Technical Report

Remediation Assessment

Fansteel, Inc.
Muskogee, Oklahoma

Volume 1 of 4

Kirkpatrick & Lockhart
Pittsburgh, Pennsylvania

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Earth Sciences
Consultants, Inc.

Technical Report

Remediation Assessment

Fansteel, Inc.
Muskogee, Oklahoma

Volume 1 of 4

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Table of Contents

	Page
Volume 1	
Executive Summary	v
1.0 Introduction	1-1
1.1 Site Location and Setting	1-1
1.2 Facility Process Descriptions	1-1
1.3 Project Background	1-3
1.4 Purpose and Objectives	1-5
1.5 Report Format	1-6
2.0 Scope of Work and Field Activities	2-1
2.1 Drilling and Soil Sampling	2-1
2.2 Monitoring Well Installation and Development	2-4
2.3 Groundwater Sampling	2-5
2.4 Test Pit Excavation and Soil Sampling	2-7
2.5 Pond Residue Sampling	2-8
2.6 Surface Water and Sediment Sampling	2-9
2.7 Seep Sampling	2-9
2.8 Hydrogeological Testing	2-9
2.8.1 Slug Tests	2-10
2.8.2 Pumping Tests	2-11
2.9 Background Radiological Sampling	2-11
2.10 Site Radiological and Geophysical Survey	2-12
2.10.1 Instrumental Survey of Exterior Grounds	2-13
2.10.1.1 Radiological Survey	2-13
2.10.1.2 Geophysical Survey	2-14
2.10.2 Instrumental Survey of Building Exterior Surfaces	2-14
2.10.3 Instrumental Survey of Building Interior Surfaces	2-15
2.10.4 Instrumental Survey of Equipment and Facilities	2-15
2.11 Air Monitoring	2-15
2.12 Site Survey	2-16
2.13 Laboratory Analysis	2-16
3.0 Geology and Hydrogeology	3-1
3.1 Regional Geology	3-1
3.2 Regional Hydrogeology	3-3
3.3 Site Geology and Hydrogeology	3-3
3.3.1 Site Geology	3-4
3.4 Site Hydrogeology	3-6
3.4.1 Single Well Aquifer Characterization	3-7

Table of Contents
(Continued)

	Page
3.4.2 Single Well Aquifer Characterization Tests	3-8
3.4.3 Multiwell Aquifer Characterization Test	3-9
4.0 Remediation Assessment Results	4-1
4.1 Chemical Characteristics	4-1
4.1.1 Site Soils	4-1
4.1.1.1 Distribution of Contaminants of Concern in Site Soils	4-5
4.1.2 Pond Residues	4-6
4.1.2.1 Pond No. 2	4-6
4.1.2.2 Pond No. 3	4-7
4.1.2.3 Pond No. 5	4-9
4.1.2.4 Pond No. 6	4-10
4.1.2.5 Pond No. 7	4-11
4.1.2.6 Pond No. 8	4-11
4.1.2.7 Pond No. 9	4-13
4.1.2.8 Distribution of Contaminants of Concern in Pond Residues	4-14
4.1.3 Surface Water and Sediments	4-14
4.1.3.1 Sediments	4-14
4.1.3.2 Surface Water	4-15
4.1.4 Groundwater	4-16
4.1.4.1 Unconsolidated Zone of Saturation (Shallow Monitoring Wells)	4-17
4.1.4.1.1 Distribution of Contaminants of Concern in the Unconsolidated Zone of Saturation	4-21
4.1.4.2 Shale Bedrock Zone of Saturation	4-21
4.1.4.2.1 Distribution of Contaminants of Concern in the Shale Bedrock Zone of Saturation	4-22
4.2 Radiological Characteristics	4-22
4.2.1 Soils	4-23
4.2.1.1 Background Soils	4-23
4.2.1.2 Site Soils	4-24
4.2.1.2.1 Instrument Survey Results	4-24
4.2.1.2.2 Soil Analysis Results	4-25
4.2.1.2.2.1 Borrow Pit Area	4-26
4.2.1.2.2.2 Wastewater Treatment Ponds	4-27
4.2.1.2.2.3 Eastern Outslope	4-27
4.2.1.2.2.4 Residue Pond Area	4-28
4.2.1.2.2.5 Central Area	4-29

Table of Contents
(Continued)

	Page
4.2.2 Pond Residues	4-29
4.2.2.1 Pond No. 2 and Pond No. 3	4-29
4.2.2.2 Wastewater Treatment Residue Impoundments	4-30
4.2.2.3 Pond No. 5	4-30
4.2.3 Surface Water and Sediments	4-31
4.2.3.1 Surface Water	4-31
4.2.3.2 Sediment	4-31
4.2.4 Groundwater	4-32
4.2.4.1 Unconsolidated Zone of Saturation (Shallow Wells)	4-32
4.2.4.2 Bedrock Zone of Saturation	4-35
4.2.5 Buildings and Equipment	4-35
4.3 Air Monitoring Results	4-36
4.4 QA/QC	4-37
5.0 Summary of Results	5-1

Tables

Table 1 - Monitoring Well Installation Data Summary
Table 2 - Typical Concentration Ranges, Proposed RCRA Corrective Action Levels, and TCLP Action Levels for Soils
Table 3 - Chemistry Data Summary, Soil Borings and Monitoring Wells
Table 4 - Chemistry Data Summary, Test Pits
Table 5 - Summary of Waste Chemistry Data, Pond 2 Residues
Table 6 - Summary of Waste Chemistry Data, Pond 3 Residues
Table 7 - Summary of Waste Chemistry Data, Pond 5 Residues
Table 8 - Summary of Waste Chemistry Data, Pond 6 Residues
Table 9 - Summary of Waste Chemistry Data, Pond 7 Residues
Table 10 - Summary of Waste Chemistry Data, Pond 8 Residues
Table 11 - Summary of Waste Chemistry Data, Pond 9 Residues
Table 12 - Chemistry Data Summary, Surface Sediments
Table 13 - Summary of USEPA Drinking Water Standards
Table 14 - Chemistry Data Summary, Surface Water
Table 15 - Chemistry Data Summary, Shallow Groundwater Zone
Table 16 - Chemistry Data Summary, Deep Groundwater Zone
Table 17 - Background Soil Radioactivity Analysis Results
Table 18 - Site Grounds Radioactivity Instrument Survey Results

Table of Contents
(Continued)

Figures

Figure 1 - Site Location Map (Dwg 0111-A11)
Figure 2 - Site Plan (Dwg 0111-E428)
Figure 3 - Background Radioactivity Survey and Sample Point Locations (Dwg 0111-A12E)
Figure 4 - Plant Grounds Area Radioactivity Survey Point Locations (Dwg 0111-E500)
Figure 5 - Geologic Cross Sections A-A', B-B', and C-C' (Dwg 0111-E435)
Figure 6 - Top of Bedrock Contour Map (Dwg 0111-E433)
Figure 7 - Shallow Groundwater Contour Map, Unconsolidated Materials (Dwg 0111-E429)
Figure 8 - Potentiometric Surface Map, Water-Bearing Zone - Shale Bedrock (Dwg 0111-E430)
Figure 9 - Summary of Soil Chemistry Data (Dwg 0111-E431)
Figure 10 - Summary of Pond Residue Chemistry Data (Dwg 0111-E432)
Figure 11 - Summary of Groundwater and Surface Water Quality Map (Dwg 0111-E409)
Figure 12 - Summary of Soil Radioactivity Data (Dwg 0111431A)
Figure 13 - Summary of Waste Sample Pond Sediments, Radioactivity Constituents (Dwg 0111432A)
Figure 14 - Summary of Groundwater and Surface Water Quality Map for Radioactive Constituents (Dwg 0111409A)

Volume 2

Appendices

Appendix A - Boring Logs and Well Construction Details
Appendix B - Test Pit Logs
Appendix C - Aquifer Characterization Data
Appendix D - Building and Equipment Radioactivity Survey Figures

Volume 3

Appendix E - Building and Equipment Radioactivity Survey Data

Volume 4

Appendix F - Air Monitoring Data
Appendix G - QA/QC Data

Executive Summary

Executive Summary

This report documents the performance and results of the remediation assessment conducted at the Fansteel, Inc. (Fansteel) Muskogee, Oklahoma facility. This work was performed in accordance with Earth Sciences Consultants, Inc.'s work plan entitled Work Plan - Remedial Assessment, Fansteel Metals, Muskogee, Oklahoma (revised July 1992). This work was approved by the Nuclear Regulatory Commission (NRC) by incorporation into Fansteel's NRC License No. SMB-911, amendment date December 21, 1992.

The work performed as part of the remediation assessment included the installation of soil borings, monitoring wells, and test pits; the collection and analysis of soil, sediment, surface water, groundwater, air, and pond residue samples; and the performance of a radioactivity scoping survey.

The results of these activities indicate that chemical and radiological contamination is present in site soils and groundwater particularly in plant areas formerly utilized for the processing of tantalum and columbium bearing ores. Impacts are generally isolated to plant areas surrounding Ponds Nos. 2 and 3 and areas to the east of the Chemical "A" and Chemical "C" plant buildings. Soil and groundwater contamination was also detected to the east of the wastewater treatment ponds and Pond No. 5, however, at levels typically lower than that exhibited in the areas associated with manufacturing and ore processing.

Licensed residues contained within Ponds Nos. 2 and 3 exhibited characteristically hazardous concentrations of chromium. Wastewater treatment residues present in Ponds Nos. 5, 6, 7, 8, and 9 exhibited elevated levels of radioactivity. Slightly elevated levels of radioactivity and chemical contamination were detected in sediments, soils, surface water, and groundwater samples collected from the southwest portion of the site, in the area referred to as the borrow pit.

A buildings and equipment surface radioactivity scoping survey was performed in the eastern and southern areas of the site. Buildings and equipment associated with ore processing activities exhibited elevated surface radioactivity. The Chemical "C" Building is contaminated throughout by radioactive ore residues. Isolated areas of radioactive contamination were found

in the Chemical "A" and R&D buildings. Roof areas in the eastern plant appear to have been affected by radioactive fugitive dust. Paved ore storage and ore transportation areas west of the Chemical "A" Building also exhibited elevated levels of surface radioactivity.

Air monitoring activities conducted prior to and during the performance of the remediation assessment did not indicate the presence of elevated levels of suspended particulates or airborne radioactivity. Additionally, investigations of the shale bedrock aquifer indicate that this zone of saturation has not been affected by plant operations.

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Technical Report
Remediation Assessment
Fansteel, Inc.
Muskogee, Oklahoma

1.0 Introduction

This report documents the remediation assessment performed by Earth Sciences Consultants, Inc. (Earth Sciences) at the Fansteel, Inc. (Fansteel) facility in Muskogee, Oklahoma. Earth Sciences was retained by Kirkpatrick & Lockhart on behalf of Fansteel to conduct the remediation assessment. The purposes of the remediation assessment were to characterize soil and groundwater quality and determine the magnitude and extent of potential contaminants of concern present on the subject site. Earth Sciences utilized technically appropriate investigative methods, in conjunction with available information regarding plant operations and site conditions, throughout the performance of the remediation assessment. The remediation assessment was performed in accordance with the approved Remedial Assessment Work Plan dated July 1992 (revised) prepared to facilitate its implementation.

1.1 Site Location and Setting

The Fansteel Muskogee plant occupies approximately 110 acres of land at a location 2.5 miles northeast of Muskogee, Oklahoma (Figure 1). The site lies along the western edge of the Arkansas River (Webber Falls Reservoir) and is bounded on the north by land owned by Muskogee Port Authority, on the south by U.S. Highway 62, and on the west by State Highway 165 and a service road. The facility was constructed in 1956 on alluvial soils and unconsolidated alluvium approximately 20 to 30 feet thick which are underlain by shale bedrock. Prior to the construction of the facility, the site was undeveloped. As expected in an area adjacent to a major river, the water table at the site is shallow. Groundwater flows largely toward the river with minor variations due to topographic influences and possibly site structures. Figure 2 presents a site plan of the Muskogee plant.

1.2 Facility Process Descriptions

Fansteel's Muskogee plant produced tantalum and columbium metals. Tantalum is used primarily in the electrical/electronics industry in the production of tantalum capacitors.

Columbium is marketed for use in heat-resistant alloys. The Fansteel processing facility had been in operation for approximately 33 years until operations ceased in 1990. The area had not been developed for any use prior to construction of the Fansteel facility and no previous structures existed.

The site has continued to be occupied by Fansteel since termination of processing in 1990. Chemical processing equipment used in the extraction of tantalum and columbium values from ores and slags was sold and removed from the site in 1990, 1991, and 1992. Site operations since 1990 have been limited to environmental monitoring; maintenance of buildings, grounds, and equipment remaining at the site; and cleanup of operating areas.

The Fansteel facility in Muskogee was constructed for the production of tantalum and columbium metal products. Raw materials utilized on site consisted of raw and beneficiated ores. Slag from tin extraction which contains commercially valuable concentrations of tantalum and columbium was also used as a raw material. The raw materials were ground and digested in hydrofluoric acid to extract the tantalum and columbium in the Chemical "C" Building (solid residues from the ore digestion process were stored in impoundments located in the east plant area). The digest was then treated by various liquid/liquid extraction processes to separate the dissolved tantalum and columbium which were then precipitated, purified, calcined, and refined to produce intermediate products (tantalum and columbium powders). These production processes occurred in the Chemical "A" Building, Chemical "C" Building, and the sodium reduction building and employed the following additional reagents: methyl isobutyl ketone (MIBK), sulfuric acid, potassium, fluoride, sodium metal, sodium chloride, nitric acid, sodium hydroxide, and ammonia. Liquid wastes were treated and discharged. Detailed process flow diagrams are presented in the July 1992 (revised) Remedial Assessment Work Plan.

The raw materials used for tantalum and columbium production contained uranium and thorium as naturally occurring trace constituents. These radioactive species were present in the process raw materials at an approximate concentration of 0.15 percent each of uranium oxide and thorium oxide. This concentration is sufficient to cause the ores and slags to be classified by the Nuclear Regulatory Commission (NRC) as source materials. Consequently, Fansteel operated under NRC License No. SMB-911 for the possession of source materials.

Uranium and thorium in the raw materials were not extracted from the ores by the digestion process. The radioactive species remained in the ore digestion residues which were retained in the east plant area, specifically Ponds Nos. 2 and 3. Therefore, the ore residues are classified as source material by the NRC.

The Northwest Property Area (Figure 2), during plant operations, was never utilized for the processing, generation, or disposal of licensed material. This portion of the site was involved with processing the intermediate products (tantalum and columbium powder) which were free of licensed material. The intermediate products were pressed and sintered into shapes in the Sintering Building. These sintered products were either sold as is or further refined prior to sale by electron beam melting in the Electron Beam Building. The Northwest Property Area has been assessed for both chemical and radiological parameters. Additionally, a radiation decommissioning survey was performed on this portion of the property. The results of these activities have been documented in the Radiation Survey and Remediation Assessment Northwest Property Area report dated July 1993. Fansteel has applied for release for unrestricted use for this portion of the property.

1.3 Project Background

The U.S. Atomic Energy Commission (precursor of NRC) granted Source Material License No. SMB-911 to Fansteel on January 27, 1967. Fansteel had been operating under this license as amended from that date. The NRC controls discharge of radionuclides to surface water and storage/management of radioactive materials on site. Discharge of other species is regulated by Oklahoma Water Resources Board (OWRB) under Waste Disposal Permit No. CW-69-020 and by U.S. Environmental Protection Agency (USEPA) under National Pollutant Discharge Elimination System (NPDES) Permit No. OK0001643. OWRB approved a monthly groundwater monitoring plan as part of the waste disposal permit. The Muskogee facility is exempt from regulation under the Resource Conservation and Recovery Act (RCRA) because it is an ore processing facility. However, it is subject to statutory requirements of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The Oklahoma State Department of Health (OSDH) and the Occupational Safety and Health Administration also have regulatory authority over certain aspects of facility operations. NRC has primacy over most facility operations; however, OWRB and USEPA may participate in the project if environmental conditions warrant remediation under CERCLA.

Pond No. 3, located in the northern portion of the plant site (Figure 2), had been in existence for approximately 10 years in 1989. The pond was designed and constructed as a total retention structure for ore/slag residues produced during the digestion and liquid/liquid exchange processes that occurred in Chemical "C" Building. Materials stored in the pond included digested ores and slags and fluid comprised of hydrofluoric and sulfuric acids and containing MIBK, heavy metals, and low-level radioactive species.

Pond No. 3 was constructed by excavating the alluvial soils to the top of the local shale bedrock. Because groundwater was encountered in this alluvium, a french drain network was installed around the structure to collect groundwater and route it to a wet well shown in Figure 2. Dikes were constructed above the former grade of the area to the configurations shown in Figure 2. A single synthetic liner was installed in the pond with the intent to retain all fluids and residues discharged to the structure.

The original design of the french drain collection system allowed groundwater to discharge to the small valley east of Outfall 003 (Figure 2). Some time after the pond was placed into service, the pH of the groundwater collected by the french drain decreased suggesting that the integrity of the liner may have been compromised. The wet well discharge to local surface watercourses was then ceased by plugging the outlet pipe; the collected fluids were then pumped from the wet well to Pond No. 3 or to the plant's wastewater treatment facility. The quantity of fluid pumped from the wet well fluctuated with weather conditions but typically had been approximately 10 gallons per minute.

On June 18, 1989, a large supernatant discharge from Pond No. 3 occurred from the wet well (collection sump) and french drain system adjacent to the subject pond and several seeps near the southwestern corner of Pond No. 3 (Figure 3) causing portions of the french drain system to collapse. The suspected cause of this release was a failure of the Pond No. 3 liner. The released fluid traveled along the natural drainage course around the western and northern sides of Pond No. 3 and discharged through storm water Outfall 003. Plant personnel immediately mobilized Fansteel employees and local contractors to contain the discharges.

Fluid discharge to the river was terminated by the construction of a temporary dike near Outfall 003 and a second dike near the northwestern corner of Pond No. 3. Fansteel's

personnel estimated that approximately 90,000 gallons of fluid was released into the Arkansas River before the discharge was arrested. Fansteel notified the National Response Center, State Response Commission, Muskogee Local Emergency Committee, and NRC immediately after the release was brought under control and again in writing on June 22, 1989 in accordance with PL99-499 (Superfund Amendments and Reauthorization Act Title III, Section 304) and related regulations. The fluids from the temporary ponds and Pond No. 3 were subsequently removed and routed to the plant's wastewater treatment system as directed by NRC. Pond No. 3 was approaching capacity when the release occurred.

A draft outline of a proposed remediation assessment work plan for the Pond No. 3 area entitled "Remediation Strategy, Pond No. 3" was submitted to NRC, USEPA, and OWRB in March 1990. Preliminary approval of this document was granted by the regulatory agencies with the stipulation that the entire site be included in the investigation rather than the Pond No. 3 area exclusively. On June 8, 1990, a draft remediation assessment work plan to assess conditions throughout the site was submitted to the NRC, OWRB, and OSDH for review and comment. The work plan underwent a series of agency reviews and revisions until it was eventually approved and incorporated into Fansteel's NRC license on December 21, 1992.

1.4 Purpose and Objectives

The remediation assessment was performed at the Muskogee facility to determine the potential impact of past site operations and existing site conditions on the surrounding environment. The results of this study will be utilized to ensure an efficient and environmentally sound closure of the site. Shallow soils, alluvium, bedrock, groundwater, surface water, and waste residues were characterized to determine if contaminants of environmental concern exist at the site. Studies were conducted to determine the hydraulic properties of the alluvial aquifer underlying the subject site and to determine the horizontal and vertical extent of contaminant plumes identified during the investigation. Additionally, air monitoring was conducted during the investigation to evaluate the potential for airborne transportation of contaminants. The goal of the investigation was to present sufficient data to develop technically feasible and cost-effective remedial alternatives to ensure that any risk to the environment from the identified contaminants of concern will be minimized.

