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INTERIM MEASURES REPORT

Removal and Bioremediation of Contaminated Soil from Mine Fill B

Full-Scale Bioremediation
NSWC Crane
Crane, Indiana

Revision 2

November 2003

Southern Division
Naval Facilities Engineering Command
North Charleston, South Carolina
29419-9010

TOLTEST, INC.

INTERIM MEASURES REPORT

REMOVAL AND BIOREMEDIATION OF CONTAMINATED SOIL FROM MINE FILL B

FULL-SCALE BIOREMEDIATION
NSWC CRANE
CRANE, INDIANA

Revision 2

November 2003

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EXECUTIVE SUMMARY

This interim measures report has been prepared by TolTest, Inc. (TT) for Southern Division, Naval Facilities Engineering Command. This report documents the actions completed for the identification, removal, and treatment through bioremediation of explosives-contaminated soil from Mine Fill B, Solid Waste Management Unit 13/14, at Naval Surface Warfare Center Crane, Crane, Indiana, and the subsequent on-site backfill of the treated material. The report summarizes the work actions performed pursuant to the requirements of the approved *Full-Scale Operational Plan* [MK, 1998a] and the *Quality Assurance Project Plan* [MK, 1998b]. The field work was performed by TT from June 1999 to January 2002.

The scope of work included the following:

- Collection and analysis of 764 initial site characterization samples from 256 grids of potentially-impacted soil.
- Excavation and screening of 21,951.73 tons of explosives-contaminated soil and 163.47 tons of rocks.
- Collection and analysis of 480 post-excavation confirmation samples that included sampling of excavations to verify that all soil exceeding the cleanup goals was removed (to the extent possible).
- Transportation of excavated, screened material to the on-site Bioremediation Facility for treatment.
- Treatment of the contaminated material at the Bioremediation Facility through composting to reduce the levels of the contaminants of concern to below the target cleanup goals.
- Confirmatory sampling of treated material to ensure cleanup goals were achieved. All treated material met industrial or residential cleanup levels for the constituents of concern.
- Transportation of approximately 39,725.95 tons of treated soil compost back to MFB for use as backfill.

All interim measures work actions have been completed in accordance with the approved plans and approved field changes. Contamination above cleanup goals remains in nine grids at MFB, due primarily to the presence of rock at he bottom of the excavations. No further interim measures action is recommended for this site.

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ACRONYMS

°C	degrees Centigrade
2A46DT	2-amino-4,6-dintrotoluene
24DNT	2,4-dinitrotoluene
26DNT	2,6-dintrotoluene
2NT	2-nitrotoluene
3NT	3-nitrotoluene
4NT	4-nitrotoluene
4A26DT	4-amino-2,6-dintrotoluene
ABG	Ammunition Burning Ground
Biofacility	Bioremediation Facility
CFR	Code of Federal Regulations
dBa	decibels
DNB	1,3-dinitrobenzene
EPD	Environmental Protection Department
EMR	Environmental Monitoring Report
FCR	Field Change Request
FSOP	Full-Scale Operational Plan
HMX	cycloteremethylenetetranitramine
IAC	Indiana Administrative Code
ICS	Initial characterization sampling
IM	Interim Measure
IMR	Interim Measures Report
LCS	laboratory control spike
LCSD	laboratory control spike duplicate
MFA	Mine Fill A
MFB	Mine Fill B
MK	Morrison Knudsen Corporation
MS	matrix spike
MSD	matrix spike duplicate
MSDS	material safety data sheets
NB	nitrobenzene
NPDES	National Pollution Discharge Elimination System
NSWC	Naval Surface Warfare Center
PETN	Pentaerylthritol tetranitrate
PEL	permissible exposure limit
PES	post excavation samples
PPA	permanent placement area
PPE	personnel protective equipment
QAPP	Quality Assurance Project Plan
QC	quality control

ACRONYMS (continued)

RCRA	Resource Conservation and Recovery Act
RDX	cyclotrimethylene trinitramine
RFI	RCRA Facility Investigation
RKI	Rockeye Munitions Facility
RPD	Relative Percent Difference
SOP	standard operating procedure
SWMU	solid waste management unit
TLV	Threshold Limit Value
TNT	2,4,6-trinitrotoluene
TNB	trinitrobenzene
Tetryl	methyl-2,4,6-trinitro phenylnitramine
TCLP	toxicity characteristic leaching procedure
TT	TolTest, Inc.
TtNUS	Tetra Tech NUS
U.S.EPA	United States Environmental Protection Agency
ug/L	micrograms per liter
VOC	volatile organic compound
WHC	water holding capacity

1.0 INTRODUCTION

This interim measures report (IMR) has been prepared by TolTest Inc. (TT) for Southern Division, Naval Facilities Engineering Command. This report documents the actions completed at Mine Fill B (MFB), Solid Waste Management Unit (SWMU) 13/14, Naval Surface Warfare Center (NSWC) Crane, Crane, Indiana, for the identification, excavation, on-site treatment through bioremediation (composting) of explosives-contaminated soil, and on-site backfill of the compost. This IMR summarizes the work actions performed pursuant to the requirements of the approved *Full-Scale Operational Plan* [MK, 1998a] (FSOP) and the *Quality Assurance Project Plan for Full-Scale Operations, Soils Bioremediation Facility* [MK, 1998b] (QAPP). Field work was performed by Morrison Knudsen, Corp. (MK) from June 1998 to March 1999 and by TT from June 1999 to May 2002. Twelve quarterly progress reports were generated by TT to document the work completed during this time period. Information provided in the progress reports and various field documentation were used in developing this IMR.

NSWC Crane, located in southwestern Indiana (Figure 1-1), provides support for equipment shipboard weapons systems and ordnance. This site also supports Crane Army Ammunition Activity (CAAA), which includes production and renovation, storage, shipment, and demilitarization and disposal of conventional ammunition. Explosive-compounds contaminated soil resulting from the above operations have been identified at Ammunition Burning Ground (ABG, SWMU 03/10), Mine Fill A (MFA, SWMU 12/14), MFB, and Rockeye Munitions Facility (RKI, SWMU 10/15/).

To reduce or eliminate the potential for contaminant migration, NSWC Crane evaluated its 31 SWMUs to determine which ones would be amenable to accelerated cleanup actions, otherwise known as Interim Measures (IM). NSWC Crane submitted a proposal to the United States Environmental Protection Agency (U.S. EPA) to conduct IM cleanup actions at selected SWMUs. MFB and the other three SWMUs mentioned above were identified for IM cleanup due to explosive contaminants in the soil.

Based on past success at other Department of Defense facilities, as well as other factors (including cost and contaminated soil transportation requirements), excavation and on-site ex-situ bioremediation of the contaminated soils was selected as the preferred treatment alternative for the IM at MFA, ABG, MFB, and RKI. Bioremediation has proven to be successful at other sites having explosive contaminated materials [Weston, 1993].

SWMU 33/00 was identified as the treatment location for the affected soil, to be known as the Bioremediation Facility (Biofacility). The Biofacility was constructed by MK from March 1996 to June 1997. The Biofacility area is a 5½-acre complex located in the southwest quadrant of NSWC Crane near the Crane Landfill as shown on Figure 1-2. It is comprised of three compost buildings each measuring 300 feet long by 70 feet wide by 18 feet tall, a vehicle decontamination facility, two lined storm-water collection ponds, a diesel storage tank, amendment storage area, and a field laboratory and administration facility. A description of the facility is provided in Section 3.0 of the FSOP and the details of the facility are included in the *Construction As-Built Report* [MK, 1998c].

The first phase of the IM process consisted of a pilot-scale bioremediation operation that evaluated several mix recipes and provided lessons learned, a final recipe for full-scale operation, and cleanup goals for treated soil. Results and discussions of the pilot-scale operations are provided in the *Pilot-Scale Treatability Test Report* [MK, 1998d]. The second phase of the IM process consisted of excavating impacted soils and full-scale operation of the Biofacility for treatment of the soils. This IMR documents the identification, excavation, and treatment of 22,115.2 tons of explosives contaminated soil from MFB and subsequent backfill of approximately 39,725.95 tons of treated soil compost.

FIGURE 1–1

NSWC CRANE VICINITY MAP

MINE FILL B INTERIM MEASURES REPORT
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

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JOB NO. 37324.01	TOLTEST, INC.
DRAWING NUMBER 3732401-040	

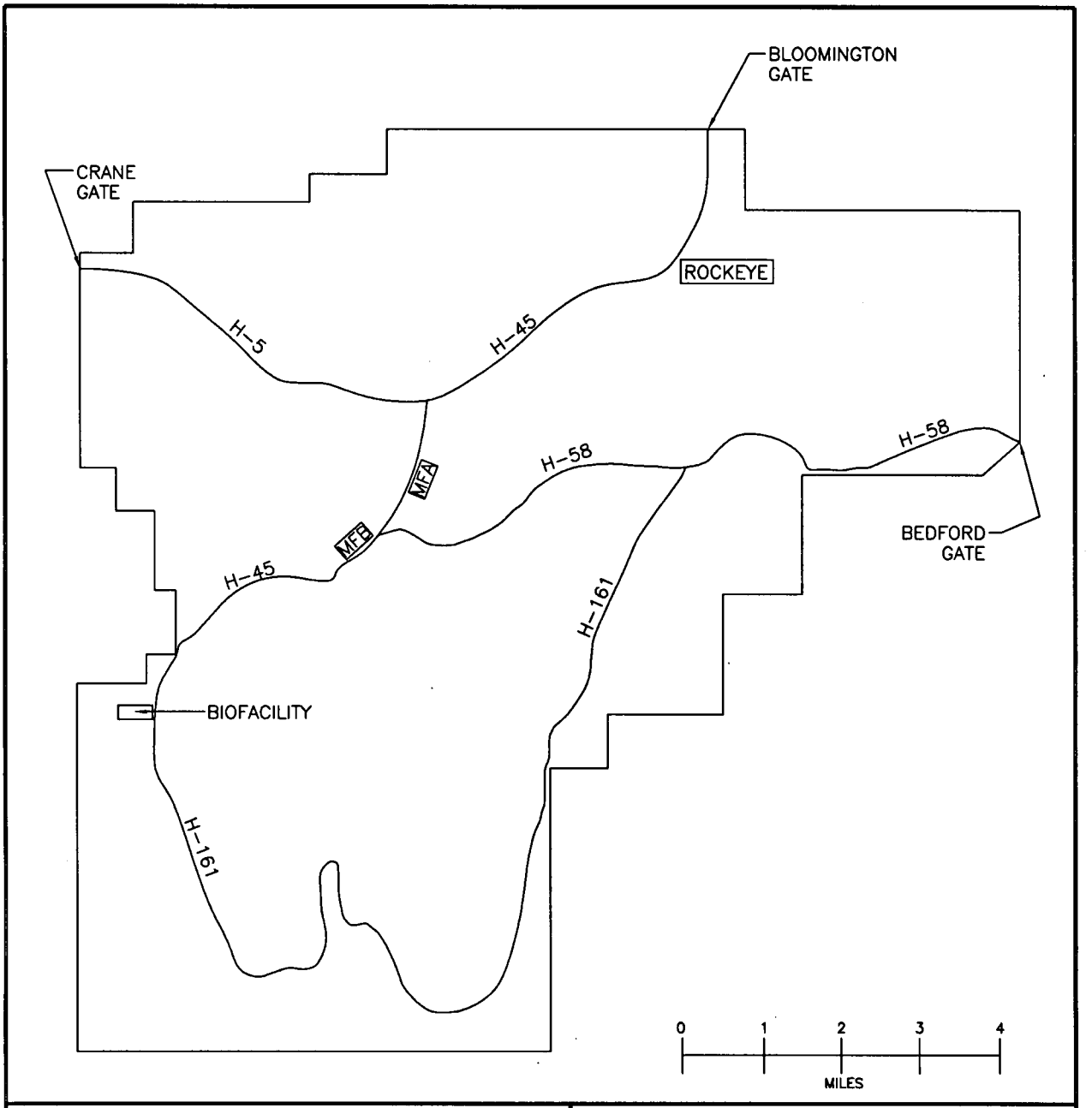

FIGURE 1-2

NSWC CRANE AREA MAP

MINE FILL B INTERIM MEASURES REPORT
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

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DRAWING NUMBER 3732401-030	

1.1 SITE BACKGROUND

MFB can be divided into two halves in which identical activities took place. Operations at MFB began when NSWC CRANE was commissioned in December 1941. MFB has historically been used to manufacture mines, depth charges, rocket heads, aerial bombs, and projectiles. Production of explosive ordnance occurred at MFB from 1941 until 1973. MFB originally had the capability only to handle TNT. Later, this Mine Fill was modified to handle Torpex, Minol, HBX, and Amatol. During the Vietnam War, TNT, Composition B, H-6, Tritonal, and Minol were used in mine filling operations. Constituents of these explosives are RDX, TNT, aluminum powder, ammonium nitrate, and wax. Fertilizers (ammonium nitrate) were also melted into bombs. Additional nitrate preparation buildings (Buildings 2500 and 2501) were also incorporated into the site. Since 1973, the facilities at MFB have been used for renovation of ordnance and equipment.

Renovation work in Building 169 includes one paint booth. The 1983 Operation Permit application contained information on these activities. The paint booth applies an enamel coating, which contains 22 percent naphtha by weight and also applies a bituminous solvent-type coating, which contains 30 percent naphtha by weight.

Loading of bullets also reportedly took place in Building 169 (Halliburton, 1992). Bullets were loaded with titanium tetrachloride and vanadium oxytrichloride or dummy loaded with sands and salts. As many as 15 gallons of titanium tetrachloride are reported to have been spilled at Building 169 and neutralized, and the residue was reportedly disposed in a sanitary landfill. These rounds are no longer loaded. Most of the vanadium oxytrichloride and titanium dioxide puff-round loading equipment has been removed from the facility. Building 169 is used primarily for inert loading and painting of projectiles.

Renovation of mortars and bullets reportedly takes place in Building 165. Renovation activities include rotary grit blasting, spray-painting, propellant removal, and fuse and configuration changes. In 1998, CAAA removed the 2 paint booths from Building 165. A new building was constructed next to B-165, and an extruder was installed in this new building (B-2172). The B-165 area is now used for extrusion of C-4 blocks for various military items. In the process, C-4 is received at the building and brought to the proper temperature. The C-4 is then moved to the extruder by a bucket conveyor. The C-4 is processed through the extruder and its associated die in a remote manner. The die cuts the C-4 into blocks, and a conveyor carries the material back to the packaging line in B-165. The blocks are inspected and packaged for shipment. This process is permitted under the Crane Title V Operating permit, although there are relatively little emissions. Building 173 is used to degrease mines. Building 174 is used primarily for demilitarization jobs. The most recent job involved the repackaging of Mine Clearing Line Charges. B-174 had contained a vapor degreaser, but this equipment was removed in 1993. A paint booth remains in the building, but it has not been used recently.

B-3299, which has been recently constructed, has been utilized by the Navy Ordnance Department to test small waterjet cutting systems. The building has a 6" curb and sealed floors, so no wastewater can exit the building.

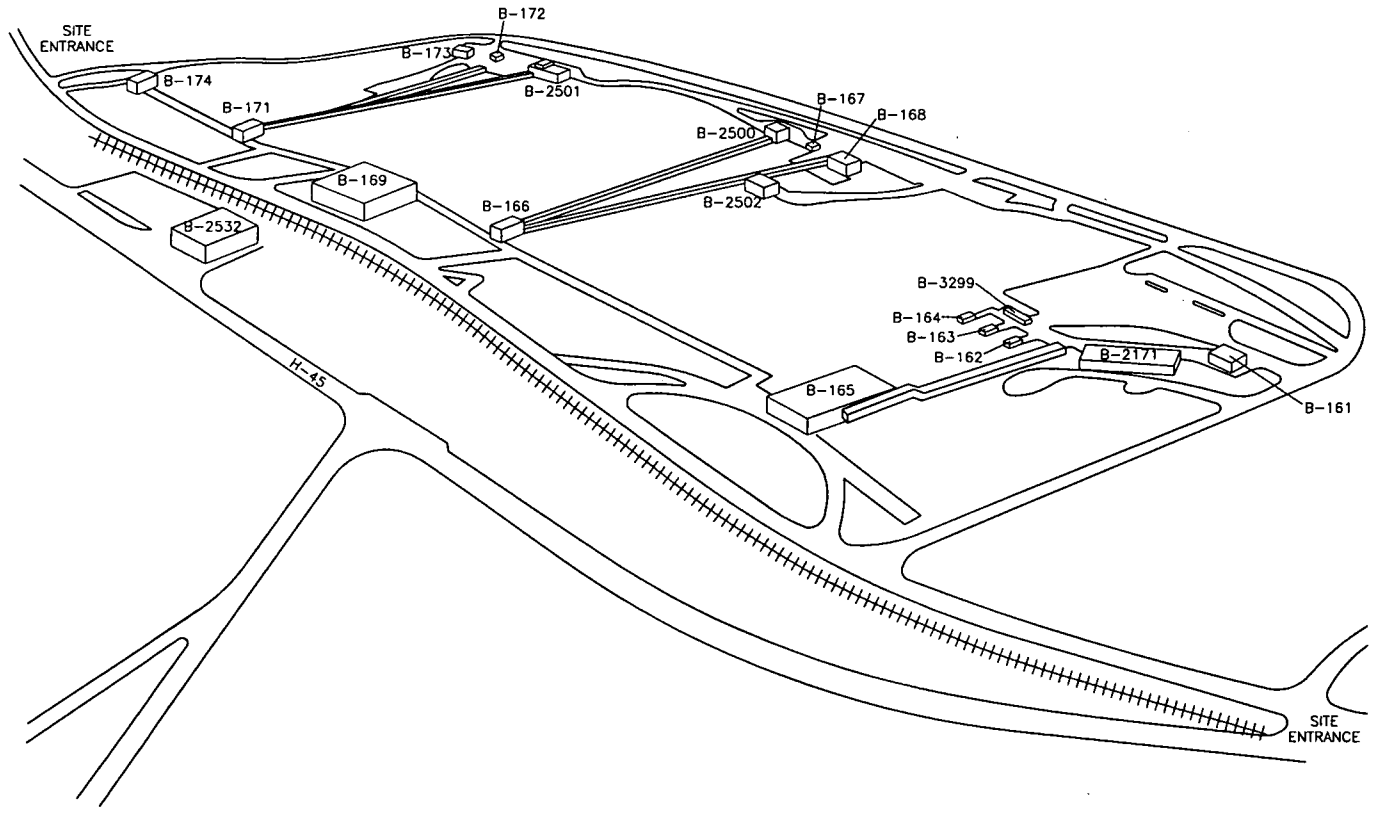
Large quantities of TNT, Composition B, HBX-1, HBX-3, and H6 were reportedly collected in the sumps of MFB. These sumps released explosives-contaminated water directly to surface drainage channels, which flow into the Boggs Creek Watershed. Widespread explosives contamination has been reported for MFB (Halliburton, 1992).

It is assumed that polychlorinated biphenyls (PCB) oils were heated in the therminol boilers and then transported to the melt building where the oil was used as a heat transfer medium in the melting of explosive mixtures in large melt kettles. PCB oils are reported to have leaked or spilled from the boilers and conveyance system, thus contaminating soil. Although areas known to have been contaminated with PCBs have been removed, some residual PCB contamination still remains around the location of the therminol boilers near Buildings 166 and 171 (Halliburton, 1992).

The constituents of concern for MFB include compounds that were identified in the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Phase I for Mine Fill B [Halliburton, 1992] and are included in Table 1-1. The areas where soil was suspected to be impacted were around the bulk loading buildings (172/173/2501 and 167/168/2500) and the production buildings (165, 166 and 171), as illustrated on Figure 1-3.

TABLE 1-1
MINE FILL B CONSTITUENTS OF CONCERN

Explosive Compounds	
• Pentaerylthritol tetranitrate (PETN)	• 4-amino-2,6-dintrotoluene (4A26DT)
• 2,4,6-trinitrotoluene (TNT);	• 2-amino-4,6-dintrotoluene (2A46DT)
• cyclotrimethylene trinitramine (RDX)	• 2,4-dinitrotoluene (24DNT)
• cycloteremethylenetetranitramine (HMX)	• 2,6-dintrotoluene (26DNT)
• tetryl (methyl 2,4,6 trinitro phenylnitroamine)	• 2-nitrotoluene (2NT)
• trinitrobenzene (TNB)	• 3-nitrotoluene (3NT)
• 1,3-dinitrobenzene (DNB)	• 4-nitrotoluene (4NT)
• nitrobenzene (NB)	
Metals	
• Aluminum	• Chromium
• Barium	• Lead
• Cadmium	• Mercury
Volatile Organic Compounds (VOCs)	
• Dichloromethane (methylene chloride)	• Methyl isobutyl ketone (4-methyl-2-pentanone)
• Acetone	• Toluene
• Methyl ethyl ketone (2-butanone)	• Xylenes
Polychlorinated Biphenyls (PCBs)	
• Aroclor 1242	• Aroclor 1254
• Aroclor 1260	



LEGEND

RAILROAD TRACKS

MFB INTERIM MEASURES REPORT

FIGURE 1-3
MINE FILL B
AREA MAP

NAVAL SURFACE WARFARE CENTER
MINE FILL B
CRANE, INDIANA

PREPARED FOR
NAVAL FACILITIES ENGINEERING COMMAND
NSWC CRANE, IN

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REVISED MRC/2-13-03	DRAWING NO.: 373240113.dwg	
JOB NO.: 37324.01		
SHEET NUMBER 1 of 1	TOLTEST, INC.	

1.2 SCOPE OF WORK

The scope of work for the IM completed at MFB included:

- Initial site characterization by sampling and analysis of potentially contaminated in-situ soil to determine the levels of contamination and to delineate the extent of contamination
- Excavation of explosives-contaminated soil identified in the site characterization, screening of the soil, and transportation of the screened soil to the Biofacility for treatment
- Field screening during excavation to assist in determining the extent of contamination
- Confirmatory sampling after excavation was completed to document site conditions
- Treatment of the contaminated soil at the Biofacility through composting, including process monitoring of the compost windrows during treatment
- Confirmation sampling of the treated soil to ensure that cleanup goals had been met
- Transportation and backfill of the compost at MFB

Field Clarification Requests (FCRs) were generated to modify, clarify, and/or revise elements associated with the scope of work. Copies of the FCRs are included in Appendix A. Table 1-2 summarizes the FCRs that impacted operations at MFB.

TABLE 1-2
SUMMARY OF FIELD CLARIFICATION REQUESTS AFFECTING MFB OPERATIONS

FCR-FS-#	Date Issued	Description
004 Rev. 2	5/5/98	Excavation of Soil at Building 165 (Mine Fill B)
005 Rev. 2	4/29/98	Pilot-Scale Testing and Toxicity & Leachability Testing for Mine Fill B
013	4/12/99	5th Windrow on East Side of Building N
014	4/23/99	Disposition of Rocks Excavated with Contaminated Soil
017	6/23/99	Formation of windrow with MFA and MFB soil
018 Rev. 1	6/28/99	Transportation of excavation equipment from MFA to MFB
019	6/23/99	Temporary Staging of Treated Compost at MFB
020	6/23/99	Permanent Storage Area for Treated Compost at MFB
021 Rev. 1	7/8/99	Weighing of Treated Compost Exiting the Biofacility
022 Rev. 1	7/19/99	MFB Gravel Wash
024 Rev. 1	8/19/99	Eliminating MFB Batch Report
025 Rev. 1	1/19/00	Disposition of Reject Rocks from Screener Site
026	1/24/2000	Change methodology for detection of arsenic
027	2/1/2000	Consolidate Excavation Completion Report and Compost Completion Report
028 Rev. 1	9/22/99	Eliminate Windrow Process Monitoring on Sundays
029 Rev. 1	9/29/00	Disposition of Staged Compost
030	4/24/01	Installation of Gutters on Biofacility Compost Building
031 Rev. 1	4/30/01	Installation of Groundwater Collection Pipe at Retention Pond 2
035	11/29/01	Disposition of Retention Pond Sludges and Windrow N-216

Note: FCRs not listed did not affect MFB operations and are, therefore, not included in this table.

2.0 REGULATORY COMPLIANCE

Various regulatory and site compliance issues were involved in the operations at MFB and the Biofacility. The following sections discuss the site and regulatory requirements associated with soil and treated compost media classification, waste management operations, storm water discharge, and excavation permitting.

2.1 CONTAMINATED MEDIA CLASSIFICATION

On-site bioremediation of contaminated soil complied with all relevant permitting and reporting requirements of RCRA (1976 *et seq.*). No hazardous waste was allowed to be treated in the Biofacility. Sampling and analysis of the soil to be treated was performed for the constituents of concern and additional VOCs and heavy metals that may have been present based on generator knowledge, to verify that material was non-hazardous.

Data obtained from in-situ soil samples from all excavation areas indicated that the contaminated soil did not contain Title 40 Code of Federal Regulations (CFR) 261 Appendix VIII hazardous constituents above the characteristic reactivity threshold as determined in 40 CFR 261.23. Contaminated soil containing reactive nitrated aromatics has been evaluated and it was determined that reactivity is not observable if the reactive constituents are present below concentrations of 10% (100,000 mg/kg) [Kristoff et al, 1987]. The site soil concentrations of nitrated aromatic compounds were below this concentration. Other hazardous waste characteristics including corrosivity and flammibility were not performed based on review of in-situ soil analysis. Toxicity analysis has been performed on SWMU specific contaminants and other compounds identified in the QAPP Table 1-2 on a total basis with a correction factor of 20 used to check if the values were below the toxicity characteristic leaching procedure regulatory limits.

Review of in-situ soil analyses indicated that all soil at MFB were non-reactive and non-characteristic and therefore were classified as non-hazardous waste.

The Biofacility and buildings were designed and built to meet, or exceed, all applicable codes, standards, and regulations. Based on the classification of the soils to be treated as non-hazardous waste, the Biofacility was approved as a solid waste and contaminated media treatment facility.

2.2 WASTE MANAGEMENT

The NSWC Crane Environmental Protection Department (EPD) representative coordinated all waste management and disposal and TT complied with all EPD requirements for management of all generated wastes.

Decontamination water generated from the cleaning of equipment and tools was collected and subsequently used as moisture additive for windrows. Storm water was collected in retention ponds. When the ponds were nearly full, the water was sampled and analyzed as required by the FSOP and the QAPP. Based on sample results, the water was either released to the adjacent drainage ditch, pumped into the site sewer system, or used as process water on the windrows. No retention pond water was taken off-site for disposal.

Specific waste containers [for acetone, field screening kits, personal protective equipment (PPE), etc.] were generated in response to operational needs. These materials were characterized by generator knowledge and Material Safety Data Sheets (MSDS). All filled waste storage containers were stored, labeled, and disposed of in accordance with the appropriate regulations listed in Section 2.6 below and NSWC Crane directives. Specifically, waste acetone from the field test kits was transported to ABG for treatment. A *Contaminated Scrap Manifest - NSWCC 6280/4, Rev. 6-84* was filled out and submitted for approval by the EPD. Upon approval, these specific wastes were transported to the ABG for treatment.

PPE was disposed at the on-site landfill. Copies of waste disposal documentation are included in Appendix B.

2.3 STORM WATER DISCHARGE

NSWC Crane obtained a Storm-water Discharge Permit [NSWC Crane, 1997] under Title 327 Indiana Administrative Code (IAC) 15, National Pollution Discharge Elimination System (NPDES) General Permit Rule Program. Operations were in compliance with the specifications in the FSOP that is consistent with the permit. The storm-water diversion and retention controls for the Biofacility are described in Sections 3.6 and 7.2.4 of the FSOP. Additional details on sampling procedures and analytical methodologies for storm-water discharge are provided in the QAPP Section 4.3.

2.4 LANDFILL PERMITTING

Soil excavated from MFB was treated and returned to MFB for use as fill and cover in the existing excavations. No landfill permit was required for disposal of treated soil.

2.5 EXCAVATION PERMITTING

A Digging Permit was obtained from the Public Works Officer for soil excavation at MFB.

2.6 SPECIFICATIONS, CODES, AND STANDARDS

Compliance in the material, examination, testing, inspection, and documentation included the applicable portions of the specifications, codes, and standards listed below.

- U.S. Navy and NSWC Crane guidance
- U.S. Occupational Safety and Health Administration
  - 29 CFR 1910, Occupational Safety and Health Standards
  - 29 CFR 1926, Safety and Health Regulations for Construction
- U.S. Army Corps of Engineers
  - EM-385-1-1, Safety and Health Manual
- U.S. Environmental Protection Agency
  - 40 CFR 257, Criteria for Classification of Solid Waste Disposal Facilities and Practices
  - 40 CFR 261, Identification and Listing of Hazardous Waste
  - 40 CFR 262, Standards Applicable to Generators of Hazardous Waste
  - 40 CFR 264, Subpart S Corrective Action
  - 40 CFR 300, National Oil and Hazardous Substance Contingency Plan
- U.S. Department of Transportation
  - 49 CFR 172, Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements. This part describes requirements for completing shipping papers; marking, labeling, and placarding; training; and emergency response.
  - 49 CFR 173, General Requirements for Shipments and Packaging. This part describes classification and packaging of hazardous materials.

- Indiana Department of Environmental Management
  - 327 IAC 15, NPDES General Permit Rule Program
  - 329 IAC 2, Solid Waste Management
  - 329 IAC 3.1, Hazardous Waste Management Permit Program And
  - Related Hazardous Waste Management
  - Department of Defense Explosives Safety Board explosive safety standard for construction equipment.

- National Codes and Standards
  - ASTM, American Society for Testing and Materials
  - ANSI, American National Standards Institute
  - NEMA, National Electrical Manufactures Association
  - NEC, National Electric Code
  - NFPA, National Fire Protection Association

2.7 ENVIRONMENTAL PROTECTION

All work was conducted in a way that minimized pollution of the air, water, and land. Noise and the disposal of solid waste materials were controlled to protect human health and the environment.

All excavations, stockpiles, access roads, and other work areas were maintained free from excess dust to avoid causing a hazard. Dust at the excavation sites and Biofacility was controlled with a wetting spray from a potable water source.

Temporary erosion control was used in excavation areas until permanent surface drainage was re-established. The amount of bare soil exposed at any time did not exceed three acres. Excavations were protected when work was not in progress.

All erosion control structures in excavation areas were built to conform to SWMU specific conditions. Generally, erosion control structures consisted of berms, ditches, sumps or straw bale dikes. These structures were maintained as often as required to minimize the migration of sediment into, or out of, exclusion zones. Potentially-contaminated storm water contained and collected within the exclusion zones was pumped to on-site storage tanks and handled as described in Section 2.3.

3.0 MFB SITE OPERATIONS

3.1 INITIAL CHARACTERIZATION SOIL SAMPLING

3.1.1 Sample Locations

TT and MK, (now Washington Group, Int.) obtained initial characterization samples (ICS) for the purpose of delineating the extent of contaminated soil requiring excavation. MK obtained ICS numbers 001 through 343 and TT obtained ICS numbers 344 through 764. The locations of potentially contaminated areas were based on visual observations and direction provided by personnel from EPD. Samples were obtained on blast-wall berms, flat areas accepting runoff from the berms, under vents, and in drainage ditches. Grid sampling was performed around or near buildings 165 - 168, 171 - 174, 2500, and 2501. The grid layout and boundaries were affected by the presence of buildings, railways, roadways, utilities, etc. A total of 281 grids were marked out as shown on the ICS grid location maps in Figures C-1 through C-6 in Appendix C.

Of the initial 281 grids laid out, only 256 grids were actually sampled. MK obtained ICS from 113 grids and TT obtained ICS from 143 grids. The grids that were not sampled were on blast-wall berms covered by a thick layer of gravel. Given the difficult nature of sampling through this gravel, EPD granted TT the permission to consolidate several grids into one larger grid for the purpose of obtaining ICSs, as identified in Table 3-1.

TABLE 3-1
ICS GRID CONSOLIDATION

Initial Grid #	Building #	Consolidated With Grid #
28	168	27
32	168	31
34	168	33
35	168	26
36	168	27
37	168	27
71	173	70
73	173	72/74
78	173	77
80	173	79
83	173	79
84	173	77
85	173	74
86	173	72/74
87	173	72
104	166	103
106	166	105
108	166	107
109	166	107
110	166	102
111	166	102/112
114	166	103/115
116	166	103/105
117	166	105/118
119	166	107/120

3.1.2 Sample Collection and Analysis

Sampling in each grid consisted of two composite samples and one grab sample. The composite samples were analyzed for explosives and metals, and the grab sample was analyzed for VOCs. The composite samples were collected at depths of zero to 12 inches and 24 to 36 inches and the grab sample was collected from a depth of 12 inches. Field duplicates and other appropriate field quality control (QC) samples were also collected from selected locations as described in Section 3.1.2 of the QAPP.

Samples were analyzed by U.S. EPA SW-846 methods 8330 (explosives), 8260 (VOCs), and 6010/7470 (metals) for the constituents of concern identified in Section 1.1. The analysis was performed to ensure that solvent-contaminated soil, or other characteristic wastes, were not transported to the Biofacility for composting. Analysis of these parameters was on a total basis. The results were divided by an estimation factor of 20 and compared with the toxicity characteristic leaching procedure (TCLP) regulatory limits. All results were significantly less than 20 times the TCLP limit so the material was classified as not possessing the hazardous waste characteristic of toxicity.

Grids 137 and 258 – 261 at B-171 were also analyzed for polychlorinated biphenyls (PCBs) since this was an area of known PCB contamination. Aroclor 1248, which is not a constituent of concern at MFB, was detected in grid 137 at 13 ppm. No PCBs were detected in grids 258 – 261. Since the level of contamination in grid 137 was less than 50 ppm, the soil was excavated, screened, and transported to the Biofacility for composting.

An area of potential PCB contamination exists between B-165 and B-166 (as discussed in Section 1.1). This area is down gradient of B-166 with a vertical drop of approximately 10 feet; therefore any PCB contamination in this area would not have impacted the soil around B-166.

3.1.3 Sampling Data Summary

Of the 256 grids sampled, analysis revealed 110 grids exceeded industrial cleanup objectives and required excavation. Table D in Appendix D summarizes the results of explosives analysis on samples collected from each grid and identifies which grids exceeded the cleanup goals for explosives and required excavation. ICS analytical results are summarized in Tables E-1 (explosives), E-2 (metals), E-3 (VOCs), and E-4 (PCBs) in Appendix E. ICS QC analytical results are summarized in Table E-5, E-6, and E-7 in Appendix E.

After the ICS results were received, the horizontal boundaries of explosives contamination had been delineated by grids with no detectable levels of contamination, levels that were below cleanup objectives, or buildings, roads, railroad tracks or other physical limitations. No metals (exceplt arsenic) or VOCs were detected above cleanup action levels for SWMU-specific contaminants of concern in any grid that required excavation. Arsenic was present in samples at various levels, which exceeded industrial cleanup goals, however no action was taken because none of the arsenic total results, when divided by an estimation factor of 20, exceeded the TCLP regulatory limit (meaning the material did not possess the hazardous waste characteristic of toxicity). The arsenic data demonstrates that background levels of arsenic are present throughout the Crane area and will need to be considered in future sites of excavation where arsenic is a contaminant of concern.

3.2 SOIL EXCAVATION, SCREENING, AND TRANSPORTATION

Soil excavation was performed around or near buildings 165 – 168, 171, 173, 174, and 2501 (no contamination was detected around B-2500). Surveyed drawings of these areas subsequent to excavation are included in Appendix F. Soil excavation and screening initially began in August 1999 and continued September 2001.

Contaminated soil was initially excavated to a depth of three feet using a tracked excavator. In-process field screening was then performed, as described in Section 3.3, to determine if additional soil excavation was necessary. All excavated soil was transported to the screener site at MFB and screened to remove oversized material (1½-inch or larger) prior to transport to the Biofacility. This was to ensure homogeneity of the soil to be treated so that the composting operation would be effective.

Excavated soil was loaded into the soil screening equipment using a backhoe or tracked excavator. After screening, the fines were dropped from the screener onto the stacking conveyor and placed into a dump truck or a live-bottom truck bed for transport to the Biofacility. Before entering the Biofacility, each truck was weighed to determine the amount of soil being brought into the facility. A step-by-step procedure for soil screening is provided in Field Standard Operating Procedure (SOP) 1.0 in Appendix D of the FSOP.

Oversized material was separated into soil clods mixed with gravel, and large rocks. The reject soil mixed with gravel was re-screened several times to remove as much soil as possible. The rocks were transported to the Biofacility to be washed, as described in Section 3.6, to be placed back into the open excavation at a later date.

Table 3-2 shows the total quantity of soil and reject rocks that were excavated, screened, and transported to the Biofacility from MFB. The quantities listed are based on actual weigh scale tickets from the Biofacility truck scale.

TABLE 3-2
TOTAL SOIL EXCAVATED, SCREENED, AND TRANSPORTED TO THE BIOFACILITY FROM MFB

Month	Quantity (tons)
August 1999	2766.81
September 1999	4047.27
October 1999	3749.6
November 1999	3522.45
December 1999	449.04
January 2000	845.55
February 2000	462.82
April 2000	176.26
May 2000	840.58
June 2000	829.13
July 2000	321.95
August 2000	1323.09
September 2000	124.49
October 2000	588.03
November 2000	106.63
November 2000	163.47 (reject rocks)
July 2001	57.92
August 2001	1064.19
Septmeber 2001	675.92
Total Soil	**21,951.73**
Total Soil and Rocks	**22,115.2**

3.3 IN-PROCESS EXCAVATION SOIL SAMPLING

Soil samples were collected during excavation activities to assist in determining the extent of excavation required at each grid. Field screening test kits were used to test RDX levels in the in-process soil samples to provide quick field screening results. Soil sampling during excavation was performed as specified in the Soil Excavation Plan, Appendix E2 of the FSOP. One composite sample was collected

from the base of the excavation and one from each side wall (if a side wall was present). If the field screening indicated that concentrations of RDX were greater than industrial cleanup levels, subsequent layers of contaminated soil were removed until field screening indicated acceptable concentrations of explosives (below the industrial cleanup objectives) or physical impediments (buildings, railways, roadways, utilities, etc.) were encountered. Table 3-3 identifies those grids that were not excavated to cleanup goals and why there was no additional excavation in these grids.

TABLE 3-3
GRIDS NOT EXCAVATED TO CLEANUP GOALS

Grid #	Building	Reason Soil Was Not Excavated to Cleanup Goals
38	167/168	Bottom of grid on rock and over a water main
66	2501	Bottom of grid on rock
71	172/173	Soil left in place supports structure for overhead electrical line
74	172/173	Soil left in place is under asphalt driveway
136	171	Bottom of grid on rock
141	2501	Water main encountered
164	173	Over steam line
178	171	Bottom of grid on rock
186	173	Bottom of grid on rock
217	171	Bottom of grid on rock

3.4 POST-EXCAVATION CONFIRMATION SOIL SAMPLING

Post-excavation confirmation soil samples (PES) were collected following excavation and field screening to determine the levels of SWMU-specific contaminants remaining in the soil. PES included one composite and one grab sample from the base of each grid and one grab sample for each 20 feet of side wall. Samples were analyzed for all contaminants of concern. Table D in Appendix D provides a summary of the PES collected from each grid. Appendix G provides post-excavation sampling grid location maps. PES results are included in Appendix H.

Although contaminated soil was excavated by MK from grids 1 and 22 at B-165, there is no record that PES were ever obtained from these grids, nor were the excavation areas surveyed. CAAA was urgent to install equipment in B-165, including a partially buried tunnel leading into the building. This tunnel covers grids 1 and 22
. It is possible that in the haste and urgency of completing the tunnel system, PES were not obtained from these grids.

3.5 EQUIPMENT DECONTAMINATION

Equipment used at the excavation site (a tracked excavator and backhoe) were first scraped clean at the screener site to remove gross contamination. Plastic sheeting was then placed on the bed of a trailer, the equipment was loaded on the trailer and the plastic sheeting was wrapped up and around the equipment. The equipment was then transported to the Biofacility and completely decontaminated in the truck wash bay. The decontamination water was collected in the wash bay sump and used for moisture addition on the compost windrows.

3.6 ROCK WASHING

Initially, the FSOP specified washing and triple rinsing oversized material rejected from the soil screening process. The wash and rinse water were to be collected and analyzed as described in Figure 1.4 of the FSOP. This procedure was labor intensive, generated excessive amounts of contaminated rinse water, and proved to be futile in attaining the cleanup standards established in the FSOP for acceptable decontamination of the rocks [drinking water standards on the rinse water]. FCR 14 was generated to replace the original rock washing procedure. The revised procedure required that the rocks be washed with a high-pressure-low-volume sprayer to remove all visible soil contamination. The rocks were then returned to the bottom of an open excavation within the same SWMU and covered with no less than two feet of finished compost. The rinse water was collected in the wash bay sump and used for moisture addition on the compost windrows.

4.0 BIOFACILITY COMPOSTING OPERATIONS

Explosive's contaminated soil excavated from MFB was treated in the Biofacility by composting to degrade the explosive compounds in the soil. Organic amendments (chicken manure and straw) were mixed with the contaminated soil to form the compost windrows. The amendments in the compost served as a carbon source for the microorganisms in the material that were capable of degrading the explosives. The availability of organic material and inorganic nutrients (such as nitrogen and phosphorus), temperature, moisture content, pH, and oxygen availability in the compost were optimized in order to enhance the process. Microbial activity in the soil was stimulated by heat that was generated and contained in the compost matrix. A full description of the composting operation process is provided in Section 5.0 of the approved FSOP.

A total of 104 windrows were formed to treat the contaminated soil excavated from MFB. All windrows, except N-200, successfully achieved industrial or residential cleanup goals for explosive compounds. Windrow N-200 (a small windrow built in the North building) contained reject soil and gravel from the screener operation and was mixed and turned using a front-end loader, not the SCARAB windrow turner. Mixing the windrow was difficult and oxygen and temperature levels were not sufficient for good thermophilic conditions within the windrow. Day Last explosive data revealed that the windrow failed to meet industrial cleanup goals. Consequently a new, full-size windrow, S-201, was built in the South building and N-200 was used as the source of contaminated soil for this windrow. This windrow was turned with the SCARAB windrow turner and successfully achieved industrial cleanup goals.

Table 4-1 shows the estimated quantity of soil processed in each windrow. The quantities of soil processed are field estimates based on the number of loads of soil used to approximate the windrow recipe of 232.1 tons of contaminated soil in each windrow. This estimate is the explanation for the difference in the total amount of soil treated in all MFB windrows (23,220.95 tons) as compared to the actual weight of soil excavated from MFB (21,951.73 tons as reported in Table 3-2).

4.1 BIOFACILITY MAINTENANCE AND REPAIRS

Routine maintenance and housekeeping activities were performed at the Biofacility. General building cleanliness was maintained during full-scale operations by using a front end loader and/or a skid steer loader to collect stray compost materials and reform the piles, as necessary. Brooms and shovels were used in inaccessible areas. Throughout operations, windrows were kept segregated, well-formed, and identified with signs containing the windrow number and date formed.

Inspections of Biofacility buildings and associated structures were performed on a quarterly basis. Items found to be deficient were repaired or scheduled for repair at the earliest available period. Special attention was paid to specific items such as checking for settlement cracks in the Biofacility building floors and leaks in either storm-water retention pond liners or compost buildings. The Biofacility building floors and sumps were inspected for new cracks between building compost cycles in addition to the quarterly inspection. Any new cracks were scheduled for repair. Repair was performed by saw-cutting the crack as necessary to allow installation of Silkaflex 1a Polyurethane sealant, or equivalent sealant.

In addition to the normal maintenance performed on Biofacility equipment, gutters, downspouts, and drainage piping were installed on the three compost buildings during the period MFB soil was being processed. This system diverted otherwise uncontaminated rain water into adjacent drainage ditches, preventing it from unnecessarily filling up Retention Pond 1. Groundwater collection pipes were installed under the liners of both retention ponds in order to pump out the groundwater from underneath the liners. The groundwater put undue stress on the liners and caused unstable footing for work crews during times of liner maintenance. The pipes were installed at the top of the pond embankment above the high water mark and groundwater was pumped into the adjacent drainage ditch.

TABLE 4-1

MINE FILL B WINDROW SUMMARY

Windrow #	Tons of Soil	Tons of Chicken Manure	Tons of Straw	Total Windrow Tonnage	Day Zero	Day Last	Process Duration (days)	Cleanup Goal Attained	Date Backfilled	Disposal Location	
										Building	Grid
N-102	17.41[1]	45.85	19.87	83.13	8/19/99	9/2/99	14	Residential	9/8/99	MFA 152	71-74
S-103	232.1	110.61	48.21	390.92	8/23/99	9/7/99	15	Industrial	9/13/99	2501	66,67,93,142,143,145,153,154,163-167,170-172,186-193,200,205,207
M-104	232.1	109.33	47.4	388.83	8/25/99	9/13/99	19	Industrial	9/20/99	2501	66,67,93,142,143,145,153,154,163-167,170-172,186-193,200,205,207
N-105	98.65	49.06	21.26	168.97	8/27/99	9/2/99	6	Industrial	9/8/99	2501	54,55,141,168,204,210,211
M-106	232.1	106.72	46.27	385.09	8/30/99	9/8/99	9	Industrial	9/14/99	173	76-84
S-107	232.1	101.22	44.51	377.83	9/3/99	9/10/99	7	Industrial	9/16/99	2501	66,67,93,142,143,145,153,154,163-167,170-172,186-193,200,205,207
S-108	232.1	115.31	49.85	397.26	9/14/99	9/21/99	7	Residential	9/27/99	173	76-84
M-109	232.1	112.58	48.39	393.07	9/16/99	9/27/99	11	Residential	10/4/99	2501	66,67,93,142,143,145,153,154,163-167,170-172,186-193,200,205,207
S-110	232.1	115.1	49.97	397.17	9/18/99	9/28/99	10	Residential	10/4/99	2501	66,67,93,142,143,145,153,154,163-167,170-172,186-193,200,205,207
M-111	232.1	115.47	49.23	396.8	9/20/99	9/29/99	9	Residential	10/5/99	2501	54,55,141,168,204,210,211
S-112	232.1	115.27	49.04	396.41	9/28/99	10/7/99	15	Residential	10/19/99	2501	66,67,93,142,143,145,153,154,163-167,170-172,186-193,200,205,207
M-113	232.1	106.98	56.23	395.31	10/4/99	10/13/99	9	Residential	10/18/99	2501	66,67,93,142,143,145,153,154,163-167,170-172,186-193,200,205,207
S-114	232.1	106.65	45.6	384.35	10/5/99	10/15/99	10	Residential	10/20/99	2501	58-65
S-115	232.1	108.4	46.74	387.24	10/6/99	10/14/99	8	Industrial	10/21/99	2501	58-65
M-116	232.1	113.18	47.86	393.14	10/19/99	10/25/99	6	Residential	11/1/99	2501	58-65
S-117	232.1	110.85	47.1	388.85	10/20/99	10/27/99	7	Industrial	11/3/99	173	76-84
S-118	232.1	111.6	47.03	390.73	10/22/99	11/1/99	10	Residential	11/8/99	173	66,67,93,142,143,145,153,154,163-167,170-172,186-193,200,205,207
M-119	232.1	109.94	46.43	388.47	10/23/99	11/1/99	9	Residential	11/8/99	2501	54,55,141,168,204,210,211
M-120	232.1	112.39	47.38	391.87	11/1/99	11/8/99	7	Residential	11/15/99	168	26,27,35-37
S-121	232.1	111.1	47.05	390.25	11/4/99	11/18/99	14	Residential	11/29/99	168	66,67,145,171,172
S-122	232.1	112.15	48.01	392.26	11/9/99	11/16/99	7	Industrial	11/23/99	168	31.32
M-123	232.1	109.59	46.95	388.64	11/10/99	11/19/99	9	Industrial	11/26/99	168	30
M-124	232.1	112.67	48.21	392.98	11/16/99	11/27/99	11	Residential	12/6/99	168	31,32
S-125	232.1	117.01	50.04	399.15	11/23/99	12/2/99	9	Industrial	12/8/99	2501	54,55

TABLE 4-1

MINE FILL B WINDROW SUMMARY

Windrow #	Tons of Soil	Tons of Chicken Manure	Tons of Straw	Total Windrow Tonnage	Day Zero	Day Last	Process Duration (days)	Cleanup Goal Attained	Date Backfilled	Disposal Location	
										Building	Grid
M-126	232.1	109.17	47.96	389.23	11/26/99	12/3/99	7	Industrial	12/9/99	168	26,27,35-37
S-127	232.1	106.63	46.01	384.74	11/30/99	12/7/99	7	Industrial	12/14/99	166	105,118,215,225,226,246
M-128	232.1	103.48	45.29	380.87	12/7/99	12/16/99	9	Residential	12/22/99	2501	54,55,141,168,204,210,211
S-129	232.1	103.75	45.03	380.88	12/9/99	12/20/99	11	Residential	12/28/99	PPA	Na
M-130	232.1	110.23	46.89	389.22	12/10/99	12/20/99	10	Industrial	12/29/99	166	105,118,215,225,226,246
S-131	232.1	112.49	49.09	393.68	12/14/99	12/23/99	9	Industrial	1/3/00	166	105,118,215,225,226,246
M-132	232.1	106.97	45.74	384.81	12/27/99	1/6/00	10	Residential [3]	1/12/00	PPA	Na
S-133	232.1	115.5	50.42	398.02	12/28/99	1/5/00	8	Residential [3]	1/11/00	PPA	Na
M-134	232.1	107.16	46.45	385.71	12/29/99	1/10/00	12	Residential [3]	1/17/00	PPA	Na
S-135	232.1	112.69	49.82	394.61	1/4/00	1/13/00	9	Residential [3]	1/19/00	PPA	Na
S-136	232.1	112.81	59.43	404.34	1/12/00	1/31/00	19	Industrial	2/7/00	172	70
M-137	232.1	112.59	48.39	393.08	1/13/00	1/24/00	11	Residential	1/31/00	168	25,29-32,38
M-138	232.1	115.07	49.3	396.47	1/18/00	1/28/00	11	Residential	2/7/00	168	26-29,38
S-139	232.1	112.61	47.91	392.62	1/20/00	1/31/00	11	Industrial	2/7/00	166	105,118,215,225,226,246
M-140	232.1	115.57	49.49	397.16	1/31/00	2/17/00	17	Residential	2/23/00	PPA	Na
M-141	232.1	115.52	49.44	397.06	2/4/00	2/15/00	11	Residential	2/22/00	168,PPA	25,26
S-142	232.1	112.46	48.36	392.92	2/7/00	2/21/00	14	Residential	2/28/00	PPA	Na
S-143	232.1	115.68	49.01	396.79	2/8/00	2/21/00	13	Residential	2/28/00	166, PPA	107,120,121,177,181,220,231
M-144	232.1	112.64	48.9	393.64	2/22/00	3/3/00	10	Industrial	3/9/00	166	120,121,177,181,231
M-145	232.1	110.26	48.43	390.79	2/24/00	3/6/00	11	Residential	3/13/00	166, PPA	102,107,113,120,121,177,181,220,231
S-146	232.1	110.15	49.52	391.77	2/28/00	3/17/00	18	Industrial	3/23/00	B-166	102,113
S-147	232.1	108.34	49.66	390.1	2/29/00	3/10/00	10	Industrial	3/16/00	B-166	107,120,121,177,181,220,231
M-148	232.1	112.4	48.66	393.16	3/10/00	3/24/00	14	Residential	3/30/00	PPA	Na
M-149	232.1	112.74	49.57	394.41	3/13/00	3/27/00	14	Residential	4/2/00	PPA	Na
S-150	232.1	109.92	48.23	390.25	3/17/00	3/27/00	10	Residential	4/2/00	PPA, 166	105,118,215,225,226,246
S-151	232.1	109.65	47.66	389.41	3/24/00	4/5/00	12	Residential	4/11/00	PPA	Na
M-152	232.1	109.91	47.74	389.75	3/31/00	4/12/00	12	Residential	4/19/00	PPA	Na
M-153	232.1	116.61	50.29	399	4/4/00	4/19/00	15	Residential	4/25/00	PPA	Na
S-154	232.1	113.13	48.82	394.05	4/4/00	4/19/00	15	Residential	4/25/00	PPA	Na

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TABLE 4-1

MINE FILL B WINDROW SUMMARY

Windrow #	Tons of Soil	Tons of Chicken Manure	Tons of Straw	Total Windrow Tonnage	Day Zero	Day Last	Process Duration (days)	Cleanup Goal Attained	Date Backfilled	Disposal Location	
										Building	Grid
S-155	232.1	104.98	44.23	381.31	4/12/00	4/24/00	12	Residential	5/1/00	PPA	Na
M-156	232.1	115.45	53.32	400.87	4/19/00	4/28/00	9	Residential	5/4/00	PPA	Na
M-157	232.1	116.06	60.43	408.59	4/26/00	5/5/00	9	Residential	5/11/00	PPA	Na
S-158	232.1	106.78	45.98	384.86	4/27/00	5/8/00	11	Residential	5/15/00	PPA	Na
S-159	232.1	112.61	48.41	393.12	5/1/00	5/10/00	9	Residential	5/16/00	PPA	Na
M-160	232.1	107.31	47.39	386.8	5/5/00	5/16/00	11	Residential	5/22/00	PPA	Na
M-161	232.1	115.8	50.05	397.95	5/12/00	5/22/00	10	Residential	5/30/00	PPA	Na
S-162	232.1	109.44	46.94	388.48	5/15/00	5/25/00	10	Residential	5/31/00	PPA	Na
S-163	232.1	113.08	49.05	394.23	5/17/00	5/25/00	8	Residential	5/31/00	PPA	Na
M-164	232.1	115.81	50.74	398.65	5/22/00	6/1/00	10	Residential	6/7/00	PPA	Na
M-165	232.1	115.62	49.83	397.55	5/31/00	6/9/00	9	Residential	6/15/00	PPA	Na
S-166	232.1	115.43	50.97	398.5	6/1/00	6/9/00	8	Residential	6/15/00	PPA	Na
S-167	232.1	115.96	49.95	398.01	6/2/00	6/12/00	10	Residential	6/18/00	PPA	Na
M-168	232.1	115.65	49.9	397.65	6/8/00	6/16/00	8	Residential	6/22/00	PPA	Na
M-169	232.1	112.79	48.92	393.81	6/16/00	6/23/00	7	Industrial	6/29/00	166	103,115,227,228,244,256
S-170	232.1	112.64	48.36	393.1	6/16/00	6/28/00	12	Residential	7/5/00	PPA	Na
S-171	232.1	118.56	51.83	402.49	6/20/00	6/30/00	10	Residential	7/6/00	PPA	Na
M-172	232.1	115.05	50.03	397.18	6/23/00	7/5/00	12	Residential	7/11/00	PPA	Na
M-173	232.1	115.2	49.29	396.59	6/30/00	7/10/00	10	Residential	7/17/00	PPA	Na
S-174	232.1	116.05	51.04	399.19	7/7/00	7/17/00	10	Residential	7/24/00	PPA	Na
S-175	232.1	115.78	50.49	398.37	7/7/00	7/19/00	12	Residential	7/25/00	PPA	Na
M-176	232.1	106.96	47.43	386.49	7/12/00	7/24/00	12	Residential	7/31/00	PPA	Na
M-177	232.1	115.54	49.75	397.39	7/18/00	8/2/00	15	Industrial	8/9/00	171	122-124,131
S-178	232.1	115.37	49.45	396.92	7/25/00	8/4/00	10	Residential	8/10/00	166,171	122-124,131137,138,276
S-179	232.1	116	49.98	398.08	7/26/00	8/11/00	16	Residential	8/17/00	166	103,115,227,228
M-180	232.1	116.06	50.5	398.66	8/1/00	8/18/00	17	Residential	8/24/00	PPA, 168	25,29-32,38
M-181	232.1	114.94	50.12	397.16	8/9/00	8/24/00	15	Residential [3]	8/30/00	PPA	na
S-182	232.1	112.72	49.07	393.89	8/11/00	8/25/00	14	Residential	8/31/00	PPA, 171	126,134,136,178
S-183	232.1	114.82	49.61	396.53	8/18/00	8/30/00	12	Industrial	9/5/00	172	88,89,144

TABLE 4-1

MINE FILL B WINDROW SUMMARY

Windrow #	Tons of Soil	Tons of Chicken Manure	Tons of Straw	Total Windrow Tonnage	Day Zero	Day Last	Process Duration (days)	Cleanup Goal Attained	Date Backfilled	Disposal Location	
										Building	Grid
M-184	232.1	115.4	50.36	397.86	8/25/00	9/7/00	13	Residential	9/13/00	B-172	70
M-185	232.1	116.41	49.78	398.29	8/30/00	9/15/00	16	Residential [3]	9/21/00	B-173	72-74,85-87
S-186	232.1	115.38	50.23	397.71	8/31/00	9/15/00	15	Residential	9/25/00	PPA	na
S-187	232.1	116.74	50.31	399.15	9/6/00	9/25/00	19	Residential	10/2/00	PPA,B-168	26-28
M-188	232.1	110.76	49.06	391.92	9/14/00	10/5/00	21	Residential	10/11/00	B-2501,172,168	56,57,70,71
M-189	232.1	115.65	50.79	398.54	9/22/00	10/10/00	18	Residential	10/16/00	B-171	126,134,136, 178,185
S-190	232.1	116.46	53.75	402.31	9/26/00	10/12/00	16	Residental	10/18/00	PPA, B-2501	54,55
S-191	232.1	112.66	49.46	394.22	10/3/00	10/20/00	17	Residental	10/26/00	PPA	Na
M-193	232.1	106.84	48.46	387.4	10/13/00	11/13/00	31	Residential	11/20/00	PPA	Na
S-196	232.1	116.04	49.98	398.12	10/27/00	11/20/00	24	Residential	11/29/00	PPA	Na
M-198	29[2]	115.53	49.52	397.15	11/15/00	12/6/00	21	Residential	2/7/01	154 @ MFA	27,28,39,40
M-199	232.1	164.56	71.44	468.1	11/29/00	2/6/01	69	Residential	2/22/01	166	103,227,228,244,256
N-200	110	57.67	24.57	198.24	12/1/00	12/18/00	18	failed	na	Na	Na
S-201	0[4]	58.18	25.16	199.34	1/26/01	3/14/01	47	Industrial	10/2/01	173	72-74,86,87
M-209	232.1	104.11	44.32	380.53	8/28/01	9/18/01	21	Residential	10/8/01	173	85,86,91,92,149,150
M-210	232.1	112.41	48.95	393.46	8/30/01	9/19/01	20	Residential	10/17/01	173	90,148,152
S-211	232.1	110.12	48.15	390.37	9/6/01	9/24/01	18	Residential	10/17/01	173	151,155-162
S-212	232.1	129.5	55.47	417.07	10/3/01	11/9/01	37	Residential	11/26/01	PPA	Na
M-213	232.1	115.04	49.08	396.22	10/4/01	10/22/01	18	Residential	11/3/01	173	155-162
N-214	214.09[5]	115.37	49.88	397.35	10/9/01	11/1/01	23	Residential	11/13/01	PPA	Na
M-215	232.1	94.98	40.46	367.54	10/10/01	11/2/01	23	Residential	11/14/01	PPA	Na
N-216	232.1	114.87	50.32	397.29	12/3/01	12/20/01	17	Residential	1/10/02	PPA	Na
Totals	23,214.95	11,498.3	5,012.7	39,725.95							

[1] Windrow 102 contained 81.24 tons of MFA soil and 17.41 tons of MFB soil
[2] Windrow 198 contained 203.1 tons of MFA soil and 29 tons of MFB soil
[3] These windrows initially met industrial cleanup goals and were placed in the staging area at MFB. Subsequent analysis indicated residential cleanup goals had been obtained and the windrows were moved to their permanent locations. See Table 4-4 for re-sampling data.
[4] Since Windrow N-200 failed, it was re-processed as Windrow S-201. Windrow N-200 was used as the dirt source for windrow S-201, therefore the quantity of soil for S-201 is zero.
[5] Windrow N-214 contained 18.01 tons of soil from the MFA Battery Site.
PPA - permanent placement area
Na – not applicable

4.2 AMENDMENTS SUPPLY AND STORAGE

The compost mix used in full-scale operations included chicken manure and straw amendments that were mixed in with the soil. Straw was brought to the site and stored either in the asphalt-paved amendment storage bins at the Biofacility or in the straw storage field immediately south of the Biofacility. Chicken manure was brought to the facility generally on an as-needed basis and only temporarily stored in the amendment storage bins. The manure was from hens and contained approximately 1% feathers, eggs, or other natural impurities and was free of bedding material. Table 4-1 contains estimated quantities of the amendments used.

4.3 WINDROW CONSTRUCTION AND MAINTENANCE

The compost mix used in the Biofacility full-scale operations consisted of 25% soil, 15% chicken manure, and 60% straw by volume. Amendments were loaded on a volume basis into a tractor-powered grinder/mixer unit using a center-pivot loader as described in SOP 3.0 of Appendix D of the FSOP. The mixer then homogenized each load by mixing for 10 to 15 minutes. Water was added for dust control. The amendment blend was unloaded from the grinder/mixer unit through a side-mounted discharge conveyer forming a windrow approximately six feet high and 12 foot wide. The grinder/mixer then returned to the amendment storage area for reloading. This process continued until a windrow approximately 275 feet long was formed. A second windrow, adjacent to and partially overlapping the first windrow was then loaded into the building. This formed a single, larger windrow approximately 20 feet wide with two peaks 6 feet high. A full description of the windrow formation procedure is provided in SOP 4.0 of Appendix D of the FSOP.

After unloading the amendment blend onto the floor of the building, water was added, the amount depending on how dry the straw and manure was at the time. Typically, 6,000 gallons of water were added to moisten the amendment mix. A shaping pass was then made with the SCARAB to form the amendments and then the soil was added with the loader bucket. A full description of the transport and loading of soil into the windrow is provided in SOP 5.0 of Appendix D of the FSOP.

After the soil was loaded onto the amendments, the soil/amendment mix was turned with the compost machine (SCARAB®) to form a windrow approximately 20 feet wide, six feet tall, and 275 feet long. The SCARAB® generally made at least two or three passes during initial windrow construction to assure thorough mixing. Following formation, windrows were turned on a daily basis as described in SOP 6.0 of the FSOP. Water was added on an as-needed basis to maintain optimum moisture levels for microbial growth and contaminant degradation (see Section 4.4.3).

Record of Recipes sheets for each windrow are provided in Appendix I and summarized in Table 4-1 above.

4.4 WINDROW PROCESS MONITORING

Process monitoring of each windrow included the daily monitoring of oxygen and temperature both prior to and after windrow turning with the SCARAB®. In addition, moisture levels and pH were monitored periodically to ensure optimal conditions for biological degradation were maintained within the windrows. Field test kits were used to monitor the level of RDX in the compost. Windrows were monitored at 15 sample locations (five cross sections with three sample locations per cross section). Monitoring locations and frequencies for each of these parameters are described in Section 6.0 of the FSOP. All field instrumentation was calibrated daily prior to use. A summary of the monitoring data is provided, by windrow, in Appendix I.

4.4.1 Temperature

Temperature was monitored during soil treatment, as it is the primary indicator of successful thermophilic composting. The process goal was to maintain average windrow temperatures near 55°C during treatment. Temperature decreasing over time to below 50°C is viewed as an indicator that a windrow is nearing the end of its operation [Weston, 1993].

During full-scale operations, windrow temperature was monitored twice daily, before and after windrow turning. Temperature readings were taken using a hand-held temperature probe at six monitoring locations at each of the five cross sections (3, 5, 7, 9, and 11) as described in Section 4.0 of the QAPP. These locations were selected to provide representative temperature profiles for the inner core and outer near-surface conditions. Ambient air temperature and humidity were recorded daily using monitors mounted to the wall of each building.

4.4.2 Oxygen

Oxygen levels approaching ambient atmospheric conditions, or about 20%, are preferred in a compost windrow, and 5% is considered the minimum for rapid compost degradation. Oxygen levels below 1% indicate anaerobic conditions. If sufficient oxygen levels are not maintained, proper microbial degradation may not occur, thermophilic temperatures may not be maintained, and putrefaction of organic matter may occur. The windrows were turned daily to help increase the oxygen levels in the compost. Like temperature, oxygen levels were also monitored twice daily, both before and after windrow turning was performed. A hand-held probe was used to measure oxygen at the same locations used for the temperature measurements.

4.4.3 Moisture

As discussed in the FSOP, the operating goal for composting moisture content was 40 to 60% maximum water holding capacity (WHC). Moisture level monitoring was performed three times per week to determine if moisture addition was required to maintain the operating goals. One composite sample per cross-section, composed of three discrete samples, was collected for moisture level determination. These samples were analyzed to determine the maximum WHC. The WHC is the ratio of the mass of water retained in the sample compared to the mass of water retained in the sample at saturation.

Based on the results of the moisture monitoring, water was added, as necessary, to maintain moisture conditions in the operating goals. Sources for the water included potable water, retention pond water, or sump water from the compost buildings or decontamination wash bay. Moisture was added to the windrows with a spray boom attached to a water wagon. At no time during operations was leachate observed from any of the windrows.

4.4.4 pH

Samples for pH monitoring were collected periodically during a windrow's life cycle, typically using the sampled collected for moisture determination. Large variations in pH would indicate abnormalities within the windrow. No such abnormalities were observed and the pH was never adjusted within any windrow.

4.4.5 Explosives

Field screening was performed at least weekly to monitor the level RDX in each windrow being processed. Each sample represented a composite of the three sampling locations from each cross-section. Field screening results were used to determine when explosive degradation had reached the desired cleanup goal and thus when samples for off-site laboratory analysis were to be obtained.

4.5 EXPLOSIVES CONTAMINANT LABORATORY SAMPLES

Explosives were the only contaminants that exceeded the industrial cleanup goals in the ICS, therefore, explosive compounds were the only parameters that required laboratory analysis during windrow treatment. Day Last samples were collected to confirm that the cleanup goals had been achieved.

Samples were collected from each of the three sampling locations at each of the five cross-sections for a total of 15 samples, plus samples for QC purposes. Samples were placed into glass jars, placed in a cooler, and shipped to Southwest Laboratories of Oklahoma analysis by Method 8330 according to the SOP provided in Appendix C of the QAPP. Shipping and handling procedures are detailed in Section 4.3.4 of the QAPP.

Analytical results of all explosives analyzed on Day Zero and Day Last are included, by windrow, in Appendix I. Average results for HMX, RDX and TNT are summarized in Table 4-2, by windrow. Cleanup levels for these compounds are shown on Table 4-3.

TABLE 4-2
MFB AVERAGE DAY ZERO AND DAY LAST EXPLOSIVE RESULTS

Windrow #	N-102		S-103		M-104		N-105		M-106		S-107		S-108	
Day #	0	14	0	15	0	19	0	6	0	9	0	7	0	7
HMX	24	2.8	72	3.1	113	2.2	24	3.7	49	1.6	9	1.6	13	1.9
RDX	190	16	591	3.9	827	4.9	101	4.9	131	5.7	41	6.4	73	0.9
TNT	18	0.9	30	1	56	1	2	1.9	1	1	1	0.9	0	0.2
Windrow #	M-109		S-110		M-111		S-112		M-113		S-114		S-115	
Day #	0	11	0	10	0	9	0	15	0	9	0	10	0	8
HMX	41	2.2	6	2.2	8	2.1	32	2.6	38	2.7	43	2.9	14	3.2
RDX	256	0.9	37	1.1	42	1	201	2.7	166	2.6	606	3.1	138	5.1
TNT	0	0.3	1	0.2	1	0.2	1	0.3	122	1.6	56	0.6	197	1.2
Windrow #	M-116		S-117		S-118		M-119		M-120		S-121		S-122	
Day #	0	6	0	7	0	10	0	9	0	7	0	14	0	7
HMX	**	2.5	**	1.8	**	2.3	**	2.2	**	2	**	3.2	**	2.6
RDX	**	1.6	**	4.1	**	2.1	**	1.6	**	1.9	**	2.2	**	4.6
TNT	**	0.2	**	0.8	**	0.3	**	0.3	**	0.4	**	0.9	**	5.2

TABLE 4-2
MFB AVERAGE DAY ZERO AND DAY LAST EXPLOSIVE RESULTS

Windrow #	M-123		M-124		S-125		M-126		S-127		M-128		S-129	
Day #	0	9	0	11	0	9	0	7	0	7	0	9	0	11
HMX	**	3.3	**	2	**	2.6	**	2.5	**	2.9	**	2	**	2.1
RDX	**	11	**	2.2	**	6.1	**	6.7	**	8.6	**	3.7	**	3.9
TNT	**	2.9	**	0.3	**	0.9	**	8.7	**	1.9	**	2.7	**	4.5
Windrow #	M-130		S-131		M-132		S-133		M-134		S-135		S-136	
Day #	0	10	0	9	0	10	0	8	0	12	0	9	0	19
HMX	**	2.7	**	2.6	**	2.5	**	2.6	**	2.8	**	4.4	**	1.9
RDX	**	5.9	**	6.9	**	4.7	**	6.7	**	5.7	**	9.1	**	4.3
TNT	**	2.1	**	3.6	**	1.2	**	4.4	**	0.5	**	1.5	**	6.9
Windrow #	M-137		M-138		S-139		M-140		M-141		S-142		S-143	
Day #	0	11	0	11	0	11	0	17	0	11	0	14	0	13
HMX	**	2	**	2	**	2.4	**	0.5	**	1.5	**	0.7	**	2.3
RDX	**	3.1	**	3.4	**	5.5	**	1.2	**	2.9	**	0.9	**	3.8
TNT	**	0.8	**	0.4	**	10	**	0.4	**	1.2	**	0.6	**	0.6
Windrow #	M-144		M-145		S-146		S-147		M-148		M-149		S-150	
Day #	0	10	0	11	0	18	0	10	0	14	0	14	0	10
HMX	**	1.6	**	0.5	**	2.1	**	1.8	**	0.6	**	0.9	**	1
RDX	**	6.8	**	2.7	**	8.2	**	5.5	**	1.4	**	2.3	**	1.2
TNT	**	5.5	**	0.6	**	0.7	**	0.5	**	0.8	**	3.8	**	0.9
Windrow #	S-151		M-152		M-153		S-154		S-155		M-156		M-157	
Day #	0	12	0	12	0	15	0	15	0	12	0	9	0	9
HMX	**	0.9	**	0.9	**	1.2	**	0.7	**	0.5	**	1.5	**	1.3
RDX	**	1.1	**	1.2	**	1.4	**	0.6	**	0.8	**	1.2	**	1.7
TNT	**	2.8	**	0.4	**	0.5	**	0.4	**	1.3	**	0.6	**	0.5
Windrow #	S-158		S-159		M-160		M-161		S-162		S-163		M-164	
Day #	0	11	0	9	0	11	0	10	0	10	0	8	0	10
HMX	**	2.4	**	0.7	**	0.4	**	0.6	**	0.9	**	1	**	1.5
RDX	**	2.3	**	2.9	**	0.8	**	0.8	**	2.1	**	3.8	**	3.3
TNT	**	0.4	**	0.6	**	0.5	**	0.5	**	0.7	**	0.4	**	0.5
Windrow #	M-165		S-166		S-167		M-168		M-169		S-170		S-171	
Day #	0	9	0	8	0	10	0	8	0	7	0	12	0	10
HMX	**	0.5	**	0.9	**	0.4	**	0.6	**	0.7	**	0.5	**	0.5
RDX	**	1.5	**	1.2	**	0.6	**	2.6	**	6.6	**	1.9	**	1.5
TNT	**	0.5	**	0.4	**	1.1	**	0.5	**	1.1	**	0.4	**	0.8
Windrow #	M-172		M-173		S-174		S-175		M-176		M-177		S-178	
Day #	0	12	0	10	0	10	0	12	0	12	0	15	0	10
HMX	**	0.4	**	0.4	**	0.6	**	1.1	**	0.8	**	1.6	**	0.9
RDX	**	0.7	**	0.4	**	0.5	**	1.2	**	0.7	**	4.2	**	2.7
TNT	**	0.5	**	0.4	**	0.5	**	0.5	**	0.5	**	0.5	**	0.5

TABLE 4-2
MFB AVERAGE DAY ZERO AND DAY LAST EXPLOSIVE RESULTS

Windrow #	S-179		M-180		M-181		S-182		S-183		M-184		M-185	
Day #	0	16	0	17	0	15	0	14	0	12	0	13	0	16
HMX	**	1	**	1.4	**	1.3	**	1.2	**	3.1	**	1.9	**	2.3
RDX	**	3.8	**	1.9	**	5.8	**	2	**	8.7	**	3.3	**	8.6
TNT	**	1.9	**	0.5	**	0.5	**	0.6	**	0.5	**	0.5	**	1.1
Windrow #	S-186		S-187		M-188		M-189		S-190		S-191		M-193	
Day #	0	15	0	19	0	21	0	18	0	16	0	17	18	31
HMX	**	0.8	**	1.1	**	1	**	1.4	**	0.7	**	0.7	2	0.7
RDX	**	0.8	**	1.6	**	2.1	**	1.5	**	1.9	**	1.9	4	1.3
TNT	**	0.5	**	0.5	**	0.5	**	0.5	**	1.6	**	0.6	0	0.5
Windrow #	S-196		M-198		M-199		N-200		S-201		M-209		M-210	
Day #	0	24	0	21	0	69	0	18	0	20	0	21	0	20
HMX	**	1.2	**	0.5	**	0.7	**	29	**	1.8	**	1.2	**	1.6
RDX	**	3.6	**	1.1	**	1.9	**	133	**	5.2	**	3.5	**	1
TNT	**	0.3	**	0.4	**	0.4	**	1.2	**	0.5	**	0.8	**	0.4
Windrow #	S-211		S-212		M-213		N-214		M-215		N-216			
Day #	0	18	0	37	0	18	0	23	0	23	0	17		
HMX	**	1.5	**	0.5	**	1.3	**	1.3	**	1.3	**	0.3		
RDX	**	2.1	**	0.6	**	1.5	**	1.1	**	1.6	**	0.5		
TNT	**	0.4	**	0.5	**	0.5	**	0.5	**	0.5	**	0.5		

** Day Zero samples not required as per FCR FS-011

TABLE 4-3
CLEANUP GOALS FOR SELECT EXPLOSIVE COMPOUNDS
(mg/kg)

Compound	Residential Cleanup Goal	Industrial Cleanup Goal
HMX	3,300	34,000
RDX	4	17
TNT	15	64

4.6 STAGED WINDROW RE-SAMPLING

Some windrows which initially met industrial cleanup goals were hauled to the staging area at MFB for temporary storage. These windrows were re-sampled at a later date to determine if the explosive compounds had been degraded to residential goals. These actions were performed pursuant to FCR-FS029 Rev. 1. The results of the re-sampling events on these windrows are listed in Table 4-4. The windrows were subsequently moved to their permanent locations as listed in Table 4-1.

TABLE 4-4
MFB AVERAGE EXPLOSIVE RESULTS FOR RE-SAMPLED WINDROWS

Windrow #	N-102		M-132		S-133		M-134	
Day #	14	432	10	455	8	455	12	455
HMX	2.8	0.7	2.5	0.4	2.6	0.5	2.8	0.3
RDX	15.5	1.9	4.7	0.4	6.7	1.6	5.7	0.6
TNT	0.9	0.4	1.2	0.8	4.4	0.6	0.5	0.6

Windrow #	S-135		M-181		M-185	
Day #	9	456	15	318	16	336
HMX	4.4	0.4	1.3	0.5	2.3	0.9
RDX	9.1	0.7	5.8	0.8	8.6	2.5
TNT	1.5	0.5	0.5	0.6	1.1	0.6

5.0 DISPOSITION OF COMPOSTED SOIL AND DECONTAMINATED ROCKS

5.1 COMPOSTED SOIL

Once laboratory analytical data verified that treatment goals were met for a windrow, the compost was loaded into semi-tractor live-bottom trailers or dump trucks. The trailers and dump beds were free of contaminated soil prior to loading the treated material. The trucks were loaded outside the exclusion zone in a clean area and did not require decontamination before exiting the Biofacility. Each load was covered with a tarp and the compost was hauled to MFB for unloading.

Compost was either put directly into open excavations, placed in the PPA (if results met residential cleanup goals), or stored in the temporary staging area. Table 4-1 identifies the location(s) where each windrow was placed. Maps showing the grid locations where windrows were backfilled are included in Appendix J. On the drawings the windrows are listed in the order they were placed in the field. Final survey drawings of the work areas after completion of backfilling are included in Appendix F.

After backfilling, very little erosion occurred because a crust formed on the surface of the compost. Seeding and mulching of the compost in the excavation area and the permanent placement area was completed in the Spring of 2002.

5.2 DECONTAMINATED ROCKS

Rocks that were rejected by the screener and were too large to be composted were decontaminated at the Biofacility and hauled back to MFB. Backfill drawings in Appendix J show where the rocks were placed.

5.3 PCB CONTAMINATED WINDROW

A pilot-scale size windrow with soil from a borrow source was formed for use as a Control windrow for toxicity testing at RKI. The windrow was formed and processing was begun before analytical results of the soil were received. Analytical results revealed that the borrow source soil was contaminated with PCBs (Aroclor-1254 was detected at 9.3 ppm and Aroclor-1260 was detected at 15 ppm). Processing of the windrow was subsequently halted at the direction of EPD, with the concurrence from the U.S. EPA, and was hauled to MFB and placed in the bottom of grid 149.

6.0 QUALITY CONTROL

6.1 QUALITY CONTROL FIELD INSPECTIONS

QC inspections included excavation site operations, composting operations, sampling activities, field test kit analyses, and facility maintenance. QC checks were performed at required intervals using the field inspection checklists provided in Appendix F of the FSOP. Copies of all inspection records are maintained at the Biofacility office.

6.2 DATA QUALITY CONTROL

Various data QC methods were utilized to verify the usability of samples collected and submitted for laboratory analysis (ICS, PES, and Day Zero/Day Last compost windrow samples). Samples were analyzed by Southwest Laboratory of Oklahoma, Inc. (SWL) and Severn Trent Laboratories, Inc. (STL). All data submitted for laboratory analysis were verified by reviewing chain-of-custody records, sample extraction records, analytical holding times, requested turnaround times, sample data in comparison to QC data and reporting requirements. Additionally, 10% of the data were validated. The data were compared with field and laboratory QC sample data to assess its usability. Sections 6.2.1 and 6.2.2 below summarize the field and laboratory QC methods employed, respectively. Sections 6.2.3 through 6.2.5 summarize the findings of the field and laboratory QC for the various types of project laboratory data.

6.2.1 Field Quality Control

Field QC included field duplicates, trip blanks, and equipment rinseates. Analytical results for these samples were evaluated to identify potential sources of error introduced during sampling, transportation, and storage. Results for QC samples associated with the ICS are summarized in Table E-5 and E-6 in Appendix E and QC samples associated with the PES are summarized in Tables H-5 and H-6 in Appendix H.

Field duplicates were collected at a frequency greater than the one in twenty samples specified in Section 3.1.2 in the QAPP. Field duplicates are samples collected at the same time and in the same location as the corresponding field sample in order to qualitatively assess field precision. There are no quantitative precision criteria specified in the QAPP.

Trip blanks were submitted with coolers containing samples to be analyzed for volatile organic compounds in order to evaluate the potential for cross-contamination during shipment to the laboratory. The trip blanks were received from the laboratory in a sealed container containing organic-free water, held intact at the site, and shipped back to the laboratory with the samples.

Equipment rinse blanks were collected by rinsing decontaminated sampling equipment with de-ionized water, collecting the rinse water in appropriate sample containers, adding any sample preservative required by the analytical method, and then submitting the rinse water for analysis. Results are used to evaluate the effectiveness of decontamination procedures in preventing sample cross-contamination.

6.2.2 Laboratory Quality Control

The laboratory performed method blank, surrogate, laboratory control sample (LCS), laboratory control sample duplicate (LCSD), sample matrix spike (MS), and sample matrix spike duplicate (MSD) analyses to evaluate laboratory accuracy and precision according to the established U.S. EPA procedures.

Laboratory method blanks were prepared and analyzed with the samples in order to evaluate potential target compounds or interference's from laboratory glassware, reagents and/or solvents used in the preparation and analysis of samples.

Laboratory replicate samples are a second sample aliquot of the control samples which the laboratory prepares and analyzes concurrently with the sample to evaluate analysis precision (relative percent difference (RPD) calculations are evaluated).

Surrogate spikes are known amounts of non-target organic compounds, which are spiked into all samples prior to sample preparation, in order to evaluate the efficiency of the organic sample preparation and analysis.

LCS and LCSD are samples prepared in the laboratory, consisting of clean soil or water spiked with known amounts of target analytes which are processed through the same preparation as field samples. Evaluation of the spike recoveries, and the variability between the LCS and LCSD, gives an indication of analysis accuracy and precision in a clean matrix.

MS and MSD are field samples that have been spiked with a known amount of target analytes and processed through the preparation and analysis with the field samples. Evaluation of the spike recoveries, and the variability between the MS and MSD, gives an indication of analysis accuracy and precision in the sample matrix. MS/MSD accuracy and precision can be affected by concentrations of both target and non-target compounds present in the original field sample, as well as the matrix of the sample itself.

6.2.3 Initial Characterization Samples

A total of 764 soil samples were collected from 256 grids to identify areas requiring excavation. MK collected the first 343 soil samples and TolTest collected the last 421 soil samples. In addition, six gravel rinse samples were collected for explosive analysis. Various rinse and trip blanks were collected along with these samples for QC purposes.

