OR LIQUIDS OR MAY HAVE COMPLEX CONTENTS.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDIES</i></u>
SLANT:	MERC. 153 ug/kg	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - C23

CENTER POINT:

EAST:	395486.71
NORTH:	77480.66

PIT SIZE:

PIT DIAMETER:	14.43 FT
DEPTH TO TOP OF WASTE:	5.90 FT
DEPTH TO BOTTOM OF WASTE:	16.07 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	71.434 FT
ELEVATION TOP OF WASTE:	65.534 FT
ELEVATION BOTTOM OF WASTE:	55.364 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	95.63 CU YD
ESTIMATED VOLUME OF WASTE:	61.57 CU YD

GPR COMMENTS:

SHALLOW PIT, BUT MAY HAVE SURFACE INTERACTION WITH
ADJACENT PITS.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	Sr90: .55pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - C24

CENTER POINT:

EAST:	395493.40
NORTH:	77476.70

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	5.90 FT
DEPTH TO BOTTOM OF WASTE:	15.09 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	71.726 FT
ELEVATION TOP OF WASTE:	65.826 FT
ELEVATION BOTTOM OF WASTE:	56.636 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	75.98 CU YD
ESTIMATED VOLUME OF WASTE:	45.85 CU YD

GPR COMMENTS:

SIMPLE PIT WITH MODERATE DEPTH.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	U238: 2.17 pCi/g

PIT # - C25

CENTER POINT:

EAST:	395496.18
NORTH:	77484.74

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	5.90 FT
DEPTH TO BOTTOM OF WASTE:	15.09 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	71.588 FT
ELEVATION TOP OF WASTE:	65.688 FT
ELEVATION BOTTOM OF WASTE:	56.498 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	75.98 CU YD
ESTIMATED VOLUME OF WASTE:	45.85 CU YD

GPR COMMENTS:

MODERATELY WELL DEFINED.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	Sr90: .43pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - C27A

CENTER POINT:

EAST:	395515.62
NORTH:	77476.15

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	5.90 FT
DEPTH TO BOTTOM OF WASTE:	15.09 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	72.510 FT
ELEVATION TOP OF WASTE:	66.610 FT
ELEVATION BOTTOM OF WASTE:	57.420 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	75.98 CU YD
ESTIMATED VOLUME OF WASTE:	45.85 CU YD

EM COMMENTS:

POSSIBLY MORE THAN ONE LARGE METAL OBJECT OR GROUPED OBJECTS IN SEPARATE LOCATIONS. DEPTH TO PRINCIPAL METALIC OBJECTS: 4-7 FT.

GPR COMMENTS:

WELL DEFINED PIT.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDIES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - C27B

CENTER POINT:

EAST:	395519.97
NORTH:	77471.29

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	5.90 FT
DEPTH TO BOTTOM OF WASTE:	15.09 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	72.424 FT
ELEVATION TOP OF WASTE:	66.524 FT
ELEVATION BOTTOM OF WASTE:	57.334 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	75.98 CU YD
ESTIMATED VOLUME OF WASTE:	45.85 CU YD

EM COMMENTS:

POSSIBLE SINGLE LARGE METAL OBJECT OR GROUPED SMALLER OBJECTS. DEPTH TO PRINCIPAL METALIC OBJECTS: 3-5 FT.

GPR COMMENTS:

EXTENSIVE AND COMPLEX. SOME LARGE OBJECTS.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDIES</u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - C29

CENTER POINT:

EAST:	395533.19
NORTH:	77466.52

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	4.92 FT
DEPTH TO BOTTOM OF WASTE:	16.07 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	72.782 FT
ELEVATION TOP OF WASTE:	67.862 FT
ELEVATION BOTTOM OF WASTE:	56.712 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	81.22 CU YD
ESTIMATED VOLUME OF WASTE:	56.33 CU YD

EM COMMENTS:

POSSIBLY MORE THAN ONE LARGE METAL OBJECT OR GROUPED OBJECTS IN SEPARATE LOCATIONS. DEPTH TO PRINCIPAL METALIC OBJECTS: 3-5 FT.

GPR COMMENTS:

BROAD DEEP COMPLEX PIT. TIGHTLY PACKED WASTE TOP TO BOTTOM.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDIES</i></u>
SLANT:	NONE	NONE	Sr90: 1.82 pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - C30

CENTER POINT:

EAST:	395539.19
NORTH:	77463.80

PIT SIZE:

PIT DIAMETER:	12.14 FT
DEPTH TO TOP OF WASTE:	3.94 FT
DEPTH TO BOTTOM OF WASTE:	14.10 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	72.785 FT
ELEVATION TOP OF WASTE:	68.845 FT
ELEVATION BOTTOM OF WASTE:	58.685 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	61.57 CU YD
ESTIMATED VOLUME OF WASTE:	44.54 CU YD

GPR COMMENTS:

SHARP SIDES TO PIT WITH SMALL LATERAL EXTENT.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - C33

CENTER POINT:

EAST:	395648.28
NORTH:	77429.94

PIT SIZE:

PIT DIAMETER:	16.40 FT
DEPTH TO TOP OF WASTE:	5.58 FT
DEPTH TO BOTTOM OF WASTE:	14.10 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	71.378 FT
ELEVATION TOP OF WASTE:	65.798 FT
ELEVATION BOTTOM OF WASTE:	57.278 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	111.35 CU YD
ESTIMATED VOLUME OF WASTE:	68.12 CU YD

EM COMMENTS:

SUGGESTS SCATTERED RELATIVELY SMALL METAL OBJECTS.
DEPTH TO PRINCIPAL METALLIC OBJECTS: 3-5 FT.

GPR COMMENTS:

DEEP WELL DEFINED PIT. FUNNEL SHAPED AND RAGGED AT
BOTTOM.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDIES</i></u>
SLANT:	NONE	NONE	Sr90: .7pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - C34

CENTER POINT:

EAST: 395666.86
NORTH: 77426.67

PIT SIZE:

PIT DIAMETER: 13.12 FT
DEPTH TO TOP OF WASTE: 5.90 FT
DEPTH TO BOTTOM OF WASTE: 13.12 FT

ELEVATIONS:

EXISTING GRADE ELEVATION: 70.997 FT
ELEVATION TOP OF WASTE: 65.097 FT
ELEVATION BOTTOM OF WASTE: 57.877 FT

VOLUME:

ESTIMATED VOLUME OF SOIL: 65.50 CU YD
ESTIMATED VOLUME OF WASTE: 36.68 CU YD

EM COMMENTS:

SUGGESTS SCATTERED RELATIVELY SMALL METAL OBJECTS.
DEPTH TO PRINCIPAL METALLIC OBJECTS: 2-4 FT.

GPR COMMENTS:

WELL DEFINED BOUNDRIES LIMITED DEPTH EXTENT.

GEOPROBE RESULTS:

	<u>METALS</u>	<u>VOC/SVOC</u>	<u>RADIONUCLIDIES</u>
SLANT:	NONE	NONE	Sr90: 0.79pCi/g
VERTICAL:	NONE	NONE	NONE

PIT # - C35

CENTER POINT:

EAST:	395627.62
NORTH:	77434.82

PIT SIZE:

PIT DIAMETER:	16.40 FT
DEPTH TO TOP OF WASTE:	5.58 FT
DEPTH TO BOTTOM OF WASTE:	14.10 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	71.119 FT
ELEVATION TOP OF WASTE:	65.539 FT
ELEVATION BOTTOM OF WASTE:	57.019 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	112.66 CU YD
ESTIMATED VOLUME OF WASTE:	68.12 CU YD

GPR COMMENTS:

DEPTH DIFFICULT TO DETERMINE. UPPER REGION CONTAINS
DIFFERENT MATERIAL THAN LOWER REGION.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - C37

CENTER POINT:

EAST:	395632.52
NORTH:	77431.26

PIT SIZE:

PIT DIAMETER:	16.40 FT
DEPTH TO TOP OF WASTE:	5.58 FT
DEPTH TO BOTTOM OF WASTE:	13.12 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	71.237 FT
ELEVATION TOP OF WASTE:	65.657 FT
ELEVATION BOTTOM OF WASTE:	58.117 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	104.80 CU YD
ESTIMATED VOLUME OF WASTE:	60.26 CU YD

GPR COMMENTS:

PIT IS VERY BROAD AT DEPTH. MAY CONTAIN A FEW LARGE OBJECTS
OR TIGHTLY PACKED GROUPS OF SMALL OBJECTS.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - C38

CENTER POINT:

EAST:	395662.05
NORTH:	77427.10

PIT SIZE:

PIT DIAMETER:	13.12 FT
DEPTH TO TOP OF WASTE:	5.58 FT
DEPTH TO BOTTOM OF WASTE:	12.47 FT

ELEVATIONS:

EXISTING GRADE ELEVATION:	71.161 FT
ELEVATION TOP OF WASTE:	65.581 FT
ELEVATION BOTTOM OF WASTE:	58.691 FT

VOLUME:

ESTIMATED VOLUME OF SOIL:	62.88 CU YD
ESTIMATED VOLUME OF WASTE:	34.06 CU YD

GPR COMMENTS:

SHALLOW PIT AT BOUNDRIES, NOT WELL DEFINED.

GEOPROBE RESULTS: NO PROBE TAKEN

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDIES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

PIT # - C41

CENTER POINT:

EAST: 395506.71
NORTH: 77483.34

PIT SIZE:

PIT DIAMETER: 12.47 FT
DEPTH TO TOP OF WASTE: 5.90 FT
DEPTH TO BOTTOM OF WASTE: 15.09 FT

ELEVATIONS:

EXISTING GRADE ELEVATION: 71.896 FT
ELEVATION TOP OF WASTE: 65.996 FT
ELEVATION BOTTOM OF WASTE: 56.806 FT

VOLUME:

ESTIMATED VOLUME OF SOIL: 66.81 CU YD
ESTIMATED VOLUME OF WASTE: 40.61 CU YD

GPR COMMENTS:

SMALL WELL DEFINED SIMPLE PIT.

GEOPROBE RESULTS:

	<u><i>METALS</i></u>	<u><i>VOC/SVOC</i></u>	<u><i>RADIONUCLIDES</i></u>
SLANT:	NONE	NONE	NONE
VERTICAL:	NONE	NONE	NONE

APPENDIX C

SUMMARY ANALYTICAL DATA

Information Obtained From:

- **Processed Material Data** - Dames & Moore On Site Analytical Laboratory

- **Confirmatory Sampling Data** - Data Obtained from CORE Laboratories and H2M Laboratories, Inc. under Subcontract to BNL (see Volume 2 for Raw Analytical Results)

Table No. C1 - Glass Holes Volatile Organic Compounds Processed Material Sampling Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Volatile Organic Compound	Soil Cleanup Goals (µg/kg)	Detection Limits (µg/kg)										Processed Material Sampling Results													
			IL Pit A (µg/kg)	IL Pit B (µg/kg)	IL Pit C (µg/kg)	IL Pit D (µg/kg)	G1A (µg/kg)	G1B (µg/kg)	G3 (µg/kg)	G3A (µg/kg)	G4 (µg/kg)	G5 (µg/kg)	G6 (µg/kg)	G7 (µg/kg)	G8 (µg/kg)	G9 (µg/kg)	G9A (µg/kg)	G10 (µg/kg)	G11 (µg/kg)	G12 (µg/kg)	G13 (µg/kg)	G15 (µg/kg)	G15E (µg/kg)		
Acetone	200	<200	NA	ND	ND	ND	ND - 3,800	ND			ND - 3,800	ND - 4	ND	ND	ND		ND	ND	ND - 8,200	ND	ND - 15,000	ND	ND		
Benzene	60	<30	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
2-butanone	300	<200	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
Carbon disulfide	2700	<200	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
Carbon tetrachloride	600	<200	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
Chlorobenzene	1700	<50	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
Chloroform	300	<200	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
1,1-dichloroethane	200	<200	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
1,2-dichloroethane	100	<200	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
1,1-dichloroethene	400	<50	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
1,2-dichloroethene (trans)	300	<50	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
1,2-dichloroethene (cis)	250	<50	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
1,3-dichloropropane	300	<200	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
Ethylbenzene	5,500	<200	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
4-methyl-2-pentanone	1000	<200	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
Tetrachloroethene	1400	<50	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
1,1,1-trichloroethane	800	<200	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
1,1,2,2-tetrachloroethane	600	<200	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
1,2,3-trichloropropane	400	<200	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
Toluene	1,500	<50	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
Trichloroethene	700	<50	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
vinyl chloride	200	<50	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
Xylenes (total)	1,200	<200	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
SVOCs (total) - mg/kg	50	<25.0	NA	ND	ND	ND	ND	ND			ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND		
Pesticides (total) - mg/kg	5	<4.0	NA	ND	ND	ND	ND - 37.5	ND - 68.82	8,840.33	9,894.42	9,575.93	ND - 45.49	116.96	116.96	116.96		9,703.75	35,743.94	ND - 17.5	ND - 0.79	ND - 0.64	ND - 4.50	10,039.73		
PCBs (total) - mg/kg	5	<0.5	NA	<0.5 - 4.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND - 0.8	ND	ND		

J - Indicates an estimated value.
U - Indicates compound was analyzed for but not detected.
B - Analyte found in associated blank as well as in the sample.
NA - Not applicable.
ND - Non-detected.