1.5 Report Format

The following chapters of this report present and discuss the scope of work employed during the assessment and the results of the investigation. Chapter 2.0 presents the scope of work and field activities utilized during the performance of the remediation assessment. Chapter 3.0 discusses regional and site-specific geology and hydrogeology. Chapter 4.0 summarizes the results of the remediation assessment and Chapter 5.0 presents pertinent conclusions.

2.0 Scope of Work and Field Activities

The subsurface investigations conducted at the Fansteel facility included the installation and sampling of soil borings, groundwater monitoring wells, test pits, surface water, sediments, and ambient air. A combination of field instrumentation surveys, laboratory analyses, and hydrogeologic field testing procedures was utilized to determine physical, chemical, and radiological characteristics of soils and groundwater beneath the site. Specific details of investigation activities performed at this facility are discussed in detail below.

2.1 Drilling and Soil Sampling

A total of 96 borings (including 67 soil borings, 25 shallow monitoring wells, and 4 bedrock monitoring wells) were completed at the subject facility by A. W. Poole Drilling of Clinton, Oklahoma. Soil Borings B-1 through B-74 (Designations B-16, B-18, B-37, B-40, B-43, B-44, and B-45 were not utilized during boring numbering) were completed to characterize soil conditions only and, therefore, were advanced to the top of the uppermost zone of saturation. Boreholes for shallow Monitoring Wells MW-51S through MW-75S were advanced to the top of bedrock to characterize soil and shallow groundwater conditions. Boreholes for deep Monitoring Wells MW-151D, MW-161D, MW-167D, and MW-174D were advanced into bedrock to characterize groundwater conditions within the underlying shale. Boring logs containing detailed descriptions of subsurface materials encountered, field instrument readings, and all other pertinent drilling information are presented in Appendix A. In addition, all downhole drilling equipment was decontaminated before initial use and between borings using potable water passed through a high-pressure, high-temperature sprayer.

Boreholes for the soil borings and deep monitoring wells were advanced using 3-3/4-inch inside diameter continuous flight hollow-stem augers fitted with a 5-foot-long-by-3-inch-diameter continuous split-spoon sampler. Split-spoon samples were collected continuously throughout the depth of the boreholes. The sampling equipment was steam cleaned between uses to minimize the potential for cross contamination. Boreholes for the shallow monitoring wells were advanced through the unconsolidated materials using 6-1/4-inch inside diameter hollow-stem augers to facilitate their conversion into 4-inch monitoring wells. Continuous split-spoon samples were also collected at these locations.

Soil samples were screened in the field with a photoionization device (H-Nu) to detect any volatile organic constituents which might be present. Soil samples were also screened using a Bicron R meter and thin window beta/gamma detector for evidence of radioactive materials.

Three soil samples were selected for laboratory analysis for radiological and/or chemical analyses from each of the borings with the exception of MW-151D, MW-161D, MW-167D, and MW-179D. No soil samples were selected from deep monitoring well boreholes due to their proximity to MW-51S, MW-61S, MW-67S, and MW-74S respectively. However, continuous split-spoon samples were collected to obtain subsurface lithostratigraphic information from the deep monitoring well boreholes. For chemical analysis, samples were selected from the 0- to 6-inch interval, the depth interval immediately above the saturated zone, and an intermediate interval displaying the highest organic vapor reading or physical evidence of contamination. Similarly, samples for radiological analyses were secured from the depth interval of 0 to 6 inches, the interval immediately above the zone of saturation, and an intermediate interval displaying the highest beta/gamma reading. In some instances, the intermediate level for both chemical and radiological analyses coincided.

Soil samples designated for laboratory analysis were placed on ice and shipped to the appropriate receiving laboratory. Samples receiving radiological analyses were shipped to Accu-Labs Research, Inc. (Accu-Labs) in Golden, Colorado and samples receiving chemistry analyses were shipped to Antech Ltd. (Antech), an Earth Sciences Consultants, Inc. affiliated and OWRB-approved laboratory. Section 2.13 of this report represents specific analytical parameters. All standard protocols regarding chain of custody procedures were strictly adhered to. Soil samples not selected for laboratory analysis were archived on site for future reference, if needed.

Following completion, Borings B-1 trough B-74 were grouted to the ground surface with a cement/bentonite grout (6 to 1 mixture). Borings MW-51S through MW-75S were completed by converting them to monitoring wells. Borings MW-151D, MW-161D, MW-167D, and MW-174D were advanced through bedrock to their total depths using core drilling techniques. Coring was conducted at these locations to obtain an accurate lithologic profile of the first bedrock unit underlying the site.

Prior to coring activities at MW-151D, MW-161D, MW-167D, and MW-174D, the augers were advanced to a point of refusal generally 35 to 40 feet below ground surface. The boreholes were then increased in diameter by using recirculating water-rotary drilling techniques. A 7-7/8-inch-diameter pilot bit was initially advanced within the auger holes to depths corresponding to approximately 4 feet into bedrock. The boreholes were then reamed to the final 12-1/4-inch diameter to this same depth. After the rock cuttings and sediments were flushed from the boreholes, 8-inch inside diameter threaded steel casing with a steel and concrete drive shoe attached to the lowermost section of pipe was lowered to the bottom of the borings and extended approximately 6 inches above ground surface. The casings were subsequently pressure grouted in place by pumping a cement/bentonite slurry down the casing and injecting an 8-inch-diameter barbed rubber plug under pressure into the fitted drive shoe. This technique forced the grout to circulate between the borehole annulus and the casing. A sufficient volume of cement/bentonite grout was injected prior to pressurizing the plug to ensure recirculation to ground surface. After allowing a minimum of 48 hours for the grout to cure, the rubber plug and concrete base of the drive shoe were reamed out using the 7-7/8-inch tricone drill bit and water-rotary techniques. This procedure was followed to prevent any unconsolidated materials from collapsing into the borings during subsequent drilling activities and to prevent the potential for groundwater within the shallow water-bearing zone to migrate vertically into deeper zones of saturation.

Rock cores were obtained utilizing diamond-tipped core bits and collected in an HQ stainless steel core barrel (5-inch-diameter outer barrel). Steel rods were used to hoist the 10-foot-long core barrel to the surface. Once removed from the boreholes, cores were initially screened for the presence of organic vapors utilizing an H-Nu meter and for radiation using a beta/gamma meter. The cored rock sections were then logged for lithology, color, grain size, hardness, sedimentary structures, and fractures. Rock quality designation (RQD) was measured along with total core recovery. RQD is a cumulative measure of all portions of a core greater than 4 inches in length and provides a qualitative description of the competence and degree of fracturing in strata. Rock core samples were placed in core boxes, identified, and staged on site.

Core drilling was advanced into shale bedrock and was completed after identifying evidence of groundwater migration. The bottom of the core holes were sealed utilizing bentonite pellets

to ensure that the monitoring wells communicated with the fractured horizon detected. This installation procedure was conducted after discussions with and concurrence by the NRC's personnel. Following the completion of coring and with concurrence of NRC's personnel, the boring was reamed with a 7-7/8-inch-diameter tricone drill bit using water-rotary drilling techniques. All soil and rock cuttings produced during subsurface drilling activities were collected into Department of Transportation (DOT)-approved 55-gallon drums and stored on site for proper management by Fansteel. All recirculated fluids produced during drilling activities were pumped into a tanker for subsequent management by Fansteel.

2.2 Monitoring Well Installation and Development

A total of 29 monitoring wells (identified as MW-51S through MW-75S, and MW-151D, MW-161D, MW-167D, and MW-174D) were installed at the Fansteel site to determine the geochemical character of groundwater at this location. Monitoring Wells MW-51S through MW-75S were installed within the alluvium at the top of bedrock. Monitoring Wells MW-151D, MW-161D, MW-167D, and MW-174D were installed to communicate with fractures within the uppermost bedrock shale unit (McCurtain Shale). These series of wells provide for the evaluation of groundwater chemistry within the two uppermost continuous zones of saturation beneath the facility.

All monitoring wells were constructed of 4-inch-diameter, flush-joint, threaded polyvinyl-chloride (PVC) riser pipe and well screens. As proposed in the work plan, well screens were 15 feet in length in the shallow wells and 10 feet in length in the deeper bedrock well. The well screens were factory slotted 0.01 inch and fitted with a flush-joint threaded PVC bottom cap. All PVC riser pipe and screen were steam cleaned on site prior to installation.

Groundwater Monitoring Wells MW-51S through MW-75S were constructed by placing the screen fitted with an end cap through the hollow-stem augers. Sections of solid riser pipe were then added to the screen extending to the ground surface. As the augers were removed, the annular space surrounding the PVC was filled with chemically inert clean silica sand sized appropriately for the slot size (2040 grade sand) to approximately 2 feet above the top of the screen. An approximate 1- to 2-foot-thick fine silica sand filter pack followed by approximately 2 feet of bentonite pellets was placed sequentially above the coarse sand. The bentonite pellets

were then hydrated with 5 gallons of potable water and allowed time to expand forming a low-permeability clay seal. The annular space remaining above the bentonite seal was filled with a cement/bentonite (6 to 1 mixture) grout. A 6-inch-diameter steel well guard equipped with a locking cap was grouted in place at the surface of each well. Following the completion of each well, a lock was installed on each steel guard to ensure the integrity of the well.

Groundwater Monitoring Wells MW-151D, MW-161D, MW-167D, and MW-174D were constructed similar to the shallow wells. However, due to the placement of steel casing, augers were not required for installation. In addition, a slightly larger bentonite seal (4 feet thick) was installed to support a substantially larger overlying grout component. Well installation details for all wells are presented in Appendix A. Table 1 presents a monitoring well installation data summary.

The monitoring wells were developed using surge and bail methods to remove fine-grained sediments and any materials introduced during drilling and well installation. Development continued until turbidity of the discharge water was reduced to a level acceptable to the supervising geologist and field pH and specific conductance stabilized. pH and specific conductance readings were considered to have stabilized when readings from three consecutive bailers did not vary by more than 10 percent. Water collected as a result of monitoring well development was contained in double-lined DOT 55-gallon drums and contained on site for proper management by Fansteel. Wells were developed with a 3-1/2-inch PVC bailer which was decontaminated between wells using rinses of hexane, methanol, and 5 percent nitric acid solution followed by a thorough distilled water wash.

2.3 Groundwater Sampling

Groundwater samples were collected from Monitoring Wells MW-51S through MW-75S on February 24 through March 2, 1993. Monitoring Wells MW-151D, MW-161D, MW-167D, and MW-174D were sampled on March 3, 1993. Monitoring Well MW-151D was sampled again on April 30, 1993.

In order to ensure the collection of samples representative of formational water, each well was evacuated prior to sampling. Initially, static water elevations were obtained by measuring water depth with a Solinst Model 121 water level meter to the nearest 0.01 foot. After static

water levels were recorded, the standing water volume in each well was calculated and recorded on Earth Sciences' Well Evacuation/Sampling sheet. Calculations were performed using the following formula:

$$Volume\ (gallons) = \pi r^2 h \times (7.48\ \frac{gal}{ft^3})$$

where

π = 3.14,
r = inside well casing radius in feet, and
h = height of the water column in the well.

Wells were purged by removing a minimum of three well volumes of water or until they were bailed dry, whichever came first. The following information was recorded in triplicate on a field sheet: pH, conductivity, and temperature. Each well was purged using dedicated 3-1/2-inch PVC bailers in conjunction with new clean nylon rope.

Prior to well evacuation, a calibration check was performed on each field instrument. Equipment requiring calibration included the pH meter and specific conductivity meter. The dissolved oxygen meter and Eh meter were calibrated prior to groundwater sampling activities. The pH meter was calibrated by placing the probe in standard solutions of 4.00, 7.00, and 10.00 pH units and adjusting the calibration control. For measurement of specific conductivity, the Micron Extraction Procedure meter was calibrated by zeroing the indicator dial with deionized water. The dissolved oxygen meter was field calibrated by adjusting the air temperature and mean sea level elevation dials to conform to field conditions. The Eh meter was calibrated by placing the probe in Zoebel solution which has a known stable redox potential. The instrument is then adjusted according to the known calibration solution and groundwater temperatures. A record of the calibration check was included on the well evacuation/water sampling sheets.

The wells were sampled within 24 hours following the time of well evacuation. Prior to sampling, the water level in the well was again obtained to ensure adequate recovery since

purging and recorded on the field sheets. The dissolved oxygen probe was lowered into the well and a measurement of dissolved oxygen was obtained and recorded. The water level meter and dissolved oxygen probe were decontaminated between sampling locations using rinses of hexane, methanol, and 5 percent nitric acid solution followed by a thorough distilled water wash.

Groundwater samples were obtained using dedicated 3-1/2-inch PVC bailers in conjunction with new clean nylon rope. After collecting the samples with minimal disturbance, the water samples were decanted directly from the bailer into the appropriate sample containers which contained the appropriate preservative. Volatile organic compounds (VOC) were collected first to minimize potential volatilization. Each 40-milliliter vial was filled such that no airspace was present. Following the collection of VOCs, other samples were collected in appropriate sample containers and properly preserved. Field measurements of pH, conductivity, and temperature were collected from a clean disposable plastic cup. In addition, general field observations including turbidity, odor, immiscible layers, and color were recorded for each groundwater sample. The redox potential was measured with an Eh meter at each well location on March 4, 1993 using a clean disposable plastic cup. Section 2.13 of this report presents specific analytical parameters. As with the soil samples, groundwater samples requiring radiological analyses were submitted to Accu-Labs. and those requiring chemical analyses were submitted to Antech. Proper chain of custody protocols were adhered to regarding sample handling and transportation.

2.4 Test Pit Excavation and Soil Sampling

A total of 13 test pits (TP-1 through TP-13) were excavated at the Fansteel site (Figure 2) to investigate the potential presence of buried drums in a central area of the site situated between the service building to the west, the Chemical "A" Building to the east, the R&D building to the north, and Pond No. 8 to the south. The test pits were excavated in this area even though a geophysical survey did not identify any unidentifiable magnetic anomalies in any area of the site.

All 13 test pits were excavated to a depth of approximately 5 feet below ground surface. The test pits were profiled for depth, subsurface horizons, color, structure, moisture, or groundwater presence, rock fragments, etc. All excavation activities were supervised and logged by

a qualified Earth Sciences geologist. Each test pit was screened with an H-Nu and a beta gamma meter to detect any volatile organic vapors or radioactive materials which may have been present. Test pit logs are presented in Appendix B. One soil sample was selected for laboratory analysis based upon visual observations and instrumentation responses. The soil samples were analyzed for a variety of radiological and chemical parameters which are presented in Section 2.13 of this report.

2.5 Pond Residue Sampling

Pond residues were sampled at 25 different locations within Ponds Nos. 2 (3 locations), 3 (5 locations), 5 (3 locations), 6 (2 locations), 7 (2 locations), 8 (5 locations), and 9 (5 locations). Pond sampling locations are identified in Figure 2. Because the residues contained within these ponds generally could not support a drill rig and standard split-spoon sampling techniques would not effectively sample the residues, an alternative method was used. Residue samples were collected at each location using a hollow-steel sampling barrel connected to an air compressor. The sampling barrel and air compressor were mounted on a pontoon barge which maneuvered from sampling location to sampling location by means of a steel cable and winch. Once at a sampling location, the sample barrel was inserted into the pond residues and a slight vacuum was created on the inside of the sample barrel. The barrel was then manually advanced through the pond residues until the bottom of the pond was encountered. The vacuum was maintained and the sample barrel was then slowly extracted from the residues. The residue samples were then extracted from the sample barrel by reversing the vacuum and exerting a small amount of pressure to the inside of the barrel.

Once extracted, the residue sample was divided into equal thirds, placed into stainless steel buckets, and homogenized. The homogenized samples were then placed into appropriate sample containers resulting in three samples per location. The sample barrel and stainless steel buckets were decontaminated between sample locations by swabbing the interior of the barrel and scrubbing the buckets with deionized water and soap followed by rinses of deionized water, a 5 percent nitric acid solution, methanol, and a final deionized water rinse. The barge and all sampling equipment were thoroughly steam cleaned between ponds and surveyed with beta/gamma meters to ensure that all residual radioactivity had been removed.

As stated earlier, three residue samples were collected from each sample location corresponding to the top third, middle third, and bottom third of residues present. The samples were analyzed for a variety of radiological and chemical parameters by Accu-Labs and Antech respectively. A specific list of analytical parameters is presented in Section 2.13 of this report.

2.6 Surface Water and Sediment Sampling

A total of seven surface water and six surface sediment samples were collected at the locations identified in Figure 2. In general, a sediment sample was collected at each surface water sampling location for comparative purposes. However, no sediment was available for sampling at Outfall 001 (SS-001). Surface water was collected directly into laboratory supplied sample containers. A new disposable sampling trowel was used at each location to sample sediments. The sediments and surface water samples were analyzed for a variety of radiological and chemical parameters as discussed in Section 2.13 of this report.

2.7 Seep Sampling

During the performance of the remediation assessment, the pool elevation of the Arkansas River prohibited access to the riverbank and an inspection for seeps could not be performed at that time. In early August 1993, after a period of significant rainfall, Earth Sciences' personnel returned to the site and completed the seep inspection. No seeps were identified which exhibited a sufficient enough flow to allow for sample collection and, as a result, no seep samples were collected.

2.8 Hydrogeological Testing

Hydrogeologic testing was conducted to determine representative hydraulic properties of both the shallow alluvial and shale bedrock aquifers beneath the Fansteel site. This information is valuable in defining possible contaminant pathways, determining the potential environmental risk associated with groundwater contamination, and developing technically feasible remedial alternatives for groundwater remediation. Methods which incorporate appropriate hydraulic testing without significant discharge of contaminated groundwater have been selected.

Hydraulic conductivity, storativity, specific yield, transmissivity, hydraulic gradients, and average linear flow velocity were calculated for both the alluvial and shale bedrock aquifers

beneath the site. Hydraulic conductivities will be calculated using aquifer type (confined or unconfined) and hydraulic test (slug or pump) specific models. Storativity, specific yield, and transmissivity for each aquifer will be calculated using standard formulas and aquifer characteristics determined during drilling activities. A potentiometric surface map will be generated for each aquifer from data collected during the remediation assessment. The hydraulic gradients will be determined using information provided on these potentiometric surface maps. To determine the rate of groundwater migration beneath the site, the average linear flow velocity in the downgradient direction will be calculated using the formula:

$$V = \frac{k*i}{n_e}$$

where

V = average linear flow velocity,
k = hydraulic conductivity,
i = groundwater flow gradient, and
n_e = effective porosity.

2.8.1 Slug Tests

Slug tests were performed on 19 of the newly installed monitoring wells at the site after development. Fifteen of the shallow wells and the 4 deep wells were slug tested to characterize the hydraulic properties of both the alluvial and shale bedrock aquifers. The tests were performed by placing a solid PVC pipe (slug) below the static water level and measuring the subsequent rate of fall of the water level in the well. In-Situ Hermit digital environmental data loggers interfaced with pressure transducers were used to record the rate of water level recovery in the monitoring wells during the testing periods. Recovery data generated during these tests will be reduced using the H. Bouwer and R. C. Rice method (1976, "A Slug Test for Determining the Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells," Water Resources Research, Vol. 12, No. 3) to determine the hydraulic conductivity (K) of the aquifers. Appropriate computer modeling software will be used to aid in these calculations.