6.2.3.1 TolTest ICS Samples

The samples were received by the laboratory in acceptable condition, with custody seals, correctly preserved, and with containers intact. Most samples were received at a recorded temperature of 4°C ± 2°C. A total of twenty-three samples were received at temperatures between 1-2°C. Because none of the samples were frozen, these temperatures below 2°C did not impact the sample results.

Several trip blanks submitted for volatile analysis were received at the laboratory with bubbles and/or significant headspace. The trip blanks were prepared by the laboratories and shipped to the TolTest Crane office. Both laboratories were notified of the discrepancy with the trip blanks. The data should not have been impacted since the trip blanks were prepared off-site and did not reflect the sampling technique used to collect the soil samples. There were no log-in discrepancies noted for the soil samples collected for volatile analysis. The trip blank submitted with samples MFBICS618-630 was received at the laboratory with one of two containers broken. The laboratory was able to complete the requested volatile analysis with the intact trip blank sample.

The rinse blank associated with samples MFBICS750-758 was received at the laboratory with one of three containers broken. The laboratory was able to perform the requested analyses with the remaining two rinse blank samples. In addition, the rinse blank associated with samples MFBICS618-630 was received with the lid cracked. The lid was replaced by laboratory personnel and analyzed without additional anomalies noted.

In several instances, the samples collected for volatile analyses were prepped outside the 48-hour extraction hold time. These samples are flagged in Table E-3. However, the 48-hour extraction hold time

applies to the Encore sample tubes and not all samples for volatile analyses were submitted in Encore tubes. All of the samples were analyzed within the 14-day hold time as specified within the *NEESA* 20.2-047B guideline and QAPP. The discrepancies over the extraction hold times should not impact the data results since the sample results were significantly less than the IM Industrial clean-up goals.

Field Quality Control

Field QC samples collected with the ICS included duplicates, trip blanks, and equipment rinse blanks. The duplicate analysis for total metals and explosives showed sample results to have precision varying from 0 - 200% RPD. In most cases, duplicate pair samples had concentrations that were either both above or both below ("J" values) the reporting limit, except sample RPD values that were at 200%, where analytes were detected in the first sample and not the duplicate.

Trip blanks were submitted with most coolers containing samples to be analyzed for VOCs in order to evaluate the potential for cross-contamination during shipping to the laboratory. The trip blanks were received from the laboratory in a sealed container containing organic-free water, held intact at the site, and shipped back to the laboratory with the samples. Acetone was detected in several of the trip blanks at reportable levels and in some of the method blanks. A positive detection of an analyte in the method blank indicates that the source of contamination could lie with the laboratory and not necessarily the field. Several of the corresponding samples had reportable levels of acetone detected, indicating that possible cross contamination may have occurred. However, the sample results for acetone were significantly less than the remedial goals, and therefore did not adversely affect the interpretation of the data based upon sample concentrations relative to the IM Industrial Cleanup Goal values. In addition, xylenes (total) were also detected in 5 trip blanks. Most of the corresponding sample results were non-detect for xylenes (total) except samples MFBICS618-630, which xylenes (total) were detected suggesting possible cross contamination may have occurred. The xylene concentration levels were significantly less than the IM Industrial Cleanup Goal levels and would not have affected the interpretation of the data. The method QC samples were generally acceptable for the VOC water analyses. The LCS/LCSD recovery results for 4-methyl-2-pentanone associated with the trip blanks submitted with samples MFBICS409-420 and MFBICS371-376 were outside the laboratory QC limits. Both of the trip blank results for 4-methyl-2-pentanone were non-detect. In addition, the percent recovery for 2-butanone was outside the laboratory QC limits for the LCSD sample associated with MFBICS 371-376. The LCS percent recovery was acceptable. The surrogate recoveries and LCS/LCSD RPD results were acceptable.

Eleven rinse blanks were collected for explosive and metal analysis for the initial characterization samples, and six gravel rinse samples for explosive analysis. The method blank, the LCS/LCSD results were acceptable for the explosive analyses. The RPD were generally acceptable for the LCS/LCSD samples for the explosive analyses. The LCS/LCSD RPD results associated with samples MFBICS618-630, MFBGR5 and MFBGR6 were slightly above the upper laboratory control limit for tetryl and 4-amino-2, 6-dinitrotoluene. The individual percent recoveries for the LCS/LCSD samples were acceptable and the rinse blank and gravel rinse results for those analytes were non-detect. The MS/MSD percent recoveries were generally acceptable. The MS/MSD samples associated with samples MFBICS400-408 had recovery and RPD problems for some explosive analytes. The corresponding rinse blank was non-detect for explosive analytes and the LCS/LCSD samples were acceptable. The MS/MSD RPD results were acceptable for explosive analyses in most sample batches, except for the MS/MSD RPD results associated with samples MFBICS400-408 as previously mentioned. The surrogate percent recoveries were within the laboratory QC limits for the rinse blank, method blank, LCS/LCSD and MS/MSD samples. The gravel rinse (MFBGR1-4) surrogate recoveries were not calculated because of high analyte concentrations requiring dilutions. The extract was diluted beyond the ability to calculate a surrogate recovery. The field blank, method blank and LCS/LCSD samples had acceptable surrogate recoveries.

The rinse blank results were non-detect for most sample batches. The rinse blank results associated with samples MFBICS618-630 showed low level ("J" values) contamination for HMX and RDX. HMX and RDX were detected in most of the corresponding soil samples at varying concentration levels from non-detect to high levels requiring dilutions. The rinse blank was collected after the soil samples were taken, and sample MFBICS628, the last soil sample collected, required dilution analyses for HMX and RDX. There were varying concentration levels detected and some samples had non-detect results for HMX and RDX,

and any cross contamination that may have occurred during sampling would not have changed the interpretation of the sample results. The gravel rinse samples (MFBGR1-4) exhibited high concentrations for HMX, RDX, TNT, 2-amino-4, 6-dinitrotoluene, and 4-amino-2, 6-dinitrotoluene. The field blank (MFBFB) had low level concentrations reported for RDX. The gravel rinse samples (MFBGR5 and MFBGR6) had high levels of HMX, RDX and TNT reported. The rinse blank results for MFBICS601-617 showed low level ("J" values) contamination for HMX and RDX. Most of the corresponding soil samples required dilutions for HMX and RDX. The soil samples with low level concentrations for explosives were less than the IM Industrial Cleanup Goals and any cross contamination that may have occurred during sampling would not have changed the interpretation of the sample results. The rinse blank results associated with samples MFBICS511-525 showed low level ("J" values) contamination for TNT, HMX and RDX. Also, RDX was detected, ("J" value), in the rinse blank associated with samples MFBICS546-574 and MFBICS484-492. In addition, 4-amino-2, 6-dinitrotoluene was also detected in the rinse blank associated with samples MFBICS484-492. The corresponding sample results were non-detect for TNT (MFBICS511-525) and 4-amino-2, 6-dinitrotoluene (MFBICS484-492). Most of the sample results for HMX and RDX were considerably greater than the reporting limit (MFBICS511-525, MFBICS546-574, MFBICS484-492). The sample results for RDX were either significantly less than or considerably greater than remedial action levels, which would have triggered whether bioremediation activities for the soil in the particular grid location were necessary or not. Hence, any cross contamination that may have occurred during sampling would not have changed the interpretation of the sample results.

Barium, chromium, aluminum and mercury were detected at low levels ("B" values) in a few of the rinse blanks. The method blanks were non-detect for all target metal analytes. Field samples associated with these rinse blanks did not show concentrations of these compounds above the cleanup levels, therefore, low concentrations found in the equipment rinse blanks did not significantly impact the sample results. The LCS/LCSD and MS/MSD sample percent recoveries and RPDs were generally acceptable. The LCS/LCSD RPD result for mercury (MFBICS400-408) was slightly above the upper control limit. The corresponding rinse blank results were non-detect for mercury and the LCS/LCSD percent recoveries were acceptable. The MS/MSD percent recoveries for aluminum (MFBICS546-574) were outside the QC limits. The corresponding rinse blank was non-detect for aluminum and the LCS/LCSD sample recoveries were acceptable.

Laboratory Quality Control

Method blanks, surrogates, LCS, MS, and replicate samples were used for laboratory QC for the ICS.

Laboratory method blanks showed low level concentrations (values between the method detection limit and the reporting limit or slightly above the reporting limit) of mercury, silver, aluminum, barium, cadmium, lead, and chromium in several of the batches. In addition, laboratory blanks showed low level concentrations for acetone, methylene chloride and 2-butanone. For all of these analytes, field sample levels were significantly less than the cleanup objectives. Arsenic was detected in several of the laboratory method blanks. The corresponding samples had arsenic concentration levels greater than the IM Industrial Cleanup levels. Method blanks were non-detect for explosives, and PCBs. Based upon these results, it is concluded that method blank contamination has not adversely affected the interpretation of the data based upon field sample concentrations relative to the IM Industrial Cleanup Goal objectives.

Surrogate recoveries were generally acceptable for organic analyses. The surrogate recoveries for the MS/MSD and soil samples (MFBICS693-707) were not calculated for the PCB analysis because the samples required dilutions for non-target interfering analytes, and the surrogates were diluted beyond the ability to quantify a recovery. The surrogate recoveries for the corresponding LCS/LCSD and method blank were acceptable. The sample results were non-detect for the target PCB analytes.

The explosive analyses had acceptable surrogate recoveries for most samples. Several surrogate recoveries were not calculated because the soil samples had high concentrations of target analytes requiring sample dilutions and the surrogates were diluted beyond the ability to calculate a recovery. MS/MSD sample surrogate recoveries were also not calculated if the parent field soil sample required dilutions (MFBICS409-420 and MFBICS484-492). The MS/MSD pair associated with samples

MFBICS356-370 and the MS sample associated with MFBICS400-408 had high surrogate recoveries due to high sample concentrations. The corresponding LCS/LCSD samples had acceptable surrogate recoveries and the high recoveries were attributed to matrix effects/interference and not poor analytical performance. The LCSD and LCS sample (MFBICS371-376 and MFBICS493-507 respectively) surrogate recoveries were outside the QC limits. The corresponding LCS and LCSD sample surrogate recoveries were within the QC limits. The sample results should not have been adversely affected by the poor surrogate recoveries since the low surrogate recoveries would reflect possible low bias or false negatives and the sample concentrations were relatively high. One soil sample, MFBICS492, had a slightly high surrogate recovery for PETN analysis. The sample result was non-detect for PETN. The high surrogate recovery should not have affected the interpretation of the data since a high surrogate recovery would possibly attribute to false positives or high bias and the sample result was non-detect for PETN. Two soil samples had a slightly high surrogate recovery for explosive analysis. Both sample results indicated that explosives were detected at low concentration levels, but significantly less than the IM Industrial Cleanup Goals and would not have changed the interpretation of the sample results.

The volatile (VOC) surrogate recoveries were acceptable for most samples. Four sample batches (MFBICS409-420, MFBICS394-399, MFBICS430-435 and MFBICS436-444) for VOC analysis had sample surrogate recoveries outside QC limits for one or two of the four surrogates. The samples were not re-extracted for the one or two surrogates because the other surrogates were within QC limits and would not impact the sample results. The laboratory case narratives addressed this indicating the poor surrogate recoveries were due to matrix effects. In each instance, the affected sample results for volatiles were either non-detect or significantly less than the IM Industrial Cleanup Goals. The sample results for volatile analyses were significantly less than the industrial cleanup objectives and for this reason, surrogate results that were outside of laboratory limits did not adversely affect the interpretation of the data.

The LCS/LCSD sets showed precision and accuracy results for the spiked target analytes to be acceptable for the PCB analyses.

The replicate control sample spike precision results were generally acceptable for the LCS/LCSD samples. The RPD values were acceptable for the VOC analyses. The RPD values were acceptable for most metal analyses except for the LCS/LCSD RPD value for silver associated with samples MFBICS430-435 and MFBICS457-465. The individual LCS/LCSD sample recoveries were within the QC limits, and the RPD value for silver was acceptable for the MS/MSD samples. The RPD value for mercury was outside control limits for samples MFBICS377-393. The individual LCS/LCSD recoveries were within the control limits and reanalysis for mercury yielded an acceptable RPD value. The RPD values were acceptable for most explosive analyses except for the LCS/LCSD RPD value for 2-6-dinitrotoluene associated with samples MFBICS508-510 and MFBICS493-507. The individual LCS/LCSD percent recoveries were acceptable and MS/MSD RPD value was acceptable. The laboratory case narratives addressed the high RPD value stating that the laboratory evaluation report did not reflect the correct upper reporting limit and the RPD value did meet the program requirements for the RPD value. The program requirements for the LCS/LCSD RPD is 0-40% as stated in table 3-2 of the QAPP. The reported RPD value for the LCS/LCSD pair associated with MFBICS508-510 samples was 12%, and the reported RPD value for the LCS/LCSD pair associated with MFBICS493-507 was 13%. The RPD values were outside the laboratory QC limits for the LCS/LCSD samples associated with MFBICS371-376 for most of the explosive spiked target analytes. The corresponding sample results were below the IM Industrial Remedial Cleanup Goals, and any sample variability that may have been exhibited in the samples would not have changed the interpretation of the data. The LCS/LCSD RPD values associated with MFBICS481-483 were outside the laboratory QC limits for most of the explosive spiked target analytes. The RPD values for the target analytes were slightly above the laboratory upper control limits and were within the stated program requirements of 0-40%. The laboratory case narrative stated that the laboratory was in the process of updating the test control limits. The corresponding MS/MSD RPD values were within the laboratory QC limits for the target analytes except RDX. The soil samples had high concentrations for RDX well above the remedial goals and any variability that may have occurred with the sample results would not have changed the interpretation of the results.

LCS/LCSD percent recovery results for volatiles were acceptable for most sample batches. The LCS sample associated with MFBICS421-429, MFBICS430-435, MFBICS445-456, and MFBICS457-465 soil samples had a high percent recovery for m,p-xylenes. The corresponding LCSD and MS/MSD samples were acceptable for this analyte and the soil samples were non-detect for xylenes. One exception occurred with the MS/MSD samples associated with MFBICS457-465. The MS sample also exhibited a high recovery for m,p-xylene, but the MSD sample had an acceptable recovery. The soil results were scrutinized more closely for this analyte, and since the soil samples were non-detect for this analyte, any possible high bias or false positives that may have occurred was not evident and the data was accepted. The percent recoveries for both the LCS/LCSD samples associated with MFBICS466-474 had high recoveries for m,p-xylenes. The corresponding MS/MSD samples had acceptable recoveries for this analyte and the soil samples were non-detect.

The LCS/LCSD sample percent recoveries were acceptable for the metal analyses. LCS/LCSD percent recovery results for explosives were acceptable for most sample batches. The LCS sample associated with MFBICS430-435 soil samples had a high percent recovery for tetryl. The corresponding LCSD and MS samples had acceptable recoveries and the soil samples were non-detect for this analyte. The LCSD sample associated with MFBICS371-376 soil samples had low percent recoveries for most of the spiked target analytes. The corresponding LCS sample had acceptable recoveries. The sample results are questionable since MS/MSD samples were not analyzed with the sample, however since the LCS had acceptable recoveries for all analytes demonstrating some method QC the data was accepted. The soil samples were non-detect for most analytes except HMX and RDX. Any possible low bias in the sample results would not have changed the interpretation of the sample results, since the analytes would still have been detected if it were present in the sample, and the reported concentrations for HMX and RDX, even if the concentration was changed to reflect a higher concentration, would still be less than the remedial goals. Several target analytes for the LCS/LCSD samples associated with MFBICS481-483 were outside the laboratory QC limits. The laboratory case narrative stated that the control limits were being updated. The corresponding MS/MSD percent recoveries were within the laboratory QC limits for the spiked target analytes except for RDX. The LSCD and MSD samples had acceptable recoveries for RDX. The LCS sample associated with MFBICS475-480 soil samples percent recovery for 2-NT was outside the laboratory control limits. The LCSD sample was acceptable and the soil samples were non-detect for this analyte.

The replicate control sample spike precision results were generally acceptable for the MS/MSD samples. The RPD values were acceptable for the MS/MSD samples for PCB analysis. The RPD values were acceptable for most of the volatile analyses except for the RPD values for acetone, m,p-xylenes and o-xylene associated with MFBICS409-420 samples, and RPD values for acetone for MFBICS394-399 and MFBICS457-465. The interpretation of the sample results should not have been affected since the LCS/LCSD samples had acceptable precision results. The RPD values for the MS/MSD samples associated with MFBICS430-435 were outside the QC limits for acetone, methylene chloride, toluene, m,p-xylenes, and o-xylenes. The corresponding LCS/LCSD RPD values were acceptable indicating a matrix effect and not a problem with the analytical technique. The RPD values associated with MFBICS436-444 were outside QC limits for acetone, 2-butanone and 4-methyl-2-pentanone. The corresponding LCS/LCSD RPD values were acceptable for these analytes. The RPD values associated with MFBICS356-370 were outside of the QC limits for 2-butanone and 4-methyl-2-pentanone. The percent recoveries were within the control limits for these analytes and the LCS/LCSD RPD values were acceptable.

The RPD values for explosive analyses were generally acceptable. The MS/MSD RPD values associated with samples MFBICS409-420 were high for tetryl, NB and 4-NT. The corresponding LCS/LCSD samples had acceptable precision results. RPD value for HMX associated with samples MFBICS526-534 was above the upper control limit. Some variability may be expected with the MS recoveries due to the field sample concentration being greater than the spike amount. However, the interpretation of the sample results should not have been affected since the LCS/LCSD samples had acceptable precision results. The RPD value for PETN was high for the MS/MSD pair associated with MFBICS457-465. The corresponding LCS/LCSD samples had acceptable precision results.

The metal precision results were acceptable for most analyses. The RPD value for aluminum was outside control limits for samples MFBICS436-444. Chromium and mercury had high RPD values associated with samples MFBICS430-435, and the RPD value was high for barium for samples MFBICS394-399. The RPD value for chromium was high for MFBICS646-664 samples. However, RPD values that were outside the laboratory control limits in the MS/MSD samples were within the control limits in the LCS/LCSD samples. The corresponding field sample concentrations were relatively high compared to the spike amounts, which suggests possible matrix interference problems may have attributed to poor recovery of the analytes which affected the RPD values in the MS/MSD samples. The interpretation of the sample results should not have been affected since the LCS/LCSD samples showed acceptable precision results.

The MS/MSD sample percent recoveries were generally acceptable for the organic analyses. The MS/MSD percent recoveries for the PCB analysis were not calculated because the samples were diluted beyond the ability to calculate a recovery. The corresponding soil samples were diluted because of non-target interfering compounds. The diluted sample results were non-detect. The corresponding LCS/LCSD sample percent recoveries were acceptable and the data was accepted.

The VOC MS/MSD sets were generally acceptable. The MS sample, which corresponded to samples MFBICS409-MFBICS420, percent recovery for acetone was high. The LCS/LCSD and MSD samples had acceptable spike analyte recoveries. A matrix effect was not suspected of interfering with the sample results since the MSD sample had acceptable spike analyte recoveries. The MS/MSD pair exhibited low recoveries for acetone and toluene (MFBICS394-399). The LCS/LCSD samples had acceptable recoveries. Several of the MS/MSD sample pairs exhibited poor recoveries for acetone. The corresponding LCS/LCSD samples had acceptable recoveries for acetone indicating possible matrix effects and not problems with the method performance. Also, the MS/MSD pair associated with MFBICS421-429 had high recoveries for 4-methy-2-pentanone as well as acetone. The corresponding LCS/LCSD samples had acceptable recoveries for both analytes. In addition, several MS or MSD samples had percent recoveries for at least one volatile compound that was outside QC limits. However, the corresponding MS or MSD sample was within the QC limits and the corresponding LCS/LCSD samples had acceptable recoveries for most samples. One exception was with the MS recovery for m,p-xylenes associated with MFBICS457-465 in which the LCS/LCSD pair had recoveries outside control limits as well for this analyte. The MSD sample had acceptable recoveries, but the data was still questionable since method QC was not demonstrated for m,p-xylenes. The corresponding soil samples were non-detect for this analyte and any possible bias that may have occurred was not evident and the data was accepted.

The MS/MSD sets for the explosive analyses were generally acceptable. The recoveries for HMX and/or RDX typically showed poor percent recoveries. In almost every batch, at least one of these compounds was outside of the laboratory QC limits in either one of the MS, MSD samples or the MS/MSD pair. In addition, some of the MS/MSD samples had poor recoveries for TNT, 4-amino-2, 6-dinitrotoluene and 2-amino-4, 6-dinitrotoluene. The poor recoveries for HMX, RDX and TNT were attributed to high sample concentrations relative to the spike amount. The poor recoveries for 4-amino-2, 6-dinitrotoluene and 2-amino-4, 6-dinitrotoluene in most instances were due to co-elution or interference of TNT off of the column, which prevented the percent recovery from being calculated for both compounds. In addition to the aforementioned analytes, the MS/MSD samples associated with MFBICS741-743 also had high recoveries for 2,6-dinitrotoleune and 4-nitrotoluene. The MS/MSD samples associated with MFBICS409-420, MFBICS356-370 and MFBICS484-492 had poor recoveries for most target analytes. High sample concentrations and coalition attributed to the poor recoveries. The MS recovery for PETN was outside control limits (MFBICS457-465). The corresponding MSD and LCSD recoveries were acceptable. The soil samples were non-detect for PETN. The MSD percent recovery for tetryl was outside control limits for samples MFBICS430-435 and MFBICS445-456. The corresponding MS and LCS/LCSD recoveries were acceptable. The soil samples were non-detect for tetryl. The MS/MSD pair recoveries for 2-NT were below control limits (MFBICS436-444), however the LCS/LCSD recoveries were within the control limits. The poor recoveries were likely due to matrix effects rather than method performance since all other spiked target analytes were within the control limits. In most instances where the MS/MSD pair or individual MS or MSD samples exhibited poor recoveries for the target analytes, the LCS/LCSD samples were acceptable. The field sample results were generally at high concentration levels for HMX, RDX and

TNT analytes and regardless of any matrix effects the interpretation of the data would not have been changed.

The MS/MSD sets for the metals analyses were generally acceptable. The recoveries for aluminum and chromium were typically outside laboratory QC limits in the MS/MSD pairs in several sample batches. The poor MS/MSD recoveries for aluminum were due to the high concentration of target analytes relative to spiking concentrations. In several sample batches the MS or MSD recovery for mercury, chromium, lead, cadmium, silver and barium were outside the laboratory QC limits. Each analytical data set has been evaluated to determine the impact of the MS/MSD recoveries on the usability of the data. For the vast majority of samples, the results were significantly less than the cleanup objective levels, and the bias seen in the varying recoveries would not impact the data enough to consider that these values may either increase above, or decrease below, the cleanup levels if acceptable recoveries were obtained. In each instance where the MS/MSD pair had poor recoveries the LCS/LCSD pair had acceptable recoveries for the target analytes, and for these reasons, MS/MSD results that were outside of laboratory limits did not adversely affect the interpretation of the data.

Conclusion

The QC data demonstrate acceptable accuracy and precision when compared to the intended use of the data. The data meets the project objectives and are, therefore, considered usable for characterization analysis.

6.2.3.2 MK ICS Samples

MK performed a portion of the ICS for MFB. MK collected a total of 343 soil samples from 113 grids to identify areas requiring excavation. Various rinse and trip blanks were collected along with these samples for QC purposes. MK performed characterization of grids 1 through 26, 29, 30, 38 through 69, 81, 82, 88 through 103, 107, 112, 113, 115, 120 through 146, and 148 through 151. Of the 113 grid locations sampled by MK, 57 grids demonstrated ICS results that exceeded industrial cleanup objectives and required excavation. No metals or volatile SWMU-specific compounds have been detected above clean-up action levels for SWMU specific contaminants of concern in any of the samples.

Samples were analyzed by SWL. All data submitted for laboratory analysis were verified by reviewing chain-of-custody records, sample extraction records, analytical holding times, requested turnaround times, sample data in comparison to QC data and reporting requirements. Additionally, MK validated 10% of the data. The data were compared with field and laboratory QC sample data to assess its usability.

All samples were received by the laboratory in acceptable condition, with custody seals, correctly preserved, and with containers intact. Most samples were received at a recorded temperature of 4°C +/- 2°C. Ten samples were received between 0°C and 2°C. Because no samples were frozen, these temperatures below 2°C did not impact the samples. Additionally, 58 samples were received at temperatures between 6.6°C and 11°C. Most of these samples were analyzed exclusively for explosives and metals, and the high temperatures did not impact the results for these analyses. The remaining samples were analyzed exclusively for VOCs and showed few detected analytes, and those detected were at levels at least three orders of magnitude below the cleanup objectives. The impact of these temperatures above the acceptable range is minor when comparing the reporting limits relative to the IM Industrial Cleanup Goal concentrations.

Field Quality Control

Field QC included field duplicates, trip blanks, and equipment rinseates. Analytical results for these samples were evaluated to identify potential sources of error introduced during sampling, transportation and storage.

Field duplicates were collected at a frequency greater than the one in twenty samples specified in Section 3.1.2 in the QAPP. Field duplicates are samples collected at the same time and in the same location as

the corresponding field sample, in order to qualitatively assess field precision. There are no quantitative precision criteria specified in the QAPP. Volatile analysis showed no difference between field duplicate pairs. Total metal analysis showed metals to have precision varying from 0 - 200% RPD, but in all cases, duplicate pairs showed analytes to either be both above or both below cleanup criteria. Explosive analysis showed analytes to have precision varying from 0 - 200 %RPD. With one exception, duplicate pairs showed analytes to be either both above or both below cleanup criteria. MFBICS297 had RDX present above the cleanup objective, at 27,700 ug/kg, while its field duplicate, MFBICS297FD, had RDX present below the cleanup objective, at 1760 ug/kg. The initial sample result should be used as a conservative approach to drive the excavation of Grid 121.

Trip blanks were submitted with coolers containing samples to be analyzed for volatile organic compounds in order to evaluate the potential for cross-contamination during shipment to the laboratory. The trip blanks were received from the laboratory in a sealed container containing organic-free water, held intact at the site, and shipped back to the laboratory with the samples. Methylene chloride, a common laboratory contaminant, was detected in several trip blanks at values that ranged from 1 ug/L to 2 ug/L. Sample concentrations ranged from estimated values of 1 ug/kg, below the reporting limit, to 35 ug/kg, all of which are significantly less than the cleanup objective of 18,000 ug/kg for methylene chloride. Acetone, another common laboratory contaminant, was detected in various trip blanks at values that ranged from 4 ug/L to 42 ug/L. Sample concentrations ranged from non-detect to 65 ug/kg, and are significantly less than the cleanup objective of 8,800,000 ug/kg for acetone. Other volatile compounds were not detected above the reporting limit in any of the trip blanks associated with these sampling events. Based upon these results it is felt that no volatile organic cross-contamination has occurred during shipping or storage for the majority of the volatile compounds analyzed. The possible methylene chloride and/or acetone contamination has not adversely affected the interpretation of the data based upon sample concentrations relative to the IM Industrial Cleanup Goal values.

Equipment rinse blanks were collected by rinsing decontaminated sampling equipment with de-ionized water, collecting the rinse water in appropriate sample containers, adding any sample preservative required by the analytical method, and then submitting the rinse water for analysis. Results are used to evaluate the effectiveness of decontamination procedures in preventing sample cross-contamination. There were low concentrations of various metals (aluminum [31 – 117 ug/L], barium [1.3 – 8.7 ug/L], lead [2.2 – 6.8 ug/L], chromium [1.7 – 62 ug/L], and cadmium [0.32 – 4.3 ug/L].) detected in one or more of the field blanks. No explosive or VOC compounds were detected in any of the rinse blanks. Field samples collected on corresponding days did not show concentrations of these compounds above the clean-up levels, therefore, low concentrations found in the field blanks have not significantly impacted the sample results.

Laboratory Quality Control

The laboratory performed method blank, replicate, surrogate, LCS, LCSD, sample MS, and MSD analyses to evaluate laboratory accuracy and precision according to the established U.S. EPA procedures.

Laboratory method blanks were prepared and analyzed with the samples in order to evaluate potential target compounds or interference's from laboratory glassware, reagents and/or solvents used in the preparation and analysis of samples. Laboratory method blanks showed the presence of arsenic, aluminum, cadmium, chromium, lead, mercury, selenium, silver, methylene chloride, and acetone in one or more analytical batches. For all analytes, field sample levels were significantly less than the cleanup objectives or for the applicable TCLP regulatory limit. All detected metal compounds and common laboratory contaminant volatile compounds found in the samples, which correspond to method blank contamination, are within 10 times the level found in the method blank and have been qualified U at the level detected. Concentrations of these compounds greater than 10 times the level found in the blank were not qualified. Method blank contamination has not adversely affected the interpretation of the data based upon field sample concentrations relative to the IM Industrial Cleanup Goal objectives and TCLP regulatory limits.

Laboratory replicate samples are a second sample aliquot which the laboratory prepares and analyzes concurrently with the sample to evaluate analysis precision. The laboratory evaluates replicates in place of a LCSD for the analysis of metals. In several analytical batches of metals precision results for one or more metals were outside of laboratory criteria. The corresponding field sample results have been qualified estimated (J) to indicate that duplicate analysis was not within control limits and that more variability may be expected in the reproduction of these values. In these instances, the total metal results were below the Region III Risk-based levels. The concentration of these contaminants would likely remain below these objectives if re-sampling was performed consistent with the sampling protocol of this project.

Surrogate spikes are known amounts of non-target organic compounds, which are spiked into all samples prior to sample preparation in order to evaluate the efficiency of the organic sample preparation and analysis. Surrogate recoveries were generally acceptable for organic analyses. All volatile surrogates were within acceptable limits. In ten analytical batches for explosive analysis, one or more samples had surrogate recoveries outside of acceptable criteria. In all cases, subsequent dilutions were required to bring the results within the linear range of the instrument, which caused the surrogate recoveries to be outside of criteria. For this reason, surrogate results which are outside of laboratory limits have not adversely affected the interpretation of the data.

The LCS and LCSD are samples prepared in the laboratory, consisting of clean soil or water spiked with known amounts of target analytes which are processed through the same preparation as field samples. Evaluation of the spike recoveries, and the variability between the LCS and LCSD, gives an indication of analysis accuracy and precision in a clean matrix. More than ninety-eight percent of spiked target analytes showed LCS precision and accuracy results to be acceptable.

In most analytical batches where LCS recovery was outside of acceptable limits, elevated LCS and/or LCSD recoveries were reported for one or more compounds. If these compounds were non-detect, no qualification was made to the data. Positive values were qualified estimated (J). In all instances, field samples analyzed with these LCS/LCSD samples showed corresponding analytes to be undetectable or at levels considerably below cleanup objectives and/or TCLP regulatory limits. Low recovery of the LCS and/or LCSD resulted in all associated sample data being qualified estimated (J/UJ). The remaining target analytes which showed low recoveries corresponded to field sample results which were significantly less than the cleanup objectives and/or TCLP regulatory limits. Tetryl, an explosive compound, consistently had low LCS recoveries between 17 and 52%. The bias seen in the low recoveries would not impact the data enough to consider that these values may actually be greater than the IM Industrial Cleanup Goal values if acceptable recovery was obtained. For these reasons, the relatively small percentage of LCS/LCSD results which are outside of laboratory limits have not adversely affected the interpretation of the data.

Sample MS and MSD are field samples that have been spiked with a known amount of target analytes and processed through the preparation and analysis with the field samples. Evaluation of the spike recoveries, and the variability between the MS and MSD, gives an indication of analysis accuracy and precision in the sample matrix. MS/MSD accuracy and precision can be affected by concentrations of both target and non-target compounds present in the original field sample, as well as the matrix of the sample itself. Recoveries for ninety-two percent of MS/MSD analyses were acceptable for the target analytes. Most of the poor MS/MSD recoveries were due to the high concentration of target analytes relative to spiking concentrations. Each analytical data set has been evaluated to determine the impact of the MS recovery on the usability of the data. For the vast majority of samples, the results were either already above the cleanup objective levels or they were significantly less than the cleanup objective levels or TCLP regulatory limits, and the bias seen in the varying recoveries would not impact the data enough to consider that these values may either increase above, or decrease below, the cleanup levels if acceptable recoveries were obtained.

Conclusion

The QC data demonstrate acceptable accuracy and precision when compared to the intended use of the data. The data meets the project objectives and are therefore considered usable for characterization analysis.

6.2.4 Post-Excavation Samples

Post-excavation samples were collected following excavation and collection of in-process excavation samples to determine the levels of constituents of concern remaining in the soil in each grid.

TT collected a total of 480 PES for laboratory analysis. All samples were received by the laboratory in acceptable condition, with custody seals, correctly preserved, and with containers intact. Ninety-five percent of the samples were received at temperatures of 4°C ± 2°C and five percent were received at 7°C to 9°C. These later samples were delayed during transient to the laboratory and the laboratory received the samples after 48-hours. Sample MFBPES052 was received at the laboratory broken, but the sample contents were transferred to another jar and analyzed with the rest of the samples without further complications. Most trip blanks were received at the laboratory with significant headspace. The laboratory was notified of the discrepancy since the laboratories prepare the trip blanks and sent them to the field office. In addition, several of the VOC analyses were not completed within the 48-hour timeframe required for Encore samples. These samples are flagged in Table H-3. However, all samples were analyzed within 14 days as specified in the QAPP.

Field Quality Control

Field QC samples collected included duplicates, trip blanks, and equipment rinse blanks.

In analysis of duplicates, metal and explosive analyses varied from 0-200% RPD.

Trip blanks were submitted with most coolers containing samples to be analyzed for VOCs in order to evaluate the potential for cross-contamination during shipment to the laboratory. Acetone was detected in most trip blanks. In addition, total xylenes were detected in several trip blanks. One trip blank had concentration levels of acetone that exceeded the calibration curve. There was not enough sample remaining to reanalyze the trip blank and the sample results were significantly less than remedial goals. Acetone was also detected in several of the method blanks analyzed by the laboratory indicating that the source of the contamination may lie within the laboratory. Sample concentrations of acetone and total xylene levels were significantly less than the cleanup goals. Thus the contamination did not adversely affect the interpretation of the data based upon sample concentrations relative to the industrial treatment standards. Method blank values for acetone and total xylenes were well below cleanup goals. The MS/MSD samples demonstrated acceptable accuracy and precision recoveries for target analytes in trip blank analyses. The LCS/LCSD percent recoveries for 2-butanone associated with sample set MFBPES387-412 were outside QC limits. This analyte was not detected in the corresponding trip blank.

Rinse blanks were generally acceptable for explosive and metal analyses. The rinse blank results for explosives were acceptable for most sample batches except the rinse blank associated with MFBPES300-315. HMX was detected in the rinse blank below the reporting limit and the corresponding soil samples were less than the remedial goals, therefore any cross contamination that may have occurred did not adversely affect the interpretation of the sample results. The rinse blank results for metals were acceptable for most samples. Barium was detected in the rinse blank associated with samples MFBPES300-315. The corresponding method blank had low levels of barium contamination indicating possible laboratory contamination for this analyte, and the soil sample result for barium were less than the cleanup goals. Low level contamination of mercury was detected in the rinse blank and corresponding method blank for samples MFBPES254-259. The sample results were less than the cleanup goals. Chromium and selenium were detected at low levels in the rinse blank associated with samples MFBPES431-440. Again the method blank had low level concentrations for chromium and

selenium. The corresponding soil samples were less than the cleanup goals. The rinse blank associated with sample MFBPES103-116 had low level concentrations of arsenic and barium. The corresponding method blank had low level contamination for arsenic and was non-detect for barium. The soil samples were below the cleanup goals for barium, but did not meet cleanup goals for arsenic. The LCS/LCSD and MS/MSD samples had acceptable accuracy and precision recoveries for rinse blank analyses for metals and explosives.

Laboratory Quality Control

Method blanks, surrogates, LCS/LCSD and MS/MSD samples were used for laboratory QC for the PES collected.

Laboratory method blanks for volatile analysis showed the presence of acetone, methylene chloride and 2-butanone in several of the sample batches. For both of these analytes, the corresponding samples had levels significantly less than the targeted cleanup levels. Based upon these results, it has been determined that method blank contamination has not adversely affected the interpretation of the data based upon field sample concentrations relative to the IM Industrial Cleanup Goal objectives. The method blank results for explosive and PCB analyses were acceptable. The method blank results for metals were generally acceptable. Method blanks showed low level contamination for aluminum associated with several of the soil sample batches. The corresponding soil samples had high concentrations of aluminum and despite the low-level contamination for aluminum in the method blanks, the sample results would not have been adversely affected. In addition, method blanks showed low level concentrations for barium (MFBPES001-012, MFBPES33-46, MFBPES47-74), chromium (MFBPES001-012, MFBPES262-264), and lead (MFBPES021-032, MFBPES013-042, MFBPES453-480, MFBPES037-142). The corresponding soil samples were significantly less than the cleanup goals; hence the method blank contamination did not adversely affect the sample results.

The LCS/LCSD sets showed precision and accuracy results for the spiked target analytes to be acceptable for PCB and metal analyses. The volatile LCS/LCSD sample percent recoveries for the spiked target analytes were acceptable for most analyses. The LCS percent recovery for 4-methyl-2-pentanone was outside control limits associated with samples MFBPES453-480. The LCSD percent recovery was acceptable. The RPD results for volatile analyses were acceptable except for RPD recovery for 4-methyl-2-pentanone associated with samples MFBPES441-452 and for acetone associated with samples MFBPES453-480. The sample results for 4-methyl-2-pentanone were non-detect, and any variability expected with the sample results would not change the interpretation of the sample data. Acetone was detected in most of the soil samples MFBPES453-480, however the sample results were significantly less than cleanup goals and any variability expected with the sample results would not change the interpretation of the sample data. The LCS/LCSD sample percent recovery results were acceptable for the spike target analytes for explosives. The LCS/LCSD sample precision (RPD) results were acceptable for the target explosive analytes except for 4-NT associated with MFBPES001-012. The corresponding samples were non-detect for this analyte.

The replicate control sample spike precision results were generally acceptable for the MS/MSD samples that were analyzed. The control spike precision results were acceptable for the volatile spiked target analytes. The explosive and metal RPD results were generally acceptable. The RPD values for aluminum were not calculated for most sample batches due to high analyte concentrations in the parent field sample. The RPD value for mercury was not calculated for the MS/MSD pair associated with MFBPES153-158 due to high analyte concentrations in the parent field sample. The RPD values were acceptable for these compounds in the LCS/LCSD samples and the sample results should not be affected. The control spike precision results for the explosives demonstrated high RPD results for TNT (MFBPES246-253, MFBPES254-259) and RDX (MFBPES371-386, MFBPES316-337, MFBPES387-442). The LCS/LCSD RPD values were within the control limits and the high RPD values for the MS/MSD samples should not affect the interpretation of the sample results.

Surrogate recoveries were acceptable for the explosive analyses. The surrogate recoveries for PCB analysis were not calculated due to the fact that the sample was diluted beyond the ability to calculate a recovery. The surrogate recoveries were acceptable for the volatile analyses except for sample

MFBPES094 in which two out of the three surrogate recoveries for this sample were acceptable. The laboratory did not re-extract for the low surrogate recoveries. The sample results indicated that acetone was the only analyte detected in the sample and the concentration level of acetone was well below cleanup goals. The sample results would not have been impacted by the data enough to consider that the results would have increased above the cleanup levels if acceptable recoveries were obtained. In addition, sample MFBPES472 surrogate recovery for one of four surrogates was outside control limits. The sample results indicated that total xylenes were detected at high concentration levels, which exceeded the calibration curve, but a dilution performed on the sample extract yielded non-detect results for the sample. The non-diluted sample results for total xylenes in MFBPES472 were significantly less than the remedial goals and even if the surrogate recovery were within control limits the data would not have been changed. The surrogate recoveries were within control limits for the diluted sample.

The MS/MSD sets were generally acceptable for the PES samples. The MS/MSD percent recoveries were acceptable for the volatile analyses. Several MS, MSD or MS/MSD pairs exhibited high recoveries for HMX, RDX and TNT. The corresponding sample concentrations were high for these analytes occasionally requiring dilutions. Instances where TNT recoveries were high, percent recoveries for 2-amino-4,6-DNT and 4-amino-2,6-DNT were not calculated because of the high TNT peak which caused interference problems. The MS/MSD recoveries for PCB analysis were not calculated because the sample results were diluted beyond the ability to calculate a recovery. The corresponding sample results for PCBs were non-detect. Instances where the MS or MSD results did not meet laboratory QC limits, the corresponding LCS/LCSD results did meet QC limits, thus indicating a matrix effect and not a problem with instrumentation or analytical technique. Most PES exhibited high concentrations of aluminum. The MS/MSD recoveries were not calculated for aluminum due to the high sample concentrations. In addition, MS/MSD recoveries were outside QC limits for chromium in several cases and cadmium for MFBPES453-480 samples. The corresponding LCS/LCSD samples were within the control limits. Mercury recovery was not calculated for samples MFBPES153-158 due to high sample concentrations of mercury. The LCS/LCSD recoveries were within QC limits. Therefore, any MS/MSD results outside laboratory QC limits do not adversely affect the interpretation of the sample data.

Conclusion

The QC data relating to the PES, except those noted above, are within laboratory control limits. The QC data satisfy the project objectives and the data are found usable for the confirmation of accuracy for the stated analyses. The QC data demonstrate acceptable accuracy and precision when compared to the intended use of the data. The data meets the project objectives and are therefore considered useable for post-excavation analysis.

6.2.5 Windrow Explosive Monitoring Samples

As indicated in Section 4.5, explosives were the only constituents of concern that exceeded the industrial cleanup goals in the ICS, therefore, they were the only parameters analyzed during windrow treatment. Windrow samples collected and submitted for laboratory analysis included Day Zero samples (for windrows 102 – 115 only), collected upon construction of the windrow, and Day Last samples, collected after completion of treatment. Day Last samples were collected to confirm that the cleanup goals had been achieved. Day Last samples were collected after results from field screening test kits for RDX were below detectable levels or indicated that cleanup goals had been met. Samples were collected from 15 locations in each windrow. Increases in reporting limits are often seen in Day Zero analytical results due to dilutions necessary for analysis. Concentrations of RDX and HMX are at such high levels in Day Zero sampling that dilutions were performed.

A total of 192 Day Zero samples (for windrows 102 through 114) and 1472 Day Last samples (windrows 115 through 201, 209-216) were collected by TolTest. In addition, 112 samples were obtained from seven windrows (102, 132-135, 181, 185) which had been re-sampled to determine if explosive concentration levels met residential remedial goals. These windrows had been stored in the temporary storage area at MFB. All samples were received by the laboratory in acceptable condition, with custody seals and with containers intact. Seventy-seven percent of the Day Zero samples and 47% of the Day Last samples were received at temperatures of 4°C ± 2°C. Twenty-three percent of the Day Zero

samples and 53% of the Day Last samples were received at 0.2°C to 2°C. The lower temperatures did not affect the performance of the method analyses or the results of the samples since the samples were not frozen. Sample data packages were received without sample tags from the laboratory for windrows 104-107 because the laboratory discarded the sample tags.

Field Quality Control

Field QC samples collected and analyzed with the Day Zero and Day Last samples included field duplicates to evaluate the precision of the field sampling and laboratory analysis

Field duplicates were collected and analyzed as a method of field data QC. Precision for explosive analyses varied from 0-200%. This is not unexpected when considering the variable nature of the compost matrix. Precision of the field duplicates varied based upon the concentration of the target analytes. Day Last duplicate data was acceptable based upon the concentrations found in the samples relative to the remedial cleanup levels.

Laboratory Quality Control

Method blanks, surrogates, LCS/LCSD and MS/MSD samples were prepared and analyzed for laboratory QC for the windrow monitoring samples.

Laboratory QC was performed consistent with the requirements of the QAPP. Method blanks, surrogate, LCS, and LCSD were acceptable in almost every analytical batch. MS and MSD data were generally acceptable. In some of the Day Zero data, consistent elevated MS and MSD recoveries of RDX, tetryl, TNT and HMX are often seen in the analytical data because of the high levels of these compounds initially present in the sample. In Day Zero samples, which often required dilutions after spiking of the sample, the concentration of the spiking solution is diluted to a low level which cannot often be distinguished from the variability of the sample itself. In Day Last samples, where MS/MSD recoveries did not meet the established laboratory criteria, in most cases matrix effects were noted attributing to interference problems since the LCS/LCSD samples typically had acceptable recoveries.

The LCS/LCSD sets showed precision results for the spiked target analytes to be acceptable for the explosive analyses. The replicate control spike precision results for the MS/MSD sets were acceptable for the spiked target analytes in most of the sample batches. RPD values for the MS/MSD samples were outside the laboratory control limits for 2,6-DNT (Windrows M185 Day 16, M115 Day 0), 2,6-DNT, 4-ADNT (Windrow S114 Day 0), 2,4-DNT (Windrow S107 Day 0), and RDX (Windrows M111 Day 0, S154 Day 15, S146 Day 10, M169 Day 7, M106 Day 9, S201 Day20, M104 Day 19). In addition, MS/MSD RPD values were outside control limits for HMX (Windrows S154 Day 15, N214 Day 23, M168 Day 8, M109 Day 0, M106 Day 9, M215 Day 23), 2-NT (Windrow S108 Day 0), DNB (Windrow N200 Day 18), Tetryl (Windrows S154 Day 15, S190 Day 16, S212 Day 37, S187 Day 19, S178 Day 10, S163 Day 8, S175 Day 12, S171 Day 10, M188 Day 21 and S136 Day 19), TNB (Windrow S201 Day 20, S154 Day 15), and TNT (Windrows S154 Day 15, M106 Day 0, S136 Day 9). Matrix interferences likely attributed to the high RPD values since the parent samples had high concentrations of HMX, TNT and RDX. The sample results should not be affected since the LCS/LCSD sets had acceptable precision results for these windrows.

The surrogate recoveries were generally acceptable for most samples, however in samples having high concentrations of TNT, the corresponding surrogate recoveries were often outside laboratory QC limits. This was typically seen with Day 0 samples and is attributed to an interference effect of a large TNT concentration on the surrogate peak. Surrogate recoveries for LCS/LCSD samples were outside control limits for Windrows M124 Day 11, M199 Day 22, S136 Day 9, and M133 Day 11. The corresponding MS/MSD sample surrogate recoveries were within laboratory control limits. Surrogate recoveries for MS/MSD samples were outside control limits for Windrows M215 Day 23 and S112 Day 15. The corresponding LCS/LCSD sample surrogate recoveries were within control limits. In addition, some of the compost samples had surrogate recoveries outside laboratory control limits. Some bias may be expected in the individual sample results, however the interpretation of the data would not have changed since the

concentration averages for each explosive compound were used to determine whether remedial goals were met or not.

In Day Zero samples, the percent recoveries for tetryl in the LCS/LCSD samples were outside laboratory control limits for Windrows M115 Day 0, S114 Day 0, S112 Day 0, and M113 Day 0. The corresponding MS/MSD sample recoveries for tetryl were also outside the control limits for these same windrows. However, this analyte was not detected in the samples corresponding to these QC samples and since these were Day 0 samples, and additional samples were going to be submitted after treatment that would be used to determine if the IM Cleanup Goals were met, the data was accepted. In addition, the percent recovery for TNT was outside laboratory control limits in the LCSD sample, but was within the laboratory control limits in the LCS sample for Windrow M113 Day 0. High concentrations of TNT were exhibited in the corresponding compost samples.

In Day Last samples, several of the LCS, LCSD or LCS/LCSD pairs exhibited percent recovery problems for tetryl. The corresponding MS/MSD samples were within the QC limits for most of the batches. The MS or MSD percent recoveries were outside QC limits for tetryl in Windrows M132 Day 10, S131 Day 9, S139 Day 11, S125 Day 9, and S127 Day 7. The sample data was accepted since tetryl was not detected in the compost samples. All other analytes were within control limits for the LCS/LCSD sets and the corresponding samples showed no evidence of the tetryl compound. The percent recoveries for 2-NT were outside the QC limits for the LCS/LCSD pair in Windrow S118 Day 10 and M130 Day 10. In addition, 2-NT was outside control limits in the corresponding MS/MSD pair for both windrows. 2-NT was not detected in the corresponding compost samples and the recovery problems were attributed to matrix effects. The data was accepted for 2-NT based on the fact that the compound was not detected in the samples. The LCS sample percent recoveries were outside QC limits for most compounds associated with windrow N-192. The corresponding LCSD, MS and MSD samples had acceptable recoveries for all of the compounds. In addition, LCS sample for windrow M160 Day 11 had high recoveries for RDX, DBN, TNT, 2,6-DNT. The corresponding LCSD, MS and MSD samples had acceptable recoveries for these compounds. TNT recoveries were not within the QC limits for LCS, LCSD or LCS/LCSD pairs for windrows M126 Day 7, M137 Day 11, and S162 Day 10. The corresponding MS/MSD pairs had acceptable recoveries for TNT. LCS or LCSD recoveries for RDX were outside control limits for windrows M130 Day 10, M176 Day 12, and S131 Day 9. The corresponding MS/MSD samples were within control limits and the data was accepted. Several LCS or LCSD samples exhibited recovery problems for one or two analytes (2-ADNT, TNB, 3-NT, 4-NT, and 2,6-DNT). Since only one of the LCS samples exhibited recovery problems and the corresponding MS/MSD samples had acceptable recoveries for these analytes, the recovery problems did not adversely affect the interpretation of the sample data.

In Day Zero samples, none of the MS/MSD sets exhibited all analyte recoveries within the laboratory QC limits. Day Zero samples often required dilutions to bring RDX, TNT and HMX to quantifiable levels. High sample concentrations caused interference problems with the calculations of the percent recoveries. In most of the instances where the MS or MSD results did not meet laboratory QC limits, the corresponding LCS/LCSD results did meet QC limits, thus indicating a matrix effect and not a problem with instrumentation or analytical technique, except for the above mentioned recovery problems for tetryl. Therefore, any MS/MSD results associated with Day Zero samples that were outside laboratory QC limits did not adversely affect the interpretation of the sample data.

For the MS/MSD associated with Day Last several of the MS/MSD sets exhibited analytes slightly outside the limits in either the MS, MSD or MS/MSD pair. The vast majority of the MS, MSD or MS/MSD pair sample recoveries that failed to meet QC criteria was for RDX. As with the Day Zero samples, in most of the cases where the MS or MSD results did not meet laboratory QC limits, the corresponding LCS/LCSD results did meet QC limits, indicating a matrix effect and not a problem with instrumentation or analytical technique, except the recovery problems previously discussed for tetryl and 2-NT. Therefore, any MS/MSD results associated with Day Last samples that were outside laboratory QC limits did not adversely affect the interpretation of the sample data.

Conclusion

Based on technical review of the field and laboratory QC data, analyses were performed within acceptable accuracy and precision requirements specified in the QAPP. All QC data relating to Day Zero and Day Last samples, except those noted above are within the laboratory control limits. The QC data satisfy the project objectives and the data are found to be usable for the confirmation of accuracy for the stated analyses to support full-scale operations.

7.0 SAFETY AND INDUSTRIAL HYGIENE

7.1 GENERAL SAFETY

From the period beginning March 27, 1999 (when TT took over Biofacility Operations from MK), until March 31, 2002, (the end of the quarter when the last MFB windrow was placed in the field), a total of 72,221.0 hours were expended for work related to the Biofacility. No injuries or incidents were recorded during this time period.

A total of 157 formal safety inspections were performed during this time period. No significant findings of an imminent or serious nature were found. Immediate actions were taken to correct any minor findings observed. Daily informal walk around safety inspections reinforced and improved the worker safety performance.

7.2 INDUSTRIAL HYGIENE SAMPLING

Ammonia samples were collected by colorimetric methods. Sampling indicated ammonia levels above the permissible exposure limit (PEL) of 50 mg/kg and the Threshold Limit Value (TLV) of 25 mg/kg during windrow construction and the first 24 hours of the windrow life cycle. The chicken manure amendment was the primary contributor to the ammonia concentrations. As a result, full face air purifying respirators with ammonia cartridges were worn during windrow formation and during the first 24 hours of the windrow life cycle.

Airborne dust sampling for explosive compounds was performed at the Biofacility, including area samples and personnel samples. All samples were collected over a period of four hours. All samples were below the 1.5 mg/m^3 8 hour time weighted average exposure limit.

Wipe sampling for explosive residues was performed at the Biofacility. Area samples were collected from the laboratory trailer, shower trailer, office trailer, and lunchroom. The highest average concentration of any sampling event for the explosive HMX was 10.0 ug/wipe, and three ug/kg for RDX. The compound 3nitro-toluene was detected in one sample in one sampling event at 10.0 ug/wipe. Personnel and equipment decontamination procedures were stressed following receipt of these sample results from the laboratory.

Noise monitoring was performed using an Audio Dosimeter. The highest time-weighted average level of exposure of any sampling event was 87 decibels (dBa), and the highest average was 78 dBa. The highest one-second average sound level recorded was 141 dBa, and the highest average was 117.9 dBa. Associates are required to wear hearing protection when noise levels exceed 85 dBa during a weighted network steady state, or 140 dBa impulse, regardless of the duration of exposure.

In summary, monitoring during this period indicates no airborne explosive compounds hazards were present and adequate dust control measures are in place. Ammonia monitoring indicates respiratory protection is warranted during the first seven days of the windrow life cycle. Wipe sample analysis indicates that personnel decontamination procedures need to be stressed and adhered to. Noise monitoring indicates a need for hearing protection while working around heavy equipment at the site.

8.0 CONCLUSIONS AND RECOMMENDATIONS

IM work at MFB including identification, excavation, treatment, and placement as backfill of explosives-contaminated soil has been completed in accordance with all relevant plans and plan modifications. All explosive contaminated grids identified during ICS, except those identified in Table 3-3, have been excavated to industrial or residential cleanup goals.

All excavated soil was successfully treated at the Biofacility by composting to levels below industrial or residential cleanup goals. Treated soil was returned to the site and used for backfill. No future IM work is recommended for MFB.

Results of ICS collected at MFB revealed levels of arsenic above cleanup goals. Recommend a comparison of MFB arsenic levels to arsenic levels found in the *Basewide Background Soil Investigation Report* [TtNUS, 2001] be conducted during the future RFI.

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Quarterly Interim Progress Report, March 27 – August 31,1999, Full-Scale Operations, Bioremediation of Explosives Contaminated Soil, NSWC Crane, Crane, Indiana.

Quarterly Interim Progress Report, September 1 – December 31, 1999, Full-Scale Operations, Bioremediation of Explosives Contaminated Soil, NSWC Crane, Crane, Indiana.

Quarterly Interim Progress Report, January 1 – March 31, 2000, Full-Scale Operations, Bioremediation of Explosives Contaminated Soil, NSWC Crane, Crane, Indiana.

Quarterly Interim Progress Report, April 1 – June 30, 2000, Full-Scale Operations, Bioremediation of Explosives Contaminated Soil, NSWC Crane, Crane, Indiana. TolTest, Inc.

Quarterly Interim Progress Report, July 1 – September 30, 2000, Full-Scale Operations, Bioremediation of Explosives Contaminated Soil, NSWC Crane, Crane, Indiana. TolTest, Inc.

Quarterly Interim Progress Report, October 1 – December 31, 2000, Full-Scale Operations, Bioremediation of Explosives Contaminated Soil, NSWC Crane, Crane, Indiana. TolTest, Inc.

Quarterly Interim Progress Report, January 1 – March 31, 2001, Full-Scale Operations, Bioremediation of Explosives Contaminated Soil, NSWC Crane, Crane, Indiana. TolTest, Inc.

Quarterly Interim Progress Report, April 1 – June 30, 2001, Full-Scale Operations, Bioremediation of Explosives Contaminated Soil, NSWC Crane, Crane, Indiana. TolTest, Inc.

Quarterly Interim Progress Report, July 1 – September 30, 2001, Full-Scale Operations, Bioremediation of Explosives Contaminated Soil, NSWC Crane, Crane, Indiana. TolTest, Inc.

Quarterly Interim Progress Report, October 1 – December 31, 2001, Full-Scale Operations, Bioremediation of Explosives Contaminated Soil, NSWC Crane, Crane, Indiana. TolTest, Inc.

Quarterly Interim Progress Report, January 1 – March 31, 2002, Full-Scale Operations, Bioremediation of Explosives Contaminated Soil, NSWC Crane, Crane, Indiana. TolTest, Inc.

APPENDIX A

FIELD CLARIFICATION REQUESTS

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	Subcontract No.: N/A	FCR No.: FCO3-FCR-FS013 Rev. 0
5th Windrow on East side of Building N		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2
Full-Scale QAPP 2/ 98 Rev. O

Problem / Change Description:
Utilize the east-end of the North building for construction of shortened windrows.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 4/12/99

Resolution:
Each windrow (one on the north and/or south side of building) will be unto itself (not one windrow consisting of two short segments), eliminating the need to amend Section 5.1.2 "Sample identification of the FS QAPP 3 / 98 Rev. 2". Each windrow will be constructed in the same manner as a full length windrow, only shorter. The length will be approximately 125 feet between columns 1 and 7 (see attached drawing). Sample locations will be located at columns (cross sections) 3 and 5, all other sampling procedures will remain the same. The SCARAB turn area will be in the uncontaminated zone between columns 7 and 9. Contaminated soil will be contained between columns 9 and 13, down-gradient of the windrows.

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▸ 2

To Chris Freeman	From Carol Witt-Smith
Dept./Agency NSWC	Phone # 312-886 6146
Fax # 812 854 4177	Fax # 312 353 4788

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

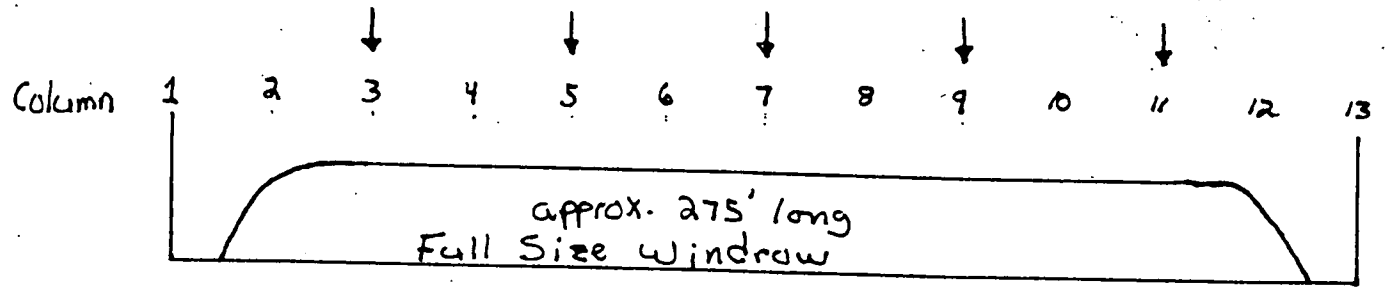
Approval by TolTest, PM	Signature: Lance Parsons Lance Parsons	Date: 4/12/99	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date
Approval by TolTest QC/SHSO	Signature: Travis Nowak	Date: 04-12-99	Approval by EPD ANTR	Signature: Christine D. Freeman Chris Freeman	Date: 4/21/99
	Signature:	Date:	Additional Reviews: By/Date		

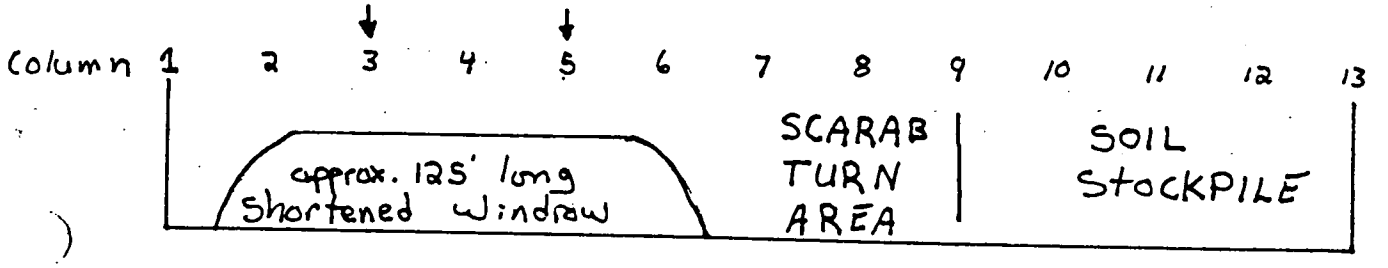
Regulator Approval/Notification Recommended:
☒ No ☐ okay Carol Witt Smith 4/22/99

Chris FAX (812) 854 4177

FCR No: FC03-FCR-FS013 Rev.0

↓ = sample cross sections





The Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.:	Subcontract No.:	FCR No.:
FC03	N/A	FCO3-FCR-FS014 **Rev. 0**
Disposition of Rocks Excavated with Contaminated Soils		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:
Require final clarification / disposition of rocks excavated with contaminated soil at the excavation sites. Current rock decontamination procedures are labor intensive (multiple washes and rinses are required for every rock) and generates an excessive amount of contaminated rinse water. Special approval is then required for disposal of this potentially contaminated rinse water. Analysis of the rinse water for disposal characterization must meet drinking water standards, which are restrictive since cleanup goals at the excavation sites are to industrial use standards. Realistically these drinking water standards are difficult to meet with this decontamination procedure ensuring that special procedures and approvals will be required for final disposition of the rocks.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 4/23/99

Resolution:
Amend the FSOP Section 7.1.1 as follows:

Change the third and fourth sentence of the first paragraph to "The separated rocks will be containerized and transported to the Biofacility Truck Wash decontamination bay. The rocks will be thoroughly rinsed with a high pressure, low volume sprayer to remove all visible soil contamination as described in Field SOP 7.0 in Appendix D of this plan."

Change the second paragraph to "Rinse water will be collected in the wash bay sump for use on the windrows as described in Field SOP 6.0 in Appendix D of this plan. If the rocks are to be placed in other than the SWMU of origination, final rinse samples will be collected and analyzed to determine the cleanliness of the washed rocks as described in SOP QAPP 2.0 of the approved QAPP for full Scale Operations. Figure 1-4 provides the decision-making flowchart for the rock decontamination.

Remove Figure 1-4 of the FSOP and replace with the revised Figure 1-4 (attached).

Amend the FSOP Field SOP 7.0, Section 3.2.2 as follows:

A) Delete number 1 through 8.
B) Insert the following:
   1) Containerize the rocks and transport to the Biofacility Truck Wash decontamination bay;
   2) Place the rocks on a metal screen or grate to protect the concrete base of the wash bay;
   3) Utilize a high-pressure low-volume sprayer to remove all visible soil contamination. Allow rinse water to drain into the wash bay sump.
   4) Utilize the rinse water from the wash bay sump on the windrows as described in Field SOP 6.0 in Appendix D of this plan.
   5) Return the rocks to the SWMU of origination and place in the bottom of an open excavation. Cover with no less than two feet of finished compost. Log and map the area and grid where the rocks were placed.
   6) If the rocks are to be placed in an area other than the SWMU of origination, then collect final rinse samples for off-site laboratory analysis per SOP QAPP 2.0 in the approved QAPP for Full-Scale Operations. The same volume of water shall be used per volume of rock for each final rinsing.

Approval by TolTest, PM	Signature: Lance Parsons Lance Parsons	Date: 4/27/99	Approval by ROICC/NTR or RPM	Signature: Brent Robertson Brent Robertson	Date 5/13/99
Approval by TolTest QC/SHSO	Signature: Travis Nowak Travis Nowak	Date: 4/27/99	Approval by EPD ECOTR	Signature: Christine D. Freeman Christine Freeman	Date: 4/28/99
			Additional Reviews: By/Date		

Regulator Approval/Notification Recommended:
Yes ☒ No ☐ See attached approval signature ~~(faxed copy)~~

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	Subcontract No.: N/A	FCR No.: FCO3-FCR-FS014 Rev. 0
Disposition of Rocks Excavated with Contaminated Soils		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:
Require final clarification / disposition of rocks excavated with contaminated soil at the excavation sites. Current rock decontamination procedures are labor intensive (multiple washes and rinses are required for every rock) and generates an excessive amount of contaminated rinse water. Special approval is then required for disposal of this potentially contaminated rinse water. Analysis of the rinse water for disposal characterization must meet drinking water standards, which are restrictive since cleanup goals at the excavation sites are to industrial use standards. Realistically these drinking water standards are difficult to meet with this decontamination procedure ensuring that special procedures and approvals will be required for final disposition of the rocks.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 4/23/99

Resolution:
Amend the FSOP Section 7.1.1 as follows:

Change the third and fourth sentence of the first paragraph to "The separated rocks will be containerized and transported to the Biofacility Truck Wash decontamination bay. The rocks will be thoroughly rinsed with a high pressure, low volume sprayer to remove all visible soil contamination as described in Field SOP 7.0 in Appendix D of this plan."

Change the second paragraph to "Rinse water will be collected in the wash bay sump for use on the windrows as described in Field SOP 6.0 in Appendix D of this plan. If the rocks are to be placed in other than the SWMU of origination, final rinse samples will be collected and analyzed to determine the cleanliness of the washed rocks as described in SOP QAPP 2.0 of the approved QAPP for full Scale Operations. Figure 1-4 provides the decision-making flowchart for the rock decontamination.

Remove Figure 1-4 of the FSOP and replace with the revised Figure 1-4 (attached).

Amend the FSOP Field SOP 7.0, Section 3.2.2 as follows:

A) Delete number 1 through 8.
B) Insert the following:
   1) Containerize the rocks and transport to the Biofacility Truck Wash decontamination bay;
   2) Place the rocks on a metal screen or grate to protect the concrete base of the wash bay;
   3) Utilize a high-pressure low-volume sprayer to remove all visible soil contamination. Allow rinse water to drain into the wash bay sump.
   4) Utilize the rinse water from the wash bay sump on the windrows as described in Field SOP 6.0 in Appendix D of this plan.
   5) Return the rocks to the SWMU of origination and place in the bottom of an open excavation. Cover with no less than ~~three~~ two feet of finished compost. Log and map the area and grid where the rocks were placed.
   6) If the rocks are to be placed in an area other than the SWMU of origination, then collect final rinse samples for off-site laboratory analysis per SOP QAPP 2.0 in the approved QAPP for Full-Scale Operations. The same volume of water shall be used per volume of rock for each final rinsing.

Approval by TolTest, PM	Signature: Lance Parsons	Date:	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date
Approval by TolTest QC/SHSO	Signature: Travis Nowak	Date:	Approval by EPD ECOTR	Signature: Christine Freeman	Date:
			Additional Reviews: By/Date		

Regulator Approval/Notification Recommended:
Yes ☒ No ☐ modification 2 feet cover okay instead of 3.
Send final pages after this approval. [illegible] 4/25/99

FIGURE 1-4
ROCK DECONTAMINATION WATER AND DISPOSAL DECISION-MAKING FLOWCHART

THIS FLOWCHART APPLIES TO THE EXCAVATION SITE ROCKS

EXCAVATION ROCKS
SCREENED FROM SOIL

↓

WASH ROCKS ←———— *B*
(Use Section 7.0 and SOP 7.0
Appendix D and QAPP
Procedures)

↓

Rocks to be returned to SWMU of origination? ——→ Yes ——→ Place in excavation and cover with minimum two feet of finished compost

NO

↓

SAMPLE FINAL RINSE WATER
(Use QAPP procedures for lab analysis,
Section 1.3 parameters)

↓

ARE THE RESULTS ALL NON-DETECT? ——→ Yes ——→ Rocks may be disposed of without use restrictions

NO

↓

WHAT REMEDIAL GOALS ARE MET?
(See Tables 1-4a and 1-4b, Section 1.3)

GO TO *A*

ne Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	**Subcontract No.:** N/A	**FCR No.:** FCO3-FCR-FS017 **Rev. 0**
Formation of windrow with Mine Fill A and Mine Fill B soils		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:
The contaminated soil excavated from Bldg. 165 at Mine Fill B (approx. 20 tons) is stored in the North compost building at the Biofacility separate from the Mine Fill A soils. This stockpile has impacted operations at the Biofacility in two ways: 1) it has been moved several times to accommodate equipment maneuvering and placement of the shortened windrows; and 2) of primary importance, it prevents full utilization of the building for stockpiling of Mine Fill A soils because it requires an inordinate amount of floor space given its small size.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 6/23/99

Resolution:
Comments to FCR-FS004 dated 5/5/98 (attached) by Carol Witt-Smith of EPA Region V imply that Mine Fill B and Mine Fill A soils can be mixed in one windrow (see the end of the first paragraph of Section 8 of the Soil Excavation for New Utility and Tunnel Installation at Building 165). Furthermore, the soil profile at Mine Fill B is similar to that of Mine Fill A and the constituents of concern are exactly the same at both sites (explosives, metals, and volatiles). There are PCBs present at Mine Fill B however they were not a constituent of concern at Building 165. Therefore to alleviate the problems associated with the Mine B stockpile, this soil will be blended with soil from Mine Fill A to form one windrow. The disposition of this windrow, as with all other windrows, will be tracked, logged, and reported to the NSWC Crane EPD.

Approval by TolTest, PM	Signature: Lance Parsons Lance Parsons	Date: 6/23/99	**Approval by ROICC/NTR or RPM**	Signature: Brent Robertson Brent Robertson	Date 8/2/99
Approval by TolTest QC/SHSO	Signature: Debbie Leighty Debbie Leighty	Date: 6/23/99	**Approval by EPD ECOTR**	Signature: Christine D. Freeman Christine Freeman	Date: 6/23/99
			Additional Reviews: By/Date		

Regulator Approval/Notification Recommended: 6/24/99
Yes ☒ No ☐

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	Subcontract No.: N/A	FCR No.: FCO3-FCR-FS018 Rev. 1
Transportation of Excavation Equipment from Mine Fill A to Mine Fill B		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:
Field SOP 7.0, Section 3.2.1 in Appendix D of the FSOP requires that excavation equipment be fully decontaminated prior to exiting the exclusion zone. This procedure would apply when moving equipment from Mine Fill A to Mine Fill B. However the soil profile at Mine Fill B is similar to that of Mine Fill A and the constituents of concern are exactly the same at both sites (explosives, metals, and volatiles). Modification of the decontamination procedure when moving equipment from Mine Fill A to Mine Fill B as outlined below would prevent the generation and subsequent disposal of contaminated waste water.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 6/28/99

Resolution:
Amend Field SOP 7.0, Section 3.2.1 in Appendix D of the FSOP as follows:
Insert the following sentence at the end of the first paragraph: "When moving equipment to Rockeye, Ammunition Burning Grounds, or when preparing equipment for off-site transportation, the following decontamination procedures apply:"

Insert the following after number 5 of this section:
When moving excavation equipment to Mine Fill B from Mine Fill A, decontamination will proceed as follows:

1. Sweep or brush all loose dirt off the exterior and interior of the equipment.
2. Remove excess soil from wheels, tracks, buckets, and other exposed equipment parts with shovels.
3. Place 6 mil plastic sheeting on bed of transport truck to include a sufficient amount to wrap around equipment.
4. After loading equipment onto transport truck, wrap all wheel, tracks, buckets, and other exposed contaminated parts with plastic sheeting.
5. Visually inspect the equipment to ensure all contamination is covered prior to leaving the site.

Approval by TolTest, PM	Signature: Lance Parsons	Date: 6/28/99	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date 6/29/99
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date: 6/28/99	Approval by EPD ECOTR	Signature: Christine D. Freeman	Date: 6/28/99
			Additional Reviews: By/Date		

Regulator Approval/Notification Recommended:
Yes ☒ No ☐

Lance Parsons

From: Freeman Christine D CNIN <freeman_cd@crane.navy.mil>
To: Lance Parsons (E-mail) <toltest@kiva.net>
Sent: Monday, June 28, 1999 8:52 AM
Subject: FW: FCRs

Please make the modification mentioned below and e-mail the revised FCR so I can review & send to EPA for approval.
Thanks

-----Original Message-----
From: PETER RAMANAUSKAS [SMTP:RAMANAUSKAS.PETER@epamail.epa.gov] <mailto:[SMTP:RAMANAUSKAS.PETER@epamail.epa.gov]>
Sent: Friday, June 25, 1999 2:27 PM
To: freeman_cd@crane.navy.mil <mailto:freeman_cd@crane.navy.mil>
Subject: FCRs

Hi Chris,

Regarding the FCRs that you gave me on Thursday:

For the FCR pertaining to Transportation of Excavation Equipment from Mine Fill A to Mine Fill B: The only thing I think needs to be done is to modify the "When moving equipment to Rockeye or ABG..." sentence to explain that these decontamination procedures will be followed at the conclusion of excavation activities (i.e. when the excavating equipment will be prepared for transportation off-site). Otherwise it seems fine.
You can FAX or Email me the modified FCR so I can approve it quickly as I remember Lance mentioning he was going to be moving the equipment within a few days. I will be out on Monday (I won't be at home either) and Tuesday through Friday I have a training class, but I will try to stop in the office during breaks to check for this modification and sign-off on it.
I'm afraid I won't get to the remaining two FCRs before the end of today, but I will turn my attention to them next week. I'll keep you posted.
Thanks much & hope you had a good weekend!
Pete

Lance Parsons

From: Freeman Christine D CNIN <FreemanCD@cninexchsrv08.crane.navy.mil>
To: 'PETER RAMANAUSKAS' <RAMANAUSKAS.PETER@epamail.epa.gov>
Cc: Lance Parsons (E-mail) <toltest@kiva.net>
Sent: Wednesday, July 07, 1999 3:51 PM
Subject: RE: FCR-FS018 Rev 1 -Reply

Thanks for the speedy reply!

The Navy will consider the below message a verbal approval and begin moving the equipment from MFA to MFB using the procedures set in FCR-FS018 Rev. 1 and the Biofacility Operations Plan. I assume a faxed copy of FCR-FS018 Rev. 1 w/your signature will follow.

Thanks again.

-----Original Message-----
From: PETER RAMANAUSKAS [SMTP:RAMANAUSKAS.PETER@epamail.epa.gov]
Sent: Wednesday, July 07, 1999 2:30 PM
To: FreemanCD@cninexchsrv08.crane.navy.mil
Subject: FCR-FS018 Rev 1 -Reply

No further comments. You should be good to go!

Pete

>>> Freeman Christine D CNIN
<FreemanCD@cninexchsrv08.crane.navy.mil> 07/07/99 01:44pm >>>
Just checking to see if you have any other comments on FCR-FS018
Rev. 1 (Rev
1 incorporates your first set of comments). Please let me know
because
TolTest would like to start moving equipment ASAP.

Thanks

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	Subcontract No.: N/A	FCR No.: FC03-FCR-FS018 Rev. 1
Transportation of Excavation Equipment from Mine Fill A to Mine Fill B		Page 1 of 1

Reference Documents:

Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:

Field SOP 7.0, Section 3.2.1 in Appendix D of the FSOP requires that excavation equipment be fully decontaminated prior to exiting the exclusion zone. This procedure would apply when moving equipment from Mine Fill A to Mine Fill B. However the soil profile at Mine Fill B is similar to that of Mine Fill A and the constituents of concern are exactly the same at both sites (explosives, metals, and volatiles). Modification of the decontamination procedure when moving equipment from Mine Fill A to Mine Fill B as outlined below would prevent the generation and subsequent disposal of contaminated waste water.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 6/28/99

Resolution:

Amend Field SOP 7.0, Section 3.2.1 in Appendix D of the FSOP as follows:

Insert the following sentence at the end of the first paragraph: "When moving equipment to Rockeye, Ammunition Burning Grounds, or when preparing equipment for off-site transportation, the following decontamination procedures apply:"

Insert the following after number 5 of this section:

When moving excavation equipment to Mine Fill B from Mine Fill A, decontamination will proceed as follows:

1. Sweep or brush all loose dirt off the exterior and interior of the equipment.
2. Remove excess soil from wheels, tracks, buckets, and other exposed equipment parts with shovels.
3. Place 6 mil plastic sheeting on bed of transport truck to include a sufficient amount to wrap around equipment.
4. After loading equipment onto transport truck, wrap all wheel, tracks, buckets, and other exposed contaminated parts with plastic sheeting.
5. Visually inspect the equipment to ensure all contamination is covered prior to leaving the site.

Approval by TolTest, PM	Signature: Lance Parsons	Date:	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date:	Approval by EPD ECOTR	Signature: Christine Freeman	Date:
			Additional Reviews: By/Date	7/2/99	

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	Subcontract No.: N/A	FCR No.: FCO3-FCR-FS019 Rev. 0
Temporary Staging of Treated Compost at Mine Fill B		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:
Identification of temporary staging area for storage of treated compost at Mine Fill B.

Initiated by	Signature: Lance Parsons	Organization: TolTest, Inc.	Date: 6/23/99

Resolution:
The temporary staging area for storage of treated compost at Mine Fill B will be adjacent to Bldg. 2500 (see attached map). Soil samples in the staging area will be obtained and tested for the presence of explosives prior to staging treated compost. Erosion control barriers will be erected to contain any runoff from the area. Treated compost that meets industrial cleanup goals will be placed on and covered with 6 mil plastic sheeting. Treated compost that meets residential cleanup goals will be placed directly on the ground and not covered. The oldest compost will be used first for backfill or for use according to the approved work plan. The staging area will be inspected weekly and after major rain events for any deterioration of the erosion control barriers or loss of compost due to wind or precipitation. Any required corrective action will be taken with the concurrence of the EPD.

Only treated compost containing soil excavated from Mine Fill B will be staged at Mine Fill B, with the possible exception of the windrow that contains soil from Mine Fill A and soil from Building 165 in Mine Fill B (addressed in FCR-FS017). Once backfill activities begin, treated compost from the staging area will be utilized as fill material. Oldest compost will be used first while newer treated compost cures in the staging area. Log book entries and maps will document the source of fill material and location of backfill. Log books, maps, and survey data will be made part of the permanent biofacility record in accordance with the operations plan. At the completion of staging operations, the staging area will be sampled for explosives to assure that the area did not become contaminated. The erosion control barriers and plastic will be removed, decontaminated for reuse, or disposed of per operations plan. Seeding and mulching will be placed and maintained until vegetation is established.

Approval by TolTest, PM	Signature: Lance Parsons Lance Parsons	Date: 6/23/99	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date:	Approval by EPD ECOTR	Signature: Christine D. Freeman Christine Freeman	Date: 6/24/99
			Additional Reviews: By/Date		

Regulator Approval/Notification Recommended:
Yes ☑ No ☐ Approved w/comments. Send final pages after this approval. [illegible] 7/1/99

Modifications to FCR No: FCO3-FCR-FS019 Rev. 0
Temporary Staging of Treated Compost at Mine Fill B
Naval Surface Warfare Center
July 1, 1999

Include:

1. The first sentence in the "Resolution" section should state that the treated compost has met clean up goals as verified by laboratory results.

2. Staged compost piles should not be stored for more than six months.

WMFAB 6" TRANSITE

MFB Staging Area

FCR-FS019

TF

E. & T.

TF

1-4" T.

54" C.I.P. x 75.8'

F.L. 698.70

111.0'

116.8'

STEAM VAULT

78.0

11.0'

NO. 2

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	Subcontract No.: N/A	FCR No.: FCO3-FCR-FS020 Rev. 0
Permanent Storage Area for Treated Compost at Mine Fill B		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:
Identification of a permanent storage area for treated compost at Mine Fill B is necessary since biofacility operations produce more treated compost than can be used for backfill.

Initiated by	Signature: Janice Parsons	Organization: TolTest, Inc.	Date: 6/23/99

Resolution:
The permanent storage area for treated compost at Mine Fill B will be adjacent to Bldg. 2501 (see attached map). Erosion control barriers will be erected to contain any runoff and the area will be inspected weekly and after major rain events for any deterioration of the barriers or loss of compost due to wind or precipitation. Any required corrective action will be taken with the concurrence of the EPD. Only treated compost that meets residential cleanup goals can be placed in the permanent storage area. Storage piles will be graded such that natural drainage patterns are not altered. Seeding and mulching will be placed and maintained until vegetation is established.

Log book entries and maps will document the source of fill material and location of backfill. Log books, maps, and survey data will be made part of the permanent biofacility record in accordance with the operations plan.