A blank cell indicates data presently unavailable.

Samples collected at a frequency of one per every 25 cubic yards of material processed per pit.
Values represent range over which contaminants were detected.
Analyses performed by Dames & Moore on site field laboratory.

Soil clean up goals as per NYSDEC TAGM #4046.

Table No. C2 - Glass Holes Inorganics Processed Material Sampling Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Inorganic	Soil Cleanup Goals (mg/kg)	Detection Limits (mg/kg)	Processed Material Sampling Results																				
			IL Pit A (mg/kg)	IL Pit B (mg/kg)	IL Pit C (mg/kg)	IL Pit D (mg/kg)	G1A (mg/kg)	G1B (mg/kg)	G3 (mg/kg)	G3A (mg/kg)	G4 (mg/kg)	G5 (mg/kg)	G6 (mg/kg)	G7 (mg/kg)	G8 (mg/kg)	G9 (mg/kg)	G9A (mg/kg)	G10 (mg/kg)	G11 (mg/kg)	G12 (mg/kg)	G13 (mg/kg)	G15 (mg/kg)	G15E (mg/kg)
Arsenic	2.8	<2	NA	ND			ND	ND - 2.80	ND		ND	ND - 15.03	ND - 15.03	ND - 15.03	ND - 15.03		ND	ND	ND - 3.90	ND - 9.0	ND	ND - 9.0	ND
Chromium	50	<5	NA	ND - 3.8			ND - 28.33	ND - 48.60	30.23		ND - 34.50	ND - 54.13	ND - 54.13	ND - 54.13	ND - 54.13		9.30 - 30.70	9.70 - 60.70	ND - 25.07	ND	ND - 26.8	ND	ND - 43.80
Cobalt	3	<2	NA	ND			ND - 14.90	ND - 15.63	7.87		ND - 14.90	ND - 25.30	ND - 25.30	ND - 25.30	ND - 25.30		ND - 13.13	ND - 23.07	ND - 14.33	ND - 15.4	ND	ND	ND - 14.93
Copper	6.5	<2	NA	ND - 2.0			ND	ND	ND		ND - 3.10	ND - 6.03	ND - 6.03	ND - 6.03	ND - 6.03		ND	ND	ND	ND - 10.3	ND - 8.6	ND - 10.3	ND
Iron	14429	<25	NA	174.3 - 493.9			283.20 - 509.87	135.07 - 684.27	534.13		143.47 - 564.80	111.93 - 1170.13	111.93 - 1170.13	111.93 - 1170.13	111.93 - 1170.13		198.80 - 580.80	169.73 - 1,072.58	69.93 - 730.47	334.9 - 676.33	188.4 - 632.0	391.2 - 676.3	83.13 - 632.00
Lead	400	<2	NA	0.6 - 3.3			ND - 2.90	ND - 2.70	3.37		ND - 2.90	2.97 - 18.70	1.90 - 94.00	1.90 - 94.00	1.90 - 94.00		ND - 4.33	ND - 24.33	ND - 5.33	ND - 11.8	ND - 5.7	ND - 11.8	ND - 8.20
Manganese	148	<25	NA	ND			ND	ND	ND		ND	ND - 376.53	ND - 376.53	ND - 376.53	ND - 376.53		ND	ND - 132.53	ND - 15.30	ND - 134.2	ND	ND - 134.2	ND
Mercury	1.84	<2	NA	2.6 - 5.6			4.07 - 5.73	ND - 3.07	2.33		3.10 - 5.73	ND - 7.80	ND - 12.93	ND - 12.50	ND - 12.60		ND - 6.33	ND	ND - 7.77	ND - 6.6	ND - 44.7	ND - 0.3	3.30 - 4.97
Nickel	11.5	<2	NA	ND - 3.2			ND - 3.73	ND - 2.87	ND		ND - 7.23	ND - 4.77	ND - 5.27	ND - 5.97	ND - 5.27		ND - 3.40	ND - 4.17	ND - 3.41	ND - 5.2	ND - 2.8	ND - 5.2	ND - 6.43
Zinc	22.4	<2	NA	1.3 - 36.3			2.47 - 7.00	ND - 3.63	3.97		ND - 7.00	ND - 2.80	ND - 7.13	ND - 14.07	ND - 7.13		0.90 - 4.23	ND - 4.73	ND - 8.87	3.0 - 82.3	ND - 7.7	5.8 - 9.2	ND - 5.73

Table No. C3 - Glass Holes Radionuclides Processed Material Sampling Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Radionuclides	Soil Cleanup Goals (pCi/g)	Detection Limits (pCi/g)	Processed Material Sampling Results																				
			IL Pit A (pCi/g)	IL Pit B (pCi/g)	IL Pit C (mg/kg)	IL Pit D (mg/kg)	G1A (pCi/g)	G1B (pCi/g)	G3 (pCi/g)	G3A (pCi/g)	G4 (pCi/g)	G5 (pCi/g)	G6 (pCi/g)	G7 (pCi/g)	G8 (pCi/g)	G9 (pCi/g)	G9A (pCi/g)	G10 (pCi/g)	G11 (pCi/g)	G12 (pCi/g)	G13 (pCi/g)	G15 (pCi/g)	G15E (pCi/g)
Gross Alpha	44.4	<1.00	NA	< 0.34 - 39.45			0.00 - 2.16	0.80 - 2.45	0.47 - 1.16	0.14 - 3.68	0.00 - 2.85	0.95 - 3.92	0.95 - 3.92	-0.14 - 3.92	-0.14 - 3.92		-0.25 - 4.47	0.48 - 3.52	-0.23 - 14.24	4.98 - 19.82	5.30 - 19.64	-0.18 - 17.08	0.39 - 2.74
Gross Beta	47.6	<10	NA	5.41 - 37.70			7.07 - 14.55	13.09 - 21.02	8.98 - 12.54	8.68 - 22.34	2.07 - 17.83	14.31 - 29.82	10.79 - 29.82	10.95 - 29.82	10.79 - 29.82		7.39 - 28.63	8.67 - 25.30	10.43 - 140.24	<3.40 - 15.09	11.19 - 17.18	<3.40 - 19.36	10.75 - 13.81
Strontium-90	15		NA																				
Cobalt-60	3,356	<1.00	NA	< 5.0			< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00		< 1.00	< 1.00	<1.00 - 2.42	< 5.00	< 5.0	< 1.00	< 1.00
Cesium-137	67	<5.00	NA	< 5.0			< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00		< 1.00	< 1.00	< 1.00 - 17.38	< 5.00	< 5.0	< 1.00	< 1.00
Uranium-238	11	<5.00	NA	< 5.0			< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00		< 5.00	< 5.00	< 5.00	< 5.00	< 5.0	< 5.00	< 5.00

J - Indicates an estimated value.
U - Indicates compound was analyzed for but not detected.
B - Analyte found in associated blank as well as in the sample.
NA - Not applicable.
ND - Non-detected.

A blank cell indicates data presently unavailable.

Samples collected at a frequency of one per every 25 cubic yards of material processed per pit.
Values represent range over which contaminants were detected.
Analyses performed by Dames & Moore on site field laboratory.

Soil clean up goals calculated by CDM Federal Programs.

Table No. C4 - Glass Holes Volatile Organic Compounds Endpoint Sample Results

Table No. C4

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Volatile Organic Compound	Soil Cleanup Goals (µg/kg)	Endpoint Sample Results																				
		IL Pit A (µg/kg)	IL Pit B (µg/kg)	IL Pit C (µg/kg)	IL Pit D (µg/kg)	G1A (µg/kg)	G1B (µg/kg)	G3 (µg/kg)	G3A (µg/kg)	G4 (µg/kg)	G5 (µg/kg)	G6 (µg/kg)	G7 (µg/kg)	G8 (µg/kg)	G9 (µg/kg)	G9A (µg/kg)	G10 (µg/kg)	G11 (µg/kg)	G12 (µg/kg)	G13 (µg/kg)	G15 (µg/kg)	G15E (µg/kg)
Acetone	200	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
Benzene	60	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
Benzoic Acid	2,700	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
2-butanone	300	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
Carbon disulfide	2,700	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
Carbon tetrachloride	600	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
Chlorobenzene	1,700	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
Chloroethane	1,900	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
Chloroform	300	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
Dibromochloromethane	N/A	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
1,2-dichlorobenzene	7,900	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
1,3-dichlorobenzene	1,600	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
1,4-dichlorobenzene	8,500	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
1,1-dichloroethane	200	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
1,2-dichloroethane	100	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
1,1-dichloroethene	400	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			4.0 J	<10	<11	
1,2-dichloroethene (trans)	300	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
1,2-dichloroethene (cis)	250	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
1,3-dichloropropane	300	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
Ethylbenzene	5,500	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
113 freon	6,000	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
ethylene chloride	100	2.0 J	2.0 J			<10	<10	4.0 J	4.0 J	<10	<10	<10	5 JB	<10		4 JB			2.0 J	2.0 J	<11	
ethyl ethyl ketone	N/A	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
4-methyl-2-pentanone	1,000	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
Tetrachloroethene	1,400	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
1,1,1-trichloroethane	800	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
1,1,2,2-tetreachloroethane	600	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
1,2,3-trichloropropane	400	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
1,2,4-trichlorobenzene	3,400	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
Toluene	1,500	0.6 J	0.6 J			3.0 J	<10	8.0 J	2.0 J	6.0 J	19	<10	5 J	1.0 J		< 10			1.0 J	1.0 J	15	
Trichloroethene	700	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
Vinyl chloride	200	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	
Xylenes (total)	1,200	<10	<10			<10	<10	<11	<10	<10	<10	<10	< 11	<10		< 10			<10	<10	<11	

J - Indicates an estimated value.
U - Indicates compound was analyzed for but not detected.
B - Analyte found in associated blank as well as in the sample.
NA - Not applicable.
ND - Non-detected.

A blank cell indicates data presently unavailable.

Endpoint samples collected at a frequency of one per pit.
Analyses performed by off site laboratory.

Soil clean up goals as per NYSDEC TAGM #4046.