2.8.2 Pumping Tests

A pump test was conducted at Monitoring Well MW-53S after Earth Sciences' personnel determined that this location was not impacted by site operations in either the alluvial or shale bedrock aquifers. The pump tests required the installation of three 2-inch-diameter PVC observation wells and one 4-inch-diameter PVC pumping well in the alluvial aquifer. Only an initial decontamination of drilling equipment and no soil sampling activities were necessary because the proposed pumping tests were conducted on wells at background locations. The pumping well was drilled and installed utilizing the standard procedures presented in Sections 2.1 and 2.2 of this report. All drilling and pumping activities were supervised by a qualified hydrogeologist.

After well development, an electric submersible pump was lowered into the well and a step test was conducted to determine maximum well yield. Upon completion of the step test, the water level in the pumping well was allowed to equilibrate and a steady rate nonequilibrium pumping test was performed in the shallow aquifer. Monitoring Well MW-53S was pumped for 3,900 minutes (65 hours). The total duration of the pump test including recovery was 72 hours. Based on step test data, it was determined that a pumping rate of 0.1 gallon per minute would be adequate to maintain well yield. Water level measurements from the pumping and observation wells were measured and recorded using In-Situ Hermit digital environmental data loggers interfaced with pressure transducers during the pumping test and throughout the water level recovery period following completion of the pumping test. Data were reduced using Jacob's Straight-Line Method and other appropriate methods to determine the hydraulic properties of each aquifer. Applicable computer modeling software was used to aid in these calculations.

2.9 Background Radiological Sampling

Background radiological conditions for the Fansteel facility were determined in order to establish baseline conditions against which radiological values measured on the site could be compared. The background was determined by obtaining instrument readings and soil samples from 30 off-site locations near the Fansteel facility. The background measurement locations are shown in Figure 3. The following measurements were performed at each background location:

- Gamma radiation in counts per minute at the ground surface utilizing a Ludlum Model 44-10 gamma scintillation probe and a Ludlum Model 2221 single channel analyzer operated in the scaler mode.

- Gamma radiation in counts per minute at an elevation of 1 meter above the ground surface utilizing a Ludlum Model 44-10 gamma scintillation probe and a Ludlum Model 2221 single channel analyzer operated in the scaler mode.

- Beta-gamma radioactivity in counts per minute at the ground surface utilizing a Ludlum Model 44-9 pancake type Geiger-Muller probe and a Ludlum Model 2221 single channel analyzer operated in the scaler mode.

- Gross alpha and gross beta radioactivity of the 6 inches of surface soil. Gross alpha and gross beta radioactivity were determined by laboratory analysis.

- Concentration of specific radionuclides in the top 6 inches of surface soil. Specific radionuclide concentrations were determined by laboratory analysis utilizing gamma spectroscopy and radiochemical analysis.

The results of the background investigation were utilized to calculate the average off-site gross alpha and gross beta radioactivity as well as the average concentration of uranium and thorium in the off-site soils.

2.10 Site Radiological and Geophysical Survey

Radiological and geophysical survey activities were conducted over the southern and eastern portion of the Fansteel facility. The following operations were performed:

- Instrumental survey of exterior grounds, paved areas, roads, concrete pads, etc.
- Instrumental survey of building exterior surfaces.
- Instrumental survey of building interior surfaces.
- Instrumental survey of equipment and facilities.
- Laboratory analysis of samples of soil, subsurface materials, sediments, surface water, groundwater, and pond residues for gross alpha and gross beta radioactivity as well as identification and quantitation of specific radionuclides.

Instrument surveys were conducted at defined locations. In the case of the instrumental surveys performed on the exterior grounds and exterior and interior building surfaces, the survey locations are described by the imposition of a regularly shaped geometric grid over the areas to be surveyed. The dimensions and spacing of these grids vary with the area being surveyed. It should be noted that the site radiological survey was performed to identify areas of potential concern and not intended as a comprehensive decommissioning survey.

2.10.1 Instrumental Survey of Exterior Grounds

2.10.1.1 Radiological Survey

External areas of the Fansteel property were subject to an instrumental survey to determine the presence of surficial contamination by radioactive materials and to indicate the possible presence of subsurface accumulations of radioactivity. Measurements of alpha, beta, and gamma radioactivity were obtained at the ground surface at designated points covering the entire area of land occupied by Fansteel. Additionally, gamma radioactivity measurements were obtained at an elevation of 1 meter at each of these points. The following instruments were used for performing these surveys:

- Ludlum Model 43-68 gas proportional probe attached to a Ludlum Model 2221 or Model 2200 single channel analyzer for alpha and beta activity measurements.
- Ludlum Model 43-10 or 43-5 alpha scintillation probe attached to a Ludlum Model 2221 or 2200 single channel analyzer for alpha activity measurements.
- Ludlum Model 44-10 gamma scintillation probe attached to a Ludlum Model 2221 or Model 2200 single channel analyzer for gamma radiation measurements.
- Ludlum Model 44-9 pancake type Geiger-Muller probe attached to a Ludlum Model 2221 or 2200 single channel analyzer or Ludlum Model 3 ratemeter for measurement of beta and/or gamma radioactivity.

A survey grid was established over the south and east plant area of the property for the location of sample points. Two different spacings of grid points were utilized. Surveys were performed within the boundaries of the areas utilized for manufacturing, processing, storage,

and waste management at a 10-meter interval. These areas were considered more likely to exhibit radioactivity than other areas on the Fansteel property. Outside the designated remediation assessment study areas, surveys were conducted at a 25-meter interval. The location of exterior grounds survey points is shown in Figure 4. Survey measurements were obtained at the numbered locations shown in the figure. Soil samples were collected at some of the survey grid points which exhibited elevated radioactivity with respect to background in the area. These samples were analyzed for gross alpha and gross beta.

2.10.1.2 Geophysical Survey

Each exterior survey point was also examined for the presence of subsurface metal objects which might indicate the presence of buried drums, tanks, or other containers. This investigation was conducted using electromagnetic metal detectors (Fisher Model "Pulse 8X").

2.10.2 Instrumental Survey of Building Exterior Surfaces

Radioactivity surveys were conducted over the exterior surfaces of the buildings located on the south and east plant portion of the Fansteel property. A 1-meter square grid was established to locate survey points on each building exterior wall. A portion of the grid squares were then surveyed for the presence of radioactivity. Building exterior and roof surfaces were surveyed at a density of at least 5 percent of the available grid square, i.e., one grid square in 25.

The same types of instruments were utilized for this survey as described in Section 2.10.1.1. The following measurements were obtained from each surveyed 1-meter square area:

- Three measurements of beta activity, consisting of one 1-minute count from the upper right-hand quadrant, the center, and the lower left-hand quadrant.
- One measurement of alpha activity consisting of one 1-minute count from the center of the square.
- One measurement of gamma activity consisting of one 1-minute count at the surface of the center of the square.
- One measurement of gamma activity consisting of one 1-minute count at a distance of 1 meter normal to the center of the square.

Building locations are shown in Figure 2.

2.10.3 Instrumental Survey of Building Interior Surfaces

Building interior surfaces were surveyed in the same manner as the building exterior surfaces. The same type of grid, instruments, and measurement techniques were used for the interior building surface surveys as for the building exterior surface surveys. Building interior surveys were conducted at a density of 11.1 percent of the available grid squares, i.e., one grid square in nine.

2.10.4 Instrumental Survey of Equipment and Facilities

Equipment and furnishings located inside the buildings were also surveyed. A regularly spaced grid cannot normally be established for items of equipment, furniture, etc., because of their small size and irregular shape. Consequently, survey point locations were arbitrarily assigned for these items. Survey points were selected such that each identified item of equipment or facility component was measured for surficial radioactivity. Items with an apparent surface area of 4 square meters or more had additional survey points located such that one set of measurements was obtained for every 4 square meters of surface area. The same types of instruments and measuring techniques were used for the survey of equipment and facilities as were utilized for the building surface surveys.

The radiological survey of the Fansteel property was conducted as two separate studies. The northwest portion of the property, consisting of approximately 35 acres of ground and 6 buildings, was treated as a separate parcel for purposes of the radiological survey. Results of the radiological survey for this portion of the property were reported in Radiation Survey and Remediation Assessment Northwest Property Area dated July 1993. The radiation survey addressed in this report concerns the remainder of the Fansteel property, consisting of approximately 75 acres and 11 buildings. The boundaries of the plant area and buildings subject to the radiation survey discussed herein are shown in Figure 2.

2.11 Air Monitoring

Air monitoring was conducted prior to and during the performance of remediation assessment field activities in order to determine if airborne particulate matter and/or radioactivity were being released from the site. Five air monitoring stations were established at the locations

shown in Figure 2. Air samples were collected over 24-hour periods in accordance with the procedures outlined in the remediation assessment work plan. Samples were analyzed gravimetrically for total suspended particulates (TSP). Gross alpha and gross beta radioactivity were also measured on the particulate materials retained on the TSP filters.

2.12 Site Survey

All test borings and site monitoring wells were located according to a surveyed site grid system. Test borings were surveyed for ground surface elevations and monitoring wells were surveyed for ground surface, top of PVC, and top of steel casing elevations. All elevations are referenced to a U.S. Geological Survey datum and are accurate to 0.01 foot. All surveying was performed by Newell and Associates, a licensed Oklahoma surveyor.

2.13 Laboratory Analysis

Samples were collected and transported for analysis at the Muskogee facility following standard procedures outlined in the previous sections of this chapter. Contaminants of concern at the site were defined based on past site operations and historical groundwater, soil, and waste chemistry data. All samples collected for chemical analysis were analyzed by Earth Sciences' affiliated laboratory, Antech. All radiological parameters were analyzed by Accu-Labs.

Groundwater and surface water samples collected for laboratory analysis were analyzed for total metals (tantalum, columbium, tin, lead, nickel, antimony, arsenic, barium, cadmium, calcium, chromium, mercury, selenium, and silver), total fluoride, total ammonia, total sulfate, nitrate, gross alpha, gross beta, and MIBK. Dissolved metals analyses (same specific metals as above) were performed on 20 percent of the aqueous samples collected for comparative purposes. The selection of aqueous samples for dissolved metals analysis was based on elevated total metals analytical results. Additionally, groundwater samples collected from 13 of the site monitoring wells were analyzed for the USEPA Target Compound List (TCL) parameters to verify that the contaminants of concern list identified at the site is comprehensive. Included in this analysis are all monitoring wells downgradient of the facility (MW-60S, MW-61S, MW-151D, MW-161D, MW-62S, MW-66S, MW-67S, MW-167D, MW-73S, and MW-74S), one monitoring well directly downgradient of Pond No. 3 (MW-71S), and three upgradient wells to establish background conditions (MW-51S, MW-151D, and MW-52S). Generally, if gross alpha was detected in excess of 15 picocuries per liter or gross beta was detected in excess of

50 picocuries per liter in a sample, individual radionuclide analyses were performed to determine the contributing species.

Soil and sediment samples collected for laboratory analysis at the site were analyzed for total metals (tantalum, columbium, tin, lead, nickel, antimony, arsenic, barium, cadmium, calcium, chromium, mercury, selenium, and silver), total fluoride, total ammonia, total sulfate, gross alpha, gross beta, and MIBK).

Generally, if gross alpha or gross beta was detected at levels significantly above background concentrations in site soil or sediment samples, individual radionuclide analyses were performed to determine the contributing species. The selection of soil or sediment samples chosen for individual radionuclide determinations was based on the number, location, distribution, and extent of apparent contamination of the samples.

Additionally, 20 percent of the soil samples were analyzed for the USEPA Toxicity Characteristic Leaching Procedure (TCLP) metals to determine the mobility of any contaminant detected. Soil samples were selected for TCLP metals analysis based on the highest total metals concentrations detected.

Waste samples collected from the facility's ponds (Ponds Nos. 3, 5, 6, 7, 8, 9, 1S, and 1N) were analyzed for total metals (antimony, arsenic, barium, beryllium, cadmium, chromium, columbium, lead, mercury, molybdenum, nickel, selenium, silver, tantalum, and tin) utilizing inductively coupled argon plasma procedures, TCLP metals, major anions and cations, total cyanide, VOCs, semivolatile organic compounds, uranium, thorium$_{230}$, radium$_{226}$, radium$_{228}$, gross alpha, and gross beta.

3.0 Geology and Hydrogeology

This chapter discusses the regional geology and hydrogeology as it pertains to the Fansteel facility located in Muskogee, Oklahoma. The site-specific geology and hydrogeology is also presented in this chapter and is based on specific information and data obtained during the performance of the remediation assessment. The regional geologic setting is discussed in Section 3.1 and the regional hydrogeology is presented in Section 3.2. Sections 3.3 and 3.4 discuss site-specific geology and hydrogeology.

3.1 Regional Geology

The city of Muskogee, Oklahoma is located in the unglaciated Osage Section of the Central Lowlands Physiographic Province. The eastern boundary of the section is delineated by the lapping of westward dipping Pennsylvanian rocks onto the western edge of the Ozark and the Ouachita uplifts. On the south, the Osage Section abuts the Arkansas Valley and Ouachita Mountains. Much of the Osage Section can be described as scarped plains. The topography ranges from nearly featureless plain and low escarpments to bold escarpments that rise as much as 600 feet above the adjacent plains. Lowlands or plains mark the weak rock belts and hills or escarpments the areas of resistant rock.

Bedrock in the southeastern portion of the Osage Section consists of mostly thin- to massive-bedded sandstone, shale, siltstone, and limestone of Pennsylvanian Age. The sandstone beds are hard and well cemented and the shales and siltstones are compact and dense. Units identified in the Muskogee area include the Hartshorne Sandstone, the McCurtain Shale, and the Warner Sandstone, in ascending order. Permeability in this type of bedrock is generally low and groundwater movement depends on secondary porosity (joints and fractures) rather than primary porosity (intergranular).

Although the subject site is physically located in the Osage Section, the regional structural geology is influenced by its proximity to the Boston Mountains Section of the Ozark Plateau Physiographic Province and the Arkansas Valley Section of the Ouachita Physiographic Province. The Boston Mountains form a fairly narrow east-west belt at the extreme southern margin of the Ozark Dome (uplift). Rocks of the Boston Mountains Section are early and middle Pennsylvanian in age and are predominantly sandstone and shale. Faulting is

conspicuous in the Boston Mountains, particularly in Cherokee and Adair counties of Oklahoma. However, the number and magnitude of these faults rapidly subsides until they are eventually unrecognizable west of the Arkansas River. On the southern margin of the Boston Mountains, near the subject site, bedrock dips steepen rapidly as the strata descend into the synclinorium in the Arkansas Valley to the south.

The Arkansas Valley Section is an east-west belt that extends from Oklahoma to the Coastal Plain in Arkansas. The Arkansas Valley is a trough both topographically and structurally. It is transitional between the essential homoclinal structure of the south flank of the Boston Mountains to the north and the complexly folded strata of the Ouachita Mountains to the south. Intensity of folding increases from the Ozark Uplift (north) to the Ouachita Mountains (south). Closed folding with an east-west trend characterizes the Arkansas Valley. The structures and associated ridges commonly overlap one another en echelon. Rocks in the Arkansas Valley, with the exception of a few igneous intrusions, are Carboniferous in age and belong mainly to the Atoka, Stanely, and Jackfork groups. The Atoka Group which consists mostly of shale and thin sandstone forms an erosional scarp located approximately 4 miles from the Arkansas River (and the subject site) and is the closest bedrock outcrop. The subject site is located on the northern flank of the Arkansas Valley. Bedrock dips typically are to the south toward the axis of the basin.

Bedrock in the area of the subject site is nearly entirely overlain by alluvial deposits. The general regional topography of the bedrock beneath the alluvial deposits is relatively uniform with minor variations due to differential erosion. Terrace deposits having upper surfaces ranging from 20 to 120 feet above the floodplain border the alluvial deposits in segments on both sides of the Arkansas River. These deposits are composed predominantly of silt, fine sand, coarse sand, and gravel near the base. The city of Muskogee is on a terrace segment that extends north and east of the city to the bank of the Arkansas River.

Alluvium is formed in lenticular segments along the Arkansas River from 1 to 3 miles wide and 3 to 11 miles long which roughly parallel the river flow direction. Deposits of alluvium underlying the floodplain consist of clay, silt, sand, and gravel in proportions that vary locally. A general feature of the alluvium is the gradation in grain size from gravel or coarse-grained

sand near the base of the deposit to silt and clay near the surface. Its total thickness averages 42 feet and its saturated thickness is approximately 25 feet.

3.2 Regional Hydrogeology

Shale bedrock permeability is generally low and, therefore, does not readily transmit groundwater in the Muskogee area as discussed previously in Section 3.1. However, a small amount of water is produced from bedrock aquifers throughout the area for domestic and stock use, presumably from fractures or joints within the bedrock. Depths to water measured in wells completed into the bedrock average approximately 30 feet below ground surface.

Alluvial deposits are the most important aquifer in the Muskogee area and along the Arkansas River in general. Precipitation is the primary recharge, averaging approximately 36 to 40 inches per year (Todd, 1983). Natural discharge is mainly by seepage into streams and evapotranspiration. Quantities of groundwater adequate for domestic or stock use are available almost everywhere on the alluvial floodplain. Wells completed into the alluvium have been recorded to yield between 300 and 5,000 gallons per minute (Todd, 1983).

Groundwater in the alluvium is predominantly a hard, calcium, magnesium bicarbonate type. The quality is affected by precipitation, geology, water movement, and hydraulics of the alluvium. The water is suitable for irrigation and for domestic, stock, and limited industrial purposes.

3.3 Site Geology and Hydrogeology

In February 1991 (revised July 1992), Earth Sciences submitted a Remedial Assessment Work Plan for the Fansteel facility in its entirety. Earth Sciences' personnel conducted a background literature search to obtain regional geologic and hydrogeologic information concerning rock units and unconsolidated deposits in the vicinity of the Fansteel facility. Information obtained during this search was used to postulate geologic and hydrogeologic conditions underlying the subject facility and develop a site-specific work plan to evaluate such conditions.

The Remedial Assessment Work Plan proposed to define geologic conditions of the subsurface through an extensive drilling program that included collection of continuous split-spoon samples of the unconsolidated materials and obtaining core samples of the underlying bedrock.

The hydrogeologic conditions in the Northwest Property Area were to be defined by observing water inflow zones during drilling, slug tests, and static water level measurements. The following sections present a detailed summary of site geologic and hydrogeologic conditions at the Fansteel property area based on these activities.

3.3.1 Site Geology

A total of 96 soil borings were advanced at the subject property as specified in the remediation assessment work plan. Twenty-five of these soil borings were converted into shallow groundwater monitoring wells (MW-51S through MW-75S) and four into deep monitoring wells (MW-151D, MW-161D, MW-167D, and MW-174D). In addition, three observation wells (OW-1, OW-2, and OW-3) were installed as part of the pumping tests performed at the subject site. The shallow monitoring wells were installed to the top of bedrock, fully penetrating the unconsolidated materials. The deep monitoring wells were installed into the McCurtain Shale which represents the first bedrock unit encountered beneath the site. The remaining soil borings not converted into monitoring wells were also drilled into unconsolidated materials to determine the depth to groundwater in these locations and to provide additional information regarding the chemical character of the sediments beneath the site. However, because these three borings were not fully advanced to bedrock, the thickness of the water-bearing zone at these locations was unquantifiable. The locations of the soil borings and monitoring wells are presented in Figure 2 included with this report.

As shown in geologic Cross Sections A-A,' B-B', and C-C' (Figure 5) and the boring logs contained in Appendix A, unconsolidated deposits underlying the Fansteel site range in thickness from approximately 8.75 feet (MW-75S) to approximately 34.5 feet (OW-1). These unconsolidated materials consist of natural soils and heterogeneous fill material. The fill is probably a heterogenous mixture of man-made materials and reworked natural soils used during the grading of the site. Fill material was not identified in most of the soil borings, however, where encountered, thicknesses ranging from 0.5 foot (MW-58) to 24 feet (OW-2) were observed.