Approval by TolTest, PM	Signature: Janice Parsons	Date: 6/23/99	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date:	Approval by EPD ECOTR	Signature: Christine D. Freeman Christine Freeman	Date: 6/24/99
			Additional Reviews: By/Date		

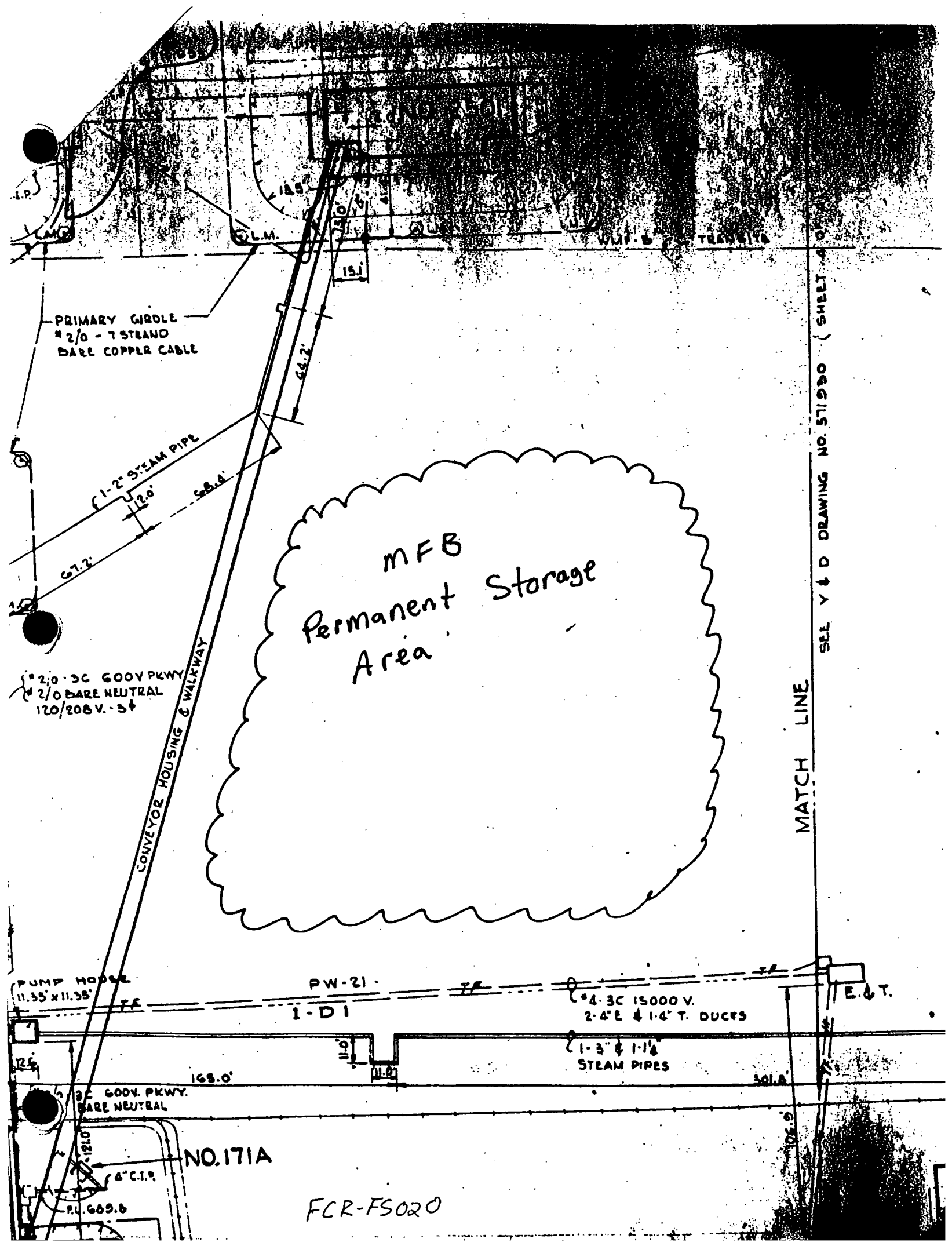
Regulator Approval/Notification Recommended:
Yes ☒ No ☐ Approved w/comments. 7/2/99

Modifications to FCR No: FCO3-FCR-FS020 Rev. 0
Permanent Storage Area for Treated Compost at Mine Fill B
Naval Surface Warfare Center
July 2, 1999

Comments:

1. The first sentence in the "Resolution" section should state that the treated compost has met residential clean up goals as verified by laboratory results.

2. Laboratory data for the treated compost should be made part of the permanent biofacility record.


PRIMARY GIRDLE
#2/0 - 7 STRAND
BARE COPPER CABLE
L.M.
TRENCH
15.1'
44.2'
1-2" STEAM PIPE
12.0'
58.6'
67.2'
#2/0 - 3C 600V PKWY
#2/0 BARE NEUTRAL
120/208 V. - 3φ
CONVEYOR HOUSING & WALKWAY
MFB
Permanent Storage
Area
MATCH LINE
SEE Y & D DRAWING NO. 571930 (SHEET 4 OF
PUMP HOUSE
11.35' x 11.35'
PW-21
I-D1
#4-3C 15000 V.
2-4"E & 1-4" T. DUCTS
E. & T.
1-3" & 1-1¼"
STEAM PIPES
168.0'
301.8'
#3C 600V. PKWY.
BARE NEUTRAL
NO. 171A
4" C.I.P.
P.L. 689.6
FCR-FS020

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	Subcontract No.: N/A	FCR No.: FCO3-FCR-FS021 Rev. 1
Weighing of Treated Compost Exiting the Biofacility		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:
Treated compost that has met clean-up goals is currently loaded onto dump trucks and weighed before being transported to the SWMU of origination. The process of weighing treated compost is both unnecessary and unsafe. It is unnecessary because all amendments and contaminated soil coming into the facility are weighed, and the Navy is billed on the amount of contaminated soil that is treated not the amount of finished compost that is produced. The weight of each windrow cannot be compared to one another due to varying moisture levels and product degradation. Therefore weighing finished compost serves no purpose and has no benefit to Biofacility operations. The process is unsafe because the truck scale at the Biofacility was designed for trucks to enter from the north (the direction trucks with amendments and soil enter from) which allows the driver easy access to the scale transmitter booth upon exiting the truck cab. Trucks with finished compost must enter from the south which requires the driver upon exiting the cab to walk on top of the guardrail (an obvious safety concern) and around the truck to access the scale transmitter booth.

Initiated by	Signature: Lance Parsons	Organization: TolTest, Inc.	Date: 7/8/99

Resolution:
Replace paragraph two in Section 5.6 of the FSOP with the following:

Once the treatment goals have been met as determined by sampling results, the building will be emptied by loading treated compost directly into decontaminated dump trucks. The treated compost will then be transported to the SWMU of origination or disposed of as approved by NSWC Crane EPD according to the flowchart provided in Figure 1-3.

Remove the third sentence of Section 2.0, Field SOP 2.0 in Appendix D of the FSOP: Trucks carrying treated soil shall be weighed prior to disposal at the on-site landfill or excavation areas or other areas as directed by NSWC Crane EPD.

Approval by TolTest, PM	Signature: Lance Parsons Lance Parsons	Date: 7/9/99	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date 8/2/99
Approval by TolTest QC/SHSO	Signature: Debbie Leighty Debbie Leighty	Date: 7/12/99	Approval by EPD ECOTR	Signature: Christine D. Freeman Christine Freeman	Date: 7/27/99
			Additional Reviews: By/Date		

Regulator Approval/Notification Recommended:
Yes ☒ No ☐ see attached fax

TolTest, Inc.

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.:	Subcontract No.:	FCR No.:
FC03	N/A	FCO3-FCR-FS021 Rev. 1
Weighing of Treated Compost Exiting the Biofacility		Page 1 of 1

Reference Documents:

Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:

Treated compost that has met clean-up goals is currently loaded onto dump trucks and weighed before being transported to the SWMU of origination. The process of weighing treated compost is both unnecessary and unsafe. It is unnecessary because all amendments and contaminated soil coming into the facility are weighed, and the Navy is billed on the amount of contaminated soil that is treated not the amount of finished compost that is produced. The weight of each windrow cannot be compared to one another due to varying moisture levels and product degradation. Therefore weighing finished compost serves no purpose and has no benefit to Biofacility operations. The process is unsafe because the truck scale at the Biofacility was designed for trucks to enter from the north (the direction trucks with amendments and soil enter from) which allows the driver easy access to the scale transmitter booth upon exiting the truck cab. Trucks with finished compost must enter from the south which requires the driver upon exiting the cab to walk on top of the guardrail (an obvious safety concern) and around the truck to access the scale transmitter booth.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 7/8/99

Resolution:

Replace paragraph two in Section 5.6 of the FSOP with the following:

Once the treatment goals have been met as determined by sampling results, the building will be emptied by loading treated compost directly into decontaminated dump trucks. The treated compost will then be transported to the SWMU of origination, the on-site solid waste landfill for use as daily cover pending IDEM approval, or disposed of as approved by NSWC Crane EPD according to the flowchart provided in Figure 1-3.

Remove the third sentence of Section 2.0, Field SOP 2.0 in Appendix D of the FSOP: Trucks carrying treated soil shall be weighed prior to disposal at the on-site landfill or excavation areas or other areas as directed by NSWC Crane EPD.

Approval by TolTest, PM	Signature: Lance Parsons	Date:	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date:	Approval by EPD ECOTR	Signature: Christine Freeman	Date:
			Additional Reviews: By/Date	7/26/99	

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	Subcontract No.: N/A	FCR No.: FCO3-FCR-FS022 Rev. 1
Mine Fill B Gravel Wash		Page 1 of 2

Reference Documents:

Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Quality Assurance Project Plan for Full-Scale Operations Soils Bioremediation Facility March 1998 Rev. 2

Problem / Change Description:

Several of the areas slated for excavation of contaminated soil at MFB are covered with as much as 3 feet of #2 gravel. Excavation of this gravel along with the contaminated soil is not recommended since: 1) much of the surface gravel, especially where it is deep, may be uncontaminated; 2) a majority of this gravel would be rejected by the screener and become packed with contaminated soil at the screener site, and: 3) gravel that did pass through the screener would cause unnecessary wear and tear on the SCARAB in composting operations. Therefore, the disposition of this gravel should be determined before excavation activities begin.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 7/19/99

Resolution:

Insert the following as Section 4.2.1 of the FSOP:

4.2.1 Top Layer Gravel Removal

The top layers of gravel present in the areas of excavation will be removed, sampled, and dispositioned prior to excavation of contaminated soil. The top layers of gravel with no visible contamination will be stripped away to within 3 inches of the contaminated soil using an excavator or similar equipment or by hand. This gravel will be stockpiled in containment pads adjacent or near to the building it was stripped from. The gravel near the surface of the soil will be stripped away and stored in separate containment pads (some gravel will remain in contact with the contaminated soil). At a minimum, the first contaminated gravel containment pad will be sampled, analyzed, and dispositioned as described below.

The containment pads will be constructed by placing 60 mil plastic on the bottom, creating berms with straw bales or railroad ties, and draping the berms with the 60 mil plastic. Several of these pads may be required based on the amount of gravel that is removed. The pads will be covered with 6 mil plastic sheeting during periods of precipitation. When the pad is full, a rinsate sample of the gravel will be obtained. The rinsate sample will be collected and analyzed to determine the cleanliness of the washed rocks as described in Section 7.0 of SOP QAPP 2.0 of the approved QAPP for Full Scale Operations. The rinsate sample will be analyzed for explosives only. If analysis of the rinsate sample is non-detect for explosives, then the gravel within that particular pad may be used at-will by TolTest. If the rinsate sample is contaminated, then the gravel will be treated as contaminated. All rinsate water (contaminated or uncontaminated) will be pumped out of the containment pads and transported to the Biofacility for use on the compost windrows as moisture amendment within the first seven days of the windrow life cycle as described in FSOP 6.0 in Appendix D of this plan.

(continued on second page)

Approval by TolTest, PM	Signature: Lance Parsons	Date: 7/21/99	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date: 7/21/99	Approval by EPD ECOTR:	Signature Christine D. Freeman Christine Freeman	Date 7/22/99

Regulator Approval/Notification Recommended:

Yes ☒ No ☐

See attached fax

Regulator Approval/Notification Recommended:
Yes No ■ 7/21/99

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	Subcontract No.: N/A	FCR No.: FCO3-FCR-FS022 Rev. 1
Mine Fill B Gravel Wash		Page 2 of 2

Reference Documents:

Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Quality Assurance Project Plan for Full-Scale Operations Soils Bioremediation Facility March 1998 Rev. 2

Contaminated gravel will be dispositioned as follows: After excavation activities are completed, the gravel will be placed in the bottom of an open excavation at the SWMU of origination and covered with a minimum of 2 feet of treated compost as provided for in FCR FS014. The grids where the gravel is placed will be logged and mapped.

Insert the following as a header for the existing paragraphs in Section 4.2 of the FSOP:

4.2.2 Soil Excavation

Insert the following as Section 7.0 of SOP QAPP 2.0 of the approved QAPP for Full Scale Operations:

7.0 GRAVEL RINSE WATER SAMPLING

Surface gravel present at the excavation sites that has been segregated prior to excavation activities (as outlined in Section 4.2.1 of the FSOP) will be rinsed and sampled as follows:

1. Potable water (from a potable water-only tank) will be poured/sprayed over the top of the gravel in the containment pad and allowed to percolate down through the gravel and collect in the bottom of the containment pad.
2. A decontaminated polypropylene or stainless steel dipper will be used to obtain a sample of the rinsate from the bottom of the pad.
3. Transfer the rinsate into two one-liter amber glass bottles for off-site laboratory analysis. Follow the sample labeling, tagging and identification, chain of custody, and shipping and handling procedures described in Section 5.0 of the QAPP. Document all activities in the logbook.
4. The potable water used in the rinse will also be sampled and analyzed for explosives (i.e. a field blank).

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	**Subcontract No.:** N/A	**FCR No.:** FCO3-FCR-FS024 **Rev. 0**
Eliminating Mine Fill B Batch Report		Page 1 of 1

Reference Documents:

Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:

The Full-Scale Operational Plan (FSOP) requires that: 1) toxicity or leachability testing be performed to determine the disposition of treated compost (section 1.3.3); 2) a pilot-scale windrow be completed for each SWMU before full-scale windrows can be constructed (section 14.0); and 3) an Initial Full-Scale Batch Report be written for each SWMU on the first full size windrow that processes contaminated soil (Table 14-1). To date, a pilot-scale windrow has been completed and a Batch Report has been written for Mine Fill A (MFA). However, in FCR-FS005, Region V EPA waived the requirement for a pilot-scale windrow at Mine Fill B (MFB) because of the similarities between MFA and MFB. These similarities include: 1) physical distance (MFB is less than one-half mile from MFA); 2) soil profiles (as reported in previously published Environmental Monitoring Reports and from pre-excavation soil sampling); and 3) constituents of concern (explosives, metals, and volatile organics). Soil contaminated with polychlorinated biphenyls (PCBs) is present at MFB in certain areas but this soil will not be brought to the Biofacility for composting if the levels of PCBs are above 50 ppm as stated in FSOP section 2.1.

Given these similarities, the composting process is not expected to be adversely affected by soils from MFB. In fact, soil excavated from building 165 at MFB (along with some MFA soil) has been successfully composted to industrial levels in windrow N-077. Therefore the requirement for submittal of an Initial Full-Scale Batch Report for MFB should be eliminated. However the requirement for completion of a pilot-scale windrow and a Batch Report should remain unchanged for Rockeye and Ammunition Burning Grounds.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 8/19/99

Resolution:

Amend the FSOP as follows:

Change the cell from the first row, second column in Table 14-1 from '<u>One report per SWMU site</u>' to '<u>One report per SWMU site (excluding Mine Fill B)</u>'.

Approval by TolTest PM	Signature: Lance Parsons	Date: 8/18/99	**Approval by ROICC/NTR or RPM**	Signature: Brent Robertson	Date 8/19/99
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date: 8/19/99	**Approval by EPD ECOTR:**	Signature Christine D. Freeman Christine Freeman	Date 8/19/99

Regulator Approval/Notification Recommended:

Yes ☒ No ☐

Crane Naval Surface Warfare Center
TolTest, Inc.

EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	Subcontract No.: N/A	FCR No.: FCO3-FCR-FS024 Rev. 1
Eliminating Mine Fill B Batch Report		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:
The Full-Scale Operational Plan (FSOP) requires that: 1) toxicity or leachability testing be performed to determine the disposition of treated compost (section 1.3.3); 2) a pilot-scale windrow be completed for each SWMU before full-scale windrows can be constructed (section 14.0); and 3) an Initial Full-Scale Batch Report be written for each SWMU on the first full size windrow that processes contaminated soil (Table 14-1). To date, a pilot-scale windrow has been completed and a Batch Report has been written for Mine Fill A (MFA). However, in FCR-FS005, Region V EPA waived the requirement for a pilot-scale windrow at Mine Fill B (MFB) because of the similarities between MFA and MFB. These similarities include: 1) physical distance (MFB is less than one-half mile from MFA); 2) soil profiles (as reported in previously published Environmental Monitoring Reports and from pre-excavation soil sampling); and 3) constituents of concern (explosives, metals, and volatile organics). Soil contaminated with polychlorinated biphenyls (PCBs) is present at MFB in certain areas but this soil will not be brought to the Biofacility for composting if the levels of PCbs are above 50 ppm as stated in FSOP section 2.1.

Given these similarities, the composting process is not expected to be adversely affected by soils from MFB. In fact, soil excavated from building 165 at MFB (along with some MFA soil) has been successfully composted to industrial levels in windrow N-077. Therefore the requirement for submittal of an Initial Full-Scale Batch Report for MFB should be eliminated. However the requirement for completion of a pilot-scale windrow and a Batch Report should remain unchanged for Rockeye and Ammunition Burning Grounds.

Remaining unchanged will be the requirements for pre and post-excavation sampling and analysis of soil at MFB, day zero and day last analysis of compost with MFB soil, data logging, and tracking the final placement of treated compost at MFB. NSWC Crane EPD will be contacted for further action regarding any compost windrow which fails to meet cleanup goals.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 9/27/99

Resolution:
Amend the FSOP as follows:
Change the cell from the first row, second column in Table 14-1 from 'One report per SWMU site' to 'One report per SWMU site (excluding Mine Fill B)'.

Approval by TolTest, PM	Signature: Lance Parsons	Date:	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date:	Approval by EPD ECOTR:	Signature Christine Freeman	Date

Regulator Approval/Notification Recommended:
Yes ☐ No ☐

9/28/99

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.:	Subcontract No.:	FCR No.:
FC03	N/A	FCO3-FCR-FS025 Rev. 1
Disposition of Reject Rocks from Screener Site		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:
Current handling requirements for rocks rejected from the screener operation are labor intensive and time consuming. Reject rocks (not gravel) must be transported to the Biofacility, washed to remove visible contamination, and transported back to the SWMU of origination. The rocks are then put into an open excavation and covered with no less than two feet of finished compost. This procedure was outlined in FCR FS014.

Initiated by	Signature: Lance M Parsons	Organization: TolTest, Inc.	Date: 1/19/2000

Resolution:
Amend the FSOP Section 7.1.1 as follows:

Insert the following after the second sentence of the first paragraph: "Separated rocks determined to be non-hazardous debris (40 CFR 268.2(h)) will be placed in the bottom of an open excavation at the SWMU of origination and covered with no less that 2 feet of finished compost. The grids where the rocks are to be placed will be shown, by post-excavation sampling, to contain levels of explosives above industrial cleanup levels. If an open excavation is not available at the time of screening, the rocks will be contained either in a metal collection bin and covered with 6 mil plastic, or a bermed containment pad will be constructed of 60 mil plastic (or multiple layers of thinner plastic equivalent to 60 mil) with a 6 mil plastic covering. In the event that no contaminated grids above industrial cleanup levels as shown by post-excavation sampling are available for placement of the rocks, the following procedures apply."

Approval by TolTest, PM	Signature: Lance M Parsons Lance Parsons	Date: 01/19/00	Approval by ROICC/NTR or RPM	Signature: Brent Robertson Brent Robertson	~~Date~~ 4-12-00
Approval by TolTest QC/SHSO	Signature: Debbie Leighty Debbie Leighty	Date: 1/19/00	Approval by EPD ECOTR:	Signature Christine D Freeman Christine Freeman	Date 1/20/00

Regulator Approval/Notification Recommended:
Yes ☒ No ☐ Approval by fax

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	Subcontract No.: N/A	FCR No.: FCO3-FCR-FS025 Rev. 1
Disposition of Reject Rocks from Screener Site		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:
Current handling requirements for rocks rejected from the screener operation are labor intensive and time consuming. Reject rocks (not gravel) must be transported to the Biofacility, washed to remove visible contamination, and transported back to the SWMU of origination. The rocks are then put into an open excavation and covered with no less than two feet of finished compost. This procedure was outlined in FCR FS014.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 1/19/2000

Resolution:
Amend the FSOP Section 7.1.1 as follows:

Insert the following after the second sentence of the first paragraph: "Separated rocks determined to be non-hazardous debris (40 [illegible] 268.2(h)) will be placed in the bottom of an open excavation at the SWMU of origination and covered with no less that 2 feet of [illegible]ed compost. The grids where the rocks are to be placed will be shown, by post-excavation sampling, to contain levels of explosives above industrial cleanup levels. If an open excavation is not available at the time of screening, the rocks will be contained either in a metal collection bin and covered with 6 mil plastic, or a bermed containment pad will be constructed of 60 mil plastic (or multiple layers of thinner plastic equivalent to 60 mil) with a 6 mil plastic covering. In the event that no contaminated grids above industrial cleanup levels as shown by post-excavation sampling are available for placement of the rocks, the following procedures apply."

Approval by TolTest, PM	Signature: Lance Parsons	Date:	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date:	Approval by EPD ECOTR:	Signature Christine D. Freeman Christine Freeman	Date 1/20/00

Regulator Approval/Notification Recommended:
Yes No ■

1/20/2000

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	**Subcontract No.:** N/A	**FCR No.:** FCO3-FCR-FS026 **Rev. 0**
Change Methodology for Detection of Arsenic in Soils		Page 1 of 1

Reference Documents:

Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Quality Assurance Project Plan for Full-Scale Operations Soils Bioremediation Facility, March 12, 1998, Rev. 2

Problem / Change Description:

The Quality Assurance Project Plan (QAPP) requires that method number 7060 be utilized for detection of arsenic in soils and water. NSWC Crane requests that the method be changed to method number 6010 (like all other metals except Mercury & Cyanide). The 7060 graphite furnace method is being phased out and replaced by the ICP analyses 6010 and 6020. Method number 7060 has a reporting limit of 0.8 ppm in soils, and method number 6010 has a normal reporting limit of 1.0 ppm, both of which are below the industrial cleanup goal for arsenic set at 2.4 ppm. The reporting level for method 6010 can reach 0.8 ppm but with less accuracy. Method 6010 is more accurate at detecting high levels of arsenic in soil than method 7060 since fewer dilutions are needed.

Initiated by	Signature: Lance M Parsons	Organization: TolTest, Inc.	Date: 1/24/2000

Resolution:

Amend Table 1-1, 1-2, 1-3, and 1-4a and 1-4b in both the Full Scale Operations Plan and the QAPP as follows:

Replace the reference for detection of arsenic in soils and water by method 7060 with method 6010.

Approval by TolTest, PM	Signature: Lance Parsons	Date: 1/24/00	**Approval by ROICC/NTR or RPM**	Signature: Brent Robertson	Date 2/1/00
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date: 1/24/00	**Approval by EPD ECOTR:**	Signature Christine D. Freeman Christine Freeman	Date 1/27/00

Regulator Approval/Notification Recommended:

Yes ☒ No ☐

Approval given by fax. Please see attached

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	Subcontract No.: N/A	FCR No.: FCO3-FCR-FS026 Rev. 0
Change Methodology for Detection of Arsenic in Soils		Page 1 of 1

Reference Documents:

Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Quality Assurance Project Plan for Full-Scale Operations Soils Bioremediation Facility, March 12, 1998, Rev. 2

Problem / Change Description:

The Quality Assurance Project Plan (QAPP) requires that method number 7060 be utilized for detection of arsenic in soils and water. NSWC Crane requests that the method be changed to method number 6010 (like all other metals except Mercury & Cyanide). The 7060 graphite furnace method is being phased out and replaced by the ICP analyses 6010 and 6020. Method number 7060 has a reporting limit of 0.8 ppm in soils, and method number 6010 has a normal reporting limit of 1.0 ppm, both of which are below the industrial cleanup goal for arsenic set at 2.4 ppm. The reporting level for method 6010 can reach 0.8 ppm but with less accuracy. Method 6010 is more accurate at detecting high levels of arsenic in soil than method 7060 since fewer dilutions are needed.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 1/24/2000

Resolution:

nd Table 1-1, 1-2, 1-3, and 1-4a and 1-4b in both the Full Scale Operations Plan and the QAPP as follows:

Replace the reference for detection of arsenic in soils and water by method 7060 with method 6010.

Approval by TolTest, PM	Signature: Lance Parsons	Date:	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date:	Approval by EPD ECOTR:	Signature Christine Freeman	Date

Regulator Approval/Notification Recommended:

Yes No ■

1/27/2000

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.:	Subcontract No.:	FCR No.:
FC03	N/A	FCO3-FCR-FS027 Rev. 0
Consolidate Excavation Completion Report and Compost Completion Report		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:
Section 12 and Section 14 Table 14-1 of the Full Scale Bioremediation Facility Operations Plan requires that within 180 days of completion two separate Interim Measures reports for each SWMU, Excavation Completion Report and Compost Completion Report, should be submitted. For simplification and ease of managing reports and correspondence, it is requested that one Interim Measures report be submitted for each SWMU containing all the information required by the separate Excavation Completion Report and Compost Completion Report.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 2/1/2000

Resolution:
Amend Section 12 Paragraph 4 Bullet 3 of the Full Scale Bioremediation Facility Operations Plan as follows: Interim Measures Reports - These reports will include a summary of operations and analytical results, cubic yards of soil processed, process adjustments, disposal of wastes and treated soil, photographs, confirmatory sampling and backfilling actions, acceptance of work etc.. These reports will be submitted within 180 days upon completion of interim measures and restoration activities at each SWMU.

Amend Section 14 Table 14-1 of the Full Scale Bioremediation Facility Operations Plan as follows: see attachment.

Approval by TolTest PM	Signature: Lance Parsons	Date: 2/1/00	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date 2/9/00
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date: 2/1/00	Approval by EPD ECOTR:	Signature Christine D. Freeman	Date 2/2/00

Regulator Approval/Notification Recommended:
Yes ☒ No ☐

See faxed approval

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	Subcontract No.: N/A	FCR No.: FCO3-FCR-FS027 Rev. 0
Consolidate Excavation Completion Report and Compost Completion Report		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Problem / Change Description:
Section 12 and Section 14 Table 14-1 of the Full Scale Bioremediation Facility Operations Plan requires that within 180 days of completion two separate Interim Measures reports for each SWMU, Excavation Completion Report and Compost Completion Report, should be submitted. For simplification and ease of managing reports and correspondence, it is requested that one Interim Measures report be submitted for each SWMU containing all the information required by the separate Excavation Completion Report and Compost Completion Report.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 2/1/2000

Resolution:
Amend Section 12 Paragraph 4 Bullet 3 of the Full Scale Bioremediation Facility Operations Plan as follows: Interim Measures Reports - These reports will include a summary of operations and analytical results, cubic yards of soil processed, process adjustments, disposal of wastes and treated soil, photographs, confirmatory sampling and backfilling actions, acceptance of work etc.. These reports will be submitted within 180 days upon completion of interim measures and restoration activities at each SWMU.

Amend Section 14 Table 14-1 of the Full Scale Bioremediation Facility Operations Plan as follows: see attachment.

Approval by TolTest, PM	Signature: Lance Parsons	Date:	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date:	Approval by EPD ECOTR:	Signature Christine Freeman	Date

Regulator Approval/Notification Recommended:
Yes No ■

2/3/2000

TABLE 14-1 SCHDEULE FOR DOCUMENT SUBMITTAL			
Document Title	**Frequency**	**Schedule**	**Distribution**
Initial Full-Scale Batch Report	One report per SWMU site.	Within 60 days of completion of first batch	NAVFACENGCOM Southern Division, NSWC Crane EPD, ROICC, U.S.EPA Region 5, and IDEM
Interim Progress Report	One report every 90 days of operation	One report every 90 days of operation	NAVFACENGCOM Southern Division, NSWC Crane EPD, ROICC, U.S.EPA Region 5, and IDEM
Interim Measures Report	One report per SWMU site.	Within 180 days of completion of final excavation and treatment, confirmatory sampling, backfilling, treated soil disposal, and acceptance of work at each SWMU site.	NAVFACENGCOM Southern Division, NSWC Crane EPD, ROICC, U.S.EPA Region 5, and IDEM
Daily Report	One report daily for the duration of the project.	By 10:00 am the following business day for the first thirty days of operation for each SWMU site. After the thirty days, the reports will be filed at the Bioremediation Facility Office.	NSWC Crane EPD
Photographic Documentation	As required to show different stages of operation.	The documentation will be filed at the Bioremediation Facility Office.	Not applicable
Inspection Records	As required by the Testing Plan and Log (Appendix F).	The documentation will be filed at the Bioremediation Facility Office.	Not applicable

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	**Subcontract No.:** N/A	**FCR No.:** FCO3-FCR-FS028 **Rev. 1**
Eliminate Windrow Process Monitoring on Sundays		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2 (FSOP)
Quality Assurance Project Plan for Full-Scale Operations Soils Bioremediation Facility July 1999, Rev. 3 (QAPP)

Problem / Change Description:
As of 9/5/00 183 full-scale windrows have been processed to industrial clean-up goals (at a minimum). Historical data generated from windrow process monitoring has indicated that thermophilic temperatures are being reached within two to three days of windrow initiation and are being sustained throughout the composting process. While aerobic degradation is the most important process in composting explosives, anaerobic decomposition also occurs throughout the composting process. Currently no windrow turning or monitoring is undertaken on national holidays. Yet all of the windrows that have sat idle on these occasions have reached, at a minimum, industrial cleanup goals. The data clearly indicates that the composting process is successful in achieving clean-up goals despite the windrows sitting idle for a short period. Therefore the requirement for windrow turning and process monitoring on Sundays is not essential and suspending operations on Sundays will not adversely affect the composting process.

Initiated by	Signature: Lance Parsons	Organization: TolTest, Inc.	Date: 9/22/99

Resolution:
Eliminate windrow turn events and process monitoring on Sundays for windrows containing soil from Mine Fill A and Mine Fill B. Eliminate windrow turn events and process monitoring on Sundays for windrows with soil from Rockeye if the Pilot Scale windrow indicates that the composting process is successful on soil from Rockeye. Windrow turn events and process monitoring will be completed on Sundays if a national holiday that TolTest observes occurs on a Monday (no work is completed on these national holidays). That is, the windrows will not be idle for more than one day at a time. If it is determined that suspending turn events on newly formed windrows results in an adverse effect on the treatment process, then Sunday turn events will only be suspended on those windrows that have reached thermophilic temperatures by at least the preceding Friday.

Approval by TolTest, PM	Signature: Lance Parsons Lance Parsons	Date: 9/22/00	**Approval by ROICC/NTR or RPM**	Signature: Brent Robertson	Date 9/26/00
Approval by TolTest QC/SHSO	Signature: Debbie Leighty Debbie Leighty	Date: 9/22/00	**Approval by EPD ECOTR**	Signature: Thomas J. Brent Christine Freeman	Date: 9/25/00
			Additional Reviews: By/Date		

Regulator Approval/Notification Recommended:
Yes ☐ No ☐

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.:	Subcontract No.:	FCR No.:
FC03	N/A	FCO3-FCR-FS028 Rev. 1
Eliminate Windrow Process Monitoring on Sundays		Page 1 of 1

Reference Documents:

Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2 (FSOP)

Quality Assurance Project Plan for Full-Scale Operations Soils Bioremediation Facility July 1999, Rev. 3 (QAPP)

Problem / Change Description:

As of 9/5/00 183 full-scale windrows have been processed to industrial clean-up goals (at a minimum). Historical data generated from windrow process monitoring has indicated that thermophilic temperatures are being reached within two to three days of windrow initiation and are being sustained throughout the composting process. While aerobic degradation is the most important process in composting explosives, anaerobic decomposition also occurs throughout the composting process. Currently no windrow turning or monitoring is undertaken on national holidays. Yet all of the windrows that have sat idle on these occasions have reached, at a minimum, industrial cleanup goals. The data clearly indicates that the composting process is successful in achieving clean-up goals despite the windrows sitting idle for a short period. Therefore the requirement for windrow turning and process monitoring on Sundays is not essential and suspending operations on Sundays will not adversely affect the composting process.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 9/20/99

Resolution:

Eliminate windrow turn events and process monitoring on Sundays for windrows containing soil from Mine Fill A and Mine Fill B. Eliminate windrow turn events and process monitoring on Sundays for windrows with soil from Rockeye if the Pilot Scale windrow indicates that the composting process is successful on soil from Rockeye. Windrow turn events and process monitoring will be completed on Sundays if a national holiday that TolTest observes occurs on a Monday (no work is completed on these national holidays). That is, the windrows will not be idle for more than one day at a time. If it is determined that suspending turn events on newly formed windrows results in an adverse effect on the treatment process, then Sunday turn events will only be suspended on those windrows that have reached thermophilic temperatures by at least the preceding Friday.

Approval by TolTest, PM	Signature: Lance Parsons	Date:	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date:	Approval by EPD ECOTR	Signature: Christine Freeman	Date:
			Additional Reviews: By/Date		

Regulator Approval/Notification Recommended:

Yes No ■

9/20/2000

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	**Subcontract No.:** N/A	**FCR No.:** FCO3-FCR-FS029 **Rev. 1**
Disposition of Staged Compost		Page 1 of 1

Reference Documents:

Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Quality Assurance Project Plan for Full-Scale Operations Soils Bioremediation Facility, July 1999 Rev. 3

Problem / Change Description:

There are currently 5 windrows staged at the Mine Fill A temporary staging area and 6 windrows staged at the Mine Fill B temporary staging area. The average Day Final explosives results for these windrows were above residential cleanup goals but below industrial cleanup goals. Handling and disposal requirements for compost meeting industrial cleanup goals are more restrictive than for compost meeting residential cleanup goals: this compost must either be buried and covered with a minimum of two feet of compost meeting residential cleanup goals or be staged on and under plastic until a burial place becomes available. Excavation of contaminated soil is nearly complete at both Mine Fills and there are not enough excavations deep enough to contain all of the staged compost.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 9/29/2000

Resolution:

At the discretion of TolTest Inc, each compost windrow at the staging areas may be sampled to determine if explosives degradation has occurred such that residential cleanup goals have now been achieved. To gain access to the interior of the windrow for sampling purposes, a backhoe with a decontaminated bucket will be utilized to dig into the compost at 5 locations to a minimum depth of 5 feet. Three grab samples will be obtained at each of the 5 locations at an approximate depth of 1 foot, 3 feet, and 5 feet. The samples will be obtained from the face of the cut opened by the backhoe. The depths specified are perpendicular to the surface of the pile. Using this procedure, 15 samples will be obtained which is the same number of samples required by the approved Quality Assurance Project Plan for Full-Scale Operations Soils Bioremediation Facility (QAPP) when sampling a windrow at the Biofacility. All analytical requirements, quality control samples (duplicates, MS/MSD), sample handling, and custody procedures will be followed as outlined in the QAPP. Should analytical results show that residential cleanup goals have been achieved and the windrows are moved from the staging areas, the location of their final disposition will be tracked and logged.

Approval by TolTest, PM	Signature: Lance Parsons	Date: 10/19/00	**Approval by ROICC/NTR or RPM**	Signature: Brent Robertson	Date 10/27/00
Approval by TolTest QC/SHSO	Signature: Larry D. Waggoner for Debbie Leighty	Date: 10/19/00	**Approval by EPD ECOTR:**	Signature Thomas J. Bart, Jr. Christine Freeman	Date 10/19/00

Regulator Approval/Notification Recommended:

Yes ☐ No ☐

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N622467-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC03	Subcontract No.: N/A	FCR No.: FCO3-FCR-FS029 Rev. 1
Disposition of Staged Compost		Page 1 of 1

Reference Documents:

Full-Scale Operational Plan for Soils Bioremediation Facility, March 1998 Rev. 2

Quality Assurance Project Plan for Full-Scale Operations Soils Bioremediation Facility, July 1999 Rev. 3

Problem / Change Description:

There are currently 5 windrows staged at the Mine Fill A temporary staging area and 6 windrows staged at the Mine Fill B temporary staging area. The average Day Final explosives results for these windrows were above residential cleanup goals but below industrial cleanup goals. Handling and disposal requirements for compost meeting industrial cleanup goals are more restrictive than for compost meeting residential cleanup goals: this compost must either be buried and covered with a minimum of two feet of compost meeting residential cleanup goals or be staged on and under plastic until a burial place becomes available. Excavation of contaminated soil is nearly complete at both Mine Fills and there are not enough excavations deep enough to contain all of the staged compost.

Initiated by	Signature:	Organization: TolTest, Inc.	Date: 9/29/2000

Resolution:

At the discretion of TolTest Inc, each compost windrow at the staging areas may be sampled to determine if explosives degradation has occurred such that residential cleanup goals have now been achieved. To gain access to the interior of the windrow for sampling purposes, a backhoe with a decontaminated bucket will be utilized to dig into the compost at 5 locations to a minimum depth of 5 feet. Three grab samples will be obtained at each of the 5 locations at an approximate depth of 1 foot, 3 feet, and 5 feet. The samples will be obtained from the face of the cut opened by the backhoe. The depths specified are perpendicular to the surface of the pile. Using this procedure, 15 samples will be obtained which is the same number of samples required by the approved Quality Assurance Project Plan for Full-Scale Operations Soils Bioremediation Facility (QAPP) when sampling a windrow at the Biofacility. All analytical requirements, quality control samples (duplicates, MS/MSD), sample handling, and custody procedures will be followed as outlined in the QAPP. Should analytical results show that residential cleanup goals have been achieved and the windrows are moved from the staging areas, the location of their final disposition will be tracked and logged.

Approval by TolTest, PM	Signature: Lance Parsons	Date:	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date
Approval by TolTest QC/SHSO	Signature: Debbie Leighty	Date:	Approval by EPD ECOTR:	Signature Christine Freeman	Date

Regulator Approval/Notification Recommended:

Yes No ■

10/4/2000

Crane Naval Surface Warfare Center TolTest, Inc.	EJOC Contract N68950-96-D-0052

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.: FC08	**Subcontract No.:** N/A	**FCR No.:** FCO8-FCR-FS035 **Rev. 0**
Disposition of Retention Pond Sludges and Windrow N-216		Page 1 of 1

Reference Documents:
Full-Scale Operational Plan Soils Bioremediation Facility (FSOP), March 1998 Rev. 2

Problem / Change Description:
The general consensus between TolTest, Crane EPD, and US EPA Region V has been that the sludge and sediments in the bottom of the Bioremediation Facility (Biofacility) retention ponds would be processed in the final compost windrow. However, water control problems experienced by the Navy have prevented TolTest from pumping down and cleaning the retention ponds. Therefore the retention pond sludge is not available to be placed on the last windrow which TolTest is ready to build (windrow N-216).

Initiated by TolTest Env. Spec.	Signature: Peter J. Chevalier	Organization: TolTest, Inc.	Date: 11/29/2001

Resolution:
TolTest will proceed with building windrow N-216 in order to facilitate closure of the Biofacility. When conditions permit it, the retention ponds will be pumped down and cleaned. At that time, the sludge will be sampled and characterized to determine disposal options, as stated in Section 7.2.4 of the FSOP.

Approval by TolTest, Regional Manager	Signature: Lance Parsons	Date: 12/12/01	**Approval by ROICC/NTR or RPM**	Signature: Brent Robertson	Date 12/7/01
Approval by TolTest QC/SHSO	Signature: John Lyttle	Date: 12/13/01	**Approval by EPD ECOTR:**	Signature Christine D Freeman Christine Freeman	Date 12/3/01

Regulator Approval/Notification Recommended:
Yes ☒ No ☐ See attached faxed signature.

Crane Naval Surface Warfare Center	EJOC Contract N68950-96-D-0052
TolTest, Inc.	

FIELD CLARIFICATION REQUEST (FCR)

Delivery Order No.:	Subcontract No.:	FCR No.:
FC08	N/A	FCO8-FCR-FS035 Rev. 0
Disposition of Retention Pond Sludges and Windrow N-216		Page 1 of 1

Reference Documents:

Full-Scale Operational Plan Soils Bioremediation Facility (FSOP), March 1998 Rev. 2

Problem / Change Description:

The general consensus between TolTest, Crane EPD, and US EPA Region V has been that the sludge and sediments in the bottom of the Bioremediation Facility (Biofacility) retention ponds would be processed in the final compost windrow. However, water control problems experienced by the Navy have prevented TolTest from pumping down and cleaning the retention ponds. Therefore the retention pond sludge is not available to be placed on the last windrow which TolTest is ready to build (windrow N-216).

Initiated by TolTest Env. Spec.	Signature: Peter J. Chevalier	Organization: TolTest, Inc.	Date: 11/29/2001

Resolution:

TolTest will proceed with building windrow N-216 in order to facilitate closure of the Biofacility. When conditions permit it, the retention ponds will be pumped down and cleaned. At that time, the sludge will be sampled and characterized to determine disposal options, as stated in Section 7.2.4 of the FSOP.

Approval by TolTest, Regional Manager	Signature: Lance Parsons	Date:	Approval by ROICC/NTR or RPM	Signature: Brent Robertson	Date
Approval by TolTest QC/SHSO	Signature: John Lyttle	Date:	Approval by EPD ECOTR:	Signature Christine Freeman	Date

Regulator Approval/Notification Recommended:
Yes ☐ No ☐

12/4/01

APPENDIX B

WASTE DISPOSAL DOCUMENTATION

CONTAMINATED SCRAP MANIFEST
NWSCC 6280/4 (REV. 6-84)

The following material is hereby certified as being contaminated with explosives and/or pyrotechnics

TYPE OF SCRAP	TYPE OF CONTAINER	TYPE OF CONTAMINATION*	BUILDING/AREA AND CODE	APPROXIMATE QUANTITY (lb.)
acetone	5 gal	explosives	Bioffacility	40

*Indicate if material is mixed with water or other chemical solvents. Identify the specific chemical solvent used.

SIGNATURE *(Generator or Facility Supervisor-Extension No.)*	CODE	DATE
Christine D. Freeman	09711	9/26/02
SIGNATURE *(Transporter)*	**ORGANIZATION**	**DATE**
[illegible]	TJ Test, Inc	9/26/02
SIGNATURE *(Operator at Treatment Facility)*	**TREATMENT FACILITY**	**DATE**
[illegible]	[illegible]	[illegible]

DISTRIBUTION

The following copies shall be withdrawn by the respective personnel and sent to Code 0924, Building 2516, within 5 work days.

Gold - Generator; Yellow - Transporter; White - Treatment Facility Operator

NOTE: Generator - retains Pink; Operator of Treatment Facility retains Green

CONTAMINATED SCRAP MANIFEST
NWSCC 6280/4 (REV. 6-84)

The following material is hereby certified as being contaminated with explosives and/or pyrotechnics

TYPE OF SCRAP	TYPE OF CONTAINER	TYPE OF CONTAMINATION*	BUILDING/AREA AND CODE	APPROXIMATE QUANTITY (lb.)
acetone	5gal. metal	explosives	Bio facility	40

*Indicate if material is mixed with water or other chemical solvents. Identify the specific chemical solvent used.

SIGNATURE *(Generator or Facility Supervisor-Extension No.)*	CODE	DATE
Christine D. Freeman	09511	8/14/01

SIGNATURE *(Transporter)*	ORGANIZATION	DATE
Peter A. O'Neal Jr	Toltest, Inc	8/14/01

SIGNATURE *(Operator at Treatment Facility)*	TREATMENT FACILITY	DATE
Bobby Tolland	NBG	8-14-01

DISTRIBUTION

The following copies shall be withdrawn by the respective personnel and sent to Code 0924, Building 2516, within 5 work days.

Gold - Generator; Yellow - Transporter; White - Treatment Facility Operator

NOTE: Generator - retains Pink; Operator of Treatment Facility retains Green

CONTAMINATED SCRAP MANIFEST
NWSCC 6280/4 (REV. 6-84)

The following material is hereby certified as being contaminated with explosives and/or pyrotechnics

TYPE OF SCRAP	TYPE OF CONTAINER	TYPE OF CONTAMINATION*	BUILDING/AREA AND CODE	APPROXIMATE QUANTITY (lb.)
acetone	metal, 5 gal.	explosives	Biofacility	40

*Indicate if material is mixed with water or other chemical solvents. Identify the specific chemical solvent used.

SIGNATURE *(Generator or Facility Supervisor-Extension No.)*	CODE	DATE

SIGNATURE *(Transporter)*	ORGANIZATION	DATE
Peter A. Chevalier	Tol Test, Inc.	8/11/00

SIGNATURE *(Operator at Treatment Facility)*	TREATMENT FACILITY	DATE
Christine D. Freeman	HBG	8/10/00

DISTRIBUTION

The following copies shall be withdrawn by the respective personnel and sent to Code 0924, Building 2516, within 5 work days.

Gold - Generator; Yellow - Transporter; White - Treatment Facility Operator

NOTE: Generator - retains Pink; Operator of Treatment Facility retains Green

CONTAMINATED SCRAP MANIFEST
NWSCC 6280/4 (REV. 6-84)

The following material is hereby certified as being contaminated with explosives and/or pyrotechnics

TYPE OF SCRAP	TYPE OF CONTAINER	TYPE OF CONTAMINATION*	BUILDING/AREA AND CODE	APPROXIMATE QUANTITY (lb.)
acetone	metal, Sgl	explosives	BioFacility	40

*Indicate if material is mixed with water or other chemical solvents. Identify the specific chemical solvent used.

SIGNATURE *(Generator or Facility Supervisor-Extension No.)*	CODE	DATE
Christine D. Freeman	09511	3/6/00
SIGNATURE *(Transporter)*	**ORGANIZATION**	**DATE**
Robert Oliveira	Tollest, Inc	3/6/00
SIGNATURE *(Operator at Treatment Facility)*	**TREATMENT FACILITY**	**DATE**
Bobby Yellen	A3G	3.6.00

DISTRIBUTION

The following copies shall be withdrawn by the respective personnel and sent to Code 0924, Building 2516, within 5 work days.

Gold - Generator; Yellow - Transporter; White - Treatment Facility Operator

NOTE: Generator - retains Pink; Operator of Treatment Facility retains Green

CONTAMINATED SCRAP MANIFEST
NWSCC 6280/4 (REV. 6-84)

The following material is hereby certified as being contaminated with explosives and/or pyrotechnics

TYPE OF SCRAP	TYPE OF CONTAINER	TYPE OF CONTAMINATION*	BUILDING/AREA AND CODE	APPROXIMATE QUANTITY (lb.)
acetone	metal	explosives	Bin Facility	40

*Indicate if material is mixed with water or other chemical solvents. Identify the specific chemical solvent used.

SIGNATURE *(Generator or Facility Supervisor-Extension No.)*	CODE	DATE
Christine D. Freeman	09511	9/16/99

SIGNATURE *(Transporter)*	ORGANIZATION	DATE
Peter [illegible]	Tolfest	7/30/99

SIGNATURE *(Operator at Treatment Facility)*	TREATMENT FACILITY	DATE
[illegible]	ABG	9-30-9[illegible]

DISTRIBUTION

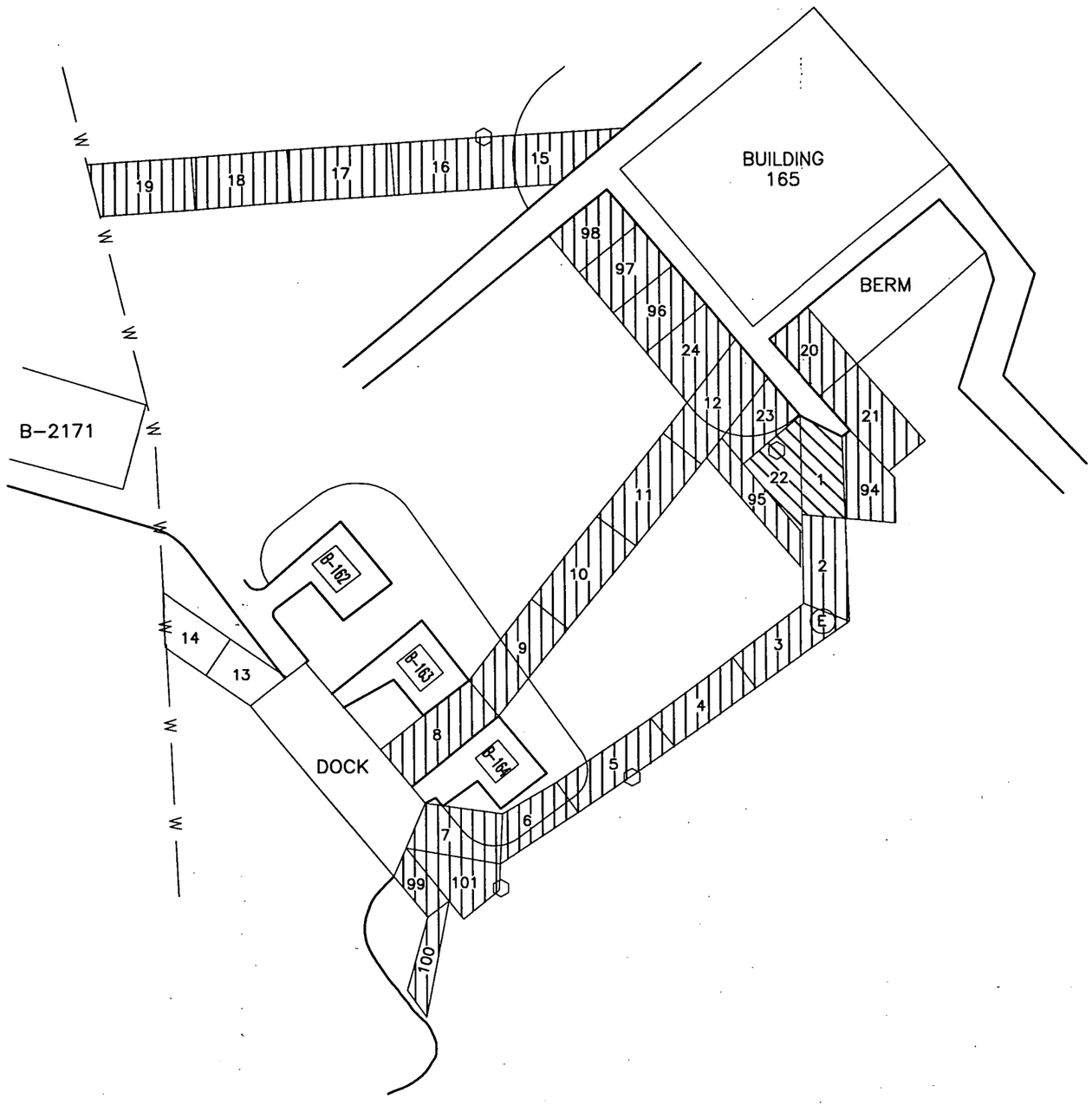
The following copies shall be withdrawn by the respective personnel and sent to Code 0924, Building 2516, within 5 work days.

Gold - Generator; Yellow - Transporter; White - Treatment Facility Operator

NOTE: Generator - retains Pink; Operator of Treatment Facility retains Green

APPENDIX C

INITIAL CHARACTERIZATION SAMPLING GRID LOCATION MAPS



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LEGEND

EXCAVATION REQUIRED. CLEANUP GOALS EXCEED INDUSTRIAL LEVELS 0–12"

NO EXCAVATION REQUIRED. CLEANUP GOALS LESS THAN INDUSTRIAL LEVELS

DRAINAGE PATTERN

RAILROAD TRACKS

LIGHTNING MAST

APPROXIMATE SCALE – FEET

0 50 100

MFB INTERIM MEASURES REPORT

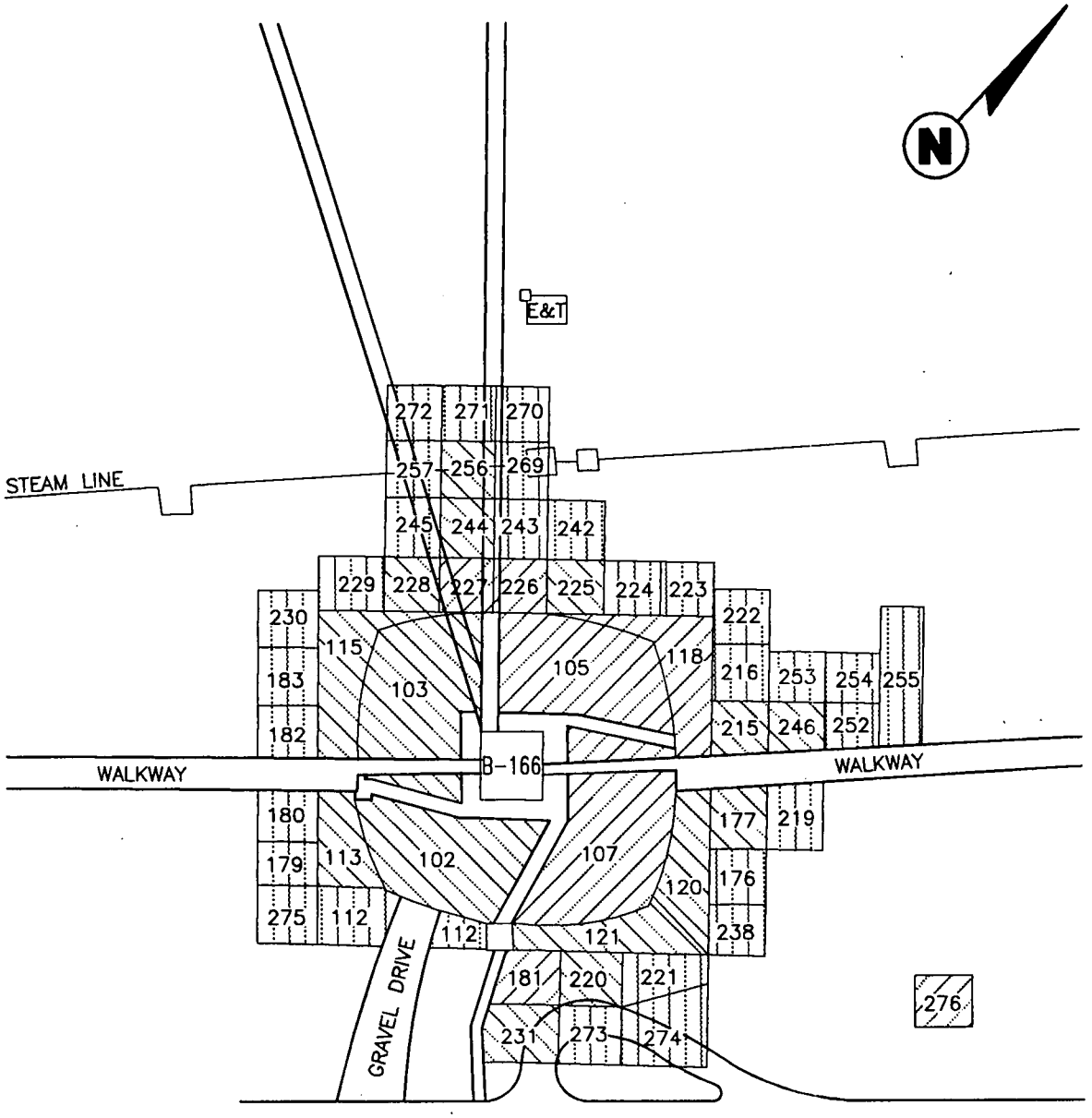
FIGURE C–1
INITIAL CHARACTERIZATION SAMPLING GRID LOCATION MAP

NAVAL SURFACE WARFARE CENTER
BUILDING 165, MINE FILL B
CRANE, INDIANA

PREPARED FOR

NAVAL FACILITIES ENGINEERING COMMAND NSWC CRANE, IN

DRAWN MRC/6–7–02	CHK	APPR
REVISED	DRAWING NO.: 3732401c1.dwg	
JOB NO.: 37324.01	TOLTEST, INC.	
SHEET NUMBER 1 of 1		



MFB INTERIM MEASURES REPORT

APPROXIMATE SCALE – FEET

0 60 120

LEGEND

- EXCAVATION REQUIRED. CLEANUP GOALS EXCEED INDUSTRIAL LEVELS 0–12"
- EXCAVATION REQUIRED. CLEANUP GOALS EXCEED INDUSTRIAL LEVELS 24–36"
- NO EXCAVATION REQUIRED. CLEANUP GOALS LESS THAN INDUSTRIAL LEVELS

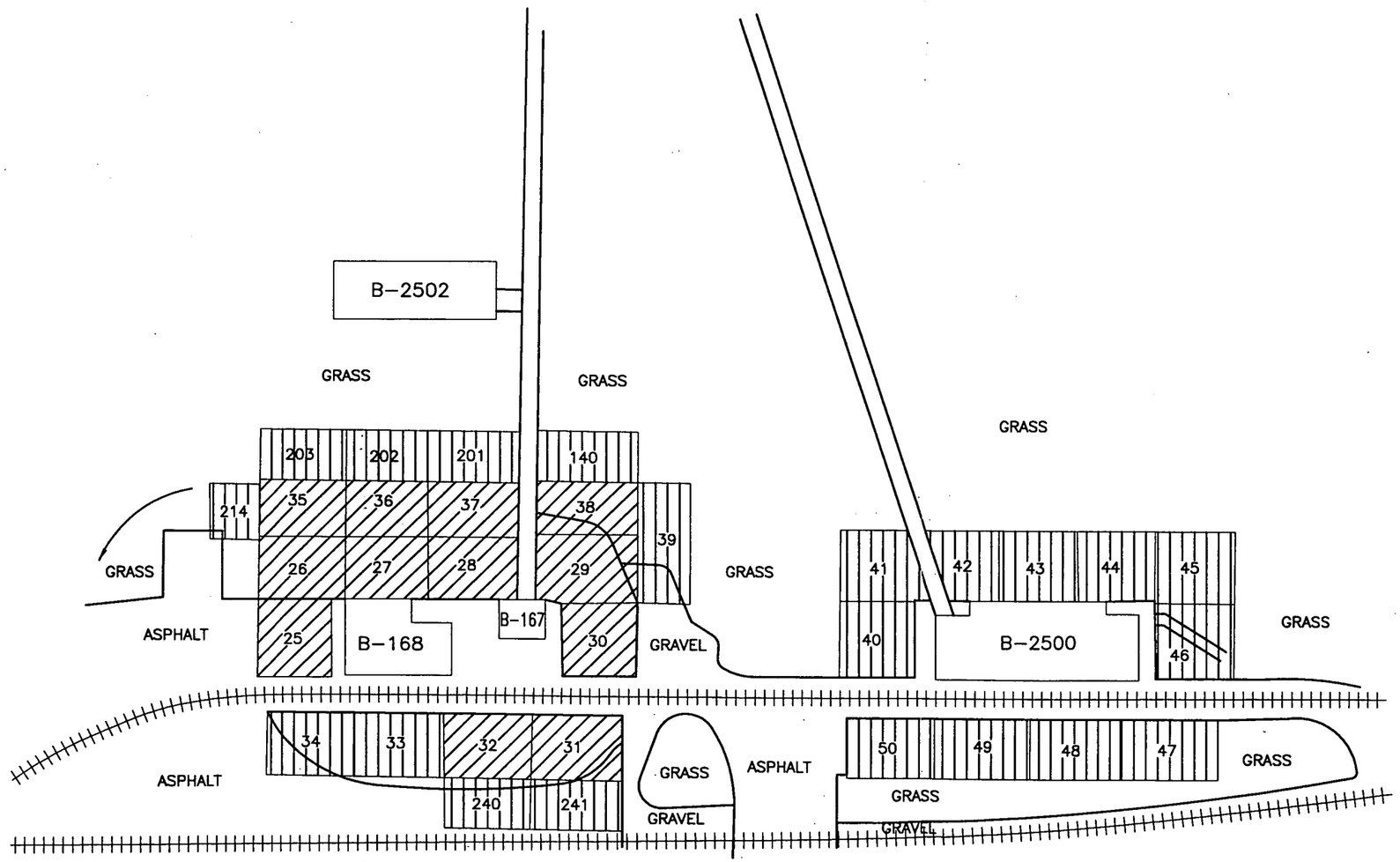
FIGURE C–2
INITIAL CHARACTERIZATION SAMPLING GRID LOCATION MAP

NAVAL SURFACE WARFARE CENTER
BUILDING 166, MINE FILL B
CRANE, INDIANA

PREPARED FOR

NAVAL FACILITIES ENGINEERING COMMAND NSWC CRANE, IN

DRAWN MRC/6-7-02	CHK	APPR
REVISED	DRAWING NO.: 3732401c2.dwg	
JOB NO.: 37324.01	TOLTEST, INC.	
SHEET NUMBER 1 of 1		



N

LEGEND

- EXCAVATION REQUIRED. CLEANUP GOALS EXCEED INDUSTRIAL LEVELS 0–12"
- EXCAVATION REQUIRED. CLEANUP GOALS EXCEED INDUSTRIAL LEVELS 24–36"
- NO EXCAVATION REQUIRED. CLEANUP GOALS LESS THAN INDUSTRIAL LEVELS
- DRAINAGE PATTERN
- RAILROAD TRACKS

APPROXIMATE SCALE – FEET

0 50 100

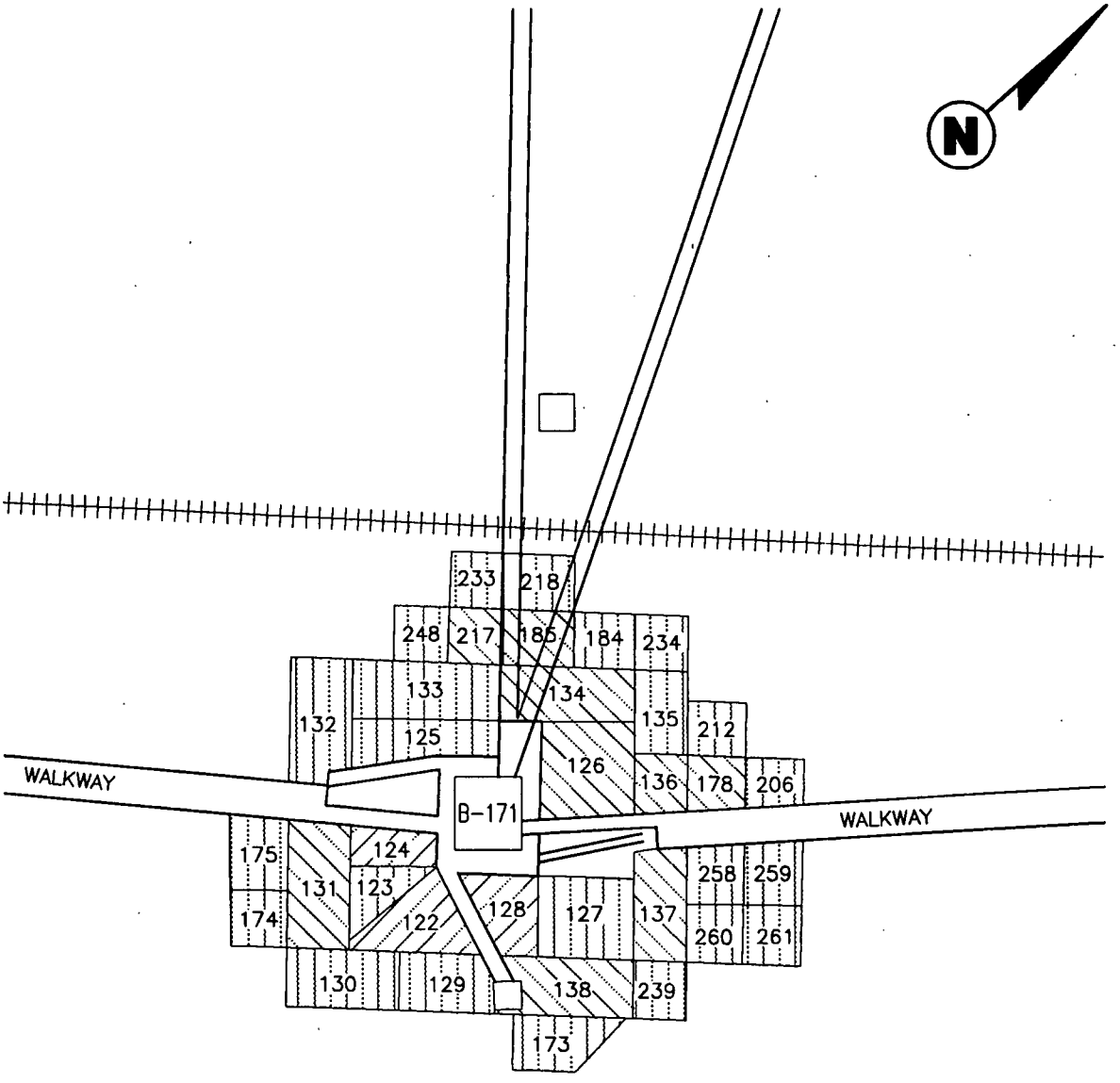
MFB INTERIM MEASURES REPORT

FIGURE C–3
INITIAL CHARACTERIZATION SAMPLING GRID LOCATION MAP

NAVAL SURFACE WARFARE CENTER
BUILDING 167/168/2500, MINE FILL B
CRANE, INDIANA

PREPARED FOR
NAVAL FACILITIES ENGINEERING COMMAND NSWC CRANE, IN

DRAWN MRC/6–7–02	CHK	APPR
REVISED	DRAWING NO.: 3732401c3.dwg	
JOB NO.: 37324.01	TOLTEST, INC.	
SHEET NUMBER 1 of 1		



MFB INTERIM MEASURES REPORT

APPROXIMATE SCALE – FEET

0 60 120

LEGEND

- EXCAVATION REQUIRED. CLEANUP GOALS EXCEED INDUSTRIAL LEVELS 0–12"
- EXCAVATION REQUIRED. CLEANUP GOALS EXCEED INDUSTRIAL LEVELS 24–36"
- NO EXCAVATION REQUIRED. CLEANUP GOALS LESS THAN INDUSTRIAL LEVELS
- RAILROAD TRACKS

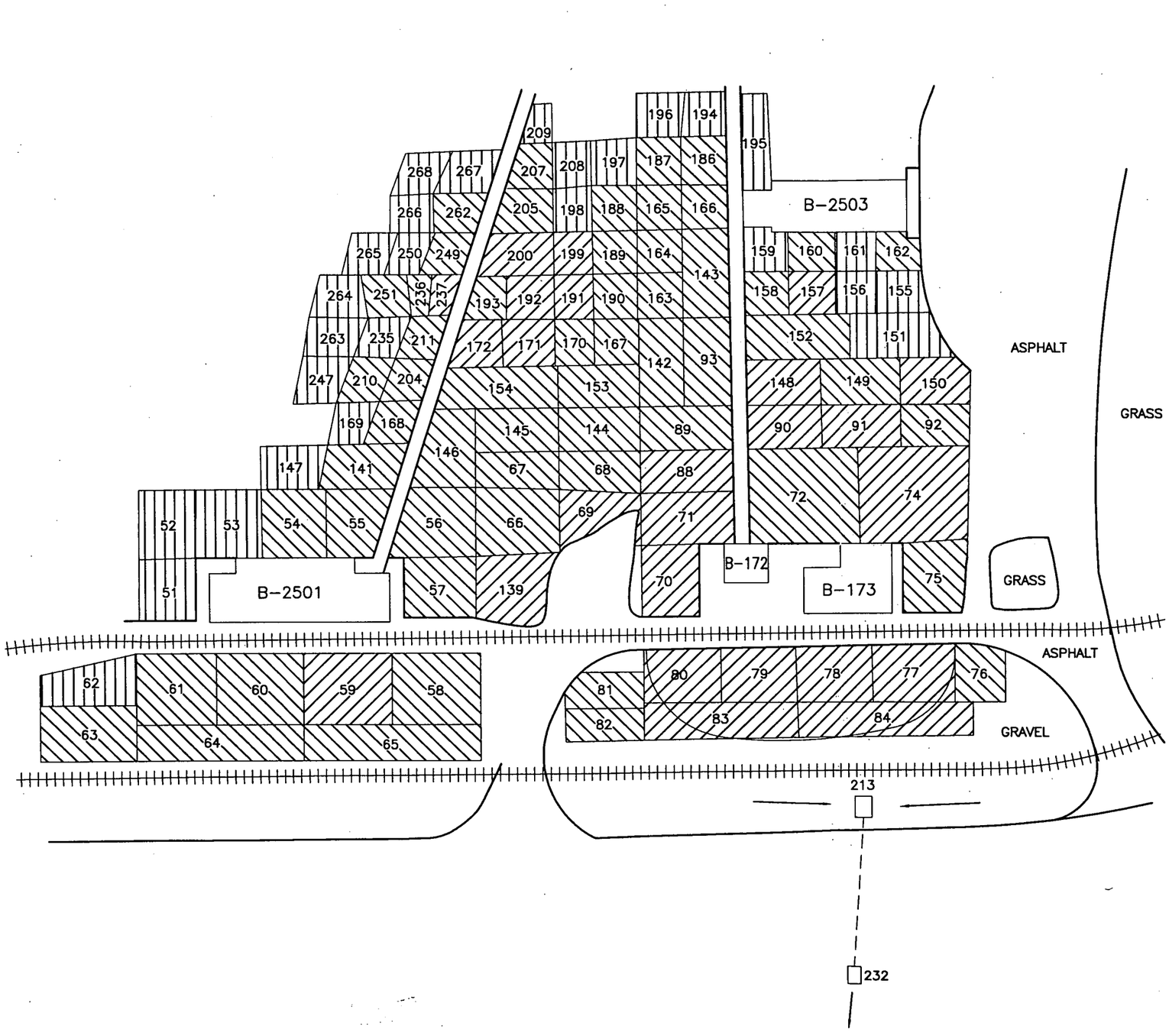
FIGURE C–4
INITIAL CHARACTERIZATION SAMPLING GRID LOCATION MAP

NAVAL SURFACE WARFARE CENTER
BUILDING 171, MINE FILL B
CRANE, INDIANA

PREPARED FOR

NAVAL FACILITIES ENGINEERING COMMAND NSWC CRANE, IN

DRAWN MRC/6-7-02	CHK	APPR
REVISED	DRAWING NO.: 3732401c4.dwg	
JOB NO.: 37324.01	TOLTEST, INC.	
SHEET NUMBER 1 of 1		



LEGEND

EXCAVATION REQUIRED. CLEANUP GOALS EXCEED INDUSTRIAL LEVELS 0–12"

EXCAVATION REQUIRED. CLEANUP GOALS EXCEED INDUSTRIAL LEVELS 24–36"

NO EXCAVATION REQUIRED. CLEANUP GOALS LESS THAN INDUSTRIAL LEVELS

RAILROAD TRACKS

DRAINAGE PATTERN

APPROXIMATE SCALE – FEET

0 50 100

MFB INTERIM MEASURES REPORT

FIGURE C–5

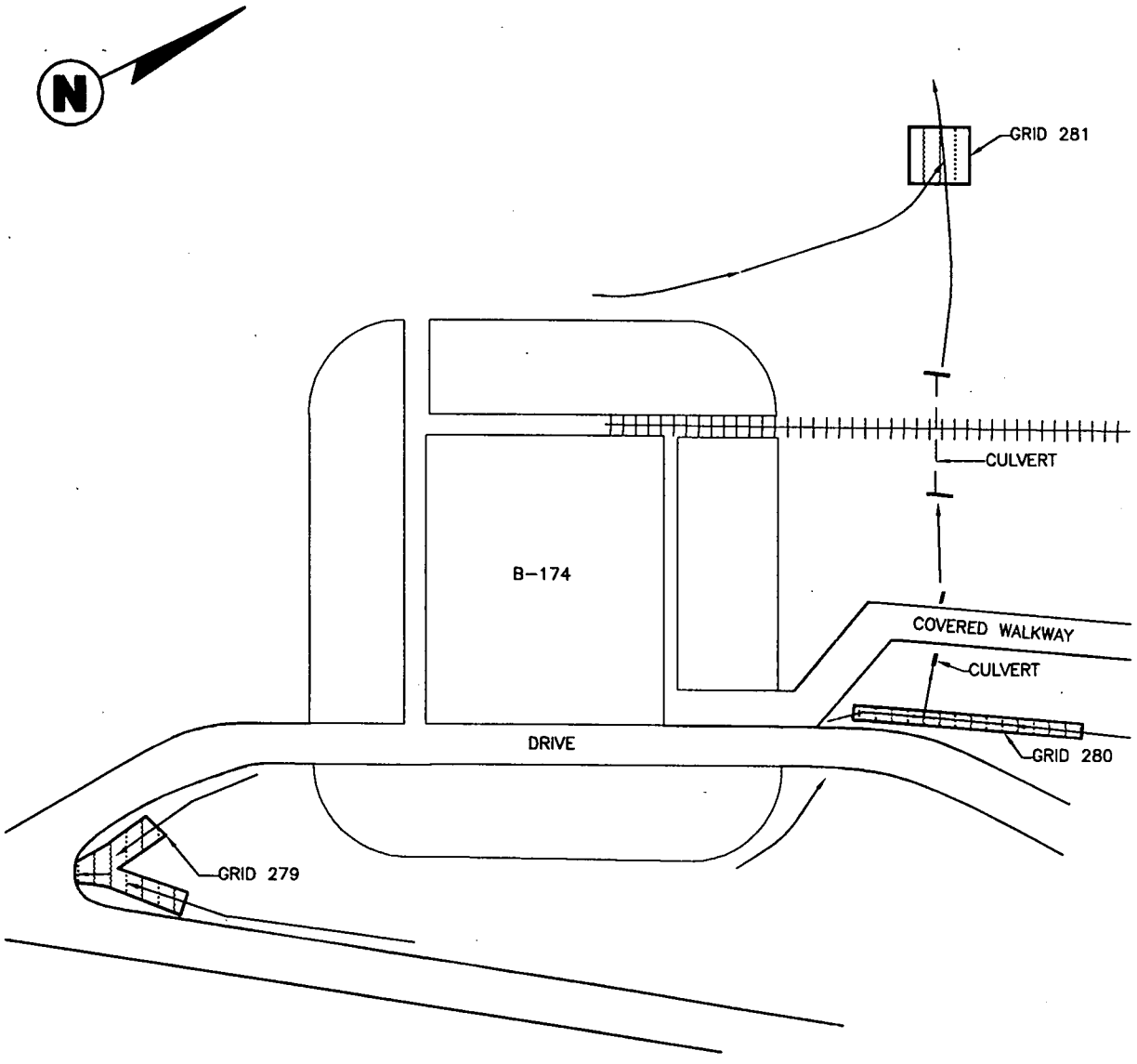
INITIAL CHARACTERIZATION SAMPLING GRID LOCATION MAP

NAVAL SURFACE WARFARE CENTER
BUILDING 172/173/2501, MINE FILL B
CRANE, INDIANA

PREPARED FOR

NAVAL FACILITIES ENGINEERING COMMAND NSWC CRANE, IN

DRAWN MRC/6–7–02	CHK	APPR
REVISED	DRAWING NO.: 3732401c5.dwg	
JOB NO.: 37324.01		
SHEET NUMBER 1 of 1	TOLTEST, INC.	



MFB INTERIM MEASURES REPORT

APPROXIMATE SCALE – FEET

0 60 120

LEGEND

NO EXCAVATION REQUIRED. CLEANUP GOALS LESS THAN INDUSTRIAL LEVELS

DRAINAGE PATTERN

RAILROAD TRACKS

FIGURE C-6
INITIAL CHARACTERIZATION SAMPLING GRID LOCATION MAP

NAVAL SURFACE WARFARE CENTER
BUILDING 174, MINE FILL B
CRANE, INDIANA

PREPARED FOR

NAVAL FACILITIES ENGINEERING COMMAND NSWC CRANE, IN

DRAWN MRC/6-7-02	CHK	APPR
REVISED	DRAWING NO.: 3732401c6.dwg	
JOB NO.: 37324.01		
SHEET NUMBER 1 of 1	TOLTEST, INC.	