Table No. C5 - Glass Holes Semi-Volatile Organic Compounds Endpoint Sample Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Semi - Volatile Organic Compound	Soil Cleanup Goals (µg/kg)	Endpoint Sample Results																				
		IL Pit A (µg/kg)	IL Pit B (µg/kg)	IL Pit C (µg/kg)	IL Pit D (µg/kg)	G1A (µg/kg)	G1B (µg/kg)	G3 (µg/kg)	G3A (µg/kg)	G4 (µg/kg)	G5 (µg/kg)	G6 (µg/kg)	G7 (µg/kg)	G8 (µg/kg)	G9 (µg/kg)	G9A (µg/kg)	G10 (µg/kg)	G11 (µg/kg)	G12 (µg/kg)	G13 (µg/kg)	G15 (µg/kg)	G15E (µg/kg)
Acenaphthene	50,000	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Acenaphthylene	41,000	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Aniline	100	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Anthracene	50,000	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Benzo(a)anthracene	224	<340	<340					<300	33 J		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Benzo(a)pyrene	61	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Benzo(b)fluoranthene	224	<340	<340					<300	54 J		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Benzo(g,h,i)perylene	50,000	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Benzo(k)fluoranthene	224	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
bis(2-ethylhexyl)phthalate	50,000	<340	<340					<300	<340		<300	<300	40 J	<300		< 350	<300		<340	<340	<350	
Butylbenzophthalate	50,000	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Chrysene	400	<340	<340					<300	32 J		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
4-chloroaniline	220	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
4-chloro-3-methylphenol	240	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
2-chlorophenol	800	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Cresol (total)	N/A	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Dibenzofuran	6,200	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Dibenzo(a,h)anthracene	14	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
3,3'-dichlorobenzidine	N/A	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
2,4-dichlorophenol	400	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
2,4-dinitrophenol	200	<820	<820					<900	<820		<900	<900	< 900	<900		< 860	<900		<820	<820	<850	
2,4-dinitrotoluene	N/A	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
2,6-dinitrotoluene	1,000	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Diethylphthalate	7,100	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Dimethylphthalate	2,000	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Di-n-butyl phthalate	8,100	55 J	47 J					41 J	98 J		19 J	24 J	< 360	24 J		< 350	76 J		48 J	44 J	61 J	
Di-n-octyl phthalate	50,000	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Fluoranthene	50,000	<340	<340					<300	78 J		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Fluorene	50,000	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Hexachlorobenzene	410	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Hexachlorobutadiene	N/A	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Hexachloroethane	N/A	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Indeno(1,2,3-cd)pyrene	3,200	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Isophorone	4,400	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
2-methylnaphthalene	36,400	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
2-methylphenol	100	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
4-methylphenol	900	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Naphthalene	13,000	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Nitrobenzene	200	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
2-nitroaniline	430	<820	<820					<900	<820		<900	<900	< 900	<900		< 860	<900		<820	<820	<850	
2-nitrophenol	330	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
4-nitrophenol	100	<820	<820					<900	<820		<900	<900	< 900	<900		< 860	<900		<820	<820	<850	
3-nitroaniline	500	<820	<820					<900	<820		<900	<900	< 900	<900		< 860	<900		<820	<820	<850	
Pentachlorophenol	1,000	<820	<820					<900	<820		<900	<900	< 900	<900		< 860	<900		<820	<820	<850	
Phenanthrene	50,000	<340	<340					<300	40 J		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Phenol	30	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
Pyrene	50,000	<340	<340					<300	55 J		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	
2,4,5-trichlorophenol	100	<820	<820					<900	<820		<900	<900	< 900	<900		< 860	<900		<820	<820	<850	
2,4,6-trichlorophenol	N/A	<340	<340					<300	<340		<300	<300	< 360	<300		< 350	<300		<340	<340	<350	

J - Indicates an estimated value.

U - Indicates compound was analyzed for but not detected.

B - Analyte found in associated blank as well as in the sample.

NA - Not applicable.

ND - Non-detected.

A blank cell indicates data presently unavailable.

Endpoint samples collected at a frequency of one per pit.

Analyses performed by off site laboratory.

Soil clean up goals as per NYSDEC TAGM #4046.

Table No. C6 - Glass Holes Inorganics Endpoint Sample Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Inorganic	Soil Cleanup Goals (mg/kg)	Endpoint Sample Results																				
		IL Pit A (mg/kg)	IL Pit B (mg/kg)	IL Pit C (mg/kg)	IL Pit D (mg/kg)	G1A (mg/kg)	G1B (mg/kg)	G3 (mg/kg)	G3A (mg/kg)	G4 (mg/kg)	G5 (mg/kg)	G6 (mg/kg)	G7 (mg/kg)	G8 (mg/kg)	G9 (mg/kg)	G9A (mg/kg)	G10 (mg/kg)	G11 (mg/kg)	G12 (mg/kg)	G13 (mg/kg)	G15 (mg/kg)	G15E (mg/kg)
Aluminum	16,461	1,780	898			570	532	495	1,300	923	329		3,060	393		394	371		1,190	444	3,160	
Antimony	13.1	10.4	4.13			<10	<10	<11	<10	<10	<11		<0.65	<11		<0.31	<10.9		5.33	8.68	<11	
Arsenic	2.8	<2.0	<2.0			<0.75	<0.76	1.0 J	<0.76	<0.77	<0.74		1.7 B	<0.74		0.39 B	<0.76		<2.0	<2.0	<0.79	
Barium	29.9	7.15	3.97			3.5 J	2.2 J	2.1 J	5.4 J	4.9 J	2.1 J		11 B	1.6 J		2.7 B	2.1 B		5.24	2.48	9.6 J	
Beryllium	0.43	0.12	0.105			<0.02	0.22 J	<0.1	<0.21	0.22 J	<0.1		0.09 B	<0.1		0.02 B	<0.10		0.159	0.106	<0.21	
Cadmium	10	<1.0	<1.0			<0.51	<0.51	<0.8	<0.52	<0.52	<0.8		<0.06	<0.8		0.03 B	<0.80		<1.0	<1.0	<0.53	
Calcium	434	87.7	48			110 J	33 J	27 J	64 J	80 J	35 J		200 B	21 J		65 B	10.6		83.2	42.6	130 J	
Chromium	50	2.34	1.28			1.8 J	<0.92	<1.7	2.0 J	3.4	<1.7		4.5	2.8		2.6	<1.7		4.69	1.52	5.4	
Cobalt	3	1.59	<10			1.6 J	1.6 J	<1.2	<1.3	<1.3	<1.1		1.6 B	<1.1		0.4 B	<1.1		0.876	<10	1.5 J	
Copper	6.5	3.44	2.58			7.4	<3.4	1.8 J	<3.4	4.4 J	1.4 J		3.9 B	1.1 J		3.43	1.7 B		2.73	1.26	3.9 J	
Cyanide	8.9	<0.0005	<0.0005			<0.0005	<0.0005	0.67	<0.0005	<0.0005	0.55		<0.54	<0.51		<0.52	<0.06		<0.0005	<0.0005	<0.53	
Iron	14,429	2,160	1,200			2,370	1,220	905	1,780	1,850	746		3,600	933		1,200	645		1,830	1,150	3,940	
Lead	400	1.88	1.07			1.1	<0.57	0.59 J	2.2	1.2	0.68		3.21	1.3		0.97	0.57		1.1	1.25	2.8	
Magnesium	2,122	301	166			200 J	180 J	120 J	250 J	190 J	66 J		540 B	99 J		98 B	81.5		248	102	540 J	
Manganese	148	55.1	23.8			38	55.9	27	34.6	55.5	16.4		51.2	7.9		22	13.8		35.8	21.4	52.9	
Mercury	1.84	<0.08	<0.08			<0.04	<0.04	0.33	<0.04	<0.04	<0.040		0.36	<0.04		0.24	<0.04		0.13	<0.08	0.13	
Nickel	11.5	2.88	2.58			<1.7	<1.7	2.5 J	<1.8	1.8 J	<1.8		2.6 B	<1.8		0.8 B	<1.8		3.66	<8.0	<0.18	
Potassium	628	191	136			<56	<56	53 J	130 J	100 J	38 J		280 B	47 J		51 B	<27.1		193	48.8	220 J	
Selenium	0.41	<1.0	<1.0			<0.93	<0.94	<0.68	<0.95	<0.95	<0.68		<0.6	<0.68		<0.29	<0.91		<1.0	<1.0	<0.98	
Silver	2	0.2	<2.0			<1.5	<1.5	<0.76	<1.5	<1.5	<0.76		<0.19	<0.76		<0.09	<0.76		0.881	0.18	<1.5	
Sodium	196	41.8	30.9			<21	<21	23 J	25 J	<21	18 J		43 B	17 J		30 B	<6.1		40.3	40.8	32 J	
Thallium	0.35	<2.0	<2.0			<0.53	<0.53	<0.54	0.96 J	<0.54	<0.53		1.3 B	<0.53		<0.27	<0.53		<2.0	<2.0	<0.55	
Vanadium	25.2	3.07	1.83			3.2 J	1.7 J	1.8 J	2.8 J	3.2 J	1.9 J		6.5 B	2.0 J		2.2 B	1.7 B		2.81	1.25	6.9 J	
Zinc	22.4	1.77	0.099			5.2	2.4 J	2.7 J	3.4 J	3.5 J	2.8 J		20.2	2.5 J		7.45	2.5 B		3.99	<4.0	6.7	

J - Indicates an estimated value.

U - Indicates compound was analyzed for but not detected.

B - Analyte found in associated blank as well as in the sample.

NA - Not applicable.

ND - Non-detected.

A blank cell indicates data presently unavailable.

Endpoint samples collected at a frequency of one per pit.

Analyses performed by off site laboratory.

Soil clean up goals for inorganics calculated by CDM Federal Programs.

Table No. C7 - Glass Holes Pesticides & Herbicides Endpoint Sample Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Pesticides & Herbicides	Soil Cleanup Goals (µg/kg)	Endpoint Sample Results																				
		IL Pit A (µg/kg)	IL Pit B (µg/kg)	IL Pit C (µg/kg)	IL Pit D (µg/kg)	G1A (µg/kg)	G1B (µg/kg)	G3 (µg/kg)	G3A (µg/kg)	G4 (µg/kg)	G5 (µg/kg)	G6 (µg/kg)	G7 (µg/kg)	G8 (µg/kg)	G9 (µg/kg)	G9A (µg/kg)	G10 (µg/kg)	G11 (µg/kg)	G12 (µg/kg)	G13 (µg/kg)	G15 (µg/kg)	G15E (µg/kg)
Aldrin	41.1	<1.7	<1.7			<2.0	<1.7	<1.7	<1.8	<1.7		<1.7	<1.7	<1.7			<1.7		<1.7	<1.7	<1.8	
alpha-BHC	110	<1.7	<1.7			<2.0	<1.7	<1.7	<1.8	<1.7		<1.7	<1.7	<1.7			<1.7		<1.7	<1.7	<1.8	
beta-BHC	200	<1.7	<1.7			<2.0	<1.7	<1.7	<1.8	<1.7		<1.7	<1.7	<1.7			<1.7		<1.7	<1.7	<1.8	
delta-BHC	300	<1.7	<1.7			<2.0	<1.7	<1.7	<1.8	<1.7		<1.7	<1.7	<1.7			<1.7		<1.7	<1.7	<1.8	
Chlorodane	540	<1.7	<1.7			<2.0	<1.7	<1.7	<1.8	<1.7		<1.7	<1.7	<1.7			<1.7		<1.7	<1.7	<1.8	
2,4-D	500	<120	<120			<120	<120			<120		<119	<16	<119			<100		<120	<120		
4,4'-DDD	2,900	<3.4	<3.4			<3.4	<3.4	9.08	<3.5	<3.6		<3.4	<3.4	<3.4			<3.6		<3.4	<3.4	<3.5	
4,4'-DDE	2,100	<3.4	<3.4			<3.4	<3.4	<3.4	<3.5	<3.6		<3.4	<3.4	<3.4			<3.6		<3.4	<3.4	<3.5	
4,4'-DDT	2,100	<3.4	<3.4			<3.4	<3.4	11.3	<3.5	<3.6		<3.4	<3.4	<3.4			<36		<3.4	<3.4	20.6	
Dieldrin	44	<3.4	<3.4			<3.4	<3.4	<3.4	<3.5	<3.6		<3.4	<3.4	<3.4			<3.6		<3.4	<3.4	<3.5	
Endosulfan I	900	<1.7	<1.7			<2.0	<1.7	<1.7	<1.8	<1.7		<1.7	<1.7	<1.7			<1.7		<1.7	<1.7	<1.8	
Endosulfan II	900	<3.4	<3.4			<3.4	<3.4	<3.4	<3.5	<3.6		<3.4	<3.4	<3.4			<3.6		<3.4	<3.4	<3.5	
Endosulfan sulfate	1,000	<3.4	<3.4			<3.4	<3.4	<3.4	<3.5	<3.6		<3.4	<3.4	<3.4			<3.6		<3.4	<3.4	<3.5	
Endrin	100	<3.4	<3.4			<3.4	<3.4	<3.4	<3.5	<3.6		<3.4	<3.4	<3.4			<3.6		<3.4	<3.4	<3.5	
Endrin keytone	NA	<3.4	<3.4			<3.4	<3.4	<3.4	<3.5	<3.6		<3.4	<3.4	<3.4			<3.6		<3.4	<3.4	<3.5	
gamma-BHC (Lindane)	60	<1.7	<1.7			<2.0	<1.7	<1.7	<1.8	<1.7		<1.7	<1.7	<1.7			<1.7		<1.7	<1.7	<1.8	
gamma-chlorodane	540	<1.7	<1.7			<2.0	<1.7	<1.7	<1.8	<1.7		<1.7	<1.7	<1.7			<1.7		<1.7	<1.7	<1.8	
Heptachlor	100	<1.7	<1.7			<2.0	<1.7	<1.7	<1.8	<1.7		<1.7	<1.7	<1.7			<1.7		<1.7	<1.7	<1.8	
Heptachlor epoxide	20	<1.7	<1.7			<2.0	<1.7	<1.7	<1.8	<1.7		<1.7	<1.7	<1.7			<1.7		<1.7	<1.7	<1.8	
oxyxychlor	***	<17	<17			<17	<17	<17	<18	<17		<17	<17	<17			<17		<17	<17	<18	
ane	N/A																					
Parathion	1,200																					
Pyridine	NA																					
Silvex	700	<24	<24			<24	<24			<24		<24	<4.0	<24			<20		<24	<24		
Toxaphene	N/A	<170	<170			<170	<170	<170	<180	<170		<170	<170	<170			<170		<170	<170	<180	
2,4,5-T	1,900	<24	<24			<24	<24			<24			<8.0	<24			<20		<24	<24		
2,3,7,8 tetrachlorodibenzo-p-dioxin	1	NA	NA			NA	NA	NA	NA	NA		NA	NA	NA			NA		NA	NA	NA	

J - Indicates an estimated value.
U - Indicates compound was analyzed for but not detected.
B - Analyte found in associated blank as well as in the sample.
NA - Not applicable.
ND - Non-detected.