The natural soils observed at the subject site are alluvial terrace deposits composed predominantly of silty and sandy clay, silt, fine sand, and coarse sand. It is typical of alluvial deposition for the more coarse-grained deposits to be found near the base of the materials.

Coarse-grained materials are heavier and will remain suspended in a medium- to high-energy environment for a shorter period of time than fine-grained sediments. This depositional environment is evident in the sequence of materials encountered beneath the Fansteel site.

The alluvial soil deposits observed beneath the subject property can be divided into two units. At the base of the unconsolidated deposits and overlying bedrock is a medium- to coarse-grained sand unit ranging in thickness from approximately 1.5 feet (MW-56S) to 17.5 feet (MW-54S). This sand unit is generally saturated throughout its entirety with few exceptions.

Additionally, at the base of the lower coarse-grained unit, a sand and gravel layer was observed in seven of the soil borings. This very coarse-grained layer, where observed, ranged in thickness from 0.5 foot (B-20) to 5.0 feet (B-64). Except for the occurrence in OW-2, the sand and gravel layer appears to be confined to the northeastern portion of the subject property.

Overlying the sand unit and comprising the major portion of the unconsolidated materials are a series of finer-grained deposits. These fine-grain materials range from 3 feet (MW-69S) to 27 feet (OW-1) in thickness and consist of predominantly silty and sandy clay at the top grading to clayey sand toward the bottom. As is evidenced at Well MW-51S, occasional coarse-grained lenses of materials may be found within the predominantly finer-grained matrix.

The bedrock encountered beneath the facility is the McCurtain Shale. Site monitoring wells MW-151D, MW-161D, MW-167D, and MW-174D were designed to monitor hydrogeologic conditions in the McCurtain Shale. As part of the monitoring well installation process, rock cores of the McCurtain Shale were retrieved and logged in detail. Monitoring Well MW-174D had the deepest penetration of the McCurtain Shale, 56.3 feet. Based on the boring logs contained in Appendix A for Monitoring Wells MW-151D, MW-161D, MW-167D, and MW-174D, the McCurtain Shale encountered at this location is predominantly medium to dark gray, siliceous, and moderately hard. Few relatively intense zones of horizontal fracturing were observed which included the presence of a few fractures on a 45-degree plane from horizontal. RQD values ranged from 0 to 100 percent. In general, the lower RQD values were recorded near the top of bedrock surface and typically increased with increasing depth corresponding to lessening degrees of weathering. Some of the fractures in the basal 30 feet of shale are clay filled indicating groundwater flow through fractures in this portion of the shale. Due to the

injection of water during coring activities, zones of saturation within the shale were detected using secondary identification indicators such as staining, contact features, and fracture/filling characteristics.

Although encountered at different portions of the facility during other remediation assessment activities, the strike and dip of the McCurtain Shale beneath the facility was not able to be calculated from drilling information because the unit was not fully penetrated and the uppermost surface represents an erosional surface. However, a strike and dip measurement from an outcrop of the McCurtain Shale on the west bank of the Arkansas River east of the Fansteel property boundary indicated the strike to be N20°W with a dip of 14 degrees to the southwest.

A top of bedrock map (Figure 6) was prepared for the Fansteel site using drill hole data collected during this assessment. As shown in Figure 6, the top of bedrock wholly consists of the McCurtain Shale with no detectable lithologic boundaries. The top of bedrock surface slopes from west to east over the majority of the Fansteel site. However, along the southern boundary of the subject site, the bedrock surface begins to rise slightly. Consequently, the overall morphology of the bedrock surface beneath the Fansteel site resembles an elongate swale with a north-south axis. Figure 6 depicts a depression on the bedrock surface in the northeast quadrant of the site roughly centered around Monitoring Well MW-72S. This depression in the bedrock surface most likely is a result of construction activity associated with the installation of the french drain circumventing Pond No. 3, rather than natural erosional or depositional processes.

3.4 Site Hydrogeology

Hydrogeologic conditions of the Fansteel property were determined using groundwater elevation data (Table 1), slug tests, data (Appendix C), and interpretation of geologic data discussed in preceding sections. Twenty-nine groundwater monitoring wells were installed to communicate with two distinct zones of saturation. Monitoring Wells MW-51S through MW-75S were installed to communicate with the unconsolidated zone of saturation and Monitoring Wells MW-151D, MW-161D, MW-167D, and MW-174D were installed to communicate with a water-bearing zone within the shale bedrock.

Groundwater within the unconsolidated deposits is located at the base of the sediments within the coarse-grained materials. The unconfined saturated sand unit overlying bedrock is laterally persistent across the subject area. The saturated thickness of this unit ranges from approximately 1.5 feet at Monitoring Well MW-56S to 17.5 feet at MW-54S. Perched zones of saturation were not encountered. In the instance where a coarse-grained lens of material was encountered overlying a finer-grained material, the lens was dry.

A groundwater contour map (Figure 7) was constructed based on groundwater elevation data for wells communicating with this unit across the entire facility. As indicated in Figure 7, a groundwater divide in the unconsolidated zone of saturation in the Northwest Property Area results in radial flow northeast, southeast, and southwest to other portions of the facility at hydraulic gradients of 0.0076, 0.003, and 0.0064 respectively. Hydraulic gradient calculations are presented in Appendix C.

3.4.1 Single Well Aquifer Characterization

Slug tests were conducted in each well to determine the hydraulic conductivity and transmissivity of the unconsolidated zone of saturation. The hydraulic conductivity of the northeast water-bearing zone ranged from 1.32×10^{-2} centimeter per second at Well MW-65S to 5.95×10^{-3} centimeter per second at Well MW-63S. The mean hydraulic conductivity for the northeast water-bearing zone was calculated as 5.43×10^{-3} centimeter per second. The hydraulic conductivity of the southwest water-bearing zone ranged from 5.15×10^{-3} centimeter per second at Well MW-56S to 3.12×10^{-3} centimeter per second at Well MW-54S. The mean hydraulic conductivity for the southwest water-bearing zone was calculated as 4.18×10^{-3} centimeter per second. The hydraulic conductivity of the southeast water-bearing zone ranged from 3.86×10^{-3} centimeter per second at Well MW-59S and 7.21×10^{-3} centimeter per second at Well MW-58S. The mean hydraulic conductivity for the southeast water-bearing zone was calculated as 5.56×10^{-3} centimeter per second.

Average linear groundwater velocity calculations were calculated for the shallow aquifer using effective porosity values of 15 and 20 percent for variations of sand, gravel, and some silty clay. The average linear velocity for the northeast and the southeast flow direction was consistent across the area ranging from 1.77×10^{-4} centimeter per second to 2.74×10^{-4} centimeter per second. However, average linear velocity for the southwest direction was slightly lower,

ranging from 6.27 x 10^{-5} centimeter per second to 8.36 x 10^{-5} centimeter per second. Slug test and average linear groundwater velocity calculations are presented in Appendix C.

The volume of groundwater flow through the unconsolidated zone of saturation in the Fansteel site was calculated for the three flow directions, the southeast, southwest, and northeast. Groundwater flow associated with these areas was determined to be 0.53, 0.4, and 0.52 gallon per minute respectively. Calculations for volume of groundwater flow are presented in Appendix H.

Groundwater within the McCurtain Shale was encountered at Well MW-151D, MW-161D, MW-167D, and MW-174D in the Fansteel property area. These deep monitoring wells were installed to communicate with a zone of fractured shale which was determined to produce a measurable quantity of water. The rock core above and below this fractured sequence was determined to be dry based on core inspection. Groundwater in this zone of saturation was encountered under confined conditions and is separated from the overlying unconsolidated zone of saturation by approximately 30 feet of shale bedrock. The significant difference in static groundwater elevation observed between nested Monitoring Wells MW-51S, MW-61S, MW-67S, and MW-74S (designed to communicate with the overlying unconsolidated material) and Monitoring Wells MW-151D, MW-161D, MW167D, and MW-174D (designed to communicate with the shale bedrock) indicates that these pairs of monitoring wells communicate with two distinct zones of saturation.

A potentiometric surface map (Figure 8) was constructed based on groundwater elevations obtained from all site monitoring wells communicating with the McCurtain Shale. As shown in Figure 8, groundwater in the shale bedrock unit beneath the Fansteel property area has a bidirectional flow direction; one component of flow is to the west-northwest and the second to the east. The flow to the northwest has a hydraulic gradient of 0.017. The hydraulic gradient of the easterly flow is 0.00565. Hydraulic gradient calculations are presented in Appendix H.

3.4.2 Single Well Aquifer Characterization Tests

Slug tests were performed at Monitoring Wells MW-151D, MW-161D, MW-167D, and MW-174D to determine the hydraulic conductivity and transmissivity of the shale bedrock zone of saturation at this location (Table 7). The hydraulic conductivities of bedrock Monitoring

Wells MW-151D, MW-161D, MW-167D, and MW-174D were 3.82×10^{-6}, 1.54×10^{-5}, 1.08×10^{-3}, and 9.72×10^{-6} centimeter per second respectively. However, it should be noted that the saturated zone in MW-167 was 17 feet compared to 5.5, 6.0, and 7.25 feet in the other three bedrock monitoring wells. This may account for the anomolously high hydraulic conductivity at this location. Based on these hydraulic conductivities, mean conductivities were calculated for the two bedrock flow directions. The mean conductivity for the westerly flow is 8.30×10^{-6} centimeter per second. The mean conductivity for the easterly flow (includes MW-167D) is 5.45×10^{-5} centimeter per second.

An average linear groundwater velocity was calculated using effective porosities of 5 and 10 percent. Five percent was assumed to account for little fracturing within the saturated zone and 10 percent was assumed to account for moderate fracturing within the saturated zone. Based on an effective porosity of 5 percent, the average linear groundwater velocity was calculated to be 9.38×10^{-7} and 1.85×10^{-5} centimeter per second for the westerly and easterly flow directions respectively. Based on an effective porosity of 10 percent, the average linear groundwater velocity was calculated to be 4.69×10^{-7} and 9.27×10^{6} centimeter per second for the westerly and easterly flow directions respectively.

The volume of groundwater flow through the McCurtain Shale zone of saturation in the eastern portion of the Fansteel property area was determined to be 5.18×10^{-5} gallon per minute. The volume of groundwater flow through the shale in the western portion of the subject property is 8.30×10^{-6} gallon per minute. Slug test and average linear groundwater velocity calculations are presented in Appendix C.

3.4.3 Multiwell Aquifer Characterization Test

A 65-hour pumping test was conducted in the southwestern quadrant of the Fansteel property to further characterize the unconsolidated aquifer. Because no impacts were observed to the McCurtain Shale, a pumping test was not required for this aquifer. Monitoring Well MW-53S was utilized as the pumping well for the unconsolidated aquifer while Monitoring Wells MW-52S, MW-54S, MW-61S, MW-63S, and MW-68S, and Observation Wells OW-1, OW-2, and OW-3 were used as observation points.

A step test performed on the pumping well indicated that the well could not sustain pumping rates more than 1.0 gallon per minute. A rate of 0.5 gallon per minute produced a slight decrease in hydraulic head over time. Consequently, a rate of 0.1 gallon per minute was determined to be the highest rate at which the pumping well could be pumped in order to retain its yield for the duration of the pump test. Based on water level measurements made at the designated observation points, it does not appear that the pumping test produced a measurable response in the unconsolidated aquifer. Although, Observation Points OW-1 and OW-2 were located only 40 and 35 feet respectively from the pumping well, no effects of the pumping were observed. Consequently, the zone of influence produced by the pumping appears to be confined to a radius of less than 35 feet.

4.0 Remediation Assessment Results

4.1 Chemical Characteristics

The chemical characteristics of soil, groundwater, and pond residues were determined using the methodologies and analytical parameters presented in Chapter 3.0 of this report. The following sections present a summary of the results of the chemical analysis performed on various media present on site.

4.1.1 Site Soils

Soil samples were collected and analyzed from all of the soil borings, shallow monitoring well boreholes, and test pits installed at the site. Generally, three soil samples for chemical analysis were selected from each soil boring and shallow monitoring well borehole based on the criteria described in Chapter 3.0 of this report. One soil sample was selected for chemical analysis from each of the test pits. All soil samples were analyzed for the following parameters:

- Total metals (antimony, arsenic, barium, cadmium, calcium, chromium, columbium, lead, mercury, nickel, silver, selenium, tantalum, and tin)
- Ammonia
- Fluoride
- Sulfate
- pH
- MIBK (4-methyl-2-pentanone)

Additionally, 20 percent of all soil samples selected for analysis was also analyzed for TCLP metals to determine the mobility of certain constituents. Soil samples were selected for TCLP metals analysis based on the highest total metals concentration detected. Results of the soil sample analyses were compared to typical concentration ranges or proposed RCRA corrective action levels, if available, to identify potential areas which may be of concern. These concentration ranges and proposed corrective action levels are summarized in Table 2. Analytical results for soils analyses are presented in Table 3 for soil borings and shallow monitoring well boreholes and Table 4 for test pits.

With the exception of antimony, mercury, selenium, and silver, the metals analyzed were detected in the majority of site soil samples at various concentrations. Antimony, generally not

identified in site soil samples, was present at concentrations up to 56 milligrams per kilogram (mg/kg) in Boring B-64, 9.5 - 12.5 feet) when identified. Arsenic ranged from not detected to a concentration of 33 mg/kg (B39, 12.0 feet to 13.0 feet). Barium was detected in the great majority of samples collected at the site and ranged in concentrations from 10 mg/kg (B-33, 0 - 0.5 feet) to 3,100 mg/kg (B-56, 4.5 - 7.0 feet). Cadmium ranged from not detected to a concentration of 36 mg/kg (B-50, 0 - 0.5 feet). Calcium was widely distributed throughout site soils at a concentration up to 220,000 mg/kg (B-55, 1.0 feet to 2.0 feet). Chromium was identified in site soils up to a concentration of 240 mg/kg (B-61, 0 feet to 0.5 feet). Columbium detected in all but a few soil samples ranged in concentrations from 1.2 mg/kg (B-5, 0 feet to 0.5 feet; B-20, 2.5 feet to 4.0 feet; B-47, 0 feet to 0.5 feet; MW-65S, 23.5 feet to 26.2 feet; and TP-6, 0.8 foot) to 2,100 mg/kg (MW-66S, 0 feet to 2 feet). Lead, another metal detected in the vast majority of site soil samples, ranged in concentrations from 0.58 mg/kg (B-42, 0.5 foot to 2.0 feet) to 91 mg/kg (B-25, 23.5 feet to 26.8 feet). Mercury was detected in only a small number of site soil samples with the highest concentration identified being 1.4 mg/kg (B-61, 0 foot to 0.5 feet). Nickel ranged from not detected to 79 mg/kg (B-1, 19.5 feet to 22 feet). Silver was identified in only one sample collected at the site (MW-55S, 14.5 feet to 17.0 feet) at a concentration of 2.5 mg/kg. Selenium was not detected in many site soil samples but, when identified, ranged in concentrations from 0.26 mg/kg (MW-65S, 0 feet to 0.5 feet) to 0.50 mg/kg (B-68, 7.5 feet to 10.0 feet). Tantalum was present in the majority of soil samples at concentrations ranging from 1.2 mg/kg (B-36, 23.0 feet to 24.5 feet) to 1,500 mg/kg (MW-66S, 0 feet to 2 feet). Tin ranged from not detected up to a concentration of 2,200 mg/kg (B-64, 9.5 feet to 12.5 feet).

Total concentrations of the following metals were present in site soils either within typical concentration ranges and/or below proposed RCRA corrective action levels: arsenic, barium, cadmium, calcium, chromium, lead, mercury, nickel, selenium, and silver. Total concentrations of antimony exceeded the proposed RCRA corrective action level of 30 mg/kg in only two site soil samples: B-64 (9.5 feet to 12.5 feet), 56 mg/kg and B-72 (15 feet to 16 feet), 40 mg/kg.

Tin which currently does not have a proposed corrective action level was present in the majority of site soil samples at concentrations outside its typical range of less than 0.1 to 7.4 mg/kg. The highest concentrations of tin detected in site soils were present in the following samples: B-1 (12 feet to 14.5 feet), 1,800 mg/kg; B-35 (11 feet to 12 feet), 440 mg/kg;

B-36 (11 feet to 13 feet), 480 mg/kg; B-47 (15 feet to 17.5), 710 mg/kg; B-64 (9.5 feet to 12.5 feet), 220 mg/kg; and B-72 (15 feet to 16 feet), 630 mg/kg.

Columbium and tantalum currently do not have established typical concentration ranges or proposed RCRA corrective action levels. The highest concentrations of columbium detected in site soils were present in the following samples: B-1 (12 feet to 14.5), 730 mg/kg; B-2 (9.5 feet to 12 feet), 510 mg/kg; B-4 (2 feet to 4.5 feet), 320 mg/kg; B-49 (0 feet to 0.5 feet), 330 mg/kg; B-64 (9.5 feet to 12.5 feet), 400 mg/kg; MW-66S (0 feet to 2 feet), 2,100 mg/kg; and MW-67S (0 feet to 2), 740 mg/kg. The highest concentrations of tantalum were observed in B-4 (2 feet to 4.5 feet), MW-66S (0 feet to 2 feet), and MW-67S (0 feet to 2 feet) at 330, 1,500 and 130 mg/kg respectively.

As stated earlier, 20 percent of the soil samples collected throughout the site were analyzed for TCLP metals. Only one of the samples analyzed for TCLP metals exhibited a leachable metal concentration of concern. This sample was collected from B-56 (4.5 feet to 7.0 feet) and exhibited a leachable concentration of barium of 200 mg/l.

Fluoride was detected in all site soil samples submitted for analyses up to a concentration of 66,000 mg/kg in B-1 (12 feet to 14.5 feet). No RCRA corrective action level has been proposed for fluoride at this time. The typical range of fluoride concentrations in soil is less than 10 mg/kg to 1,900 mg/kg. This concentration range was exceeded by a number of site soil samples, most notably: B-1 (12 feet to 10.5 feet, 17 feet to 19.5 feet, and 19.5 feet to 22 feet), 66,000, 13,000, and 10,000 mg/kg respectively; B-2 (9.5 feet to 12 feet, 24.5 feet to 27 feet, and 27 feet to 31 feet), 60,000, 24,000, and 23,000 mg/kg respectively; B-15 (9.2 feet to 10 feet), 9,100 mg/kg; B-22 (0 feet to 0.5 foot), 5,600 mg/kg; B-29 (0 feet to 0.5 foot, 0.5 foot to 2.5 feet, and 23 feet to 24.5 feet), 6,400, 43,000, and 6,500 mg/kg respectively; B-35 (10 feet to 11 feet and 11 feet to 12 feet), 17,000 and 53,000 mg/kg; B-36 (11 feet to 13 feet), 13,000 mg/kg; B-49 (0 feet to 0.5 foot), 7,900 mg/kg; B-51 (24 feet to 26 feet), 5,400 mg/kg; B-52 (0.5 foot to 2.5 feet), 5,600 mg/kg; B-54 (0.5 foot to 2.0 feet), 31,000 mg/kg; B-55 (1 foot to 2 feet and 7 feet to 9.5 feet), 6,800 and 5,800 mg/kg; B-59 (12.5 feet to 15 feet), 8,800 mg/kg; B-61 (0 feet to 0.5 foot), 13,000 mg/kg; B-62 (15 feet to 17 feet), 5,200 mg/kg; B-64 (18 feet to 20 feet), 14,000 mg/kg; B-70 (12.5 feet to 14.0 feet), 5,200 mg/kg; B-72 (12.5 feet to 15 feet and 15 feet to 16 feet), 6,800 and 12,000 mg/kg; MW-66S (0 feet to 2 feet and 14.5 feet to 17 feet), 8,900 and 6,100

mg/kg; MW-67S (12.0 feet to 14.5 feet and 19.5 feet to 22.0 feet) 12,000 and 5,100 mg/kg; MW-71S (2 feet to 4.5 feet), 6,000 mg/kg; and TP-6 (0.8 foot), 6,200 mg/kg.