APPENDIX D

MFB GRID EXPLOSIVE SAMPLING SUMMARY

TABLE D
MINE FILL B GRID EXPLOSIVE SAMPLING SUMMARY

	INITIAL CHARACTERIZATION				POST-EXCAVATION			
Grid Number	Sample ID: MFB ICS	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded	Sample ID: MFB PES	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded
1	001 003	 yes		YES				
2	009 012	yes yes						
3	013 015	yes yes						
4	016 018	yes yes						
5	019 022	yes yes						
6	023 025	yes yes						
7	026 028	yes yes						
8	029 032	yes yes						
9	033 035	yes yes						
10	036 038	yes yes						
11	039 042	yes yes						
12	044 046	yes yes						
13	047 049	yes yes						
14	051 053	yes yes						
15	054 056	yes yes						
16	057 059	yes yes						
17	060 062	yes yes						
18	063 065	yes yes						
19	066 068	yes yes						
20	069 071	yes yes						
21	072 074	yes yes						
22	075 077	 no	 yes	YES				
23	078 080	yes yes						
24	081 083	yes yes						
25	120 122			YES YES	201	no	yes	
26	117 119			YES YES	089	no	yes	
27	463 465			YES YES	087	no	yes	
28	Consolidated with grid 27				085 193* 203*	no yes yes	no	
29	111 113			YES YES	189 234	yes no	 yes	
30	114 116			YES YES	187	yes		
31	457 459			YES YES	185 228	yes yes		
32	Consolidated with grid 31				183 224 226	yes yes yes		
33	460 462	no yes	yes					
34	Consolidated with grid 33							

TABLE D
MINE FILL B GRID EXPLOSIVE SAMPLING SUMMARY

	INITIAL CHARACTERIZATION				POST-EXCAVATION			
Grid Number	Sample ID: MFB ICS	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded	Sample ID: MFB PES	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded
35	Consolidated with grid 26				199 218 220 222	no yes yes yes	yes	
36	Consolidated with grid 27				197 207 209	yes yes yes		
37	Consolidated with grid 27				195 205	yes yes		
38	108 110			YES YES	191 230 232	no no	yes yes	YES
39	156 158	yes yes						
40	126 128	yes yes						
41	123 125	yes yes						
42	153 155	yes yes						
43	150 152	yes yes						
44	147 149	yes yes						
45	144 146	yes yes						
46	141 143	yes yes						
47	138 140	yes yes						
48	135 137	yes yes						
49	132 134	yes yes						
50	129 131	yes yes						
51	177 179	yes yes						
52	180 182	yes yes						
53	183 185	no yes	yes					
54	186 188	no	yes	YES	133 179 181	no yes no	yes yes	
55	189 191	yes		YES	135	yes		
56	162 164	yes		YES	109	yes		
57	159 161	no	yes	YES	119	yes		
58	165 167	no	yes	YES	021	yes		
59	168 170			YES YES	023	no	yes	
60	171 173	yes		YES	025	no	yes	
61	174 176	yes		YES	027	yes		
62	236 238	yes yes						
63	239 241	yes		YES	013	yes	yes	
64	225			YES	015	no	yes	
65	223			YES	17	no	yes	
66	208 210	no	yes	YES	111			YES
67	211 213	no	yes	YES	113	yes		
68	202 204	no	yes	YES	417	no	yes	

TABLE D
MINE FILL B GRID EXPLOSIVE SAMPLING SUMMARY

	INITIAL CHARACTERIZATION				POST-EXCAVATION			
Grid Number	Sample ID: MFB ICS	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded	Sample ID: MFB PES	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded
69	205 207			**YES** **YES**	421 423	no no	yes yes	
70	409 411			**YES** **YES**	427 429	no no	yes yes	
71	Consolidated with grid 70				425			**YES**
72	356 358	no	yes	**YES**	435	yes		
73	Consolidated with grid 72				433	yes		
74	347 349			**YES** **YES**	431 480	no	yes	 **YES**
75	359 361	no	yes	**YES**	003	no	yes	
76	362 364	no	yes	**YES**	001	no	yes	
77	365 367			**YES** **YES**	005	no	yes	
78	Consolidated with grid 77				009	no	yes	
79	368 370			**YES** **YES**	011 029* 079*	no no	no yes	
80	Consolidated with grid 79				031 075*	no yes	no	
81	227 229	yes		**YES**	081	no	yes	
82	230 232	no	yes	**YES**	083 121*	no yes	no	
83	Consolidated with grid 79				019 077*	no yes	no	
84	Consolidated with grid 77				007	no	yes	
85	Consolidated with grid 74				453	no	yes	
86	Consolidated with grid 72				455	no	yes	
87	Consolidated with grid 72				457	no	yes	
88	192 194			**YES** **YES**	419	yes		
89	195 197	no	yes	**YES**	413	yes		
90	220 222			**YES** **YES**	441	no	yes	
91	217 219			**YES** **YES**	461	no	yes	
92	214 216	no	yes	**YES**	459 479	no no	yes yes	
93	199 201	no	yes	**YES**	063	no	yes	
94	084 086	yes yes						
95	087 089	yes yes						
96	090 092	yes yes						
97	093 095	yes yes						
98	096 098	yes yes						
99	099 101	yes yes						
100	102 104	yes yes						
101	105 107	yes yes						
102	283 285	yes		**YES**	266	yes		

TABLE D
MINE FILL B GRID EXPLOSIVE SAMPLING SUMMARY

	INITIAL CHARACTERIZATION				POST-EXCAVATION			
Grid Number	Sample ID: MFB ICS	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded	Sample ID: MFB PES	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded
103	326 328	no	yes	YES	316	no	yes	
104	Consolidated with grid 103				Consolidated with grid 103			
105	472 474			YES YES	280	yes		
106	Consolidated with grid 105				Consolidated with grid 105			
107	291 293			YES YES	236	yes		
108	Consolidated with grid 107				Consolidated with grid 107			
109	Consolidated with grid 107				Consolidated with grid 107			
110	Consolidated with grid 102				Consolidated with grid 102			
111	Consolidated with grid 112							
112	289	yes						
113	286 288	yes		YES	268 310 312 314	yes yes yes yes		
114	Consolidated with grids 103 & 115				Consolidated with grid 115			
115	338 340	yes		YES	318 320 322 324	yes yes yes yes		
116	Consolidated with grids 103 & 105				Consolidated with grids 103 & 105			
117	Consolidated with grids 105 & 118				Consolidated with grid 105			
118	505 507	yes		YES	282 286 284 298	yes yes yes yes		
119	Consolidated with grids 107 & 120				Consolidated with grid 120			
120	294 296	yes		YES	264 308 306	yes yes yes		
121	297 299	yes		YES	244 256	yes no	yes	
122	250 252			YES YES	371 385	no yes	yes	
123	245 247	yes yes			373	no	yes	
124	242 244	yes		YES	375	no	yes	
125	259 261	yes no	yes					
126	262 264	no	yes	YES	405	no	yes	
127	256 258	yes yes						
128	253 255			YES YES	349 351	yes yes		
129	303 305	no yes	yes					
130	306 308	yes yes						
131	309 311	yes		YES	377 379 381 383	yes yes yes yes		
132	312 314	no yes	yes					
133	317 319	no no	yes yes					
134	320			YES	397 403 401 399	no yes yes yes	yes	

TABLE D
MINE FILL B GRID EXPLOSIVE SAMPLING SUMMARY

	INITIAL CHARACTERIZATION				POST-EXCAVATION			
Grid Number	Sample ID: MFB ICS	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded	Sample ID: MFB PES	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded
135	322	yes						
136	324			YES	407 409	 yes		YES
137	315			YES	361 363 365 367 369	yes yes yes yes yes		
138	300 302	no	yes	YES	353 355 357 359	yes yes yes yes		
139	233 235			YES YES	125	yes		
140	248	yes						
141	265 267	yes		YES	137 175 177	yes yes		 YES
142	268 270	 yes		YES	65	yes		
143	274 276	 no	 yes	YES	43	no	yes	
144	271 273	 no	 yes	YES	415	yes		
145	277 279	 no	 yes	YES	115	yes		
146	280 282	 yes		YES	107	yes		
147	412 414	no yes	yes					
148	335 337			YES YES	443	no	yes	
149	329 331	 no	 yes	YES	465	yes		
150	332 334	no	yes	 YES	463 478	yes yes		
151	341 342	no yes	yes		467 477	yes yes		
152	344 346	 yes		YES	445	no	yes	
153	350 352	 no	 yes	YES	117	yes		
154	353 355	 no	 yes	YES	105	yes		
155	371 373	yes yes			469 476	yes no	 yes	
156	374 376	yes yes			451	yes		
157	377 379			YES YES	449	yes		
158	380 382	 no	 yes	YES	447	no	yes	
159	383 385	yes yes			437	yes		
160	386 388	 yes		YES	439	yes		
161	389	no	yes	 YES	473	yes		
162	391 393	 no	 yes	YES	471 475	yes yes		
163	394 396			YES YES	55	yes		
164	397 399	 no	 yes	YES	39			YES
165	400 402	 yes		YES	51	no	yes	
166	403 405	 no	 yes	YES	49	yes		

TABLE D
MINE FILL B GRID EXPLOSIVE SAMPLING SUMMARY

	INITIAL CHARACTERIZATION				POST-EXCAVATION			
Grid Number	Sample ID: MFB ICS	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded	Sample ID: MFB PES	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded
167	406 408	 no	 yes	**YES**	37	yes		
168	415 417	 yes		**YES**	91 173	no yes	yes	
169	418 420	yes yes						
170	421 423	 no	 yes	**YES**	71	yes		
171	424 426			**YES** **YES**	73 103*	no yes	no	
172	427 429			**YES** **YES**	61	no	yes	
173	430 432	yes yes						
174	433 435	yes yes						
175	442 444	yes yes						
176	436 438	yes yes						
177	439 441	 yes		**YES**	246 258 260 262*	yes no no yes	 yes no	
178	445			**YES**	411			**YES**
179	448 450	yes yes						
180	451 453	yes yes						
181	454 456	yes		**YES**	240 252 250 248	yes no yes no	 yes yes	
182	466 468	yes yes						
183	469 471	yes yes						
184	475 477	yes yes						
185	478 480	 yes		**YES**	393 395	yes yes		
186	481 483	 yes		**YES**	41 143	 no	 yes	**YES**
187	484 486	 no	 yes	**YES**	45 145 153	yes no yes	 yes	
188	487 489	 no	 yes	**YES**	53 155 157	yes yes yes		
189	490 492			**YES** **YES**	47	yes		
190	493 495	 no	 yes	**YES**	57	yes		
191	496 498			**YES** **YES**	59	no	yes	
192	499 501			**YES** **YES**	67 099*	no yes	no	
193	502 504	 no	 yes	**YES**	69 101*	no no	no yes	
194	508 510	yes no	 yes					
195	538 540	yes yes						
196	511 513	yes no	 yes					
197	517 519	yes yes						
198	514 516	yes yes						

TABLE D
MINE FILL B GRID EXPLOSIVE SAMPLING SUMMARY

	INITIAL CHARACTERIZATION				POST-EXCAVATION			
Grid Number	Sample ID: MFB ICS	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded	Sample ID: MFB PES	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded
199	520 522			YES YES	35 159	yes no	 yes	
200	523 525			YES YES	33	yes		
201	526 528	yes yes						
202	529 531	yes yes						
203	532 534	yes yes						
204	535 537	 no	 yes	YES	93	yes		
205	541 543	 no	 yes	YES	97 161	yes no	 yes	
206	544	no	yes					
207	546 548	 no	 yes	YES	95 163 211	yes yes yes		
208	549 551	no yes	yes					
209	552 554	no yes	yes					
210	555 557	 yes		YES	123 167 169	yes yes yes		
211	558 560	 no	 yes	YES	127 165	yes yes		
212	561	yes						
213	563 565	yes no	 yes					
214	566 568	yes no	 yes					
215	569 571	 no	 yes	YES	288 290	no yes	yes	
216	572 574	yes no	 yes					
217	575			YES	387 391 389	 yes yes		YES
218	577 579	yes yes						
219	580 582	yes yes						
220	583 585	 yes		YES	242 254 304	yes no yes	 yes	
221	586 588	yes yes						
222	589 591	yes yes						
223	592 594	yes yes						
224	595 597	yes yes						
225	598 600	 yes		YES	270 272 274	yes yes yes		
226	601 603			YES YES	276 278	yes yes		
227	604 606			YES YES	332	yes		
228	607 609	 no	 yes	YES	326 328 330	yes yes yes		
229	610 612	yes yes						
230	613 615	yes yes						

TABLE D
MINE FILL B GRID EXPLOSIVE SAMPLING SUMMARY

	INITIAL CHARACTERIZATION				POST-EXCAVATION			
Grid Number	Sample ID: MFB ICS	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded	Sample ID: MFB PES	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded
231	616			YES	238 300 302	yes yes yes		
232	618 620	no yes	yes					
233	621	yes						
234	623	yes						
235	625 627	yes yes						
236	628 630	 yes		YES	131 149	yes yes		
237	637 639			YES YES	129	yes		
238	631 633	yes yes						
239	634 636	yes yes						
240	640 642	yes yes						
241	643 645	no yes	yes					
242	646 648	yes yes						
243	649 651	no yes	yes					
244	652 654	 yes		YES	334 336	yes yes		
245	655 657	yes yes						
246	658 660	 yes		YES	292 296 294	yes yes yes		
247	661 663	yes yes						
248	664	yes						
249	666 668	 no	 yes	YES	141 147	yes yes		
250	669 671	yes yes						
251	672 674	 no	 yes	YES	139 151 216	yes no no	 yes yes	
252	675 677	yes yes						
253	678 680	yes yes						
254	681 683	yes yes						
255	684 686	yes yes						
256	687 689	 yes		YES	338 340 344 342	yes yes yes yes		
257	690 692	yes yes						
258	693 695	yes yes						
259	696 698	yes yes						
260	699 701	yes yes						
261	702 704	yes no	 yes					
262	705 707	 no	 yes	YES	214	yes		
263	708 710	yes yes						
264	711 713	yes yes						

TABLE D
MINE FILL B GRID EXPLOSIVE SAMPLING SUMMARY

	INITIAL CHARACTERIZATION				POST-EXCAVATION			
Grid Number	Sample ID: MFB ICS	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded	Sample ID: MFB PES	Residential Cleanup Goal Met	Industrial Cleanup Goal Met	Cleanup Goals Exceeded
265	714 716	yes yes						
266	717 719	yes yes						
267	720 722	no no	yes yes					
268	723 725	yes yes						
269	726 728	yes yes						
270	729 731	yes yes						
271	732 734	yes yes						
272	735 737	yes yes						
273	741 743	yes yes						
274	744 746	yes yes						
275	738 740	yes yes						
276	747 749			**YES** **YES**	347	yes		
277	750 752	yes yes						
278	753	yes yes						
279	755 758	yes yes						
280	759 761	yes yes						
281	762 764	yes yes						

* Initial results indicated that contamination remained above industrial cleanup goals.
Subsequent re-sampling and analysis after additional excavation indicated that cleanup goals had been met.

APPENDIX E

INITIAL CHARACTERIZATION SAMPLE RESULTS

Table E-1 Explosives
Table E-2 Metals
Table E-3 Volatiles
Table E-4 PCBs
Table E-5 Trip Blank Sample Results
Table E-6 Rinse Blank Sample Explosives Results
Table E-7 Rinse Blank Sample Metals Results

TABLE E-1
MINE FILL B INITIAL CHARACTERIAZATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	0.25	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	0.25	4	650
MFB ICS #	Sample Date	Grid #	Depth (in.)															
001	5/18/1998	1	0-12	0.25 U	0.25 U	29.4 D	0.25 U	0.26 U	0.25 U	0.25 U	3.12 U	0.25 U	0.25 U	25.6 JD	0.26 U	0.25 U	213 D	0.65 U
003	5/18/1998	1	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.338 J	0.26 U	0.25 U	1 U	0.65 U
009	5/18/1998	2	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
012	5/18/1998	2	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.219 J	0.26 U	0.25 U	0.232 J	0.65 U
013	5/18/1998	3	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
015	5/18/1998	3	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
016	5/19/1998	4	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
018	5/19/1998	4	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
019	5/19/1998	5	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
022	5/19/1998	5	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
023	5/19/1998	6	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
025	5/19/1998	6	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
026	5/19/1998	7	0-12	0.25 U	0.25 U	1.19	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
028	5/19/1998	7	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
029	5/19/1998	8	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
032	5/19/1998	8	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
033	5/19/1998	9	0-12	0.25 U	0.25 U	0.421	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.218 J	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
035	5/19/1998	9	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
036	5/19/1998	10	0-12	0.25 U	0.25 U	0.331	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
038	5/19/1998	10	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
039	5/20/1998	11	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	0.376 J	0.65 U
042	5/20/1998	11	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	2.4	0.65 U
044	5/20/1998	12	0-12	0.164 J	0.25 U	2	0.25 U	0.26 U	0.772	0.43	0.25 U	2.95	0.25 U	3.21	0.26 U	0.25 U	1 U	0.65 U
046	5/20/1998	12	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
047	5/20/1998	13	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
049	5/20/1998	13	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
051	5/20/1998	14	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
053	5/20/1998	14	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
054	5/20/1998	15	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
056	5/20/1998	15	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
057	5/21/1998	16	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
059	5/21/1998	16	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
060	5/21/1998	17	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
062	5/21/1998	17	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
063	5/21/1998	18	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
065	5/21/1998	18	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
066	5/21/1998	19	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
068	5/21/1998	19	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
069	6/10/1998	20	0-12	0.25 U	0.25 U	0.489	0.25 U	0.26 U	150 J	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
071	6/10/1998	20	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
072	6/10/1998	21	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
074	6/10/1998	21	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
075	6/10/1998	22	0-12	0.25 U	0.25 U	3.53	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	43.9	0.26 U	0.25 U	325 D	0.65 U
077	6/10/1998	22	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.23 J	0.26 U	0.25 U	5.85	0.65 U
078	6/11/1998	23	0-12	0.25 U	0.25 U	0.653	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.512	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
080	6/11/1998	23	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
081	6/11/1998	24	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
083	6/11/1998	24	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
084	6/23/1998	94	0-12	0.25 U	0.25 U	2.45	0.25 U	0.26 U	0.394 J	0.25 U	0.25 U	0.732	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
086	6/23/1998	94	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
087	6/23/1998	95	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
089	6/23/1998	95	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
090	7/20/1998	96	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
092	7/20/1998	96	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
093	7/21/1998	97	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
095	7/21/1998	97	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
096	7/21/1998	98	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
098	7/21/1998	98	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
099	7/21/1998	99	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
101	7/21/1998	99	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U

TABLE E-1
MINE FILL B INITIAL CHARACTERIAZATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	0.25	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	0.25	4	650
MFB ICS #	Sample Date	Grid #	Depth (in.)															
102	7/21/1998	100	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
104	7/21/1998	100	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
105	7/23/1998	101	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
107	7/23/1998	101	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
108	8/5/1998	38	0-12	250 U	250 U	3,670 D	250 U	260 U	250 U	250 U	250 U	250 U	250 U	2200 U	260 U	0.25 U	5620 D	650 U
110	8/5/1998	38	24-36	0.25 U	0.25 U	35.7 D	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	7.75	0.26 U	0.25 U	43.6 D	0.65 U
111	8/6/1998	29	0-12	25 U	25 U	3,150 D	25 U	26 U	25 U	25 U	25 U	25 U	25 U	237	26 U	0.25 U	2200	65 U
113	8/6/1998	29	24-36	0.25 U	0.25 U	14.0 D	0.25 U	0.26 U	0.486	0.25 U	0.25 U	1.25	0.25 U	9.53	0.26 U	0.25 U	59.6 D	0.65 U
114	8/6/1998	30	0-12	250 U	250 U	16,600 D	250 U	260 U	250 U	250 U	250 U	250 U	250 U	861 J	260 U	0.25 U	11000	650 U
116	8/6/1998	30	24-36	0.25 U	0.25 U	162.0 D	0.25 U	0.26 U	2760	0.25 U	0.25 U	0.25 U	0.25 U	12.7	0.26 U	0.25 U	68.3 D	0.65 U
117	11/16/1998	26	0-12	0.25 U	0.25 U	17.7 D	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	4.15 J	0.25 U	102 DJ	0.26 U	0.25 U	567 D	0.65 U
119	11/16/1998	26	24-36	0.25 U	0.25 U	0.535	0.25 U	0.26 U	1.87	0.25 U	0.25 U	1.6	0.25 U	9.42	0.26 U	0.25 U	36.1 D	0.65 U
120	11/16/1998	25	0-12	0.25 U	0.25 U	0.929	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	3.16 J	0.25 U	81.4 DJ	0.26 U	0.25 U	498 D	0.65 U
122	11/16/1998	25	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	1.98	0.25 U	0.25 U	1.61	0.25 U	6.11	0.26 U	0.25 U	17.3	0.65 U
123	11/16/1998	41	0-12	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	238 U	238 U	3.81	0.248 U	238 U	0.952 U	0.619 U
125	11/16/1998	41	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
126	11/16/1998	40	0-12	0.25 U	0.25 U	0.262	0.25 U	0.26 U	0.22 J	0.25 U	0.25 U	0.112J	0.25 U	5.26	0.26 U	0.25 U	1 U	0.65 U
128	11/16/1998	40	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
129	11/16/1998	50	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.156 J	0.25 U	0.25 U	0.185 J	0.25 U	3.54	0.26 U	0.25 U	1 U	0.65 U
131	11/16/1998	50	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
132	11/16/1998	49	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
134	11/16/1998	49	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
135	11/18/1998	48	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
137	11/18/1998	48	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
138	11/18/1998	47	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
140	11/18/1998	47	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
141	11/18/1998	46	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
143	11/18/1998	46	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
144	11/18/1998	45	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
146	11/18/1998	45	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
147	11/23/1998	44	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
149	11/23/1998	44	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
150	11/23/1998	43	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
152	11/23/1998	43	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
153	11/23/1998	42	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
155	11/23/1998	42	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
156	11/23/1998	39	0-12	0.238 U	0.238 U	0.449	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	238 U	238 U	0.567 J	0.248 U	238 U	0.952 U	0.619 U
158	11/23/1998	39	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
159	11/24/1998	57	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	198000 D	0.26 U	0.25 U	980 D	0.65 U
161	11/24/1998	57	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	3.28	0.26 U	0.25 U	6.26	0.65 U
162	11/24/1998	56	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	215 D	0.26 U	0.25 U	579 D	0.65 U
164	11/24/1998	56	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.19 J	0.26 U	0.25 U	3.26	0.65 U
165	11/24/1998	58	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	76.8 D	0.26 U	0.25 U	245 D	0.65 U
167	11/24/1998	58	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.69	0.26 U	0.25 U	6.72	0.65 U
168	11/24/1998	59	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	208 D	0.26 U	0.25 U	818 D	0.65 U
170	11/24/1998	59	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	6.43	0.26 U	0.25 U	20.8	0.65 U
171	12/1/1998	60	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	185 D	0.26 U	0.25 U	590 D	0.65 U
173	12/1/1998	60	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	3.07	0.26 U	0.25 U	1.43	0.65 U
174	12/1/1998	61	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	54.6	0.26 U	0.25 U	45.3 D	0.65 U
176	12/1/1998	61	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.59 J	0.26 U	0.25 U	1.72	0.65 U
177	12/1/1998	51	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	4.35	0.26 U	0.25 U	0.488 J	0.65 U
179	12/1/1998	51	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	3.08	0.26 U	0.25 U	1 U	0.65 U
180	12/2/1998	52	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	8	0.26 U	0.25 U	1 U	0.65 U
182	12/2/1998	52	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.96	0.26 U	0.25 U	1 U	0.65 U
183	12/8/1998	53	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	46.5	0.26 U	0.25 U	8.13	0.65 U
185	12/8/1998	53	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	4.73	0.26 U	0.25 U	2.07	0.65 U
186	12/9/1998	54	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	80.7 D	0.26 U	0.25 U	150 D	0.65 U
188	12/9/1998	54	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	4.14	0.26 U	0.25 U	7.32	0.65 U
189	12/9/1998	55	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	33.4	0.26 U	0.25 U	53.7 D	0.65 U

TABLE E-1
MINE FILL B INITIAL CHARACTERIAZATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	0.25	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	0.25	4	650
MFB ICS #	Sample Date	Grid #	Depth (in.)															
189	12/9/1998	55	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	33.4	0.26 U	0.25 U	53.7 D	0.65 U
191	12/9/1998	55	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	5.29	0.26 U	0.25 U	3.7	0.65 U
192	12/9/1998	88	0-12	0.25 U	0.25 U	1,820	250 U	260 U	250 U	250 U	250 U	250 U	250 U	3010	260 U	0.25 U	1910	650 U
194	12/9/1998	88	24-36	0.432 J	0.25 U	12.2	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	1.12 J	0.25 U	5.41	0.26 U	0.25 U	43.6 D	0.65 U
195	12/10/1998	89	0-12	0.25 U	0.25 U	250 U	250 U	260 U	250 U	250 U	250 U	250 U	250 U	983 J	260 U	0.25 U	10000	650 U
197	12/10/1998	89	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.852 J	0.26 U	0.25 U	15.8	0.65 U
199	12/10/1998	93	0-12	0.25 U	0.25 U	250 U	250 U	260 U	250 U	250 U	250 U	250 U	250 U	170 J	260 U	0.25 U	2170	650 U
201	12/10/1998	93	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.779 J	0.26 U	0.25 U	6.59	0.65 U
202	12/10/1998	68	0-12	250 U	250 U	250 U	250 U	260 U	250 U	250 U	250 U	250 U	250 U	2200 U	260 U	0.25 U	4410	650 U
204	12/10/1998	68	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.399 J	0.26 U	0.25 U	5.92	0.65 U
205	12/11/1998	69	0-12	250 U	250 U	941	250 U	260 U	250 U	250 U	250 U	250 U	250 U	2200000	260 U	0.25 U	24100	650 U
207	12/11/1998	69	24-36	1.89 J	2.5 U	26.1	2500 U	2.6 U	2.5 U	2500 U	2500 U	2500 U	2500 U	11.6 J	2.6 U	0.25 U	132	6500 U
208	12/11/1998	66	0-12	250 U	250 U	4,290	250 U	260 U	250 U	250 U	250 U	512	250 U	4090	0.26 U	0.238 U	16100	650 U
210	12/11/1998	66	24-36	0.25 U	0.25 U	0.4120J	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.711 J	0.26 U	0.25 U	6.47	0.65 U
211	12/14/1998	67	0-12	23.8 U	23.8 U	23.8 U	23.8 U	24.8 U	23.8 U	23.8 U	23.8 U	23.8 U	23.8 U	288	24.8 U	238 U	1660	61.9 U
213	12/14/1998	67	24-36	0.25 U	25.0 U	0.95	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.67 J	0.26 U	0.25 U	10.9	0.65 U
214	12/16/1998	92	0-12	25.0 U	25.0 U	250U	25 U	26 U	25 U	25 U	25 U	25 U	25 U	434	26 U	0.25 U	2400	65 U
216	12/16/1998	92	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.59	0.26 U	0.25 U	14.5	0.65 U
217	12/16/1998	91	0-12	25.0 U	25.0 U	3.28 J	25 U	26 U	25 U	25 U	25 U	25 U	25 U	274 J	26 U	0.25 U	2070	65 U
219	12/16/1998	91	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	3.34	0.26 U	0.25 U	26.8	0.65 U
220	12/16/1998	90	0-12	50.0 U	50.0 U	50 U	50 U	52 U	50 U	50 U	50 U	50 U	50 U	565	52 U	0.25 U	4500	130000 U
222	12/16/1998	90	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	3.87	0.26 U	0.25 U	22.4	0.65 U
223	12/17/1998	65	0-12	0.25 U	0.25 U	0.81	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	111 DJ	0.26 U	0.25 U	258 D	0.65 U
225	12/17/1998	64	0-12	0.25 U	0.25 U	1.4	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.354 J	0.25 U	67.6 DJ	0.26 U	0.25 U	325 D	0.65 U
227	12/17/1998	81	0-12	0.238 U	0.238 U	1.17	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	238 U	238 U	35.2	248 U	238 U	171 D	0.619 U
229	12/17/1998	81	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	1.07	0.25 U	0.25 U	0.465	0.25 U	1.27 J	0.26 U	0.25 U	2.5	0.65 U
230	12/17/1998	82	0-12	0.25 U	0.25 U	0.213 J	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	82.4 DJ	0.26 U	0.25 U	650 D	0.65 U
232	12/17/1998	82	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.26 J	0.26 U	0.25 U	4.24	0.65 U
233	12/28/1998	139	0-12	125 U	125 U	125 U	125 U	130 U	125 U	125 U	125 U	125 U	125 U	1830	130 U	0.25 U	12500	325 U
235	12/28/1998	139	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	13	0.26 U	0.25 U	67.8 D	0.65 U
236	12/29/1998	62	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	11.6	0.26 U	0.25 U	1 U	0.65 U
238	12/29/1998	62	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
239	12/29/1998	63	0-12	238 U	238 U	1.41	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	238 U	238 U	101 D	0.248 U	238 U	33.7 D	619 U
241	12/29/1998	63	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1.69	0.65 U
242	1/20/1999	124	0-12	0.25 U	0.25 U	4	0.25 U	0.26 U	0.5	0.25 U	0.25 U	0.4 J	0.25 U	5	0.26 U	0.25 U	5	0.65 U
244	1/20/1999	124	24-36	0.25 U	0.25 U	0.3	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	20	0.26 U	0.5	20	0.65 U
245	1/26/1999	123	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.67	0.26 U	0.25 U	1 U	0.65 U
247	1/26/1999	123	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.278	0.25 U	0.25 U	0.593	0.25 U	3.64	0.26 U	0.25 U	11.4	0.65 U
248	1/26/1999	140	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
250	1/26/1999	122	0-12	0.238 U	238 U	0.238 U	238 U	0.248 U	0.331	0.238 U	0.238 U	0.793	0.238 U	14	0.248 U	238 U	86.5 D	0.619 U
252	1/26/1999	122	24-36	0.25 U	0.25 U	0.317	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	763	0.25 U	27.6	0.26 U	0.25 U	219 D	0.65 U
253	1/26/1999	128	0-12	0.25 U	0.25 U	166 D	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	1240 J	0.25 U	56800	0.26 U	0.25 U	332 D	0.65 U
255	1/26/1999	128	24-36	0.25 U	0.25 U	32.7 D	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	276 J	0.25 U	8710	0.26 U	0.25 U	24.8 D	0.65 U
256	1/27/1999	127	0-12	0.25 U	0.25 U	0.285 J	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
258	1/27/1999	127	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
259	1/27/1999	125	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.332	0.25 U	5390	0.26 U	0.25 U	1.46	0.65 U
261	1/27/1999	125	24-36	0.238 U	238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	238 U	238 U	2750	0.248 U	238 U	4.92	619 U
262	1/27/1999	126	0-12	0.25 U	0.25 U	0.725	0.25 U	0.26 U	0.348	0.25 U	0.25 U	1.18	0.25 U	82.6 DJ	0.26 U	0.25 U	159 D	0.65 U
264	1/27/1999	126	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.88	0.26 U	0.25 U	7.78	0.65 U
265	1/27/1999	141	0-12	0.25 U	0.25 U	0.335	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	362 J	0.25 U	64.8 DJ	0.26 U	0.25 U	69.9 D	0.65 U
267	1/27/1999	141	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
268	1/28/1999	142	0-12	25.0 U	25.0 U	25 U	25 U	26 U	25 U	25 U	25 U	25 U	25 U	105 J	26 U	0.25 U	49.5	65 U
270	1/28/1999	142	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.258 J	0.26 U	0.25 U	3.12	0.65 U
271	1/28/1999	144	0-12	25.0 U	25.0 U	25 U	25 U	26 U	25 U	25 U	25 U	25 U	25 U	222	26 U	0.25 U	1470	65 U
273	1/28/1999	144	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.62 J	0.26 U	0.25 U	11.6	0.65 U
274	1/28/1999	143	0-12	23.8 U	23800 U	23.8 U	23.8 U	24.8 U	23.8 U	23.8 U	23.8 U	23.8 U	23.8 U	225	24.8 U	238 U	1490	61.9 U
276	1/28/1999	143	24-36	238 U	238 U	238 U	0.238 U	248 U	0.238 U	0.238 U	0.238 U	238 U	238 U	1.64 J	248 U	238 U	9.72	619 U

TABLE E-1
MINE FILL B INITIAL CHARACTERIAZATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	0.25	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	0.25	4	650
MFB ICS #	Sample Date	Grid #	Depth (in.)															
277	1/28/1999	145	0-12	25.0 U	25.0 U	25 U	25 U	26 U	25 U	25 U	25 U	25 U	25 U	209 J	26 U	0.25 U	1080	65 U
279	1/28/1999	145	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.985 J	0.26 U	0.25 U	7.73	0.65 U
280	1/28/1999	146	0-12	25.0 U	25.0 U	25 U	25 U	26 U	25 U	25 U	25 U	25 U	25 U	139 J	26 U	0.25 U	786	65 U
282	1/28/1999	146	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	3.45	0.65 U
283	2/3/1998	102	0-12	0.25 U	0.25 U	5.03	0.25 U	0.26 U	0.464	0.25 U	0.25 U	2.14	0.25 U	106 DJ	0.26 U	0.25 U	561 DJ	0.65 U
285	2/3/1998	102	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1.25	0.65 U
286	2/3/1998	113	0-12	0.25 U	0.25 U	2.03	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	11.7	0.26 U	0.25 U	34 D	0.65 U
288	2/3/1998	113	24-36	0.25 U	0.25 U	0.684	0.25 U	0.459 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	0.972 J	0.65 U
289	2/3/1998	112	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
291	2/3/1998	107	0-12	0.25 U	0.25 U	11.2	0.25 U	0.26 U	723	0.25 U	0.25 U	1.5 J	0.25 U	50.5	0.26 U	0.25 U	440 DJ	0.65 U
293	2/3/1998	107	24-36	0.25 U	0.25 U	20.3 D	0.25 U	0.26 U	2670	0.25 U	0.25 U	2140	0.25 U	13.1	0.26 U	0.25 U	32.8 D	0.65 U
294	2/3/1998	120	0-12	0.25 U	0.25 U	1.24	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	52.8	0.26 U	0.25 U	321 D	0.65 U
296	2/3/1998	120	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
297	2/3/1998	121	0-12	0.25 U	0.25 U	44.4 D	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	11	0.26 U	0.25 U	27.7D	0.65 U
299	2/3/1998	121	24-36	6.89	0.25 U	31.3 D	0.25 U	0.26 U	0.496	0.25 U	0.25 U	0.894 J	0.25 U	1.01J	0.26 U	0.25 U	3.21	0.65 U
300	2/9/1999	138	0-12	0.25 U	0.25 U	1.02	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.646 J	0.25 U	73.5 DJ	0.26 U	0.25 U	202 D	0.65 U
302	2/9/1999	138	24-36	0.25 U	0.25 U	0.285	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	179 J	0.25 U	6050	0.26 U	0.25 U	9.54	0.65 U
303	2/9/1999	129	0-12	0.25 U	0.25 U	1.16	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	303	0.25 U	2950	0.26 U	0.25 U	10.5	0.65 U
305	2/9/1999	129	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
306	2/17/1999	130	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
308	2/17/1999	130	24-36	238 U	238 U	0.238 U	238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.238 U	0.238 U	2.1 U	0.248 J	0.238 U	0.952 U	0.619 U
309	2/17/1999	131	0-12	0.25 U	0.25 U	3.52	0.25 U	0.26 U	0.314 J	0.25 U	0.25 U	1.27	0.25 U	128 DJ	0.26 U	0.25 U	386 D	0.65 U
311	2/17/1999	131	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	3.14	0.26 U	0.25 U	3.33	0.65 U
312	2/17/1999	132	0-12	0.25 U	0.25 U	1.06	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.794 J	0.25 U	10.9	0.26 U	0.25 U	12.5	0.65 U
314	2/17/1999	132	24-36	0.25 U	0.25 U	0.565	0.25 U	0.26 U	0.201 J	0.25 U	0.25 U	0.269	0.25 U	0.706 J	0.26 U	0.25 U	0.652 J	0.65 U
315	2/25/1999	137	0-12	0.25 U	0.25 U	0.686	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.819	0.25 U	94 DJ	0.26 U	0.25 U	500 D	0.65 U
317	2/25/1999	133	0-12	0.25 U	0.25 U	0.187 J	0.25 U	0.26 U	0.245 J	0.25 U	0.25 U	0.672	0.25 U	5.56	0.26 U	0.25 U	5.6	0.65 U
319	2/25/1999	133	24-36	0.25 U	0.25 U	0.533	0.25 U	0.26 U	0.191 J	0.25 U	0.25 U	0.249 J	0.25 U	6.81	0.26 U	0.25 U	11.9	0.65 U
320	3/1/1999	134	0-12	0.25 U	0.25 U	1.27	0.25 U	0.26 U	0.46	0.25 U	0.25 U	1.35 J	0.25 U	106 DJ	0.26 U	0.518	486 D	0.65 U
322	3/1/1999	135	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
324	3/1/1999	136	0-12	0.25 U	0.25 U	0.477	0.25 U	0.26 U	0.963	0.25 U	0.25 U	1.08	0.25 U	30.3	0.26 U	0.25 U	39.6 D	0.65 U
326	3/2/1999	103	0-12	0.25 U	250.0 U	1,530	250 U	260 U	250 U	250 U	250 U	250 U	250 U	178 J	0.26 U	0.25 U	1660	650 U
328	3/2/1999	103	24-36	4.66	0.25 U	26.8 D	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	1.53	0.25 U	4.75	0.26 U	0.25 U	16.4	0.65 U
329	3/2/1999	149	0-12	0.25 U	0.25 U	0.166 J	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	148 DJ	0.26 U	0.25 U	1250	0.65 U
331	3/2/1999	149	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.897 J	0.26 U	0.25 U	8.12	0.65 U
332	3/4/1999	150	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.02 J	0.26 U	0.25 U	5.12	0.65 U
334	3/4/1999	150	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	222 DJ	0.26 U	0.25 U	736 D	0.65 U
335	3/4/1999	148	0-12	0.25 U	0.25 U	2.23	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	198 DJ	0.26 U	0.25 U	1130 D	0.65 U
337	3/4/1999	148	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	107 DJ	0.26 U	0.25 U	676 D	0.65 U
338	3/4/1999	115	0-12	119 U	119 U	754	119 U	124 U	119 U	119 U	119 U	119 U	119 U	30.1 J	124 U	238 U	106 J	310 U
340	3/4/1999	115	24-36	0.25 U	0.25 U	2	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1.44	0.65 U
341	3/19/1999	151	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	14.7	0.26 U	0.25 U	13	0.65 U
342	3/19/1999	151	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1.35	0.65 U
344	6/7/1999	152	0-12	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.238 U	0.238 U	53.6 DJ	0.248 U	0.238 U	307 D	0.619 U
346	6/7/1999	152	24-36	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	238 U	238 U	238 U	238 U	238 U	2.1 U	0.248 U	0.25 U	3.64	0.619 U
347	6/7/1999	74	0-12	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	238 U	238 U	238 U	238 U	238 U	146 DJ	0.248 U	0.25 U	1100 D	0.619 U
349	6/7/1999	74	24-36	0.238 U	0.238 U	0.167 J	0.238 U	0.248 U	622	238 U	238 U	0.598	238 U	5.97	0.248 U	0.25 U	37 D	0.619 U
350	6/9/1999	153	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	207 DJ	0.26 U	0.25 U	1360 D	0.65 U
352	6/9/1999	153	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	6.07	650 U
353	6/9/1999	154	0-12	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	238 U	238 U	238 U	238 U	2.14 E	0.248 U	0.25 U	6490 PE	0.619 U
355	6/9/1999	154	24-36	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	238 U	238 U	238 U	238 U	0.842 J	0.248 U	0.25 U	5.64	0.619 U
356	6/10/1999	72	0-12	2500 U	2500 U	1870 J	2500 U	2600 U	2500 U	2500 U	2500 U	2500 U	2500 U	2.2 U	2600 U	0.25 U	11400	6500 U
358	6/10/1999	72	24-36	0.25 U	0.25 U	2.09	0.25 U	0.26 U	1.05	0.25 U	0.25 U	0.696	0.25 U	3.9	0.26 U	0.25 U	12.4	0.65 U
359	6/10/1999	75	0-12	0.25 U	0.25 U	0.533	0.25 U	0.26 U	0.226 J	0.25 U	0.25 U	0.324 P	0.25 U	8.75	0.26 U	0.25 U	35.7 E	0.65 U
361	6/10/1999	75	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.236 J	0.25 U	0.25 U	0.327 P	0.25 U	3.76	0.26 U	0.25 U	7.21	0.65 U
362	6/10/1999	76	0-12	0.25 U	0.25 U	0.46	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	89 E	0.26 U	0.25 U	243 E	0.65 U
364	6/10/1999	76	24-36	0.25 U	0.25 U	0.278	0.25 U	0.26 U	0.343	0.25 U	0.25 U	0.25 U	0.25 U	2.78	0.26 U	0.25 U	9.58	0.65 U

TABLE E-1
MINE FILL B INITIAL CHARACTERIAZATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	0.25	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	0.25	4	650
MFB ICS #	Sample Date	Grid #	Depth (in.)															
365	6/10/1999	77	0-12	0.25 U	0.25 U	0.564	0.25 U	0.26 U	0.218 J	0.25 U	0.25 U	1.38	0.25 U	23.5	0.26 U	0.25 U	129 E	0.65 U
367	6/10/1999	77	24-36	0.25 U	0.25 U	0.401	0.25 U	0.26 U	0.339	0.25 U	0.25 U	0.688	0.25 U	7.26	0.26 U	0.25 U	46.4 E	0.65 U
368	6/10/1999	79	0-12	0.25 U	0.25 U	56.5 E	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	4.33	0.25 U	151 E	0.26 U	0.25 U	1370 E	0.65 U
370	6/10/1999	79	24-36	0.25 U	0.25 U	57 E	0.25 U	0.26 U	3.46 P	0.25 U	0.25 U	1.62	0.25 U	11.4	0.26 U	0.25 U	91 E	0.65 U
371	6/17/1999	155	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.43	0.26 U	0.25 U	0.92 J	0.65 U
373	6/17/1999	155	24-36	0.217 U	0.217 U	0.217 U	0.217 U	0.226 U	0.217 U	0.217 U	0.217 U	0.217 U	0.217 U	1.91 U	0.226 U	0.217 U	2.79	0.565 U
374	6/17/1999	156	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	7.77	0.26 U	0.25 U	1.47	0.65 U
376	6/17/1999	156	24-36	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.238 U	0.238 U	1.5 J	0.248 U	0.238 U	2.19	0.619 U
377	6/18/1999	157	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	250 E	0.26 U	0.25 U	1260 E	0.65 U
379	6/18/1999	157	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	17.1	0.26 U	0.25 U	104 E	0.65 U
380	6/18/1999	158	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	28.9	0.26 U	0.25 U	162 E	0.65 U
382	6/18/1999	158	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	3.19	0.26 U	0.25 U	5.58	0.65 U
383	6/18/1999	159	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	8.76	0.26 U	0.25 U	3.22	0.65 U
385	6/18/1999	159	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
386	6/18/1999	160	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	49.6	0.26 U	0.25 U	106 E	0.65 U
388	6/18/1999	160	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
389	6/18/1999	161	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	5.69	0.26 U	0.25 U	13.1	0.65 U
391	6/18/1999	162	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	10.4	0.26 U	0.25 U	18.7	0.65 U
393	6/18/1999	162	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.13 J	0.26 U	0.25 U	5.84	0.65 U
394	6/22/1999	163	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	46.2	0.26 U	0.25 U	246 E	0.65 U
396	6/22/1999	163	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.17 J	0.26 U	0.25 U	18.5	0.65 U
397	6/22/1999	164	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.274	0.25 U	166 E	0.26 U	0.25 U	878 E	0.65 U
399	6/22/1999	164	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.81 J	0.26 U	0.25 U	11.2	0.65 U
400	6/23/1999	165	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.144 J	0.25 U	0.25 U	0.305	0.25 U	139 D	0.26 U	0.25 U	751 D	0.65 U
402	6/23/1999	165	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	3.35	0.65 U
403	6/23/1999	166	0-12	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.222 J	0.238 U	76.4 D	0.248 U	0.25 U	257 D	0.619 U
405	6/23/1999	166	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	3.06	0.26 U	0.25 U	9.44	0.65 U
406	6/23/1999	167	0-12	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.267 U	0.238 U	80.1 DPJ	0.248 U	0.25 U	578 D	0.619 U
408	6/23/1999	167	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.04 J	0.26 U	0.25 U	11.5	0.65 U
409	6/30/1999	70	0-12	2.5 U	2.5 U	1620 D	2.5 U	2.6 U	19.3 P	2.5 U	2.5 U	2.5 U	2.5 U	618 DJ	2.6 U	2.5 U	7070 D	6.5 U
411	6/30/1999	70	24-36	1.33 P	0.25 U	13.2	0.25 U	0.26 U	0.552	0.25 U	0.25 U	1.27	0.25 U	15.7	0.26 U	0.25 U	57.6 E	0.65 U
412	6/30/1999	147	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	13.8	0.26 U	0.25 U	4.75	0.65 U
414	6/30/1999	147	24-36	0.238 U	0.238 U	0.238 U	0.238 U	248 U	0.238 U	0.238 U	0.238 U	0.238 U	0.238 U	2.1 U	248 U	0.238 U	1.3 P	0.619 U
415	6/30/1999	168	0-12	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.238 U	0.238 U	28.1	0.248 U	0.238 U	35.2 D	0.619 U
417	6/30/1999	168	24-36	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.238 U	0.238 U	2.1 U	0.248 U	0.238 U	0.952 U	0.619 U
418	6/30/1999	169	0-12	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.238 U	0.238 U	10.7	0.248 U	0.238 U	0.952 U	0.619 U
420	6/30/1999	169	24-36	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.238 U	0.238 U	2.1 U	0.248 U	0.238 U	0.952 U	0.619 U
421	7/6/2009	170	0-12	0.25 U	0.25 U	0.268 P	0.25 U	0.26 U	0.382	0.25 U	0.25 U	0.687	0.25 U	363 E	0.26 U	0.25 U	11600 E	0.65 U
423	7/6/2009	170	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	3.75	0.26 U	0.25 U	15.5	0.65 U
424	7/6/2009	171	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.172 J	0.25 U	0.25 U	0.324	0.25 U	250 E	0.26 U	0.25 U	1510 E	0.65 U
426	7/6/2009	171	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	4.18	0.26 U	0.25 U	28.1 E	0.65 U
427	7/6/2009	172	0-12	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.482	0.238 U	0.238 U	0.883	0.238 U	157 E	0.248 U	0.25 U	925 E	0.619 U
429	7/6/2009	172	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	5.79	0.26 U	0.25 U	22.2	0.65 U
430	7/7/1999	173	0-12	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.238 U	0.238 U	2.1 U	0.248 U	0.238 U	0.952 U	0.619 U
432	7/7/1999	173	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
433	7/7/1999	174	0-12	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.238 U	0.238 U	2.1 U	0.248 U	0.238 U	0.952 U	0.619 U
435	7/7/1999	174	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
436	7/8/1999	176	0-12	0.238 U	0.238 U	0.268	0.238 U	0.248 U	0.172 J	0.238 U	0.238 U	0.202 J	0.238 U	2.1 U	0.248 U	0.25 U	0.952 U	0.619 U
438	7/8/1999	176	24-36	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.238 U	0.238 U	2.1 U	0.248 U	0.25 U	0.952 U	0.619 U
439	7/8/1999	177	0-12	0.25 U	0.25 U	1.44	0.25 U	0.26 U	0.36	0.25 U	0.25 U	0.775	0.25 U	10.9	0.26 U	0.25 U	56.7 E	0.65 U
441	7/8/1999	177	24-36	0.238 U	0.238 U	1.13	0.238 U	0.248 U	0.16 J	0.238 U	0.238 U	0.438	0.238 U	8.34	0.248 U	0.25 U	3.65	0.128 J
442	7/8/1999	175	0-12	0.238 U	0.238 U	5.59	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.43	0.238 U	37.1	0.248 U	0.25 U	0.458 J	0.619 U
444	7/8/1999	175	24-36	0.227 U	0.227 U	0.227 U	0.227 U	0.236 U	0.227 U	0.227 U	0.227 U	0.227 U	0.227 U	4.31	0.236 U	0.25 U	1.26	0.591 U
445	7/9/1999	178	0-12	0.227 U	0.227 U	0.442	0.227 U	0.236 U	0.577	0.227 U	0.227 U	0.835	0.227 U	33.3	0.236 U	0.25 U	17.9	0.591 U
448	7/9/1999	179	0-12	0.25 U	0.25 U	0.122 J	0.25 U	0.26 U	0.221 J	0.25 U	0.25 U	0.276	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
450	7/9/1999	179	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
451	7/9/1999	180	0-12	0.227 U	0.227 U	0.983	0.227 U	0.236 U	0.215 J	0.227 U	0.227 U	0.259	0.227 U	1.7 J	0.236 U	0.25 U	2.44	0.591 U
453	7/9/1999	180	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U

TABLE E-1
MINE FILL B INITIAL CHARACTERIAZATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	0.25	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	0.25	4	650
MFB ICS #	Sample Date	Grid #	Depth (in.)															
454	7/9/1999	181	0-12	0.227 U	0.227 U	0.148 J	0.227 U	0.236 U	0.151 J	0.227 U	0.227 U	0.258	0.227 U	2 U	0.236 U	0.25 U	0.909 U	0.591 U
456	7/9/1999	181	24-36	0.227 U	0.227 U	1.79	0.227 U	0.236 U	0.294	0.227 U	0.227 U	0.595	0.227 U	5.86	0.236 U	0.25 U	20.5	0.591 U
457	7/13/1999	31	0-12	0.25 U	0.25 U	4.81	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	4.92 P	0.25 U	2.2 U	0.26 U	0.25 U	4850 PE	0.65 U
459	7/13/1999	31	24-36	0.25 U	0.25 U	0.931	0.25 U	0.26 U	0.408	0.25 U	0.25 U	1.98	0.25 U	7	0.26 U	0.25 U	38.2 E	0.65 U
460	7/13/1999	33	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	1.03	0.25 U	0.25 U	2.11	0.25 U	2.44	0.26 U	0.25 U	7.92	0.65 U
462	7/13/1999	33	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	1.03	0.25 U	0.25 U	0.749	0.25 U	2.32	0.26 U	0.25 U	3.09	0.65 U
463	7/13/1999	27	0-12	0.25 U	0.25 U	20.9 E	0.25 U	0.26 U	1.21	0.25 U	0.25 U	2.64	0.25 U	84.4 E	0.26 U	0.25 U	711 E	0.65 U
465	7/13/1999	27	24-36	0.25 U	0.25 U	11.9	0.25 U	0.26 U	1.41	0.25 U	0.25 U	1.24	0.25 U	2.86	0.26 U	0.25 U	24.8	0.65 U
466	7/14/1999	182	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
468	7/14/1999	182	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
469	7/14/1999	183	0-12	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2 U	0.26 U	0.25 U	1 U	0.65 U
471	7/14/1999	183	24-36	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.238 U	0.238 U	2.1 U	0.248 U	0.25 U	0.952 U	0.619 U
472	7/14/1999	105	0-12	0.25 U	0.25 U	174 E	0.25 U	0.26 U	1.31	0.25 U	0.25 U	4.07	0.25 U	61.8	0.26 U	0.25 U	600 E	0.65 U
474	7/14/1999	105	24-36	0.238 U	0.238 U	21.1 E	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	1.5 P	0.238 U	14.5	0.248 U	0.25 U	106 E	0.619 U
475	7/15/1999	184	0-12	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.238 U	0.238 U	2.1 U	0.248 U	0.238 U	0.952 U	0.619 U
477	7/15/1999	184	24-36	0.238 U	0.238 U	0.238 U	0.238 U	0.248 U	0.238 U	0.238 U	0.238 U	0.238 U	0.238 U	2.1 U	0.248 U	0.25 U	0.952 U	0.619 U
478	7/15/1999	185	0-12	0.227 U	0.227 U	3230 E	0.227 U	0.236 U	0.923	0.227 U	0.227 U	0.227 U	0.227 U	1.3 J	0.236 U	0.25 U	5.03	0.591 U
480	7/15/1999	185	24-36	0.227 U	0.227 U	0.294	0.227 U	0.236 U	0.707	0.227 U	0.227 U	0.46	0.227 U	2 U	0.236 U	0.25 U	0.909 U	0.591 U
481	8/10/1999	186	0-12	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	16	2.5 U	0.5 U	100	2.5 U
483	8/10/1999	186	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.93	0.25 U	0.5 U	2.7	0.25 U
484	8/16/1999	187	0-12	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	40	2.5 U	2.5 U	47	2.5 U
486	8/16/1999	187	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.9	0.25 U	2.5 U	9.2	0.25 U
487	8/16/1999	188	0-12	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	66	25 U	2.5 U	330	25 U
489	8/16/1999	188	24-36	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.2	0.25 U	2.5 U	15	0.25 U
490	8/16/1999	189	0-12	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	24	2.5 U	2.5 U	83	2.5 U
492	8/16/1999	189	24-36	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5	2.5 U	2.5 U	22	2.5 U
493	8/18/1999	190	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	150 D	1 U	2.5 U	1100 D	1 U
495	8/18/1999	190	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.4	1 U	2.5 U	6.8	1 U
496	8/18/1999	191	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	220 D	1 U	2.5 U	1600 D	1 U
498	8/18/1999	191	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	7.2	1 U	2.5 U	49 D	1 U
499	8/18/1999	192	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	210 D	1 U	2.5 U	1500 D	1 U
501	8/18/1999	192	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.7	1 U	2.5 U	31 D	1 U
502	8/18/1999	193	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	26 D	1 U	2.5 U	140 D	1 U
504	8/18/1999	193	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4.5	1 U	2.5 U	12	1 U
505	8/18/1999	118	0-12	50 U	50 U	200	50 U	50 U	50 U	50 U	50 U	50 U	50 U	31 J	50 U	2.5 U	140	50 U
507	8/18/1999	118	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.66 J	1 U	3.7	1 U	2.5 U	2.1	1 U
508	8/26/1999	194	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.92	1 U	2.5 U	2.67	1 U
510	8/26/1999	194	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.687 J	1 U	2.5 U	0.664 J	1 U
511	9/8/1999	196	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	20.8	1 U	2.5 U	1.8	1 U
513	9/8/1999	196	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.11	1 U	2.5 U	6.86	1 U
514	9/8/1999	198	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	7.6	1 U	2.5 U	2.72	1 U
516	9/8/1999	198	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.467 J	1 U	2.5 U	2.53	1 U
517	9/8/1999	197	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5.76	1 U	2.5 U	0.865 J	1 U
519	9/8/1999	197	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.807 J	1 U	2.5 U	3.46	1 U
520	9/8/1999	199	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	25.7 D	1 U	2.5 U	89.9 D	1 U
522	9/8/1999	199	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	6.24	1 U	2.5 U	38.3 D	1 U
523	9/8/1999	200	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	28.5 D	1 U	2.5 U	135 D	1 U
525	9/8/1999	200	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	6.55	1 U	2.5 U	40.2 D	1 U
526	9/9/1999	201	0-12	1 U	1 U	0.2 J	1 U	1 U	0.25 J	1 U	1 U	0.284 J	1 U	1.84	1 U	2.5 U	0.16 J	1 U
528	9/9/1999	201	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.0995 J	1 U	2.5 U	1 U	1 U
529	9/9/1999	202	0-12	1 U	1 U	1 U	1 U	1 U	0.667 J	1 U	1 U	0.548 J	1 U	0.864 J	1 U	2.5 U	0.208 J	1 U
531	9/9/1999	202	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
532	9/9/1999	203	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.14 J	1 U	2.5 U	1 U	1 U
534	9/9/1999	203	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.128 J	1 U	2.5 U	1 U	1 U
535	9/14/1999	204	0-12	1 U	1 U	0.284 J	1 U	1 U	0.435 J	1 U	1 U	0.786 J	1 U	431 JD	1 U	2.5 U	2700 D	1 U
537	9/14/1999	204	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.88	1 U	2.5 U	6.72	1 U
538	9/14/1999	195	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.319 J	1 U	2.5 U	1.47	1 U
540	9/14/1999	195	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.173 J	1 U	2.5 U	0.411 J	1 U

TABLE E-1
MINE FILL B INITIAL CHARACTERIAZATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	0.25	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	0.25	4	650
MFB ICS #	Sample Date	Grid #	Depth (in.)															
541	9/15/1999	205	0-12	1 U	1 U	1 U	1 U	1 U	0.113 J	1 U	1 U	0.45 J	1 U	252 D	1 U	2.5 U	1340 D	1 U
543	9/15/1999	205	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.07	1 U	2.5 U	5.65	1 U
544	9/15/1999	206	0-12	1 U	1 U	1 U	1 U	1 U	0.714 J	1 U	1 U	0.613 J	1 U	2.11	1 U	2.5 U	6.39	1 U
546	9/22/1999	207	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	26 D	1 U	2.5 U	46 D	1 U
548	9/22/1999	207	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.5	1 U	2.5 U	4.4	1 U
549	9/22/1999	208	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	18	1 U	2.5 U	10	1 U
551	9/22/1999	208	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.1	1 U	2.5 U	3.8	1 U
552	9/22/1999	209	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.15 J	1 U	17	1 U	2.5 U	7.4	1 U
554	9/22/1999	209	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.3	1 U	2.5 U	2.6	1 U
555	9/22/1999	210	0-12	1 U	1 U	0.11 J	1 U	1 U	0.32 J	1 U	1 U	0.67 J	1 U	280 D	1 U	2.5 U	2000 D	1 U
557	9/22/1999	210	24-36	1 U	1 U	1 U	1 U	1 U	0.3 J	1 U	1 U	1 U	1 U	1.9	1 U	2.5 U	3.1	1 U
558	9/22/1999	211	0-12	1 U	1 U	0.26 J	1 U	1 U	0.14 J	1 U	1 U	0.44 J	1 U	160 D	1 U	2.5 U	1200 D	1 U
560	9/22/1999	211	24-36	1 U	1 U	1 U	1 U	1 U	0.15 J	1 U	1 U	0.12 J	1 U	3.1	1 U	2.5 U	4.4	1 U
561	9/22/1999	212	0-12	1 U	1 U	0.24 J	1 U	1 U	1 U	1 U	1 U	0.17 J	1 U	4.6	1 U	2.5 U	0.21 J	1 U
563	9/22/1999	213	0-12	1 U	1 U	0.12 J	1 U	1 U	0.1 J	1 U	1 U	0.19 J	1 U	1.2	1 U	2.5 U	0.9 J	1 U
565	9/22/1999	213	24-36	1 U	1 U	0.48 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.56 J	1 U	2.5 U	5.6	1 U
566	9/22/1999	214	0-12	1 U	1 U	1.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	7.4	1 U	2.5 U	0.25 J	1 U
568	9/22/1999	214	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1	1 U	2.5 U	11	1 U
569	9/22/1999	215	0-12	1 U	1 U	5.7	1 U	1 U	1 U	1 U	1 U	1.1	1 U	100 D	1 U	2.5 U	1100 D	1 U
571	9/22/1999	215	24-36	1 U	1 U	0.27 J	1 U	1 U	0.12 J	1 U	1 U	1 U	1 U	1.2	1 U	2.5 U	4.2	1 U
572	9/22/1999	216	0-12	1 U	1 U	1.8	1 U	1 U	1 U	1 U	1 U	0.61 J	1 U	1.4	1 U	2.5 U	2.1	1 U
574	9/22/1999	216	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.71 J	1 U	2.5 U	5.6	1 U
575	9/24/1999	217	0-12	1 U	1 U	67 D	1 U	1 U	1 U	1 U	1 U	1.9	1 U	54 D	1 U	7.2	200 D	1 U
577	9/24/1999	218	0-12	1 U	1 U	1.4	1 U	1 U	1 U	1 U	1 U	0.31 J	1 U	0.19 J	1 U	2.5 U	0.27 J	1 U
579	9/24/1999	218	24-36	1 U	1 U	0.5 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.31 J	1 U	2.5 U	0.17 J	1 U
580	9/27/1999	219	0-12	1 U	1 U	0.78 J	1 U	1 U	0.28 J	1 U	1 U	0.42 J	1 U	4.4	1 U	2.5 U	0.67 J	1 U
582	9/27/1999	219	24-36	1 U	1 U	0.52 J	1 U	1 U	0.21 J	1 U	1 U	0.14 J	1 U	1.6	1 U	2.5 U	0.59 J	1 U
583	9/27/1999	220	0-12	1 U	1 U	50 D	1 U	1 U	2 U	1 U	1 U	2 U	1 U	13	1 U	2.5 U	63 D	1 U
585	9/27/1999	220	24-36	1 U	1 U	30 D	1 U	1 U	2 U	1 U	1 U	1.1	1 U	0.49 J	1 U	2.5 U	0.16 J	1 U
586	9/27/1999	221	0-12	1 U	1 U	0.24 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.33 J	1 U	2.5 U	0.67 J	1 U
588	9/27/1999	221	24-36	1 U	1 U	0.82 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.8	1 U	2.5 U	0.49 J	1 U
589	9/27/1999	222	0-12	1 U	1 U	0.2 J	1 U	1 U	0.12 J	1 U	1 U	1 U	1 U	0.33 J	1 U	2.5 U	1 U	1 U
591	9/27/1999	222	24-36	1 U	1 U	0.18 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.39 J	1 U	2.5 U	0.82 J	1 U
592	9/27/1999	223	0-12	1 U	1 U	0.52 J	1 U	1 U	1 U	1 U	1 U	0.1 J	1 U	0.37 J	1 U	2.5 U	2.5	1 U
594	9/27/1999	223	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.92 J	1 U	2.5 U	1.1	1 U
595	9/27/1999	224	0-12	1 U	1 U	0.24 J	1 U	1 U	0.13 J	1 U	1 U	0.25 J	1 U	0.89 J	1 U	2.5 U	1 U	1 U
597	9/27/1999	224	24-36	1 U	1 U	0.1 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 J	1 U	2.5 U	1	1 U
598	9/27/1999	225	0-12	1 U	1 U	25 D	1 U	1 U	1 U	1 U	1 U	2.1	1 U	29 D	1 U	2.5 U	190 D	1 U
600	9/27/1999	225	24-36	1 U	1 U	1.2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.2	1 U	2.5 U	3.6	1 U
601	9/28/1999	226	0-12	1 U	1 U	490 D	1 U	1 U	1 U	1 U	1 U	8.6	1 U	210 D	1 U	2.5 U	1800 D	1 U
603	9/28/1999	226	24-36	1 U	1 U	760 D	1 U	1 U	1 U	1 U	1 U	1 U	1 U	240 JD	1 U	2.5 U	2300 D	1 U
604	9/28/1999	227	0-12	6.7	1 U	2800 D	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 JD	1 U	2.5 U	1000 D	1 U
606	9/28/1999	227	24-36	2.2	1 U	100 D	1 U	1 U	1 U	1 U	1 U	1 U	1 U	18	1 U	2.5 U	74 D	1 U
607	9/28/1999	228	0-12	1 U	1 U	1	1 U	1 U	0.26 J	1 U	1 U	0.63 J	1 U	21 D	1 U	2.5 U	58 D	1 U
609	9/28/1999	228	24-36	1 U	1 U	0.38 J	1 U	1 U	0.12 J	1 U	1 U	1 U	1 U	1.8	1 U	2.5 U	5.2	1 U
610	9/28/1999	229	0-12	1 U	1 U	18	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.8 J	1 U	2.5 U	0.17 J	1 U
612	9/28/1999	229	24-36	1 U	1 U	1.3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.93 J	1 U	2.5 U	3.1	1 U
613	9/28/1999	230	0-12	1 U	1 U	0.31 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.16 J	1 U	2.5 U	1 U	1 U
615	9/28/1999	230	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.43 J	1 U	2.5 U	1 U	1 U
616	9/28/1999	231	0-12	1 U	1 U	0.59 J	1 U	1 U	0.21 J	1 U	1 U	0.29 J	1 U	14	1 U	2.5 U	30 D	1 U
618	9/30/1999	232	0-12	1 U	1 U	0.15 J	1 U	1 U	1 U	1 U	1 U	0.23 J	1 U	4.9	1 U	2.5 U	6.4	1 U
620	9/30/1999	232	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.19 J	1 U	2.5 U	2.2	1 U
621	9/30/1999	233	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.12 J	1 U	0.44 J	1 U	2.5 U	0.1 J	1 U
623	9/30/1999	234	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.12 J	1 U	1 U	1 U	2.5 U	1 U	1 U
625	9/30/1999	235	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.2 J	1 U	38 D	1 U	2.5 U	2.4	1 U
627	9/30/1999	235	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.9	1 U	2.5 U	0.95 J	1 U
628	9/30/1999	236	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.17 J	1 U	71 D	1 U	2.5 U	320 D	1 U
630	9/30/1999	236	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.77 J	1 U	2.5 U	1.5	1 U

TABLE E-1
MINE FILL B INITIAL CHARACTERIAZATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	0.25	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	0.25	4	650
MFB ICS #	Sample Date	Grid #	Depth (in.)															
631	10/1/1999	238	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.2 J	1 U	2.5 U	0.33 J	1 U
633	10/1/1999	238	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.11 J	1 U	2.5 U	0.45 J	1 U
634	10/1/1999	239	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
636	10/1/1999	239	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.12 J	1 U	2.5 U	0.47 J	1 U
637	10/1/1999	237	0-12	1 U	1 U	0.23 J	1 U	1 U	0.37 J	1 U	1 U	0.72 J	1 U	170 D	1 U	2.5 U	790 D	1 U
639	10/1/1999	237	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	13	1 U	2.5 U	75 D	1 U
640	10/18/1999	240	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	0.22 J	1 U
642	10/18/1999	240	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
643	10/18/1999	241	0-12	1 U	1 U	1.98	1 U	1 U	1 U	1 U	1 U	0.277 J	1 U	3.66	1 U	2.5 U	7.62	1 U
645	10/18/1999	241	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
646	10/12/1999	242	0-12	1 U	1 U	0.15 J	1 U	1 U	0.12 J	1 U	1 U	0.19 J	1 U	0.28 J	1 U	2.5 U	1 U	1 U
648	10/12/1999	242	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.98 J	1 U	2.5 U	1 U	1 U
649	10/12/1999	243	0-12	1 U	1 U	0.35 J	1 U	1 U	0.21 J	1 U	1 U	0.44 J	1 U	2.9	1 U	2.5 U	5.2	1 U
651	10/12/1999	243	24-36	1 U	1 U	0.24 J	1 U	1 U	0.17 J	1 U	1 U	0.31 J	1 U	1.4	1 U	2.5 U	1.8	1 U
652	10/12/1999	244	0-12	0.33 J	1 U	4.5	1 U	1 U	2 U	1 U	1 U	1.7	1 U	53 D	1 U	2.5 U	370 D	1 U
654	10/12/1999	244	24-36	1 U	1 U	0.24 J	1 U	1 U	0.26 J	1 U	1 U	0.52 J	1 U	4.1	1 U	2.5 U	2.3	1 U
655	10/12/1999	245	0-12	1 U	1 U	0.79 J	1 U	1 U	1 U	1 U	1 U	0.34 J	1 U	1.2	1 U	2.5 U	0.26 J	1 U
657	10/12/1999	245	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.78 J	1 U	2.5 U	0.29 J	1 U
658	10/12/1999	246	0-12	1 U	1 U	0.6 J	1 U	1 U	0.2 J	1 U	1 U	0.49 J	1 U	17	1 U	2.5 U	41 D	1 U
660	10/12/1999	246	24-36	1 U	1 U	0.15 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1	1 U	2.5 U	1.5	1 U
661	10/12/1999	247	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1	1 U	2.5 U	0.4 J	1 U
663	10/12/1999	247	24-36	1 U	1 U	0.13 J	1 U	1 U	0.17 J	1 U	1 U	0.18 J	1 U	0.85 J	1 U	2.5 U	0.2 J	1 U
664	10/12/1999	248	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.83 J	1 U	2.5 U	0.1 J	1 U
666	10/18/1999	249	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.142 J	1 U	30.4 D	1 U	2.5 U	114 D	1 U
668	10/18/1999	249	24-36	1 U	1 U	1 U	1 U	1 U	0.128 J	1 U	1 U	0.148 J	1 U	1.38	1 U	2.5 U	5.76	1 U
669	10/18/1999	250	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	9.38	1 U	2.5 U	0.188 J	1 U
671	10/18/1999	250	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.93	1 U	2.5 U	0.563 J	1 U
672	10/19/1999	251	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	31 D	1 U	2.5 U	57 D	1 U
674	10/19/1999	251	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.7	1 U	2.5 U	7.5	1 U
675	10/19/1999	252	0-12	1 U	1 U	0.15 J	1 U	1 U	1 U	1 U	1 U	0.13 J	1 U	0.12 J	1 U	2.5 U	0.11 J	1 U
677	10/19/1999	252	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.3 J	1 U	2.5 U	0.24 J	1 U
678	10/19/1999	253	0-12	1 U	1 U	0.42 J	1 U	1 U	1 U	1 U	1 U	0.15 J	1 U	0.24 J	1 U	2.5 U	0.29 J	1 U
680	10/19/1999	253	24-36	1 U	1 U	0.22 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.51 J	1 U	2.5 U	1.1	1 U
681	10/19/1999	254	0-12	1 U	1 U	0.37 J	1 U	1 U	0.25 J	1 U	1 U	0.35 J	1 U	1	1 U	2.5 U	0.55 J	1 U
683	10/19/1999	254	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.4 J	1 U	2.5 U	0.16 J	1 U
684	10/19/1999	255	0-12	1 U	1 U	0.23 J	1 U	1 U	1 U	1 U	1 U	0.14 J	1 U	0.11 J	1 U	2.5 U	0.15 J	1 U
686	10/19/1999	255	24-36	1 U	1 U	1.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.13 J	1 U	2.5 U	0.18 J	1 U
687	10/20/1999	256	0-12	1 U	1 U	6.8	1 U	1 U	2 U	1 U	1 U	3.5	1 U	170 D	1 U	2.5 U	300 D	1 U
689	10/20/1999	256	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.4	1 U	2.5 U	1.1	1 U
690	10/20/1999	257	0-12	1 U	1 U	1.2	1 U	1 U	0.46 J	1 U	1 U	1.1	1 U	17	1 U	2.5 U	1.6	1 U
692	10/20/1999	257	24-36	1 U	1 U	0.26 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.3	1 U	2.5 U	0.39 J	1 U
693	10/21/1999	258	0-12	1 U	1 U	0.13 J	1 U	1 U	1 U	1 U	1 U	0.23 J	1 U	10	1 U	2.5 U	2.1	1 U
695	10/21/1999	258	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
696	10/21/1999	259	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.14 J	1 U	2.5 U	0.38 J	1 U
698	10/21/1999	259	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.16 J	1 U	2.5 U	1 U	1 U
699	10/21/1999	260	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.11 J	1 U	2.5 U	0.51 J	1 U
701	10/21/1999	260	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
702	10/21/1999	261	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
704	10/21/1999	261	24-36	1 U	1 U	0.16 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.5	1 U	2.5 U	4.8	1 U
705	10/21/1999	262	0-12	1 U	1 U	0.16 J	1 U	1 U	0.32 J	1 U	1 U	0.71 J	1 U	230 D	1 U	2.5 U	890 D	1 U
707	10/21/1999	262	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.9	1 U	2.5 U	4.8	1 U
708	10/26/1999	263	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.23 J	1 U	4.5	1 U	2.5 U	0.13 J	1 U
710	10/26/1999	263	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.1	1 U	2.5 U	0.47 J	1 U
711	10/26/1999	264	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.7	1 U	2.5 U	1 U	1 U
713	10/26/1999	264	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.5	1 U	2.5 U	0.26 J	1 U
714	11/3/1999	265	0-12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	13	1 U	2.5 U	2.3	1 U
716	11/3/1999	265	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.9	1 U	2.5 U	0.44 J	1 U
717	11/3/1999	266	0-12	1 U	1 U	1 U	1 U	1 U	0.16 J	1 U	1 U	0.24 J	1 U	9.4	1 U	2.5 U	0.1 J	1 U
719	11/3/1999	266	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.4	1 U	2.5 U	0.31 J	1 U

TABLE E-1
MINE FILL B INITIAL CHARACTERIAZATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	0.25	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	0.25	4	650
MFB ICS #	Sample Date	Grid #	Depth (in.)															
720	11/3/1999	267	0-12	1 U	1 U	1 U	1 U	1 U	0.16 J	1 U	1 U	0.21 J	1 U	12	1 U	2.5 U	6	1 U
722	11/3/1999	267	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	6	1 U	2.5 U	9.8	1 U
723	11/3/1999	268	0-12	1 U	1 U	1 U	1 U	1 U	0.19 J	1 U	1 U	0.24 J	1 U	7.9	1 U	2.5 U	1.4	1 U
725	11/3/1999	268	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4.4	1 U	2.5 U	0.59 J	1 U
726	11/4/1999	269	0-12	1 U	1 U	0.8 J	1 U	1 U	0.3 J	1 U	1 U	0.59 J	1 U	0.65 J	1 U	2.5 U	0.26 J	1 U
728	11/4/1999	269	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.95 J	1 U	2.5 U	0.15 J	1 U
729	11/4/1999	270	0-12	1 U	1 U	2.2	1 U	1 U	0.51 J	1 U	1 U	1.4	1 U	4.4	1 U	2.5 U	0.75 J	1 U
731	11/4/1999	270	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.37 J	1 U	2.5 U	0.24 J	1 U
732	11/4/1999	271	0-12	1 U	1 U	57 D	1 U	1 U	2 U	1 U	1 U	2 U	1 U	0.63 J	1 U	2.5 U	0.99 J	1 U
734	11/4/1999	271	24-36	1 U	1 U	1.2	1 U	1 U	0.26 J	1 U	1 U	0.18 J	1 U	0.74 J	1 U	2.5 U	0.13 J	1 U
735	11/4/1999	272	0-12	1 U	1 U	1.4	1 U	1 U	0.42 J	1 U	1 U	0.66 J	1 U	1.3	1 U	2.5 U	0.1 J	1 U
737	11/4/1999	272	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.83 J	1 U	2.5 U	1 U	1 U
738	1/25/2000	275	0-12	1 U	1 U	0.29 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.41 J	1 U	2.5 U	0.14 J	1 U
740	1/25/2000	275	24-36	1 U	1 U	0.31 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.26 J	1 U	2.5 U	1 U	1 U
741	1/26/2000	273	0-12	1 U	1 U	0.13 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.36 J	1 U	2.5 U	0.37 J	1 U
743	1/26/2000	273	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.23 J	1 U	2.5 U	1 U	1 U
744	1/26/2000	274	0-12	1 U	1 U	0.13 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
746	1/26/2000	274	24-36	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.16 J	1 U	1 U	1 U	2.5 U	1 U	1 U
747	3/29/2000	276	0-12	1 U	1 U	230 D	1 U	1 U	10 U	1 U	1 U	10 U	1 U	0.51 D	1 U	2.5 U	3000 D	1 U
749	3/29/2000	276	24-36	3 U	1 U	87000 D	1 U	1 U	1 U	1.5 U	1 U	1 U	1.5 U	0.59 D	1 U	6 U	7200 D	1.5 U
750	10/31/2000	277	0-12	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
752	10/31/2000	277	24-36	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
753	10/31/2000	278	0-12	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U
755	10/31/2000	279	0-12	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U
758	10/31/2000	279	24-36	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U
759	11/1/2000	280	0-12	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
761	11/1/2000	280	24-36	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
762	11/1/2000	281	0-12	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
764	11/1/2000	281	24-36	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

U - non-detect
J - an estimated value, the result is less than the quantitation limit but greater than zero
D - identified in an analysis at a secondary dilution factor
P - indicates a difference in quantitation of >25% between primary and secondary columns
E - indicates compounds whose concentrations exceed the calibration range of the instrument
highlighted - exceeds residential and/or industrial cleanup goals

TABLE E-2
MINE FILL B INITIAL CHARACTERIZATION SAMPLE RESULTS
METALS (mg/kg)

ANALYTE				MERCUR	ALUMINUM	ARSENIC	BARIUM	CADMIUM	HROMIU	LEAD	ELENIU	SILVER
IM Industrial Cleanup Goal (Human Health)				510	100,000	2.4	100,000	850	450	1,000	8,500	8,500
IM Residential Cleanup Goal (Human Health)				23	77,000	0.32	5,300	38	210	400	380	380
MFB ICS #	Sample Date	Grid #	Depth (in.)									
001	5/18/1998	1	0-12	0.2	12800	7.3 J	1110	2.8 J	47.8 J	37.2 J	0.52 U	0.16 U
003	5/18/1998	1	24-36	0.05 J	20000	12 J	76.3	0.04 UJ	27.7 J	16.8 J	1.1 J	0.15 U
009	5/18/1998	2	0-12	0.05 J	19100	11.1 J	111	0.04 UJ	21.7 J	22.1 J	1.3 J	0.17 U
012	5/18/1998	2	24-36	0.07	19200	10.2 J	72.6	0.04 UJ	23.8 J	13.7 J	0.75 J	0.15 U
013	5/18/1998	3	0-12	0.06 J	18500	8.2 J	96.8	0.13 J	22.1 J	23.7 J	0.84 J	0.17 U
015	5/18/1998	3	24-36	0.04 J	12700	8.7 J	67.6	0.04 UJ	19.4 J	17 J	1.2 J	0.14 U
016	5/19/1998	4	0-12	0.02 U	10800	8.3 J	84.8	0.04 U	14.9	16.9	1.1 J	0.15 U
018	5/19/1998	4	24-36	0.02 U	9800	6.3 J	61.3	0.04 U	13.5	11.1	0.48 U	0.14 U
019	5/19/1998	5	0-12	0.02 U	13500	8.7 J	70.2	0.03 U	18.9	16.8	0.87 J	0.14 U
022	5/19/1998	5	24-36	0.02 U	6010	3.3 J	39.4	0.03 U	7.7	7	0.46 U	0.14 U
023	5/19/1998	6	0-12	0.02 U	13900	9.6 J	107	0.04 U	17.1	20.1	1 J	0.17 U
025	5/19/1998	6	24-36	0.02 U	12100	8.4 J	74.4	0.04 U	24	23.1	1.2 J	0.14 U
026	5/19/1998	7	0-12	0.02 U	11400	7.3 J	116	0.04 U	14.7	29.1	0.84 J	0.14 U
028	5/19/1998	7	24-36	0.02 U	16100	8.2 J	95.6	0.04 U	17.9	15	1 J	0.15 U
029	5/19/1998	8	0-12	0.02 U	15300	9.9 J	88	0.16 U	19.2	28.7	1.2 J	0.13 U
032	5/19/1998	8	24-36	0.02 U	18200	12.5 J	77.6	0.04 U	22.9	12.7	1.5 J	0.14 U
033	5/19/1998	9	0-12	0.03 J	13500	8.3 J	73.2	0.03 U	18.8	26	0.75 J	0.14 U
035	5/19/1998	9	24-36	0.02 U	13300	6.4 J	84.3	0.03 U	14.8	15.7	0.96 J	0.14 U
036	5/19/1998	10	0-12	0.02 U	8870	6.5 J	47	0.04 U	14.8	21.6	0.49 U	0.15 U
038	5/19/1998	10	24-36	0.02 U	8730	4.9 J	58.9	0.04 U	15	9.7 J	0.58 J	0.14 U
039	5/20/1998	11	0-12	0.02 U	14300	10.7 J	85.6	0.11 U	19.2 J	NA	670 J	0.14 U
042	5/20/1998	11	24-36	0.02 U	13800	8.4 J	67.2	0.04 U	19	NA	0.84 J	0.14 U
044	5/20/1998	12	0-12	1.2 J	15700	8.2 J	131	1.3	23.5	NA	1.1 J	0.15 U
046	5/20/1998	12	24-36	0.04 J	13100	5.4 J	91	0.05 U	15.2	NA	0.62 J	0.14 U
047	5/20/1998	13	0-12	0.02 U	14700	5.9 J	119	0.16 U	17.2	NA	0.62 J	0.14 U
049	5/20/1998	13	24-36	0.02 U	13100	7.2 J	64.7	0.04 U	18.3	NA	0.49 U	0.15 U
051	5/20/1998	14	0-12	0.02 U	17100	9.5 J	123	0.06 U	20.3	NA	1 J	0.14 U
053	5/20/1998	14	24-36	0.02 U	11100	4.8 J	58.4	0.03 U	12.2	NA	0.47 U	0.14 U
054	5/20/1998	15	0-12	0.03 J	13600	12.1 J	115	0.51 J	21.4	55.5 J	1 J	0.15 U
056	5/20/1998	15	24-36	0.02 U	17500	10.6 J	110	0.04 U	21.9	NA	0.97 J	0.14 U
057	5/21/1998	16	0-12	0.04 U	16700	10.4 J	86.5	0.03 U	19.9	19.4	0.44 U	0.13 U
059	5/21/1998	16	24-36	0.04 U	11600	6.1 J	48.4	0.04 U	14.6 J	10.4 J	0.47 U	0.14 U
060	5/21/1998	17	0-12	0.04 U	14800	8.5 J	57.5	0.04 U	17.8	13.4	0.48 U	0.14 U
062	5/21/1998	17	24-36	0.04 U	9420	3.7 J	41.6	0.04 U	11.7	7.3 J	0.47 U	0.14 U
063	5/21/1998	18	0-12	0.04 U	13100	6.4 J	42.7	0.03 U	15.7	11.6 J	0.47 U	0.14 U
065	5/21/1998	18	24-36	0.04 U	8440	3.6 J	34	0.03 U	9.6	7.8 J	0.46 U	0.14 U
066	5/21/1998	19	0-12	0.04 U	13800	6.2 J	43.4	0.04 U	19.5	12.1	0.48 U	0.14 U
068	5/21/1998	19	24-36	0.04 U	9870	3.9 J	28.1	0.04 U	10.8	7.3 J	0.48 U	0.14 U
069	6/10/1998	20	0-12	0.05 J	15300	10.5 J	106	0.04 U	18.2	19.8	0.62 J	0.3 U
071	6/10/1998	20	24-36	0.05 J	13800	11.2 J	95.7	0.04 U	20.1	18.1	0.86 J	0.14 U
072	6/10/1998	21	0-12	0.04 U	11900	9.1 J	118	0.05 J	21.4	44.4	0.97 J	0.15 U
074	6/10/1998	21	24-36	0.04 U	18200	15.3 J	64.4	0.04 U	24.1	17.3	0.53 J	0.17 U
075	6/10/1998	22	0-12	0.32 J	13800	8.8 J	1410	2.4	82.8	90.5	0.49 U	0.15 U
077	6/10/1998	22	24-36	0.05 J	15200	8.7 J	78.3	0.04 U	19.6	12.8 J	0.47 U	0.29 U
078	6/11/1998	23	0-12	0.19 J	14300	8.9 J	1160 J	0.27 J	22.8 J	36.2 J	0.96 J	0.15 U
080	6/11/1998	23	24-36	0.04 J	15700	10.4 J	155 J	0.04 U	18.3	15.7 J	0.8 J	0.15 U
081	6/11/1998	24	0-12	0.05 J	15500	9.6 J	123 J	0.04 U	17.6	18.1 J	1.1 J	0.16 U
083	6/11/1998	24	24-36	0.04 U	13500	6.8 J	88.9 J	0.04 U	17.5	13.1 J	0.66 J	0.14 U
084	6/23/1998	94	0-12	0.04 U	9110	7.9 J	138	0.28 U	15.8	22	0.48 U	0.14 U
086	6/23/1998	94	24-36	0.04 U	14300	9.8 J	86.7	0.04 U	24	20	1.1 J	0.15 U
087	6/23/1998	95	0-12	0.05 J	15600	13.4 J	55.6	0.04 U	21	15.3	0.7 J	0.15 U
089	6/23/1998	95	24-36	0.04 U	15000	10.5 J	77	0.04 U	18.4	13.9	0.7 J	0.15 U
090	7/20/1998	96	0-12	0.07 J	10200	9.7 J	103	0.07 J	13	16.9	0.82	0.16 U
092	7/20/1998	96	24-36	0.04 U	11500	7.7 J	77.3	0.03 U	14.6	10.1 J	0.82	0.14 U
093	7/21/1998	97	0-12	0.06	12400	8.5 J	113	0.19	14.9	17	0.48 U	0.14 U
095	7/21/1998	97	24-36	0.05	10600	8 J	146	0.31 J	14.2	17.5	0.48 U	0.14 U
096	7/21/1998	98	0-12	0.06	10700	8.2 J	148	0.17	13.5	20.2	0.5 U	0.15 U
098	7/21/1998	98	24-36	0.05 J	12400	9.5 J	145	0.08 J	16.2	15.6	0.48 U	0.15 U
099	7/21/1998	99	0-12	0.05	10400	8.4 J	159	1.7	14	41.7	0.48 U	0.14 U
101	7/21/1998	99	24-36	0.04 U	11500	7 J	91	0.09 J	13.7	14.3	0.49 U	0.15 U
102	7/21/1998	100	0-12	0.06	10400	6.7 J	125	0.53 J	13.1	20.7	0.47 U	0.14 U
104	7/21/1998	100	24-36	0.04 U	9550	6.2 J	81.5	0.07 J	15.1	10.8 J	0.47 U	0.14 U
105	7/23/1998	101	0-12	0.04 U	10400	8.2 J	91.5	0.22 J	14.3	21.3	0.81 J	0.14 U
107	7/23/1998	101	24-36	0.04 U	9370	8.3 J	83.6	0.05 J	13.4	14.9	0.53 J	0.14 U
108	8/5/1998	38	0-12	0.04 U	11500	9.8 J	74.5	0.23 J	17.1	28.3 J	650 U	0.15 U

TABLE E-2
MINE FILL B INITIAL CHARACTERIZATION SAMPLE RESULTS
METALS (mg/kg)