A blank cell indicates data presently unavailable.

Endpoint samples collected at a frequency of one per pit.
Analyses performed by off site laboratory.

Soil clean up goals as per NYSDEC TAGM #4046.

Table No. C8 - Glass Holes Radionuclides Endpoint Sample Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Radionuclides	Soil Cleanup Goals (pCi/g)	Endpoint Sample Results																				
		IL Pit A (pCi/g)	IL Pit B (pCi/g)	IL Pit C (pCi/g)	IL Pit D (pCi/g)	G1A (pCi/g)	G1B (pCi/g)	G3 (pCi/g)	G3A (pCi/g)	G4 (pCi/g)	G5 (pCi/g)	G6 (pCi/g)	G7 (pCi/g)	G8 (pCi/g)	G9 (pCi/g)	G9A (pCi/g)	G10 (pCi/g)	G11 (pCi/g)	G12 (pCi/g)	G13 (pCi/g)	G15 (pCi/g)	G15E (pCi/g)
Gross Alpha	44.4	0.581 ± 0.101	0.999 ± 0.145			0.398 ± 0.081	0.338 ± 0.069	0.478 ± 0.087	0.699 ± 0.113	0.623 ± 0.103	0.755 ± 0.117	0.294 ± 0.063	1.32 ± 0.186	0.463 ± 0.085	0.262 ± 0.064	2.12 ± 0.265	0.157 ± 0.052	0.383 ± 0.076	0.633 ± 0.104	0.447 ± 0.083	0.902 ± 0.139	
Gross Beta	47.6	0.142 ± 0.070	0.368 ± 0.078			-0.011 ± 0.013	0.078 ± 0.061	0.303 ± 0.075	0.199 ± 0.069	0.082 ± 0.068	0.223 ± 0.071	-0.026 ± 0.012	1.05 ± 0.146	0.001 ± 0.065	0.560 ± 0.098	1.78 ± 0.211	0.015 ± 0.059	0.022 ± 0.065	0.155 ± 0.064	0.160 ± 0.065	0.378 ± 0.081	
Strontium-90	15	-0.24 ± 0.101	1.34 ± 0.320			-0.250 ± 0.150	-0.310 ± 0.210	-0.101 ± 0.16	-0.36 ± 0.16	-0.470 ± 0.170	0.017 ± 0.014	-0.230 ± 0.170	-0.110 ± 0.170	-0.190 ± 0.190	-0.860 ± 0.210	-0.480 ± 0.190	-0.280 ± 0.170	-0.190 ± 0.170	-0.091 ± 0.170	-0.67 ± 0.17	-0.17 ± 0.18	
Cobalt-60	3,356	0.021 ± 0.020	0.038 ± 0.022			-0.005 ± 0.010	-0.004 ± 0.015	0.037 ± 0.018	-0.016 ± 0.017	0.012 ± 0.019	0.017 ± 0.014	0.015 ± 0.014	0.003 ± 0.014	0.00 ± 0.0001	0.017 ± 0.012	0.016 ± 0.012	0.003 ± 0.011	0.003 ± 0.013	0.011 ± 0.015	-0.01 ± 0.013	0.012 ± 0.007	
Cesium-137	67	0.017 ± 0.019	0.001 ± 0.017			-0.020 ± 0.009	-0.004 ± 0.015	-0.021 ± 0.017	0.002 ± 0.016	-0.050 ± 0.017	0.008 ± 0.012	0.013 ± 0.015	-0.014 ± 0.013	0.018 ± 0.015	0.003 ± 0.011	0.009 ± 0.014	-0.009 ± 0.010	0.002 ± 0.011	-0.011 ± 0.015	-0.01 ± 0.040	0.007 ± 0.012	
Uranium-238	11	NA	NA									NA	-0.082 ± 0.058	NA	NA	0.065 ± 0.069		NA	NA	NA		

Table No. C9 - Glass Holes PCBs Endpoint Sample Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

PCB	Soil Cleanup Goals (µg/kg)	Endpoint Sample Results																				
		IL Pit A (µg/kg)	IL Pit B (µg/kg)	IL Pit C (µg/kg)	IL Pit D (µg/kg)	G1A (µg/kg)	G1B (µg/kg)	G3 (µg/kg)	G3A (µg/kg)	G4 (µg/kg)	G5 (µg/kg)	G6 (µg/kg)	G7 (µg/kg)	G8 (µg/kg)	G9 (µg/kg)	G9A (µg/kg)	G10 (µg/kg)	G11 (µg/kg)	G12 (µg/kg)	G13 (µg/kg)	G15 (µg/kg)	G15E (µg/kg)
CBs (total) surface	1,000	<0.2	680			<69	<69	<68	<71	<71		<70	<69	<70			<69		<0.2		<71	
PCBs (total) sub-surface	10,000																					
Polychlorinated dibenzofurans	NA																					

J - Indicates an estimated value.
U - Indicates compound was analyzed for but not detected.
B - Analyte found in associated blank as well as in the sample.
NA - Not applicable.
ND - Non-detected.

A blank cell indicates data presently unavailable.

Endpoint samples collected at a frequency of one per pit.
Analyses performed by off site laboratory.

Soil clean up goals for radionuclides calculated by CDM Federal Programs.
Soil clean up goals for PCBS as per NYSDEC TAGM #4046.

Table No. C10 - Animal/Chemical Pits Volatile Organic Compounds Processed Material Sampling Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Volatile Organic Compound	Soil Cleanup Goals (µg/kg)	Detection Limits (µg/kg)	Processed Material Sampling Results																																	
			C2 (µg/kg)	C2A (µg/kg)	C4 (µg/kg)	C5A (µg/kg)	C6 (µg/kg)	C6B (µg/kg)	C7 (µg/kg)	C8 (µg/kg)	C11A (µg/kg)	C11B (µg/kg)	C11C (µg/kg)	C12 (µg/kg)	C13 (µg/kg)	C14 (µg/kg)	C15A (µg/kg)	C15B (µg/kg)	C17 (µg/kg)	C18 (µg/kg)	C20 (µg/kg)	C21 (µg/kg)	C22 (µg/kg)	C23 (µg/kg)	C24 (µg/kg)	C25 (µg/kg)	C27A (µg/kg)	C27B (µg/kg)	C29 (µg/kg)	C30 (µg/kg)	C33 (µg/kg)	C34 (µg/kg)	C35 (µg/kg)	C37 (µg/kg)	C38 (µg/kg)	C41 (µg/kg)
acetone	200	<200									ND - 20400	ND - 20400	ND - 20400	ND - 680	ND - 2,400	ND - 1,300	ND - 9.4	ND - 9.4	ND		ND - 1,970	ND - 230	ND - 3,940	ND - 2,050		ND - 1,070	ND - 10150	ND - 10150	ND		ND - 230		ND - 1,600	ND - 3,200		ND - 230
benzene	60	<30									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
2-butanone	300	<200									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
carbon disulfide	2700	<200									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
carbon tetrachloride	600	<200									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
chlorobenzene	1700	<50									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
chloroform	300	<200									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
1,1-dichloroethane	200	<200									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
1,2-dichloroethane	100	<200									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
1,1-dichloroethene	400	<50									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
1,2-dichloroethene (trans)	300	<50									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
1,2-dichloroethene (cis)	250	<50									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
1,3-dichloropropane	300	<200									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
ethylbenzene	5,500	<200									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
2-methyl-2-pentanone	1,000	<200									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
tetrachloroethene	1400	<50									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
1,1,1-trichloroethane	800	<200									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
1,1,2,2-tetrachloroethane	600	<200									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
2,3-trichloropropane	400	<200									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
toluene	1,500	<50									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
trichloroethene	700	<50									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
vinyl chloride	200	<50									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
xylenes (total)	1,200	<200									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
VOCs (total) - mg/kg	50										ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND
semivolatile organics (total) - mg/kg	5										ND - 11.81	ND - 11.81	ND - 11.81	ND - 76.1	ND	ND - 22.39	ND - 13.36	ND - 13.36	ND - 4.29		ND - 27.1	ND - 59.5	ND	ND - 17.04		ND - 59.5	ND - 3.42	ND - 3.42	ND		ND - 59.5		ND	ND		ND - 59.5
SVOCs (total) - mg/kg	5	<0.5									ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND		ND	ND	ND	ND		ND		ND	ND		ND

- Indicates an estimated value.
- Indicates compound was analyzed for but not detected.
- Analyte found in associated blank as well as in the sample.
- A - Not applicable.
- D - Non-detected.

blank cell indicates data presently unavailable.

Samples collected at a frequency of one per every 25 cubic yards of material processed per pit.
Values represent range over which contaminants were detected.
Analyses performed by Dames & Moore on site field laboratory.

Soil clean up goals as per NYSDEC TAGM #4046.