Ammonia was also identified in site soil samples at concentrations up to 1,780 mg/kg in MW-67S (19.5 feet to 22 feet). No typical concentration ranges for ammonia in soil have been established and no RCRA corrective action levels have been proposed at this time. The highest concentrations of ammonia detected in site soils were exhibited by the following samples: B-1 (17 feet to 19.5 feet), 780 mg/kg; B-35 (10 feet to 11 feet), 480 mg/kg; B-58 (9.5 feet to 12 feet), 1,100 mg/kg; B-61 (15 feet to 17 feet), 560 mg/kg; B-62 (15 feet to 17 feet), 540 mg/kg; B-63 (15 feet to 17.5 feet), 520 mg/kg; and MW-67S (12 feet to 14.5 feet, 19.5 feet to 22 feet, and 22 feet to 24.5 feet), 1,580, 1,780, and 1,300 mg/kg respectively.

Sulfate was detected in site soils at concentrations up to 10,000 mg/kg in B-9 (12 feet to 15 feet). No typical concentration ranges or proposed RCRA corrective action levels have been established for sulfate. The highest concentrations of sulfate were detected in the following site soil samples: B-9 (12 feet to 15 feet and 15 feet to 17 feet), 10,000 and 4,200 mg/kg; B-12 (17.5 feet to 19 feet), 600 mg/kg; B-19 (0 feet to 0.5 foot), 1,420 mg/kg; B-35 (11 feet to 12 feet), 640 mg/kg; B-36 (11 to 13 feet), 700 mg/kg; B-48 (24.5 feet to 26 feet), 540 mg/kg; B-53 (23 feet to 24.9 feet), 740 mg/kg; B-58 (9.5 feet to 12 feet), 860 mg/kg; B-63 (15 feet to 17.5 feet), 660 mg/kg; MW-59S (9.5 feet to 12 feet), 780 mg/kg; MW-64S (0 feet to 0.5 foot), 680 mg/kg; MW-67S (19.5 feet to 22 feet and 22 feet to 24.5 feet), 1,120 and 960 mg/kg; MW-71S (19.5 feet to 22 feet), 1,500 mg/kg; and MW-73S (13.02 feet to 14.2 feet), 520 mg/kg.

MIBK was also identified in several site soil samples. A proposed RCRA corrective action level has been established for MIBK. This level is 4,000 micrograms per kilogram (µg/kg). The following site soil samples exhibited concentrations of MIBK in excess of the proposed RCRA corrective action level: B-1 (12 feet to 14.5 feet, 17 feet to 19.5 feet, and 19.5 feet to 22 feet), 75,000, 65,000, and 64 µg/kg respectively; B-2 (9.5 feet to 12 feet, 24.5 feet to 27 feet, and 27 feet to 31 feet), 14,000, 25,000, and 5,700 µg/kg respectively; B-35 (10 feet to 11 feet and 11 feet to 12 feet), 23,000 and 91,000 µg/kg; B-36 (11 feet to 13 feet), 6,900 µg/kg; B-47 (15 feet to 17 feet and 24.5 feet to 26 feet), 190,000 and 20,000 µg/kg; B-59 (12.5 feet to 15 feet), 22,000 µg/kg; B-64 (9.5 feet to 12.5 feet and 18 feet to 20 feet), 30,000 and 33,000 µg/kg; B-72 (15 feet to 16 feet), 7,600 µg/kg; MW-73S (13 feet to 14.2 feet and 14.7 feet to 15 feet), 45,000 and

10,000 μg/kg; and MW-64S (14.5 feet to 17 feet and 19.5 feet to 22 feet), 19,000 and 83,000 μg/kg.

4.1.1.1 Distribution of Contaminants of Concern in Site Soils

Figure 9 illustrates the location of the parameters of concern identified in excess of typical soil concentration ranges or proposed corrective action levels. As stated earlier, ammonia does not have a typical soil concentration range or proposed corrective action level. Figure 9 identifies the location of ammonia concentrations generally detected in excess of 10 mg/kg. As this figure illustrates, the vast majority of soil contamination is confined to the eastern area of the site, downgradient or in the immediately vicinity of the Chemical "A" Building, Chemical "C" Building, Pond No. 2, and Pond No. 3. The most pervasive constituents identified in this portion of the site (MIBK, ammonia, fluoride, tin, and columbium) are consistent with plant operations and activities historically conducted in this area.

The presence of these constituents appears to be well distributed throughout the soil column in this area with the exception of MIBK and ammonia. MIBK and ammonia, almost without exception, were present at depths greater than 5 feet in the borings in this area and do not appear to present a surficial concern. Antimony was identified in only two borings in this area at concentrations only slightly in excess of typical ranges and, therefore, does not appear to present significant concern.

Barium which is not widely distributed in site soils at significant levels was identified at one specific location (B-56) at a concentration that presents some concern. Leachable concentrations of barium were present in soils from B-56 at levels sufficient to classify these materials as characteristically hazardous. Barium was not identified in soil borings immediately surrounding this location at significant concentrations. Therefore, the presence of the elevated concentration of barium within B-56 appears to be a discrete and isolated occurrence. Columbium, fluoride, and ammonia were also identified at relatively elevated concentrations in soils to the east of Ponds Nos. 5, 6, 7, 8, and 9. However, the concentrations of these constituents were typically less than that exhibited in soils to the east of the Chemical "A" Building and in the area of Ponds Nos. 2 and 3.

4.1.2 Pond Residues

Residue samples were collected from each of the ponds located on the Fansteel site including Ponds Nos. 2, 3, 5, 6, 7, 8, and 9. The residue samples were collected in accordance with the sampling methodologies outlined in Chapter 3.0 of this report. Each residue sample was analyzed for the following parameters:

- Total metals: antimony, arsenic, barium, beryllium, cadmium, chromium, columbium, lead, mercury, molybdenum, nickel, selenium, silver, tin, and tantalum.
- TCLP metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and nickel).
- Ammonia, chloride, fluoride, nitrate, sulfate, and cyanide.
- Aluminum, calcium, iron, potassium, magnesium, manganese, and sodium.
- Alkalinity, pH, and specific conductance.
- VOCs.
- Semivolatile organic compounds.

These parameters were utilized to define the characteristics of the pond residues. The following sections discuss the analytical results for the residue samples on a pond-by-pond basis.

4.1.2.1 Pond No. 2

A total of nine residue samples were collected from three sampling locations within Pond No. 2 (Figure 2). Silver was present in Pond No. 2 residue at concentrations ranging from 10 to 52.7 mg/kg. Arsenic was detected in only three residue samples at concentrations up to 74.3 mg/kg. Barium ranged in concentrations from 284 to 2,180 mg/kg. Beryllium was detected at concentrations ranging from 10.3 to 33.1 mg/kg. Cadmium was not detected in any of the Pond No. 2 residue samples. Chromium ranged in concentrations from 153 to 740 mg/kg. Mercury was identified at concentrations ranging from 0.260 to 2.74 mg/kg. Molybdenum ranged in concentrations from 21 to 40 mg/kg. Nickel ranged from nondetected to 103 mg/kg. Lead ranged from nondetected to 167 mg/kg. Antimony was detected at concentrations ranging from 61.9 to 576 mg/kg. Selenium was not detected in any Pond No. 2 residue samples. Tin ranged in concentrations from 830 to 6,000 mg/kg. Columbium ranged in concentrations from 1,200 to 11,000 mg/kg and tantalum ranged from 970 to 7,100 mg/kg. Cyanide ranged from not detected to 11 mg/kg.

Analysis of the nine residue samples for TCLP metals indicated that all residue samples exhibited leachable concentrations of chromium. Five of the residue samples contained leachable concentrations of chromium in excess of 5.0 milligrams per liter (mg/l), the maximum contaminant level (MCL). The concentrations of leachable chromium in the five samples ranged from 5.0 to 20.0 mg/l.

Ammonia was present in Pond No. 2 residues at concentrations ranging from 1.3 to 8.9 mg/l. Chloride ranged from nondetected to 5.7 mg/l. Fluoride was detected from 110 to 650 mg/l. Nitrate ranged in concentrations from 0.12 to 0.46 mg/l. Sulfate was detected at concentrations from 2.6 to 510 mg/l. Aluminum ranged from nondetected to 270 mg/l. Calcium was present at concentrations ranging from 13 to 300 mg/l. Iron ranged from 110 to 640 mg/l. Potassium was identified at concentrations ranging from 15 to 170 mg/l. Magnesium ranged from 16 to 50 mg/l. Manganese was present at concentrations ranging from 27 to 150 mg/l. Sodium ranged from not detected to 58 mg/l.

The alkalinity of all Pond No. 2 residue samples was below 2.0 mg/l calcium carbonate. Specific conductance ranged from 845 to 5,660 micromhos per centimeter. The pH of Pond No. 2 residues ranged from 2.33 to 3.38 standard units. The only VOC detected in Pond No. 2 residue samples was MIBK, identified in each of the nine residue samples at concentrations ranging from 43,000 to 730,000 micrograms per liter (µg/l).

No semivolatile organic compounds were detected in Pond No. 2 residue samples with the exception of di-N-butyl phthalate. However, this constituent was also detected in quality assurance/quality control (QA/QC) samples associated with the residue samples and may be associated with plastic sample collection equipment. It is not believed that di-N-butyl phthalate is actually present in Pond No. 2 residues. The results for the analysis of Pond No. 2 residues are summarized in Table 5. Figure 10 illustrates the location of various parameters of concern identified in Pond No. 2 residues.

4.1.2.2 Pond No. 3

A total of 15 residue samples were collected at 5 separate locations within Pond No. 3 in accordance with the methodologies presented in Chapter 3.0 of this report. Silver concentrations within Pond No. 3 residues ranged from 9.6 to 37 mg/kg. Arsenic ranged from

not detected to 109 mg/kg. Barium was detected at concentrations from 288 to 1,720 mg/kg. Beryllium ranged from 8.5 to 39.8 mg/kg. Cadmium was identified in only one Pond No. 3 residue sample at a concentration of 5.9 mg/kg. Chromium concentrations ranged from 1,540 to 1,970 mg/kg. Mercury ranged from not detected to 3.5 mg/kg. Molybdenum, nickel, lead, and antimony were detected at concentrations up to 49, 56.4, 137, and 241 mg/kg respectively. Selenium was not detected in any of the 15 Pond No. 3 residue samples. Tin was identified at concentrations ranging from 210 to 3,900 mg/kg. Columbium ranged from 720 to 4,400 mg/kg and tantalum ranged from 260 to 2,200 mg/kg. Cyanide ranged from not detected to concentrations up to 160 mg/kg.

TCLP metal analysis of Pond No. 3 residue samples indicated that leachable concentrations of chromium were present at levels above the MCL for this metal, 5.0 mg/l. Thirteen of the 15 residue samples collected from this pond exhibited leachable concentrations of chromium ranging from 6.7 to 36 mg/l.

Ammonia was detected in Pond No. 3 residues at concentrations ranging from 2.9 to 7.5 mg/l. Chloride ranged from not detected to 48 mg/l. Fluoride was identified at concentrations ranging from 32 to 670 mg/l. Nitrates ranged from not detected to 2.6 mg/l. Sulfates ranged from 2.6 to 540 mg/l. Aluminum ranged from not detected to 100 mg/l. Calcium was present at concentrations ranging from 20 to 270 mg/l. Iron, potassium, magnesium, manganese, and sodium were identified at concentrations up to 380, 170, 55, 140, and 37 mg/l respectively.

Alkalinity was detected in only one Pond No. 3 residue sample at 3.0 mg/l calcium carbonate. Specific conductance ranged from 714 to 6,220 microhms per centimeter. The pH of Pond No. 3 residue samples ranged from 2.10 to 5.56 standard units.

The only VOC detected in Pond No. 3 residues was MIBK. MIBK was identified in each of the 15 Pond No. 3 residue samples at concentrations ranging from 34,000 to 1,300,000 μg/kg.

No semivolatile organic compounds were detected in Pond No. 3 residues with the exception of di-N-butyl phthalate which is believed to be associated with plastic samples collection equipment. Analytical results for Pond No. 3 residue samples are summarized in Table 6.

Figure 10 identifies the location of various parameters of concern present in Pond No. 3 residues.

4.1.2.3 Pond No. 5

A total of five residue samples were collected from Pond No. 5 at three separate sampling locations in accordance with the methodologies presented in Chapter 3.0 of this report. No silver, arsenic, cadmium, cyanide, or selenium was detected in Pond No. 5 residue samples. Barium was identified at concentrations ranging from 28.1 to 119 mg/kg. Beryllium ranged from 3.2 to 15.6 mg/kg. Chromium was detected in Pond No. 5 residues at concentrations ranging from 45.8 to 164 mg/kg. Mercury was present at levels up to 0.410 mg/kg and molybdenum at concentrations up to 21 mg/kg. Nickel ranged in concentrations from 17.5 to 143 mg/kg. Lead was detected at concentrations up to 89.8 mg/kg. Antimony ranged form 140 to 4,200 mg/kg. Columbium and tantalum were detected in each residue sample form Pond No. 5. Columbium ranged from 870 to 8,100 mg/kg and tantalum ranged from 270 to 5,200 mg/kg.

TCLP metals analysis of the Pond No. 5 residue samples did not identify the presence of metals above established MCLs. Leachable concentrations of nickel were detected in one Pond No. 5 residue sample at a concentration of 1.3 mg/l. No MCL has been established for nickel.

Ammonia was detected in four of the five Pond No. 5 residue samples at concentrations up to 16 mg/l. Chloride was identified in only two samples at concentrations of 6 and 19 mg/l. Fluoride was detected in each sample at concentrations ranging from 3.8 to 9.6 mg/l. Nitrate and sulfate were detected in each Pond No. 5 residue sample at concentrations up to 7.6 and 900 mg/l respectively.

Aluminum and iron were not detected in any of the pond No. 5 residue samples. Calcium ranged from 57 to 610 mg/l. Potassium, magnesium, manganese, and sodium were present at trace levels up to 38, 19, 13, and 39 mg/l respectively.

The alkalinity of Pond No. 5 residues ranged from 21 to 60 mg/l calcium carbonate. Specific conductances ranged from 384 to 2,500 micromhos per centimeter. The pH of Pond No. 5 residues ranged from 7.93 to 10.31 standard units.

No VOCs or semivolatile organic compounds were detected within the Pond No. 5 residue samples with the exception of bis(2-ethylhexyl) phthalate and di-N-butyl phthalate. The presence of these phthalates are believed to be associated with plastic sample collection equipment used to handle the residue samples. The results for the analysis of Pond No. 5 residue samples are summarized in Table 7. Figure 10 identifies the location of various parameters of concern identified in Pond No. 5 residues.

4.1.2.4 Pond No. 6

Two residue samples were collected from the bottom sediments of Pond No. 6 in accordance with the sampling methodologies outlined in Chapter 3.0 of this report. No silver, arsenic, cyanide, molybdenum, lead, or selenium were detected in sediment samples from Pond No. 6. Barium was detected at 74.2 and 195 mg/kg in the two residue samples. Beryllium, cadmium, chromium, and mercury were identified at 9 and 10.9 mg/kg, not detected and 11 mg/kg, 183 and 249 mg/kg, and 0.221 and 0.414 mg/kg respectively in the two sediment samples. Antimony was present in both samples at 126 and 134 mg/kg. Tin was detected at 1,100 and 1,400 mg/kg. Columbium and tantalum were detected at 260 and 2,700 mg/kg (columbium) and 310 and 960 mg/kg (tantalum).

No TCLP metals were detected in Pond No. 6 sediment samples. Ammonia was present at 0.51 and 0.84 mg/l; chloride at 2.2 and 3.9 mg/l, and fluoride at 4.6 and 11 mg/l. Nitrate was detected in only one sediment sample at 0.14 mg/l. Sulfates were present at 73 and 1,200 mg/l.

Aluminum, iron, magnesium, manganese, and sodium were not detected in Pond No. 6 sediments. Calcium was detected at 41 and 520 mg/l and potassium was present at 15 and 17 mg/l.

The alkalinity of the two Pond No. 6 sediment samples was 8 and 18 mg/l calcium carbonate. Specific conductance was measured at 283 and 2,093 micromhos per centimeter. The pH of the two sediment samples was 7.93 and 8.08 standard units.

No VOCs or semivolatile organic compounds were detected within the two Pond No. 6 samples. Analytical results for Pond No. 6 are summarized in Table 8. Figure 10 identifies the location of various parameters of concern detected in Pond No. 6.

4.1.2.5 Pond No. 7

A total of two sediment samples from Pond No. 7 were collected for analysis in accordance with the sampling protocols outlined in Chapter 3.0 of this report. No silver, arsenic, cyanide, cadmium, molybdenum, or selenium were detected in these two sediment samples. The following metals were detected in the two sediment samples at the concentrations identified: barium (79.7 and 91.7 mg/kg), beryllium (21.4 and 22.5 mg/kg), chromium (358 and 406 mg/kg), mercury (1.72 and 2.98 mg/kg), nickel (61.1 and 95 mg/kg), lead (98.4 and 102 mg/kg), antimony (366 and 623 mg/kg), tin (3,000 and 3,400 mg/kg), columbium (5,700 and 7,600 mg/kg), and tantalum (1,600 and 1,900 mg/kg). No TCLP metals were detected in the two sediment samples.

Ammonia was detected at 3.3 and 7.8 mg/l. Chloride was present at 8.9 and 22 mg/l and fluoride was identified at 5.4 and 9.9 mg/l. No nitrate was detected in the two Pond No. 7 sediment samples. Sulfates were detected at 140 and 720 mg/l in the two samples.

No aluminum, iron, magnesium, or manganese was detected in Pond No. 7 samples. Calcium was identified at 64 and 240 mg/l, potassium at 30 and 39 mg/l, and sodium at 40 and 53 mg/l.

The alkalinity of the two sediment samples was determined to be 14 and 20 mg/l calcium carbonate. The specific conductance of the two samples was measured at 735 and 1,530 micromhos per centimeter. The pH of Pond No. 7 sediments was 8.02 and 9.57 standard units.

No VOCs or semivolatile organic compounds were detected in Pond No. 7 sediments. Analytical results for Pond No. 7 are summarized in Table 9. Figure 10 illustrates the location of various parameters of concern identified in Pond No. 7 residues.

4.1.2.6 Pond No. 8

A total of 15 residue samples were collected from 5 separate locations within Pond No. 8 in accordance with the sampling protocols outlined in Chapter 3.0 of this report. No silver, cadmium, lead, selenium, or cyanide were detected in any of the Pond No. 8 residue samples. The following metals were detected at the indicated concentration ranges: arsenic (not detected to 91.1 mg/kg), barium (24.2 to 105 mg/kg) beryllium (8.4 to 27.3 mg/kg), chromium

(74.7 to 992 mg/kg), mercury (0.197 to 1.24 mg/kg), molybdenum (not detected to 38 mg/kg), nickel (27.4 to 159 mg/kg), antimony (106 to 513 mg/kg), tin (360 to 1,800 mg/kg), columbium (1,500 to 5,500 mg/kg), and tantalum (650 to 3,700 mg/kg).

No TCLP metals were detected in the Pond No. 8 residue samples above established MCLs. Nickel which does not have an established MCL associated with TCLP analysis was detected in one sample at 1.3 mg/l.

Ammonia was identified in Pond No. 8 residues at concentrations ranging from 7.3 to 19 mg/l. Chloride was detected at concentrations from 21 to 47 mg/l. Fluoride ranged from 2.4 to 9.0 mg/l. Nitrate, when detected, was present at concentrations up to 0.43 mg/l. Sulfate ranged from 190 to 1,200 mg/l.