ANALYTE				MERCUR	ALUMINUM	ARSENIC	BARIUM	CADMIUM	HROMIU	LEAD	ELENIU	SILVER
IM Industrial Cleanup Goal (Human Health)				510	100,000	2.4	100,000	850	450	1,000	8,500	8,500
IM Residential Cleanup Goal (Human Health)				23	77,000	0.32	5,300	38	210	400	380	380
MFB ICS #	Sample Date	Grid #	Depth (in.)									
110	8/5/1998	38	24-36	0.04 U	7140	4.2 J	155 J	0.08 J	10.5	9.2 J	0.47 U	0.14 U
111	8/6/1998	29	0-12	0.04 U	12400	8.8 J	81.9	0.28	14.9	19.9	570 U	0.12 U
113	8/6/1998	29	24-36	0.04 U	9270	6.7 J	50.2	0.12 U	13	9.5	0.49 U	0.12 U
114	8/6/1998	30	0-12	0.04 U	9780	6.2 J	83.1	0.15	12.4	22.9	630 U	0.12 U
116	8/6/1998	30	24-36	0.04 U	9920	8	141	0.12U	16.5	14.6	0.47 U	0.12 U
117	11/16/1998	26	0-12	0.04 U	17100	9.6	89	0.18 J	17.2	29	0.92	0.14 U
119	11/16/1998	26	24-36	0.04 U	17100	10	103	0.12 J	20.4	15.9	0.48 U	0.14 U
120	11/16/1998	25	0-12	0.04 U	12700	8.3	87.4	0.25 J	14.4	22.1	0.48 U	0.14 U
122	11/16/1998	25	24-36	0.04 U	17800	8.8	132	0.15 J	18.8	18.4	1.3	0.15 U
123	11/16/1998	41	0-12	0.04 U	17300	9.9	83.5	0.17 J	20.6	24.8	1.1	0.14 U
125	11/16/1998	41	24-36	0.04 U	10500	7.2	53.4	0.05 J	14.5	11.1	1.3	0.14 U
126	11/16/1998	40	0-12	0.04 U	13000	10.4	94	0.24 J	16.3	15.9	0.47 U	0.14 U
128	11/16/1998	40	24-36	0.04 U	17100	8.9	73.4	0.13 J	21.1	13.2	0.71	0.14 U
129	11/16/1998	50	0-12	0.04 U	12600	7.1	70.8	0.17 J	16.4	14.8	1	0.14 U
131	11/16/1998	50	24-36	0.04 U	12000	7.8	77.4	0.13 J	14.6	16.1	1.4	0.14 U
132	11/16/1998	49	0-12	0.04 U	15400	5	82.4	0.18 J	19.6	15.3	0.88	0.15 U
134	11/16/1998	49	24-36	0.04 U	15400	8.6	96.2	0.14 J	17.1	16.6	0.99	0.14 U
135	11/18/1998	48	0-12	1.4	10800	4.4	61.7	0.04 U	14.1	11.2	0.9	1.2 U
137	11/18/1998	48	24-36	0.04 U	13400	9.5	87	0.04 U	16.4	15.3	1.2	1.2 U
138	11/18/1998	47	0-12	0.04	9990	8.5	105	0.25 J	13.7	29.7 J	1.5	1.2 U
140	11/18/1998	47	24-36	0.04 U	14100	10.5	75.2	0.03 U	17.4	13.2	1.6	1.1 U
141	11/18/1998	46	0-12	0.04 U	9480	6.8	51.7	0.04 U	13.9	9.6	0.9	1.2 U
143	11/18/1998	46	24-36	0.04 U	14200	10.5	84.3	0.03 U	16.9	12.6	1.1	1.1 U
144	11/18/1998	45	0-12	0.04	10500	8.9	74.3	0.04 U	15	12.4	1.1	1.2 U
146	11/18/1998	45	24-36	0.04 U	8560	5.6	68.3	0.03 U	13.2	11.4	0.6	1.1 U
147	11/23/1998	44	0-12	0.15	9270	8.9	70.6	0.04 U	12.9	14.3	0.66	0.15 U
149	11/23/1998	44	24-36	0.04 U	9800	7.9	91.5	0.1 J	12.2	16	0.99	0.14 U
150	11/23/1998	43	0-12	0.05	10800	9.6	85.5	0.09 J	14	16	1.1	0.15 U
152	11/23/1998	43	24-36	0.06	11100	7.9	59.7	0.04 U	14.4	12.2	0.53 J	0.15 U
153	11/23/1998	42	0-12	0.07	13800	8.1	81.9	0.04 U	18.2	14.5	1.6	0.14 U
155	11/23/1998	42	24-36	0.06	12700	12	80.7	0.04 U	17.4	13.5	1.1	0.14 U
156	11/23/1998	39	0-12	0.04 U	13800	9.3	70.5	0.06 J	18.4	16.9	1.1	0.14 U
158	11/23/1998	39	24-36	0.03 U	13600	6.7	67.9	0.03 U	20	275 J	1.4 J	0.14 U
159	11/24/1998	57	0-12	0.04 U	14000	8.3	76.7	0.04 U	19.5	14.2 J	0.75	0.14 U
161	11/24/1998	57	24-36	0.04 U	16400	8.8	74.1	0.04 U	20.3	11.9 J	0.99	0.14 U
162	11/24/1998	56	0-12	0.05	17600	9.5	81.8	0.04 U	20.3	53.2	0.66	0.15 U
164	11/24/1998	56	24-36	0.05	16000	8.7	72.3	0.04 U	21.3	12.5 J	0.93	0.14 U
165	11/24/1998	58	0-12	0.04 U	14700	8.6	78.8	0.06 J	17.9	14 J	1	0.14 U
167	11/24/1998	58	24-36	0.04 U	15800	10.3	79.4	0.03 U	19.6	13.4 J	1.2	0.14 U
168	11/24/1998	59	0-12	0.04 U	12600	5.4	59.3	0.04 U	16.8	11.3 J	0.49 U	0.15 U
170	11/24/1998	59	24-36	0.04	16500	8.6	68.1	0.04 U	20	11.9 J	1.1	0.14 U
171	12/1/1998	60	0-12	0.05	7880	5.8	87.5	0.18 J	13.5	19.6	0.52 J	0.15 U
173	12/1/1998	60	24-36	0.04 U	6290	5.4	49.6	0.09 J	9.9	7.9	0.48 U	0.14 U
174	12/1/1998	61	0-12	0.05	7200	5.4	70.9	0.19 J	10	12.9	0.74	0.15 U
176	12/1/1998	61	24-36	0.04	7870	6.5	53	0.11 J	14.8	10.2	0.46 U	0.14 U
177	12/1/1998	51	0-12	0.05	11200	8.6	75	0.19 J	19	18.6	0.5 U	0.15 U
179	12/1/1998	51	24-36	0.05	8590	7.4	69.6	0.21 J	12.9	15.7	0.68	0.14 U
180	12/2/1998	52	0-12	0.05	9530	7.3	65	0.15 J	11.7	13.7	0.47 U	0.14 U
182	12/2/1998	52	24-36	0.04	9530	8.8	63.1	0.13 J	15.6	15.9	0.78	0.14 U
183	12/8/1998	53	0-12	0.06 J	10800	9.4 J	104	0.34 J	18.1	40	0.66 J	0.15 U
185	12/8/1998	53	24-36	0.05 J	10400	8.9 J	82.9	0.19 J	13.9	13.7 J	0.48 U	0.14 U
186	12/9/1998	54	0-12	0.04 J	10400	8.7 J	76.2	0.23 J	14	16 J	0.47 U	0.14 U
188	12/9/1998	54	24-36	0.05 J	12900	9.8 J	61.4	0.2 J	17.1	12.1 J	610 J	0.14 U
189	12/9/1998	55	0-12	0.05 J	13700	8.1 J	83.5	0.19 J	18.3	13.1 J	0.47 U	0.14 U
191	12/9/1998	55	24-36	0.05 J	9870	8.3 J	66.5	0.21 J	13.9	13.1 J	0.46 U	0.14 U
192	12/9/1998	88	0-12	0.04 U	7220	4.9 J	53.3	0.37 J	10.7	62.8	0.47 U	0.14 U
194	12/9/1998	88	24-36	0.04 U	7860	4.5 J	70	0.19 J	11.9	12.2 J	0.48 U	0.14 U
195	12/10/1998	89	0-12	0.02 J	8580	3.8	53.7	0.5 J	12.2	25.8 J	0.5 J	0.17 U
197	12/10/1998	89	24-36	0.03 J	8870	4	86.4	0.22 J	11.4	11.2 J	0.37 U	0.17 U
199	12/10/1998	93	0-12	0.03 J	11100	3.3	50.7	0.34 J	10.4	21.7 J	0.36 U	0.16 U
201	12/10/1998	93	24-36	0.03 J	6070	2.5	26.1	0.1 J	15.7	60.3 J	2.5	0.17 U
202	12/10/1998	68	0-12	0.04	9870	6.1	54.8	0.22 J	13.2	14.2 J	0.38 J	0.17 U
204	12/10/1998	68	24-36	0.05	10600	5.5	75.9	0.21 J	15.2	9.2 J	0.37 J	0.16 U
205	12/11/1998	69	0-12	0.02 J	13700	3.7	61	0.51 U	14.7	32 J	0.74	0.14 U
207	12/11/1998	69	24-36	0.02 U	11300	6.6	50.9	0.23 U	33.3	11.4 J	0.56 J	0.14 U

TABLE E-2
MINE FILL B INITIAL CHARACTERIZATION SAMPLE RESULTS
METALS (mg/kg)

ANALYTE				MERCUR	ALUMINUM	ARSENIC	BARIUM	CADMIUM	HROMIU	LEAD	ELENIU	SILVER
IM Industrial Cleanup Goal (Human Health)				510	100,000	2.4	100,000	850	450	1,000	8,500	8,500
IM Residential Cleanup Goal (Human Health)				23	77,000	0.32	5,300	38	210	400	380	380
MFB ICS #	Sample Date	Grid #	Depth (in.)									
208	12/11/1998	66	0-12	0.03 J	16800	7.5	70.6	0.44 U	24.4	28.7 J	0.56 J	0.14 U
210	12/11/1998	66	24-36	0.02 J	11800	3.8	40.8	0.13 U	16.5	7.6 J	0.47 U	0.14 U
211	12/14/1998	67	0-12	0.02 J	14900	8.2	97.1	0.24 U	17.3	19.2 J	0.48 U	0.14 U
213	12/14/1998	67	24-36	0.03 J	16500	7.2	98.8	0.17 U	19.6	13.8 J	0.48 U	0.14 U
214	12/16/1998	92	0-12	0.03 U	10200	5	53.2	0.43 U	11.2	11.3	0.46 U	0.14 U
216	12/16/1998	92	24-36	0.03 U	9540	5.3	64.9	0.75 U	12.1	12.4	0.72	0.14 U
217	12/16/1998	91	0-12	0.03 U	8750	5.3	50.7	0.4 U	10.9	10.3	0.53 J	0.14 U
219	12/16/1998	91	24-36	0.04 U	7380	4.3	48.9	0.41 U	9.2	12.1	0.47 J	0.13 U
220	12/16/1998	90	0-12	0.5 U	7220	4.1	51.6	0.37 U	12.3	14.9	0.48 U	0.14 U
222	12/16/1998	90	24-36	0.03 U	10800	5.7	39.4	0.59 U	13.2	14.6	0.5 J	0.14 U
223	12/17/1998	65	0-12	0.04 U	10800	9.6	55.6	0.97 J	25.2	17.9 J	1.3	0.17 U
225	12/17/1998	64	0-12	0.07	14900	8.3	59	0.64J	18.6	13.1 J	1.2	0.15 U
227	12/17/1998	81	0-12	0.04 J	12600	6.3	68.1	0.54 J	15.5	11.7 J	0.59	0.16 U
229	12/17/1998	81	24-36	0.05	13500	6.5	105	0.47 J	16.4	13.9 J	0.45 J	0.17 U
230	12/17/1998	82	0-12	0.06	13900	8	73.9	0.63 J	18.5	14.3 J	0.86	0.16 U
232	12/17/1998	82	24-36	0.07	13600	6.8	70.4	0.54 J	21	11 J	0.66	0.16 U
233	12/28/1998	139	0-12	0.04 U	11900	7	62.1	0.8 J	12.7	19.3 J	0.5 U	0.15 U
235	12/28/1998	139	24-36	0.04 U	9400	7.7	48.2	0.66 J	15.2	9.9 J	0.46 U	0.14 U
236	12/29/1998	62	0-12	0.04 U	8510	14.6	59.9	0.62 J	13.3	15.7 J	0.49 U	0.15 U
238	12/29/1998	62	24-36	0.04 U	8620	8	72.2	0.83 J	15.6	11 J	0.49 U	0.15 U
239	12/29/1998	63	0-12	0.04 U	9200	9.2	63.2	0.63 J	14.8	14.3 J	0.45 U	0.14 U
241	12/29/1998	63	24-36	0.04 U	5800	3.9	67.9	0.72 J	20.5	7.7 J	0.47 U	0.14 U
242	1/20/1999	124	0-12	0.42	20200	7.5	101	0.28 J	16.5	19	0.49 U	0.15 U
244	1/20/1999	124	24-36	0.02 J	13800	7.9	68	0.03 U	16.6	12.8	0.46 U	0.14 U
245	1/26/1999	123	0-12	0.1	20900	8.3	88.7	0.27 U	19.5	19.7	0.47 U	0.14 U
247	1/26/1999	123	24-36	0.07	15900	9.9	91.6	0.13 U	18	18.1	0.47 U	0.14 U
248	1/26/1999	140	0-12	0.05	18400	10.3	73.5	0.04 U	22.8	14.6	0.49 U	0.15 U
250	1/26/1999	122	0-12	0.06	22600	7.6	100	0.18 U	14.7	24.2	0.48 U	0.14 U
252	1/26/1999	122	24-36	0.07	25000	10.8	76.8	0.04 U	20	16	0.48 U	0.14 U
253	1/26/1999	128	0-12	0.12	28600	7.3	101	0.18 U	16.2	23	0.49 U	0.15 U
255	1/26/1999	128	24-36	0.04 J	14800	6.3	64.9	0.04 U	15.8	12.8	0.48 U	0.14 U
256	1/27/1999	127	0-12	0.05	29200	6.7	63.8	0.3 U	15.2	22.4	0.47 U	0.14 U
258	1/27/1999	127	24-36	0.03 U	11600	4.9	57.5	0.03 U	13.1	13	0.46 U	0.14 U
259	1/27/1999	125	0-12	0.63	20900	6.2	97.4	0.19 U	15.8	22.8	0.49 U	0.15 U
261	1/27/1999	125	24-36	0.13	14100	7.8	68.9	0.03 U	19.4	15.9	0.46 U	0.14 U
262	1/27/1999	126	0-12	0.8	52100	7.4	97.8	0.29 U	15.9	36.7	0.49 U	0.15 U
264	1/27/1999	126	24-36	0.04	17700	6.8	87.3	0.03 U	24.1	12.4	0.45 U	0.14 U
265	1/27/1999	141	0-12	0.04 U	17800	9	93.4	0.12 U	24	35.2	0.48 U	0.14 U
267	1/27/1999	141	24-36	0.04 U	16400	7.7	68.6	0.04 U	19.5	13.2	0.48 U	0.14 U
268	1/28/1999	142	0-12	0.04 U	11800	6.9	192	0.18 J	21.5	17.8	0.51 J	0.17 U
270	1/28/1999	142	24-36	0.04 U	12000	4.3	85.2	0.08 J	15.6	12.7	0.38 J	0.16 U
271	1/28/1999	144	0-12	0.04 U	10200	6.1	60.3	0.1 J	14.4	10.1	0.37 U	0.17 U
273	1/28/1999	144	24-36	0.04 U	14600	6.7	144	0.1 J	20.4	13.4	0.38 J	0.16 U
274	1/28/1999	143	0-12	0.04 U	28200	6.1	85.2	0.27 J	17.5	22.3	0.4 J	0.17 U
276	1/28/1999	143	24-36	0.04 U	10400	4.2	53.6	0.14 J	17.1	13	0.35 U	0.16 U
277	1/28/1999	145	0-12	0.04 U	13300	8.5	82.5	0.15 J	16.2	17.5	0.38 U	0.17 U
279	1/28/1999	145	24-36	0.04 U	12100	10.1	53.8	0.11 J	33.9	15.6	0.44 J	0.16 U
280	1/28/1999	146	0-12	0.04 U	14600	8.8	109	0.24 J	16.4	32.1	0.39 U	0.17 U
282	1/28/1999	146	24-36	0.04 U	11100	8	95.3	0.11 J	17.4	13.9	0.37 U	0.17 U
283	2/3/1998	102	0-12	0.5 U	17700	9.4 J	76.6	0.04 U	20.7	13 J	0.37 U	0.17 U
285	2/3/1998	102	24-36	0.5 U	14500	10.3 J	81.9	0.04 U	18.3	17.2 J	0.37 U	0.16 U
286	2/3/1998	113	0-12	0.27	16000	8.8 J	84.2	0.25 J	17.7	24.8 J	0.36 U	0.16 U
288	2/3/1998	113	24-36	0.5 U	17300	8.6 J	78.2	0.09 J	21	15.4 J	0.38 U	0.17 U
289	2/3/1998	112	0-12	0.26	11900	8.7 J	88.3	0.23 J	15.7	15.3 J	0.36 U	0.16 U
291	2/3/1998	107	0-12	0.8 U	17100	14 J	107	0.04 J	21.5	25.9 J	0.65 J	0.18 U
293	2/3/1998	107	24-36	0.07 U	18400	12.1 J	83.7	0.04 U	21	22.6 J	0.38 J	0.17 U
294	2/3/1998	120	0-12	0.72	17100	9.7 J	74.6	0.04 J	19.4	14.3 J	0.36 U	0.16 U
296	2/3/1998	120	24-36	0.5 U	12300	5.2 J	73.2	0.04 U	15.8	9.2 J	0.37 U	0.17 U
297	2/3/1998	121	0-12	0.13 U	12000	8.7 J	93.1	0.23 J	31.8	31.8	0.39 U	0.17 U
299	2/3/1998	121	24-36	0.12 U	16000	8.4 J	77.4	0.06 J	21	12 J	0.38 U	0.17 U
300	2/9/1999	138	0-12	0.04 U	27000	7.2	158	0.03 U	20.6	27.9	1.2	0.14 U
302	2/9/1999	138	24-36	0.04 U	15600	5.7	68.2	0.04 U	15.7	14.2	0.7	0.14 U
303	2/9/1999	129	0-12	0.04 U	16500	6.9	59.6	0.21 U	19.1	22.5	0.84	0.14 U
305	2/9/1999	129	24-36	0.04 U	13500	6.6	58	0.04 U	14.9	11.5	0.63	0.15 U
306	2/17/1999	130	0-12	0.04 U	17300	5.3	61.6	0.17 U	15.9	13.7 J	0.47 U	0.14 U

TABLE E-2
MINE FILL B INITIAL CHARACTERIZATION SAMPLE RESULTS
METALS (mg/kg)

ANALYTE				MERCUR	ALUMINUM	ARSENIC	BARIUM	CADMIUM	HROMIU	LEAD	ELENIU	SILVER
IM Industrial Cleanup Goal (Human Health)				510	100,000	2.4	100,000	850	450	1,000	8,500	8,500
IM Residential Cleanup Goal (Human Health)				23	77,000	0.32	5,300	38	210	400	380	380
MFB ICS #	Sample Date	Grid #	Depth (in.)									
308	2/17/1999	130	24-36	0.04	21100	5.9	87.2	0.41 U	24.5	10.9 J	0.8	0.14 U
309	2/17/1999	131	0-12	0.15	14500	5.1	55.4	0.5 U	12.9	19.6 J	0.47 U	0.14 U
311	2/17/1999	131	24-36	0.04 J	14100	5.8	74.7	0.23 U	20.4	13.9 J	0.47 U	0.14 U
312	2/17/1999	132	0-12	0.15 U	27100	6.1	81.7	0.37 U	17.2	22.9 J	0.47 U	0.14 U
314	2/17/1999	132	24-36	0.04	13100	6	51.8	0.2 U	15.1	12.8 J	0.48 U	0.14 U
315	2/25/1999	137	0-12	0.2 U	14750	6.3	60.8	0.12 U	13	63.6	1.4	730 U
317	2/25/1999	133	0-12	0.38	15468	9.2	98.9	0.13 U	18.5	11.8	1.2	0.15 U
319	2/25/1999	133	24-36	8.9	8858	5.4	46.7	0.11 U	12.3	8.9	0.95	0.14 U
320	3/1/1999	134	0-12	0.67	25300	6.8	82.3	0.36	12.5	41.5	1.4	0.15 U
322	3/1/1999	135	0-12	0.11	20300	7	104	0.18	14.5	33.7	2.4	0.14 U
324	3/1/1999	136	0-12	1	27900	5	63.1	0.35	10.7	21.9	1.4	0.14 U
326	3/2/1999	103	0-12	0.05	16200	7	60.4	0.04 U	15.9	13.8	0.47 U	140 J
328	3/2/1999	103	24-36	0.04 U	11200	7.6	42.3	0.04 U	13.8	11.7	0.48 U	0.15 U
329	3/2/1999	149	0-12	0.03 U	11000	4.2	49	0.03 U	12.7	11.9 J	0.46 U	0.14 U
331	3/2/1999	149	24-36	0.04 U	9500	4	53.1	0.03 U	11.4	12.7	0.46 U	0.14 U
332	3/4/1999	150	0-12	0.04 U	13300	3.9	61.9	0.11 U	15.7	11	0.47 U	0.12 U
334	3/4/1999	150	24-36	0.04 U	18100	8.5	51.9	0.2 U	16.9	16.4	0.47 U	0.12 U
335	3/4/1999	148	0-12	0.04 U	13600	7.3	86.3	0.1 U	16.6	12	0.46 U	0.12 U
337	3/4/1999	148	24-36	0.04 U	15300	4.7	194	0.05 U	16.3	13.6	0.46 U	0.12 U
338	3/4/1999	115	0-12	0.15	18900	11.3	73.1	0.13 U	22.1	19.9	0.48 U	0.12 U
340	3/4/1999	115	24-36	0.04	15900	11.4	80.2	0.11 U	29.9	21.9	0.47 U	0.12 U
341	3/19/1999	151	0-12	0.02 U	15700	5.7	68.3	0.03 U	16	13.8 J	0.95	0.14 U
342	3/19/1999	151	24-36	0.02 U	19700	6.6	87.2	0.03 U	26.1	16.4 J	2.1	0.14 U
344	6/7/1999	152	0-12	0.29	12500	5.7	61.8	0.03 U	13.3	12.3	0.52 U	0.23 U
346	6/7/1999	152	24-36	0.02 B	8820	4.8	91.2	0.04 U	10.9	13.9	0.54 U	0.24 U
347	6/7/1999	74	0-12	0.05	10700	6.3	70.4	0.03 U	12.2	23.4	0.52 U	0.23 U
349	6/7/1999	74	24-36	0.08	13600	8.5	96.3	0.04 U	17.3	14	0.55 U	0.25 U
350	6/9/1999	153	0-12	0.05	13300	4.8	52	0.08 B	14.1	9.6	0.38 U	0.14 U
352	6/9/1999	153	24-36	0.05	12900	4.4	130	0.07 B	16.1	10.3	0.38 U	0.14 U
353	6/9/1999	154	0-12	0.08	18000	9.7	78.2	0.12 B	21	19.8	0.4 U	0.14 U
355	6/9/1999	154	24-36	0.08	15500	6.8	66.6	0.06 B	21.2	12	0.4 U	0.15 U
356	6/10/1999	72	0-12	0.02 U	11100	6.1	66.9	0.04 U	13.2	12.5	0.39 U	0.14 U
358	6/10/1999	72	24-36	0.02 U	13600	5.9	90.2	0.11 B	17.1	15.2	0.41 U	0.15 U
359	6/10/1999	75	0-12	0.02 U	10700	6	69.6	0.15 B	13.4	16.5	0.37 U	0.13 U
361	6/10/1999	75	24-36	0.02 U	13100	8	90.4	0.08 B	15.2	13.9	0.4 U	0.15 U
362	6/10/1999	76	0-12	0.02 U	11200	7	66.4	0.22 B	14.3	21.8	0.38 U	0.14 U
364	6/10/1999	76	24-36	0.05	13500	11.8	62.5	0.04 U	18.7	14.5	0.4 U	0.15 U
365	6/10/1999	77	0-12	0.03 B	11500	8	65.8	0.04 B	15.5	13.6	0.38 U	0.14 U
367	6/10/1999	77	24-36	0.03 B	15200	9.8	91.5	0.07 B	17	14.7	0.39 U	0.14 U
368	6/10/1999	79	0-12	0.03 B	11200	8.1	65.9	0.04 B	16.7	13.3	0.42 B	0.15 U
370	6/10/1999	79	24-36	0.02 U	14000	8.7	60.8	0.04 B	17.2	12.1	0.39 U	0.14 U
371	6/17/1999	155	0-12	0.02 U	12300	4.6	67.8	0.03 U	11.6	15.8	0.4 B	0.13 U
373	6/17/1999	155	24-36	0.02 U	12300	6.4	119	0.04 U	14.2	11.9	0.41 U	0.15 U
374	6/17/1999	156	0-12	0.02 U	11100	4.3	62.2	0.03 U	11.1	13.1	0.37 U	0.13 U
376	6/17/1999	156	24-36	0.02 U	8680	4.1	74.1	0.04 U	13.6	12.2	0.39 U	0.14 U
377	6/18/1999	157	0-12	0.02 U	18900	4.9	63.2	0.03 NU	11.4	15.6	0.38 U	0.14 U
379	6/18/1999	157	24-36	0.02 U	9800	5.4	64.9	0.04 NU	13.9	12.4	0.48 B	0.14 U
380	6/18/1999	158	0-12	0.02 U	11100	4.8	81.6	0.03 NU	15.7	12.6	0.41 B	0.14 U
382	6/18/1999	158	24-36	0.02 U	8740	3.2	49.7	0.04 NU	12.9	15.2	0.46 B	0.14 U
383	6/18/1999	159	0-12	0.02 U	10900	3.9	93.3	0.04 NU	13.7	15.2	0.45 B	0.14 U
385	6/18/1999	159	24-36	0.02 U	7810	1.9	73.3	0.03 NU	14.4	10	1	0.13 U
386	6/18/1999	160	0-12	0.02 U	21300	3.3	58.7	0.04 NU	10.6	13.1	0.44 B	0.14 U
388	6/18/1999	160	24-36	0.02 U	8540	1.6	128	0.03 NU	15.4	9.4	0.58	0.13 U
389	6/18/1999	161	0-12	0.02 U	9470	4.1	62.6	0.03 NU	10.6	12.6	0.38 U	0.14 U
391	6/18/1999	162	0-12	0.03 B	13300	5.9	98	0.04 NU	18.4	16.6	0.45 U	0.16 U
393	6/18/1999	162	24-36	0.02 U	6980	0.76 B	124	0.04 NU	12.8	12	0.68	0.15 U
394	6/22/1999	163	0-12	0.02 U	19400	7	69.4 *	0.11 B	25	19.2	0.37 U	0.14 *U
396	6/22/1999	163	24-36	0.28	11800	4.2	55.2 *	0.1 B	17.4	12	0.39 U	0.14 *U
397	6/22/1999	164	0-12	0.02 U	14400	4.6	67.4 *	0.13 B	13.6	13.8	0.46 B	0.13 *U
399	6/22/1999	164	24-36	0.02 U	12000	4.3	58.7 *	0.09 B	17.7	11.3	0.49 B	0.14 *U
400	6/23/1999	165	0-12	0.02 U	18600	7.1	42.3	0.06 B	18.4	16.6	1.2	0.13 NU
402	6/23/1999	165	24-36	0.02 U	12900	7.7	614	0.04 U	20.5	15.9	1.5	0.15 NU
403	6/23/1999	166	0-12	0.02 U	17900	6.6	72.3	0.24 B	15.1	20.3	0.46 B	0.14 NU
405	6/23/1999	166	24-36	0.02 U	8860	5	46.3	0.03 U	12.6	13.8	0.84	0.14 NU
406	6/23/1999	167	0-12	0.02 U	11700	4.9	282	0.07 B	16.6	9.9	0.62	0.13 NU

TABLE E-2
MINE FILL B INITIAL CHARACTERIZATION SAMPLE RESULTS
METALS (mg/kg)

ANALYTE				MERCUR	ALUMINUM	ARSENIC	BARIUM	CADMIUM	HROMIU	LEAD	ELENIU	SILVER
IM Industrial Cleanup Goal (Human Health)				510	100,000	2.4	100,000	850	450	1,000	8,500	8,500
IM Residential Cleanup Goal (Human Health)				23	77,000	0.32	5,300	38	210	400	380	380
MFB ICS #	Sample Date	Grid #	Depth (in.)									
408	6/23/1999	167	24-36	0.02 U	13100	7.6	194	0.03 U	21.3	16.5	1	0.14 NU
409	6/30/1999	70	0-12	0.02 U	11000	7.4	75.9	0.05 B	14.4 N	15 B	0.4 U	0.14 U
411	6/30/1999	70	24-36	0.02 U	10200	6.8	74.3	0.04 U	13.6 N	11.1 B	0.4 U	0.14 U
412	6/30/1999	147	0-12	0.02 U	9450	10	55.5	0.03 U	22.8 N	18.8 B	0.36 U	0.13 U
414	6/30/1999	147	24-36	0.02 U	9970	7.4	46.9	0.03 U	15.2 N	9.5 B	0.38 U	0.14 U
415	6/30/1999	168	0-12	0.02 B	11100	9.3	92.6	0.15 B	14.2	22.6 B	0.37 U	0.14 U
417	6/30/1999	168	24-36	0.02 U	13800	27.8	114	0.27 B	15.2 N	25.9 B	0.41 U	0.15 U
418	6/30/1999	169	0-12	0.03 B	9500	9	82.9	0.2 B	13.2 N	22.5 B	0.54 B	0.13 U
420	6/30/1999	169	24-36	0.03 B	15100	11	66.4	0.04 U	31.9 N	13.4 B	0.39 U	0.14 U
421	7/6/2009	170	0-12	0.02 B	16700	6.5	56.7	0.04 U	17.1	12.6 B	0.46 B	0.14 U
423	7/6/2009	170	24-36	0.03 B	12100	7	69.9	0.04 U	17.4	16.3 B	0.47 B	0.14 U
424	7/6/2009	171	0-12	0.06	15500	9.7	68.8	0.04 U	19.7	14 B	0.46 B	0.14 U
426	7/6/2009	171	24-36	0.04	10500	4.9	49.6	0.03 U	15.2	9.1 B	0.4 B	0.13 U
427	7/6/2009	172	0-12	0.03 B	17200	7.5	102	0.04 U	18.3	16.3 B	0.55 B	0.14 U
429	7/6/2009	172	24-36	0.03 B	15700	8.8	71.6	0.04 U	19.2	12.6 B	0.48 B	0.15 U
430	7/7/1999	173	0-12	1	15200	6.4	55.4	0.59 B	17.6 N*	20.6	0.92	0.14 U
432	7/7/1999	173	24-36	0.03 B	10300	64.7	64.5	0.27 B	19.8 N*	20.3	3.5	0.14 U
433	7/7/1999	174	0-12	0.02 B	12500	4.8	53.6	0.29 B	11.4 N*	14.2	1	0.13 U
435	7/7/1999	174	24-36	0.02 U	7970	5.9	34.9	0.08 B	14.4 N*	16.7	0.61	0.13 U
436	7/8/1999	176	0-12	0.08	15800	8.6	75.9	0.32 B	37.1 N	17.7	0.39 U	0.14 U
438	7/8/1999	176	24-36	0.02 U	15000	7.4	89.9	0.04 U	19.3 N	10	0.44 B	0.14 U
439	7/8/1999	177	0-12	0.62	14700	8.7	68.2	0.34 B	16.1 N	31.6	0.56 B	0.14 U
441	7/8/1999	177	24-36	0.04	11400	7.5	66.1	0.04 B	19.8 N	11.3	0.38 U	0.14 U
442	7/8/1999	175	0-12	0.42	23900	5.6	57	0.21 B	12.6 N	21.2	0.51 B	0.13 U
444	7/8/1999	175	24-36	0.1	17900	8.3	64.2	0.04 U	19.7 N	14.9	0.52 B	0.14 U
445	7/9/1999	178	0-12	1.1	27200	5.3	350 N	2.6 NB	18	136 N	0.99	0.14 U
448	7/9/1999	179	0-12	0.09	11800	8.4	79 N	0.21 NB	13.9	17.1 NB	0.67	0.13 U
450	7/9/1999	179	24-36	0.03 B	10200	8.8	96.9 N	0.89 NB	13.5	14.6 NB	0.83	0.14 U
451	7/9/1999	180	0-12	0.13	11300	8.3	76.6 N	0.26 NB	14	23.8 NB	0.68	0.13 U
453	7/9/1999	180	24-36	0.04	9970	8.6	68.3 N	4.6 NB	14.9	16.6 NB	0.73	0.14 U
454	7/9/1999	181	0-12	0.46	8490	8.6	84.3 N	3.8 NB	12	18.9 NB	0.89	0.14 U
456	7/9/1999	181	24-36	0.12	10100	10.7	79.9 N	1 NB	15.4	17.5 NB	0.75	0.14 U
457	7/13/1999	31	0-12	0.04	12800	9.2	110	0.05 B	13.9	17.1 B	0.42 B	0.15 U
459	7/13/1999	31	24-36	0.04	13700	9.5	86	0.04 U	15.9	14.3 B	0.62 B	0.15 U
460	7/13/1999	33	0-12	0.03	10700	18.1	72	0.04 U	35.8	13.9 B	0.97 B	0.14 U
462	7/13/1999	33	24-36	0.02	9350	7	73.1	0.04 U	12.9	10.7 B	0.46 B	0.14 U
463	7/13/1999	27	0-12	0.02 U	10100	8.5	86.9	0.04 U	14.3	13.5 B	0.48 B	0.14 U
465	7/13/1999	27	24-36	0.03	10400	7.3	69.5	0.04 U	18.1	11 B	0.46 B	0.15 U
466	7/14/1999	182	0-12	1.7	9990	8.3 B	59.8 E	0.26 B	15.9	20.9 EB	0.39 U	0.14 U
468	7/14/1999	182	24-36	0.06	12500	4.7 B	64.7 E	0.04 U	14.3	9 EB	0.39 U	0.14 U
469	7/14/1999	183	0-12	0.6	12300	7.9 B	64.7 E	0.19 B	13.3	16.9 EB	0.38 U	0.14 U
471	7/14/1999	183	24-36	0.03	10500	7 B	48.6 E	0.04 U	14.1	11.3 EB	0.39 U	0.14 U
472	7/14/1999	105	0-12	0.39	13500	7.2 B	68.8 E	0.12 B	11.9	16.5 EB	0.38 U	0.14 U
474	7/14/1999	105	24-36	0.25	11600	9 B	58.4 E	0.04 U	14.8	11.3 EB	0.58 B	0.14 U
475	7/15/1999	184	0-12	0.03 U	15500	6.4	63.2	0.15 B	11.4	20.6 B	0.52 B	0.14 U
477	7/15/1999	184	24-36	0.02 U	7790	6	67.8	0.03 U	12	10.8 B	0.37 U	0.13 U
478	7/15/1999	185	0-12	0.07	11700	5.6	81.3	0.21 B	14.3	28.9	0.43 B	0.13 U
480	7/15/1999	185	24-36	0.02 U	8710	7.1	75.7	0.03 U	12.7	21.6 B	0.5 B	0.14 U
481	8/10/1999	186	0-12	0.11 U	15400	11.5 U	110	0.57 U	19	18.1	22.9 U	1.1 U
483	8/10/1999	186	24-36	0.12 U	10300	5.3 J	81	0.58 U	13.8	13.6	23.2 U	1.2 U
484	8/16/1999	187	0-12	0.013 J	16900	9.3 J	72.8	0.61 U	26.7	26.2	24.5 U	1.2 U
486	8/16/1999	187	24-36	0.11 U	14500	5.7 J	1150	0.57 U	19.6	15.6	22.7 U	1.1 U
487	8/16/1999	188	0-12	0.0087 J	12100	6.7 J	41.2	0.56 U	12.5	12.7	22.3 U	1.1 U
489	8/16/1999	188	24-36	0.11 U	14800	8.5 J	58.9	0.56 U	17.9	8	22.4 U	1.1 U
490	8/16/1999	189	0-12	0.0087 J	12600	6.1 J	52.1	0.55 U	20.3	18.2	22.1 U	1.1 U
492	8/16/1999	189	24-36	0.0081 J	17400	6.3 J	74.8	0.61 U	21.1	12	24.4 U	1.2 U
493	8/18/1999	190	0-12	0.014 J	19300	11.3 U	108	0.56 U	19.2	16.1	22.5 U	1.1 U
495	8/18/1999	190	24-36	0.006 J	15900	11.7 U	126	0.59 U	24	21.3	23.5 U	1.2 U
496	8/18/1999	191	0-12	0.016 J	20800	11.2 U	61.5	0.56 U	20.1	20.7	22.4 U	1.1 U
498	8/18/1999	191	24-36	0.11 U	14700	11.2 U	55.2	0.56 U	21.2	20.7	22.4 U	1.1 U
499	8/18/1999	192	0-12	0.034 J	19300	11.9 U	81.4	0.59 U	22.2	17	23.7 U	1.2 U
501	8/18/1999	192	24-36	0.029 J	14400	4.1 J	53.3	0.58 U	21.9	12	23.2 U	1.2 U
502	8/18/1999	193	0-12	0.042 J	16200	5.3 J	109	0.58 U	19.5	20.9	23.2 U	1.2 U
504	8/18/1999	193	24-36	0.042 J	18000	8.4 J	64.4	0.61 U	22.9	14.6	24.3 U	1.2 U
505	8/18/1999	118	0-12	0.25	19600	11.6 U	118	1.4	20.5	58.5	23.2 U	1.2 U

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MINE FILL B INITIAL CHARACTERIZATION SAMPLE RESULTS
METALS (mg/kg)

ANALYTE				MERCUR	ALUMINUM	ARSENIC	BARIUM	CADMIUM	HROMIU	LEAD	ELENIU	SILVER
IM Industrial Cleanup Goal (Human Health)				510	100,000	2.4	100,000	850	450	1,000	8,500	8,500
IM Residential Cleanup Goal (Human Health)				23	77,000	0.32	5,300	38	210	400	380	380
MFB ICS #	Sample Date	Grid #	Depth (in.)									
507	8/18/1999	118	24-36	0.053 J	17700	4.3 J	87.6	0.56 U	23.8	16.1	22.3 U	1.1 U
508	8/26/1999	194	0-12	0.00771 B	17000	11.6 U	81.6	0.582 U	18.7	16.3	23.3 U	1.16 U
510	8/26/1999	194	24-36	0.0314 B	10800	12 U	80.1	0.602 U	14.3	12.9	24.1 U	1.2 U
511	9/8/1999	196	0-12	0.0105 J	13200	5.87 J	125	0.562 U	14.9	14.4	22.5 U	1.12 U
513	9/8/1999	196	24-36	0.118 U	16000	11.8 U	117	0.588 U	19.2	14.6	23.5 U	1.18 U
514	9/8/1999	198	0-12	0.0268 J	15600	7.69 J	66.7	0.564 U	21	16.9	22.6 U	1.13 U
516	9/8/1999	198	24-36	0.113 U	8100	11.3 U	43.2	0.566 U	11.6	5.82	22.6 U	1.13 U
517	9/8/1999	197	0-12	0.00669 J	9240	11.1 U	39.3	0.554 U	14	11.2	22.1 U	1.11 U
519	9/8/1999	197	24-36	0.123 U	11100	8.51 J	50.3	0.615 U	19.1	12.3	24.6 U	1.23 U
520	9/8/1999	199	0-12	0.0182 J	16500	4.7 J	70.7	0.565 U	20.2	13.8	22.6 U	1.13 U
522	9/8/1999	199	24-36	0.114 U	8860	3.67 J	54.4	0.568 U	16.2	7.47	22.7 U	1.14 U
523	9/8/1999	200	0-12	0.0401 J	15700	14.7	94.4	0.583 U	20	20.6	23.3 U	1.17 U
525	9/8/1999	200	24-36	0.017 J	14400	13.4	63.9	0.6 U	21.3	13.1	24 U	1.2 U
526	9/9/1999	201	0-12	0.0343 J	15400	11.6 U	62.6	0.578 U	17.6	16.2	23.1 U	1.16 U
528	9/9/1999	201	24-36	0.0263 J	15000	5.99 J	72.1	0.607 U	18.3	15.8	24.3 U	1.21 U
529	9/9/1999	202	0-12	0.0254 J	12600	4.82 D	83.4	0.558 U	16.1	14.4	22.3 U	1.12 U
531	9/9/1999	202	24-36	0.0119 J	13400	9.33 J	273	0.607 U	27.8	15	24.3 U	1.21 U
532	9/9/1999	203	0-12	0.0328 J	15500	3.76 J	70	0.554 U	20.5	17.9	22.2 U	1.11 U
534	9/9/1999	203	24-36	0.00958 B	10700	11.8 U	35.2	0.588 U	27.7	11.9	23.5 U	1.18 U
535	9/14/1999	204	0-12	0.0386 J	17500	8.31 J	110	0.56 U	20.3	30.9	22.4 U	1.12 U
537	9/14/1999	204	24-36	0.0348 J	15400	5.99 J	162	0.638 U	18.4	21.3	25.5 U	1.28 U
538	9/14/1999	195	0-12	0.0133 J	32500	11 U	150	0.748	18	37.3	21.9 U	1.1 U
540	9/14/1999	195	24-36	0.0155 J	11900	11.7 U	79.2	0.584 U	15.8	20.5	23.4 U	1.17 U
541	9/15/1999	205	0-12	0.055 J	21300	11.2 U	102	0.559 U	22.6	34.7	22.4 U	1.12 U
543	9/15/1999	205	24-36	0.0111 J	12600	10.6 J	64.2	0.582 U	18.3	13.1	23.3 U	1.16 U
544	9/15/1999	206	0-12	0.753	29600	10.6 U	64.5	0.531 U	17.3	26.4	21.2 U	1.06 U
546	9/22/1999	207	0-12	0.057 J	21000	8.9 J	95.9	0.56 U	23.7	20.4	22.5 U	1.1 U
548	9/22/1999	207	24-36	0.035 J	19800	6.3 J	86.7	0.61 U	25.6	13.6	24.5 U	1.2 U
549	9/22/1999	208	0-12	0.034 J	17200	10.1 J	67.1	0.56 U	22.6	14.3	22.3 U	1.1 U
551	9/22/1999	208	24-36	0.0058 J	11600	9.4 J	55.7	0.57 U	18.3	12.4	22.7 U	1.1 U
552	9/22/1999	209	0-12	0.058 J	19600	10.9 J	94.4	0.56 U	23.9	20.1	22.5 U	1.1 U
554	9/22/1999	209	24-36	0.017 J	15900	4.7 J	72.6	0.6 U	21.3	14.4	24 U	1.2 U
555	9/22/1999	210	0-12	0.052 J	16300	9 J	107	0.56 U	19.7	24.2	22.2 U	1.1 U
557	9/22/1999	210	24-36	0.035 J	14000	9.9 J	181	0.63 U	18	19.3	25.1 U	1.3 U
558	9/22/1999	211	0-12	0.04 J	19900	7.2 J	110	0.57 U	19.3	26.9	22.7 U	1.1 U
560	9/22/1999	211	24-36	0.04 J	15800	12.4 U	97.2	0.62 U	27.4	13	24.7 U	1.2 U
561	9/22/1999	212	0-12	0.16	45100	4.4 J	62.9	0.53 U	95.8	22.5	21.1 U	1.1 U
563	9/22/1999	213	0-12	0.03 J	14900	9.1 J	79	0.58 U	23.1	18.8	23.1 U	1.2 U
565	9/22/1999	213	24-36	0.12 U	14600	11.8 U	72.8	0.59 U	22	13.1	23.7 U	1.2 U
566	9/22/1999	214	0-12	0.033 J	14200	6.6 J	62.7	1.3	17.5	29.3	22.9 U	1.1 U
568	9/22/1999	214	24-36	0.034 J	10000	5 J	104	0.61 U	11.6	11.2	24.5 U	1.2 U
569	9/22/1999	215	0-12	0.29	17100	5.3 J	77.1	0.52 J	15.7	27.2	21.8 U	1.1 U
571	9/22/1999	215	24-36	0.029 J	12700	10.9 J	47.7	0.59 U	18.9	11.1	23.5 U	1.2 U
572	9/22/1999	216	0-12	0.097 J	17200	4.6 J	77.3	0.54 U	15.5	30.5	21.6 U	1.1 U
574	9/22/1999	216	24-36	0.041 J	14500	6.6 J	57.7	0.57 U	20.1	15.1	22.8 U	1.1 U
575	9/24/1999	217	0-12	0.04 B	17400	10.5 U	81.3	0.53 U	15.2	69	21.1 U	1.1 U
577	9/24/1999	218	0-12	0.04 J	17400	10.5 U	81.3	0.53 U	15.2	69	21.1 U	1.1 U
579	9/24/1999	218	24-36	0.019 J	10900	10.7 U	68.4	0.54 U	14.4	17.3	21.5 U	1.1 U
580	9/27/1999	219	0-12	0.073 J	15200	4.9 J	76.1	0.53 U	18.3	26.6	21.3 U	0.4 J
582	9/27/1999	219	24-36	0.016 J	10500	11 U	56.6	0.55 U	15.8	13.3	22 U	0.37 J
583	9/27/1999	220	0-12	1.1 A	14500	106 U	65.9	0.53 U	15.1	20.2	21 U	1.1 U
585	9/27/1999	220	24-36	0.066 J	13500	12 U	89.5	0.6 U	18.5	17.5	23.9 U	0.25 J
586	9/27/1999	221	0-12	0.69	12200	4.6 J	79.9	0.53 U	17.6	22.3	21.4 U	1.1 U
588	9/27/1999	221	24-36	0.053 J	16300	6.2 J	76.3	0.57 U	22.5	19	22.6 U	0.5 J
589	9/27/1999	222	0-12	0.15	24900	10.6 U	62.3	0.53 U	14.7	22.2	21.2 U	1.1 U
591	9/27/1999	222	24-36	0.044 J	10700	13.1 U	46.1	0.66 U	15.4	11.8	26.3 U	0.39 J
592	9/27/1999	223	0-12	0.15	22600	10.3 U	62.3	0.61	11.8	26.2	20.5 U	1 U
594	9/27/1999	223	24-36	0.092 B	15100	12.2 U	57.3	0.61 U	21	13.8	24.4 U	0.44 B
595	9/27/1999	224	0-12	0.088 J	16200	11.6 U	72.6	0.58 U	17.5	20.6	23.3 U	0.38 J
597	9/27/1999	224	24-36	0.014 J	14300	5.7 J	74	0.66 U	19.4	20	26.4 U	0.71 J
598	9/27/1999	225	0-12	1.6	22200	13.5 U	90.5	0.67 U	19.6	27.3	27 U	0.39 J
600	9/27/1999	225	24-36	0.036 J	12600	4 J	69.6	0.62 U	20	20	24.8 U	0.41 J
601	9/28/1999	226	0-12	8.9 A	20900	12.6 U	74.8	1.1	20.6	31.1	25.2 U	0.41 J
603	9/28/1999	226	24-36	10.2 A	37400	6.9 J	66	0.56 U	29.2	74.8	22.3 U	1.1 U
604	9/28/1999	227	0-12	2.7 A	29100	11 U	72.9	1.1	16.6	52.1	22 U	1.1 U

TABLE E-2
MINE FILL B INITIAL CHARACTERIZATION SAMPLE RESULTS
METALS (mg/kg)

ANALYTE				MERCUR	ALUMINUM	ARSENIC	BARIUM	CADMIUM	HROMIU	LEAD	ELENIU	SILVER
IM Industrial Cleanup Goal (Human Health)				510	100,000	2.4	100,000	850	450	1,000	8,500	8,500
IM Residential Cleanup Goal (Human Health)				23	77,000	0.32	5,300	38	210	400	380	380
MFB ICS #	Sample Date	Grid #	Depth (in.)									
606	9/28/1999	227	24-36	0.29	15200	11.9 U	56.3	0.59 U	14.6	14.6	23.7 U	1.2 U
607	9/28/1999	228	0-12	0.47	15100	21.1 U	49.4	1 J	27.2	24.3	42.2 U	2.1 U
609	9/28/1999	228	24-36	0.017 J	14400	4.3 J	59.7	0.57 U	17.9	12.2	22.7 U	0.23 J
610	9/28/1999	229	0-12	0.26	12700	22.2 U	40.4	1.4	10.7	21.1	44.4 U	2.2 U
612	9/28/1999	229	24-36	0.019 J	11900	11.5 U	54.3	0.57 U	14.1	14.4	23 U	1.1 U
613	9/28/1999	230	0-12	0.5	17500	20.7 U	67.1	1	12.7	22.1	41.4 U	2.1 U
615	9/28/1999	230	24-36	0.045 J	14700	11.4 U	85.5	0.55 J	18.7	18.6	22.8 U	0.37 J
616	9/28/1999	231	0-12	1.2 A	12500	20.9 U	69.7	1	11.3	32	41.8 U	2.1 U
618	9/30/1999	232	0-12	0.024 J	8550	13.4 J	52.9	1.3 U	33.9	25.4	51.4 U	0.95 J
620	9/30/1999	232	24-36	0.0067 J	5610	11.2 U	35.1	0.56 U	18.7	9	22.4 U	1.1 U
621	9/30/1999	233	0-12	0.0082 J	7320	24.2 U	44	1.1 J	12.3	21.7	48.4 U	2.4 U
623	9/30/1999	234	0-12	0.044 J	15400	25.9 U	62.1	1.6	11.3	21.6	51.8 U	2.6 U
625	9/30/1999	235	0-12	0.048 D	14700	11.6 U	77.9	0.58 U	17.9	18.9	23.2 U	1.2 U
627	9/30/1999	235	24-36	0.033 J	13100	12.3 U	98.6	0.62 U	16.5	15.2	24.6 U	1.2 U
628	9/30/1999	236	0-12	0.033 J	15700	11.8 U	115	0.63	19.5	29.2	23.7 U	1.2 U
630	9/30/1999	236	24-36	0.03 J	14300	11.6 U	58.9	0.58 U	19.8	12.1	23.2 U	0.24 J
631	10/1/1999	238	0-12	0.039 J	15000	4.7 J	144	0.5 J	17.7	19.1	22.6 U	1.1 U
633	10/1/1999	238	24-36	0.017 J	19500	5.5 J	92	0.6 U	25.3	16.6	23.9 U	1.2 U
634	10/1/1999	239	0-12	0.11 U	4050	11.1 U	26.3	0.55 U	6.3	7.6	22.2 U	1.1 U
636	10/1/1999	239	24-36	0.013 J	14100	8 J	44.5	1.2 U	21.5	17.5	48 U	2.4 U
637	10/1/1999	237	0-12	0.034 J	15600	10.4 J	113	0.66	17.8	25.7	23.6 U	1.2 U
639	10/1/1999	237	24-36	0.021 J	15700	9.4 J	73.6	0.59 U	20.9	18.1	23.6 U	0.36 J
640	10/18/1999	240	0-12	0.0315 B	14700	12.1 U	89	0.603 U	18	14.5	24.1 U	1.21 U
642	10/18/1999	240	24-36	0.0555 J	11000	8.26 J	57.3	0.598 U	22	13.8	23.9 U	1.2 U
643	10/18/1999	241	0-12	0.0247 J	11700	4.24 J	73.1	0.613 U	17.2	14.8	24.5 U	1.23 U
645	10/18/1999	241	24-36	0.0651 J	15600	5.15 J	76.1	0.609 U	20	13.3	24.3 U	1.22 U
646	10/12/1999	242	0-12	0.046 J	11400	11.9 U	62.9	0.6 U	14.3	16.3	23.8 U	1.2 U
648	10/12/1999	242	24-36	0.03 J	11600	11.7 U	57.8	0.58 U	15.6	14.1	23.3 U	1.2 U
649	10/12/1999	243	0-12	0.93	17000	7.5 J	65.8	0.6 U	17.7	40.2	24.1 U	1.2 U
651	10/12/1999	243	24-36	0.093 J	14200	10.6 J	78.3	0.6 U	23	23	24.1 U	1.2 U
652	10/12/1999	244	0-12	5.2 A	23800	6.2 J	83.9	1.1	17.7	69.9	24.1 U	1.2 U
654	10/12/1999	244	24-36	0.029 J	16400	7.8 J	79.5	0.58 U	20.1	33.2	23 U	1.2 U
655	10/12/1999	245	0-12	0.1 J	12500	8.4 J	67.5	0.59 U	18	17.1	23.4 U	1.2 U
657	10/12/1999	245	24-36	0.061 J	17100	8.3 J	67.1	0.59 U	30.1	17.8	23.5 U	1.2 U
658	10/12/1999	246	0-12	0.11 J	15500	11 J	56.2	0.6 U	16.5	18.3	24 U	1.2 U
660	10/12/1999	246	24-36	0.11 U	9450	11.2 U	32.5	0.56 U	13.5	10.1	22.5 U	1.1 U
661	10/12/1999	247	0-12	0.04 J	16300	5.1 J	103	0.6 U	19.8	18.3	23.9 U	1.2 U
663	10/12/1999	247	24-36	0.041 J	12400	7.4 J	112	0.62 U	14.1	18.8	24.7 U	1.2 U
664	10/12/1999	248	0-12	0.14	25200	6.7 J	71.3	0.59 U	19.1	39.2	23.5 U	1.2 U
666	10/18/1999	249	0-12	0.0337 J	16000	9.33 J	82.8	0.605 U	19.6	23.9	24.2 U	1.21 U
668	10/18/1999	249	24-36	0.0209 B	11400	4.37 B	60.8	0.595 U	17.2	10.4	23.8 U	1.19 U
669	10/18/1999	250	0-12	0.0358 J	15800	6.9 J	79.5	0.594 U	19.2	14.6	23.8 U	1.19 U
671	10/18/1999	250	24-36	0.0148 J	13200	9.29 J	60.4	0.597 U	17.4	11.2	23.9 U	1.19 U
672	10/19/1999	251	0-12	0.037 J	14700	4.4 J	126	0.59 U	19.6	17.8	23.7 U	1.2 U
674	10/19/1999	251	24-36	0.028 B	12700	8.6 B	69.5	0.58 U	15.8	14	23.1 U	1.2 U
675	10/19/1999	252	0-12	0.13	10300	12 U	42.8	0.6 U	10.9	19.6	24.1 U	1.2 U
677	10/19/1999	252	24-36	0.007 B	8570	11 U	34	0.55 U	13.3	9.5	22.1 U	1.1 U
678	10/19/1999	253	0-12	0.078 B	15500	8.6 B	61.3	0.58 U	17.5	13.8	23.2 U	1.2 U
680	10/19/1999	253	24-36	0.019 B	10700	11.3 U	39.2	0.57 U	13.4	9.5	22.6 U	1.1 U
681	10/19/1999	254	0-12	0.21	19200	12.1 U	79.1	0.55 B	14.5	39.7	24.2 U	1.2 U
683	10/19/1999	254	24-36	0.038 B	10700	11.6 U	40.6	0.58 U	13	10.3	23.3 U	1.2 U
684	10/19/1999	255	0-12	0.13	14200	12.2 U	70.8	0.56 B	14.5	23.3	24.4 U	1.2 U
686	10/19/1999	255	24-36	0.02 B	11100	4.2 B	47	0.56 U	20.2	11.4	22.6 U	1.1 U
687	10/20/1999	256	0-12	4.3 A	36300	11.5 U	81.5	1.3	16.1	73.9	22.9 U	1.1 U
689	10/20/1999	256	24-36	0.062 J	13900	11.5 U	101	0.58 U	20	18.1	23 U	1.2 U
690	10/20/1999	257	0-12	0.69	16500	6.3 J	87.8	0.51 J	18.5	50.1	23 U	1.1 U
692	10/20/1999	257	24-36	0.061 J	13900	8.1 J	136	0.58 U	18.3	29.2	23.4 U	1.2 U
693	10/21/1999	258	0-12	0.033 J	18300	11.7 U	70	0.68	14.1	31.2	23.5 U	1.2 U
695	10/21/1999	258	24-36	0.014 J	7570	11.7 U	55.1	0.59 U	11	13.4	23.5 U	1.2 U
696	10/21/1999	259	0-12	0.024 J	12900	11.4 U	60	0.57 U	12.6	18.6	22.8 U	1.1 U
698	10/21/1999	259	24-36	0.019 J	12700	5.1 J	64.9	0.59 U	13.9	16.1	23.4 U	1.2 U
699	10/21/1999	260	0-12	0.012 J	8860	11.6 U	65.6	0.58 U	11.8	16.1	23.2 U	1.2 U
701	10/21/1999	260	24-36	0.014 J	8050	13.7	38.8	0.58 U	41.2	31.2	23 U	0.26 J
702	10/21/1999	261	0-12	0.02 J	11700	11.1 U	46.5	0.56 U	11.4	14.7	22.3 U	1.1 U
704	10/21/1999	261	24-36	0.0082 J	9020	11.4 U	58.9	0.57 U	9.4	41.1	22.8 U	1.1 U

TABLE E-2
MINE FILL B INITIAL CHARACTERIZATION SAMPLE RESULTS
METALS (mg/kg)

ANALYTE				MERCUR	ALUMINUM	ARSENIC	BARIUM	CADMIUM	HROMIU	LEAD	ELENIU	SILVER
IM Industrial Cleanup Goal (Human Health)				510	100,000	2.4	100,000	850	450	1,000	8,500	8,500
IM Residential Cleanup Goal (Human Health)				23	77,000	0.32	5,300	38	210	400	380	380
MFB ICS #	Sample Date	Grid #	Depth (in.)									
705	10/21/1999	262	0-12	0.046 J	22800	5.2 J	95.2	0.61 U	18.8	40.8	24.6 U	1.2 U
707	10/21/1999	262	24-36	0.025 J	16300	5.5 J	66.8	0.6 U	20.5	16.4	23.9 U	1.2 U
708	10/26/1999	263	0-12	0.054 J	16000	12.3 U	93.8	0.62 U	17	25.2	24.6 U	1.2 U
710	10/26/1999	263	24-36	0.038 J	11400	12.5 U	154	0.63 U	13.9	18.4	25.1 U	1.3 U
711	10/26/1999	264	0-12	0.051 J	14100	14.4	98.3	0.59 U	17.4	22.6	23.7 U	1.2 U
713	10/26/1999	264	24-36	0.039 J	11500	4.4 J	91	0.61 U	14.3	16.6	24.5 U	1.2 U
714	11/3/1999	265	0-12	0.033 J	14300	9.5 J	78.5	0.58 U	17.9	18.9	23.1 U	1.2 U
716	11/3/1999	265	24-36	0.013 J	16200	11.2 J	70.9	0.61 U	17.5	18.2	24.5 U	1.2 U
717	11/3/1999	266	0-12	0.034 J	16900	11.3 J	87.4	0.6 U	20.2	19.5	24 U	1.2 U
719	11/3/1999	266	24-36	0.032 J	18800	14.8	75.3	0.63 U	24.8	21	25.3 U	1.3 U
720	11/3/1999	267	0-12	0.036 J	14600	12.7	119	0.6 U	18.6	23	24.1 U	1.2 U
722	11/3/1999	267	24-36	0.062 J	18300	14.5	64.8	0.61 U	25.1	18.5	24.6 U	1.2 U
723	11/3/1999	268	0-12	0.052 J	17400	8.7 J	118	0.62 U	19.7	26.3	24.7 U	1.2 U
725	11/3/1999	268	24-36	0.033 J	16400	10.3 J	74	0.62 U	19.6	20.9	24.7 U	1.2 U
726	11/4/1999	269	0-12	0.8	17100	10.9 J	78.7	0.58 U	19.2	50.4	23.1 U	1.2 U
728	11/4/1999	269	24-36	0.14	16100	13.1	61.5	0.6 U	22.7	19.2	24.1 U	1.2 U
729	11/4/1999	270	0-12	1.6 A	20800	5.8 J	76.7	0.66	15.6	49.4	23.1 U	1.2 U
731	11/4/1999	270	24-36	0.067 J	15100	14.3	72.7	0.6 U	20	21.2	24.2 U	1.2 U
732	11/4/1999	271	0-12	0.22	16300	10.7 J	70.4	0.6 U	23.3	27.4	24 U	1.2 U
734	11/4/1999	271	24-36	0.072 J	20000	15.6	80.6	0.63 U	24.7	18.3	25.1 U	1.3 U
735	11/4/1999	272	0-12	1.5 A	19700	5.5 J	199	0.59 U	19.7	67.5	23.5 U	1.2 U
737	11/4/1999	272	24-36	0.096 J	19300	17.7	61.4	0.6 U	23.4	16	24.1 U	1.2 U
738	1/25/2000	275	0-12	0.066 J	13200	13.3 U	78.1	0.66 U	17	23.9	26.5 U	1.3 U
740	1/25/2000	275	24-36	0.072 J	13900	6.5 J	101	0.63 U	16.8	42.1	25.3 U	1.3 U
741	1/26/2000	273	0-12	0.032 J	11400	7.2 J	89.1	0.56 U	19.1	30	22.5 U	1.1 U
743	1/26/2000	273	24-36	0.064 J	7970	10.6 J	65.9	0.55 U	15.2	14.4	22.1 U	1.1 U
744	1/26/2000	274	0-12	0.04 J	12400	12.1 U	126	0.61 U	17	19.9	24.3 U	1.2 U
746	1/26/2000	274	24-36	0.036 J	10100	12 U	103	0.6 U	14.7	15.2	24 U	1.2 U
747	3/29/2000	276	0-12	1.3 A	30800	11.2 U	50.2	0.74	16.8	27.5	22.4 U	1.1 U
749	3/29/2000	276	24-36	1.2 A	35100	4.3 J	59.2	0.58 U	12.6	24	23.2 U	1.2 U
750	10/31/2000	277	0-12	0.03 B	10500	4.8	96.7	0.13 B	12.4	13.3 B	0.46 U	0.32 U
752	10/31/2000	277	24-36	0.03 B	10200	4.6	93.8	0.06 U	10.5	9.4 B	0.45 U	0.31 U
753	10/31/2000	278	0-12	0.05	11800	7	48.8	0.48 B	22	16.4 B	0.95	0.33 U
755	10/31/2000	279	0-12	0.03 B	9840 E	4.5	70.5	0.09 B	13.2	25.7 B	0.47 U	0.32 U
758	10/31/2000	279	24-36	0.03 B	5280 E	3	30.9	0.06 U	6.4	10.5 B	0.43 U	0.3 U
759	11/1/2000	280	0-12	0.03 B	6820 E	4.6 N	46.1 EN	0.06 NU	11 N	10.4 NB	0.47 NU	0.33 NU
761	11/1/2000	280	24-36	0.03 B	8450 E	4.2 N	165 EN	0.06 NU	11.5 N	10.4 NB	0.45 NU	0.31 NU
762	11/1/2000	281	0-12	0.06	6640	5.8 N	70.2 EN	0.27 NB	9.6 N	16 NB	0.48 NU	0.33 NU
764	11/1/2000	281	24-36	0.07	8310	8 N	70.4 EN	0.43 NB	15.5 N	19.9 NB	0.47 NU	0.33 NU

arsenic values are not shaded (as being over the cleanup goals) since it needs to be compared to basewide background levels
N - spike recovery not within control limits of 75 - 125%
* - relative percent difference exceeded laboratory window of 0 - 20%
B - indicates the compound is found in the associated blank
J - indicates an estimated value. The result is less than the sample quantitation limit but greater than zero.
E - estimated because of the presence of interference

TABLE E-3
MINE FILL B INITIAL CHARACTERIZATION SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (mg/kg)

ANALYTE				ACETONE	MEK	METH. CHL.	MIBK	TOLUENE	XYLENES		
IM Industrial Cleanup Goal (Human Health)				8,800	27,000	18	2,800	880	320		
IM Residential Cleanup Goal (Human Health)				2,000	7,100	7.8	770	790	320	Qualifier	Sample Analysis Date
MFB ICS #	Sample Date	Grid #	Depth (in.)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		
MFBICS002	5/18/1998	1	12	0.01 U	0.005 U	0.005 U	0.01 U	0.005 U	0.005 U		
MFBICS004	5/18/1998	1	12	0.008 U	0.009 U	0.009 U	0.008 U	0.009 U	0.009 U		
MFBICS005	5/18/1998	1	12	0.014 U	0.006 U	0.006 U	4 U	0.006 U	0.006 U		
MFBICS006	5/18/1998	1	12	0.053	0.005 U	0.005 U	0.01 U	0.005 U	0.005 U		
MFBICS007	5/18/1998	1	12	0.011 U	0.006 U	0.006 U	0.011 U	0.006 U	0.006 U		
MFBICS008	5/18/1998	1	12	0.064	0.006 U	0.006 U	0.013 U	0.006 U	0.006 U		
MFBICS011	5/18/1998	2	12	0.012 U	0.006 U	0.006 U	0.012 U	0.006 U	0.006 U		
MFBICS014	5/18/1998	3	12	0.011 U	0.006 U	0.006 U	0.011 U	0.006 U	0.006 U		
MFBICS017	5/19/1998	4	12	0.012 U	0.006 U	0.006 U	0.012 U	0.006 U	0.006 U		
MFBICS021	5/19/1998	5	12	0.013 U	0.006 U	0.006 U	0.013 U	0.006 U	0.006 U		
MFBICS024	5/19/1998	6	12	0.012 U	0.006 U	0.006 U	0.012 U	0.006 U	0.006 U		
MFBICS027	5/19/1998	7	12	0.012 U	0.006 U	0.009	0.012 U	0.006 U	0.006 U		
MFBICS031	5/19/1998	8	12	0.021	0.007 U	0.007 U	0.013 U	0.007 U	0.007 U		
MFBICS034	5/19/1998	9	12	0.012 U	0.006 U	0.006 U	0.012 U	0.006 U	0.006 U		
MFBICS037	5/19/1998	10	12	0.014 U	0.007 U	0.007 U	0.014 U	0.007 U	0.007 U		
MFBICS041	5/20/1998	11	12	0.012 U	0.006 U	0.006 U	0.012 U	0.006 U	0.006 U		
MFBICS043	5/20/1998	11	12	0.012 U	0.006 U	0.006 U	0.012 U	0.006 U	0.006 U		
MFBICS045	5/20/1998	12	12	0.012 U	0.006 U	0.006 U	0.012 U	0.006 U	0.006 U		
MFBICS048	5/20/1998	13	12	0.012 U	0.006 U	0.006 U	0.012 U	0.006 U	0.006 U		
MFBICS052	5/20/1998	14	12	0.012 U	0.006 U	0.009	0.012 U	0.006 U	0.006 U		
MFBICS055	5/20/1998	15	12	0.013 U	0.006 U	0.005 J	0.013 U	0.006 U	0.006 U		
MFBICS058	5/21/1998	16	12	0.012 U	0.006 U	0.018	0.012 U	0.006 U	0.006 U		
MFBICS061	5/21/1998	17	12	0.012 U	0.006 U	0.018	0.012 U	0.006 U	0.006 U		
MFBICS064	5/21/1998	18	12	0.012 U	0.006 U	0.019	0.012 U	0.006 U	0.006 U		
MFBICS067	5/21/1998	19	12	0.012 U	0.006 U	0.017	0.012 U	0.006 U	0.006 U		
MFBICS070	6/10/1998	20	12	0.065 J	0.005 U	0.008 U	0.011 U	0.005 U	0.005 U		
MFBICS073	6/10/1998	21	12	0.026 J	0.005 U	0.01 U	0.011 U	0.005 U	0.005 U		
MFBICS076	6/10/1998	22	12	0.007 U	0.011 U	0.022 U	0.022 U	0.011 U	0.011 U		
MFBICS079	6/15/1998	23	12	0.007 U	0.007 U	0.007 U	0.014 U	0.007 U	0.007 U		
MFBICS082	6/15/1998	24	12	0.017 U	0.008 U	0.008 U	0.017 U	0.008 U	0.008 U		
MFBICS085	6/23/1998	94	12	0.016	0.006 U	0.006 U	0.013 U	0.006 U	0.006 U		
MFBICS088	6/23/1998	95	12	0.005 J	0.006 U	0.006 U	0.013 U	0.006 U	0.006 U		
MFBICS091	7/20/1998	96	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS094	7/21/1998	97	12	0.012 U	0.006 U	0.006 U	0.012 U	0.006 U	0.006 U		
MFBICS097	7/21/1998	98	12	0.013 U	0.006 U	0.006 U	0.013 U	0.006 U	0.006 U		
MFBICS100	7/21/1998	99	12	4 U	0.007 U	0.007 U	4 U	0.007 U	0.007 U		
MFBICS103	7/21/1998	100	12	0.012 U	0.006 U	0.006 U	0.012 U	0.006 U	0.006 U		
MFBICS106	7/23/1998	101	12	0.009 U	0.005 U	0.005 U	0.01 U	0.005 U	0.005 U		
MFBICS109	8/5/1998	38	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS112	8/6/1998	29	12	0.008	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS115	8/6/1998	30	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS118	11/16/1998	26	12	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS121	11/16/1998	25	12	0.006	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS124	11/16/1998	41	12	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U		
MFBICS127	11/16/1998	40	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS130	11/16/1998	50	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS133	11/16/1998	49	12	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS136	11/18/1998	48	12	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		

TABLE E-3
MINE FILL B INITIAL CHARACTERIZATION SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (mg/kg)

ANALYTE				ACETONE	MEK	METH. CHL.	MIBK	TOLUENE	XYLENES		
IM Industrial Cleanup Goal (Human Health)				8,800	27,000	18	2,800	880	320		
IM Residential Cleanup Goal (Human Health)				2,000	7,100	7.8	770	790	320	Qualifier	Sample Analysis Date
MFB ICS #	Sample Date	Grid #	Depth (in.)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		
MFBICS139	11/18/1998	47	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS142	11/18/1998	46	12	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS145	11/18/1998	45	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS148	11/23/1998	44	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS151	11/23/1998	43	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS154	11/23/1998	42	12	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS157	11/23/1998	39	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS160	11/24/1998	57	12	0.005 U	0.005 U	0.009	0.005 U	0.005 U	0.005 U		
MFBICS163	11/24/1998	56	12	0.005 U	0.005 U	0.002 J	0.005 U	0.005 U	0.005 U		
MFBICS166	11/24/1998	58	12	0.004 U	0.004 U	0.002J	0.004 U	0.004 U	0.004 U		
MFBICS169	11/24/1998	59	12	0.006 U	0.006 U	0.003 J	0.006 U	0.006 U	0.006 U		
MFBICS172	12/1/1998	60	12	0.012 U	0.006 U	0.014	0.006 U	0.006 U	0.079		
MFBICS175	12/1/1998	61	12	0.004 U	0.006 U	0.006 U	0.006 U	0.006 U	0.03		
MFBICS178	12/1/1998	51	12	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U	0.014		
MFBICS181	12/2/1998	52	12	0.009 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS184	12/8/1998	53	12	0.018	0.005 J	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS187	12/9/1998	54	12	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS190	12/9/1998	55	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS193	12/9/1998	88	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS196	12/10/1998	89	12	0.026	0.005 U	0.003 U	0.005 U	0.005 U	0.005 U		
MFBICS198	12/10/1998	89	24	0.028	0.005 U	0.002 U	0.005 U	0.005 U	0.005 U		
MFBICS200	12/10/1998	93	12	0.022	0.005 U	0.003 U	0.005 U	0.005 U	0.005 U		
MFBICS203	12/10/1998	68	12	0.02	0.005 U	0.003 U	0.005 U	0.005 U	0.005 U		
MFBICS206	12/14/1998	69	12	0.004 U	0.004 U	0.002 J	0.004 U	0.004 U	0.004 U		
MFBICS209	12/14/1998	66	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS212	12/14/1998	67	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS215	12/16/1998	92	12	0.009	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS218	12/16/1998	91	12	0.007	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS221	12/16/1998	90	12	0.008 J	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U		
MFBICS224	12/17/1998	65	12	0.008	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS226	12/17/1998	64	12	0.004	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS228	12/17/1998	81	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS231	12/17/1998	82	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS234	12/28/1998	139	12	0.009 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U		
MFBICS237	12/29/1998	62	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS240	12/29/1998	63	12	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U		
MFBICS243	1/20/1999	124	12	0.005 J	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS246	1/26/1999	123	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS249	1/26/1999	140	12	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS251	1/26/1999	122	12	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS254	1/26/1999	128	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS257	1/27/1999	127	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS260	1/27/1999	125	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS263	1/27/1999	126	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS266	1/27/1999	141	12	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS269	1/28/1999	142	12	0.011	0.005 U	0.006 U	0.005 U	0.005 U	0.005 U		
MFBICS272	1/28/1999	144	12	0.01	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS275	1/28/1999	143	12	0.008	0.005 U	0.007 U	0.005 U	0.005 U	0.005 U		

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ANALYTE				ACETONE	MEK	METH. CHL.	MIBK	TOLUENE	XYLENES		
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IM Residential Cleanup Goal (Human Health)				2,000	7,100	7.8	770	790	320	Qualifier	Sample Analysis Date
MFB ICS #	Sample Date	Grid #	Depth (in.)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		
MFBICS278	1/28/1999	145	12	0.005 U	0.005 U	0.006 U	0.005 U	0.005 U	0.005 U		
MFBICS281	1/28/1999	146	12	0.012	0.005 U	0.006 U	0.005 U	0.005 U	0.005 U		
MFBICS284	2/3/1999	102	12	0.008	0.005 U	0.006 U	0.005 U	0.005 U	0.005 U		
MFBICS287	2/3/1999	113	12	0.007	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS290	2/3/1999	112	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS292	2/3/1999	107	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS295	2/3/1999	120	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS298	2/3/1999	121	12	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS301	2/9/1999	138	12	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U		
MFBICS304	2/9/1999	129	12	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U		
MFBICS307	2/17/1999	130	12	0.008	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS310	2/17/1999	131	12	0.018	0.005 U	0.005 U	0.005 U	0.005 U	0.006		
MFBICS313	2/17/1999	132	12	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS316	2/25/1999	137	12	0.026 U	0.005 U	0.02 U	0.005 U	0.005 U	0.005 U		
MFBICS318	2/25/1999	133	12	0.009 U	0.006 U	0.035	0.006 U	0.006 U	0.006 U		
MFBICS321	3/1/1999	134	12	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U		
MFBICS323	3/1/1999	135	12	4 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS325	3/1/1999	136	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS327	3/2/1999	103	12	0.053	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS330	3/2/1999	149	12	0.019	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U		
MFBICS333	3/4/1999	150	12	0.019	0.004 U	0.006 U	0.004 U	0.004 U	0.004 U		
MFBICS336	3/4/1999	148	12	0.009	0.005 U	0.006 U	0.005 U	0.005 U	0.005 U		
MFBICS339	3/4/1999	115	12	0.005 U	0.005 U	0.004 U	0.005 U	0.005 U	0.005 U		
MFBICS343	3/24/1999	151	12	0.016 U	0.006 U	0.002 J	0.006 U	0.006 U	0.006 U		
MFBICS345	6/7/1999	152	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS348	6/7/1999	74	12	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS351	6/9/1999	153	12	0.014	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS354	6/9/1999	154	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS357	6/10/1999	72	12	0.01	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS360	6/10/1999	75	12	0.014	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS363	6/10/1999	76	12	0.023	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS366	6/10/1999	77	12	0.01	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS369	6/10/1999	79	12	0.016	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U		
MFBICS372	6/17/1999	155	12	0.005 U	0.005 U	0.006 B	0.005 U	0.005 U	0.005 U		
MFBICS375	6/17/1999	156	12	0.005 U	0.005 U	0.008 B	0.005 U	0.005 U	0.005 U		
MFBICS378	6/18/1999	157	12	0.005 U	0.005 U	0.01 B	0.005 U	0.005 U	0.005 U		
MFBICS381	6/18/1999	158	12	0.006 U	0.006 U	0.012 B	0.006 U	0.006 U	0.006 U		
MFBICS384	6/18/1999	159	12	0.006 U	0.006 U	0.014 B	0.006 U	0.006 U	0.006 U		
MFBICS387	6/18/1999	160	12	0.007 U	0.007 U	0.021 B	0.007 U	0.007 U	0.007 U		
MFBICS390	6/18/1999	161	12	0.03	0.006 U	0.017 B	0.006 U	0.006 U	0.006 U		
MFBICS392	6/18/1999	162	12	0.005 U	0.005 U	0.012 B	0.005 U	0.005 U	0.005 U		
MFBICS395	6/22/1999	163	12	0.006 U	0.006 U	0.003 JB	0.006 U	0.006 U	0.006 U		
MFBICS398	6/22/1999	164	12	0.005 U	0.005 U	0.002 JB	0.005 U	0.005 U	0.005 U		
MFBICS401	6/23/1999	165	12	0.005 U	0.005 U	0.003 JB	0.005 U	0.005 U	0.005 U		
MFBICS404	6/23/1999	166	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS407	6/23/1999	167	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS410	6/30/1999	70	12	0.005 U	0.005 U	0.017 B	0.005 U	0.005 U	0.005 U		
MFBICS413	6/30/1999	147	12	0.0051	0.005 U	0.01 B	0.005 U	0.005 U	0.005 U		

TABLE E-3
MINE FILL B INITIAL CHARACTERIZATION SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (mg/kg)

ANALYTE				ACETONE	MEK	METH. CHL.	MIBK	TOLUENE	XYLENES		
IM Industrial Cleanup Goal (Human Health)				8,800	27,000	18	2,800	880	320		
IM Residential Cleanup Goal (Human Health)				2,000	7,100	7.8	770	790	320	Qualifier	Sample Analysis Date
MFB ICS #	Sample Date	Grid #	Depth (in.)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		
MFBICS416	6/30/1999	168	12	0.014	0.005 U	0.01 B	0.005 U	0.005 U	0.005 U		
MFBICS419	6/30/1999	169	12	0.005 U	0.005 U	0.01 B	0.005 U	0.005 U	0.005 U		
MFBICS422	7/6/1999	170	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS425	7/6/1999	171	12	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS428	7/6/1999	172	12	0.005 U	0.005 U	0.002 JB	0.005 U	0.005 U	0.005 U		
MFBICS431	7/7/1999	173	12	0.006 U	0.006 U	0.001 JB	0.006 U	0.006 U	0.006 U		
MFBICS434	7/7/1999	174	12	0.085	0.005 U	0.002 JB	0.005 U	0.005 U	0.005 U		
MFBICS437	7/8/1999	176	12	0.005 U	0.005 U	0.002 JB	0.005 U	0.005 U	0.005 U		
MFBICS440	7/8/1999	177	12	0.004 U	0.004 U	0.002 JB	0.004 U	0.004 U	0.004 U		
MFBICS443	7/8/1999	175	12	0.004 U	0.004 U	0.002 JB	0.004 U	0.004 U	0.004 U		
MFBICS446	7/9/1999	178	12	0.005 U	0.005 U	0.002 JB	0.005 U	0.005 U	0.005 U		
MFBICS449	7/9/1999	179	12	0.005 U	0.005 U	0.01 JB	0.005 U	0.005 U	0.005 U		
MFBICS452	7/9/1999	180	12	0.005 U	0.005 U	0.004 JB	0.005 U	0.005 U	0.005 U		
MFBICS455	7/9/1999	181	12	0.005 U	0.005 U	0.01 JB	0.005 U	0.005 U	0.005 U		
MFBICS458	7/13/1999	31	12	0.006 U	0.006 U	0.011 B	0.006 U	0.006 U	0.006 U		
MFBICS461	7/13/1999	33	12	0.005 U	0.005 U	0.011 B	0.005 U	0.005 U	0.005 U		
MFBICS464	7/13/1999	27	12	0.005 U	0.005 U	0.011 B	0.005 U	0.005 U	0.005 U		
MFBICS467	7/14/1999	182	12	0.009 U	0.009 U	0.002 JB	0.009 U	0.009 U	0.009 U		
MFBICS470	7/14/1999	183	12	0.005 U	0.005 U	0.006 B	0.005 U	0.005 U	0.005 U		
MFBICS473	7/14/1999	105	12	0.006 U	0.006 U	0.006 B	0.006 U	0.006 U	0.006 U		
MFBICS476	7/15/1999	184	12	0.005 U	0.005 U	0.01 JB	0.005 U	0.005 U	0.005 U		
MFBICS479	7/15/1999	185	12	0.005 U	0.005 U	0.004 JB	0.005 U	0.005 U	0.005 U		
MFBICS482	8/10/1999	186	12	0.024 U	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U		
MFBICS485	8/16/1999	187	12	0.013 J	0.011 U	0.0057 U	0.0057 U	0.0057 U	0.0057 U		
MFBICS488	8/16/1999	188	12	0.01 J	0.011 U	0.0055 U	0.0055 U	0.0055 U	0.0055 U		
MFBICS491	8/16/1999	189	12	0.01 J	0.011 U	0.0055 U	0.0055 U	0.0055 U	0.0055 U		
MFBICS494	8/18/1999	190	12	0.022 U	0.011 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U		
MFBICS497	8/18/1999	191	12	0.011 J	0.011 U	0.0055 U	0.0055 U	0.0055 U	0.0055 U		
MFBICS500	8/18/1999	192	12	0.014 J	0.011 U	0.0057 U	0.0057 U	0.0057 U	0.0057 U		
MFBICS503	8/18/1999	193	12	0.066 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U		
MFBICS506	8/18/1999	118	12	0.13 B	0.011 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U		
MFBICS509	8/26/1999	194	12	0.0191 JB	0.0114 U	0.0057 U	0.0057 U	0.0057 U	0.0057 U		
MFBICS512	9/8/1999	196	12	0.0134 JB	0.00892 J	0.0058 U	0.0058 U	0.0058 U	0.0058 U		
MFBICS515	9/8/1999	198	12	0.00952 JB	0.011 U	0.00549 U	0.00549 U	0.00549 U	0.00549 U		
MFBICS518	9/8/1999	197	12	0.00633 JB	0.011 U	0.00552 U	0.00552 U	0.00552 U	0.00552 U		
MFBICS521	9/8/1999	199	12	0.0091 JB	0.0112 U	0.00559 U	0.00559 U	0.00559 U	0.00559 U		
MFBICS524	9/8/1999	200	12	0.0138 JB	0.0116 U	0.00581 U	0.00581 U	0.00581 U	0.00581 U		
MFBICS527	9/9/1999	201	12	0.0207 JB	0.00726 JB	0.00608 U	0.00608 U	0.00608 U	0.00608 U		
MFBICS530	9/9/1999	202	12	0.0167 JB	0.0121 U	0.00605 U	0.00605 U	0.00605 U	0.00605 U		
MFBICS533	9/9/1999	203	12	0.0126 JB	0.0111 U	0.00555 U	0.00555 U	0.00555 U	0.00555 U		
MFBICS536	9/14/1999	204	12	0.0266	0.0115 U	0.00577 U	0.00577 U	0.00577 U	0.00577 U		
MFBICS539	9/14/1999	195	12	0.148	0.0259	0.00571 U	0.00571 U	0.00571 U	0.00571 U		
MFBICS542	9/15/1999	205	12	0.0325	0.0215	0.00528 U	0.00528 U	0.00528 U	0.00528 U		
MFBICS545	9/15/1999	206	12	0.0242	0.0105 J	0.00575 U	0.00575 U	0.00435 J	0.00575 U		

TABLE E-3
MINE FILL B INITIAL CHARACTERIZATION SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (mg/kg)

ANALYTE				ACETONE	MEK	METH. CHL.	MIBK	TOLUENE	XYLENES		
IM Industrial Cleanup Goal (Human Health)				8,800	27,000	18	2,800	880	320		
IM Residential Cleanup Goal (Human Health)				2,000	7,100	7.8	770	790	320	Qualifier	Sample Analysis Date
MFB ICS #	Sample Date	Grid #	Depth (in.)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		
MFBICS547	9/22/1999	207	12	0.023 JB	0.0062 J	0.0059 U	0.0059 U	0.0059 U	0.0059 U	J*	09/28/99
MFBICS550	9/22/1999	208	12	0.023 U	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U	J*	09/28/99
MFBICS553	9/22/1999	209	12	0.041 B	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U	J*	09/28/99
MFBICS556	9/22/1999	210	12	0.031 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U	J*	09/28/99
MFBICS559	9/22/1999	211	12	0.055 B	0.014	0.0057 U	0.0057 U	0.0057 U	0.0057 U	J*	09/28/99
MFBICS562	9/22/1999	212	12	0.022 U	0.012	0.0054 U	0.0054 U	0.0036 J	0.0054 U	J*	09/28/99
MFBICS564	9/22/1999	213	12	0.022 JB	0.0064 J	0.0062 U	0.0062 U	0.0062 U	0.0062 U	J*	09/28/99
MFBICS567	9/22/1999	214	12	0.086 B	0.0099 J	0.0054 U	0.0054 U	0.0054 U	0.0054 U	J*	09/28/99
MFBICS570	9/22/1999	215	12	0.021 JB	0.0083 J	0.0056 U	0.0056 U	0.0056 U	0.0056 U	J*	09/28/99
MFBICS573	9/22/1999	216	12	0.095 B	0.021	0.0054 U	0.0054 U	0.0054 U	0.0054 U	J*	09/28/99
MFBICS576	9/24/1999	217	12	0.039 B	0.01 U	0.0052 U	0.0052 U	0.0052 U	0.0052 U		
MFBICS578	9/24/1999	218	12	0.022 U	0.011 U	0.0055 U	0.0055 U	0.0027 J	0.0055 U		
MFBICS581	9/27/1999	219	12	0.018 JB	0.011 U	0.0053 U	0.0053 U	0.0053 U	0.0053 U		
MFBICS584	9/27/1999	220	12	0.026 B	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U		
MFBICS587	9/27/1999	221	12	0.033 B	0.011 U	0.0055 U	0.0055 U	0.0055 U	0.0055 U		
MFBICS590	9/27/1999	222	12	0.022 B	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U		
MFBICS593	9/27/1999	223	12	0.038 B	0.011 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U		
MFBICS596	9/27/1999	224	12	0.033 B	0.011 U	0.0053 U	0.0053 U	0.0053 U	0.0053 U		
MFBICS599	9/27/1999	225	12	0.017 JB	0.013 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U		
MFBICS602	9/28/1999	226	12	0.027 B	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U		
MFBICS605	9/28/1999	227	12	0.024 B	0.012 U	0.0058 U	0.0058 U	0.0014 J	0.0058 U		
MFBICS608	9/28/1999	228	12	0.031 B	0.011 U	0.0055 U	0.0055 U	0.0055 U	0.0055 U		
MFBICS611	9/28/1999	229	12	0.009 JB	0.011 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U		
MFBICS614	9/28/1999	230	12	0.041 B	0.011 U	0.0055 U	0.0055 U	0.0055 U	0.0055 U		
MFBICS617	9/28/1999	231	12	0.056 B	0.011 U	0.0054 U	0.0054 U	0.0014 J	0.0054 U		
MFBICS619	9/30/1999	232	12	0.17 B	0.013 U	0.0063 U	0.0063 U	0.0095	0.0059 J		
MFBICS622	9/30/1999	233	12	0.022 U	0.011 U	0.0055 U	0.0055 U	0.0041 J	0.0033 J		
MFBICS624	9/30/1999	234	12	0.024 U	0.012 U	0.0061 U	0.0061 U	0.0065	0.0041 J		
MFBICS626	9/30/1999	235	12	0.11 B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U		
MFBICS629	9/30/1999	236	12	0.093 B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U		
MFBICS632	10/1/1999	238	12	0.063 B	0.011 U	0.0057 U	0.0057 U	0.0057 U	0.0057 U		
MFBICS635	10/1/1999	239	12	0.014 JB	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U		
MFBICS638	10/1/1999	237	12	0.11 B	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U		
MFBICS641	10/18/1999	240	12	0.104 B	0.0119 U	0.00596 U	0.00596 U	0.00707	0.00476 J		
MFBICS644	10/18/1999	241	12	1.23 U	0.616 U	0.308 U	0.308 U	0.308 U	0.308 U		
MFBICS647	10/12/1999	242	12	0.097 B	0.012 U	0.0058 U	0.0058 U	0.0011 J	0.0058 U		
MFBICS650	10/12/1999	243	12	0.082 B	0.011 U	0.0057 U	0.0057 U	0.0042 J	0.0032 J		
MFBICS653	10/12/1999	244	12	0.022 U	0.011 U	0.0056 U	0.0056 U	0.0033 J	0.0022 J		
MFBICS656	10/12/1999	245	12	0.099 B	0.011 U	0.0057 U	0.0057 U	0.0014 J	0.0057 U		
MFBICS659	10/12/1999	246	12	0.038 B	0.012 U	0.0061 U	0.0061 U	0.0044 J	0.0021 J		
MFBICS662	10/12/1999	247	12	0.1 B	0.012 U	0.0062 U	0.0062 U	0.0011 J	0.0062 U		
MFBICS665	10/12/1999	248	12	0.065 B	0.013 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U		
MFBICS667	10/18/1999	249	12	0.00958 JB	0.0121 U	0.00607 U	0.00607 U	0.00607 U	0.00607 U		
MFBICS670	10/18/1999	250	12	0.0171 JB	0.0118 U	0.00591 U	0.00591 U	0.00591 U	0.00591 U		
MFBICS673	10/19/1999	251	12	0.095	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U		
MFBICS676	10/19/1999	252	12	0.08	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U		
MFBICS679	10/19/1999	253	12	0.018 J	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U		
MFBICS682	10/19/1999	254	12	0.03	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U		

TABLE E-3
MINE FILL B INITIAL CHARACTERIZATION SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (mg/kg)

ANALYTE				ACETONE	MEK	METH. CHL.	MIBK	TOLUENE	XYLENES		
IM Industrial Cleanup Goal (Human Health)				8,800	27,000	18	2,800	880	320		
IM Residential Cleanup Goal (Human Health)				2,000	7,100	7.8	770	790	320	Qualifier	Sample Analysis Date
MFB ICS #	Sample Date	Grid #	Depth (in.)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		
MFBICS685	10/19/1999	255	12	0.042	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U		
MFBICS688	10/20/1999	256	12	0.021 J	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS691	10/20/1999	257	12	0.056	0.011 U	0.0057 U	0.0057 U	0.0057 U	0.0057 U		
MFBICS694	10/21/1999	258	12	0.058	0.012 U	0.0058 U	0.0058 U	0.0076	0.0019 J		
MFBICS697	10/21/1999	259	12	0.025	0.011 U	0.0057 U	0.0057 U	0.0047 J	0.0053 J		
MFBICS700	10/21/1999	260	12	0.021 J	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U		
MFBICS703	10/21/1999	261	12	0.033	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U		
MFBICS706	10/21/1999	262	12	0.037	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U		
MFBICS709	10/26/1999	263	12	0.056	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U		
MFBICS712	10/26/1999	264	12	0.13 B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U		
MFBICS715	11/3/1999	265	12	0.06 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U		
MFBICS718	11/3/1999	266	12	0.039 B	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U		
MFBICS721	11/3/1999	267	12	0.026 B	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U		
MFBICS724	11/3/1999	268	12	0.054 B	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS727	11/4/1999	269	12	0.027 B	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS730	11/4/1999	270	12	0.035 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U		
MFBICS733	11/4/1999	271	12	0.044 B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U		
MFBICS736	11/4/1999	272	12	0.035 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U		
MFBICS742	1/26/2000	273	12	0.081 B	0.013 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U		
MFBICS745	1/26/2000	274	12	0.032 B	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U		
MFBICS748	3/29/2000	276	12	0.043 B	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U		
MFBICS751	10/31/2000	277	12	0.007	0.006 U	0.004 BJ	0.006 U	0.006 U	0.006 U		
MFBICS754	10/31/2000	278	12	0.006 U	0.006 U	0.003 BJ	0.006 U	0.006 U	0.006 U		
MFBICS756	11/2/2000	279	12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		
MFBICS757	10/31/2000	279	18	0.02	0.005 U	0.002 J	0.005 U	0.005 U	0.077		
MFBICS760	11/1/2000	280	12	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U		
MFBICS763	11/1/2000	281	12	0.032	0.006 U	0.002 J	0.006 U	0.03	0.006 U		

NOTE: samples flagged with a "J*" were analyzed outside the EPA extended 54-hour hold time and are considered to be reported with a "low bias".
Actual sample analysis dates are provided for referencee (sample prep dates are not available).