Table No. C12 - Animal/Chemical Pits Inorganics Processed Material Sampling Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Inorganic	Soil Cleanup Goals (mg/kg)	Processed Material Sampling Results																																	
		C2 (mg/kg)	C2A (mg/kg)	C4 (mg/kg)	C5A (mg/kg)	C6 (mg/kg)	C6B (mg/kg)	C7 (mg/kg)	C8 (mg/kg)	C11A (mg/kg)	C11B (mg/kg)	C11C (mg/kg)	C12 (mg/kg)	C13 (mg/kg)	C14 (mg/kg)	C15A (mg/kg)	C15B (mg/kg)	C17 (mg/kg)	C18 (mg/kg)	C20 (mg/kg)	C21 (mg/kg)	C22 (mg/kg)	C23 (mg/kg)	C24 (mg/kg)	C25 (mg/kg)	C27A (mg/kg)	C27B (mg/kg)	C29 (mg/kg)	C30 (mg/kg)	C33 (mg/kg)	C34 (mg/kg)	C35 (mg/kg)	C37 (mg/kg)	C38 (mg/kg)	C41 (mg/kg)
Arsenic	2.8									ND - 4.80	ND - 4.80	ND - 4.80	ND - 4.40	ND - 62.77	ND - 1.33	ND - 8.57	ND - 8.57	ND - 7.50		ND	ND - 2.53	ND - 3.20	ND - 9.13		ND - 7.50	ND	ND	ND		ND - 7.50		ND	ND		ND - 7.50
Chromium	50									ND - 18.20	ND - 48.93	ND - 18.20	ND - 18.40	ND - 17.73	9.30 - 28.51	ND - 58.77	ND - 58.77	13.07 - 37.50		10.43 - 62.37	27.71 - 39.33	ND - 19.40	ND - 474.40		ND - 98.87	10.00 - 48.93	10.00 - 48.93	13.07 - 38.07		ND - 98.87		20.87 - 36.33	ND - 33.40		ND - 98.87
Cobalt	3									ND - 10.13	ND - 14.20	ND - 10.13	ND - 44.53	ND - 15.10	ND - 7.07	ND - 15.83	ND - 15.83	ND - 18.33		ND - 18.40	17.30 - 24.57	ND - 18.23	ND - 29.00		5.57 - 24.57	ND - 14.20	ND - 14.20	ND		5.57 - 19.77		ND - 7.53	8.33 - 11.07		5.57 - 24.57
Copper	6.5									ND - 2.40	ND - 4.80	ND - 2.40	ND - 26.87	ND - 20.33	ND - 3.83	ND - 5.67	ND - 5.67	ND - 13.67		ND - 9.93	ND	ND - 0.67	ND - 11.90		ND - 13.67	ND - 4.80	ND - 4.80	ND		ND - 13.67		ND	ND		ND - 13.67
Iron	14428									7.90 - 237.33	7.90 - 463.20	7.90 - 237.33	198.83 - 638.1	154.53 - 788.07	185.13 - 359.40	84.55 - 893.87	84.53 - 893.87	241.87 - 1193.00		244.83 - 871.20	978.13 - 1227.73	194.83 - 383.29	23.77 - 880.93		21.23 - 1227.73	228.53 - 463.20	228.53 - 463.20	241.87 - 402.87		20.23 - 1227.73		221.53 - 485.87	200.80 - 506.20		20.23 - 1227.73
Lead	400									ND - 8.83	ND - 21.77	ND - 8.83	ND - 23.63	ND - 1,040.5	ND - 8.40	ND - 8.80	ND - 8.80	ND - 3.23		ND - 28.27	ND - 5.30	4.27 - 32.60	ND - 52.77		ND - 5.30	ND - 21.77	ND - 21.77	ND - 2.08		ND - 5.30		ND	ND - 2.80		ND - 5.30
Manganese	148									ND	ND	ND	ND	ND - 40.77	ND	ND - 242.40	ND - 242.40	ND		ND	ND	ND - 217.07	ND - 580.35		ND - 931.20	ND	ND	ND		ND - 931.20		ND	ND - 17.97		ND - 931.20
Mercury	1.84									3.37 - 93.93	3.37 - 93.93	3.37 - 93.93	3.37 - 149.75	ND - 14.1	ND - 91.60	ND - 15.83	ND - 15.83	ND - 11.37		ND - 9.07	3.00 - 3.73	28.27 - 278.47	2.77 - 610.13		ND - 12.70	ND - 24.53	ND - 24.53	3.43 - 11.10		ND - 11.37		3.27 - 39.83	ND - 5.40		ND - 11.37
Nickel	11.5									ND - 3.80	ND - 4.57	ND - 3.80	ND - 8.27	ND - 20.17	ND	ND - 18.80	ND - 5.40	ND - 12.57		ND - 3.27	ND	ND - 3.63	ND - 10.13		ND - 12.57	ND - 4.57	ND - 4.57	ND - 6.20		ND - 12.57		ND - 4.97	ND		ND - 12.57
Zinc	22.4									2.03 - 45.50	2.03 - 45.50	2.03 - 45.50	2.33 - 17.07	1.97 - 370.40	2.70 - 9.33	ND - 6.97	ND - 6.97	1.07 - 79.53		2.87 - 6.63	7.63 - 7.97	ND - 2.03	ND - 10.93		ND - 79.53	4.20 - 10.83	4.20 - 10.83	1.27 - 8.63		ND - 79.53		1.23 - 2.30	ND - 1.07		ND - 79.53

Table No. C21 - Animal/Chemical Pits Radionuclides Processed Material Sampling Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Radionuclide	Soil Cleanup	Processed Material Sampling Results																																	
	Goals (pCi/g)	C2 (pCi/g)	C2A (pCi/g)	C4 (pCi/g)	C5A (pCi/g)	C6 (pCi/g)	C6B (pCi/g)	C7 (pCi/g)	C8 (pCi/g)	C11A (pCi/g)	C11B (pCi/g)	C11C (pCi/g)	C12 (pCi/g)	C13 (pCi/g)	C14 (pCi/g)	C15A (pCi/g)	C15B (pCi/g)	C17 (pCi/g)	C18 (pCi/g)	C20 (pCi/g)	C21 (pCi/g)	C22 (pCi/g)	C23 (pCi/g)	C24 (pCi/g)	C25 (pCi/g)	C27A (pCi/g)	C27B (pCi/g)	C29 (pCi/g)	C30 (pCi/g)	C33 (pCi/g)	C34 (pCi/g)	C35 (pCi/g)	C37 (pCi/g)	C38 (pCi/g)	C41 (pCi/g)
Gross Alpha	44.4									1.81 - 9.55	1.81 - 9.55	1.81 - 9.55	0.28 - 19.97	1.20 - 25.38	1.44 - 9.90	0.98 - 21.15	1.01 - 39.33	1.22 - 3.12		1.09 - 4.59		-1.35 - 3.48	-0.34 - 5.19			1.01 - 4.04	1.01 - 4.04	2.21 - 4.67		1.27		0.50 - 4.04	0.00 - 1.35		1.27
Gross Beta	47.6									22.70 - 178.80	17.08 - 178.80	22.70 - 178.80	15.02 - 114.11	-2.70 - 49.03	10.27 - 51.77	-2.81 - 25.17	8.81 - 40.40	10.19 - 12.51		12.35 - 25.70		-30.33 - 41.05	12.85 - 58.07			17.00 - 24.00	17.00 - 24.00	16.79 - 24.08		18.33		11.19 - 28.05	17.91 - 17.25		18.33
Strontium-90	15																																		
Cobalt-60	3,356									< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00		< 1.00		< 1.00	< 1.00			< 1.00	< 1.00	< 1.00		< 1.00		< 1.00	< 1.00		< 1.00
Cesium-137	67									0.49 - 26.9	< 1.00 - 26.7	0.49 - 26.9	< 1.00 - 43.21	< 1.00	< 1.00 - 1.74	< 1.00 - 2.95	< 1.00 - 8.04	< 1.00		< 1.00		2.7 - 8.04	< 1.00 - 5.72			< 1.00	< 1.00	< 1.00		< 1.00		< 1.00	< 1.00		< 1.00
Uranium-238	11									< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00		< 5.00		< 5.00	< 5.00			< 5.00	< 5.00	< 5.00		< 5.00		< 5.00	< 5.00		< 5.00

J - Indicates an estimated value.
U - Indicates compound was analyzed for but not detected.
B - Analyte found in associated blank as well as in the sample.
NA - Not applicable.
ND - Non-detected.

A blank cell indicates data presently unavailable.

Samples collected at a frequency of one per every 25 cubic yards of material processed per pit.
Values represent range over which contaminants were detected.
Analyses performed by Dames & Moore on site field laboratory.

Soil clean up goals calculated by CDM Federal Programs.

Table No. C13 - Animal/Chemical Pits Volatile Organic Compounds Endpoint Sample Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Volatile Organic Compound	Soil Cleanup Goals (µg/kg)	Endpoint Sample Results																																			
		C2 (µg/kg)	C2A (µg/kg)	C4 (µg/kg)	C5A (µg/kg)	C6 (µg/kg)	C6B (µg/kg)	C7 (µg/kg)	C8 (µg/kg)	C11A (µg/kg)	C11B (µg/kg)	C11C (µg/kg)	C12 (µg/kg)	C13 (µg/kg)	C14 (µg/kg)	C15A (µg/kg)	C15B (µg/kg)	C17 (µg/kg)	C18 (µg/kg)	C20 (µg/kg)	C21 (µg/kg)	C22 (µg/kg)	C23 (µg/kg)	C24 (µg/kg)	C25 (µg/kg)	C27A (µg/kg)	C27B (µg/kg)	C29 (µg/kg)	C30 (µg/kg)	C33 (µg/kg)	C34 (µg/kg)	C35 (µg/kg)	C37 (µg/kg)	C38 (µg/kg)	C41 (µg/kg)		
Acetone	200			< 10	<11	840	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
Benzene	60			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
Benzoic Acid	2,700			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
2-butanone	300			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
Carbon disulfide	2,700			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
Carbon tetrachloride	600			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
Chlorobenzene	1,700			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
Chloroethane	1,900			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
Chloroform	300			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
Dibromochloromethane	N/A			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
1,2-dichlorobenzene	7,900			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
1,3-dichlorobenzene	1,600			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
1,4-dichlorobenzene	8,500			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
1,1-dichloroethane	200			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
1,2-dichloroethane	100			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
1,1-dichloroethene	400			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
1,2-dichloroethene (trans)	300			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
1,2-dichloroethene (cis)	250			< 10	<11	4 J	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
1,3-dichloropropane	300			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
Ethylbenzene	5,500			< 10	<11	3 J	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
113 freon	6,000			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
Methylene chloride	100			3 JB	3 JB	<10	3 JB	2 JB	2 JB	2 JB	2 JB	4 JB	2 JB		4 JB	4.0 J	<10	3 JB	2 JB	3 JB	2 JB	<10	2 JB	<10	4 JB	5 JB	<10		3 JB	<10	<10	<10		<10	<11	<10	
Methyl ethyl ketone	N/A			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	4 JB		
4-methyl-2-pentanone	1,000			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
Tetrachloroethene	1,400			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
1,1-trichloroethane	800			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
2,2-tetreachloroethane	600			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
2,3-trichloropropane	400			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
1,2,4-trichlorobenzene	3,400			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
Toluene	1,500			< 10	<11	120	< 10	<10	<10	<10	<10	< 10	<10		< 10	7.0 J	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
Trichloroethene	700			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		3 J	7 J	<10	3.0 J		<10	<11	<10		
Vinyl chloride	200			< 10	<11	<10	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		
Xylenes (total)	1,200			< 10	<11	15	< 10	<10	<10	<10	<10	< 10	<10		< 10	<10	<10	<10	<10	<10	<10	<10	< 10	<10	<10	<10		<13	<10	<10	<10		<10	<11	<10		

J - Indicates an estimated value.
U - Indicates compound was analyzed for but not detected.
B - Analyte found in associated blank as well as in the sample.
NA - Not applicable.
ND - Non-detected.

A blank cell indicates data presently unavailable.

Endpoint samples collected at a frequency of one per pit.
Analyses performed by off site laboratory.

Soil clean up goals as per NYSDEC TAGM #4046.

Table No. C14 - Animal/Chemical Pits Semi-Volatile Organic Compounds Endpoint Sample Results

**Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report**

Semi-Volatile Organic Compound	Soil Cleanup Goals (µg/kg)	Enpoint Sample Results																																	
		C2 (µg/kg)	C2A (µg/kg)	C4 (µg/kg)	C5A (µg/kg)	C6 (µg/kg)	C6B (µg/kg)	C7 (µg/kg)	C8 (µg/kg)	C11A (µg/kg)	C11B (µg/kg)	C11C (µg/kg)	C12 (µg/kg)	C13 (µg/kg)	C14 (µg/kg)	C15A (µg/kg)	C15B (µg/kg)	C17 (µg/kg)	C18 (µg/kg)	C20 (µg/kg)	C21 (µg/kg)	C22 (µg/kg)	C23 (µg/kg)	C24 (µg/kg)	C25 (µg/kg)	C27A (µg/kg)	C27B (µg/kg)	C29 (µg/kg)	C30 (µg/kg)	C33 (µg/kg)	C34 (µg/kg)	C35 (µg/kg)	C37 (µg/kg)	C38 (µg/kg)	C41 (µg/kg)
Acenaphthene	50,000	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
Acenaphthylene	41,000	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
Aniline	100	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
Anthracene	50,000	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	1,400	< 340	< 300	< 300		< 400	< 400	< 340
Benzo(a)anthracene	224	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	980	< 340	< 300	< 300		< 400	< 400	< 340
Benzo(a)pyrene	61	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	1,300	< 340	< 300	< 300		< 400	< 400	< 340
Benzo(b)fluoranthene	224	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	980	< 340	< 300	< 300		< 400	< 400	< 340
Benzo(g,h,i)perylene	50,000	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	1,900	< 340	< 300	< 300		< 400	< 400	< 340
Benzo(k)fluoranthene	224	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	590	< 340	< 300	< 300		< 400	< 400	< 340
bis(2-ethylhexyl)phthalate	50,000	< 340	46 J	< 340	< 350	< 350	< 350	< 340	< 340	47 J	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	2,500	< 340	< 300	< 300		< 400	< 400	< 340
Butylbenzophthalate	50,000	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	79 J	< 340	< 300	< 300		< 400	27 J	< 340
Chrysene	400	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
4-chloroaniline	220	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	1,400	< 340	< 300	< 300		< 400	< 400	< 340
4-chloro-3-methylphenol	240	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
2-chlorophenol	800	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
Cresol (total)	N/A	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
Dibenzofuran	6,200	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
Dibenzo(a,h)anthracene	14	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
3,3'-dichlorobenzidine	N/A	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
2,4-dichlorophenol	400	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
2,4-dinitrophenol	200	< 850	< 850	< 860	< 880	< 870	< 870	< 860	< 860	< 860	< 860	< 860	< 850		< 860	< 490	< 820	< 860	< 870	< 860	< 860	< 870	< 850	< 860	< 860	< 870	< 850	< 430	< 340	< 300	< 300		< 400	< 400	< 340
2,4-dinitrotoluene	N/A	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
2,6-dinitrotoluene	1,000	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
Diethylphthalate	7,100	< 340	< 340	< 340	< 350	53 J	< 350	< 340	< 340	< 350	< 350	< 340	45 J		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	48 J	< 300	< 300		< 400	< 400	< 340
Dimethylphthalate	2,000	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	48 J	< 300	< 300		< 400	< 400	< 340
n-butyl phthalate	8,100	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	55 J	140 J	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	43 J	37 J		21 J	26 J	< 340
n-octyl phthalate	50,000	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
n-Fluoranthene	50,000	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
Fluorene	50,000	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	3,200	< 340	< 300	< 300		< 400	< 400	< 340
Hexachlorobenzene	410	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
Hexachlorobutadiene	N/A	< 340	< 340	< 340	< 350	< 350	< 350	< 340	< 340	< 350	< 350	< 340	< 340		< 340	< 200	< 340	< 340	< 350	< 340	< 340	< 350	< 340	< 340	< 340	< 350	< 350	< 430	< 340	< 300	< 300		< 400	< 400	< 340
Hexachloroethane	N/A	< 340	< 340	< 340	< 350	< 350	< 350	< 340	<																										