No aluminum, iron, magnesium, or manganese was detected in Pond No. 8 residues. Calcium, potassium, and sodium were present at concentrations up to 1,300, 74, and 98 mg/l respectively.

The alkalinity of Pond No. 8 residues ranged from 16 to 2,080 mg/l calcium carbonate. The specific conductance of the residue samples was measured at 1,050 to 8,350 micromhos per centimeter. The pH of the residues in Pond No. 8 ranged from 7.84 to 12.67 standard units. All pond residue samples with the exception of P8-2C (14 feet to 20 feet) exhibited pH near 11.0 standard units or less. Residue Sample P8-2C exhibited a pH of 12.67 standard units. This pH does not appear to be representative of residues contained within Pond No. 8.

MIBK was detected in each of the 15 Pond No. 8 residue samples at concentrations ranging from 4,800 to 190,000 µg/kg. Acetone was also detected in one residue sample at 3,000 µg/kg. No semivolatile organic compounds were identified in Pond No. 8 residues with the exception of di-N-butyl phthalate. Di-N-butyl phthalate was also detected in QA/QC samples associated with Pond No. 8 residues and is believed to be associated with the use of plastic sample collection trowels. The analytical results for Pond No. 8 are summarized in Table 10. Figure 10 illustrates the location of various parameters of concern detected in Pond No. 8.

4.1.2.7 Pond No. 9

A total of 15 residue samples were collected from 5 separate locations within Pond No. 9 in accordance with the methodologies outlined in Chapter 3.0 of this report. No silver, cadmium, molybdenum, lead, or selenium were detected in Pond No. 9 residue samples. Cyanide, arsenic, barium, mercury, and antimony when detected were present at concentrations up to 460, 74.5, 37.2, 1.73, and 362 mg/kg respectively. Beryllium was detected at concentrations ranging from 11.5 to 17.0 mg/kg, chromium ranged from 189 to 816 mg/kg, and nickel ranged from 37.2 to 88.3 mg/kg. Tin ranged from 580 to 1,500 mg/kg, columbium ranged from 2,100 to 5,500 mg/kg, and tantalum ranged from 640 to 1,300 mg/kg. TCLP metals analysis did not identify the presence of leachable concentrations of metals above established MCLs.

Ammonia was detected in Pond No. 9 residues at concentrations ranging from 2.0 to 18 mg/kg. Chloride and fluoride were identified at the following concentration ranges: 18 to 68 mg/l and 3.9 to 13 mg/l. Nitrate, when detected, was present at concentrations up to 0.32 mg/l. Sulfates ranged from 140 to 1,600 mg/l.

No aluminum, iron, magnesium, or manganese were detected in Pond No. 9 residue samples. Calcium was detected at concentrations ranging from 61 to 520 mg/l. Potassium concentrations ranged from 24 to 65 mg/l and sodium was present from 35 to 100 mg/l in Pond No. 9 residue samples.

The alkalinity on Pond No. 9 residue samples ranged from not detected up to 111 mg/l calcium carbonate. Specific conductances ranged from 952 to 2,400 micromhos per centimeter. The pH of Pond No. 9 residues was measured at 8.44 to 10.93 standard units.

MIBK was detected in all but one of the Pond No. 9 residue samples at concentrations ranging from 6,000 to 190,000 µg/kg. 1,1,1-Trichloroethane was identified in one Pond No. 9 residue sample at 4,700 µg/kg. No other VOCs were detected in the residue sample. No semivolatile organic compounds were detected in Pond No. 9 residues with the exception of bis(2-ethyl-hexyl) phthalate and di-N-butyl phthalate. The presence of the phthalates is believed to be associated with the use of plastic sample collection equipment. The results of Pond No. 9 residue analyses are summarized in Table 11. Figure 10 illustrates the location of various parameters of concern detected in Pond No. 9.

4.1.2.8 Distribution of Contaminants of Concern in Pond Residues

The residues present in each of the ponds located on site appear to be fairly well homogenized. Although the chemistry of the residues may differ from pond to pond, each individual pond residues chemistry is fairly consistent from sample location to sample location and from depth to depth. No significant trends could be identified in any of the ponds which would indicate the presence of particularly contaminated or relatively clean "layers" or locations.

A variety of metals is present in the residues contained in each of the ponds, the most notable being chromium which was identified in Ponds Nos. 2 and 3 at levels considered characteristically hazardous. MIBK was detected at relatively significant concentrations in Ponds Nos. 2, 3, 8, and 9 residues. No MIBK was detected in residues contained in Ponds Nos. 5, 6, or 7. As might be expected, fluoride concentrations were present at the highest concentrations in Ponds Nos. 2 and 3. Ammonia concentrations were similar from pond to pond. Ponds Nos. 2 and 3 exhibit acidic pH. Ponds Nos. 5, 6, 7, 8, and 9 exhibit slightly basic pH.

4.1.3 Surface Water and Sediments

A total of 6 sediment and 7 surface water samples were collected at locations identified in Figure 2. The following sections discuss the results of the analysis of these samples.

4.1.3.1 Sediments

Sediment samples were analyzed for the following chemical parameters:

- Total metals (antimony, arsenic, barium, calcium, cadmium, chromium, fluoride, lead, nickel, mercury, selenium, silver, tin, columbium, and tantalum).
- Ammonia, sulfate, and pH.
- MIBK.

No silver, mercury, antimony, or selenium were detected in the sediment samples. Arsenic, barium, calcium, cadmium, chromium, nickel, lead, and columbium were detected in one or more of the sediment samples, however, the concentrations exhibited by these metals were within typical soil concentrations ranges and, where applicable, were below proposed RCRA corrective action levels.

Tin was detected in SS-002 (22 mg/kg), SS-003 and SS-005 (17 mg/kg), and SS-1 (28 mg/kg) at concentrations slightly above the typical soil concentration range for this metal (less than 0.1 to 7.4 mg/kg). Fluoride was identified in sediment Samples SS-002 (3,700 mg/kg) and SS-003 (2,100 mg/kg) at concentrations outside the typical soil concentration range for this parameter (less than 10 to 1,900 mg/kg). Tantalum does not currently have a typical soil concentration range or proposed RCRA corrective action level. Tantalum was detected in the sediment samples at concentrations ranging from 5.6 mg/kg (SS-005 and SS-2) to 13 mg/kg (SS-003 and SS-1).

Ammonia was detected only in sediment sample SS-002 at a concentration of 26 mg/kg. Sulfate was present in all sediment samples at concentrations ranging from 44 to 66 mg/kg. The pH of the sediment sample ranged from a low of 6.26 standard units in SS-3 to a high of 7.18 standard units in SS-003. No MIBK was detected in any of the six sediment samples. The analytical results of the sediment samples are summarized in Table 12. Figure 9 illustrates the location of the various parameters identified in sediment samples at concentrations in excess of typical ranges or proposed action levels.

4.1.3.2 Surface Water

A total of seven surface water samples were collected and analyzed for the following parameters:

- Total metals (silver, arsenic, barium, calcium, cadmium, chromium, mercury, nickel, lead, antimony, selenium, tin, columbium, and tantalum).
- Fluoride, ammonia, nitrate, and sulfate.
- MIBK.

The surface water analytical results were compared to established USEPA Drinking Water Standard MCLs, Table 13 where applicable, to identify potential areas of concern.

No silver, mercury, or selenium were detected in any of the surface water samples. Arsenic was detected in all seven surface water samples; however, only one exhibited concentrations of this metal above its established MCL of 50 µg/l. This sample was SS-001 which contained 188 µg/l of arsenic. Barium was detected in all surface water samples with the exception of SS-001.

All detected concentrations of barium were below its established MCL. Calcium which does not have an established MCL ranged in concentrations from 11,600 µg/l in SS-003 to 111,000 µg/l in SS-001. Cadmium was detected in all surface water samples with the exception of SS-002 and was present at concentrations above its MCL of 5 µg/l in the following samples: SS-001 (6.48 µg/l), SS-003 (5.11 µg/l), SS-005 (12.2 µg/l), SS-1 (20.8 µg/l), SS-2 (15.2 µg/l), and SS-3 (5.51 µg/l). Chromium was detected in all surface water samples except SS-3 and was present above its MCL of 100 µg/l in only one sample, SS-1 (110 µg/l). Nickel which does not have an MCL was detected in only two surface water samples, SS-002 (28.4 µg/l) and SS-1 (103 µg/l). Lead was detected in all surface water samples at concentrations ranging rom 1.74 to 276 µg/l. No MCL is currently in effect for lead; however, an action level of 15 µg/l has been imposed at the tap of drinking water supplies. Antimony was detected in only one sample, SS-002, at a concentration of 85.1 µg/l. No MCL has been established for antimony. Tin which also does not have an MCL was detected in two surface water samples, SS-001 (72 µg/l) and SS-1 (120 µg/l). Columbium and tantalum were only detected in SS-1 both at 300 µg/l. No MCL has been established for either of these metals.

Fluoride which has an MCL of 4.0 mg/l was detected in each of the seven surface water samples. Fluoride was present at concentrations above its MCL in SS-001 (9.4 mg/l) and SS-002 (12 mg/l). Ammonia was identified only in SS-001 (6.7 mg/l), SS-002 (8.4 mg/l), and SS-3 (0.12 mg/l). Ammonia currently does not have an established MCL. Nitrate were detected in all but one surface water sample, SS-003. An MCL for nitrate has been established of 10 mg/l and was equaled or exceeded in SS-001 (10 mg/l) and SS-002 (15 mg/l). The MCL for sulfate is 250 mg/l and was exceeded in only one surface water sample, SS-001 (390 mg/l).

MIBK was detected only in surface water Sample SS-001 at a concentration of 500 µg/l. An MCL of 2,000 µg/l has been established by the state of Oklahoma for MIBK. The analytical results of surface water samples are summarized in Table 14. Figure 11 illustrates the locations where parameters of concern were identified in excess of established MCLs.

4.1.4 Groundwater

All 29 monitoring wells installed at the site were sampled and analyzed for the following parameters:

- Total metals (antimony, arsenic, barium, cadmium, calcium, chromium, lead, mercury, nickel, selenium, silver, tin, tantalum, and columbium).
- Total fluoride, total ammonia, total nitrate, and total sulfate.
- MIBK.
- Dissolved metals (same specific metals as total analyses) analysis was performed on groundwater samples from MW-55S, MW-62S, MW-63S, MW-65S, MW-66S, MW-67S, MW-73S, and MW-74S for comparative purposes.
- TCL parameters were analyzed for in the following wells: MW-51S, MW-52S, MW-60S, MW-61S, MW-62S, MW-66S, MW-67S, MW-71S, and MW-74S.

The following sections discuss the results of the chemical analysis of site groundwater samples. As with the surface water samples, analytical results for groundwater were compared to established MCLs (Table 13) to identify potential areas of concern.

4.1.4.1 Unconsolidated Zone of Saturation (Shallow Monitoring Wells)

A total of 24 monitoring wells were installed to communicate with the unconsolidated zone of saturation present on site (MW-51S through MW-75S). The only total metals detected in groundwater samples from shallow monitoring wells in excess of established MCLs or action levels were aluminum, arsenic, cadmium, chromium, manganese, and lead. The MCL for aluminum is 200 µg/l. This level was exceeded in samples collected from the following wells: MW-51S (1,090 µg/l), MW-52S (5,620 µg/l), MW-60S (5,240 µg/l), MW-61S (6,040 µg/l), MW-62S (1,980 µg/l), MW-66S (13,200 µg/l), MW-67S (37,900 µg/l), MW-71S (26,700 µg/l), and MW-74S (394,000 µg/l). The drinking water MCL for arsenic is 50 µg/l. This level was exceeded in groundwater samples collected from the following wells: MW-57S (70.2 µg/l), MW-58S (330 µg/l), MW-59S (126 µg/l), MW-60S (391 µg/l), MW-61 (405 µg/l), MW-62S (538 µg/l), MW-63S (1,100 µg/l), MW-64S (177 µg/l), MW-65S (403 µg/l), MW-66S (205 µg/l), MW-67S (2,830 µg/l), MW-70S (126 µg/l), MW-71S (494 µg/l), MW-73S (116 µg/l), and MW-74S (149 µg/l).

The drinking water MCL for cadmium in 5 µg/l. The following monitoring wells exhibited concentrations of cadmium in excess of 5 µg/l: MW-51S (18.1 µg/l), MW-52S (10.1 µg/l), MW-53S (7.17 µg/l), MW-55S (28.5 µg/l), MW-57S (8.45 µg/l), MW-58S (5.18 µg/l), MW-59S (5.86

µg/l), MW-60S (7.2 µg/l), MW-61S (6.38 µg/l), MW-62S (5.39 µg/l), MW-63S (5.55 µg/l), MW-64S (6.39 µg/l), MW-65S (10.1 µg/l), MW-66S (6.03 µg/l), MW-67S (6.69 µg/l), MW-68S (11 µg/l), MW-69S (10.2 µg/l), MW-70S (5.32 µg/l), MW-71S (12.8 µg/l), MW-72S (9.12 µg/l), MW-73S (79 µg/l), MW-74S (119 µg/l), and MW-75S (5.65 µg/l).

Chromium was detected in only two shallow groundwater monitoring wells at concentrations in excess of its drinking water MCL of 100 µg/l. These wells included MW-73S (126 µg/l) and MW-74S (1,500 µg/l). Manganese was identified in nine wells in excess of its drinking water MCL of 50 µg/l. These wells included MW-51S (207 µg/l), MW-52S (619 µg/l), MW-60S (6,290 µg/l), MW-61S (1,370 µg/l), MW-62S (718 µg/l), MW-66S (17,200 µg/l), MW-67S (321 µg/l), MW-71S (20,000 µg/l), and MW-74S (266,000 µg/l).

Lead currently does not have a drinking water MCL; however, the USEPA has imposed an action level of 15 µg/l at the tap for drinking water suppliers. Six shallow monitoring wells exhibited concentrations of lead in excess of 15 µg/l. These wells included MW-54S (34.6 µg/l), MW-55S (16.7 µg/l), MW-56S (55.3 µg/l), MW-57S (15.8 µg/l), MW-69S (110 µg/l), and MW-73S (110 µg/l).

Total silver, barium, copper, mercury, and selenium were either not detected in the groundwater samples collected from the shallow monitoring wells or present at concentrations below established MCLs.

Beryllium, calcium, cobalt, iron, potassium, magnesium, sodium, nickel, antimony, tin, thallium, vanadium, zinc, columbium, and tantalum do not have established MCLs. These metals were detected in one or more of the shallow monitoring wells with the exception of thallium. Thallium was not detected in any of the 25 shallow wells. The remainder of these metals were detected at the following total concentration ranges: beryllium from 1.19 µg/l (MW-51S) to 253 µg/l (MW-74S); calcium from 1,070 µg/l (MW-67S) to 500,000 µg/l (MW-56S); cobalt from not detected (MW-51S, 62S, and 67S) to 290 µg/l (MW-74S); iron from 926 µg/l (MW-51S) to 832,000 µg/l (MW-74S); potassium from 1,850 µg/l (MW-51S) to 235,000 µg/l (MW-60S); magnesium from 638 µg/l (MW-67S) to 48,000 µg/l (MW-62S); sodium from 32,400 µg/l (MW-52S) to 696,000 µg/l (MW-60S); nickel from not detected (MW-51S, MW-52S, MW-53S, MW-62S, and MW-70S) to 2,380 µg/l (MW-74S); antimony from not detected (MW-51S,

MW-52S, MW-53S, MW-54S, MW-58S, MW-59S, MW-60S, MW-61S, MW-62S, MW-64S, MW-66S, MW-68S, MW-70S, MW-71S, MW-74S, and MW-75S) to 284 µg/l (MW-74S); tin from not detected (MW-51S, MW-52S, MW-57S, MW-58S, MW-60S, MW-61S, MW-62S, MW-63S, MW-64S, MW-66S, MW-68S, MW-69S, MW-70S, and MW-75S) to 160,000 µg/l (MW-56S); vanadium from not detected (MW-51S) to 2,640 µg/l (MW-74S); zinc from 18.3 µg/l (MW-61S) to 1,480 µg/l (MW-74S); columbium from not detected (MW-51S, MW-52S, MW-53S, MW-59S, MW-61S, MW-62S, MW-63S, MW-64S, MW-65S, MW-66S, MW-67S, MW-68S, MW-70, and MW-75S) to 1,900 µg/l (MW-74S); and tantalum from not detected (MW-53S, MW-63S, MW-64S, MW-65S, MW-66S, MW-67S, MW-68S, MW-70S, and MW-71S) to 600 µg/l (MW-74S).

Dissolved metals analysis was performed on groundwater samples collected from MW-55S, MW-62S, MW-63S, MW-65S, MW-66S, MW-67S, MW-73S, and MW-74S. The dissolved metals analysis was performed for comparative purposes with total metal concentrations. Dissolved concentrations of silver were only detected in MW-73S (60 µg/l) and MW-74S (27 µg/l). The concentrations of dissolved silver present in these well samples were below the established MCL for this metal (100 µg/l). Dissolved arsenic concentrations exceeded the MCL for this metal (50 µg/l) in the following wells: MW-62S (550 µg/l), MW-63S (650 µg/l), MW-65S (300 µg/l), MW-66S (430 µg/l), MW-67S (4,000 µg/l), MW-73S (180 µg/l), and MW-74S (910 µg/l). Dissolved concentrations of barium were not exhibited by any of the wells sampled at concentrations in excess of this metal's MCL. Dissolved concentrations of cadmium were identified above its established MCL (5 µg/l) in the following wells: MW-55S (5.5 µg/l), MW-63S (5.1 µg/l), MW-66S (10 µg/l), MW-73S (190 µg/l), and MW-74S (110 µg/l). Dissolved concentrations of chromium were only detected in MW-73S (1,400 µg/l) and MW-75S (1,500 µg/l). The concentrations of chromium detected in both of these wells exceed this metals established MCL of 100 µg/l. Mercury was not detected in any of the eight wells at concentrations in excess of its MCL. Dissolved concentrations of selenium were not identified in any of the eight wells sampled. Dissolved lead was detected in the following wells at trace concentrations: MW-55S (1.6 µg/l), MW-67S (3.6 µg/l), MW-73S (2.0 µg/l), and MW-74S (5.2 µg/l).

Calcium, nickel, antimony, tin, columbium, and tantalum do not have established MCLs. These metals were detected at the following dissolved concentrations in the wells identified below: calcium was detected in MW-55S (13,000 µg/l), MW-62S (180,000 µg/l), MW-63S (280,000 µg/l),

MW-65S (53,000 µg/l), MW-66S (67,000 µg/l), MW-67S (1,000 µg/l), MW-73S (8,000 µg/l), and MW-74S (9,900 µg/l); nickel was detected in MW-55S (68 µg/l), MW-63S (53 µg/l), MW-65S (54 µg/l), MW-66S (120 µg/l), MW-73S (2,300 µg/l), and MW-74 (2,300 µg/l); antimony was detected in MW-55S (6.0 µg/l), MW-63S (4.2 µg/l), MW-65S (7.2 µg/l), MW-66S (4.3 µg/l), MW-67S (12 µg/l), and MW-74S (4.0 µg/l); tin was identified in MW-62S (53 µg/l), MW-63S (61 µg/l), MW-67S (110 µg/l), MW-73S (1,300 µg/l), MW-73S (1,400 µg/l), and MW-74S (1,500 µg/l); and tantalum was detected in MW-62S (100 µg/l), MW-63S (200 µg/l), MW-67S (100 µg/l), MW-73S (900 µg/l), and MW-74S (800 µg/l).