TABLE E-4
MINE FILL B INITIAL CHARACTERIZATION SAMPLE RESULTS
POLYCHLORINATED BIPHENYLS (ug/kg)

ANALYTE				Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
IM Industrial Cleanup Goal (Human Health)							340		19,000	340
IM Residential Cleanup Goal (Human Health)							66		66	66
MFB ICS #	Sample Date	Grid #	Depth (in.)							
MFBICS315	2/25/1999	137	0-12	3.95 U	3.95 U	3.95 U	3.95 U	13000 DJ	3.95 U	3.95 U
MFBICS693	10/21/1999	258	0-12				3.9 U		3.9 U	3.9 U
MFBICS695	10/21/1999	258	24-36				0.004 U		0.004 U	0.004 U
MFBICS696	10/21/1999	259	0-12				1.9 U		1.9 U	1.9 U
MFBICS698	10/21/1999	259	24-36				0.77 U		0.77 U	0.77 U
MFBICS699	10/21/1999	260	0-12				3.8 U		3.8 U	3.8 U
MFBICS701	10/21/1999	260	24-36				0.76 U		0.76 U	0.76 U
MFBICS702	10/21/1999	261	0-12				7.4 U		7.4 U	7.4 U
MFBICS704	10/21/1999	261	24-36				0.38 U		0.38 U	0.38 U

U - non-detect
D - identified in an analysis at a secondary dilution factor

TABLE E-5
MINE FILL B INITIAL CHARACTERIZATION SAMPLING
TRIP BLANK RESULTS (ug/L)

ANALYTE		ACETONE	MEK	METH. CHL.	MIBK	TOLUENE	XYLENES
Sample ID	Sample Date						
MFBTB060799	6/7/99	8	5 U	5 U	5 U	5 U	5 U
MFBTB060999	6/9/99	5 U	5 U	5 U	5 U	5 U	5 U
MFBTB061099	6/10/99	5 U	5 U	5 U	5 U	5 U	5 U
MFBTB061799	6/17/99	10	5 U	5 U	5 U	5 U	5 U
MFBTB061899	6/18/99	5 U	5 U	5 U	5 U	5 U	5 U
MFBTB062299	6/22/99	5 U	5 U	5 U	5 U	5 U	5 U
MFBTB062399	6/23/99	20	5 U	5 U	5 U	5 U	5 U
MFBTB063099	6/30/99	24	5 U	5 U	5 U	5 U	5 U
MFBTB070699	7/6/99	13	5 U	5 B	5 U	5 U	5 U
MFBTB070799	7/7/99	5 U	5 U	5 U	5 U	5 U	5 U
MFBTB070899	7/8/99	15	5 U	5 U	5 U	5 U	5 U
MFBTB070999	7/9/99	64	5 U	5 U	5 U	5 U	5 U
MFBTB071399	7/13/99	92	5 U	9	5 U	5 U	5 U
MFBTB071499	7/14/99	5 U	5 U	5 U	5 U	5 U	5 U
MFBTB071599	7/15/99	5 U	5 U	5 U	5 U	5 U	5 U
MFBTB081099	8/10/99	15B	2 U	1 U	2 U	1 U	1 U
MFBTB081699	8/16/99	39 B	2 U	1 U	2 U	1 U	1 U
MFBTB081899	8/18/99	10 B	2 U	1 U	2 U	1 U	1 U
MFBTB082699	8/26/99	30.1 B	4 U	2 U	4 U	2 U	2 U
MFBTB090899	9/8/99	1709 B	2 U	1 U	2 U	1 U	0.133 J
MFBTB090999	9/9/99	6.11	2 U	1 U	2 U	1 U	0.198 J
MFBTB091499	9/14/99	5.74 B	2 U	1 U	2 U	1 U	0.138 J
MFBTB091599	9/15/99	4.9 B	2 U	1 U	2 U	1 U	0.126 J
MFBTB092299	9/22/99	6.6	2 U	1 U	2 U	1 U	0.15 J
MFBTB092499	9/24/99	6.1 B	2 U	1 U	2 U	1 U	0.19 J
MFBTB092799	9/27/99	9.3 B	2 U	1 U	2 U	1 U	1 U
MFBTB093099	9/30/99	8.4 B	2 U	1 U	2 U	1 U	0.16 U
MFBTB100199	10/1/99	8.5	2 U	1 U	2 U	1 U	1 U
MFBTB101299	10/12/99	7.3	2 U	1 U	2 U	1 U	1 U
MFBTB101899	10/18/99	5.49	2 U	1 U	2 U	1 U	1 U
MFBTB102099	10/20/99	8.7	2 U	1 U	2 U	1 U	1 U
MFBTB102199	10/21/99	4.8	2 U	1 U	2 U	1 U	1 U
MFBTB102699	10/26/99	11	2 U	1 U	2 U	1 U	1 U
MFBTB110399	11/3/99	8.2	2 U	1 U	2 U	1 U	1 U
MFBTB110499	11/4/99	35	2 U	1 U	2 U	1 U	1 U
MFBTB012500	1/25/00	16	2 U	1 U	2 U	1 U	1 U
MFBTB012600	1/26/00	130** E	4 U	2 U	4 U	2 U	2 U
MFBTB032900	3/29/00	2.8	2 U	1 U	2 U	1 U	1 U
MFBTB103100	10/31/00	110	5 U	5 J	5 U	5 U	5 U
MFBTB110100	11/1/00	110	5 U	4 J	5 U	5 U	5 U

** The lab did not reanalyze sample

TABLE E-6
MINE FILL B INITIAL CHARACTERIZATION SAMPLING
RINSE BLANK RESULTS
EXPLOSIVES (mg/L)

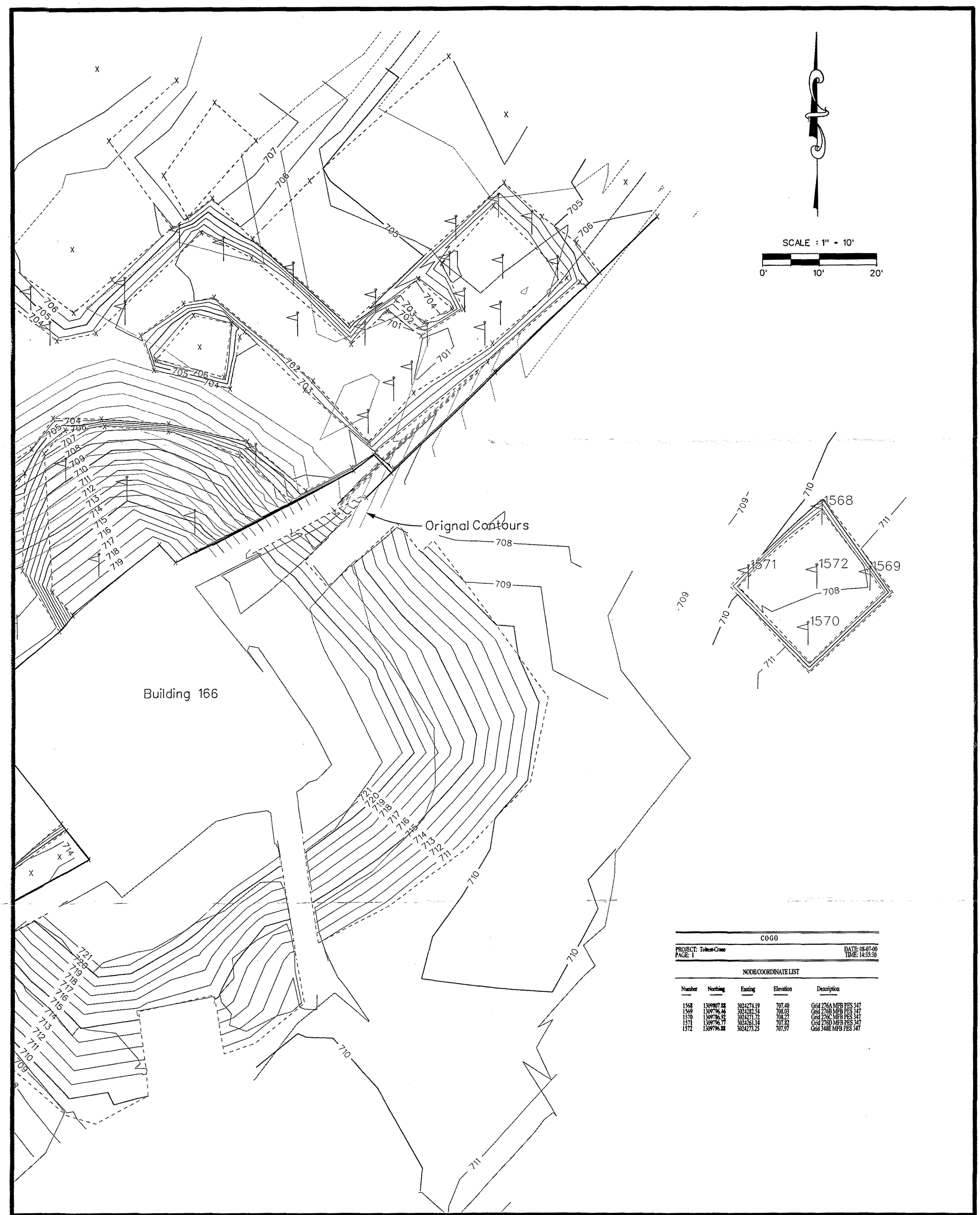
ANALYTE		135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
Sample ID	Sample Date															
MFBRB060999	6/9/99	0.0073 U	0.004 U	0.0064 U	0.0057 U	0.0094 U	0.012 U	0.012 U	0.008 U	0.007 U	0.0079 U	0.013 U	0.007 U	0.02 U	0.014 U	0.01 U
MFBRB062399	6/23/99	0.0073 U	0.004 U	0.0064 U	0.0057 U	0.0094 U	0.012 U	0.012 U	0.008 U	0.007 U	0.0079 U	0.013 U	0.007 U	0.02 U	0.014 U	0.01 U
MFBRB071499	7/14/99	0.0073 U	0.004 U	0.0064 U	0.0057 U	0.0094 U	0.012 U	0.012 U	0.008 U	0.007 U	0.0079 U	0.013 U	0.007 U	0.02 U	0.014 U	0.01 U
MFBRB081699	8/16/99	0.0003 U	0.0001 U	0.0001 U	0.0001 U	0.0003 U	0.0001 U	0.001 U	0.001 U	0.0001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.001 U
MFBRB090899	9/8/99	0.0003 U	0.0001 U	0.00012	0.0001 U	0.0003 U	0.0001 U	0.001 U	0.001 U	0.0001 U	0.001 U	0.00019 J	0.001 U	0.001 U	0.000126 J	0.001 U
MFBRB092299	9/22/99	0.0003 U	0.0001 U	0.0001 U	0.0001 U	0.0003 U	0.0001 U	0.001 U	0.001 U	0.0001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0003 J	0.001 U
MFBRB092899	9/28/99	0.0003 U	0.0001 U	0.0001 U	0.0001 U	0.0003 U	0.0001 U	0.001 U	0.001 U	0.0001 U	0.001 U	0.00022 J	0.001 U	0.001 U	0.00019 J	0.001 U
MFBRB093099	9/30/99	0.0003 U	0.0001 U	0.0001 U	0.0001 U	0.0003 U	0.0001 U	0.001 U	0.001 U	0.0001 U	0.001 U	0.00011 J	0.001 U	0.001 U	0.0002 J	0.001 U
MFBRB101299	10/12/99	0.0003 U	0.0001 U	0.0001 U	0.0001 U	0.0003 U	0.0001 U	0.001 U	0.001 U	0.0001 U	0.001 U	0.00011 J	0.001 U	0.001 U	0.0008 U	0.001 U
MFBRB101999	10/19/99	0.0003 U	0.0001 U	0.0001 U	0.0001 U	0.0003 U	0.0001 U	0.001 U	0.001 U	0.0001 U	0.001 U	0.00011 J	0.001 U	0.001 U	0.0008 U	0.001 U
MFBRB110399	11/3/99	0.0003 U	0.0001 U	0.0001 U	0.0001 U	0.0003 U	0.0001 U	0.001 U	0.001 U	0.0001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.001 U
MFBRB103100	10/31/00	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

TABLE E-7
MINE FILL B INITIAL CHARACTERIZATION SAMPLING
RINSE BLANK RESULTS (mg/L)
METALS

ANALYTE		MERCURY	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	SELENIUM	SILVER
Sample ID	Sample Date									
MFBRB060999	6/9/99	0.00011 B	0.0321 U	0.003 U	0.004 U	0.003 U	0.0005 U	0.0021 U	0.0029 U	0.002 U
MFBRB062399	6/23/99	0.0001 U	0.0321 U	0.0033 U	0.00081 B	0.0003 U	0.0005 U	0.0021 U	0.0029 U	0.002 U
MFBRB071499	7/14/99	0.0001 U	0.0321 U	0.0033 U	0.0004 U	0.0003 U	0.0005 U	0.0021 U	0.0045 U	0.002 U
MFBRB081699	8/16/99	0.0002 U	0.2 U	0.3 U	0.0013 J	0.005 U	0.01 U	0.1 U	0.25 U	0.01 U
MFBRB090899	9/8/99	0.0002 U	0.2 U	0.3 U	0.2 U	0.005 U	0.01 U	0.1 U	0.25 U	0.01 U
MFBRB092299	9/22/99	0.0002 U	0.2 U	0.3 U	0.2 U	0.005 U	0.01 U	0.1 U	0.25 U	0.01 U
MFBRB092899	9/28/99	0.0002 U	0.053 J	0.3 U	0.2 U	0.005 U	0.01 U	0.1 U	0.25 U	0.01 U
MFBRB093099	9/30/99	0.0002 U	0.2 U	0.3 U	0.2 U	0.005 U	0.01 U	0.1 U	0.25 U	0.01 U
MFBRB101299	10/12/99	0.0002 U	0.2 U	0.3 U	0.0018 B	0.005 U	0.01 U	0.1 U	0.25 U	0.01 U
MFBRB101999	10/19/99	0.0002 U	0.2 U	0.3 U	0.2 U	0.005 U	0.01 U	0.1 U	0.25 U	0.01 U
MFBRB110399	11/3/99	0.0002 U	0.2 U	0.3 U	0.2 U	0.005 U	0.0031 J	0.1 U	0.25 U	0.01 U
MFBRB103100	10/31/00	0.00016 B	0.113 B	0.0022 U	0.002 B	0.0006 U	0.0038 B	0.0035 B	0.0029 U	0.002 U

APPENDIX F

SURVEYED DRAWINGS



COGO

PROJECT: Tolleson-Crane
PAGE: 1

DATE: 08-07-00
TIME: 14:35:30

NODE/COORDINATE LIST

Number	Northing	Easting	Elevation	Description
1568	1309807.88	3024274.19	707.40	Grid 276A MFB PES 347
1569	1309796.46	3024282.54	708.03	Grid 276B MFB PES 347
1570	1309786.92	3024271.72	708.27	Grid 276C MFB PES 347
1571	1309796.77	3024261.14	707.82	Grid 276D MFB PES 347
1572	1309796.88	3024273.25	707.97	Grid 348E MFB PES 347

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REVISIONS AND DATES

4/2/01 Showed the location of Building 166

DESIGNED BY:

DRAWN BY: GSB

CHECKED BY: RLB

APPROVED BY:

DATE: August 7, 2000

Mine Fill B

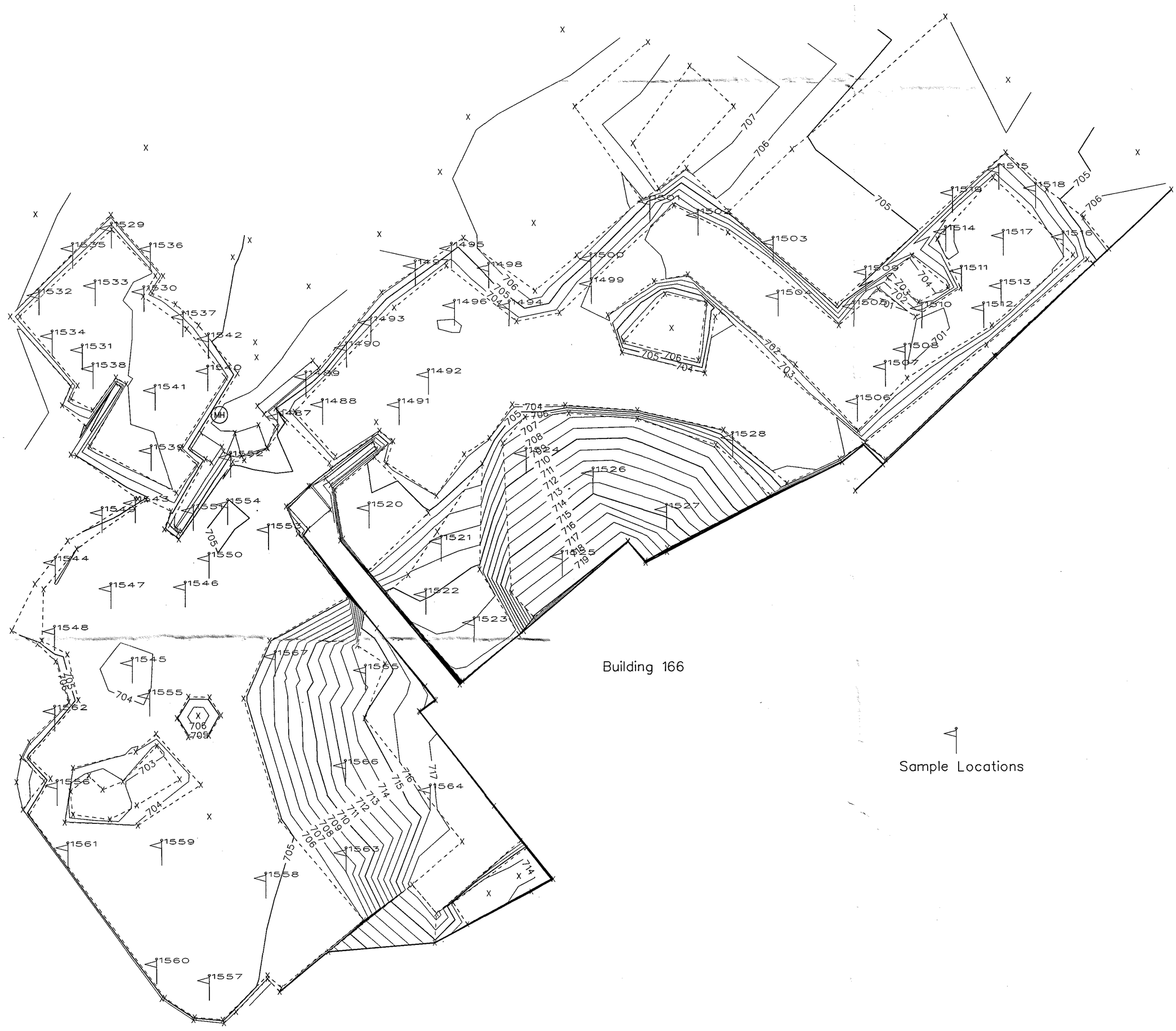
Building 166
Sample Location & Excavated Area

Locations done August 2, 2000

SCALE: 1" = 10' JOB No.: 121-4359 SHEET No.: 1 of 1

000842 PB04X

mfb_09.dgn



Mine Fill B

Sample Locations & Excavated Area
Building 166

Locations Done November 9, 1999

SCALE: 1" = 10' JOB No.: 121-4359 SHEET No.: 1 of 1

REVISIONS AND DATES

DESIGNED BY:
DRAWN BY: GSB
CHECKED BY: RLB
APPROVED BY:
DATE: April 20, 2000

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MFB_06.dgn

COGO

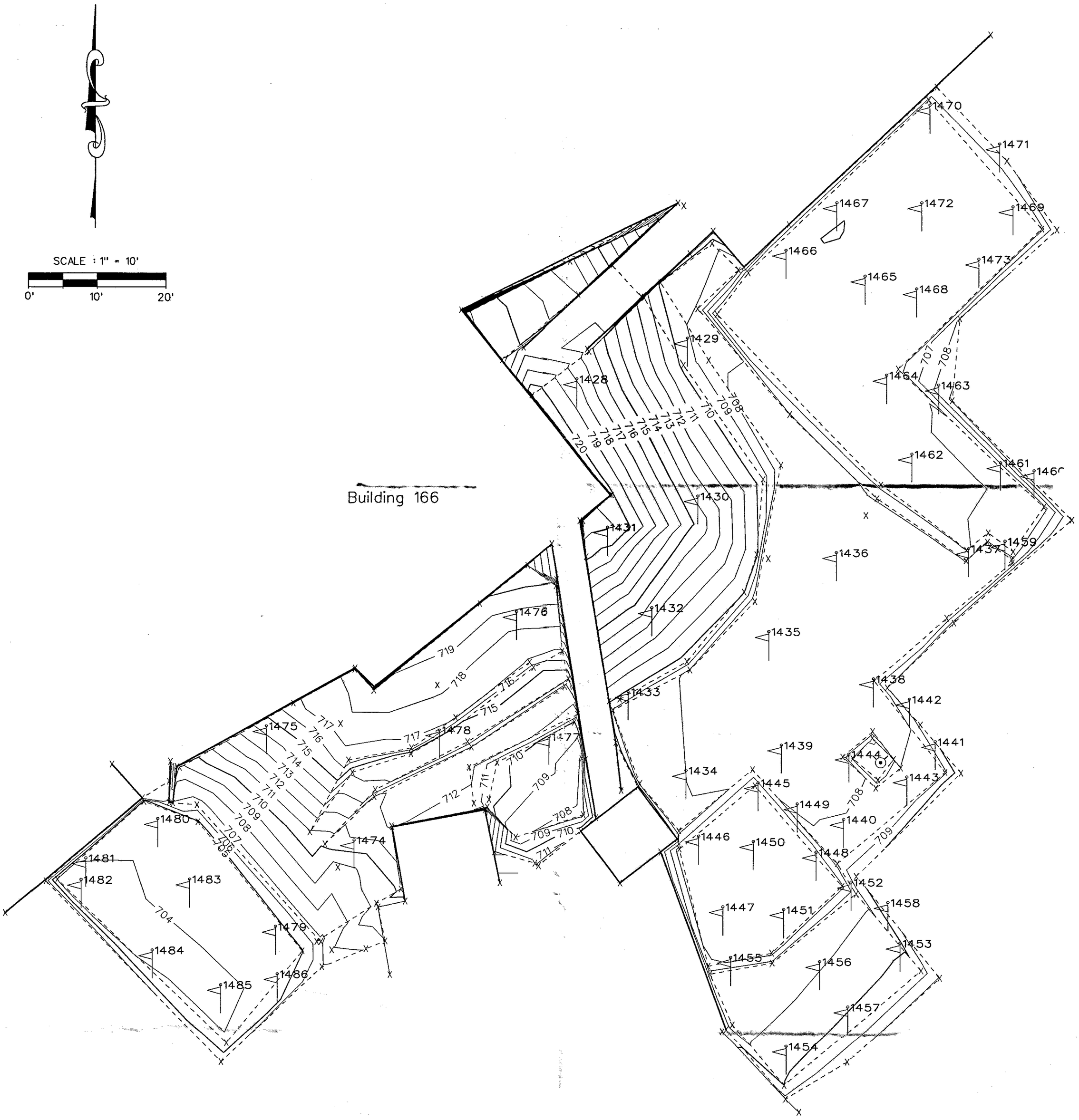
PROJECT: Toltest-Crane
PAGE: 1 B-166 Nwside

DATE: 04-01-00
TIME: 10:55:48

NODE/COORDINATE LIST

Number	Northing	Easting	Elevation	Description
1487	1309821.32	3024099.93	705.00	GRID 226A MFB PES 276
1488	1309823.30	3024107.27	703.16	GRID 226B MFB PES 276 277
1489	1309827.78	3024104.59	703.39	GRID 226C MFB PES 276
1490	1309832.56	3024111.18	703.22	GRID 226D MFB PES 276
1491	1309823.29	3024119.67	703.63	GRID 226E MFB PES 276
1492	1309828.14	3024124.44	703.46	GRID 225A MFB PES 270
1493	1309836.61	3024115.11	703.21	GRID 225B MFB PES 270
1494	1309839.25	3024137.65	703.34	GRID 225C MFB PES 270
1495	1309848.56	3024128.16	703.49	GRID 225D MFB PES 270
1496	1309839.34	3024128.65	702.95	GRID 225E MFB PES 270 271
1497	1309845.74	3024122.29	703.96	GRID 225F MFB PES 274 275
1498	1309845.37	3024134.35	704.45	GRID 225G MFB PES 272 273
1499	1309842.84	3024151.00	702.75	GRID 118A MFB PES 286
1500	1309846.88	3024150.94	703.04	GRID 118B MFB PES 298 299
1501	1309856.12	3024160.57	703.02	GRID 118C MFB PES 284 285
1502	1309853.92	3024168.43	701.41	GRID 118D MFB PES 282
1503	1309849.56	3024180.70	701.50	GRID 118E MFB PES 286 287
1504	1309840.87	3024181.46	701.74	GRID 118F MFB PES 282 283
1505	1309839.29	3024193.60	701.64	GRID 215A MFB PES 288
1506	1309823.91	3024194.14	701.74	GRID 118G MFB PES 282
1507	1309829.54	3024198.72	701.40	GRID 118H MFB PES 282
1508	1309832.30	3024201.92	701.04	GRID 215B MFB PES 288
1509	1309844.82	3024195.54	701.85	GRID 215C MFB PES 290 291
1510	1309838.94	3024204.66	700.79	GRID 215D MFB PES 288 289
1511	1309844.93	3024211.07	701.17	GRID 215E MFB PES 288
1512	1309839.04	3024214.65	701.25	GRID 215F MFB PES 288
1513	1309842.59	3024217.51	701.49	GRID 246A MFB PES 292
1514	1309851.29	3024208.52	700.92	GRID 246B MFB PES 292
1515	1309861.30	3024217.17	701.42	GRID 246C MFB PES 292
1516	1309850.50	3024227.62	701.98	GRID 246D MFB PES 292
1517	1309850.71	3024217.88	701.28	GRID 246E MFB PES 292 293
1518	1309858.35	3024223.15	702.05	GRID 246F MFB PES 296 297
1519	1309857.52	3024209.64	701.58	GRID 246G MFB PES 294 295
1520	1309806.68	3024114.83	705.11	GRID 105AA MFB PES 346
1521	1309801.29	3024126.53	709.15	GRID 105AB MFB PES 346
1522	1309792.72	3024123.99	710.45	GRID 105AC MFB PES 346
1523	1309788.13	3024131.91	711.39	GRID 105AD MFB PES 346
1524	1309815.43	3024140.36	710.06	GRID 105A MFB PES
1525	1309798.87	3024146.25	718.94	GRID 105B MFB PES
1526	1309812.23	3024151.28	714.95	GRID 105C MFB PES
1527	1309806.41	3024163.24	715.94	GRID 105D MFB PES
1528	1309818.01	3024174.04	707.06	GRID 105E MFB PES
1529	1309851.77	3024072.50	702.32	GRID 256A MFB PES 338
1530	1309841.52	3024077.84	703.12	GRID 256B MFB PES 338
1531	1309832.10	3024067.76	702.45	GRID 256C MFB PES 338
1532	1309841.00	3024060.60	702.21	GRID 256D MFB PES 338
1533	1309842.49	3024069.84	702.59	GRID 256E MFB PES 338 339
1534	1309834.39	3024062.83	702.60	GRID 256F MFB PES 340 341

1535	1309848.50	3024066.11	702.14	GRID 256G MFB PES 342 343
1536	1309848.44	3024078.91	702.99	GRID 256H MFB PES 344 345
1537	1309837.49	3024084.29	703.12	GRID 244A MFB PES 334
1538	1309829.08	3024069.54	702.34	GRID 244B MFB PES 334
1539	1309815.84	3024079.06	702.58	GRID 244C MFB PES 334
1540	1309828.71	3024088.41	703.33	GRID 244D MFB PES 334
1541	1309825.55	3024079.72	703.23	GRID 244E MFB PES 334 335
1542	1309833.95	3024088.52	703.08	GRID 244F MFB PES 336 337
1543	1309807.47	3024076.53	704.22	GRID 228A MFB PES 326
1544	1309797.87	3024063.37	703.99	GRID 228B MFB PES 326
1545	1309781.43	3024076.10	703.65	GRID 228C MFB PES 326
1546	1309793.92	3024084.70	704.58	GRID 228D MFB PES 326
1547	1309793.64	3024072.53	704.29	GRID 228E MFB PES 326 327
1548	1309786.76	3024063.28	704.31	GRID 228F MFB PES 328 329
1549	1309805.84	3024071.08	704.00	GRID 228G MFB PES 330 331
1550	1309798.54	3024088.62	704.92	GRID 227A MFB PES 332
1551	1309806.28	3024086.01	704.93	GRID 227B MFB PES 332
1552	1309814.81	3024092.11	704.92	GRID 227C MFB PES 332
1553	1309803.16	3024098.43	704.57	GRID 227D MFB PES 332
1554	1309807.21	3024091.64	705.09	GRID 227E MFB PES 332 333
1555	1309776.10	3024078.90	704.19	GRID 115A MFB PES 318
1556	1309761.69	3024063.73	704.27	GRID 115B MFB PES 318
1557	1309730.22	3024088.75	704.23	GRID 115C MFB PES 318
1558	1309746.73	3024098.03	704.91	GRID 115D MFB PES 318
1559	1309752.02	3024080.91	704.53	GRID 115E MFB PES 318 319
1560	1309732.82	3024080.09	704.55	GRID 115F MFB PES 320 321
1561	1309751.63	3024065.53	704.51	GRID 115G MFB PES 322 323
1562	1309773.69	3024063.32	704.21	GRID 115H MFB PES 324 325
1563	1309750.85	3024111.16	706.96	GRID 103A MFB PES 316
1564	1309760.98	3024124.76	715.98	GRID 103B MFB PES 316
1565	1309780.31	3024114.29	713.92	GRID 103C MFB PES 316
1566	1309764.97	3024111.05	711.98	GRID 103D MFB PES 316 317
1567	1309782.50	3024099.58	707.13	GRID 103E MFB PES 316



Minefill B

Building 166

Sample Locations & Excavated Area

Locations Done March 11, 2000

SCALE: 1" = 10' JOB No.: 121-4359 SHEET No.: 1 of 1

REVISIONS AND DATES

DESIGNED BY:

DRAWN BY: GSB

CHECKED BY: RLB

APPROVED BY:

DATE: March 31, 2000

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000842PB05X

MFA 04.dgn

ORIGINAL SURFACE: mfb_04
FINAL SURFACE: mfb_07
COMPACTION FACTOR: 0% SHRINK
CUT VOLUME = 0.5 CU YD
FILL VOLUME = 1224.1 CU YD

Minefill B

Building 166

Final dirt As-Builts

Locations Done April 1, 2000

SCALE: 1" = 10' JOB No.: 121-4359 SHEET No.: 1 of 1

REVISIONS AND DATES

DESIGNED BY:

DRAWN BY: GSB

CHECKED BY: RLB

APPROVED BY:

DATE: April 20, 2000

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mfb_07.dgn

COGO

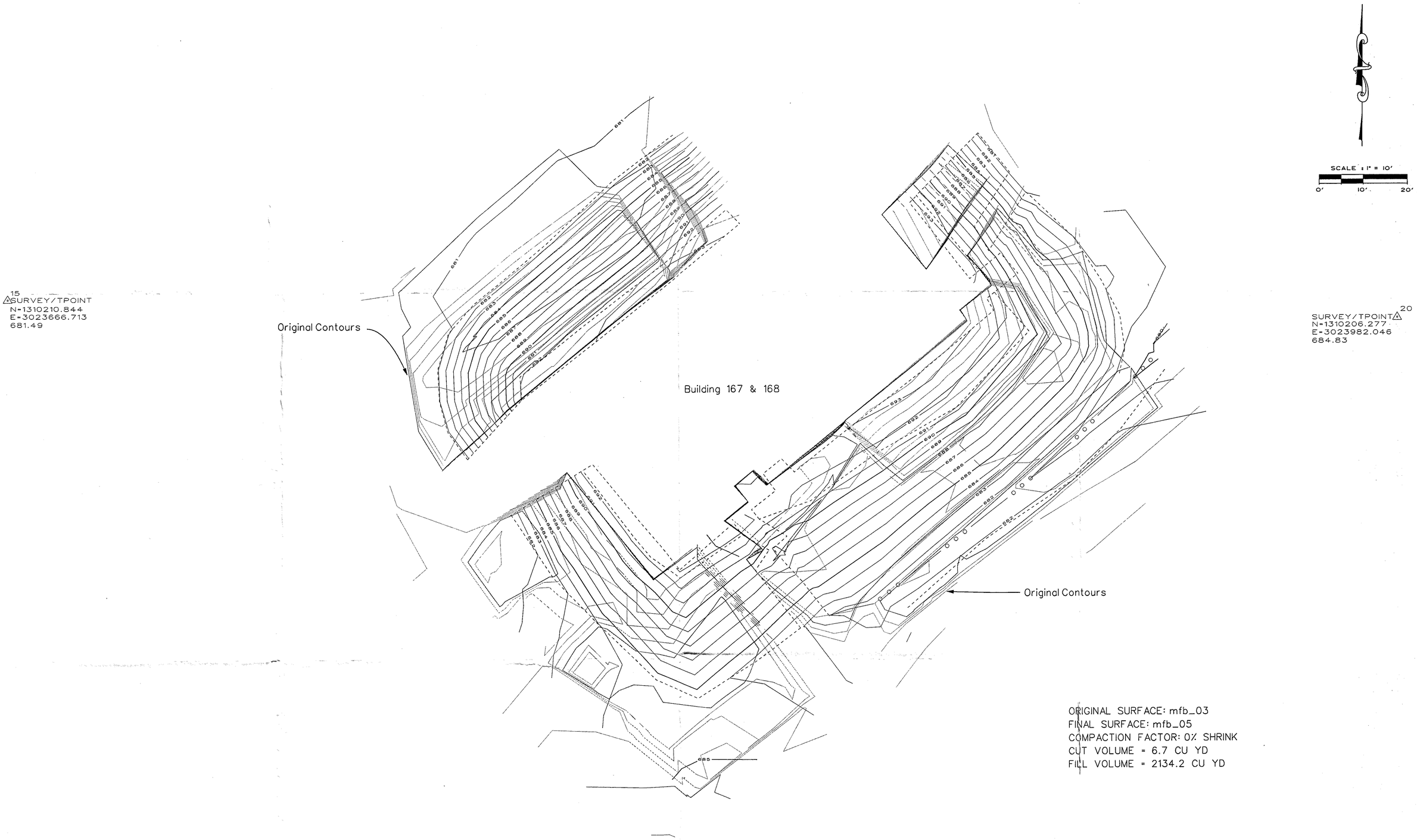
PROJECT: Toltest-Crane
PAGE: 1 B-166 SE side

DATE: 03-11-00
TIME: 14:48:01

NODE/COORDINATE LIST

Number	Northing	Easting	Elevation	Description
1428	1309783.54	3024179.69	718.93	GRID 107A MFB PES 236
1429	1309789.35	3024195.67	709.67	GRID 107B MFB PES 236
1430	1309766.66	3024197.23	714.70	GRID 107C MFB PES 236 237
1431	1309762.16	3024184.24	719.46	GRID 107D MFB PES 236
1432	1309750.70	3024190.68	712.22	GRID 107E MFB PES 236
1433	1309738.81	3024187.31	708.48	GRID 121A MFB PES 244
1434	1309727.48	3024195.59	708.02	GRID 121B MFB PES 244
1435	1309747.33	3024207.59	707.26	GRID 121C MFB PES 244 245
1436	1309758.61	3024217.22	707.03	GRID 121D MFB PES 244
1437	1309759.23	3024236.10	707.08	GRID 121E MFB PES 244
1438	1309740.70	3024222.46	707.32	GRID 220A MFB PES 242
1439	1309731.17	3024209.40	707.55	GRID 220B MFB PES 242
1440	1309720.51	3024218.28	708.28	GRID 220C MFB PES 242
1441	1309731.69	3024231.31	708.68	GRID 220D MFB PES 242
1442	1309737.79	3024227.63	707.96	GRID 220E MFB PES 254 255
1443	1309726.60	3024227.23	708.61	GRID 220F MFB PES 304 305
1444	1309729.88	3024219.00	707.76	GRID 220G MFB PES 242 243
1445	1309725.73	3024206.06	706.00	A MFB PES 240
1446	1309718.06	3024197.42	706.29	B MFB PES 240
1447	1309707.99	3024200.95	706.59	C MFB PES 240
1448	1309715.81	3024214.37	706.35	D MFB PES 240
1449	1309722.71	3024211.70	706.21	E MFB PES 250 251
1450	1309717.30	3024205.36	706.10	GRID 181F MFB PES 240 241
1451	1309707.61	3024209.73	706.86	GRID 181G MFB PES 248 249
1452	1309711.53	3024219.31	708.75	GRID 231A MFB PES 238
1453	1309702.89	3024226.25	710.23	GRID 231B MFB PES 238
1454	1309687.97	3024210.13	709.99	GRID 231C MFB PES 238
1455	1309700.83	3024202.10	708.52	GRID 231D MFB PES 238
1456	1309700.27	3024214.87	709.20	GRID 231E MFB PES 238 239
1457	1309693.80	3024218.86	710.18	GRID 231F MFB PES 300 301
1458	1309708.64	3024224.53	709.23	GRID 231G MFB PES 302 303
1459	1309760.24	3024241.31	707.38	GRID 121F MFB PES 256 257
1460	1309770.55	3024245.43	706.56	GRID 120A MFB PES 306 307
1461	1309771.70	3024240.64	706.04	GRID 120B MFB PES 264
1462	1309772.91	3024227.90	705.76	GRID 120C MFB PES 264
1463	1309782.73	3024231.72	706.09	GRID 120D MFB PES 308 309
1464	1309784.11	3024224.28	705.39	GRID 120E MFB PES 264 265
1465	1309798.21	3024221.18	705.44	GRID 120F MFB PES 264
1466	1309801.90	3024209.93	705.14	GRID 120G MFB PES 264
1467	1309808.71	3024217.19	704.95	GRID 177A MFB PES 246
1468	1309796.41	3024228.52	705.52	GRID 177B MFB PES 246
1469	1309808.14	3024242.31	705.80	GRID 177C MFB PES 246
1470	1309822.67	3024230.42	705.54	GRID 177D MFB PES 246
1471	1309817.13	3024240.44	705.66	GRID 177E MFB PES 262 263
1472	1309808.71	3024229.23	705.54	GRID 177F MFB PES 246 247
1473	1309800.64	3024237.45	705.89	GRID 177G MFB PES 258 259
1474	1309717.52	3024147.56	708.92	GRID 102A MFB PES 266
1475	1309733.90	3024134.87	712.95	GRID 102B MFB PES 266
1476	1309750.26	3024170.98	717.50	GRID 102C MFB PES 266
1477	1309732.33	3024175.73	709.28	GRID 102D MFB PES 266
1478	1309733.33	3024159.85	714.23	GRID 102E MFB PES 266 267
1479	1309705.21	3024136.22	704.46	GRID 113A MFB PES 268
1480	1309720.55	3024119.15	704.14	GRID 113B MFB PES 268

1481	1309714.94	3024108.71	703.73	GRID 113C MFB PES 268
1482	1309711.89	3024108.03	704.40	GRID 113D MFB PES 314 315
1483	1309711.95	3024123.72	704.20	GRID 113E MFB PES 268 269
1484	1309701.82	3024118.36	704.28	GRID 113F MFB PES 312 313
1485	1309696.83	3024128.23	703.66	GRID 113G MFB PES 268
1486	1309698.42	3024136.48	704.84	GRID 113G MFB PES 310 311



Mine Fill B

Building 167 & 168
Final dirt As-Builts

Locations Done March 11, 2000

SCALE: 1" = 10' JOB No.: 121-4359 SHEET No.: 1 of 1

REVISIONS AND DATES

DESIGNED BY:
DRAWN BY: GSB
CHECKED BY: RLB/DO
APPROVED BY:
DATE: April 3, 2000

Mid-States ENGINEERING
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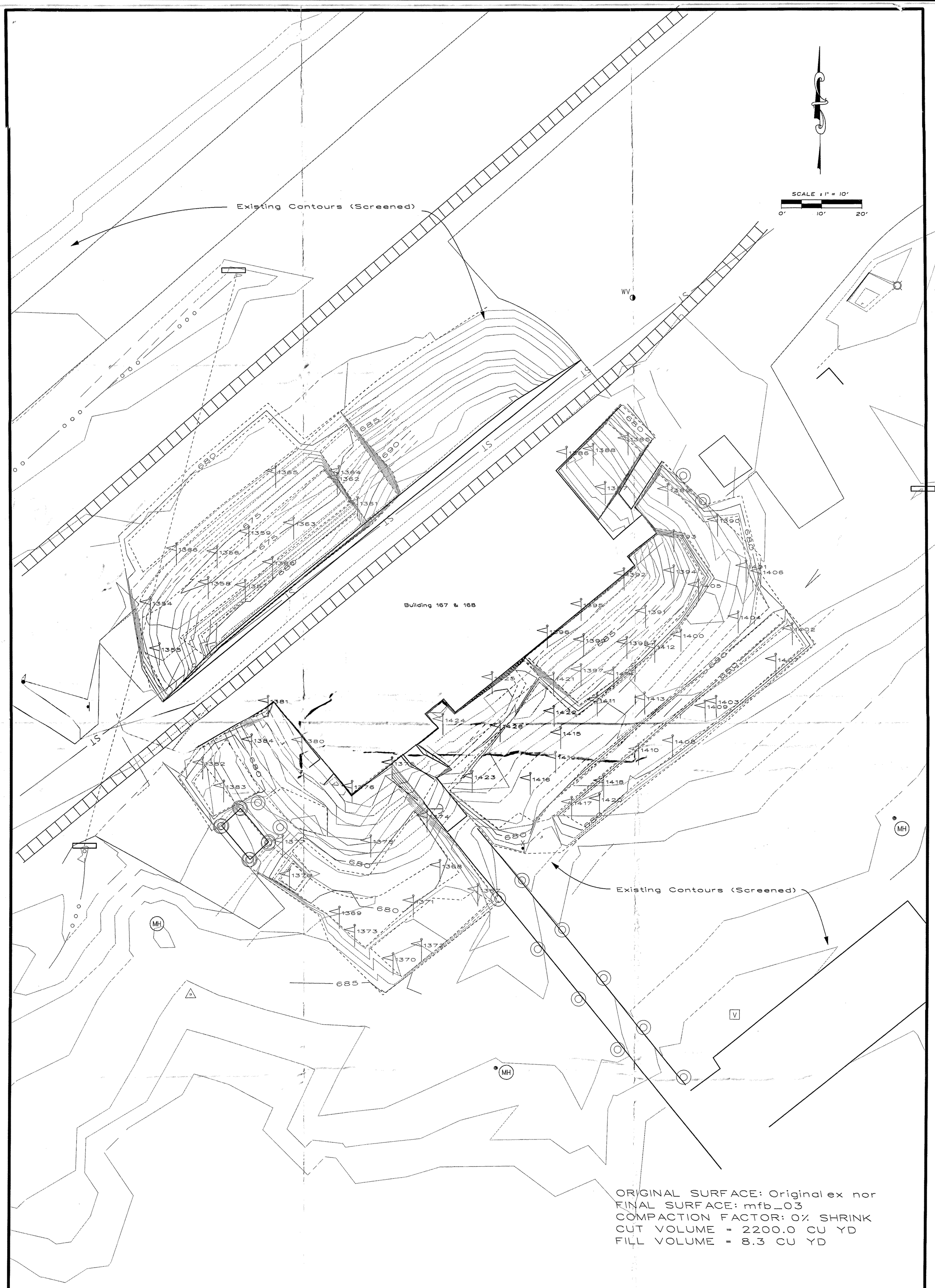
mfb_05

00084DPB06X



ORIGINAL SURFACE: Original ex nor
FINAL SURFACE: mfb_03
COMPACTION FACTOR: 0% SHRINK
CUT VOLUME = 2200.0 CU YD
FILL VOLUME = 8.3 CU YD

Mine Fill B

Building 167 & 168

Locations Done November 9, 1999

SCALE: 1" = 10' | JOB No.: 121-4359 | SHEET No.: 1 of 1

REVISIONS AND DATES

DESIGNED BY:

DRAWN BY: GSB

CHECKED BY: RLB

APPROVED BY:

DATE: December 20, 1999

Mid-States ENGINEERING
350 E. New York St., Suite 300
Indianapolis, IN 46204
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MFB_03.dgn

COGO

PROJECT: Toltest-Crane DATE: 05-02-01

PAGE: 1 B-167/168 TIME: 14:40:42

NODE/COORDINATE LIST

Number	Northing	Easting	Elevation	Description
1354	1310192.55	3023761.84	675.77	Grid 31A MFB PES 185
1355	1310180.98	3023764.14	677.10	Grid 31B MFB PES 185
1356	1310205.37	3023779.03	674.55	Grid 31C MFB PES 185
1357	1310196.89	3023786.17	680.10	Grid 31D MFB PES 185
1358	1310197.59	3023776.77	675.58	Grid 31E MFB PES 185 186
1359	1310210.30	3023787.14	674.59	Grid 32A MFB PES 184
1360	1310202.65	3023793.15	679.97	Grid 32B MFB PES 184
1361	1310217.68	3023814.70	681.64	Grid 32C MFB PES 184
1362	1310223.85	3023809.58	674.87	Grid 32D MFB PES 184
1363	1310212.53	3023798.50	675.78	Grid 32E MFB PES 184 183
1364	1310225.50	3023809.95	676.40	Grid 32.330A MFB PES 224 225
1365	1310225.49	3023794.05	676.52	Grid 32.240B MFB PES 226 226
1366	1310206.08	3023768.62	676.93	Grid 31.241C MFB PES 228 229
1367	1310119.75	3023844.64	681.02	Grid 38A MFB PES 191
1368	1310125.80	3023835.05	680.01	Grid 38B MFB PES 191
1369	1310114.05	3023810.02	681.52	Grid 38C MFB PES 191
1370	1310102.40	3023823.40	683.09	Grid 38D MFB PES 191
1371	1310116.93	3023828.40	681.93	Grid 38E MFB PES 191 192
1372	1310105.99	3023830.45	683.71	Grid 38.140A MFB PES 230 231
1373	1310109.49	3023813.86	681.86	Grid 38.390B MFB PES 232 233
1374	1310138.25	3023831.77	679.53	Grid 29A MFB PES 189
1375	1310151.52	3023823.08	684.30	Grid 29B MFB PES 189
1376	1310145.61	3023813.11	684.78	Grid 29C MFB PES 189
1377	1310131.96	3023795.76	679.81	Grid 29D MFB PES 189
1378	1310131.93	3023817.83	680.69	Grid 29E MFB PES 189 190
1379	1310123.51	3023797.47	681.36	Grid 29.390A MFB PES 234 235
1380	1310157.37	3023800.48	683.77	Grid 30A MFB PES 187
1381	1310167.70	3023791.87	683.54	Grid 30B MFB PES 187
1382	1310151.64	3023775.34	678.85	Grid 30C MFB PES 187
1383	1310145.75	3023780.64	679.26	Grid 30D MFB PES 187
1384	1310157.56	3023787.65	680.09	Grid 30E MFB PES 187 188
1385	1310233.71	3023882.51	677.18	Grid 25A MFB PES 201

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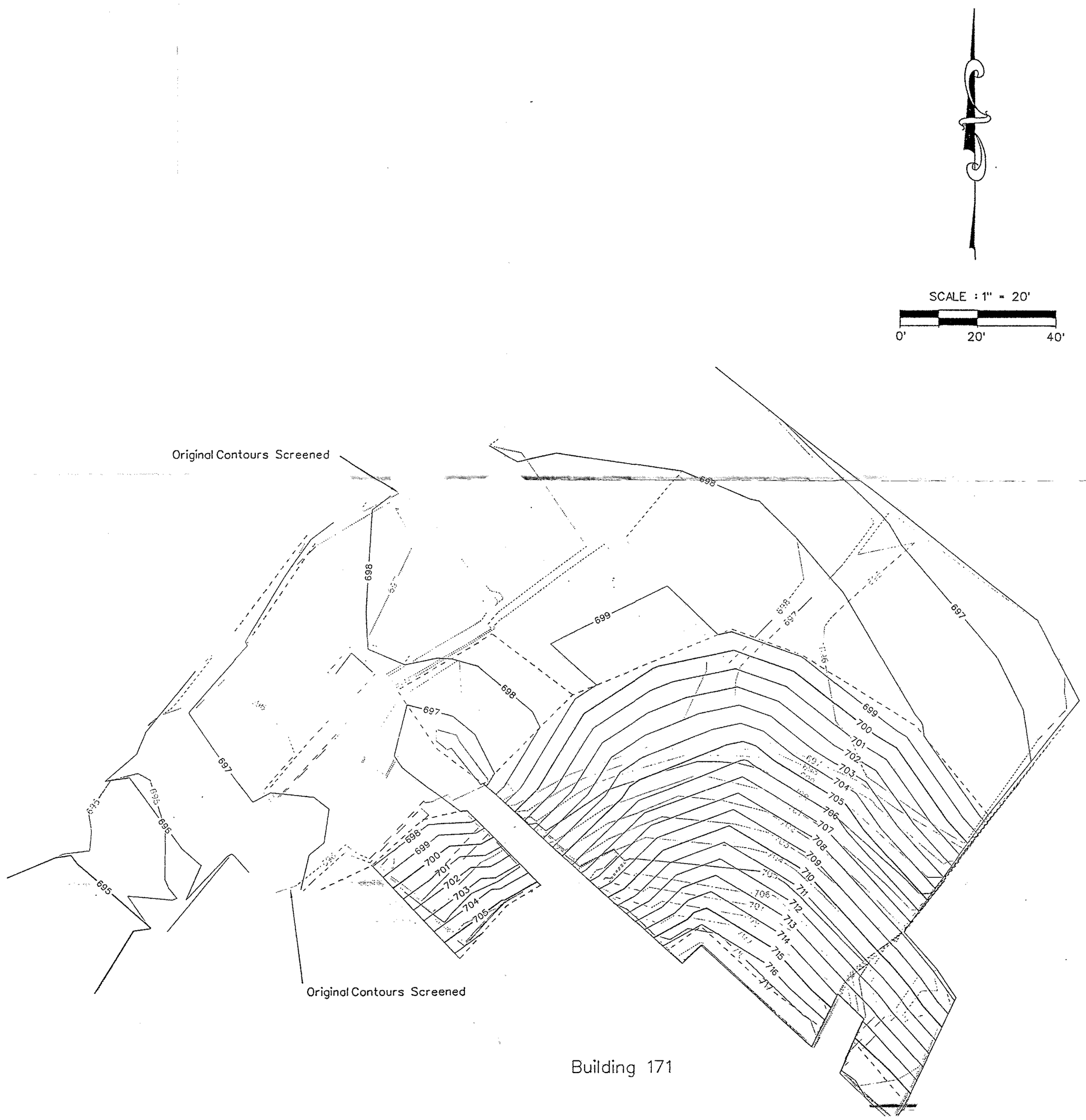
P. 2

1386	1310230.31	3023867.05	682.64	Grid 25B MFB PES 201
1387	1310221.50	3023876.70	682.89	Grid 25C MFB PES 201
1388	1310231.04	3023873.70	679.78	Grid 25D MFB PES 201 202
1389	1310220.93	3023892.54	677.37	Grid 25E MFB PES 201
1390	1310213.24	3023904.84	678.13	Grid 26A MFB PES 89
1391	1310190.38	3023886.74	683.13	Grid 26B MFB PES 89
1392	1310199.79	3023881.30	687.79	Grid 26C MFB PES 89
1393	1310209.33	3023893.93	683.12	Grid 26D MFB PES 89
1394	1310200.51	3023893.88	683.96	Grid 26E MFB PES 89 90
1395	1310192.12	3023870.46	688.45	Grid 27A MFB PES 87
1396	1310185.42	3023861.97	687.97	Grid 27B MFB PES 87
1397	1310175.76	3023870.36	682.60	Grid 27C MFB PES 87
1398	1310182.57	3023881.92	681.64	Grid 27D MFB PES 87
1399	1310183.24	3023871.05	685.01	Grid 27E MFB PES 87 88
1400	1310184.41	3023895.53	678.07	Grid 35A MFB PES 199
1401	1310201.68	3023911.86	677.58	Grid 35B MFB PES 199
1402	1310185.93	3023923.26	678.07	Grid 35C MFB PES 199
1403	1310167.68	3023904.18	678.95	Grid 35D MFB PES 199
1404	1310188.95	3023909.79	678.55	Grid 35E MFB PES 199 200
1405	1310196.96	3023899.95	679.76	Grid 35.36A MFB PES 220 221
1406	1310200.28	3023915.54	679.79	Grid 35.214B MFB PES 222 223
1407	1310178.25	3023919.13	680.58	Grid 35.203C MFB PES 218 219
1408	1310157.30	3023893.32	680.02	Grid 36.202D MFB PES 207 208
1409	1310166.52	3023901.40	679.00	Grid 36A MFB PES 197
1410	1310155.19	3023884.81	679.46	Grid 36B MFB PES 197
1411	1310168.08	3023874.36	678.55	Grid 36C MFB PES 197
1412	1310181.59	3023888.99	678.34	Grid 36D MFB PES 197
1413	1310168.57	3023886.39	679.30	Grid 36E MFB PES 197 198
1414	1310174.93	3023878.55	679.40	Grid 36.270A MFB PES 209 210
1415	1310159.39	3023865.17	678.32	Grid 37A MFB PES 195
1416	1310147.66	3023857.55	678.43	Grid 37B MFB PES 195
1417	1310141.70	3023867.92	679.34	Grid 37C MFB PES 195
1418	1310147.07	3023875.91	679.04	Grid 37D MFB PES 195
1419	1310153.19	3023863.88	678.22	Grid 37E MFB PES 195 196
1420	1310142.55	3023874.87	681.22	Grid 37.201A MFB PES 205 206
1421	1310173.63	3023863.49	679.46	Grid 27.280A MFB PES 203 204
1422	1310165.19	3023863.54	678.28	Grid 28A MFB PES 193
1423	1310148.18	3023843.21	678.81	Grid 28B MFB PES 193
1424	1310163.07	3023835.73	679.24	Grid 28C MFB PES 193
1425	1310173.79	3023848.20	678.93	Grid 28D MFB PES 193
1426	1310161.25	3023850.07	678.41	Grid 28E MFB PES 193 194



ORIGINAL SURFACE: mfb10
FINAL SURFACE: mfb15
COMPACTION FACTOR: 0% SHRINK
CUT VOLUME = 1.7 CU YD
FILL VOLUME = 569.1 CU YD

Mid-States ENGINEERING
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REVISIONS AND DATES

DESIGNED BY:
DRAWN BY: GSB
CHECKED BY: TJ/DQ
APPROVED BY:

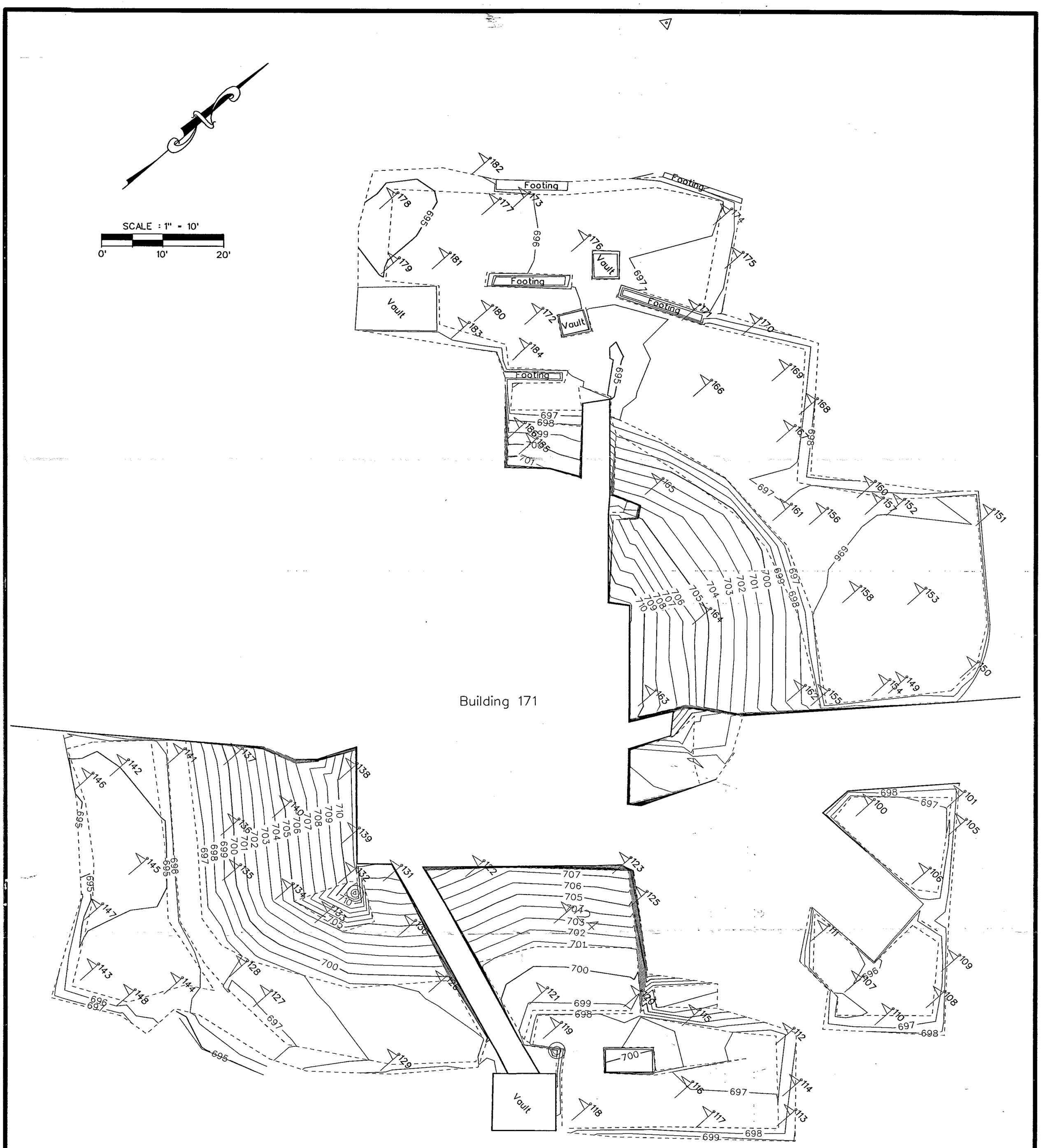
Mine Fill B

Building 171

As-Built Locations Done October 1, 2001

DATE: November 1, 2001 SCALE: 1" = 20' JOB No.: 121-4359 SHEET No.: 1 of

mfb_15.dgn



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REVISIONS AND DATES
4/2/01 Added Building Number

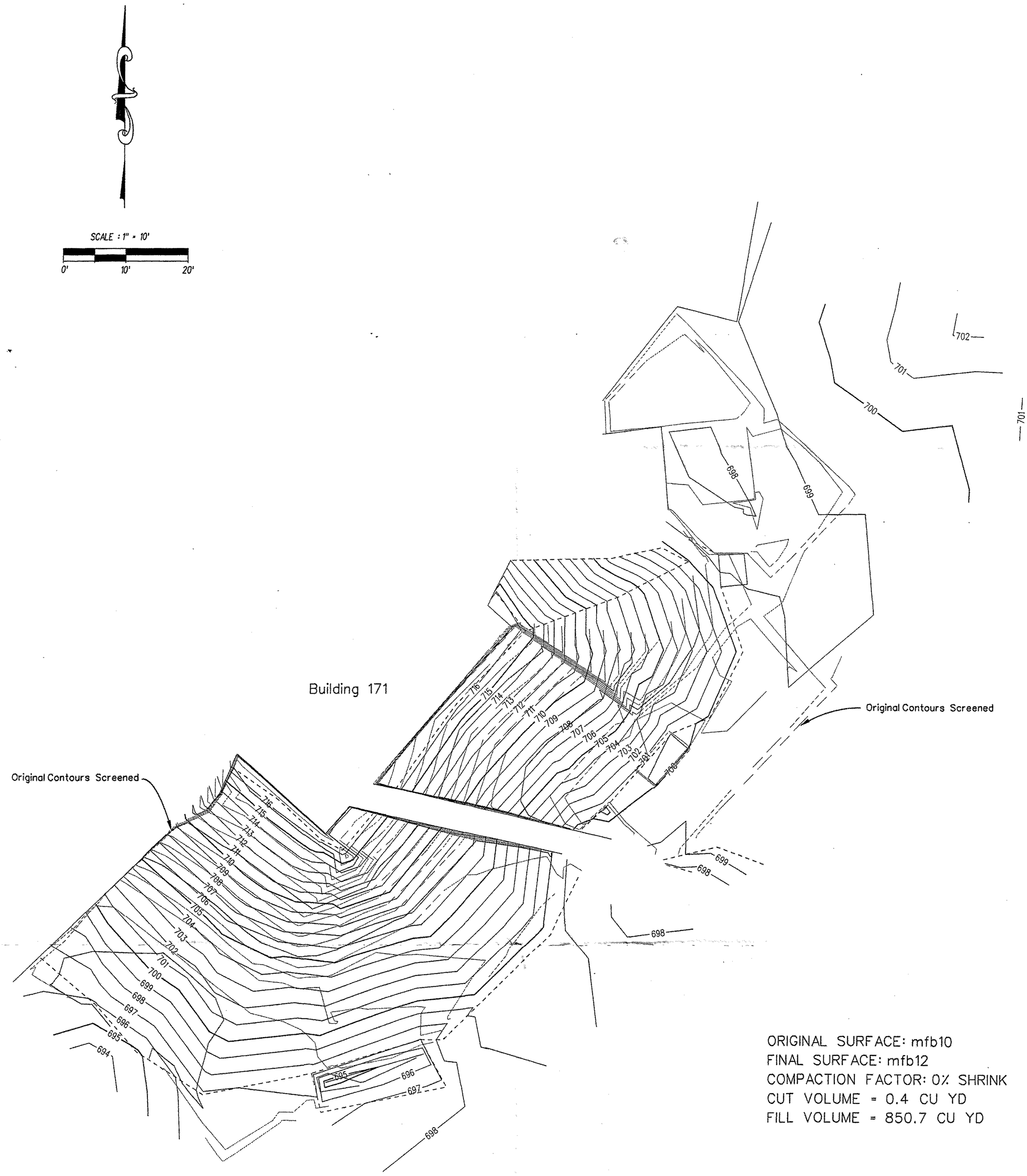
DESIGNED BY:
DRAWN BY: GSB
CHECKED BY: RLB
APPROVED BY:

DATE: August 9, 2000

Mine Fill B

Building 171
Sample Location & Excavated Area

SCALE: 1" = 10' JOB No.: 121-4359 SHEET No.: 1 of 1



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REVISIONS AND DATES

DESIGNED BY:
DRAWN BY: GSB
CHECKED BY: RLB
APPROVED BY:

DATE: May 9, 2001

Mine Fill B

Building 171

As-Builts Done September 6, 2000

SCALE: 1" = 10' JOB No.: 121-4359 SHEET No.: 1 of 1

MFB_12.dgn

COGO

PROJECT: Toltest-Crane

DATE: 04-30-01

PAGE: 1 B-171

TIME: 16:12:10

NODE/COORDINATE LIST

Number	Northing	Easting	Elevation	Description
100	1309071.62	3023491.37	696.82	Grid 137A MFB PES 361
101	1309083.77	3023500.33	697.00	Grid 137B MFB PES 361
105	1309080.94	3023503.90	696.77	Grid 137D MFB PES 363 364
106	1309071.04	3023506.00	696.55	Grid 137J MFB PES 361 362
107	1309050.74	3023512.18	696.02	Grid 137E MFB PES 361
108	1309059.13	3023523.09	696.30	Grid 137F MFB PES 361
109	1309065.01	3023520.22	696.59	Grid 137G MFB PES 365 366
110	1309050.86	3023519.60	696.48	Grid 137H MFB PES 367 368
111	1309052.11	3023502.11	696.84	Grid 137I MFB PES 37 368
112	1309036.48	3023511.19	696.43	Grid 138A MFB PES 353
113	1309027.71	3023521.51	697.37	Grid 138B MFB PES 353
114	1309031.64	3023518.38	697.37	Grid 138C MFB PES 347 348
115	1309026.93	3023498.58	697.81	Grid 138D MFB PES 355 356
116	1309018.08	3023506.78	697.11	Grid 138E MFB PES 353 354
117	1309017.42	3023512.81	697.21	Grid 138F MFB PES 359 360
118	1309002.97	3023498.30	697.22	Grid 138G MFB PES 353
119	1309008.46	3023485.04	697.60	Grid 138H MFB PES 353
120	1309021.80	3023489.81	698.92	Grid 128A MFB PES 349
121	1309010.56	3023479.21	698.95	Grid 128B MFB PES 349
122	1309016.84	3023456.20	708.12	Grid 128C MFB PES 349
123	1309035.20	3023471.82	707.27	Grid 128D MFB PES 349
124	1309022.53	3023471.79	702.63	Grid 128E MFB PES 349 350
125	1309033.41	3023477.92	704.89	Grid 128F MFB PES 351 352
126	1308999.40	3023466.62	699.07	Grid 122A MFB PES 371
127	1308976.21	3023449.24	696.91	Grid 122B MFB PES 371
128	1308976.51	3023442.88	697.01	Grid 123A MFB PES 373
129	1308984.81	3023471.06	698.60	Grid 122D MFB PES 385 386
130	1309001.67	3023456.20	704.05	Grid 122E MFB PES 371 372
131	1309006.10	3023447.67	708.76	Grid 122F MFB PES 31
132	1309000.38	3023443.04	709.20	Grid 123B MFB PES 373
133	1308993.08	3023445.48	703.42	Grid 122G MFB PES 371

B-171
p. 2

134	1308990.71	3023438.20	703.23	Grid 123C MFB PES 373 374
135	1308986.38	3023430.02	698.80	Grid 123D MFB PES 373
136	1308991.20	3023424.19	698.69	Grid 124A MFB PES 375
137	1308999.24	3023415.92	699.55	Grid 124B MFB PES 375
138	1309011.75	3023430.33	710.08	Grid 124C MFB PES 375
139	1309005.01	3023438.41	709.93	Grid 124D MFB PES 375
140	1308999.52	3023427.67	703.78	Grid 124E MFB PES 375 376
141	1308992.12	3023409.67	695.62	Grid 131A MFB PES 377
142	1308984.01	3023404.91	694.75	Grid 131B MFB PES 377
143	1308957.87	3023427.05	695.31	Grid 131C MFB PES 377
144	1308966.59	3023437.84	695.22	Grid 131D MFB PES 377
145	1308975.55	3023419.02	694.52	Grid 131E MFB PES 377 378
146	1308978.23	3023402.72	694.54	Grid 131F MFB PES 379 380
147	1308965.03	3023419.97	694.82	Grid 131G MFB PES 381 382
148	1308959.48	3023434.17	695.97	Grid 131H MFB PES 383 384
149	1309089.18	3023479.67	695.40	Grid 178A MFB PES 411
150	1309099.67	3023485.69	695.24	Grid 178B MFB PES 411
151	1309118.47	3023468.42	695.98	Grid 178C MFB PES 411
152	1309108.47	3023457.31	695.97	Grid 178D MFB PES 411
153	1309101.34	3023470.71	695.51	Grid 178E MFB PES 411 412
154	1309086.79	3023478.15	695.33	Grid 136A MFB PES 407
155	1309078.17	3023472.70	697.43	Grid 136B MFB PES 407
156	1309097.96	3023450.00	696.35	Grid 136C MFB PES 407
157	1309105.99	3023454.84	696.04	Grid 136D MFB PES 407
158	1309093.47	3023463.32	695.74	Grid 136E MFB PES 407 408
160	1309106.84	3023451.90	696.46	Grid 136F MFB PES 409 410
161	1309093.97	3023445.56	696.87	Grid 126A MFB PES 405
162	1309075.72	3023469.58	698.90	Grid 126B MFB PES 405
163	1309056.76	3023453.85	710.33	Grid 126C MFB PES 405
164	1309072.55	3023449.70	706.26	Grid 126D MFB PES 405 406
165	1309080.92	3023428.33	702.69	Grid 126F MFB PES 405
166	1309097.94	3023421.31	696.34	Grid 134A MFB PES 397 398
167	1309103.17	3023436.10	696.72	Grid 134B MFB PES 397
168	1309108.92	3023435.15	696.66	Grid 134C MFB PES 401 402
169	1309109.39	3023428.01	696.36	Grid 134D MFB PES 397
170	1309110.92	3023419.02	696.50	Grid 134E MFB PES 397
171	1309104.86	3023410.57	696.16	Grid 185A MFB PES 393
172	1309085.12	3023393.97	695.28	Grid 185B MFB PES 393
173	1309096.42	3023377.93	695.64	Grid 185C MFB PES 393
174	1309119.47	3023402.03	696.95	Grid 185D MFB PES 393
175	1309116.11	3023408.68	697.14	Grid 185E MFB PES 395 396

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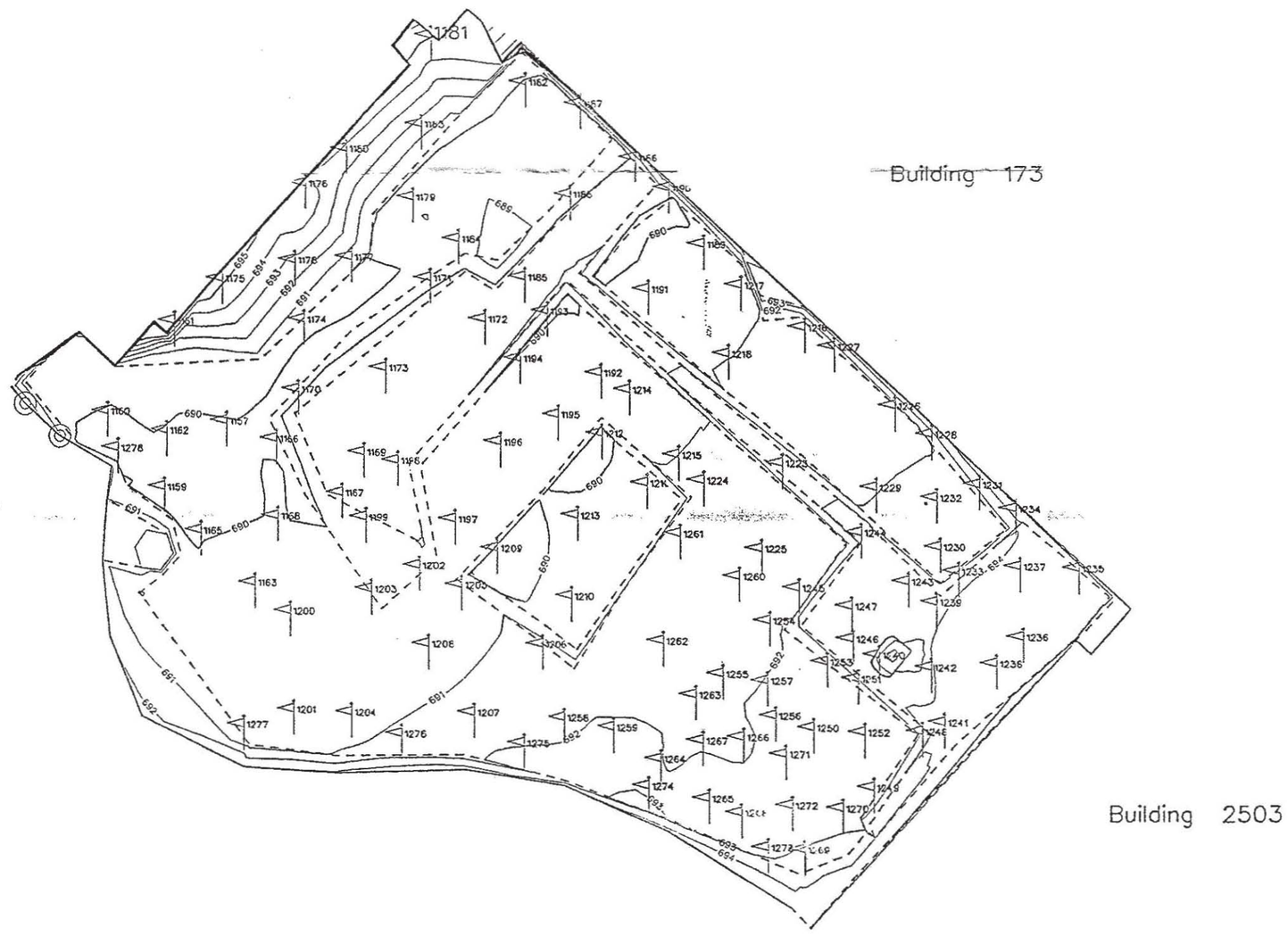
p. 3