J - Indicates an estimated value.
U - Indicates compound was analyzed for but not detected.
B - Analyte found in associated blank as well as in the sample.
NA - Not applicable.
ND - Non-detected.

A blank cell indicates data presently unavailable.

Endpoint samples collected at a frequency of one per pit.
Analyses performed by off site laboratory.

Soil clean up goals as per NYSDEC TAGM #4046.

Table No. C15 - Animal/Chemical Pits Inorganics Endpoint Sample Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Inorganic	Soil Cleanup Goals (mg/kg)	Endpoint Sample Results																																	
		C2 (mg/kg)	C2A (mg/kg)	C4 (mg/kg)	C5A (mg/kg)	C6 (mg/kg)	C6B (mg/kg)	C7 (mg/kg)	C8 (mg/kg)	C11A (mg/kg)	C11B (mg/kg)	C11C (mg/kg)	C12 (mg/kg)	C13 (mg/kg)	C14 (mg/kg)	C15A (mg/kg)	C15B (mg/kg)	C17 (mg/kg)	C18 (mg/kg)	C20 (mg/kg)	C21 (mg/kg)	C22 (mg/kg)	C23 (mg/kg)	C24 (mg/kg)	C25 (mg/kg)	C27A (mg/kg)	C27B (mg/kg)	C29 (mg/kg)	C30 (mg/kg)	C33 (mg/kg)	C34 (mg/kg)	C35 (mg/kg)	C37 (mg/kg)	C38 (mg/kg)	C41 (mg/kg)
Aluminum	16,461	1060	845	413	3,080	480	241	1,810	787	500	525	801	340		1140	391	415	252	576			340	130	271	162	682		1,400	400	410	345		452	1,870	386
Antimony	13.1	< 0.06	< 0.6	< 0.62	< 0.64	< 0.63	< 0.3	< 0.62	< 0.62	< 0.6	< 0.62	< 0.62	< 0.61		< 0.62	< 10	< 11	< 0.31	< 0.63		0.6	< 0.3	< 0.31	8.5 B	< 0.31	< 0.62		< 0.77	< 0.61	< 11	< 11		< 11	< 11	< 0.31
Arsenic	2.8	< 0.4	0.52	< 0.5	0.76 B	< 0.5	< 0.24	< 0.50	< 0.49	< 0.5	< 0.5	0.75 B	< 0.49		< 0.49	< 0.77	< 0.78	< 0.25	0.54 B		91 B	< 0.3	< 0.25	0.84 B	< 0.25	< 0.50		3.29	< 0.49	< 7.4	< 0.74		< 0.74	< 0.75	< 0.25
Barium	29.9	4.7	3.8	2.0 B	25 B	2.2 B	0.91 B	11 B	4.2 B	1.6 B	0.79 B	2.5 B	2.0 B		5.1 B	< 1.9	2.7 J	1.3 B	4.2 B		15.5	2.3 B	0.73 B	24 B	0.64 B	3.0 B		9.0 B	4.5 B	2.5 J	2. J		1.7 J	7.3 J	2.1 B
Beryllium	0.43	0.06	0.14	< 0.02	0.17 B	0.04 B	< 0.01	0.1 B	0.04 B	0.04 B	0.06 B	0.02 B		0.04 B	< 0.21	< 0.21	< 0.01	0.04 B		0.1 B	< 0.04	0.1 B	0.04 B	< 0.01	0.04 B		0.21 B	0.04 B	< 0.10	< 0.1		< 0.10	< 0.1	0.01 B	
Cadmium	10	< 0.06	0.1	< 0.06	< 0.06	< 0.06	< 0.03	< 0.08	< 0.06	< 0.1	0.06 B	0.59 B	< 0.06		< 0.06	< 0.53	< 0.53	< 0.03	< 0.08		0.4 B	< 0.06	0.03 B	< 0.06	0.03	< 0.06		< 0.08	< 0.06	< 0.81	< 0.8		< 0.80	< 0.82	0.03 B
Calcium	434	102	85.8	63 B	122 B	62 B	41 B	96 B	71 B	68 B	66 B	115 B	78.3 B		120 B	25 J	67 J	29 B	34 B		44 B	41 B	27 B	200 B	25 B	84 B		230 B	66 B	80 J	41 J		43 J	100 J	33 B
Chromium	50	3.3	2.8	1.3 B	3.14	1.1 B	0.63 B	1.6 B	1.7 B	2.0 B	1.6 B	1.3 B	1.1 B		2.0 B	< 0.93	1.7 J	0.59 B	0.68 B		< 0.3	1.7	0.94 B	6.8	0.74 B	1.7 B		7.5	1.4 B	2.8	2.0 J		< 1.7	2.7	0.82 B
Cobalt	3	0.8	0.9	0.35 B	1.6 B	0.4 B	0.18 B	1.0 B	0.53 B	0.9 B	0.39 B	2.1 B	0.30 B		0.68 B	< 1.3	1.4 J	0.2 B	0.48 B		< 0.1	0.03 B	< 0.11	0.79 B	0.16 B	0.48 B		1.8 B	0.43 B	< 1.2	< 1.2		< 1.2	< 1.2	0.28 B
Copper	6.5	2	1.4	1.8 B	3.8 B	1.7 B	0.86 B	1.9 B	2.0 B	1.4 B	1.64 B	3.3 B	1.5 B		2.1 B	< 3.4	< 1.5	0.93 B	1.3 B		8.3 B	1.3 B	1.2 B	3.4 B	0.84 B	1.5 B		10.4	0.94 B	0.98 J	1.3 J		< 0.84	2.1 J	0.93 B
Cyanide	8.9	< 0.52	< 0.51	< 0.52	< 0.53	< 0.52	< 0.51	< 0.52	< 0.51	< 0.52	< 0.51	< 0.51	< 0.51		< 0.52	< 0.0005	< 0.0005	< 0.52	< 0.53		< 0.52	< 0.52	< 0.51	< 0.51	< 0.52		< 0.64	< 0.51	< 0.52	< 0.51		< 0.51	1.31	< 0.52	
Iron	14,429	1580	1530	698	3,680	930	444	2,430	1,360	872	1,050	1570	840		1600	736	1,160	557	1,070		< 0.3	760	280	654	515	947		8,500	900	1,040	599		977	2,210	661
Lead	400	1.5	1.2	0.96	2.22	1.1	0.56	1.18	2.59	1.2	1.75	1.3	0.96		1.2	< 0.58	1	0.55	1.27		1.2 B	2.5	0.52	5.9	0.59	1.53		9.7	1.6	1.1	0.93		0.49	1.4	0.51
Magnesium	2,122			91 B	660 B	97 B	53 B	390 B	200 B	138 B	114 B	320 B	100 B		350 B	97.8 J	120 J	66 B	150 B		6.1	90 B	38 B	71 B	28 B	158 B		210 B	80 B	63 J	77 J		94 J	380 J	99 B
Manganese	148	36.2	27.8	17.3	99	22	14.37	49	23.9	23.6	23	39	18		38.4	12.1	33.2	11.25	42.6		< 0.5	6	2.15	17.2	10.14	23		160	14	22.7	20.4		19.5	42.6	14.29
Mercury	1.84	< 0.05	0.16	0.05 B	< 0.05	< 0.05	< 0.05	< 0.05	0.16	0.07 B	< 0.08	0.09	< 0.04		< 0.05	< 0.04	< 0.04	< 0.5	< 0.05		0.07 B	0.16	0.72	< 0.05	< 0.06	0.06 B		< 0.05	< 0.05	< 0.04	< 0.04		< 0.04	< 0.04	< 0.04
Nickel	11.5	1.1	1.2	1.0 B	2.2 B	1.0 B	0.37 B	1.4 B	0.66 B	1.4 B	0.66 B	4.3 B	0.61 B		0.89 B	< 1.8	< 1.8	0.42 B	0.35 B		1.4 B	0.5 B	0.19 B	0.73 B	0.22 B	1.0 B		2.9 B	0.51 B	< 1.8	< 1.8		< 1.8	< 1.8	0.37 B
Potassium	628	164	126	60 B	410 B	50 B	33 B	230 B	94 B	54 B	61 B	65 B	68 B		130 B	< 57	< 58	37 B	54 B		54 B	69 B	34 B	48 B	22 B	65 B		110 B	40 B	43 J	< 27		33 J	190 J	51 B
Selenium	0.41	< 0.5	< 0.5	< 0.58	< 0.59	< 0.58	< 0.28	< 0.58	< 0.57	< 0.6	< 0.58	< 0.58	< 0.57		< 0.58	< 0.95	< 0.97	< 0.29	< 0.59		< 0.6	< 0.3	< 0.29	< 0.58	< 0.29	< 0.58		< 0.72	< 0.57	< 0.68	< 0.68		< 0.68	< 0.69	< 0.29
Silver	2	< 0.18	< 0.18	< 0.19	< 0.19	< 0.19	< 0.09	< 0.19	< 0.18	< 0.2	< 0.19	< 0.18	< 0.18		< 0.19	< 1.5	< 1.5	< 0.09	< 0.19		< 0.2	< 0.1	< 0.09	< 0.18	< 0.09	< 0.19		< 0.23	< 0.18	< 0.77	< 0.76		< 0.76	< 0.77	< 0.09
Sodium	196	44.8	47.9	19 B	71 B	37 B	8.2 B	30 B	53 B	31 B	47 B	43 B	31 B		22 B	< 21	< 22	23 B	71 B		31 B	68 B	6.7 B	45 B	11 B	36 B		43 B	31 B	26 J	19 J		11 J	20 J	12 B
Thallium	0.35	< 0.5	< 0.5	< 0.54	0.62 B	< 0.54	< 0.26	0.67 B	0.59 B	< 0.5	< 0.54	< 0.53	< 0.53		< 0.54	< 0.54	< 0.55	< 0.27	0.62 B		< 0.5	< 0.3	< 0.27	< 0.53	< 0.27	< 0.54		< 0.67	< 0.53	< 0.54	< 0.53		< 0.53	< 0.54	< 0.27
Vanadium	25.2	3.5	3	1.6 B	5.6 B	2.0 B	0.95 B	3.5 B	2.2 B	1.4 B	2.3 B	2.2 B	1.7 B		2.7 B	1.6 J	2.3 J	1.21 B	5.6 B		1.4 B	1.5 B	0.53 B	1.6 B	1.0 B	1.4 B		19	2.2 B	2.7 J	1.7 J		2.2 J	4.0 J	0.99 B
Zinc	22.4	5.2	4.9	16.2	22.51	28	12.95	9.48	24.99	15.1	7.58	26.3	9.5		12.5	6.3	0.62 J	6.33	22.51			5.6	4.8	10.3	7.64	11		20	7	2.7 J	2.9 J		1.8 J	4.0 J	5.1

ates an estimated value.
J - Indicates compound was analyzed for but not detected.
B - Analyte found in associated blank as well as in the sample.
NA - Not applicable.
ND - Non-detected.