Total concentrations of fluoride were detected in excess of its established MCL (4 mg/l) in the following wells: MW-55S (52 mg/l)), MW-57S (19 mg/l), MW-60S (7.4 mg/l), MW-61S (25 mg/l), MW-62S (10 mg/l), MW-63S (20 mg/l), MW-64S (39 mg/l), MW-65S (42 mg/l), MW-66S (51 mg/l), MW-67S (3,600 mg/l), MW-68S (5.0 mg/l), MW-69S (21 mg/l), MW-70S (16 mg/l), MW-71S (54 mg/l), MW-72S (50 mg/l), MW-73S (12 mg/l), MW-74S (8.5 mg/l), and MW-75S (38 mg/l).

Ammonia which does not have an established MCL was detected in 17 of the 25 shallow monitoring wells at concentrations ranging from 0.39 mg/l (MW-73S) to 3,500 mg/l (MW-67S). Total nitrate was detected above its MCL (10 mg/l) in the following wells: MW-52S (41 mg/l), MW-57S (30 mg/l), MW-61S (29 mg/l), MW-62S (160 mg/l), MW-66S (59 mg/l), and MW-67S (69 mg/l). Sulfate was detected in 16 of 25 shallow monitoring wells at concentrations in excess of its MCL of 250 mg/l. These wells included MW-52S (2,000 mg/l), MW-56S (2,000 mg/l), MW-57S (270 mg/l), MW-58S (800 mg/l), MW-59S (1,600 mg/l), MW-60S (780 mg/l), MW-62S (1,000 mg/l), MW-63S (1,900 mg/l), MW-64S (740 mg/l), MW-65S (420 mg/l), MW-66S (880 mg/l), MW-67S (2,900 mg/l), MW-71S (590 mg/l), MW-72S (1,200 mg/l), MW-73S (800 mg/l), and MW-74S (1,600 mg/l).

MIBK was detected in MW-64S (430 µg/l), MW-67S (820 µg/l), MW-71S (37 µg/l), MW-73S (120,000 µg/l), and MW-74S (83,000 µg/l). The state of Oklahoma has established an MCL for MIBK of 2,000 µg/l. The only other VOCs detected in site wells were methyl ethyl ketone (MEK), 1,2-dichloroethene, and 2-hexanone. These constituents were only detected in MW-74S at 21, 64, and 33 µg/l respectively. None of these three VOCs have established MCLs. No semivolatile organic compounds were detected in the monitoring wells with the exception of di-N-butyl phthalate which was identified in MW-67S (14 µg/l) and MW-74S (36 µg/l). Table 15

summarizes the results of groundwater samples collected from the shallow monitoring wells. Figure 11 illustrates the location of various parameters of concern detected above established MCLs.

4.1.4.1.1 Distribution of Contaminants of Concern in the Unconsolidated Zone of Saturation

Figure 11 illustrates the location of various contaminants of concern in shallow monitoring wells. As with site soils, groundwater is most significantly impacted in the areas of the site downgradient of the Chemical "A" Building and in the immediate vicinity of Ponds Nos. 2 and 3. Groundwater in this area of the site exhibits elevated concentrations of ammonia, fluoride, and MIBK. Concentrations of metals are also generally higher in the monitoring wells in this portion of the site than in other facility areas.

Groundwater samples collected from wells in the vicinity of the wastewater treatment ponds also exhibit some impacts associated with fluoride and ammonia. No MIBK was identified in groundwater in this portion of the site.

4.1.4.2 Shale Bedrock Zone of Saturation

A total of four groundwater monitoring wells were installed at the Fansteel facility to communicate with the shale bedrock zone of saturation (MW-151D, MW-161D, MW-167D, and MW-174D). Groundwater samples collected from these wells were analyzed for the list of parameters identified in Section 4.1.4 of this report.

Silver, barium, chromium, mercury, nickel, selenium, tin, columbium, and tantalum were either not detected or present at concentrations below established MCLs within samples collected from the four bedrock monitoring wells. Arsenic was detected in each bedrock monitoring well (MW-151D, 120 µg/l; MW-161D, 4.6 µg/l; MW-167D, 3.88 µg/l; and MW-174D, 11.3 µg/l). The drinking water MCL for arsenic is 50 µg/l. Calcium was detected in each of the four wells at concentrations ranging from 20,100 µg/l (MW-151D) to 83,600 µg/l (MW-167D). Cadmium was identified only in MW-151D (6.3 µg/l). The MCL for cadmium is 5.0 µg/l. Lead was detected in each bedrock monitoring well at concentrations ranging from 8.71 µg/l (MW-167D) to 122 µg/l (MW-161D). Antimony was detected only in MW-151D (38.2 µg/l) and MW-174D (30.8 µg/l).

Fluoride was detected in each well at concentrations below 4 mg/l, the MCL for this constituent. Ammonia was detected in MW-161D (0.33 mg/l), MW-167D (0.22 mg/l), and MW-174D (0.44 mg/l). Nitrate was detected in each of the four wells at concentrations ranging from 0.31 mg/l (MW-161D) to 10 mg/l (MW-151D).

MIBK was detected only in MW-174D at a trace concentration of 13 µg/l. The method detection limit for MIBK is 10 µg/l. However, this well was sampled again on April 30, 1993 and MIBK was not detected at this time. The presence of MIBK in the initial sample collected from this well immediately after installation is believed to be associated with residual contamination resulting from well installation that was not completely removed during initial well development. The analytical results for the analysis of groundwater from the bedrock wells are summarized in Table 16. Figure 11 illustrates the location of various parameters detected above established MCLs.

4.1.4.2.1 Distribution of Contaminants of Concern in the Shale Bedrock Zone of Saturation

Figure 11 also summarizes the occurrence of specific chemical contaminants of concern in the bedrock zone of saturation. Generally, the bedrock zone of saturation does not exhibit concentrations of the various constituents of concern at levels which pose a significant concern. Fluoride is not present in any of the bedrock monitoring wells at concentrations above MCLs. Ammonia was detected in the three downgradient bedrock monitoring wells; however, the concentrations are orders of magnitude less than those associated with the unconsolidated zone of saturation. Results of the most recent sampling activities indicate that MIBK is not present in the bedrock zone. The analytical results demonstrate that groundwater impacts of concern are confined to the shallow zone of saturation. The bedrock zone of saturation does not appear to have been adversely impacted by site operations.

4.2 Radiological Characteristics

Based on the field activities described in Sections 3.9 and 3.10 of this report, the following determinations were obtained relating to the presence of radioactive materials on the south and east plant area of the Fansteel property.

4.2.1 Soils

4.2.1.1 Background Soils

Radiochemical analysis of the soils obtained from 30 background locations was utilized to establish a baseline for comparison of site soils. The background soil samples were assumed to be unaffected by Fansteel's manufacturing operations. The background soil samples were also assumed to be representative of the total content and distribution of radionuclides which would be present on the Fansteel property without regard to any manufacturing activity. Figure 3 presents the location of the 30 background soil samples and Table 17 summarizes the results of their analyses.

Average values of gross alpha and gross beta activity were calculated from the background soil analytical results. The average gross alpha activity measured in the background soils was found to be 15.6 picocuries per gram (pCi/g). Results were distributed normally around this value, i.e., the calculated sample standard deviation was 4.5 pCi/g. No background sample results exceeded two standard deviations from the mean value of alpha activity. One sample (Sample No. 9) showed alpha activity less than the mean value by more than two standard deviations but less than three. The average gross beta activity measured in the background samples was found to be 20.5 pCi/g. Results were distributed normally around the mean, i.e., the calculated sample standard deviation was 4.6 pCi/g. No background sample exceeded two standard deviations from the mean value of beta activity. One sample (Sample No. 3), showed beta activity less than the mean value by more than two standard deviations but less than three. Based on the normal distribution of gross activity results, the average values for gross alpha and gross beta radioactivity can be confidently applied to the results of similar analyses at the Fansteel site as a background correction for purposes of detecting impacts to the site by radioactive materials managed at the facility.

One reservation must be enunciated regarding the background radiochemistry values for gross alpha activity. The results of the background radiochemistry survey exhibited a higher level of alpha activity than might have been expected. These slightly elevated results are most probably due to fallout from the nearby Oklahoma Gas and Electric (OG&E) coal-fired electricity generation plant. Both uranium and thorium are emitted from coal-burning facilities. The OG&E plant has been in operation in excess of 20 years and so may have

contributed measurable amounts of these long-lived radionuclides to the surface soil on the land surfaces surrounding the generation plant. The Fansteel facility would be expected to have received approximately the same addition as the areas sampled for the determination of the radiochemical background.

Background soil samples were also analyzed for specific radionuclides of concern, specifically uranium and thorium. The concentration of uranium (including U-238, U-235, and U-234) averaged 1.08 pCi/g with a sample standard deviation of 0.62 pCi/g. The concentration of thorium (including Th-232, Th-230, and Th-228) averaged 3.33 pCi/g with a sample standard deviation of 0.92 pCi/g. These results indicate a normal distribution of radionuclide concentrations in the background soil. These average concentrations will be used to provide a background radionuclide concentration for interpreting the results of soil samples obtained from the Fansteel site.

Examination of the background soils for Radium-226 (a Uranium-238 decay product) and Radium-228 (a Thorium-232 decay product) indicates that the parent radionuclides are in a condition of approximate equilibrium with their decay products. Results of the background soil sample radiochemical analysis are also presented in Table 18.

4.2.1.2 Site Soils

Site soils were investigated for radioactive materials using both an instrument survey of the ground surface and by laboratory analysis of soils obtained from borings, test pits, and monitoring well installations. These investigations indicate the presence of radioactive materials in site soils at various locations on the east plant area of the Fansteel property.

4.2.1.2.1 Instrument Survey Results

The results of the instrument survey of site soils are presented in Table 17. The location of the soil instrument survey points is shown in Figure 4. The instrument survey of the exterior grounds was able to yield relatively little additional information on the concentration of radionuclides in the soil. Surveys of surface alpha and beta activity are only marginally useful because of the short range of alpha and beta particles through soil. Gamma radiation surveys are generally capable of detecting the presence of concentrations of radionuclides in soils. However, the presence of large quantities of radioactive materials in Pond No. 2, Pond No. 3,

and, to a lesser extent, Pond No. 5 contributed a sufficiently high and variable background to preclude meaningful interpretation of the results of the surface gamma radiation survey.

The results of the surface alpha radioactivity survey generally support the findings of the subsurface radiochemical analysis. Elevated surface alpha radioactivity was observed in the immediate surroundings of the residue impoundments, Pond No. 2 and Pond No. 3. Additional elevated surface alpha particle activity was detected in the area east of the Chemical "A" Building and along the railroad spur terminus northwest of the Chemical "C" Building.

Surface alpha particle surveys are more useful on finished surfaces. The paved ore storage pad located west of the Chemical "A" Building showed widespread areas of elevated alpha particle activity on the surface. Areas used for traffic carrying ores or residues between the storage pad and the materials entrance for the Chemical "A" Building similarly showed elevated surface activity, probably due to fugitive ore material or processing residues. These areas will be remediated with regard to radioactive materials as part of site decommissioning activities.

4.2.1.2.2 Soil Analysis Results

Results of the soil radiochemical analyses performed on samples recovered from soil borings, monitoring wells, test pits, and surface sediments are presented in Tables 3, 4, and 12. Locations of soil samples for radiochemical analysis are shown in Figure 2. Gross alpha and gross beta analysis was performed by counting 100 milligrams of dried soil using a gas flow proportional counter. Specific radionuclides were determined by gamma spectrometry and radiochemical analysis.

The following criteria were used to identify soil areas that may have been affected by radioactive materials used at the Fansteel site:

- Gross alpha radioactivity in excess of 20 pCi/g. This level of radioactivity represents one standard deviation above the local background alpha activity of 15 pCi/g.
- Total uranium (U-238, U-235, and U-234) in excess of 6.1 pCi/g. This concentration of uranium represents 5 pCi/g above the local background concentration of uranium in soil.

- Total thorium (Th-232 and Th-230) in excess of 8.3 pCi/g. This concentration of thorium represents 5 pCi/g above the local background concentration of thorium in soil.

Soils meeting one or more of these criteria for consideration as potentially affected by radioactive materials from the Fansteel manufacturing operations are found throughout the site, as shown in Figure 12. Potentially affected soils are found in various locations from the surface to depths in excess of 20 feet below the surface. Most of the contaminated soils and the soils with the highest levels of contamination are located along the eastern edge of the property, east of the manufacturing, processing, and waste management areas of the facility. The location, concentration, and extent of contamination in each area is discussed in further detail in the following sections.

4.2.1.2.2.1 Borrow Pit Area

The borrow pit is located in the southwest corner of the plant property. The original surface soils in the borrow pit have been partially removed for use in constructing berms, impoundments, improving drainage, and other uses at the site. Three samples of surface soil were obtained and six soil borings were evaluated as part of the soils investigation. Two of the soil borings were developed as shallow monitoring wells. Two of the soil borings, B-10 and MW-56S, exhibited elevated gross alpha activity.

Soil Boring B-10 exhibited gross alpha activity of 42 pCi/g in the sample obtained between 2.0 and 4.5 feet below the surface. Radiochemical analysis of this sample showed both uranium and thorium in the soil at levels above the local background but below the threshold criteria cited previously. Other decay products of uranium and thorium are also present in a condition of equilibrium. Other sampled intervals did not exhibit elevated radioactivity.

The boring for MW-56S exhibited gross alpha radioactivity of 23 pCi/g in the top 6 inches of soils sampled. Radiochemical analysis of this sample showed uranium and thorium concentrations approximately equal to the local background average. Other decay products of uranium and thorium are present in a condition of equilibrium. Other sampled intervals did not exhibit elevated radioactivity.

Based on the results of the soil sampling alone, the radioactivity detected in this area might be attributed to a random accumulation of fugitive material or to a naturally occurring concentration of uranium or thorium-bearing minerals. However, as discussed in Sections 4.2.3.1 and 4.2.4.1 following, groundwater and surface water in this area of the property also indicate elevated concentrations of radioactivity. This combination of indicators suggests that radioactive materials may have impacted this area at some time in the past.

4.2.1.2.2.2 Wastewater Treatment Ponds (Ponds Nos. 6, 7, 8, and 9)

The wastewater treatment ponds are located in the southeast corner of the Fansteel property. These ponds are currently used to store sludges, principally calcium carbonate and calcium fluoride, generated during the treatment of plant wastewater. Additionally, the location designated as Pond No. 5 has in the past been used for the storage of radioactive material containing residues from the processing of ores at this facility. Fifteen soil borings were advanced in this area. Seven of these borings were developed as monitoring wells. One sediment sample from a surface water outfall was also sampled. One of the soil borings, B-17, exhibited elevated gross alpha radioactivity and elevated concentrations of thorium.

Boring B-17 exhibited gross alpha radioactivity of 27 pCi/g and thorium at a concentration of 13.6 pCi/g at a depth of 0.5 to 2.5 feet below the ground surface. The principal contributor to the total thorium is Thorium-230 which was reported present at 11 pCi/g. Radiochemical analysis of other members of the Uranium-238 decay series shows these elements to be present but at concentrations less than would be required for equilibrium, i.e., in the range of 1 to 3 pCi/g. The result reported for B-17 appears to be a local anomaly since no other soil borings in this area of the property indicate elevated radioactivity, nor was elevated radioactivity detected in any of the other samples obtained from this borehole.

4.2.1.2.2.3 Eastern Outslope

The eastern outslope comprises the area lying south of the closed impoundment designated Pond No. 2, north of the wastewater treatment ponds, and east of the main chemical processing building referred to as the Chemical "A" Building or Building No. 16. Twenty-seven boreholes were sampled in this area, 4 of which were developed as monitoring wells. Sediment from 2 runoff or treated water outfalls were also sampled. All but 6 of the boreholes show elevated radioactivity levels. Sediment from Outfall 002 also exhibited elevated radioactivity.

Elevated gross alpha radioactivity was identified in the following boreholes: B-32, B-33, B-74, B-50, B-66, B-49, B-63, MW-65S, B-48, B-47, B-58, B51, B-52, B-64, B-65, B-54, B-55, B-56, B-61, B-73, and B-62. Elevated uranium was found in B-74, B-33, B-50, B-49, MW-65S, B-47, B-64, B-65, B-54, B-55, B-56, B-61, B-73, and B-62. Elevated thorium was found in B-47, B-51, B-52, B-54, B-55, B-56, B-61, and B-73. Elevated gross alpha was detected in the sediments associated with Outfall 002. Radioactivity in the boreholes was detected at depths from the surface material to 20 feet below the surface. The majority of the contamination is found within the top 2.5 feet of soil in this area. Levels of radioactivity range from near the criterion concentration to more than 100 pCi/g. This entire area appears to be affected by radioactive materials which may have resulted from plant operations.

4.2.1.2.2.4 Residue Pond Area

This area comprises the boundaries of the embankments of Pond No. 2, Pond No. 3, the Chemical "C" Building (also referred to as Building No. 13) and the area of land lying east of these ponds to the Arkansas River. These impoundments are used for the storage of ore processing residues from the production of tantalum and columbium. A total of 24 boreholes were developed in this area, 9 of which were developed as monitoring wells. Sediment associated with 1 surface water outfall was also sampled. Eleven of the boreholes and the sediment sample exhibited elevated radioactivity.

Elevated alpha radioactivity was detected in the following boreholes: B-15, B-29, B-36, MW-71S, B-60, B-59, B-38, B-72, B-39, MW-75S, and B-22. Elevated uranium was detected in B-29, B-36, MW-71S, B-59, B-72, MW-75S, and B-22. Elevated thorium was detected in MW-75S. Elevated gross alpha radioactivity and elevated uranium were found in the sediment obtained from Outfall 003. Radioactivity in this area was distributed from the surface to depths in excess of 20 feet. However, as with the eastern slope area, most of the radioactivity was found in the upper 2.5 feet of soil. The contamination found at depth, i.e., from soils recovered from MW-71S, B-59, and B-72, was almost exclusively due to uranium. Radioactive decay products were found in these locations at concentrations much lower than the parent uranium. This indicates that the contamination may be associated with uranium mobilized by infiltrating groundwater through Pond No. 2 or Pond No. 3 rather than from ore or slag residues present in the soils at these locations. This entire area appears to have been affected by radioactive materials derived from plant operations.

4.2.1.2.2.5 Central Area

The central area comprises the balance of the property. Soil samples were obtained from 12 test pits and 14 soil borings. Three of the soil borings were also developed as monitoring wells. Radioactive contamination is essentially absent from the central plant area. Gross alpha radioactivity in excess of the criterion was detected from two of the test pits (TP-5 and TP-10) and one borehole, B-28. Results from these locations are from the surface soil and are either at the criterion value of 20 pCi/g (TP-5) or slightly above it. Gross alpha radioactivity at TP-10 was 21 pCi/g. Gross alpha radioactivity at B-28 was 22 pCi/g. These values may be attributed to fugitive emissions of ore or residue, and do not indicate significant contamination of soils in this area of the site.

4.2.2 Pond Residues

Samples were obtained from each of the ponds on the site as identified in Figure 2. These consisted of the two ore processing residue impoundments (Pond No. 2 and Pond No. 3), an empty basin (Pond No. 5) formerly used for residue storage, and four basins (Pond No. 6, Pond No. 7, Pond No. 8, and Pond No. 9) used for treatment of wastewaters and storage of water treatment residues, principally calcium carbonate and calcium fluoride.

4.2.2.1 Pond No. 2 and Pond No. 3

Pond No. 2 and Pond No. 3 were sampled at the locations shown in Figure 2. At each location, a sample of the entire column of process residue was obtained. The sample was divided into thirds by vertical interval. The uppermost aliquot was identified as the "A" sample, the middle aliquot as "B", and the bottom aliquot as "C." The samples were analyzed for gross alpha, gross beta, and specific radionuclides by gamma ray spectroscopy. Analytical results are presented in Tables 5 and 6.