176	1309098.97	3023389.81	696.44	Grid 185F MFB PES 393 394
177	1309092.07	3023375.46	695.25	Grid 217A MFB PES 387
178	1309080.05	3023363.48	694.71	Grid 217B MFB PES 387
179	1309073.02	3023371.75	694.94	Grid 217C MFB PES 387
180	1309079.24	3023388.01	695.36	Grid 217D MFB PES 387
181	1309079.89	3023376.73	695.17	Grid 217E MFB PES 387 388
182	1309095.40	3023369.24	694.95	Grid 217F MFB PES 389 390
183	1309074.47	3023387.60	695.74	Grid 217G MFB PES 391 392
184	1309079.67	3023397.01	695.04	Grid 134F MFB PES 397
185	1309069.99	3023409.50	700.86	Grid 134G MFB PES 397
186	1309070.24	3023406.27	700.21	Grid 134H MFB PES 403 404



SCALE : 1" = 20'

0' 20' 40'

Mid-States ENGINEERING
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REVISIONS AND DATES

DESIGNED BY:

DRAWN BY: GSB

CHECKED BY: TJ/DQ

APPROVED BY:

DATE: October 5, 2001

Mine Fill B

Building 173/2503

Sample Locations Done September 26, 2001

SCALE: 1" = 20' JOB No.: 121-4359 SHEET No.: 1 of 1

mfb_14.dgn

000842 P08X

MFB B-123 Screener Site

COGO

PROJECT: Toltest-Crane DATE: 10-18-01

PAGE: 1 TIME: 15:37:55

NODE/COORDINATE LIST

Number	Northing	Easting	Elevation	Description
1157	1309306.64	3023032.82	689.82	Grid 74A MFB PES 431
1159	1309296.19	3023022.68	690.09	Grid 74B MFB PES 431
1160	1309308.19	3023013.32	689.73	Grid 74C MFB PES 431
1161	1309322.42	3023024.25	691.31	Grid 74D MFB PES 431
1162	1309305.15	3023023.02	689.82	Grid 74E MFB PES 432
1163	1309280.97	3023037.53	690.44	Grid 85A MFB PES 453
1165	1309289.27	3023028.69	690.09	Grid 84B MFB PES 453
1166	1309303.83	3023040.95	690.02	Grid 85C MFB PES 453
1167	1309295.22	3023051.57	690.61	Grid 85D MFB PES 453
1168	1309291.57	3023041.21	690.14	Grid 85E MFB PES 453 454
1169	1309301.67	3023055.16	690.68	Grid 86A MFB PES 455
1170	1309311.65	3023044.45	690.46	Grid 86B MFB PES 455
1171	1309329.18	3023065.67	690.29	Grid 86C MFB PES 455
1172	1309322.68	3023074.28	690.57	Grid 86D MFB PES 455
1173	1309315.02	3023058.55	690.65	Grid 86E MFB PES 455 456
1174	1309322.68	3023045.39	689.93	Grid 73A MFB PES 433
1175	1309329.13	3023032.12	694.26	Grid 73B MFB PES 433
1176	1309344.24	3023045.49	694.53	Grid 73C MFB PES 433
1177	1309332.54	3023053.03	690.48	Grid 73D MFB PES 433
1178	1309332.05	3023043.85	691.79	Grid 73E MFB PES 434
1179	1309342.02	3023062.87	689.14	Grid 72A MFB PES 435
1180	1309349.96	3023052.14	692.87	Grid 72B MFB PES 435
1181	1309367.96	3023065.67	693.99	Grid 72C MFB PES 435
1182	1309360.48	3023080.57	689.72	Grid 72D MFB PES 435
1183	1309353.82	3023064.17	690.47	Grid 72E MFB PES 436
1184	1309335.37	3023070.10	689.70	Grid 87A MFB PES 457
1185	1309329.34	3023080.61	690.49	Grid 87B MFB PES 457
1186	1309348.49	3023098.65	690.34	Grid 87C MFB PES 457
1187	1309357.13	3023089.60	689.37	Grid 87D MFB PES 457
1188	1309342.52	3023087.99	690.39	Grid 87E MFB PES 457 458
1189	1309334.64	3023109.75	690.94	Grid 90A MFB PES 441

MFB B-173 Screener Site

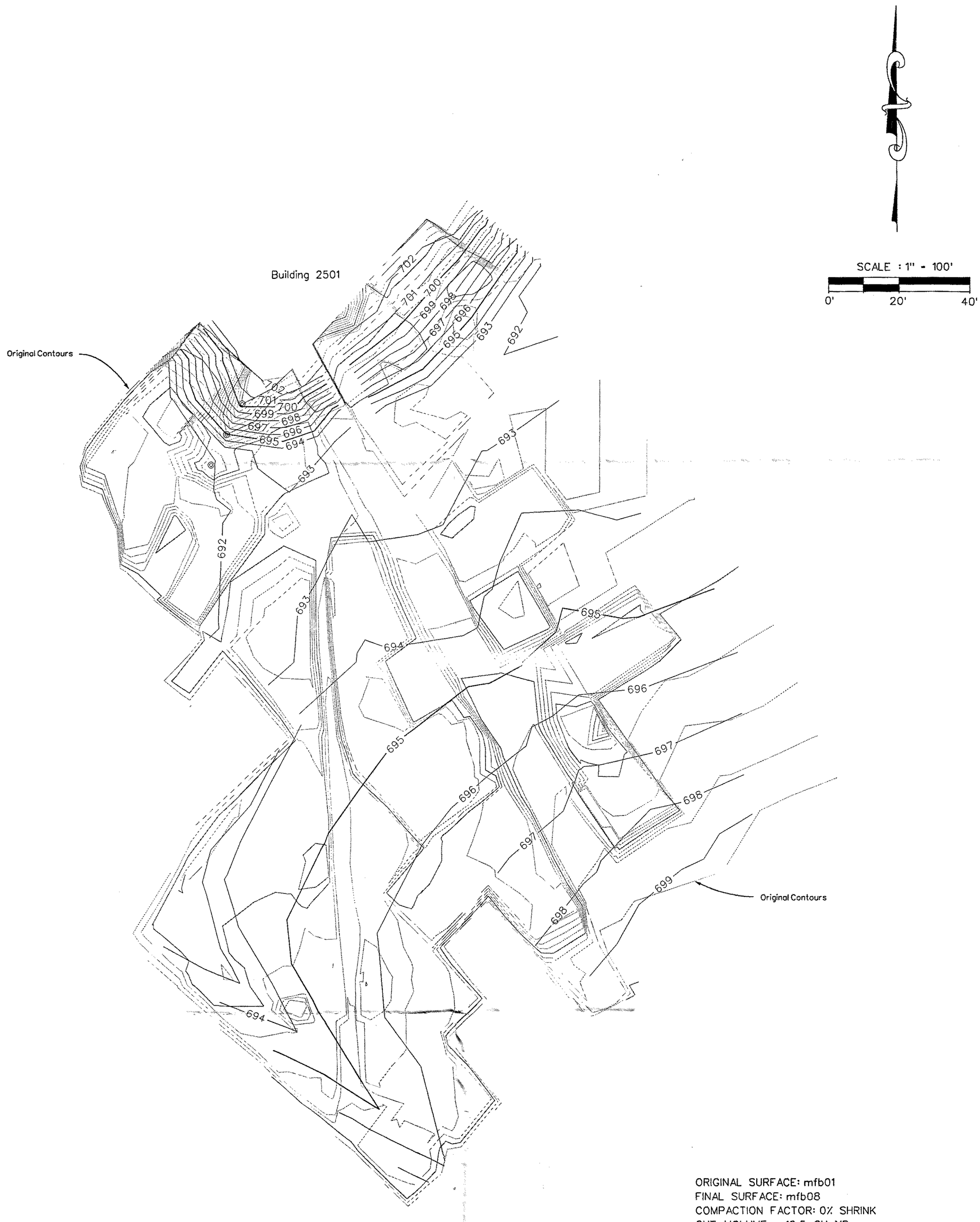
1190	1309343.48	3023104.14	689.76	Grid 90B MFB PES 441
1191	1309327.43	3023100.86	690.47	Grid 90C MFB PES 441 442
1192	1309314.18	3023093.07	690.44	Grid 90D MFB PES 441
1193	1309323.99	3023084.24	690.08	Grid 90E MFB PES 441
1194	1309316.48	3023079.90	690.15	Grid 91A MFB PES 461
1195	1309307.58	3023086.06	690.65	Grid 91B MFB PES 461
1196	1309303.25	3023076.73	690.62	Grid 91C MFB PES 461 462
1197	1309291.01	3023069.64	690.36	Grid 91D MFB PES 461
1198	1309300.34	3023060.54	690.76	Grid 91E MFB PES 461
1199	1309291.36	3023055.49	690.65	Grid 92A MFB PES 459
1200	1309276.48	3023043.21	690.71	Grid 92B MFB PES 459
1201	1309260.79	3023043.78	690.66	Grid 92C MFB PES 459
1202	1309283.69	3023064.08	690.41	Grid 92D MFB PES 459
1203	1309279.96	3023056.44	690.67	Grid 92E MFB PES 459 460
1204	1309260.32	3023053.21	690.94	Grid 150A MFB PES 463
1205	1309280.62	3023070.71	690.71	Grid 150B MFB PES 463
1206	1309271.19	3023083.53	691.38	Grid 150C MFB PES 463
1207	1309260.25	3023072.69	691.46	Grid 150D MFB PES 463
1208	1309271.22	3023065.51	690.82	Grid 150E MFB PES 463 464
1209	1309286.39	3023076.31	689.81	Grid 149A MFB PES 465
1210	1309278.87	3023088.37	690.29	Grid 149B MFB PES 465
1211	1309296.72	3023100.68	690.41	Grid 149C MFB PES 465
1212	1309304.60	3023093.25	689.95	Grid 149D MFB PES 465
1213	1309291.64	3023089.32	690.12	Grid 149E MFB PES 465 466
1214	1309311.46	3023097.83	690.47	Grid 148A MFB PES 443
1215	1309301.18	3023105.83	691.19	Grid 148B MFB PES 443
1216	1309321.40	3023125.78	691.13	Grid 148C MFB PES 443
1217	1309328.11	3023115.74	690.75	Grid 148D MFB PES 443
1218	1309317.21	3023113.79	691.11	Grid 148E MFB PES 443 444
1223	1309299.93	3023122.29	691.57	Grid 152E MFB PES 445 446
1224	1309297.19	3023109.78	691.27	Grid 152A MFB PES 445
1225	1309286.37	3023118.97	691.83	Grid 152B MFB PES 445
1226	1309308.99	3023140.14	691.89	Grid 152C MFB PES 445
1227	1309318.32	3023130.48	691.27	Grid 152D MFB PES 445
1228	1309304.47	3023146.05	692.02	Grid 158A MFB PES 447
1229	1309296.13	3023137.17	692.09	Grid 158B MFB PES 447
1230	1309286.67	3023147.47	692.65	Grid 158C MFB PES 447
1231	1309296.61	3023153.72	692.35	Grid 158D MFB PES 447
1232	1309294.50	3023146.89	692.31	Grid 158E MFB PES 447 448
1233	1309282.84	3023150.42	694.02	Grid 159A MFB PES 437
1234	1309292.77	3023159.48	693.98	Grid 159B MFB PES 437

MFB B-173 Screener Site

1235	1309283.31	3023169.53	694.66	Grid 159C MFB PES 437
1236	1309272.39	3023160.72	694.59	Grid 159D MFB PES 437
1237	1309283.57	3023160.26	694.22	Grid 159E MFB PES 438
1238	1309268.18	3023156.55	694.37	Grid 160A MFB PES 439
1239	1309277.92	3023146.90	694.00	Grid 160B MFB PES 439
1240	1309269.56	3023137.72	693.87	Grid 160C MFB PES 439
1241	1309258.75	3023148.20	694.03	Grid 160D MFB PES 439
1242	1309267.61	3023146.03	693.98	Grid 160E MFB PES 440
1243	1309281.17	3023142.34	693.62	Grid 157A MFB PES 449
1244	1309288.94	3023134.78	693.17	Grid 157B MFB PES 449
1245	1309280.12	3023124.93	692.90	Grid 157C MFB PES 449
1246	1309272.09	3023133.54	693.41	Grid 157D MFB PES 449
1247	1309277.29	3023133.32	693.39	Grid 157E MFB PES 449 450
1248	1309257.34	3023144.57	693.98	Grid 161A MFB PES 473
1249	1309248.46	3023136.85	693.25	Grid 161B MFB PES 473
1250	1309257.87	3023127.31	692.37	Grid 161C MFB PES 473
1251	1309265.75	3023134.31	692.44	Grid 161D MFB PES 473
1252	1309257.17	3023135.39	692.57	Grid 161E MFB PES 473 474
1253	1309268.42	3023129.43	692.23	Grid 156A MFB PES 451
1254	1309274.94	3023120.33	691.93	Grid 156B MFB PES 451
1255	1309266.48	3023112.96	691.92	Grid 156C MFB PES 451
1256	1309259.78	3023121.27	692.20	Grid 156D MFB PES 451
1257	1309265.38	3023119.96	692.08	Grid 156E MFB PES 451 452
1258	1309259.43	3023087.17	692.02	Grid 151A MFB PES 467
1259	1309257.94	3023095.27	692.32	Grid 151B MFB PES 467
1260	1309281.97	3023115.56	691.43	Grid 151C MFB PES 467
1261	1309288.75	3023106.11	691.19	Grid 151D MFB PES 467
1262	1309271.72	3023103.35	691.63	Grid 151E MFB PES 467 468
1263	1309263.14	3023108.59	691.81	Grid 155A MFB PES 469
1264	1309252.92	3023103.01	692.17	Grid 155B MFB PES 469
1265	1309246.66	3023110.74	692.74	Grid 155C MFB PES 469
1266	1309256.38	3023116.25	692.00	Grid 155D MFB PES 469
1267	1309255.82	3023109.74	692.13	Grid 155E MFB PES 469 470
1268	1309244.39	3023116.00	692.82	Grid 162A MFB PES 471
1269	1309238.48	3023125.93	693.59	Grid 162B MFB PES 471
1270	1309245.10	3023131.96	693.01	Grid 162C MFB PES 471
1271	1309253.67	3023122.95	692.36	Grid 162D MFB PES 471
1272	1309245.53	3023123.93	692.88	Grid 162E MFB PES 471 472
1273	1309238.82	3023120.09	693.85	Grid 162F MFB PES 475
1274	1309248.65	3023101.06	693.46	Grid 155F MFB PES 476
1275	1309255.37	3023080.64	692.81	Grid 151F MFB PES 477

MFB B-173 Screener Site

1276	1309256.87	3023061.23	692.34	Grid 150F MFB PES 478
1277	1309258.38	3023035.68	691.76	Grid 92F MFB PES 479
1278	1309302.41	3023015.04	690.60	Grid 74F MFB PES 480



ORIGINAL SURFACE: mfb01
FINAL SURFACE: mfb08
COMPACTION FACTOR: 0% SHRINK
CUT VOLUME = 10.5 CU YD
FILL VOLUME = 3512.1 CU YD

Mine Fill B

Building 2501
Final dirt As-Builts

Locations done April 1, 2000

SCALE: 1" = 20' JOB No.: 121-4359 SHEET No.: 1 of 1

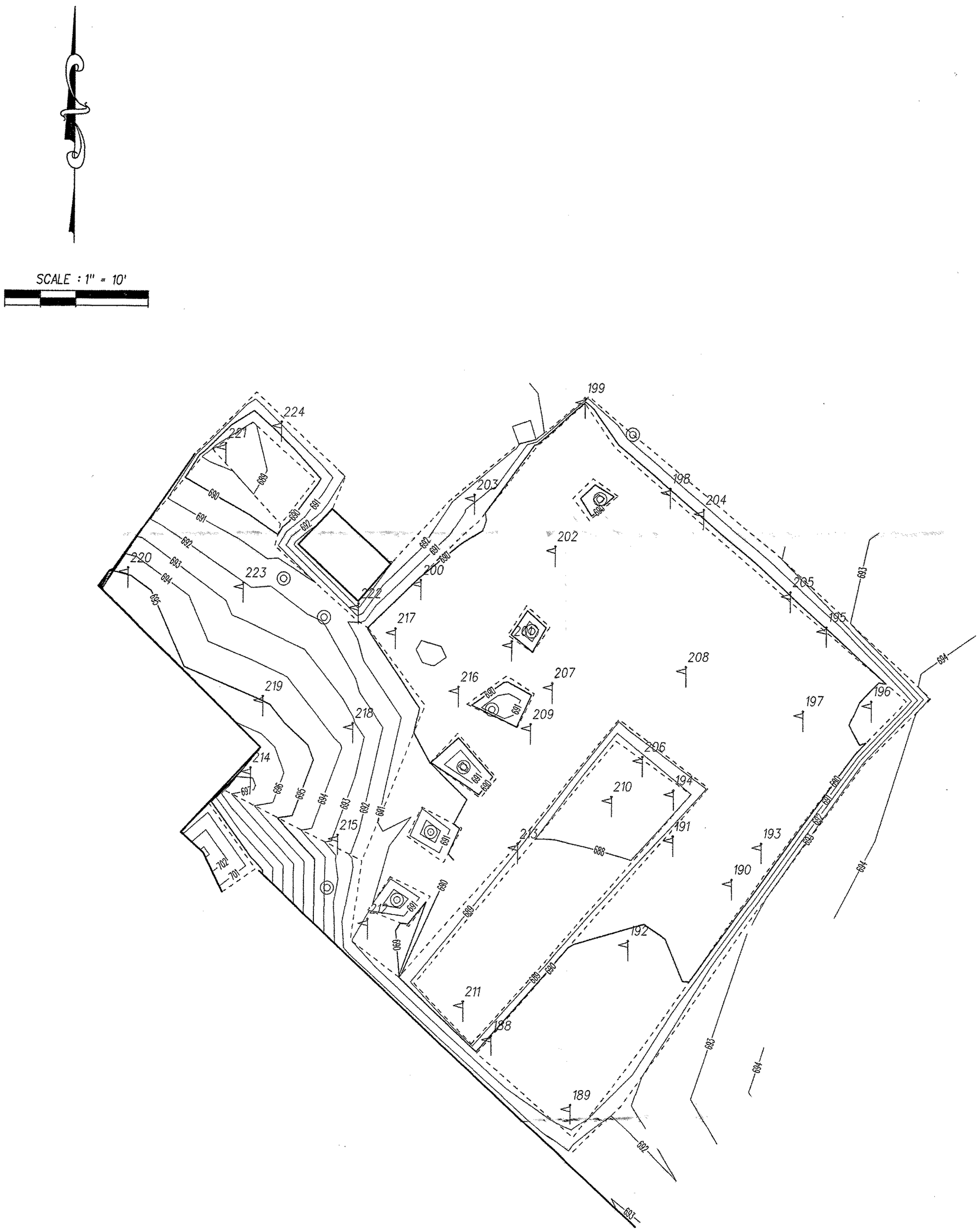
REVISIONS AND DATES

DESIGNED BY:
DRAWN BY: GSB
CHECKED BY: RLB
APPROVED BY:
DATE: April 30, 2000

Mid-States ENGINEERING
350 E. New York St., Suite 300
Indianapolis, IN 46204
(317) 634-6434 Phone
(317) 634-3576 Fax

000842PB09X

mfb_08.dgn



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350 E. New York St., Suite 300
Indianapolis, IN 46204
(317) 634-6434 Phone
(317) 634-3576 Fax

REVISIONS AND DATES

DESIGNED BY:

DRAWN BY: GSB

CHECKED BY: TLK

APPROVED BY:

DATE: April 30, 2001

Mine Fill B

Building 172

Sample Location & Excavated Area

Locations done September 6, 2000

SCALE: 1" = 30' JOB No.: 121-4359 SHEET No.: 1 of 1

MFB_#1

SCALE : 1" = 20'

0' 20' 40'

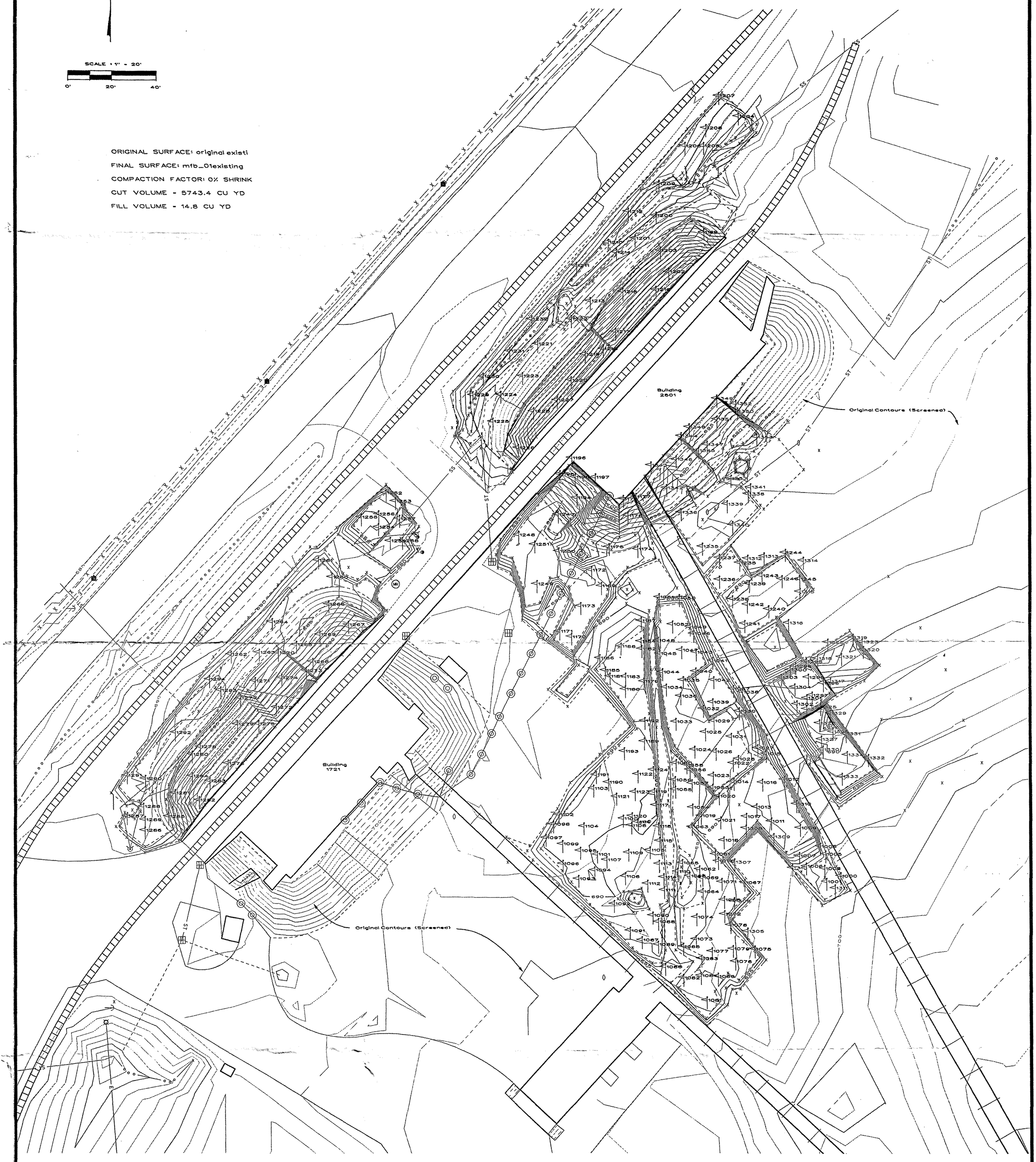
ORIGINAL SURFACE: original existi

FINAL SURFACE: mfb_01existing

COMPACTION FACTOR: 0% SHRINK

CUT VOLUME - 5743.4 CU YD

FILL VOLUME - 14.8 CU YD



Mine Fill B

Building 1721 & 2501

As-Built Locations Done October 20, 1999

SCALE: 1" = 20' JOB No.: 121-4359 SHEET No.: 1 of 1

REVISIONS AND DATES

4/2/01 Revised showing Flag Numbers

DESIGNED BY:

DRAWN BY: GSB

CHECKED BY: RLB

APPROVED BY:

DATE: December 20, 1999

Mid-States ENGINEERING
350 E. New York St., Suite 300
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(317) 634-6434 Phone
(317) 634-3576 Fax

mfb 01.dgn

COGO

PROJECT: Toltest-Crane DATE: 04-30-01

PAGE: 1 B-172 TIME: 14:39:36

NODE/COORDINATE LIST

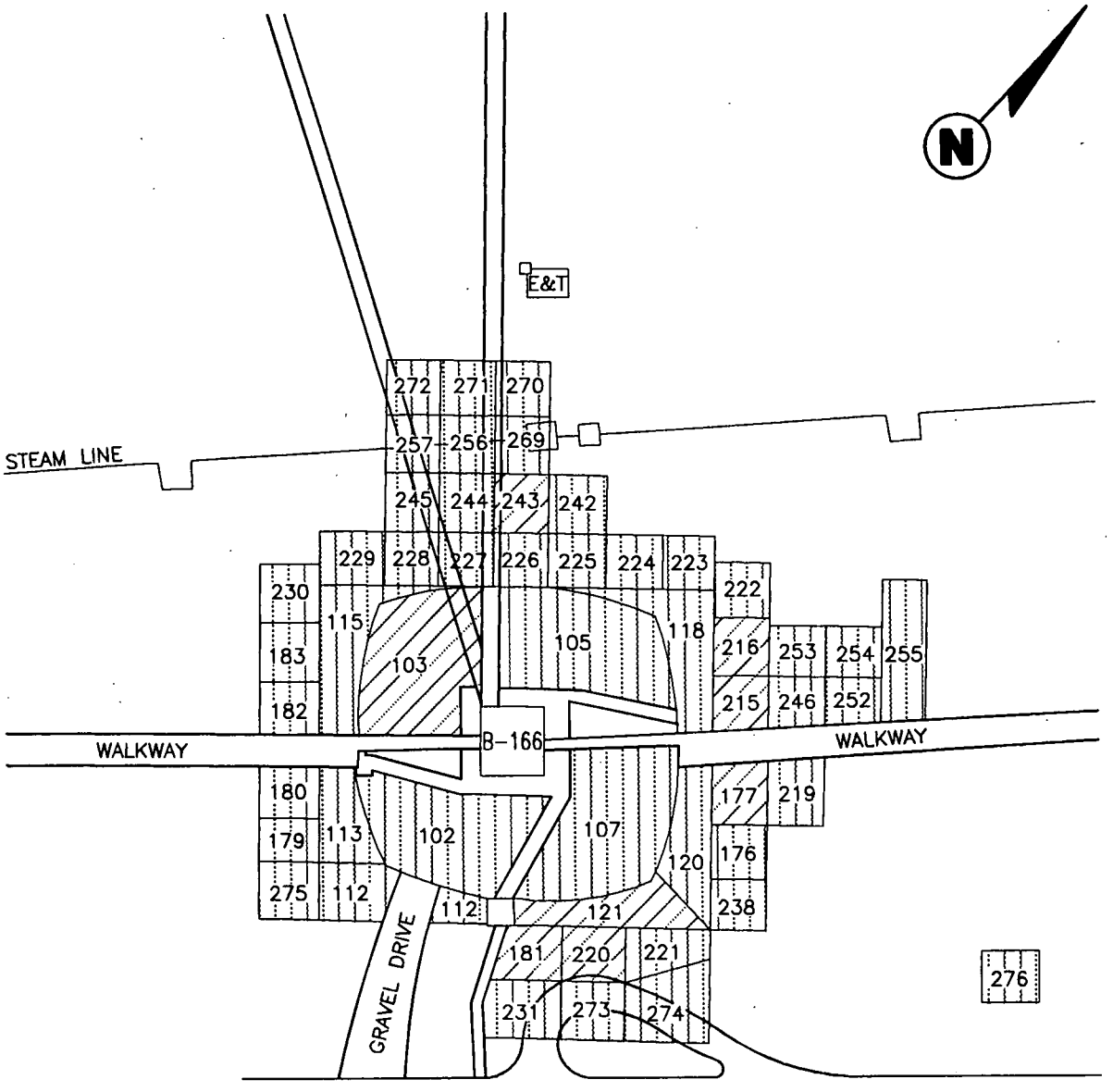
Number	Northing	Easting	Elevation	Description
188	1309349.77	3023117.79	690.03	Grid 89A MFB PES 413
189	1309340.36	3023128.85	690.86	Grid 89B MFB PES 413
190	1309370.80	3023150.84	689.63	Grid 89C MFB PES 413
191	1309376.67	3023142.69	689.62	Grid 89D MFB PES 413
192	1309362.49	3023136.68	690.20	Grid 89E MFB PES 413 414
193	1309375.65	3023154.96	689.62	Grid 144A MFB PES 415
194	1309382.87	3023142.76	687.69	Grid 144B MFB PES 415
195	1309404.77	3023163.84	689.83	Grid 144C MFB PES 415
196	1309394.76	3023170.02	690.06	Grid 144D MFB PES 415
197	1309393.44	3023160.72	689.88	Grid 144E MFB PES 415 416
198	1309423.68	3023142.10	689.29	Grid 69A MFB PES 421
199	1309435.77	3023130.39	689.57	Grid 69B MFB PES 421
200	1309411.20	3023107.61	689.86	Grid 69C MFB PES 421
201	1309403.04	3023120.33	689.67	Grid 69D MFB PES 421
202	1309415.73	3023126.33	689.38	Grid 69E MFB PES 421 422
203	1309422.90	3023115.00	690.36	Grid 69F MFB PES 423 424
204	1309420.81	3023146.74	689.07	Grid 68A MFB PES 417
205	1309409.51	3023158.95	689.63	Grid 68B MFB PES 417
206	1309387.38	3023138.55	687.61	Grid 68C MFB PES 417
207	1309397.30	3023126.05	689.55	Grid 68D MFB PES 417
208	1309399.46	3023144.42	689.41	Grid 68E MFB PES 417 418
209	1309391.79	3023123.07	689.62	Grid 88A MFB PES 419
210	1309381.98	3023134.35	687.82	Grid 88B MFB PES 419
211	1309354.38	3023113.93	688.59	Grid 88C MFB PES 419
212	1309365.47	3023100.58	690.59	Grid 88D MFB PES 419
213	1309375.63	3023121.32	688.15	Grid 88E MFB PES 419 420
214	1309385.87	3023084.21	697.18	Grid 71A MFB PES 425
215	1309376.83	3023096.36	692.84	Grid 71B MFB PES 425
216	1309396.82	3023113.05	689.54	Grid 71C MFB PES 425
217	1309404.72	3023104.07	689.78	Grid 71D MFB PES 425
218	1309391.95	3023098.33	693.63	Grid 71E MFB PES 425 426
219	1309395.53	3023085.82	695.43	Grid 70A MFB PES 427
220	1309412.78	3023066.90	695.62	Grid 70B MFB PES 427
221	1309429.78	3023080.22	688.52	Grid 70C MFB PES 427

222	1309408.03	3023098.92	690.63	Grid 70D MFB PES 427
223	1309410.80	3023082.90	692.53	Grid 70E MFB PES 428 429
224	1309432.69	3023088.01	689.49	Grid 70F MFB PES 429 430

B-172
P2

APPENDIX G

POST-EXCAVATION SAMPLING GRID LOCATION MAPS



MFB INTERIM MEASURES REPORT

APPROXIMATE SCALE – FEET

0 60 120

LEGEND

MEETS RESIDENTIAL CLEANUP GOALS

MEETS INDUSTRIAL CLEANUP GOALS

EXCEEDS INDUSTRIAL CLEANUP GOALS. REFER TO TABLE 3-3.

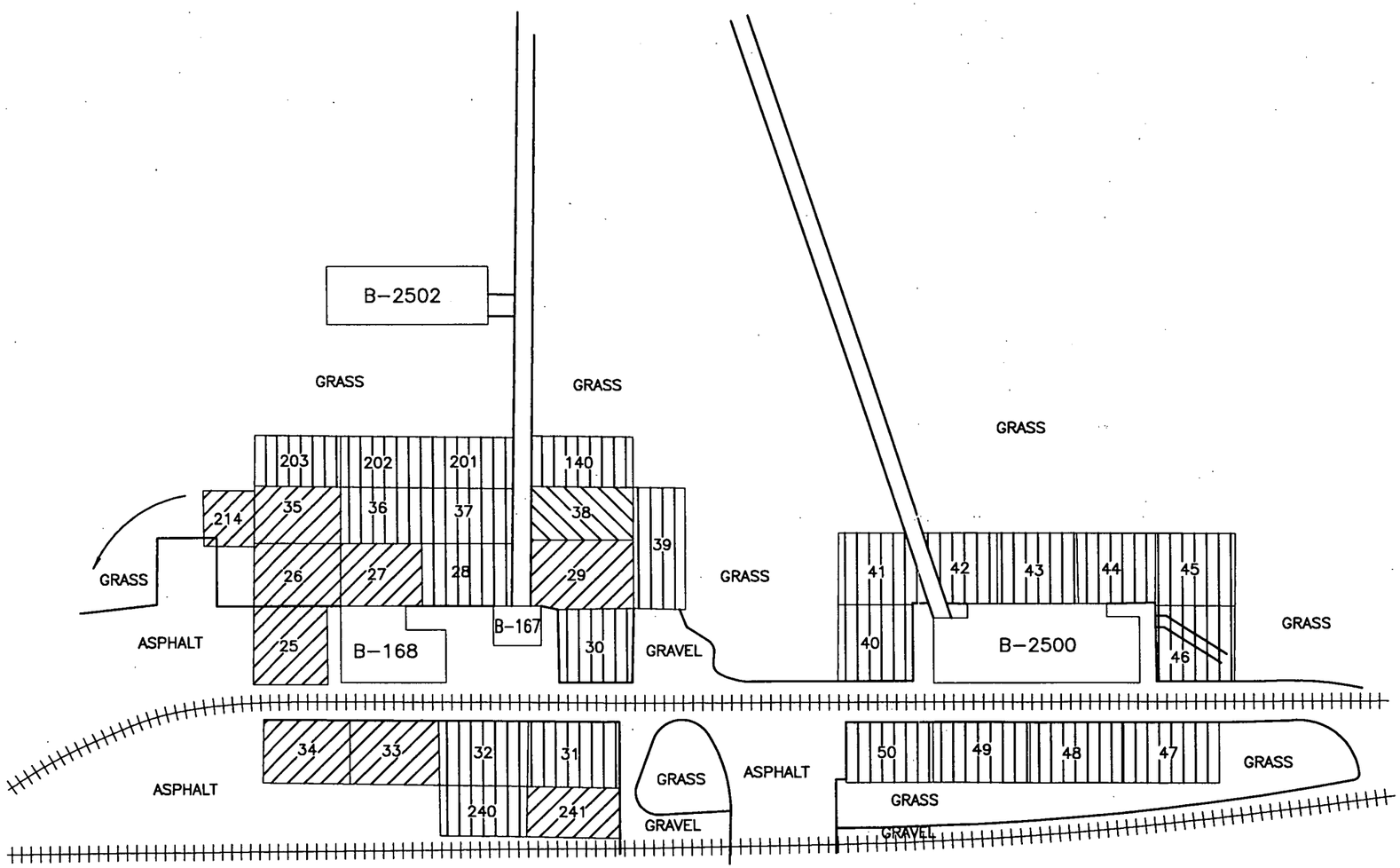
FIGURE G-1
POST-EXCAVATION SAMPLING GRID LOCATION MAP

NAVAL SURFACE WARFARE CENTER
BUILDING 166, MINE FILL B
CRANE, INDIANA

PREPARED FOR

NAVAL FACILITIES ENGINEERING COMMAND NSWC CRANE, IN

DRAWN MRC/6-7-02	CHK	APPR
REVISED	DRAWING NO.: 3732401g1.dwg	
JOB NO.: 37324.01	TOLTEST, INC.	
SHEET NUMBER 1 of 1		



LEGEND

- MEETS RESIDENTIAL CLEANUP GOALS
- MEETS INDUSTRIAL CLEANUP GOALS
- EXCEEDS INDUSTRIAL CLEANUP GOALS. REFER TO TABLE 3-3.
- DRAINAGE PATTERN
- RAILROAD TRACKS

APPROXIMATE SCALE - FEET

0 50 100

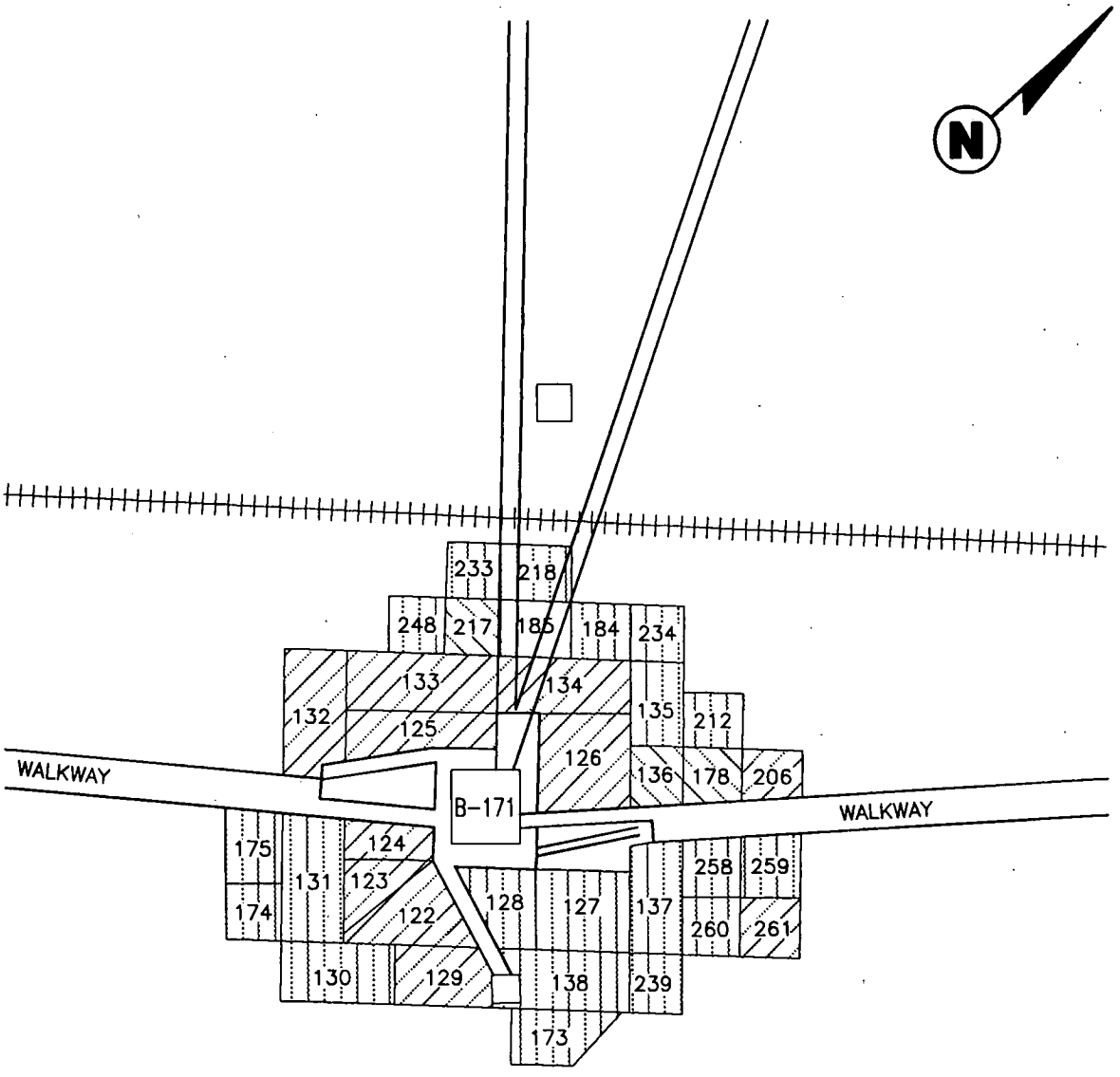
MFB INTERIM MEASURES REPORT

FIGURE G-2
POST-EXCAVATION SAMPLING GRID LOCATION MAP

NAVAL SURFACE WARFARE CENTER
BUILDING 167/168/2500, MINE FILL B
CRANE, INDIANA

PREPARED FOR
NAVAL FACILITIES ENGINEERING COMMAND
NSWC CRANE, IN

DRAWN MRC/6-7-02	CHK	APPR
REVISED	DRAWING NO.: 3732401g2.dwg	
JOB NO.: 37324.01	TOLTEST, INC.	
SHEET NUMBER 1 of 1		



MFB INTERIM MEASURES REPORT

APPROXIMATE SCALE – FEET

0 60 120

LEGEND

- MEETS RESIDENTIAL CLEANUP GOALS
- MEETS INDUSTRIAL CLEANUP GOALS
- EXCEEDS INDUSTRIAL CLEANUP GOALS. REFER TO TABLE 3-3.
- RAILROAD TRACKS

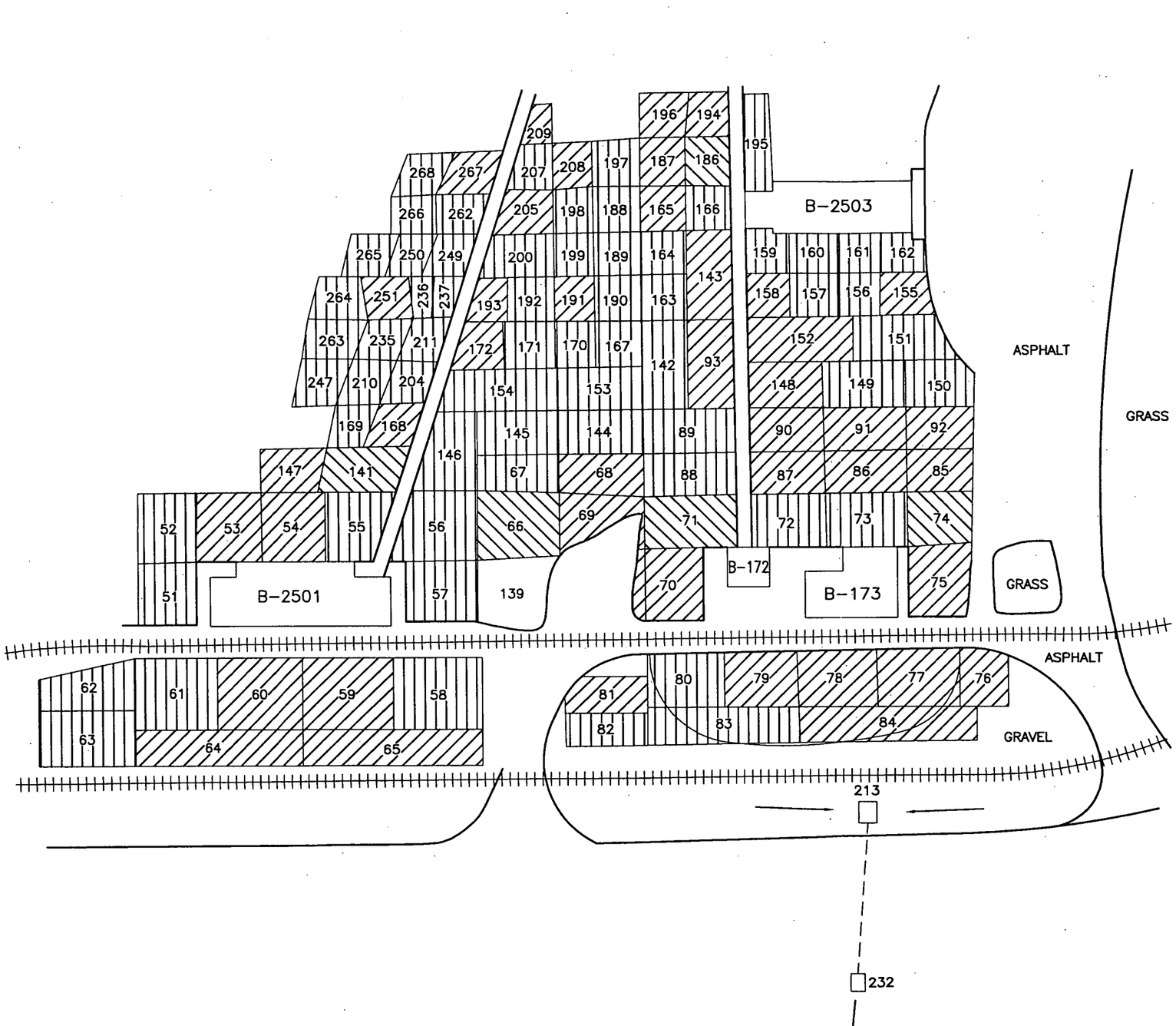
FIGURE G-3
POST-EXCAVATION SAMPLING GRID LOCATION MAP

NAVAL SURFACE WARFARE CENTER
BUILDING 171, MINE FILL B
CRANE, INDIANA

PREPARED FOR

NAVAL FACILITIES ENGINEERING COMMAND
NSWC CRANE, IN

DRAWN MRC/6-7-02	CHK	APPR
REVISED	DRAWING NO.: 3732401g3.dwg	
JOB NO.: 37324.01	TOLTEST, INC.	
SHEET NUMBER 1 of 1		



N

LEGEND

MEETS RESIDENTIAL CLEANUP GOALS

MEETS INDUSTRIAL CLEANUP GOALS

EXCEEDS INDUSTRIAL CLEANUP GOALS. REFER TO TABLE 3-3.

RAILROAD TRACKS

DRAINAGE PATTERN

APPROXIMATE SCALE - FEET

0 50 100

MFB INTERIM MEASURES REPORT

FIGURE G-4
POST-EXCAVATION SAMPLING GRID LOCATION MAP

NAVAL SURFACE WARFARE CENTER
BUILDING 172/173/2501, MINE FILL B
CRANE, INDIANA

PREPARED FOR
NAVAL FACILITIES ENGINEERING COMMAND NSWC CRANE, IN

DRAWN MRC/6-7-02	CHK	APPR
REVISED	DRAWING NO.: 3732401g4.dwg	
JOB NO.: 37324.01	TOLTEST, INC.	
SHEET NUMBER 1 of 1		

APPENDIX H

POST-EXCAVATION SAMPLE RESULTS

Table H-1 Explosives
Table H-2 Metals
Table H-3 Volatiles
Table H-4 PCBs
Table H-5 Trip Blank Sample Results
Table H-6 Rinse Blank Sample Explosives Results
Table H-7 Rinse Blank Sample Metals Results

TABLE H-1
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	TBD	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	TBD	4	650
MFB PES#	Sample Date	Grid #	Depth (in.)															
001	8/23/1999	76	0-6	1 U	1 U	0.18 J	1 U	1 U	0.18 J	1 U	1 U	1 U	1 U	2.7	1 U	2.5 U	4.5	1 U
003	8/23/1999	75	0-6	1 U	1 U	1 U	1 U	1 U	0.32 J	1 U	1 U	0.3 J	1 U	3.1	1 U	2.5 U	7.8	1 U
005	8/23/1999	77	0-6	1 U	1 U	0.82 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.2	1 U	2.5 U	6.5	1 U
007	8/23/1999	84	0-6	1 U	1 U	1 U	1 U	1 U	0.13 J	1 U	1 U	0.1 J	1 U	2.9	1 U	2.5 U	12	1 U
009	8/23/1999	78	0-6	1 U	1 U	0.99 J	1 U	1 U	0.52 J	1 U	1 U	0.99 J	1 U	2.6	1 U	2.5 U	11	1 U
011	8/23/1999	79	0-6	1 U	1 U	15	1 U	1 U	10 U	1 U	1 U	10 U	1 U	5.1	1 U	2.5 U	45 D [1]	1 U
013	9/2/1999	63	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.51	1 U	2.5 U	0.386 J	1 U
015	9/2/1999	64	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.21	1 U	2.5 U	7.65	1 U
017	9/2/1999	65	0-6	1 U	1 U	1 U	1 U	1 U	0.155 J	1 U	1 U	0.116 J	1 U	2.17	1 U	2.5 U	4.73	1 U
019	9/2/1999	83	0-6	0.51 J	1 U	2.68	1 U	1 U	1 U	1 U	1 U	0.123 J	1 U	8.14	1 U	2.5 U	72.9 D [1]	1 U
021	9/3/1999	58	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.16	1 U	2.5 U	3.04	1 U
023	9/3/1999	59	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.28	1 U	2.5 U	6.06	1 U
025	9/3/1999	60	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4.31	1 U	2.5 U	4.16	1 U
027	9/3/1999	61	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.46	1 U	2.5 U	0.482 J	1 U
029	9/3/1999	79	0-6	1 U	1 U	9.22	1 U	1 U	1.49	1 U	1 U	1 U	1 U	3.74	1 U	2.5 U	15.6	1 U
031	9/3/1999	80	0-6	4.43	1 U	10.6	1 U	1 U	0.51 J	1 U	1 U	1 U	1 U	6.97	1 U	2.5 U	40.8 D [1]	1 U
033	9/20/1999	200	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.52 J	1 U	2.5 U	3.6	1 U
035	9/20/1999	199	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.2 J	1 U	2.5 U	1.7	1 U
037	9/20/1999	167	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.12 J	1 U	2.5 U	0.37 J	1 U
039	9/20/1999	164	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4.3 D	1 U	2.5 U	26 D	1 U
041	9/20/1999	186	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.92 J	1 U	2.5 U	6.2	1 U
043	9/20/1999	143	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 J	1 U	2.5 U	3.4	1 U
045	9/20/1999	187	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.42 J	1 U	2.5 U	2.4	1 U
047	9/21/1999	189	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.17 J	1 U	2.5 U	1.1	1 U
049	9/21/1999	166	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.6 J	1 U	2.5 U	3.5	1 U
051	9/21/1999	165	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.3	1 U	2.5 U	4.5	1 U
053	9/21/1999	188	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.16 J	1 U	2.5 U	1.3	1 U
055	9/21/1999	163	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.51 J	1 U	2.5 U	1.7	1 U
057	9/21/1999	190	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.19 J	1 U	2.5 U	2.1	1 U
059	9/21/1999	191	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1	1 U	2.5 U	4.5	1 U
061	9/21/1999	172	0-6	1 U	1 U	0.1 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.5	1 U	2.5 U	12	1 U
063	9/21/1999	93	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.92 J	1 U	2.5 U	5.4	1 U
065	9/21/1999	142	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	0.58 J	1 U
067	9/21/1999	192	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	7.9 D	1 U	2.5 U	28 D [1]	1 U
069	9/21/1999	193	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5.7	1 U	2.5 U	51 D [1]	1 U
071	9/21/1999	170	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.13 J	1 U	2.5 U	1	1 U
073	9/21/1999	171	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5.8 D	1 U	2.5 U	26 D [1]	1 U
075	9/24/1999	80	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.14 J	1 U	2.5 U	0.72 J	1 U

TABLE H-1
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	TBD	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	TBD	4	650
MFB PES#	Sample Date	Grid #	Depth (in.)															
077	9/24/1999	83	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.11 J	1 U	2.5 U	1.5	1 U
079	9/24/1999	79	0-6	1.1	1 U	3.6	1 U	1 U	1 U	1 U	1 U	0.21 J	1 U	2.7	1 U	2.5 U	9.1	1 U
081	9/24/1999	81	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.27 J	1 U	2.5 U	4.1	1 U
083	9/24/1999	82	0-6	1 U	1 U	0.21 J	1 U	1 U	0.13 J	1 U	1 U	1 U	1 U	4	1 U	2.5 U	32 D [1]	1 U
085	10/4/1999	28	0-6	0.14 J	1 U	58 D [1]	1 U	1 U	1 U	1 U	1 U	1.2	1 U	3.9	1 U	2.5 U	66 D [1]	1 U
087	10/4/1999	27	0-6	1 U	1 U	9.5	1 U	1 U	2.5	1 U	1 U	1.3	1 U	2.4	1 U	2.5 U	10	1 U
089	10/4/1999	26	0-6	1 U	1 U	4.8	1 U	1 U	2 U	1 U	1 U	0.71 J	1 U	1.7	1 U	2.5 U	7.2	1 U
091	10/5/1999	168	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.2	1 U	2.5 U	7.2	1 U
093	10/5/1999	204	0-6	1 U	1 U	1 U	1 U	1 U	0.23 J	1 U	1 U	1 U	1 U	1.9	1 U	2.5 U	2	1 U
095	10/14/1999	207	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.4	1 U	2.5 U	2.3	1 U
097	10/14/1999	205	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.97 J	1 U	2.5 U	1.9	1 U
099	10/14/1999	192	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1.7	1 U
101	10/14/1999	193	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.2	1 U	2.5 U	5.3	1 U
103	10/15/1999	171	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.17 J	1 U	2.5 U	1.9	1 U
105	10/15/1999	154	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.44 J	1 U	2.5 U	3.6	1 U
107	10/15/1999	146	0-6	1 U	1 U	0.099 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.5	1 U	2.5 U	2.3	1 U
109	10/15/1999	56	0-6	1 U	1 U	1 U	1 U	1 U	0.13 J	1 U	1 U	1 U	1 U	2.4	1 U	2.5 U	3.2	1 U
111	10/15/1999	66	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4.2	1 U	2.5 U	38 D	1 U
113	10/15/1999	67	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.26 J	1 U	2.5 U	1.3	1 U
115	10/15/1999	145	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 J	1 U	2.5 U	0.82 J	1 U
117	10/15/1999	153	0-6	1.18 U	1.18 U	1.18 U	1.18 U	1.18 U	1.18 U	1.18 U	1.18 U	1.18 U	1.18 U	1.18 U	1.18 U	2.94 U	0.875 J	1.18 U
119	10/15/1999	57	0-6	1.23 U	1.23 U	0.187 J	1.23 U	1.23 U	1.23 U	1.23 U	1.23 U	1.23 U	1.23 U	0.401 J	1.23 U	3.08 U	3.22	1.23 U
121	10/16/1999	82	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.26 J	1 U	2.5 U	2.3	1 U
123	10/16/1999	210	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4.7	1 U	2.5 U	0.89 J	1 U
125	10/16/1999	139	0-6	1 U	1 U	0.19 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.47 J	1 U	2.5 U	2.2	1 U
127	10/16/1999	211	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.47 J	1 U	2.5 U	2.2	1 U
129	10/19/1999	237	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.67 J	1 U	2.5 U	3.4	1 U
131	10/19/1999	236	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.3	1 U	2.5 U	3.9	1 U
133	10/22/1999	54	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.4	1 U	2.5 U	5.4	1 U
135	10/22/1999	55	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.48 J	1 U	2.5 U	1.9	1 U
137	10/26/1999	141	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4	1 U	2.5 U	3.7	1 U
139	10/26/1999	251	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.83 J	1 U	2.5 U	1.2	1 U
141	10/26/1999	249	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.44 J	1 U	2.5 U	1.8	1 U
143	10/28/1999	186/19	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.4	1 U	2.5 U	8	1 U
145	10/28/1999	187/19	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4.5	1 U	2.5 U	11	1 U
147	10/28/1999	249/25	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.53 J	1 U	2.5 U	2.3	1 U
149	10/28/1999	236/25	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.7	1 U	2.5 U	1.2	1 U
151	10/28/1999	251/23	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.2	1 U	2.5 U	4.3	1 U
153	10/29/1999	187/19	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.86 J	1 U	2.5 U	3.1	1 U

TABLE H-1
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	TBD	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	TBD	4	650
MFB PES#	Sample Date	Grid #	Depth (in.)															
155	10/29/1999	188/19	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.41 J	1 U	2.5 U	2.1	1 U
157	10/29/1999	188/19	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.54 J	1 U	2.5 U	1.6	1 U
159	11/1/1999	199/19	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.5 J	1 U	2.5 U	5.8	1 U
161	11/1/1999	205/19	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.8	1 U	2.5 U	13	1 U
163	11/1/1999	207/20	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.4	1 U	2.5 U	3.8	1 U
165	11/1/1999	211/23	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.8	1 U	2.5 U	1.1	1 U
167	11/1/1999	210/23	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.8	1 U	2.5 U	2.2	1 U
169	11/1/1999	210/24	sidewall	1 U	1 U	1 U	1 U	1 U	0.15 J	1 U	1 U	1 U	1 U	1.4	1 U	2.5 U	1.1	1 U
171	11/1/1999	210/16	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.3 J	1 U	2.5 U	1 U	1 U
173	11/1/1999	168/16	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.2	1 U	2.5 U	0.19 J	1 U
175	11/2/1999	141/16	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.7	1 U	2.5 U	1.1	1 U
177	11/2/1999	141/14	sidewall	1 U	1 U	5.2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	12	1 U	2.5 U	29 D	1 U
179	11/2/1999	54/147	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.4	1 U	2.5 U	2.4	1 U
181	11/2/1999	54/53	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.15 J	1 U	5 D	1 U	2.5 U	8.8	1 U
183	11/2/1999	32	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.14 J	1 U	2.5 U	0.53 J	1 U
185	11/2/1999	31	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	0.68 J	1 U
187	11/8/1999	30	0-6	1 U	1 U	0.12 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
189	11/8/1999	29	0-6	1 U	1 U	0.19 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.1 J	1 U	2.5 U	1 U	1 U
191	11/8/1999	38	0-6	1 U	1 U	30 D	1 U	1 U	2 U	1 U	1 U	2 U	1 U	2.8	1 U	2.5 U	17	1 U
193	11/8/1999	28	0-6	1 U	1 U	0.26 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.22 J	1 U	2.5 U	1 U	1 U
195	11/8/1999	37	0-6	1 U	1 U	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.17 J	1 U	2.5 U	0.76 J	1 U
197	11/8/1999	36	0-6	1 U	1 U	1.3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.17 J	1 U	2.5 U	1.6	1 U
199	11/8/1999	35	0-6	1 U	1 U	3.2	1 U	1 U	1 U	1 U	1 U	0.37 J	1 U	6.3	1 U	2.5 U	10	1 U
201	11/8/1999	25	0-6	1 U	1 U	1.2	1 U	1 U	0.78 J	1 U	1 U	0.36 J	1 U	2.7	1 U	2.5 U	14	1 U
203	11/8/1999	28/27	sidewall	1 U	1 U	0.89 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	0.2 J	1 U
205	11/8/1999	37/201	sidewall	1 U	1 U	0.43 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
207	11/8/1999	36/202	sidewall	1 U	1 U	2.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.95 J	1 U	2.5 U	0.58 J	1 U
209	11/8/1999	36/27	sidewall	1 U	1 U	0.86 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.16 J	1 U	2.5 U	0.25 J	1 U
211	11/9/1999	207/20	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.94 J	1 U	2.5 U	1.3	1 U
214	11/9/1999	262	0-6	1 U	1 U	0.2 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.87 J	1 U	2.5 U	1.5	1 U
216	11/9/1999	251/26	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.76 J	1 U	2.5 U	5.2	1 U
218	11/9/1999	35/203	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.17 J	1 U	2.5 U	0.33 J	1 U
220	11/9/1999	35/26	sidewall	1 U	1 U	0.3 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	0.13 J	1 U
222	11/9/1999	35/214	sidewall	1 U	1 U	1.7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	0.41 J	1 U
224	11/9/1999	32/33	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.1 J	1 U	2.5 U	1.9	1 U
226	11/9/1999	32/240	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
228	11/9/1999	31/241	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.43 J	1 U	2.5 U	1 U	1 U
230	11/9/1999	38/140	sidewall	1 U	1 U	8.3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.4 J	1 U	2.5 U	4.8	1 U
232	11/9/1999	38/39	sidewall	1 U	1 U	39 D	1 U	1 U	1 U	1 U	1 U	2 U	1 U	3.6	2 U	2.5 U	29 D	1 U

TABLE H-1
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	TBD	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	TBD	4	650
MFB PES#	Sample Date	Grid #	Depth (in.)															
234	11/9/1999	29/39	sidewall	1 U	1 U	7.1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.7 J	1 U	2.5 U	7.8	1 U
236	1/8/2000	107	0-6	1 U	1 U	3.1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.68 J	1 U	2.5 U	0.91 J	1 U
238	1/19/2000	231	0-6	1 U	1 U	0.19 J	1 U	1 U	0.22 J	1 U	1 U	0.26 J	1 U	0.63 J	1 U	2.5 U	0.47 J	1 U
240	1/19/2000	181	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.3 J	1 U	2.5 U	0.37 J	1 U
242	1/19/2000	220	0-6	1 U	1 U	1	1 U	1 U	1 U	1 U	1 U	0.29 J	1 U	0.5 J	1 U	2.5 U	0.34 J	1 U
244	1/19/2000	121	0-6	1 U	1 U	1.9	1 U	1 U	1 U	1 U	1 U	0.31 J	1 U	0.9 J	1 U	2.5 U	2	1 U
246	1/25/2000	177	0-6	1 U	1 U	1.5	1 U	1 U	1 U	1 U	1 U	0.5 J	1 U	0.96 J	1 U	2.5 U	3.1	1 U
248	1/25/2000	181/23	sidewall	1 U	1 U	25 D	0.1 J	1 U	1 U	1 U	1 U	1 U	1 U	3.9	1 U	2.5 U	17	1 U
250	1/25/2000	181/22	sidewall	1 U	1 U	0.26 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 J	1 U	2.5 U	1 U	1 U
252	1/25/2000	181/12	sidewall	1 U	1 U	8.6	1 U	1 U	1 U	1 U	1 U	0.61 J	1 U	3.3	1 U	2.5 U	12	1 U
254	1/26/2000	220/22	sidewall	1 U	1 U	14	1 U	1 U	1 U	1 U	1 U	1.1	1 U	3.3	1 U	2.5 U	11	1 U
256	1/26/2000	121/22	sidewall	1 U	1 U	12	1 U	1 U	1 U	1 U	1 U	1.4	1 U	2.4	1 U	2.5 U	5.4	1 U
258	1/26/2000	177/17	sidewall	1 U	1 U	15	1 U	1 U	1 U	1 U	1 U	1.6	1 U	2.4	1 U	2.5 U	8.7	1 U
260	1/27/2000	177/21	sidewall	1 U	1 U	0.56 J	1 U	1 U	1 U	1 U	1 U	0.35 J	1 U	12	1 U	2.5 U	33 D	1 U
262	2/17/2000	177/21	sidewall	1 U	1 U	0 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0 J	1 U	2 U	0 J	1 U
264	2/17/2000	120	0-6	1 U	1 U	0 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0 J	1 U	2 U	1	1 U
266	2/17/2000	102	0-6	1 U	1 U	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1	1 U	2 U	4	1 U
268	2/17/2000	113	0-6	1 U	1 U	0 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 J	1 U	2 U	1 J	1 U
270	3/1/2000	225	0-6	1 U	1 U	0.16 J	1 U	1 U	0.16 J	1 U	1 U	1 U	1 U	0.28 J	1 U	2.5 U	2	1 U
272	3/1/2000	225/22	sidewall	1 U	1 U	0.18 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.21 J	1 U	2.5 U	1.7	1 U
274	3/1/2000	225/24	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.18 J	1 U	2.5 U	0.8 J	1 U
276	3/1/2000	226	0-6	1 U	1 U	0.2 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.45 J	1 U	2.5 U	1.3	1 U
278	3/1/2000	226/24	sidewall	1 U	1 U	0.68 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.46 J	1 U	2.5 U	2	1 U
280	3/1/2000	106	0-6	1 U	1 U	1.9	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.49 J	1 U	2.5 U	3.7	1 U
282	3/1/2000	118	0-6	1 U	1 U	1.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.46 J	1 U	2.5 U	3.2	1 U
284	3/1/2000	118/22	sidewall	1 U	1 U	1.2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.55 J	1 U	2.5 U	3.2	1 U
286	3/1/2000	118/21	sidewall	1 U	1 U	1.3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.43 J	1 U	2.5 U	3.6	1 U
288	3/2/2000	215	0-6	1 U	1 U	0.4 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.5 J	1 U	2.5 U	5	1 U
290	3/2/2000	215/21	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	0.21 J	1 U
292	3/2/2000	246	0-6	1 U	1 U	0.22 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.33 J	1 U	2.5 U	2.4	1 U
294	3/2/2000	246/25	sidewall	1 U	1 U	0.18 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 J	1 U	2.5 U	0.56 J	1 U
296	3/2/2000	246/25	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.52 J	1 U	2.5 U	2.1	1 U
298	3/2/2000	118/22	sidewall	1 U	1 U	0.33 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.15 J	1 U	2.5 U	0.63 J	1 U
300	3/7/2000	31/roa	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
302	3/7/2000	231/27	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.54 J	1 U	2.5 U	0.2 J	1 U
304	3/7/2000	220/27	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
306	3/7/2000	120/23	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.37 J	1 U	2.5 U	1 U	1 U
308	3/7/2000	120/17	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	0.41 J	1 U
310	3/7/2000	113/11	sidewall	1 U	1 U	1.3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U

TABLE H-1
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	TBD	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	TBD	4	650
MFB PES#	Sample Date	Grid #	Depth (in.)															
312	3/7/2000	113/17	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.7	1 U	2.5 U	1 U	1 U
314	3/7/2000	113/18	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.81 J	1 U	2.5 U	1 U	1 U
316	3/8/2000	103	0-6	2.2	1 U	14	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.1	1 U	2.5 U	9.2	1 U
318	3/8/2000	115	0-6	0.13 J	1 U	1.1	1 U	1 U	1 U	1 U	1 U	0.54 J	1 U	2.2	1 U	2.5 U	2.2	1 U
320	3/8/2000	115/18	sidewall	1 U	1 U	0.51 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.34 J	1 U	2.5 U	1 U	1 U
322	3/8/2000	115/18	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
324	3/8/2000	115/22	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.25 J	1 U	2.5 U	0.72 J	1 U
326	3/8/2000	228	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.97 J	1 U	2.5 U	0.59 J	1 U
328	3/8/2000	228/22	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.64 J	1 U	2.5 U	1 U	1 U
330	3/8/2000	228/24	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.2 J	1 U	2.5 U	0.11 J	1 U
332	3/8/2000	227	0-6	1 U	1 U	0.31 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1	1 U	2.5 U	2.5	1 U
334	3/8/2000	244	0-6	0.23 J	1 U	0.71 J	1 U	1 U	1 U	1 U	1 U	0.3 J	1 U	2.2	1 U	2.5 U	2.7	1 U
336	3/8/2000	244/24	sidewall	1 U	1 U	0.33 J	1 U	1 U	0.24 J	1 U	1 U	0.28 J	1 U	3.4	1 U	2.5 U	3.2	1 U
338	3/10/2000	256	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.3	1 U	2.5 U	0.39 J	1 U
340	3/10/2000	256/25	sidewall	1 U	1 U	1 U	1 U	1 U	0.14 J	1 U	1 U	1 U	1 U	4	1 U	2.5 U	2.4	1 U
342	3/10/2000	256/27	sidewall	1 U	1 U	0.17 J	1 U	1 U	0.12 J	1 U	1 U	1 U	1 U	100 D	1 U	2.5 U	1.6	1 U
344	3/10/2000	256/26	sidewall	1 U	1 U	1 U	1 U	1 U	0.2 J	1 U	1 U	1 U	1 U	1.8	1 U	2.5 U	0.85 J	1 U
346	3/28/2000	105	0-6	0.25 U	0.25 U	0.2 J	0.25 U	0.25 U	0.13 J	0.25 U	0.25 U	0.25 U	0.25 U	0.33	0.25 U		0.88	0.25 U
347	5/18/2000	276	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.57 J	1 U	2.5 U	1.4	1 U
349	6/1/2000	128	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.75 J	1 U	2.5 U	1.5	1 U
351	6/1/2000	128/12	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.99 J	1 U	2.5 U	2.7	1 U
353	6/1/2000	138	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.81 J	1 U	2.5 U	1.9	1 U
355	6/1/2000	138/12	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.2	1 U	2.5 U	0.92 J	1 U
357	6/1/2000	138/23	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
359	6/1/2000	138/17	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
361	6/1/2000	137	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.6 J	1 U	2.5 U	2.2	1 U
363	6/1/2000	137/25	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.3	1 U	2.5 U	1 U	1 U
365	6/1/2000	137/26	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
367	6/1/2000	137/23	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
369	6/1/2000	137/12	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.38 J	1 U	2.5 U	1 U	1 U
371	6/2/2000	122	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.8	1 U	2.5 U	13	1 U
373	6/2/2000	123	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.7	1 U	2.5 U	5.7	1 U
375	6/2/2000	124	0-6	1 U	1 U	0.47 J	1 U	1 U	1 U	1 U	1 U	0.25 J	1 U	3.4	1 U	2.5 U	7.7	1 U
377	6/2/2000	131	0-6	1 U	1 U	0.8 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.7	1 U	2.5 U	2.8	1 U
379	6/2/2000	131/17	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.7	1 U	2.5 U	3.5	1 U
381	6/2/2000	131/17	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	0.27 J	1 U
383	6/2/2000	131/13	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
385	6/2/2000	122/12	sidewall	1 U	1 U	0.39 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.15 J	1 U	2.5 U	0.12 J	1 U
387	7/18/2000	217	0-6	1 U	1 U	8.2	1 U	1 U	2.5 U	1 U	1 U	2.2	1 U	24 D	1 U	470 D	32 D	1 U

TABLE H-1
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	TBD	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	TBD	4	650
MFB PES#	Sample Date	Grid #	Depth (in.)															
389	7/18/2000	217/23	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
391	7/18/2000	217/13	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.5 J	1 U	2.6	1 U	2.5 U	0.57 J	1 U
393	7/18/2000	185	0-6	1 U	1 U	0.45 J	1 U	1 U	0.48 J	1 U	1 U	0.92 J	1 U	0.84 J	1 U	2.5 U	1.5	1 U
395	7/18/2000	185/18	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
397	7/18/2000	134	0-6	1 U	1 U	0.4 J	1 U	1 U	0.84 J	1 U	1 U	0.7 J	1 U	2.3	1 U	2.5 U	4.1	1 U
399	7/18/2000	134/18	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U	1 U
401	7/18/2000	134/13	sidewall	1 U	1 U	0.88 J	1 U	1 U	1 U	1 U	1 U	0.3 J	1 U	0.72 J	1 U	2.5 U	0.19 J	1 U
403	7/18/2000	134/13	sidewall	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.2	1 U	2.5 U	0.73 J	1 U
405	7/18/2000	126	0-6	1 U	1 U	1 U	1 U	1 U	0.2 J	1 U	1 U	0.36 J	1 U	2.4	1 U	2.5 U	4.7	1 U
407	7/18/2000	136	0-6	1 U	1 U	0.82 J	1 U	1 U	0.48 J	1 U	1 U	0.69 J	1 U	44 D	1 U	2.5 U	180 D	1 U
409	7/18/2000	136/13	sidewall	1 U	1 U	1 U	1 U	1 U	0.78 J	1 U	1 U	0.63 J	1 U	1.9	1 U	2.5 U	3.6	1 U
411	7/18/2000	178	0-6	1 U	1 U	1.2	1 U	1 U	0.96 J	1 U	1 U	1.1	1 U	130 D	1 U	2.5 U	290 D	1 U
413	8/28/2000	89	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.52 J	1 U	2.5 U	3.4	1 U
415	8/28/2000	144	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 J	1 U	2.5 U	4	1 U
417	8/28/2000	68	0-6	1 U	1 U	0.83 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.55 J	1 U	2.5 U	7.2	1 U
419	8/28/2000	88	0-6	1 U	1 U	0.49 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.39 J	1 U	2.5 U	3.5	1 U
421	8/28/2000	69	0-6	1.1	1 U	1.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.1	1 U	2.5 U	11	1 U
423	8/28/2000	69	sidewall	1 U	1 U	0.26 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.2	1 U	2.5 U	11	1 U
425	8/28/2000	71	0-6	1 U	1 U	7:1	1 U	1 U	1.7	1 U	1 U	1.3	1 U	5.5	1 U	2.5 U	41 D	1 U
427	8/28/2000	70	0-6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.6	1 U	2.5 U	6.6	1 U
429	8/28/2000	70	sidewall	1.7	1 U	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.8	1 U	2.5 U	10	1 U
431	8/29/2001	74	0-6	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.88	0.25 U	0.5 U	6.3	0.25 U
433	8/29/2001	73	0-6	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.14 J	0.25 U	0.5 U	0.79	0.25 U
435	8/29/2001	72	0-6	0.25 U	0.25 U	0.26	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.73	0.25 U	0.5 U	2.8	0.25 U
437	8/29/2001	159	0-6	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.3	0.25 U	0.5 U	2	0.25 U
439	8/29/2001	160	0-6	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1	0.25 U	0.5 U	0.7	0.25 U
441	9/17/2001	90	0-6	0.5 U	0.5 U	0.035 J	0.5 U	0.5 U	0.131 PJ	0.5 U	0.5 U	0.045 J	0.5 U	0.806	0.5 U	0.5 U	6.42	0.5 U
443	9/17/2001	148	0-6	0.5 U	0.5 U	0.437 J	0.5 U	0.5 U	0.238 PJ	0.5 U	0.5 U	0.252 PJ	0.5 U	1.84	0.5 U	0.5 U	15.4	0.5 U
445	9/17/2001	152	0-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.502	0.5 U	0.5 U	4.41	0.5 U
447	9/17/2001	158	0-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.074 PJ	0.5 U	0.5 U	0.5 U	0.5 U	0.912	0.5 U	0.5 U	5.25	0.5 U
449	9/17/2001	157	0-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.052 PJ	0.5 U	0.5 U	0.5 U	0.5 U	0.976	0.5 U	0.5 U	2.15	0.5 U
451	9/17/2001	156	0-6	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.055 PJ	0.476 U	0.476 U	0.476 U	0.476 U	4.46	0.476 U	0.476 U	1.47	0.476 U
453	9/26/2001	85	0-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.181 J	0.5 U	0.5 U	0.5 J	0.5 U	2.95	0.5 U	0.5 U	8.89	0.5 U
455	9/26/2001	86	0-6	0.5 U	0.5 U	1.16	0.5 U	0.5 U	0.334 J	0.5 U	0.5 U	0.5 J	0.5 U	2.07	0.5 U	0.5 U	10.7	0.5 U
457	9/26/2001	87	0-6	0.121 J	0.5 U	11.4	0.5 U	0.5 U	0.319 PJ	0.5 U	0.5 U	0.5 J	0.5 U	1.32	0.5 U	0.5 U	12.1	0.5 U
459	9/26/2001	92	0-6	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.776	0.476 U	0.476 U	4.69	0.476 U
461	9/26/2001	91	0-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.104 J	0.5 U	0.5 U	0.5 U	0.5 U	0.696	0.5 U	0.5 U	5.76	0.5 U
463	9/26/2001	150	0-6	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.102 PJ	0.476 U	0.476 U	0.476 U	0.476 U	0.592	0.476 U	0.476 U	2.3	0.476 U

TABLE H-1
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
EXPLOSIVES (mg/kg)

ANALYTE				135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
IM Industrial Cleanup Goal				34	68	64	1400	680	1400	6800	6800	680	6800	34000	94	TBD	17	6800
IM Residential Cleanup Goal				3.3	6.5	15	130	65	130	650	650	65	650	3300	18	TBD	4	650
MFB PES#	Sample Date	Grid #	Depth (in.)															
465	9/26/2001	149	0-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.095 PJ	0.5 U	0.5 U	0.5 U	0.5 U	0.358 J	0.5 U	0.5 U	1.42	0.5 U
467	9/26/2001	151	0-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.465 PJ	0.5 U	0.5 U	1.68	0.5 U
469	9/26/2001	155	0-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.462 J	0.5 U	0.5 U	0.965	0.5 U
471	9/26/2001	162	0-6	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.476 U	0.395 J	0.476 U	0.476 U	0.503	0.476 U
473	9/26/2001	161	0-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.16 J	0.5 U	0.5 U	0.238 J	0.5 U
475	9/26/2001	162	sidewall	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.185 J	0.5 U	0.5 U	0.251 J	0.5 U
476	9/26/2001	155	sidewall	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.138 J	0.5 U	0.5 U	0.5 PJ	0.5 U	1.95	0.5 U	0.5 U	6.12	0.5 U
477	9/26/2001	151	sidewall	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.289 J	0.5 U	0.5 U	0.127 J	0.5 U
478	9/26/2001	150	sidewall	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.081 J	0.5 U	0.5 U	0.039 PJ	0.5 U
479	9/26/2001	92	sidewall	0.5 U	0.5 U	0.321 J	0.5 U	0.5 U	0.175 J	0.5 U	0.5 U	0.5 J	0.5 U	7.47	0.5 U	0.5 U	14	0.5 U
480	9/26/2001	74	sidewall	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.106 J	0.5 U	0.5 U	0.5 U	0.5 U	6.65	0.5 U	0.5 U	25.4	0.5 U

U - non-detect

J - an estimated value, the result is less than the quantitation limit but greater than zero

D - identified in an analysis at a secondary dilution factor

P - indicates a difference in quantitation of >25% between primary and secondary columns

[1] - the soil represented by these samples was excavated

highlighted - exceeds residential and/or industrial cleanup goals

TABLE H-2
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
METALS (mg/kg)