A blank cell indicates data presently unavailable.

Endpoint samples collected at a frequency of one per pit.
Analyses performed by off site laboratory.

Soil clean up goals for inorganics calculated by CDM Federal Programs.

Table No. C16 - Animal/Chemical Pits Pesticides & Herbicides Endpoint Sample Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Pesticides & Herbicides	Soil Cleanup Goals (µg/kg)	Endpoint Sample Results																																	
		C2 (µg/kg)	C2A (µg/kg)	C4 (µg/kg)	C5A (µg/kg)	C6 (µg/kg)	C6B (µg/kg)	C7 (µg/kg)	C8 (µg/kg)	C11A (µg/kg)	C11B (µg/kg)	C11C (µg/kg)	C12 (µg/kg)	C13 (µg/kg)	C14 (µg/kg)	C15A (µg/kg)	C15B (µg/kg)	C17 (µg/kg)	C18 (µg/kg)	C20 (µg/kg)	C21 (µg/kg)	C22 (µg/kg)	C23 (µg/kg)	C24 (µg/kg)	C25 (µg/kg)	C27A (µg/kg)	C27B (µg/kg)	C29 (µg/kg)	C30 (µg/kg)	C33 (µg/kg)	C34 (µg/kg)	C35 (µg/kg)	C37 (µg/kg)	C38 (µg/kg)	C41 (µg/kg)
Aldrin	41.1	<1.7	<1.7		<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7			<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7		<2.2	<1.7	<1.7	<1.7		<1.7	<1.7	<1.7	
alpha-BHC	110	<1.7	<1.7		<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7			<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7		<2.2	<1.7	<1.7	<1.7		<1.7	<1.7	<1.7	
beta-BHC	200	<1.7	<1.7		<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7			<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7		<2.2	<1.7	<1.7	<1.7		<1.7	<1.7	<1.7	
delta-BHC	300	<1.7	<1.7		<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7			<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7		<2.2	<1.7	<1.7	<1.7		<1.7	<1.7	<1.7	
Chlorodane	540	<1.7	<1.7		<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7			<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7		<2.2	<1.7	<1.7	<1.7		<1.7	<1.7	<1.7	
2,4-D	500	<16	<16		<16	<16		<16	<16	<16	<16	<16	<16						<16					<16		<16		<16	<16	<120	<120		<124	<124	
4,4'-DDD	2,900	<3.4	<3.4		<3.5	<3.4	<3.4	<3.4	<3.4	<3.5	<3.5	7.2 P	<3.3			<3.4	<3.4	<3.4	<3.5	<3.4	<3.4	<3.3	<3.4	<3.4	<3.4		<4.2	<3.4	<3.4	<3.4		<3.6	<3.6	<3.4	
4,4'-DDE	2,100	<3.4	<3.4		<3.5	<3.4	<3.4	<3.4	<3.4	<3.5	<3.5	<3.4	<3.3			<3.4	<3.4	<3.4	<3.5	<3.4	<3.4	<3.3	<3.4	<3.4	<3.4		<4.2	<3.4	<3.4	<3.4		<3.6	<3.6	<3.4	
4,4'-DDT	2,100	<3.4	<3.4		<3.5	<3.4	<3.4	<3.4	<3.4	<3.5	<3.5	16 P	<3.3			<3.4	<3.4	<3.4	<3.5	<3.4	<3.4	<3.3	<3.4	<3.4	<3.4		<4.2	<3.4	<3.4	<3.4		<3.6	<3.6	<3.4	
Dieldrin	44	<3.4	<3.4		<3.5	<3.4	<3.4	<3.4	<3.4	<3.5	<3.5	<3.4	<3.3			<3.4	<3.4	<3.4	<3.5	<3.4	<3.4	<3.3	<3.4	<3.4	<3.4		<4.2	<3.4	<3.4	<3.4		<3.6	<3.6	<3.4	
Endosulfan I	900	<1.7	<1.7		<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7			<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7		<2.2	<1.7	<1.7	<1.7		<1.7	<1.7	<1.7		
Endosulfan II	900	<3.4	<3.4		<3.5	<3.4	<3.4	<3.4	<3.4	<3.5	<3.5	<3.4	<3.3			<3.4	<3.4	<3.4	<3.5	<3.4	<3.4	<3.3	<3.4	<3.4	<3.4		<4.2	<3.4	<3.4	<3.4		<3.6	<3.6	<3.4	
Endosulfan sulfate	1,000	<3.4	<3.4		<3.5	<3.4	<3.4	<3.4	<3.4	<3.5	<3.5	<3.4	<3.3			<3.4	<3.4	<3.4	<3.5	<3.4	<3.4	<3.3	<3.4	<3.4	<3.4		<4.2	<3.4	<3.4	<3.4		<3.6	<3.6	<3.4	
Endrin	100	<3.4	<3.4		<3.5	<3.4	<3.4	<3.4	<3.4	<3.5	<3.5	<3.4	<3.3			<3.4	<3.4	<3.4	<3.5	<3.4	<3.4	<3.3	<3.4	<3.4	<3.4		<4.2	<3.4	<3.4	<3.4		<3.6	<3.6	<3.4	
Endrin ketone	N/A	<3.4	<3.4		<3.5	<3.4	<3.4	<3.4	<3.4	<3.5	<3.5	<3.4	<3.3			<3.4	<3.4	<3.4	<3.5	<3.4	<3.4	<3.3	<3.4	<3.4	<3.4		<4.2	<3.4	<3.4	<3.4		<3.6	<3.6	<3.4	
gamma-BHC (Lindane)	60	<1.7	<1.7		<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7			<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7		<2.2	<1.7	<1.7	<1.7		<1.7	<1.7	<1.7		
gamma-chlorodane	540	<1.7	<1.7		<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7			<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7		<2.2	<1.7	<1.7	<1.7		<1.7	<1.7	<1.7	
Heptachlor	100	<1.7	<1.7		<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7			<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7		<2.2	<1.7	<1.7	<1.7		<1.7	<1.7	<1.7	
Heptachlor epoxide	20	<1.7	<1.7		<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7			<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7		<2.2	<1.7	<1.7	<1.7		<1.7	<1.7	<1.7	
Methoxychlor	***	<17	<17		<18	<18	<17	<17	<17	<17	<17	<17	<17			<17	<17	<17	<17	<17	<17	<17	<17	<17	<17		<22	<17	<17	<17		<17	<17	<17	
Mitotane	N/A																																		
Parathion	1,200																																		
Pyridine	N/A																																		
Silvex	700	<4.0	<4.0		<4.0	<4.0		<4.0	<4.0	<4.0	<4.0	<4.0	<4.0						<4.0					<4.0		<4.0		<4.0	<4.0	<24	<24		<25	<25	
aphene	N/A	<170	<170		<180	<180	<170	<170	<170	<170	<170	<170	<170			<170	<170	<170	<170	<170	<170	<170	<170	<170	<170		<220	<170	<170	<170		<174	<174	<170	
i-T	1,900	<8.0	<8.0		<8.0	<8.0		<8.0	<8.0	<8.0	<8.0	<8.0	<8.0						<8.0					<8.0		<8.0		<8.0	<8.0	<24	<24		<25	<25	
7,8 tetrachlorodibenzo-p-dioxin	1				NA	NA		NA	NA	NA	NA	NA	NA						NA							NA		NA	NA						

J - Indicates an estimated value.
U - Indicates compound was analyzed for but not detected.
B - Analyte found in associated blank as well as in the sample.
NA - Not applicable.
ND - Non-detected.

A blank cell indicates data presently unavailable.

Endpoint samples collected at a frequency of one per pit.
Analyses performed by off site laboratory.

Soil clean up goals as per NYSDEC TAGM #4046.

Table No. C17 - Animal/Chemical Pits Radionuclides Endpoint Sample Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

Radionuclide	Soil Cleanup Goals (pCi/g)	Endpoint Sample Results																																			
		C2 (pCi/g)	C2A (pCi/g)	C4 (pCi/g)	C5A (pCi/g)	C6 (pCi/g)	C6B (pCi/g)	C7 (pCi/g)	C8 (pCi/g)	C11A (pCi/g)	C11B (pCi/g)	C11C (pCi/g)	C12 (pCi/g)	C13 (pCi/g)	C14 (pCi/g)	C15A (pCi/g)	C15B (pCi/g)	C17 (pCi/g)	C18 (pCi/g)	C20 (pCi/g)	C21 (pCi/g)	C22 (pCi/g)	C23 (pCi/g)	C24 (pCi/g)	C25 (pCi/g)	C27A (pCi/g)	C27B (pCi/g)	C29 (pCi/g)	C30 (pCi/g)	C33 (pCi/g)	C34 (pCi/g)	C35 (pCi/g)	C37 (pCi/g)	C38 (pCi/g)	C41 (pCi/g)		
Gross Alpha	44.4			0.475 ± 0.085	0.630 ± 0.130	0.146 ± 0.050	0.460 ± 0.080	0.454 ± 0.080	0.150 ± 0.050	0.440 ± 0.090	0.227 ± 0.054		1.18 ± 0.100	0.805 ± 0.144	0.575 ± 0.101	0.983 ± 0.142	0.090 ± 0.090	0.437 ± 0.081	0.253 ± 0.085	0.296 ± 0.098	0.743 ± 0.117	0.828 ± 0.127	0.935 ± 0.136		0.447 ± 0.081	0.134 ± 0.054	0.155 ± 0.048	0.778 ± 0.127	0.841 ± 0.128	0.521 ± 0.094	0.390 ± 0.078	0.562 ± 0.100	0.582 ± 0.096	1.29 ± 0.181	0.450 ± 0.095		
Gross Beta	47.6			0.103 ± 0.070	0.546 ± 0.098	-0.049 ± 0.012	-0.009 ± 0.012	-0.027 ± 0.012	0.549 ± 0.083	7.34 ± 0.707	0.571 ± 0.097		0.908 ± 0.091	2.40 ± 0.303	0.361 ± 0.090	7.57 ± 0.289	0.223 ± 0.099	0.096 ± 0.089	0.058 ± 0.082	0.156 ± 0.073	0.838 ± 0.096	1.06 ± 0.141	5.720 ± 0.112		0.148 ± 0.069	-0.271 ± 0.012	0.183 ± 0.064	0.341 ± 0.098	0.456 ± 0.082	0.106 ± 0.064	0.295 ± 0.070	0.218 ± 0.035	0.136 ± 0.085	1.04 ± 0.140	0.183 ± 0.074		
Strontium-90	15			-0.180 ± 0.180	-0.54 ± 0.180	-0.210 ± 0.170	-0.210 ± 0.170	-0.480 ± 0.180	9.72 ± 1.59	4.05 ± 0.720	0.010 ± 0.190		-0.400 ± 0.180	-0.040 ± 0.180	-0.110 ± 0.180	-0.180 ± 0.200	-0.510 ± 0.180	-0.490 ± 0.180	-0.090 ± 0.180	-0.100 ± 0.140	-0.630 ± 0.180	-0.670 ± 0.180	-0.430 ± 0.180		-0.080 ± 0.180	-0.280 ± 0.170	-0.380 ± 0.180	-0.260 ± 0.180	-0.420 ± 0.180	-0.240 ± 0.170	-0.230 ± 0.170	-0.490 ± 0.180	-0.100 ± 0.180	-0.260 ± 0.180	-0.450 ± 0.180		
Cobalt-60	3,356			0.877 ± 0.017	-0.015 ± 0.018	-0.014 ± 0.014	0.022 ± 0.015	0.008 ± 0.014	0.004 ± 0.018	0.021 ± 0.012	0.006 ± 0.018		-0.018 ± 0.015	0.002 ± 0.020	0.012 ± 0.011	0.028 ± 0.014	0.010 ± 0.015	0.005 ± 0.014	0.034 ± 0.018	0.029 ± 0.015	0.014 ± 0.018	0.008 ± 0.018	0.020 ± 0.015		-0.013 ± 0.018	0.002 ± 0.016	0.000 ± 0.00	0.003 ± 0.018	0.016 ± 0.018	0.016 ± 0.018	-0.010 ± 0.010	0.002 ± 0.016	-0.001 ± 0.014	0.008 ± 0.013	0.018 ± 0.007		
Cesium-137	67			0.021 ± 0.016	-0.008 ± 0.010	0.029 ± 0.014	-0.011 ± 0.015	-0.005 ± 0.014	0.246 ± 0.033	0.543 ± 0.046	0.717 ± 0.058		-0.012 ± 0.012	1.51 ± 0.114	-0.012 ± 0.010	1.88 ± 0.136	0.085 ± 0.013	0.003 ± 0.013	0.038 ± 0.020	0.010 ± 0.015	0.012 ± 0.014	0.362 ± 0.045	0.022 ± 0.015		-0.016 ± 0.010	-0.002 ± 0.018	0.024 ± 0.016	-0.016 ± 0.017	0.00 ± 0.00	-0.002 ± 0.017	-0.008 ± 0.010	0.028 ± 0.018	0.012 ± 0.015	0.003 ± 0.024	0.016 ± 0.011		
Uranium-238	11			0.075 ± 0.054	0.047 ± 0.069	0.242 ± 0.054	-0.028 ± 0.064	0.125 ± 0.058	-0.002 ± 0.081	-0.006 ± 0.052	-0.122 ± 0.080		-0.107 ± 0.057	0.132 ± 0.082	0.187 ± 0.054			0.182 ± 0.058	0.171 ± 0.064	0.054 ± 0.072	0.177 ± 0.071	0.138 ± 0.061	-0.053 ± 0.081		0.114 ± 0.082	0.217 ± 0.070	-0.140 ± 0.071	0.250 ± 0.070	0.145 ± 0.072	NA	NA	NA	NA	NA	0.000 ± 0.000		