ANALYTE				Hg	Al	Ar	Ba	Cd	Cr	Pb	Se	Ag
IM Industrial Cleanup Goal				510	100000	2.4	100000	850	450	1000	8500	8500
IM Residential Cleanup Goal				23	77000	0.32	5300	38	210	400	380	380
MFB PES#	Sample Date	Grid #	Depth (in.)									
001	8/23/1999	76	0-6	0.058 J	15700	10.4 J	75.2	0.6 U	20.1	14	24.1 U	1.2 U
003	8/23/1999	75	0-6	0.039 J	14600	9.3 J	100	0.56 U	17.4	16.8	22.5 U	1.1 U
005	8/23/1999	77	0-6	0.036 J	12900	11.3 U	83.4	0.57 U	16.3	15.4	22.7 U	1.1 U
007	8/23/1999	84	0-6	0.018 J	12300	12.5	53	0.59 U	19.1	10.6	23.5 U	1.2 U
009	8/23/1999	78	0-6	0.026 J	13500	4.6 J	62.9	0.57 U	18.9	16.8	22.8 U	1.1 U
011	8/23/1999	79	0-6	0.046 J	17700	10 J	73.4	0.58 U	21.2	15.9	23.2 U	1.2 U
013	9/2/1999	63	0-6	0.00824 J	13200	10 J	62.1	0.542 U	24.1	16	21.7 U	1.08 U
015	9/2/1999	64	0-6	0.016 J	12600	5.65 J	71.2	0.543 U	23.7	14.6	21.7 U	1.09 U
017	9/2/1999	65	0-6	0.047 J	13000	11.7 U	77.9	0.587 U	16.5	16.4	23.5 U	1.17 U
019	9/2/1999	83	0-6	0.035 J	15500	12.6	74.6	0.589 U	20.5	18.8	23.5 U	1.18 U
021	9/3/1999	58	0-6	0.0202 J	10400	11.5 U	70	0.574 U	12.5	15.5	22.9 U	1.15 U
023	9/3/1999	59	0-6	0.0192 J	12400	8.83 J	71.6	0.568 U	18.9	16.8	22.7 U	1.14 U
025	9/3/1999	60	0-6	0.0345 J	13100	7.81 J	78.5	0.569 U	16.4	15.2	22.8 U	1.14 U
027	9/3/1999	61	0-6	0.0297 J	11300	9.52 J	61.4	0.538 U	21.4	16.8	21.5 U	1.08 U
029	9/3/1999	79	0-6	0.0254 J	16800	8.4 J	79.1	0.587 U	21.1	17.5	23.5 U	1.17 U
031	9/3/1999	80	0-6	0.0266 J	17300	6.34 J	74.4	0.604 U	21.3	16	24.2 U	1.21 U
033	9/20/1999	200	0-6	0.012 J	16600	11.5 J	123	0.62 U	32.8	43.9	24.6 U	1.2 U
035	9/20/1999	199	0-6	0.019 J	13100	5.3 J	71.8	0.59 U	22.3	15.1	23.5 U	1.2 U
037	9/20/1999	167	0-6	0.04 J	11500	7 J	104	0.58 U	18.8	16.3	23.1 U	1.2 U
039	9/20/1999	164	0-6	0.015 J	11900	5.5 J	105	0.57 U	20.5	13.2	22.7 U	1.1 U
041	9/20/1999	186	0-6	0.11 U	4820	11.1 U	23.9	0.56 U	5.7	10.8	22.2 U	1.1 U
043	9/20/1999	143	0-6	0.01 J	11600	5.6 J	83.9	0.58 U	19.3	12.5	23.1 U	1.2 U
045	9/20/1999	187	0-6	0.11 U	5680	7.4 J	35.9	0.56 U	7.1	13.4	22.3 U	1.1 U
047	9/21/1999	189	0-6	0.027 J	19700	11.9 U	158	0.59 U	26.9	16.5	23.7 U	1.2 U
049	9/21/1999	166	0-6	0.014 J	12000	11.6 U	82.6	0.58 U	21.1	14.4	23.3 U	1.2 U
051	9/21/1999	165	0-6	0.0099 J	13400	5.2 J	185	0.59 U	18	23.2	23.5 U	1.2 U
053	9/21/1999	188	0-6	0.016 J	15000	7.9 J	378	0.57 U	20.8	30.6	23 U	1.1 U
055	9/21/1999	163	0-6	0.01 J	14600	11.1 U	261	0.56 U	22.2	17.8	22.2 U	1.1 U
057	9/21/1999	190	0-6	0.0091 J	12400	11 U	124	0.55 U	19.5	10.7	22 U	1.1 U
059	9/21/1999	191	0-6	0.018 J	17900	11.3 J	283	0.57 U	24.5	18.5	22.8 U	1.1 U
061	9/21/1999	172	0-6	0.016 J	13900	11.5 U	73.9	0.58 U	24.1	18.2	23.1 U	1.2 U
063	9/21/1999	93	0-6	0.021 J	14400	6 J	147	0.6 U	18.3	14.6	24 U	1.2 U
065	9/21/1999	142	0-6	0.017 J	12600	11.2 U	87.8	0.56 U	17.2	13.9	22.3 U	1.1 U
067	9/21/1999	192	0-6	0.12 U	15600	6.6 J	72.6	0.62 U	44.2	18.7	24.6 U	1.2 U
069	9/21/1999	193	0-6	0.012 J	16900	5.1 J	86.9	0.57 U	21.2	10.8	22.9 U	1.1 U
071	9/21/1999	170	0-6	0.12 U	15200	11.6 U	108	0.58 U	27.1	16.9	23.3 U	1.2 U
073	9/21/1999	171	0-6	0.014 J	13800	11 U	72.2	0.55 U	21.3	10.9	21.9 U	1.1 U
075	9/24/1999	80	0-6	0.025 J	13400	11.8 U	86	0.59 U	16.7	14.8	23.6 U	1.2 U
077	9/24/1999	83	0-6	0.04 J	15700	11.8 U	111	0.59 U	18.2	16.4	23.6 U	0.25 J
079	9/24/1999	79	0-6	0.049 J	18700	11.8 U	88.3	0.59 U	23.2	18.4	23.6 U	0.25 J
081	9/24/1999	81	0-6	0.036 J	15200	11.6 U	113	0.58 U	17	18.4	23.1 U	1.2 U
083	9/24/1999	82	0-6	0.035 J	15900	11.6 U	95.9	0.58 U	21.7	17.3	23.3 U	1.2 U
085	10/4/1999	28	0-6	0.026 J	14200	10.3 J	67.3	0.59 U	21.4	16.2	23.7 U	0.36 J
087	10/4/1999	27	0-6	0.04 J	15200	6.3 J	102	0.61 U	20.6	16.4	24.3 U	1.2 U
089	10/4/1999	26	0-6	0.048 J	13800	4 J	80.8	0.61 U	18.2	14.4	24.3 U	1.2 U
091	10/5/1999	168	0-6	0.027 J	14400	7.7 J	69.3	0.59 U	18.1	16.4	23.6 U	1.2 U
093	10/5/1999	204	0-6	0.03 J	12200	12.8 U	169	0.64 U	22.5	17.8	25.6 U	1.3 U
095	10/14/1999	207	0-6	0.018 J	16300	9.7 J	75.1	0.61 U	21.1	16.4	24.3 U	1.2 U
097	10/14/1999	205	0-6	0.03 J	16400	6.8 J	128	0.62 U	21.1	14.5	24.9 U	1.2 U
099	10/14/1999	192	0-6	0.0064 J	6740	4.2 J	34	0.56 U	13.9	12.7	22.4 U	1.1 U
101	10/14/1999	193	0-6	0.12 U	12700	4.2 J	106	0.59 U	15.1	21.1	23.6 U	1.2 U
103	10/15/1999	171	0-6	0.13 U	6950	12.6 U	31.9	0.63 U	12.4	7.5	25.1 U	1.3 U
105	10/15/1999	154	0-6	0.12 U	12000	7.9 J	88.5	0.59 U	15.7	11.7	23.4 U	1.2 U
107	10/15/1999	146	0-6	0.03 J	13800	8.5 J	56.1	0.64 U	43.3	18.2	25.8 U	1.3 U
109	10/15/1999	56	0-6	0.048 J	12700	5.1 J	91.1	0.61 U	16.8	18.1	24.3 U	1.2 U
111	10/15/1999	66	0-6	0.024 J	13200	12.2 J	154	0.64 U	23.2	19.4	25.4 U	1.3 U
113	10/15/1999	67	0-6	0.013 J	11000	5.4 J	78.7	0.72 U	13.9	9.2	29 U	1.4 U
115	10/15/1999	145	0-6	0.12 U	12200	11.6 U	62.3	0.58 U	15.8	9.1	23.3 U	1.2 U
117	10/15/1999	153	0-6	0.118 U	12600	4.08 J	84.7	0.588 U	20.9	23.7	23.5 U	1.18 U
119	10/15/1999	57	0-6	0.0266 J	14500	8.46 J	119	0.617 U	18.6	19	24.7 U	1.23 U
121	10/16/1999	82	0-6	0.023 J	13000	8 J	87.6	0.6 U	15	15.9	24 U	1.2 U
123	10/16/1999	210	0-6	0.025 J	10500	12.8 U	132	0.64 U	12.2	15.1	25.7 U	1.3 U
125	10/16/1999	139	0-6	0.064 J	15400	6.2 J	64.4	0.64 U	21	13.4	25.4 U	1.3 U
127	10/16/1999	211	0-6	0.12 U	13600	6.4 J	57	0.6 U	72.2	14.4	23.8 U	1.2 U
129	10/19/1999	237	0-6	0.018 J	10400	11.7 U	56.9	0.58 U	22.3	18.6	23.3 U	1.2 U
131	10/19/1999	236	0-6	0.12 U	10700	11.6 U	54.8	0.58 U	13.9	11.9	23.3 U	1.2 U
133	10/22/1999	54	0-6	0.044 J	12300	12 U	78.9	0.6 U	16	15	24 U	1.2 U
135	10/22/1999	55	0-6	0.049 J	15300	4.2 J	104	0.62 U	19.5	16.9	24.6 U	1.2 U
137	10/26/1999	141	0-6	0.036 J	14300	11.9 U	77.9	0.6 U	18.2	18.5	23.9 U	1.2 U
139	10/26/1999	251	0-6	0.12 U	10700	11.6 U	63.4	0.58 U	13.7	10.9	23.3 U	1.2 U
141	10/26/1999	249	0-6	0.0088 J	10800	12.1 U	81.2	0.6 U	32.2	16.2	24.2 U	1.2 U
143	10/28/1999	186/194	sidewall	0.12 U	12500	11.7 U	97.6	0.59 U	15.7	11.4	23.4 U	1.2 U
145	10/28/1999	187/196	sidewall	0.12 U	12200	11.6 U	567	0.58 U	12.6	14.3	23.2 U	1.2 U
147	10/28/1999	249/250	sidewall	0.023 J	13200	11.9 U	132	0.59 U	17	13.5	23.8 U	1.2 U
149	10/28/1999	236/250	sidewall	0.12 U	9910	11.5 U	60.6	0.58 U	23.3	9.6	23 U	1.2 U
151	10/28/1999	251/235	sidewall	0.11 U	8160	4.2 J	45.7	0.56 U	20.2	11.9	22.5 U	1.1 U
153	10/29/1999	187/197	sidewall	0.022 J	14900	12.3 U	136	0.61 U	18.2	16.4	24.5 U	1.2 U
155	10/29/1999	188/197	sidewall	0.036 J	8180	11.5 U	62.3	0.57 U	16.8	9.7	22.9 U	1.1 U
157	10/29/1999	188/198	sidewall	0.026 J	9880	7.8 J	87.7	0.57 U	14.3	12.2	22.9 U	1.1 U
159	11/1/1999	199/198	sidewall	0.11 U	10300	11.1 U	46.6	0.55 U	13.3	8.7	22.2 U	1.1 U
161	11/1/1999	205/198	sidewall	0.0066 J	16200	4.4 J	68.5	0.58 U	20.3	14.2	23.4 U	1.2 U
163	11/1/1999	207/208	sidewall	0.017 J	14900	4.2 J	60.3	0.57 U	20.8	14.7	23 U	1.1 U
165	11/1/1999	211/235	sidewall	0.037 J	14900	12.2 U	93.2	0.61 U	18.2	17.5	24.3 U	1.2 U

TABLE H-2
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
METALS (mg/kg)

ANALYTE				Hg	Al	Ar	Ba	Cd	Cr	Pb	Se	Ag
IM Industrial Cleanup Goal				510	100000	2.4	100000	850	450	1000	8500	8500
IM Residential Cleanup Goal				23	77000	0.32	5300	38	210	400	380	380
MFB PES#	Sample Date	Grid #	Depth (in.)									
167	11/1/1999	210/235	sidewall	0.036 J	12100	4.2 J	146	0.65 U	25.7	12.9	25.9 U	1.3 U
169	11/1/1999	210/247	sidewall	0.036 J	13300	6.8 J	142	0.64 U	23.1	18.8	25.5 U	1.3 U
171	11/1/1999	210/169	sidewall	0.052 J	16300	12.2 U	91.2	0.61 U	19.8	16.8	24.4 U	1.2 U
173	11/1/1999	168/169	sidewall	0.019 J	11800	11.5 U	71.8	0.57 U	16.7	15.3	23 U	1.1 U
175	11/2/1999	141/169	sidewall	0.048 J	14600	12.1 U	105	0.61 U	20.5	31	24.2 U	1.2 U
177	11/2/1999	141/147	sidewall	0.042 J	15000	3.7 J	83.2	0.56 U	20.3	22.8	22.3 U	1.1 U
179	11/2/1999	54/147	sidewall	0.011 J	11500	11.8 U	106	0.59 U	15.1	17.8	23.6 U	1.2 U
181	11/2/1999	54/53	sidewall	0.19	15000	9.1 J	80.5	0.52 U	21.9	20.8	21 U	1 U
183	11/2/1999	32	0-6	0.021 J	12900	4.9 J	44.5	0.62 U	18.2	15.1	24.9 U	1.2 U
185	11/2/1999	31	0-6	0.013 J	10400	9.7 J	35.3	0.6 U	23.2	21.7	24.1 U	1.2 U
187	11/8/1999	30	0-6	0.032 J	12400	5.9 J	90.9	0.61 U	16.7	15.4	24.6 U	1.2 U
189	11/8/1999	29	0-6	0.028 J	12300	5.5 J	95.6	0.62 U	17.8	17.2	24.6 U	1.2 U
191	11/8/1999	38	0-6	0.013 J	9760	8.7 J	42	0.58 U	20	17.5	23.3 U	1.2 U
193	11/8/1999	28	0-6	0.028 J	10900	12.2 U	59.4	0.61 U	14.3	19.2	24.4 U	1.2 U
195	11/8/1999	37	0-6	0.021 J	4310	20.4	10.5	0.6 U	7.2	7.9	24 U	1.2 U
197	11/8/1999	36	0-6	0.044 J	9360	6.9 J	46.9	0.57 U	15.6	13	22.9 U	1.1 U
199	11/8/1999	35	0-6	0.12 U	10100	9.9 J	89	0.59 U	34	28.1	23.5 U	1.2 U
201	11/8/1999	25	0-6	0.027 J	12500	8.7 J	96.6	0.61 U	16.9	15.7	24.4 U	1.2 U
203	11/8/1999	28/27	sidewall	0.12 U	11100	12.1 U	81.2	0.61 U	20.1	15.3	24.3 U	1.2 U
205	11/8/1999	37/201	sidewall	0.019 J	9970	10.6 J	65.3	0.6 U	25.5	13.3	23.9 U	1.2 U
207	11/8/1999	36/202	sidewall	0.023 J	10900	11.9 U	84.1	0.6 U	16.7	17.5	23.9 U	1.2 U
209	11/8/1999	36/27	sidewall	0.022 J	11200	30.5	69.2	0.6 U	50.9	25.4	24 U	1.2 U
211	11/9/1999	207/209	sidewall	0.021 J	13200	12.5 U	158	0.62 U	17.5	12.1	25 U	1.2 U
214	11/9/1999	262	0-6	0.017 J	14600	12.4 U	184	0.62 U	17.9	13.3	24.8 U	1.2 U
216	11/9/1999	251/264	sidewall	0.015 J	7900	11.6 U	42.4	0.58 U	14.7	13.1	23.3 U	1.2 U
218	11/9/1999	35/203	sidewall	0.041 J	9810	4.3 J	83.1	0.59 U	16.5	12.3	23.6 U	1.2 U
220	11/9/1999	35/26	sidewall	0.032 J	10500	11.6 J	84.9	0.59 U	38.8	20.9	23.7 U	1.2 U
222	11/9/1999	35/214	sidewall	0.022 J	11200	5.9 J	83.1	0.68 U	14.7	15.4	27.3 U	1.4 U
224	11/9/1999	32/33	sidewall	0.039 J	12900	10.1 J	65.4	0.57 U	17.8	13.3	22.9 U	1.1 U
226	11/9/1999	32/240	sidewall	0.036 J	13200	9.8 J	67.9	0.57 U	19.1	15.4	22.8 U	1.1 U
228	11/9/1999	31/241	sidewall	0.032 J	11700	5.2 J	63.5	0.57 U	16.5	11.4	23 U	1.1 U
230	11/9/1999	38/140	sidewall	0.04 J	12200	12.1 U	121	0.61 U	14.8	20.8	24.2 U	1.2 U
232	11/9/1999	38/39	sidewall	0.04 J	12800	12 U	126	0.6 U	16.7	21.1	23.9 U	1.2 U
234	11/9/1999	29/39	sidewall	0.035 J	11800	4.8 J	121	0.6 U	14.9	19.5	23.9 U	1.2 U
236	1/8/2000	107	0-6	0.042 J	18200	5.3 J	95.9	0.62 U	21.4	16.1	24.8 U	1.2 U
238	1/19/2000	231	0-6	0.13	11900	12.1 U	91.2	0.61 U	14.9	25.5	24.2 U	1.2 U
240	1/19/2000	181	0-6	0.044 J	13900	3.9 J	80.6	0.61 U	16.3	15.9	24.4 U	1.2 U
242	1/19/2000	220	0-6	0.075 J	11700	5.5 J	63.7	0.6 U	15.3	16.1	23.8 U	1.2 U
244	1/19/2000	121	0-6	0.12	15100	11.8 U	77.1	0.59 U	19.1	21.5	23.5 U	1.2 U
246	1/25/2000	177	0-6	0.032 J	13200	12.8 U	65.4	0.64 U	17.7	19.3	25.6 U	1.3 U
248	1/25/2000	181/231	sidewall	0.036 J	17500	12.5 U	125	0.62 U	22.2	19.2	24.9 U	1.2 U
250	1/25/2000	181/220	sidewall	0.48	14400	10.6 U	95.5	0.53 U	16.6	22.9	21.3 U	1.1 U
252	1/25/2000	181/121	sidewall	3.6	10200	6.5 J	60.9	0.56 U	13.7	19.3	22.3 U	1.1 U
254	1/26/2000	220/221	sidewall	0.049 J	14700	12 J	128	0.62 U	19.6	20.6	24.6 U	1.2 U
256	1/26/2000	121/221	sidewall	0.32	15300	7.5 J	136	0.61 U	18.7	17.6	24.4 U	1.2 U
258	1/26/2000	177/176	sidewall	0.26	15200	7.2 J	131	0.62 U	19.3	16.5	24.7 U	1.2 U
260	1/27/2000	177/219	sidewall	0.21	11400	5.6 J	64.2	0.62 U	16.3	12.4	24.8 U	1.2 U
262	2/17/2000	177/219	sidewall	0 J	11800	12 U	54	1 U	16	12	24 U	1 U
264	2/17/2000	120	0-6	0 U	12700	14 U	63	1 U	18	9	27 U	1 U
266	2/17/2000	102	0-6	0 J	12900	12 U	76	1 U	22	18	24 U	1 U
268	2/17/2000	113	0-6	0 J	13400	12 U	56	1 U	22	15	24 U	1 U
270	3/1/2000	225	0-6	0.031 J	14100	12.1 U	58.7	0.61 U	19.5	15.9	24.3 U	1.2 U
272	3/1/2000	225/224	sidewall	0.016 J	14500	12.3 U	64.5	0.62 U	17.3	18.2	24.6 U	1.2 U
274	3/1/2000	225/242	sidewall	0.033 J	15100	7.8 J	63	0.63 U	20	14.6	25.1 U	1.3 U
276	3/1/2000	226	0-6	0.049 J	13800	12 U	67.4	0.6 U	16.5	16.6	24.1 U	1.2 U
278	3/1/2000	226/243	sidewall	0.023 J	16300	12.3 U	86.2	0.62 U	20.7	17.5	24.7 U	1.2 U
280	3/1/2000	106	0-6	0.12 U	11900	9.1 J	44.3	0.59 U	32	19.4	23.5 U	1.2 U
282	3/1/2000	118	0-6	0.12 U	10500	4.1 J	38.7	0.58 U	12.9	11.7	23 U	1.2 U
284	3/1/2000	118/223	sidewall	0.0066 J	11300	11.2 U	42.1	0.56 U	11.9	9.7	22.5 U	1.1 U
286	3/1/2000	118/216	sidewall	0.12 U	13200	11.6 U	52.8	0.58 U	13.8	8.1	23.2 U	1.2 U
288	3/2/2000	215	0-6	0.01 J	20500	4.9 J	59.6	0.63 U	22.2	14.4	25.4 U	1.3 U
290	3/2/2000	215/216	sidewall	0.007 J	17200	12.7 U	47.2	0.63 U	17.7	16.4	25.4 U	1.3 U
292	3/2/2000	246	0-6	0.07 J	21000	12 U	62.3	0.6 U	22.7	15.3	24 U	1.2 U
294	3/2/2000	246/253	sidewall	0.12 U	8540	11.5 U	28.8	0.58 U	22.3	35.8	23.1 U	1.2 U
296	3/2/2000	246/252	sidewall	0.006 J	9570	4 J	32.3	0.57 U	13.2	11	22.7 U	1.1 U
298	3/2/2000	118/224	sidewall	0.077 J	15400	11.8 U	86.1	0.59 U	19.5	16.5	23.7 U	1.2 U
300	3/7/2000	231/road	sidewall	0.041 J	19700	8.4 J	117	0.61 U	21.4	18	24.2 U	1.2 U
302	3/7/2000	231/273	sidewall	0.063 J	14300	11.7 U	81.1	0.59 U	17.4	18.1	23.4 U	1.2 U
304	3/7/2000	220/273	sidewall	0.027 J	16000	6.7 J	67.7	0.57 U	18	11.1	22.9 U	1.1 U
306	3/7/2000	120/238	sidewall	0.0097 J	19100	13.4	86.2	0.62 U	25.8	16.7	24.8 U	1.2 U
308	3/7/2000	120/176	sidewall	0.045 J	20700	6.8 J	97.4	0.63 U	24.1	10.2	25.3 U	1.3 U
310	3/7/2000	113/112	sidewall	0.039 J	16400	12.2	84	0.58 U	20.6	20.8	23.4 U	1.2 U
312	3/7/2000	113/179	sidewall	0.043 J	15300	9.4 J	90.9	0.6 U	20.9	22.5	24.1 U	1.2 U
314	3/7/2000	113/180	sidewall	0.041 J	16800	12 U	119	0.6 U	20.9	19.7	24 U	1.2 U
316	3/8/2000	103	0-6	0.045 J	13400	8.4 J	80.6	0.59 U	19.4	14.3	23.6 U	1.2 U
318	3/8/2000	115	0-6	0.019 J	10200	11.4 U	52.4	0.57 U	13.5	25.2	22.8 U	1.1 U
320	3/8/2000	115/182	sidewall	0.028 J	11200	11.6 U	44.5	0.58 U	14.1	12.3	23.1 U	1.2 U
322	3/8/2000	115/183	sidewall	0.024 J	14900	5.1 J	47.9	0.58 U	18.9	7.9	23.4 U	1.2 U
324	3/8/2000	115/229	sidewall	0.12 U	14300	11.7 U	57.6	0.58 U	16.2	12.7	23.4 U	1.2 U
326	3/8/2000	228	0-6	0.03 J	10400	11.7 U	127	0.58 U	14.5	17.7	23.4 U	1.2 U
328	3/8/2000	228/229	sidewall	0.0065 J	8970	11.6 U	44.1	0.58 U	10	11.3	23.1 U	1.2 U
330	3/8/2000	228/245	sidewall	0.12	13100	5 J	97.5	0.58 U	14.1	16.1	9.1 J	1.2 U
332	3/8/2000	227	0-6	0.021 J	10800	11.6 U	59.4	0.58 U	15.1	12.4	23.2 U	1.2 U

TABLE H-2
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
METALS (mg/kg)

ANALYTE				Hg	Al	Ar	Ba	Cd	Cr	Pb	Se	Ag
IM Industrial Cleanup Goal				510	100000	2.4	100000	850	450	1000	8500	8500
IM Residential Cleanup Goal				23	77000	0.32	5300	38	210	400	380	380
MFB PES#	Sample Date	Grid #	Depth (in.)									
334	3/8/2000	244	0-6	0.043 J	12300	11.9 U	71.9	0.59 U	16.1	12.2	23.7 U	1.2 U
336	3/8/2000	244/243	sidewall	0.026 J	13700	5.9 J	73.4	0.61 U	18.7	13.5	24.4 U	1.2 U
338	3/10/2000	256	0-6	0.047 J	17500	5.3 J	81.3	0.58 U	25.8	16.8	23.4 U	1.2 U
340	3/10/2000	256/257	sidewall	0.035 J	15300	7.4 J	314	0.6 U	19.8	25.8	12.4 J	1.2 U
342	3/10/2000	256/271	sidewall	0.02 J	19600	8.6 J	90	0.62 U	26.4	15.8	24.7 U	1.2 U
344	3/10/2000	256/269	sidewall	0.069 J	11300	5 J	48.7	0.6 U	17.2	11.9	10.1 J	1.2 U
346	3/28/2000	105	0-6	metals analysis not requested in this sample								
347	5/18/2000	276	0-6	0.068 J	20000	14.8	71.8	0.62 U	28.1	20.1	10.7 J	1.2 U
349	6/1/2000	128	0-6	0.03 B	14400	3.8 B	67	0.58 U	17.5	15.7	23 U	1.2 U
351	6/1/2000	128/127	sidewall	0.019 B	14300	5.3 B	69.4	0.61 U	20.6	13.7	24.4 U	1.2 U
353	6/1/2000	138	0-6	0.018 B	13700	10.9 B	71.4	0.58 U	16.4	18.3	23.1 U	1.2 U
355	6/1/2000	138/127	sidewall	0.032 B	15500	10.2 B	71.9	0.6 U	20	17.3	24 U	1.2 U
357	6/1/2000	138/239	sidewall	0.037 B	58500	11 B	73.5	0.65 U	36.3	27.8	25.8 U	1.3 U
359	6/1/2000	138/173	sidewall	0.02 B	13100	6.5 B	94.5	0.6 U	16.2	18.7	23.9 U	1.2 U
361	6/1/2000	137	0-6	0.051 B	12100	11.3 U	52.5	0.56 U	12.2	19.1	22.6 U	1.1 U
363	6/1/2000	137/258	sidewall	0.017 B	7510	6.8 B	60.7	0.58 U	14.6	19.5	23.4 U	1.2 U
365	6/1/2000	137/260	sidewall	0.009 B	10700	11.9 U	43.8	0.6 U	11.6	14.3	23.8 U	1.2 U
367	6/1/2000	137/239	sidewall	0.0093 B	12500	11.8 U	40.6	0.59 U	11	12.6	23.7 U	1.2 U
369	6/1/2000	137/127	sidewall	0.035 B	13900	8.4 B	75	0.58 U	30.8	17.2	23.4 U	1.2 U
371	6/2/2000	122	0-6	0.024 J	16500	4.7 J	66	0.6 U	21.1	13.4	24.1 U	1.2 U
373	6/2/2000	123	0-6	0.018 J	16500	9.7 J	85	0.6 U	22.1	18.8	23.9 U	1.2 U
375	6/2/2000	124	0-6	0.03 J	15100	7.4 J	61.2	0.58 U	17.8	14.4	23.3 U	1.2 U
377	6/2/2000	131	0-6	0.026 J	14900	13	81.4	0.59 U	22.2	20.5	23.7 U	1.2 U
379	6/2/2000	131/175	sidewall	0.028 J	15700	9 J	67.6	0.59 U	24.7	17.5	9.3 J	1.2 U
381	6/2/2000	131/174	sidewall	0.03 J	20900	11.1 J	69.7	0.6 U	15.1	16.8	24 U	1.2 U
383	6/2/2000	131/130	sidewall	0.02 J	15000	4.1 J	79.8	0.58 U	20.4	19.3	23.1 U	1.2 U
385	6/2/2000	122/129	sidewall	0.037 J	11100	7.4 J	94.7	0.6 U	16	18.2	24.1 U	1.2 U
387	7/18/2000	217	0-6	2.9 A	15000	4.4 J	101	0.58 U	17.5	34.6	23.1 U	1.2 U
389	7/18/2000	217/233	sidewall	0.0069 J	9350	3.8 J	88	0.58 U	17.3	22.2	23.3 U	1.2 U
391	7/18/2000	217/133	sidewall	0.99	25800	5.1 J	103	0.6 U	15.1	24.9	24.1 U	1.2 U
393	7/18/2000	185	0-6	0.05 J	9940	5.4 J	60.2	0.75	18	17	22.9 U	1.1 U
395	7/18/2000	185/184	sidewall	0.023 J	16900	11.5 J	81.1	0.58 U	17.7	25.5	23.2 U	1.2 U
397	7/18/2000	134	0-6	0.015 J	9920	11.5 U	54	0.58 U	23.5	13.2	23.1 U	1.2 U
399	7/18/2000	134/184	sidewall	0.014 J	13000	13.6 U	69.2	0.68 U	18	16.2	27.2 U	1.4 U
401	7/18/2000	134/135	sidewall	0.033 J	15400	7.3 J	85.6	0.63 U	17.3	18.2	25.3 U	1.3 U
403	7/18/2000	134/133	sidewall	0.019 J	13600	4.8 J	56.9	0.59 U	18.4	13.2	23.7 U	1.2 U
405	7/18/2000	126	0-6	0.044 J	15300	6 J	86.8	0.63 U	18.5	14.2	25.4 U	1.3 U
407	7/18/2000	136	0-6	0.49	12700	4.2 J	50.3	0.61 U	15	20.1	24.3 U	1.2 U
409	7/18/2000	136/135	sidewall	0.13	6300	4.3 J	137	0.57 U	18.9	11.5	22.8 U	1.1 U
411	7/18/2000	178	0-6	1 A	19400	11.6 U	73.6	0.58 U	13.9	28	23.1 U	1.2 U
413	8/28/2000	89	0-6	0.011 J	15400	12.3 U	95.5	0.61 U	17.1	12.6	24.5 U	1.2 U
415	8/28/2000	144	0-6	0.018 J	17800	11.8 U	190	0.59 U	20	12.1	23.6 U	1.2 U
417	8/28/2000	68	0-6	0.0064 J	17100	12.1 U	109	0.6 U	21.2	12.9	24.2 U	1.2 U
419	8/28/2000	88	0-6	0.012 J	9500	11.7 U	53.9	0.59 U	9.7	15.2	23.4 U	1.2 U
421	8/28/2000	69	0-6	0.12 U	10800	11.5 U	53.2	0.58 U	20	21.3	23 U	1.2 U
423	8/28/2000	69	sidewall	0.014 J	13600	11.8 U	55.9	0.59 U	19.4	9.3	23.6 U	1.2 U
425	8/28/2000	71	0-6	0.018 J	11600	12.1 U	65.5	0.61 U	14.4	12.2	24.2 U	1.2 U
427	8/28/2000	70	0-6	0.03 J	12100	12.1 U	84.9	0.61 U	16.8	17.6	24.3 U	1.2 U
429	8/28/2000	70	sidewall	0.03 J	12200	11.7 U	63.6	0.58 U	15.7	13.9	23.4 U	1.2 U
431	8/29/2001	74	0-6	0.049 U	12000	5.5	65.6	0.25 U	19.8	9.4	0.62 U	0.62 U
433	8/29/2001	73	0-6	0.03 J	19400	7.2	91.9	0.24 U	22.3	14.8	0.51 J	0.6 U
435	8/29/2001	72	0-6	0.027 J	16100	7.5	72.8	0.23 U	20.9	13.6	0.6	0.59 U
437	8/29/2001	159	0-6	0.0063 J	13800	3.9	58.6	0.23 U	15.4	12.5	0.57 U	0.57 U
439	8/29/2001	160	0-6	0.0096 J	11600	4.6	62.2	0.23 U	13	17	0.51 J	0.57 U
441	9/17/2001	90	0-6	0.03 B	10100	4	65.5	0.25 B	13.3	17.7	2.9	0.2 U
443	9/17/2001	148	0-6	0.02 B	14300	4.7	98.7	0.12 U	18.7	17.1	3.8	0.2 U
445	9/17/2001	152	0-6	0.02 B	10300	3.2	157	0.14 B	14	23.3	3.1	0.19 U
447	9/17/2001	158	0-6	0.03 B	11100	3.7	94.1	0.12 U	17.6	18	7.4	0.2 U
449	9/17/2001	157	0-6	0.02 B	13000	5.5	72	0.13 U	15.4	13.2	3.5	0.21 U
451	9/17/2001	156	0-6	0.02 B	13700	4.5	123	0.13 U	15.8	14.8	4.6	0.22 U
453	9/26/2001	85	0-6	0.02 B	11100	5.4	83.6	0.16 U	14.7	11.5	2.1	0.16 U
455	9/26/2001	86	0-6	0.05	12000	5.5	92.7	0.16 U	16.6	13.6	2.2	0.16 U
457	9/26/2001	87	0-6	0.02 U	11000	3.9	70	0.15 U	14.2	13.4	2	0.15 U
459	9/26/2001	92	0-6	0.02 U	8410	3.1	55.1	0.15 U	12.9	10.4	2.2	0.15 U
461	9/26/2001	91	0-6	0.03 B	11200	4.1	85.4	0.14 U	12.7	13.6	2	0.14 U
463	9/26/2001	150	0-6	0.04	11300	2.7	50.9	0.15 U	12.1	10.9	2.2	0.15 U
465	9/26/2001	149	0-6	0.02 U	7710	1.2	38.6	0.14 U	8.9	10.6	2.2	0.14 U
467	9/26/2001	151	0-6	0.02 U	12600	2.2	125	0.15 U	15.2	12.7	3.4	0.15 U
469	9/26/2001	155	0-6	0.02 B	12200	2.3	106	0.16 U	22.4	16.4	7.5	0.16 U
471	9/26/2001	162	0-6	0.02 U	12500	1.7	86.8	0.15 U	13.3	11.3	2.9	0.15 U
473	9/26/2001	161	0-6	0.03 B	10600	0.71 B	98.2	0.15 U	15.1	10.9	3.4	0.15 U
475	9/26/2001	162	sidewall	0.02 B	7450	4.6	29.6	0.16 U	10.3	13.4	2.1	0.16 U
476	9/26/2001	155	sidewall	0.03 B	18200	2.8	45.4	0.5 B	13.5	59.4	0.77 B	0.14 U
477	9/26/2001	151	sidewall	0.02 B	8250	3.6	44.8	0.14 U	10.5	9.6	1.5 B	0.14 U
478	9/26/2001	150	sidewall	0.02 B	5440	3.2	40.3	0.14 U	10.7	7	0.81 B	0.14 U
479	9/26/2001	92	sidewall	0.03 B	4430	2.4	25.6	0.49 B	7.4	30.2	0.59 B	0.17 U
480	9/26/2001	74	sidewall	0.06	15200	9.1	80.4	0.16 U	18.3	14.6	1.8 B	0.16 U

U - non-detect

J - an estimate valune, the result is less than the quantitation limit but greater than zero

B - indicates the compound was found in the associated blank as well as in the sample

TABLE H-3
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (mg/kg)

ANALYTE				Acetone	MEK	Meth.Chl.	MIBK	Toluene	Xylenes	Qualifiers		
IM Industrial Cleanup Goal				8800	27000	18	2800	880	320			
IM Residential Cleanup Goal				2000	7100	7.8	770	790	320			
MFB PES#	Sample Date	Grid #	Depth (in.)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		Sample Prep Date	Sample Analysis Date
002	8/23/1999	76	6	0.02 J,B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
004	8/23/1999	75	6	0.085 B	0.017 B	0.0057 U	0.0057 U	0.0057 U	0.0057 U			
006	8/23/1999	77	6	0.052 B	0.012 B	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
008	8/23/1999	84	6	0.013 J,B	0.011 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U			
010	8/23/1999	78	6	0.049 B	0.0087 J,B	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
012	8/23/1999	79	6	0.055 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
014	9/2/1999	63	6	0.0218 U	0.0109 U	0.00545 U	0.00545 U	0.00545 U	0.00545 U			
016	9/2/1999	64	6	0.0213 U	0.0107 U	0.00533 U	0.00533 U	0.00533 U	0.00533 U			
018	9/2/1999	65	6	0.0199 J	0.0122 U	0.00609 U	0.00609 U	0.00609 U	0.00609 U			
020	9/2/1999	83	6	0.0248 U	0.0124 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U			
022	9/3/1999	58	6	0.0514	0.012 U	0.00598 U	0.00598 U	0.00598 U	0.00598 U			
024	9/3/1999	59	6	0.0228 J	0.0116 U	0.00579 U	0.00579 U	0.00579 U	0.00579 U			
026	9/3/1999	60	6	0.0309	0.0116 U	0.00581 U	0.00581 U	0.00581 U	0.00581 U			
028	9/3/1999	61	6	0.0241 U	0.012 U	0.00602 U	0.00602 U	0.00602 U	0.00602 U			
030	9/3/1999	79	6	0.0233 J	0.0122 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
032	9/3/1999	80	6	0.0219 J	0.0123 U	0.00614 U	0.00614 U	0.00614 U	0.00614 U			
034	9/20/1999	200	6	0.014 J,B	0.012 B	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
036	9/20/1999	199	6	0.011 J,B	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U			
038	9/20/1999	167	6	0.0071 J,B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
040	9/20/1999	164	6	0.011 J,B	0.0061 JB	0.0056 U	0.0056 U	0.0056 U	0.0056 U			
042	9/20/1999	186	6	0.032 B	0.012 B	0.0056 U	0.0056 U	0.0056 U	0.0056 U			
044	9/20/1999	143	6	0.012 JB	0.0077 JB	0.0056 U	0.0056 U	0.0056 U	0.0056 U			
046	9/20/1999	187	6	0.016 JB	0.0099 JB	0.0065 U	0.0065 U	0.0065 U	0.0065 U			
048	9/21/1999	189	6	0.0095 JB	0.011 U	0.0057 U	0.0057 U	0.0057 U	0.0057 U	J*	+	9/24/1999
050	9/21/1999	166	6	15 B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U	J*	+	9/25/1999
052	9/21/1999	165	6	0.021 JB	0.011 JB	0.006 U	0.006 U	0.006 U	0.006 U			
054	9/21/1999	188	6	0.017 JB	0.014 B	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
056	9/21/1999	163	6	0.039 B	0.015 B	0.0054 U	0.0054 U	0.0054 U	0.0054 U			
058	9/21/1999	190	6	0.044 B	0.0087 JB	0.0056 U	0.0056 U	0.0056 U	0.0056 U			
060	9/21/1999	191	6	0.024 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U	J*	+	9/25/1999
062	9/21/1999	172	6	0.0094 JB	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U	J*	+	9/25/1999
064	9/21/1999	93	6	0.025 U	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U	J*	+	9/25/1999
066	9/21/1999	142	6	0.014 JB	0.011 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	J*	+	9/25/1999
068	9/21/1999	192	6	0.03 B	0.011 U	0.0055 U	0.0055 U	0.0055 U	0.0055 U	J*	+	9/25/1999
070	9/21/1999	193	6	0.016 JB	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U	J*	+	9/25/1999
072	9/21/1999	170	6	0.024 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U	J*	+	9/25/1999
074	9/21/1999	171	6	0.021 U	0.011 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	J*	+	9/25/1999
076	9/24/1999	80	6	0.02 JB	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
078	9/24/1999	83	6	0.043 B	0.012 U	0.0058 U	0.0058 U	0.0054 J	0.0058 U			
080	9/24/1999	79	6	0.032 B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
082	9/24/1999	81	6	0.022 JB	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
084	9/24/1999	82	6	0.015 JB	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
086	10/4/1999	28	6	0.013 JB	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
088	10/4/1999	27	6	0.035 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
090	10/4/1999	26	6	0.048 B	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U			
092	10/5/1999	168	6	0.018 JB	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
094	10/5/1999	204	6	0.058 B	0.013 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U			

TABLE H-3
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (mg/kg)

ANALYTE				Acetone	MEK	Meth.Chl.	MIBK	Toluene	Xylenes	Qualifiers		
IM Industrial Cleanup Goal				8800	27000	18	2800	880	320			
IM Residential Cleanup Goal				2000	7100	7.8	770	790	320			
MFB PES#	Sample Date	Grid #	Depth (in.)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		Sample Prep Date	Sample Analysis Date
096	10/14/1999	207	6	0.022 JB	0.012 U	0.006 U	0.006 U	0.0021 J	0.006 U			
098	10/14/1999	205	6	0.01 JB	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U			
100	10/14/1999	192	6	0.024 B	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
102	10/14/1999	193	6	0.028 B	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
104	10/15/1999	171	6	0.014 JB	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
106	10/15/1999	154	6	0.024 U	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
108	10/15/1999	146	6	0.061 B	0.013 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U			
110	10/15/1999	56	6	0.039 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
112	10/15/1999	66	6	0.018 JB	0.012 U	0.0062 U	0.0062 U	0.011	0.0064			
114	10/15/1999	67	6	0.018 JB	0.013 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U			
116	10/15/1999	145	6	0.031 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
118	10/15/1999	153	6	0.0245 U	0.0122 U	0.00612 U	0.00612 U	0.00612 U	0.00612 U	J*	10/19/1999	10/20/1999
120	10/15/1999	57	6	0.0475 B	0.0123 U	0.00616 U	0.00616 U	0.00616 U	0.00616 U	J*	10/19/1999	10/20/1999
122	10/16/1999	82	6	0.028 B	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U	J*	10/19/1999	10/23/1999
124	10/16/1999	210	6	0.12	0.013 U	0.0067 U	0.0067 U	0.0049 J	0.0062 J	J*	10/19/1999	10/27/1999
126	10/16/1999	139	6	0.044 B	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U	J*	10/19/1999	10/23/1999
128	10/16/1999	211	6	0.023 JB	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U	J*	10/19/1999	10/23/1999
130	10/19/1999	237	6	0.017 JB	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
132	10/19/1999	236	6	0.016 JB	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
134	10/22/1999	54	6	0.09	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
136	10/22/1999	55	6	0.028	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U			
138	10/26/1999	141	6	0.074	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
140	10/26/1999	251	6	0.076	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
142	10/26/1999	249	6	0.056	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
144	10/28/1999	186/194	sidewall	0.031 B	0.012 U	0.0021 J	0.0061 U	0.0024 J	0.0041 J			
146	10/28/1999	187/196	sidewall	0.021 JB	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
148	10/28/1999	249/250	sidewall	0.013 JB	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
150	10/28/1999	236/250	sidewall	0.04 B	0.011 U	0.0057 U	0.0057 U	0.0057 U	0.0057 U			
152	10/28/1999	251/235	sidewall	0.023 U	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U			
154	10/29/1999	187/197	sidewall	0.022 J	0.013 U	0.0019 J	0.0063 U	0.0014 J	0.0063 U			
156	10/29/1999	188/197	sidewall	0.062	0.013 U	0.0063 U	0.0063 U	0.001 J	1.3			
158	10/29/1999	188/198	sidewall	0.019 J	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
160	11/1/1999	199/198	sidewall	0.1 B	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U			
162	11/1/1999	205/198	sidewall	0.026	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
164	11/1/1999	207/208	sidewall	0.023 U	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
166	11/1/1999	211/235	sidewall	0.037	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
168	11/1/1999	210/235	sidewall	0.095 B	0.013 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U			
170	11/1/1999	210/247	sidewall	0.072	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U			
172	11/1/1999	210/169	sidewall	0.059	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
174	11/1/1999	168/169	sidewall	0.078	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
176	11/2/1999	141/169	sidewall	0.03 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
178	11/2/1999	141/147	sidewall	0.077 B	0.012 U	0.0014 J	0.0059 U	0.0059 U	0.0059 U			
180	11/2/1999	54/147	sidewall	0.04 B	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
182	11/2/1999	54/53	sidewall	0.037 B	0.013 U	0.0065 U	0.0065 U	0.0065 U	0.0065 U			
184	11/2/1999	32	6	0.021 JB	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
186	11/2/1999	31	6	0.032 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
188	11/8/1999	30	6	0.03 B	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U			

TABLE H-3
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (mg/kg)

ANALYTE				Acetone	MEK	Meth.Chl.	MIBK	Toluene	Xylenes	Qualifiers		
IM Industrial Cleanup Goal				8800	27000	18	2800	880	320			
IM Residential Cleanup Goal				2000	7100	7.8	770	790	320			
MFB PES#	Sample Date	Grid #	Depth (in.)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		Sample Prep Date	Sample Analysis Date
190	11/8/1999	29	6	0.059 B	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
192	11/8/1999	38	6	0.015 JB	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
194	11/8/1999	28	6	0.034 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
196	11/8/1999	37	6	0.04 B	0.016 U	0.008 U	0.008 U	0.008 U	0.008 U			
198	11/8/1999	36	6	0.091 B	0.015 U	0.0077 U	0.0077 U	0.0077 U	0.0077 U			
200	11/8/1999	35	6	0.13 B	0.016 U	0.008 U	0.008 U	0.008 U	0.008 U			
202	11/8/1999	25	6	0.043 B	0.011 U	0.0057 U	0.0057 U	0.0057 U	0.0057 U			
204	11/8/1999	28/27	sidewall	0.052 B	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U			
206	11/8/1999	37/201	sidewall	0.051 B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
208	11/8/1999	36/202	sidewall	0.038 B	0.014 U	0.0069 U	0.0069 U	0.0069 U	0.0069 U			
210	11/8/1999	36/27	sidewall	laboratory failed to report VOC data for this sample								
213	11/9/1999	207/209	sidewall	0.028 U	0.014 U	0.0069 U	0.0069 U	0.0069 U	0.0069 U			
215	11/9/1999	262	6	0.025 U	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
217	11/9/1999	251/264	sidewall	0.029 U	0.015 U	0.0073 U	0.0073 U	0.0073 U	0.0073 U			
219	11/9/1999	35/203	sidewall	0.096	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
221	11/9/1999	35/26	sidewall	0.024 U	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
223	11/9/1999	35/214	sidewall	0.024 U	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
225	11/9/1999	32/33	sidewall	0.085	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
227	11/9/1999	32/240	sidewall	0.1	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
229	11/9/1999	31/241	sidewall	0.14	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
231	11/9/1999	38/140	sidewall	0.085	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
233	11/9/1999	38/39	sidewall	0.098	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
235	11/9/1999	29/39	sidewall	0.18	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
237	1/18/2000	107	6	0.035	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
239	1/19/2000	231	6	0.0074 JB	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
241	1/19/2000	181	6	0.0065 JB	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
243	1/19/2000	220	6	0.014 JB	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
245	1/19/2000	121	6	0.014 JB	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
247	1/25/2000	177	6	0.018 JB	0.013 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	J*	1/28/2000	1/28/2000
249	1/25/2000	181/231	sidewall	0.026 B	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U	J*	1/28/2000	1/28/2000
251	1/25/2000	181/220	sidewall	0.045 B	0.014 U	0.0072 U	0.0072 U	0.0018 J	0.0017 J	J*	1/28/2000	1/31/2000
253	1/25/2000	181/121	sidewall	0.023 B	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U	J*	1/28/2000	1/31/2000
255	1/26/2000	220/221	sidewall	0.026 B	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
257	1/26/2000	121/221	sidewall	0.021 JB	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
259	1/26/2000	177/176	sidewall	0.019 JB	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
261	1/27/2000	177/219	sidewall	0.015 JB	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U			
263	2/17/2000	177/219	sidewall	0.0072 JB	0.014 U	0.0069 U	0.0069 U	0.0069 U	0.0069 U			
265	2/17/2000	120	6	0.025 U	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U			
267	2/17/2000	102	6	0.025 U	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U			
269	2/17/2000	113	6	0.0078 JB	0.013 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U			
271	3/1/2000	225	6	0.014 J	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
273	3/1/2000	225/224	sidewall	0.018 J	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U			
275	3/1/2000	225/242	sidewall	0.013 J	0.013 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U			
277	3/1/2000	226	6	0.012 J	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
279	3/1/2000	226/243	sidewall	0.012 J	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U			
281	3/1/2000	105	6	0.057	0.056	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
283	3/1/2000	118	6	0.012 J	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			

TABLE H-3
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (mg/kg)

ANALYTE				Acetone	MEK	Meth.Chl.	MIBK	Toluene	Xylenes	Qualifiers		
IM Industrial Cleanup Goal				8800	27000	18	2800	880	320			
IM Residential Cleanup Goal				2000	7100	7.8	770	790	320			
MFB PES#	Sample Date	Grid #	Depth (in.)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		Sample Prep Date	Sample Analysis Date
285	3/1/2000	118/223	sidewall	0.0078 J	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U			
287	3/1/2000	118/216	sidewall	0.011 J	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
289	3/2/2000	215	6	0.02 J	0.013 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U			
291	3/2/2000	215/216	sidewall	0.02 J	0.013 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U			
293	3/2/2000	246	6	0.019 J	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
295	3/2/2000	246/253	sidewall	0.015 J	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
297	3/2/2000	246/252	sidewall	0.022 J	0.011 U	0.0057 U	0.0057 U	0.0057 U	0.0057 U			
299	3/2/2000	118/224	sidewall	0.037	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
301	3/7/2000	231/road	sidewall	0.12 B	0.013 U	0.0066 U	0.0066 U	0.0016 J	0.0066 U			
303	3/7/2000	231/273	sidewall	0.024 U	0.012 U	0.0059 U	0.0059 U	0.0027 J	0.0059 U			
305	3/7/2000	220/273	sidewall	0.035 B	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U			
307	3/7/2000	120/238	sidewall	0.011 JB	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U			
309	3/7/2000	120/176	sidewall	0.0085 JB	0.012 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U			
311	3/7/2000	113/112	sidewall	0.051 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
313	3/7/2000	113/179	sidewall	0.042 B	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
315	3/7/2000	113/180	sidewall	0.079 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
317	3/8/2000	103	6	0.022 JB	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
319	3/8/2000	115	6	0.038 B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
321	3/8/2000	115/182	sidewall	0.012 JB	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
323	3/8/2000	115/183	sidewall	0.027 B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
325	3/8/2000	115/229	sidewall	0.017 JB	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
327	3/8/2000	228	0-6	0.011 JB	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
329	3/8/2000	228/229	sidewall	0.024 U	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
331	3/8/2000	228/245	sidewall	0.094 B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
333	3/8/2000	227	6	0.025 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
335	3/8/2000	244	6	0.15 B	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
337	3/8/2000	244/243	sidewall	0.064 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
339	3/10/2000	256	6	0.0087 J	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
341	3/10/2000	256/257	sidewall	0.037	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
343	3/10/2000	256/271	sidewall	0.01 J	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
345	3/10/2000	256/269	sidewall	0.011 J	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
348	5/18/2000	276	6	0.02 JB	0.0095 J	0.0062 U	0.0062 U	0.0062 U	0.0062 U	J*	+	5/23/2000
350	6/1/2000	128	6	0.14 B	0.0064 J	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
352	6/1/2000	128/127	sidewall	0.034 B	0.0084 J	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
354	6/1/2000	138	6	0.16 B	0.012	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
356	6/1/2000	138/127	sidewall	0.092 B	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
358	6/1/2000	138/239	sidewall	0.3 B	0.013 U	0.0065 U	0.0065 U	0.0065 U	0.0065 U			
360	6/1/2000	138/173	sidewall	0.042 B	0.01 J	0.006 U	0.006 U	0.0021 J	0.006 U			
362	6/1/2000	137	6	0.02 JB	0.011 U	0.0056 U	0.0056 U	0.0056 U	0.0056 U			
364	6/1/2000	137/258	sidewall	0.034 B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
366	6/1/2000	137/260	sidewall	0.019 JB	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
368	6/1/2000	137/239	sidewall	0.14 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
370	6/1/2000	137/127	sidewall	0.026 B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
372	6/2/2000	122	6	0.012 JB	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
374	6/2/2000	123	6	0.01 JB	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
376	6/2/2000	124	6	0.15 B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
378	6/2/2000	131	6	0.13 B	0.011 J	0.0059 U	0.0059 U	0.0059 U	0.0059 U			

TABLE H-3
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (mg/kg)

ANALYTE				Acetone	MEK	Meth.Chl.	MIBK	Toluene	Xylenes	Qualifiers		
IM Industrial Cleanup Goal				8800	27000	18	2800	880	320			
IM Residential Cleanup Goal				2000	7100	7.8	770	790	320			
MFB PES#	Sample Date	Grid #	Depth (in.)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		Sample Prep Date	Sample Analysis Date
380	6/2/2000	131/175	sidewall	0.024 B	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
382	6/2/2000	131/174	sidewall	0.058 B	0.0088 J	0.006 U	0.006 U	0.006 U	0.006 U			
384	6/2/2000	131/130	sidewall	0.028 B	0.006 J	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
386	6/2/2000	122/129	sidewall	0.11 B	0.02	0.006 U	0.006 U	0.006 U	0.006 U			
388	7/18/2000	217	6	0.19 B	0.011 J	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
390	7/18/2000	217/233	sidewall	0.063 B	0.0063 J	0.0058 U	0.0058 U	0.0014 J	0.0058 U			
392	7/18/2000	217/133	sidewall	0.083 B	0.014	0.006 U	0.006 U	0.006 U	0.006 U			
394	7/18/2000	185	6	0.017 JB	0.011 U	0.0057 U	0.0057 U	0.0057 U	0.0057 U			
396	7/18/2000	185/184	sidewall	0.042 B	0.0063 J	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
398	7/18/2000	134	6	0.029 B	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
400	7/18/2000	134/184	sidewall	0.06 B	0.007 J	0.0068 U	0.0068 U	0.0068 U	0.0068 U			
402	7/18/2000	134/135	sidewall	0.087 B	0.012 J	0.0063 U	0.0063 U	0.0063 U	0.0063 U			
404	7/18/2000	134/133	sidewall	0.037 B	0.015 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U			
406	7/18/2000	126	6	0.064 B	0.008 J	0.0063 U	0.0063 U	0.0063 U	0.0063 U			
408	7/18/2000	136	6	0.048 B	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
410	7/18/2000	136/135	sidewall	0.096 B	0.014 J	0.0082 U	0.0082 U	0.0082 U	0.0082 U			
412	7/18/2000	178	6	0.12 B	0.016 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U			
414	8/28/2000	89	6	0.018 JB	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
416	8/28/2000	144	6	0.009 JB	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
418	8/28/2000	68	6	0.011 JB	0.012 U	0.006 U	0.006 U	0.006 U	0.006 U			
420	8/28/2000	88	6	0.014 JB	0.012 U	0.0059 U	0.0059 U	0.0059 U	0.0059 U			
422	8/28/2000	69	6	0.012 JB	0.012 U	0.0058 U	0.0058 U	0.0058 U	0.0058 U			
424	8/28/2000	69	sidewall	0.32 B	0.059 U	0.029 U	0.029 U	0.029 U	0.029 U			
426	8/28/2000	71	6	0.019 JB	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
428	8/28/2000	70	6	0.014 JB	0.012 U	0.0061 U	0.0061 U	0.0061 U	0.0061 U			
430	8/28/2000	70	sidewall	0.26 B	0.058 U	0.029 U	0.029 U	0.029 U	0.029 U			
432	8/29/2001	74	6	0.01 JB	0.012 U	0.012 U	0.012 U	0.0062 U	0.0062 U			
434	8/29/2001	73	6	0.012 B	0.012 U	0.012 U	0.012 U	0.006 U	0.006 U			
436	8/29/2001	72	6	0.012 U	0.012 U	0.012 U	0.012 U	0.0059 U	0.0059 U			
438	8/29/2001	159	6	0.0059 JB	0.011 U	0.011 U	0.011 U	0.0057 U	0.0057 U			
440	8/29/2001	160	6	0.0065 JB	0.011 U	0.011 U	0.011 U	0.0057 U	0.0057 U			
442	9/17/2001	90	6	0.037	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U			
444	9/17/2001	148	6	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U			
446	9/17/2001	152	6	0.02	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U			
448	9/17/2001	158	6	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U			
450	9/17/2001	157	6	0.016	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U			
452	9/17/2001	156	6	0.069	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U			
454	9/26/2001	85	6	0.006	0.005 U	0.013 B	0.005 U	0.005 U	0.005 U			
456	9/26/2001	86	6	0.043	0.005 U	0.012 B	0.005 U	0.005 U	0.005 U			
458	9/26/2001	87	6	0.005 U	0.005 U	0.01 B	0.005 U	0.005 U	0.005 U			
460	9/26/2001	92	6	0.005 U	0.005 U	0.008 B	0.005 U	0.005 U	0.005 U			
462	9/26/2001	91	6	0.006 U	0.006 U	0.012 B	0.006 U	0.006 U	0.006 U			
464	9/26/2001	150	6	0.6DL U	0.005 U	0.011 B	0.005 U	0.005 U	0.005 U			
466	9/26/2001	149	6	0.006	0.005 U	0.012 B	0.005 U	0.005 U	0.005 U			
468	9/26/2001	151	6	0.005	0.005 U	0.011 B	0.005 U	0.005 U	0.005 U			
470	9/26/2001	155	6	0.007	0.005 U	0.01 B	0.005 U	0.005 U	0.005 U			
472	9/26/2001	162	6	0.005	0.005 U	0.009 B	0.005 U	0.005 U	0.81DL U			

TABLE H-3
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (mg/kg)

ANALYTE				Acetone	MEK	Meth.Chl.	MIBK	Toluene	Xylenes	Qualifiers		
IM Industrial Cleanup Goal				8800	27000	18	2800	880	320			
IM Residential Cleanup Goal				2000	7100	7.8	770	790	320			
MFB PES#	Sample Date	Grid #	Depth (in.)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		Sample Prep Date	Sample Analysis Date
474	9/26/2001	161	6	0.006 U	0.006 U	0.011 B	0.006 U	0.006 U	0.012			
475	9/26/2001	162	sidewall	0.005	0.005 U	0.01 B	0.005 U	0.005 U	0.001 J			
476	9/26/2001	155	sidewall	0.004 U	0.004 U	0.013 B	0.004 U	0.001 J	0.004 U			
477	9/26/2001	151	sidewall	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U			
478	9/26/2001	150	sidewall	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U			
479	9/26/2001	92	sidewall	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U			
480	9/26/2001	74	sidewall	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U			

NOTE: samples flagged with a "J*" were analyzed outside the EPA extended 54-hour hold time and are considered to be reported with a "low bias". Actual sample prep dates and sample analysis dates are provided for referencee.

+ - sample prep dates not available

TABLE H-4
MINE FILL B POST-EXCAVATION SAMPLE RESULTS
PCB's (ug/kg)

ANALYTE				Aroclor 1242	Aroclor 1254	Aroclor 1260
IM Industrial Cleanup Goal				340	19,000	340
IM Residential Cleanup Goal				66	66	66
MFB PES#	Sample Date	Grid #	Depth (in.)			
361	6/1/2000	137	0-6	0.37	0.37	0.37

TABLE H-5
MINE FILL B POST-EXCAVATION SAMPLING
TRIP BLANK RESULTS (ug/L)

ANALYTE		ACETONE	MEK	METH. CHL.	MIBK	TOLUENE	XYLENES
Sample ID	Sample Date						
MFBTB082399	8/23/99	16 B	2 U	1 U	2 U	1 U	1 U
MFBTB090299	9/2/99	3.15 B	2 U	1 U	2 U	1 U	0.242 J
MFBTB090399	9/3/99	4.01 B	2 U	1 U	2 U	1 U	0.227 J
MFBTB092099	9/20/99	7.8	2 U	1 U	2 U	1 U	0.15 J
MFBTB092199	9/21/99	7.2	1 U	1 U	2 U	2 U	0.17 J
MFBTB100499	10/4/99	8.6	2 U	1 U	2 U	1 U	1 U
MFBTB100599	10/5/99	5.6	2 U	1 U	2 U	1 U	1 U
MFBTB101499	10/14/99	8.4	2 U	1 U	2 U	1 U	1 U
MFBTB101599	10/15/99	5.9	2 U	1 U	2 U	1 U	1 U
MFBTB101599A	10/15/99	7.14	2 U	1 U	2 U	1 U	1 U
MFBTB101999	10/19/99	5.7 B	2 U	1 U	2 U	1 U	1 U
MFBTB102299	10/22/99	6.7	2 U	1 U	2 U	1 U	1 U
MFBTB102899	10/28/99	5.6	2 U	1 U	2 U	1 U	1 U
MFBTB102999	10/29/99	11	2 U	1 U	2 U	1 U	1 U
MFBTB110199	11/1/99	9	2 U	1 U	2 U	1 U	1 U
MFBTB110299	11/2/99	90* E	2 U	1 U	2 U	1 U	1 U
MFBTB110899	11/8/99	37	2 U	1 U	2 U	1 U	1 U
MFBTB110999	11/9/99	18	2 U	1 U	2 U	1 U	1 U
MFBTB011800	1/18/00	49	4 U	2 U	4 U	2 U	2 U
MFBTB011900	1/19/00	39	4 U	2 U	4 U	2 U	2 U
MFBTB012700	1/27/00	41	2 U	0.42 J	2 U	1 U	1 U
MFBTB021700	2/17/00	10	2 U	1 U	2 U	1 U	1 U
MFBTB030200	3/1/00	21 B	2 U	1 U	2 U	1 U	1 U
MFBTB030700	3/7/00	12	2 U	1 U	2 U	1 U	1 U
MFBTB030800	3/8/00	20 B	2 U	1 U	2 U	1 U	1 U
MFBTB031000	3/10/00	13 B	2 U	1 U	2 U	1 U	1 U
MFBTB060100	6/1/00	6.9	2 U	1 U	2 U	1 U	1 U
MFBTB060200	6/2/00	9.6	2 U	1 U	2 U	1 U	1 U
MFBTB071800	7/18/00	5.8	2 U	1 U	2 U	1 U	1 U
MFBTB082800	8/28/00	39 B	2 U	1 U	2 U	1 U	1 U
MFBTB082901	8/29/01	83 B	10 U	5 U	10 U	5 U	5 U
MFBTB092601	9/26/01	140	5 U	5 U	5 U	5 U	5 U

* Lab reanalyzed and reported 5 ug/L at a 5X dilution, however Form I reported first analysis.
There was significant headspace in the trip blank which may have attributed to the acetone dissipating, which in turn resulted in the large difference between the sample results.

TABLE H-6
MINE FILL B POST-EXCAVATION SAMPLING
RINSE BLANK RESULTS
EXPLOSIVES (mg/L)

ANALYTE		135TNB	13DNB	246TNT	24DNT	26DNT	2A46DT	2NT	3NT	4A26DT	4NT	HMX	NB	PETN	RDX	TETRYL
Sample ID	Sample Date															
MFBRB101599	10/15/1999	0.0003 U	0.0001 U	0.0001 U	0.0001 U	0.0003 U	0.0001 U	0.001 U	0.001 U	0.0001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.001 U
MFBRB102899	10/28/1999	0.0003 U	0.0001 U	0.0001 U	0.0001 U	0.0003 U	0.0001 U	0.001 U	0.001 U	0.0001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.001 U
MFBRB012600	1/26/2000	0.0003 U	0.0001 U	0.0001 U	0.0001 U	0.0003 U	0.0001 U	0.001 U	0.001 U	0.0001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.001 U
MFBRB030700	3/7/2000	0.0003 U	0.0001 U	0.0001 U	0.0001 U	0.0003 U	0.0001 U	0.001 U	0.001 U	0.0001 U	0.001 U	0.0001 J	0.001 U	0.001 U	0.0008 U	0.001 U
MFBRB071800	7/18/2000	0.0003 U	0.0001 U	0.0001 U	0.0001 U	0.0003 U	0.0001 U	0.001 U	0.001 U	0.0001 U	0.001 U	0.0001 J	0.001 U	0.001 U	0.0008 U	0.001 U
MFBRB082901	8/29/2001	0.0023 J	0.0001 U	0.0001 U	0.0001 U	0.0003 U	0.0001 U	0.001 U	0.001 U	0.0001 U	0.001 U	0.0001 J	0.001 U	0.001 U	0.0008 U	0.001 U
MFBRB092601	9/26/2001	0.0065 U	0.0065 U	0.0065 U	0.0065 U	0.0065 U	0.0065 U	0.0065	0.0065 U	0.0065 U	0.0065	0.0065 U	0.0065 U	0.0065 U	0.0065 U	0.0065 U

TABLE H-7
MINE FILL B POST-EXCAVATION SAMPLING
RINSE BLANK RESULTS (mg/L)
METALS

ANALYTE		MERCURY	ALUMINUM	ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	SELENIUM	SILVER
Sample ID	Sample Date									
MFBRB101599	10/15/99	0.0002 U	0.2 U	0.052 J	0.0015 J	0.005 U	0.01 U	0.1 U	0.25 U	0.01 U
MFBRB102899	10/28/99	0.0002 U	0.2 U	0.3 U	0.2 U	0.005 U	0.01 U	0.1 U	0.25 U	0.01 U
MFBRB012600	1/26/00	0.000054 J	0.2 U	0.3 U	0.2 U	0.005 U	0.01 U	0.1 U	0.25 U	0.01 U
MFBRB030700	3/7/00	0.0002 U	0.2 U	0.3 U	0.0012 J	0.005 U	0.01 U	0.1 U	0.25 U	0.01 U
MFBRB071800	7/18/00	0.0002 U	0.2 U	0.3 U	0.0012 J	0.005 U	0.01 U	0.1 U	0.25 U	0.01 U
MFBRB082901	8/29/01	0.0002 U	0.17	0.01 U	0.001 U	0.002 U	0.0016 B	0.003 U	0.0041 B	0.005
MFBRB092601	9/26/01	0.0001 U	0.0338 U	0.0033 U	0.0029 U	0.0013 U	0.001 U	0.0025 U	0.004 U	0.001 U

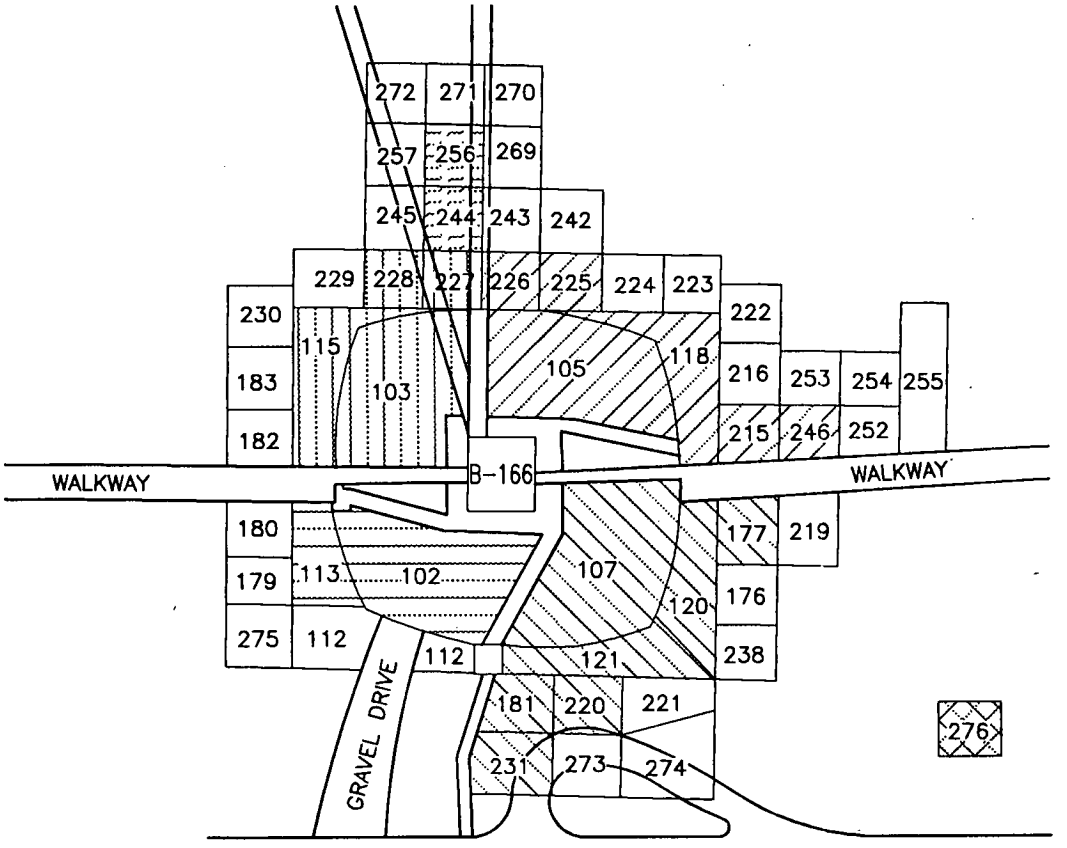
APPENDIX I

WINDROW RECIPES, FIELD MONITORING RESULTS, AND DAY ZERO/DAY LAST SAMPLE RESULTS SUMMARY

Results Contained In Supplementary Binders

APPENDIX J

BACKFILL GRID LOCATION MAPS



LEGEND

- WINDROWS 127, 130, 131, 139, 150
- WINDROWS 144, 147, 143, 145
- WINDROWS 169, 179, 199
- WINDROWS 146, 145
- WINDROWS 169, 199
- WINDROWS 178

MFB INTERIM MEASURES REPORT

APPROXIMATE SCALE – FEET

0 60 120

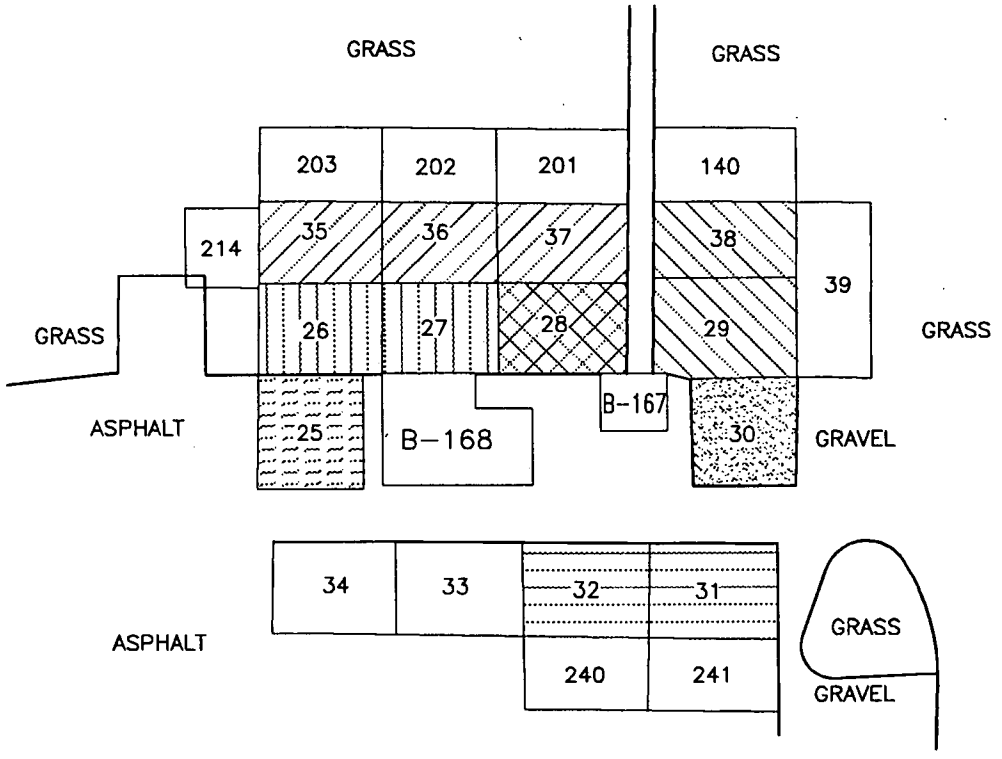
N

FIGURE J–1
WINDROW BACKFILL LOCATION MAP

NAVAL SURFACE WARFARE CENTER
BUILDING 166, MINE FILL B
CRANE, INDIANA

PREPARED FOR
NAVAL FACILITIES ENGINEERING COMMAND
NSWC CRANE, IN

DRAWN MRC/6-17-02	CHK	APPR
REVISED	DRAWING NO.: 3732401w1.dwg	
JOB NO.: 37324.01	TOLTEST, INC.	
SHEET NUMBER 1 of 1		



LEGEND

- WINDROWS 120, 126, 138
- WINDROWS 123, 121, 137, 138
- WINDROWS 120, 126, 138, 187
- WINDROWS 122, 124, 137
- WINDROWS 137, 180
- WINDROWS 126, 138, 187
- WINDROWS 123, 121, 137

MFB INTERIM MEASURES REPORT

APPROXIMATE SCALE - FEET

0 50 100

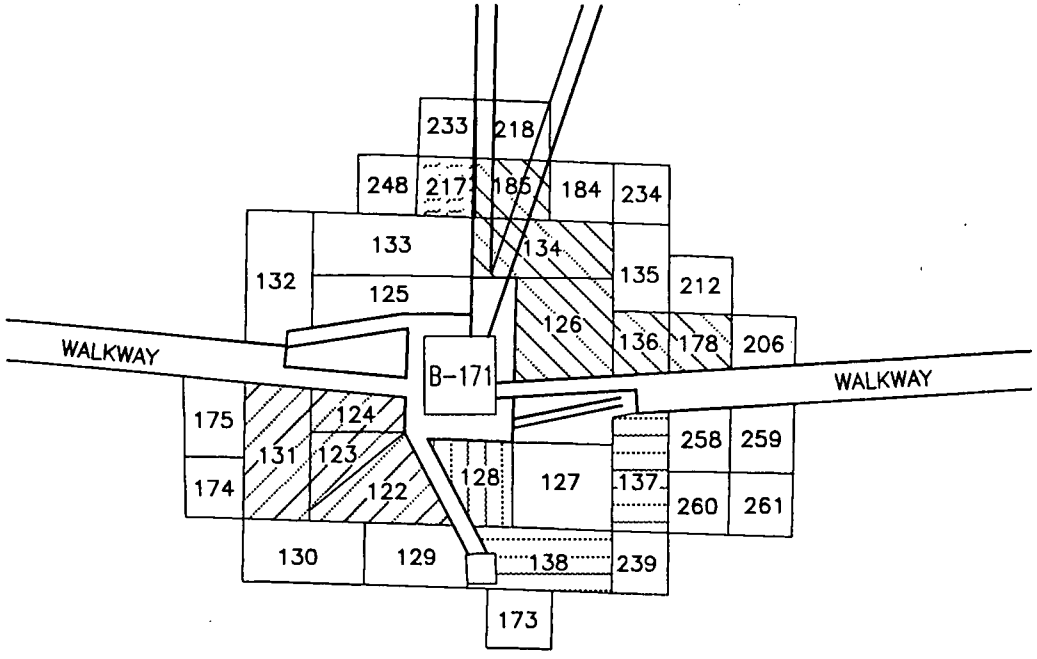
N

FIGURE J-2
WINDROW BACKFILL LOCATION MAP

NAVAL SURFACE WARFARE CENTER
BUILDING 167/168, MINE FILL B
CRANE, INDIANA

PREPARED FOR
NAVAL FACILITIES ENGINEERING COMMAND
NSWC CRANE, IN

DRAWN MRC/6-17-02	CHK	APPR
REVISED	DRAWING NO.: 3732401w2.dwg	
JOB NO.: 37324.01	TOLTEST, INC.	
SHEET NUMBER 1 of 1		



LEGEND

- WINDROWS 177, 178
- WINDROWS 182, 189
- WINDROWS 177
- WINDROWS 178
- WINDROWS 181

MFB INTERIM MEASURES REPORT

APPROXIMATE SCALE – FEET

0 60 120

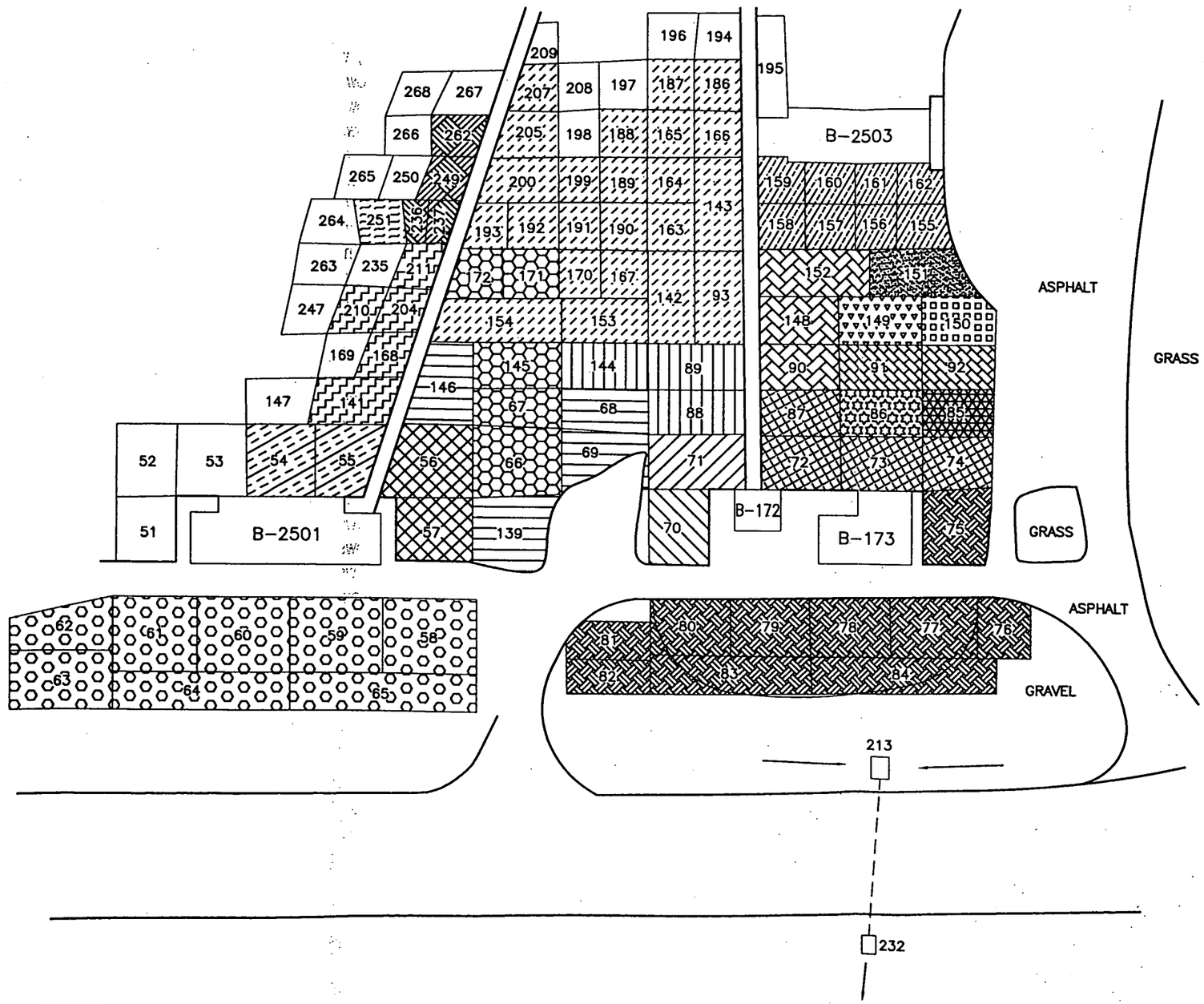
N

FIGURE J–3
WINDROW BACKFILL LOCATION MAP

NAVAL SURFACE WARFARE CENTER
BUILDING 171, MINE FILL B
CRANE, INDIANA

PREPARED FOR
NAVAL FACILITIES ENGINEERING COMMAND
NSWC CRANE, IN

DRAWN MRC/6-17-02	CHK	APPR
REVISED	DRAWING NO.: 3732401w3.dwg	
JOB NO.: 37324.01		
SHEET NUMBER 1 of 1	TOLTEST, INC.	



N

LEGEND

- ROCKS, WINDROWS 136, 184, 188
- WINDROW 188
- WINDROWS 183, 151
- WINDROWS 118, 121
- WINDROWS 118, 121, 137, 188
- WINDROW 128
- WINDROW 210
- WINDROW 211
- 1st CONTROL WINDROW w/PCBs, WINDROW 209
- WINDROW 209
- WINDROWS 185, 209
- WINDROWS 201, 185, 209
- WINDROWS 104, 107, 103, 110, 109, 113, 112, 118
- WINDROWS 106, 108, 117
- WINDROWS 211, 213
- WINDROWS 201, 185
- WINDROWS 209, 210
- WINDROWS 104, 107, 103, 110, 109, 113, 112, 118, 121
- WINDROWS 114, 115, 116
- WINDROWS 105, 111, 119, 128
- WINDROWS 125, 128
- WINDROWS 105, 111, 119, 125, 128, 190
- DRAINAGE PATTERN

APPROXIMATE SCALE - FEET
0 50 100

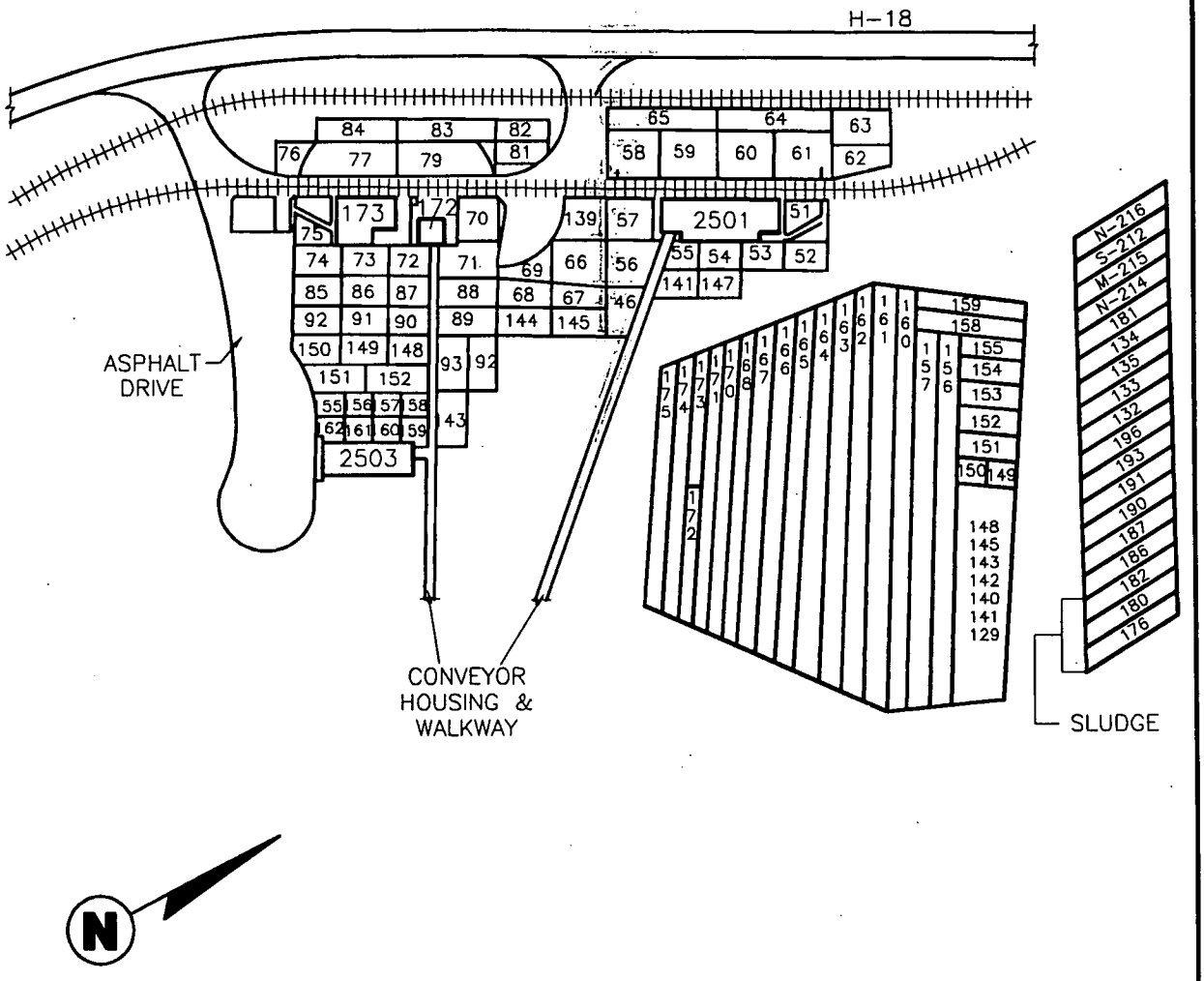
MFB INTERIM MEASURES REPORT

FIGURE J-4
WINDROWS BACKFILL LOCATION MAP

NAVAL SURFACE WARFARE CENTER
BUILDING 172/173/2501, MINE FILL B
CRANE, INDIANA

PREPARED FOR
NAVAL FACILITIES ENGINEERING COMMAND
NSWC CRANE, IN

DRAWN MRC/6-17-02	CHK	APPR
REVISED	DRAWING NO.: 3732401w4.dwg	
JOB NO.: 37324.01	TOLTEST INC.	
SHEET NUMBER 1 of 1		



MEASUREMENTS ARE APPROXIMATE
NOT TO SCALE

LEGEND

(R) – RESIDENTIAL
(I) – INDUSTRIAL

INTERIM MEASURES REPORT

FIGURE J-5
MFB PERMANENT PLACEMENT AREA
BACKFILL OPERATIONS
MINE FILL B
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

PREPARED FOR
NAVAL FACILITIES ENGINEERING COMMAND
NSWC CRANE, IN

DRAWN MRC/3-2-01	DRAWING NO.: 3732401-2002 Q2	
REVISED MRC/7-17-02	CHKD:	APPR:
JOB NO.: 37324.01	TOLTEST, INC.	
SHEET NUMBER 1 of 1		