Table No. C18 - Animal/Chemical Pits PCBs Endpoint Sample Results

Brookhaven National Laboratory, Upton, New York
Animal/Chemical Pits & Glass Holes Remedial Action Closure Report

PCB	Soil Cleanup Goals (µg/kg)	Endpoint Sample Results																																			
		C2 (µg/kg)	C2A (µg/kg)	C4 (µg/kg)	C5A (µg/kg)	C6 (µg/kg)	C6B (µg/kg)	C7 (µg/kg)	C8 (µg/kg)	C11A (µg/kg)	C11B (µg/kg)	C11C (µg/kg)	C12 (µg/kg)	C13 (µg/kg)	C14 (µg/kg)	C15A (µg/kg)	C15B (µg/kg)	C17 (µg/kg)	C18 (µg/kg)	C20 (µg/kg)	C21 (µg/kg)	C22 (µg/kg)	C23 (µg/kg)	C24 (µg/kg)	C25 (µg/kg)	C27A (µg/kg)	C27B (µg/kg)	C29 (µg/kg)	C30 (µg/kg)	C33 (µg/kg)	C34 (µg/kg)	C35 (µg/kg)	C37 (µg/kg)	C38 (µg/kg)	C41 (µg/kg)		
PCBs (total) surface	1,000	<68	<68		<71	<70	<68	<69	<68	<69	<69	<69	<68			<69	<69	50	<70	<69	<69	<69	35	<68	<68	<69		<86	<69	<70	<70		<71	<70	<68		
PCBs (total) sub-surface	10,000																																				
Polychlorinated dibenzofurans	N/A																																				

J - Indicates an estimated value.
U - Indicates compound was analyzed for but not detected.
B - Analyte found in associated blank as well as in the sample.
NA - Not applicable.
ND - Non-detected.

A blank cell indicates data presently unavailable.

Endpoint samples collected at a frequency of one per pit.
Analyses performed by off site laboratory.

Soil clean up goals for radionuclides calculated by CDM Federal Programs.
Soil clean up goals for PCBS as per NYSDEC TAGM #4046.

APPENDIX D
PROJECT PHOTOGRAPHS

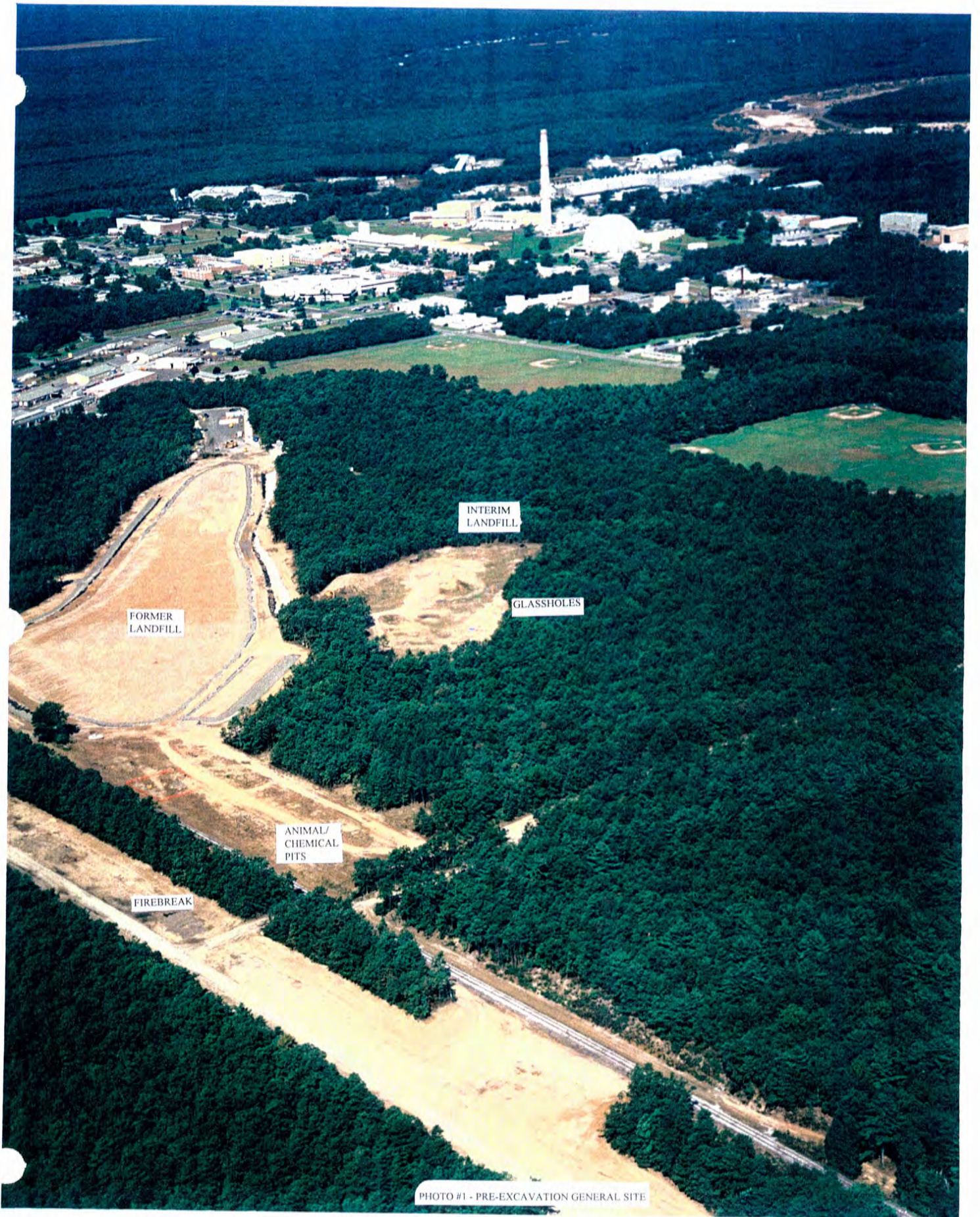


PHOTO #1 - PRE-EXCAVATION GENERAL SITE



PHOTO #2 - STORAGE AREAS



PHOTO #3 - GLASS HOLES EXCAVATION



ACCESS ROAD

CONSTRUCTION OF
STOCKPILING AREA
(HDPE LINER)

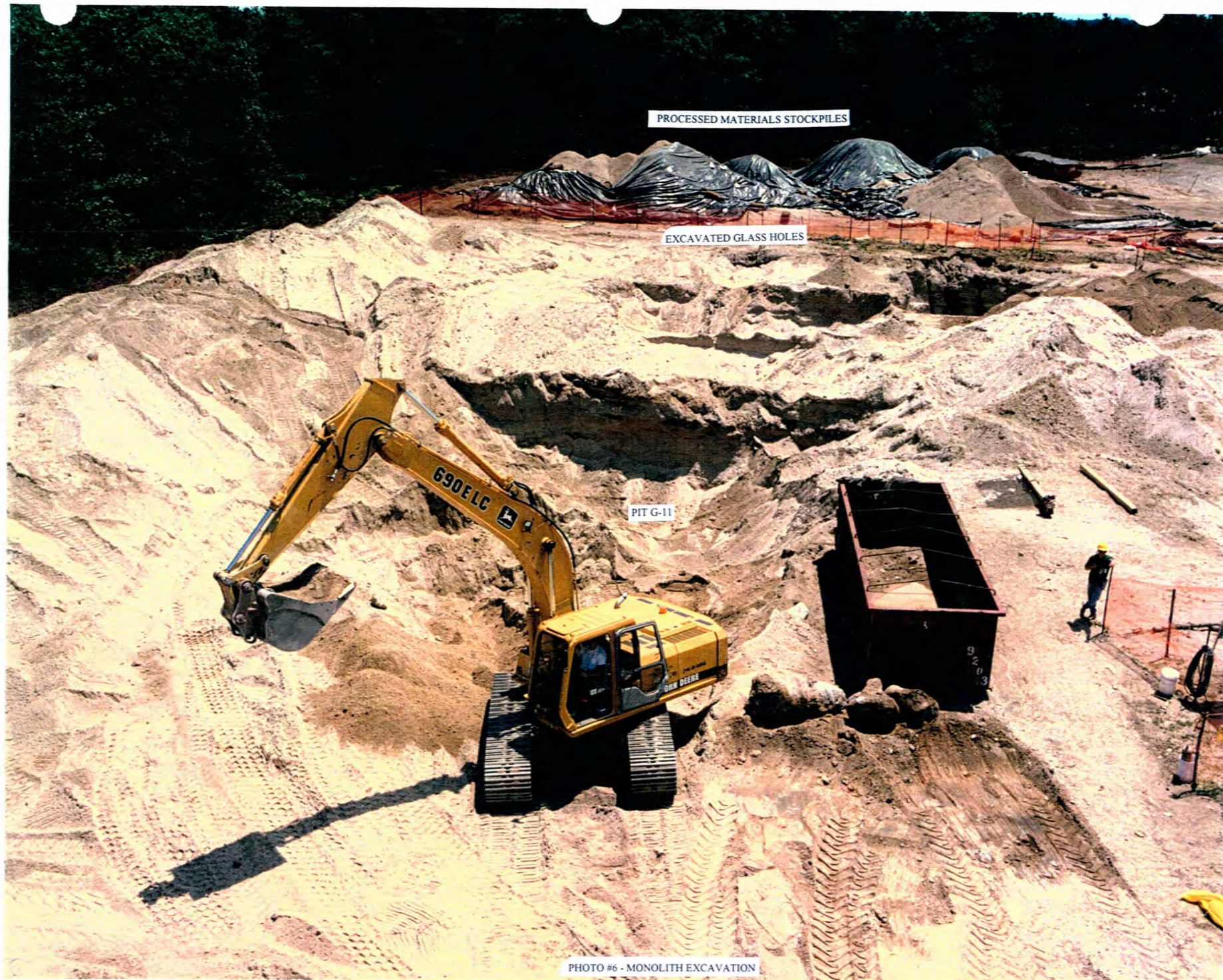
EAST END OF
ANIMAL/CHEMICAL
PITS

FIELD SUPPORT AREA

PHOTO #4 - ANIMAL/CHEMICAL PITS EXCAVATION



PHOTO #5 - SITE LOOKING WESTERLY



PROCESSED MATERIALS STOCKPILES

EXCAVATED GLASS HOLES

PIT G-11

PHOTO #6 - MONOLITH EXCAVATION



PHOTO #7 - SITE LOOKING EASTERLY



PHOTO #8 - SORTING OPERATIONS



PHOTO #9 - PROCESSED WASTE DEBRIS STAGING AREA