The ore processing residues retain the radioactive species that were present in the ores processed at the facility. All samples exhibited significant radioactivity, with gross alpha values in the thousands of picocuries per gram range. Uranium and thorium were present in all samples at hundreds of picocuries per gram. Evaluation of the decay product activities shows that the residues are in a condition of approximate equilibrium. Figure 13 illustrates the location of pond sampling points exhibiting elevated levels of radioactivity.

4.2.2.2 Wastewater Treatment Residue Impoundments

Ponds Nos. 6, 7, 8, and 9 were sampled at the locations shown in Figure 2. Ponds No. 6 and 7 are is the final polishing basins where treated wastewater is retained prior to discharge. Only a small amount of residue is present in each of these ponds. Consequently, only one sample increment was obtained from sample location associated with Ponds Nos. 6 and 7. Ponds Nos. 8 and 9 are essentially full of wastewater treatment residue. This residue is composed primarily of calcium carbonate and calcium fluoride derived from treatment of process water and other wastewaters generated at the facility. Each sample from Ponds Nos. 8 and 9 was divided into three aliquots in the same manner as the samples from the ore processing residue impoundments. Each sample was analyzed for gross alpha and gross beta radioactivity and for specific radionuclides. Analytical results are presented in Tables 8, 9, 10, and 11.

All of the wastewater treatment residue samples contain radioactivity in excess of the criterion value of 20 pCi/g. All of the wastewater treatment residue samples contain uranium and thorium in excess of the criterion value of 5 pCi/g. Examination of the activity of the radioactive decay products in the wastewater treatment residues indicates that equilibrium activities exist through radium. Activities of elements below radium in the decay sequence are present in less than equilibrium activities. The activity of these species will therefore tend to increase over time as equilibrium is re-established. Figure 13 illustrates the location of pond sampling points exhibiting elevated levels of radioactivity.

4.2.2.3 Pond No. 5

Pond No. 5 is a dry basin that has been used both for storage of ore processing residues and for wastewater treatment. The ore processing residues have been substantially removed. An accumulation of wastewater treatment residues remain in the basin. The material remaining in Pond No. 5 was sampled at the locations shown in Figure 2. Each sample was divided into three aliquots in the same manner as the samples from the active wastewater treatment residue impoundments. Each sample aliquot was analyzed for gross alpha and gross beta radioactivity and for specific radionuclides. Results of these analyses are presented in Table 7.

All of the sample locations have radioactivity in excess of the criterion value of 20 pCi/g gross alpha radioactivity except for the "C" aliquot of Samples P5-1 and P5-3. All of the sample

locations have uranium and thorium concentrations in excess of the criterion of 5 pCi/g except the "C" aliquot of Samples P5-1 and P5-3. Radioactivity levels in the Pond No. 5 materials are slightly higher than the levels found in the other wastewater treatment ponds. Figure 13 illustrates the location of pond sampling points exhibiting elevated levels of radioactivity.

4.2.3 Surface Water and Sediments

Surface water and sediments were sampled at the locations shown in Figure 2. The samples were analyzed for gross alpha and gross beta radioactivity and for specific radionuclides. The results of these analyses are presented in Tables 12 and 14. For purposes of evaluating surface water for the presence of radioactive contamination, the OWRB values of 15 picocuries per liter (pCi/l) for alpha radioactivity and 50 pCi/l for beta radioactivity were utilized. Water containing radioactivity in excess of these values is presumed to have been affected by plant operations, except as noted.

4.2.3.1 Surface Water

Two of the surface water sources, S-1 and S-002, contained gross alpha and gross beta radioactivity in excess of criterion. Sample S-1 consisted of runoff from the borrow pit area located in the southwest corner of the Fansteel property. This sample exhibited elevated alpha and beta radioactivity 110 pCi/l and 150 pCi/l respectively. Specific radionuclide analysis identified elevated concentrations of uranium, thorium, and radium. These results may indicate that surface waters in this area have been affected by radioactive materials.

S-002 is a permitted discharge point for runoff from the east side of the plant property. Runoff discharging through this point flows through the east outslope area discussed in Section 4.2.1.2.3. Soils in this area appear to have been impacted with radioactive residues. These residues are located primarily in the near surface soils and so would be subject to transport in any surface runoff. The water sampled at S-002 contained elevated gross alpha and gross beta radioactivity as well as uranium and radium. Figure 14 identifies the surface water locations exhibiting elevated levels of radioactivity.

4.2.3.2 Sediment

Sediment samples were obtained from each surface water sample location. Sediments from discharge Points S-002 and S-003 exhibited elevated levels of radioactivity.

S-002 is the permitted discharge point for runoff from the east side of the plant and was discussed previously in Section 4.2.3.1. Sediment associated with the discharge point exhibited slightly elevated gross alpha radioactivity, i.e., 28 pCi/g.

S-003 is the permitted discharge point for the french drain system used for controlling groundwater in the vicinity of Pond No. 3. The sediment associated with the discharge point contained slightly elevated gross alpha radioactivity, 24 pCi/g, and elevated uranium, 12.4 pCi/g. Figure 12 identifies surface sediment sampling locations exhibiting elevated levels of radioactivity.

4.2.4 Groundwater

Twenty-five monitoring wells were developed in the unconsolidated zone of saturation on the south and east portion of the Fansteel property. Four monitoring wells were developed in the bedrock zone of saturation. The location of these wells is shown in Figure 2. Water from these wells was sampled and analyzed for gross alpha and gross beta radioactivity as well as for specific radionuclides. Results of these analyses are presented in Table 15 for the shallow groundwater zone and Table 16 for the deep groundwater zone.

4.2.4.1 Unconsolidated Zone of Saturation (Shallow Wells)

Groundwater in the unconsolidated zone of saturation is generally contaminated with radioactivity over the south and east portion of the site. All but three of the monitoring wells installed to communicate with the unconsolidated zone of saturation exhibit some degree of radiological contamination. However, some of this contamination may be from sources other than manufacturing and processing operations conducted at Fansteel. Figure 14 identifies groundwater monitoring wells exhibiting elevated levels of radioactivity.

MW-52S and MW-56S are located in the borrow pit area, i.e., the southwest corner of the property. Both of these wells exhibited elevated gross alpha radioactivity. MW-52S contained 79 pCi/l and 160 pCi/l respectively of gross alpha and gross beta radioactivity. MW-56S contained 76 pCi/l and 34 pCi/l of gross alpha and gross beta radioactivity. Additionally, MW-56S contains 68 pCi/l of uranium. MW-52S contains elevated concentrations of radium and thorium. The groundwater in the borrow pit area appears to have been affected by radioactive materials.

MW-59S, MW-60S, MW61S, MW-57S, and MW-62S are located along the eastern (downgradient) side of the wastewater treatment residue impoundments. MW-59S, MW-60S, and MW-57S exhibited elevated gross alpha and gross beta radioactivity. MW-61S and MW-62S show elevated gross beta radioactivity only. The elevated gross beta in these wells appears to be associated with elevated levels of naturally occurring Potassium-40 rather than contamination with exogenous radionuclides.

MW-59S exhibited elevated gross alpha and gross beta radioactivity at 19 pCi/l and 110 pCi/l respectively. MW-60S exhibited gross alpha and gross beta radioactivity of 24 pCi/l and 240 pCi/l respectively. MW-57S exhibited 23 pCi/l and 120 pCi/l of gross alpha and gross beta radioactivity. Radium was the only specific radionuclide detected in these wells at significant concentrations.

The source of this groundwater contamination may be associated with the radioactive materials contained in the wastewater treatment residues. The presence of radium in the groundwater samples together with the relative absence of uranium and thorium (which would be immobilized in the wastewater treatment residues) supports this identification of the impoundments as the source of the groundwater contamination in this area of the plant.

MW-65S, MW-66S, and MW-67S are located in the east outslope area, directly east of the main process area of the plant. All three of these wells exhibited elevated gross alpha and gross beta radioactivity. Of these wells, MW-65 shows the least contamination with 19 pCi/l gross alpha and 100 pCi/l gross beta activity. This well is located most upgradient of the three wells in this area and is removed from the majority of the contaminated soils previously identified. MW-66S contains 140 pCi/l of gross alpha activity and 120 pCi/l of gross beta radioactivity. MW-67S is the most contaminated well in the area with 1,300 pCi/l gross alpha and 440 pCi/l gross beta radioactivity. The concentration of uranium in MW-67S is also substantial.

MW-68S, MW-70S, MW-71S, MW-73S, MW-74S, MW-72S, MW-75S, and MW-69S surround the ore processing residue impoundments, Pond No. 2 and Pond No. 3. MW-72S and MW-75S, located north and east of Pond No. 3, do not exhibit contamination by radioactive materials. MW-70S shows only gross beta radioactivity above the water quality criteria. Elevated gross beta in the absence of elevated gross alpha may indicate elevated concentrations of naturally

occurring Potassium-40. Pending additional information, groundwater containing only beta activity in excess of the water quality criteria will not be considered affected by manufacturing or processing activities.

Pond No. 2 is an unlined ore processing residue impoundment. Consequently, the wells associated with this impoundment are strongly affected. MW-73S contains 830 pCi/l of gross alpha radioactivity and 1,300 pCi/l of gross beta. MW-74S, located downgradient and immediately adjacent to Pond No. 2, contains 2,600 pCi/l of gross alpha radioactivity and 930 pCi/l of gross beta. MW-71 which is located on the upgradient side of Pond No. 2 contains only 29 pCi/l of gross alpha and 140 pCi/l gross beta radioactivity.

MW-68S located on the west side of Pond No. 3 and MW-69S located on the north side of Pond No. 3 also exhibited some contamination. MW-68S contains 52 pCi/l of gross alpha radioactivity and 59 pCi/l of gross beta. MW-69S contains 30 pCi/l of gross alpha activity. Gross beta radioactivity in this well is less than the criterion concentration of 50 pCi/l. Both MW-68S and MW-69S are located in areas that were potentially affected by the lining failure in Pond No. 3. As such, the presence of contaminants may be associated with this single event. If this is the case, contamination concentrations in these wells may be expected to decrease over time. The absence of radioactive contamination in MW-72S which is located downgradient of Pond No. 3 indicates that the liner of Pond No. 3 is generally intact and not leaking.

Monitoring Wells MW-63S, MW-64S, and MW-55S are located in the central area immediately west of the main processing area. This was an area in which soil analysis showed little if any radioactive contamination present. Groundwater obtained from MW-63S and MW-64S exhibited elevated gross beta radioactivity, but not elevated gross alpha. Pending further investigation, these wells will not be considered to have been affected by plant operations. MW-55S does exhibit elevated gross alpha radioactivity, 40 pCi/l. Gross beta radioactivity in this well is below the criterion concentration. MW-55S is in an area that was potentially affected by the release of materials from Pond No. 3. As with MW-68S and MW-69S, contaminant concentrations for this well may be expected to diminish over time.

4.2.4.2 Bedrock Zone of Saturation

Four monitoring wells were developed in the bedrock zone of concentration: MW-151D, MW-161D, MW-167D, and MW-174D. The locations of these wells is presented in Figure 2. Water from these wells was analyzed for gross alpha and gross beta radioactivity. MW-151D initially exhibited gross alpha and gross beta radioactivity in excess of the water quality criteria cited in Section 4.2.3. Subsequent sampling and analysis of water from this well exhibited gross alpha and gross beta activity at levels below these criteria. The initial concentrations are therefore believed to be due to laboratory error or to trace contaminants introduced during well installation or development. Radionuclide concentrations in the other bedrock monitoring wells were below the cited water quality criteria. Based on these results, radioactive contaminated groundwater appear to be confined to the unconsolidated zone of saturation.

4.2.5 Buildings and Equipment

A preliminary scoping survey was performed on the buildings and equipment in the east plant area. This survey was performed to identify buildings, portions of buildings, and equipment that will require decontamination or other measures during NRC license decommissioning activities. Locations of the buildings surveyed during this activity are identified in figures contained in Appendix D. The results of the radiation survey are summarized in Appendix E.

Building No. 13, also referred to as the Chemical "C" Building, was formerly used for the ore digestion process. This building is contaminated with radioactive material throughout.

Individual areas of walls and floors and individual items of equipment in Building No. 16, also referred to as the Chemical "A" Building, are contaminated with radioactivity in excess of the applicable standard for release for unrestricted use. These areas and items will be delineated in the decommissioning plan which will be prepared for the site. Additionally, much of the roof surface shows elevated radioactivity, probably caused by fugitive dust from ore crushing or processing operations.

The other buildings on the east plant area appear to be uncontaminated. Roof areas on these structures do exhibit some elevated radioactivity from fugitive dust emissions and/or windblown material.

4.3 Air Monitoring Results

The results for TSP and radioactivity measurements were compared against background values for the site determined during the third quarter of 1992. The results of the air quality monitoring are included in this report as Appendix F. Data for the air quality evaluation were supplied by Fansteel.

Background air quality results were evaluated with regard to concentrations of TSP and radionuclides. The background average upwind concentration of TSP was 55.8 micrograms per cubic meter ($\mu g/m^3$) with a standard deviation of 33.2 $\mu g/m^3$. The 90 percent confidence interval for the concentration of TSP includes the range from 1.4 to 110.2 $\mu g/m^3$.

The concentrations of gross alpha and gross beta activity in the air samples, as determined by measuring the activity of the air sample filters, were too variable to calculate meaningful statistics. Because of this, the most restrictive airborne radionuclide effluent limit applicable to the Fansteel facility, i.e., Thorium-230, was used as a standard for comparison. All background upwind air samples had an activity of less than 3×10^{-14} microcurie per milliliter ($\mu Ci/ml$) of air, the effluent limitation for airborne Thorium-230 as established by the NRC in 10 Code of Federal Regulations (CFR) 20, Appendix B, Table 2. The upwind background concentrations of airborne radionuclides varied from not detectable to 3.16×10^{-15} $\mu Ci/ml$.

The same air quality parameters were measured during the performance of remediation assessment field activities during February of 1993. The concentration of airborne TSP during the remediation assessment field activities averaged 49.9 $\mu g/m^3$ with a standard deviation of 18.6 $\mu g/m^3$. None of the air quality samples obtained during the remediation assessment field activities fell outside the 90 percent confidence interval for upwind background TSP concentrations.

Concentrations of alpha emitting radionuclides exhibited the same behavior during the performance of remediation assessment field activities as was observed during the period in which background values were measured. The concentration of alpha particle activity was too variable for the development of meaningful statistics. All the measured concentrations were well below the most restrictive applicable airborne radioactivity effluent limitation of 3.0×10^{-14} $\mu Ci/ml$ of air. The maximum observed airborne radioactivity was 1.09×10^{-15} $\mu Ci/ml$ of air.

Based on these measurements, no measurable increase in TSP or radioactive constituents left the site as airborne material during the performance of the remediation assessment. Concentrations of TSP and radioactivity were below applicable standards at all times during the remediation assessment field activities.

4.4 QA/QC

The QA/QC procedures utilized during the performance of the remedial assessment at the Fansteel site are summarized in the QA Project Plan (QAPP) which was prepared for this project. The QAPP can be found in Appendix A of the Remedial Assessment Work Plan (July 1993 revised) prepared for the implementation of this work scope.

Analytical QA/QC documentation for the work performed on this project is contained within Appendix G of this report. This information includes matrix spike, matrix spike duplicate, field blank, equipment blank, trip blanks, and method blank results for each matrix sampled on site. Soil and sediments QA/QC data are summarized on Table G-1. Groundwater QA/QC data are summarized in Table G-2 and pond residue QA/QC data are summarized on Table G-3.

All method blank and trip blanks associated with samples collected from the facility were free of the contaminants of concern analyzed for in site samples. All equipment blank samples associated with site soil samples exhibited trace concentrations of sulfates. Low concentrations of fluoride were also present in three of the equipment blanks. Ammonia was detected near the method detection limit of 0.10 mg/l in one equipment blank. Additionally, trace concentrations of lead, arsenic, chromium, and tin were identified in several equipment blanks. No MIBK was detected in any of the equipment blanks associated with soil samples collected from the site. Barium and di-N-butyl phthalate were detected in the equipment blanks associated with the pond residues samples.

Trace concentrations of fluoride, sulfate, aluminum, calcium, copper, manganese, lead, zinc, and tantalum were identified in field blanks associated with the groundwater samples collected from the site. Several of these constituents are most likely associated with the water used to prepare the blank samples. The concentrations of these constituents exhibited by the field blanks are low compared to actual site samples, and their occurrence in the field blanks does not invalidate associated site sample data.

Fourteen groundwater samples were analyzed for TCL parameters using Contract Laboratory Program (CLP) protocols to verify that the list of specific parameters used to characterize site conditions was comprehensive. The results of these analyses are discussed in Section 4.1.4 of this report. The CLP data packages associated with the analysis of these 14 samples are contained in Appendix G. The data packages have been determined to be in compliance with the terms and conditions of the contract, both technically and for completeness.

5.0 Summary of Results

Based upon the results of this remedial assessment, Earth Sciences presents the following summary:

- The most pervasive chemical contaminants of concern identified in site soils included MIBK, ammonia, columbium, fluoride, and tin. The vast majority of these constituents was located in plant areas surrounding Pond No. 3 and to the east of Ponds Nos. 2 and 3, the Chemical "A" Building, and the Chemical "C" Building. These constituents are well distributed throughout the soil column in this area with the exception of MIBK and ammonia. MIBK and ammonia, almost without exception, were present at depths greater than 5 feet and do not appear to present a surficial concern. Columbium, fluoride, and tin were also identified at relatively elevated concentrations in soils to the east of Ponds Nos. 5, 6, 7, 8, and 9. A leachable concentration of barium was identified in one soil boring (B-56) located to the east of the Chemical "A" Building near Pond No. 2 which was in excess of 100 mg/l. Based upon surrounding data points, this concentration of barium appears to be an isolated occurrence.

- Radioactivity in site soils was detected in the manufacturing and processing area of the facility. Radioactivity was most prevalent in the soils located in the immediate vicinity of the ore processing residue ponds and the area lying east of these ponds and the Chemical "A" and Chemical "C" buildings. Soil radioactivity was concentrated in the top 2.5 feet of soil, although some locations did exhibit radioactivity to depths greater than 15 feet below the surface. These locations are consistent with historical manufacturing practices. Radioactivity was also detected in the southwest area of the plant in sufficient extent to require further investigation since this area is not known to have been used for manufacturing and processing activities.

- Similar to site soils, the shallow groundwater zone is most significantly impacted in the area of the site to the east of Ponds Nos. 2 and 3, the Chemical "A" Building, and the Chemical "C" Building. Groundwater in this area of the site exhibits elevated concentrations of ammonia, fluoride, and MIBK. Concentrations of a variety of metals (including columbium, tantalum, tin, arsenic, and chromium) are also generally higher in the monitoring wells in this portion of site than in other facility areas. Groundwater samples collected from wells in the vicinity of the wastewater treatment ponds (Nos. 6, 7, 8, and 9) and Pond No. 5 also exhibit some impact associated with fluoride and ammonia; however, no MIBK was detected in these wells.

- Groundwater throughout the south and east area of the property exhibited elevated radioactivity. Radioactivity was most prevalent in the areas adjacent to the ore processing residue ponds and the area lying east of these ponds and the Chemical "A" and Chemical "C" buildings. Elevated radioactivity was also detected in the groundwater downgradient (east) of the

wastewater treatment impoundments. The groundwater underlying the southwest plant area exhibits elevated radioactivity as well.

- The shale bedrock groundwater-bearing zone does not appear to be impacted by either chemical or radiological constituents of concern associated with plant operations.

- Surface water present in the southwest borrow pit area exhibits concentrations of barium, cadmium, lead, columbium, and tantalum. Ammonia was detected in one surface water sample from this area at low concentrations. Surface water discharge samples contained relatively low concentrations of ammonia, fluoride, and cadmium, MIBK was also identified in one surface water discharge sample (SS-001).

- Surface water was affected by radioactivity in two locations. NPDES Outfall 002 which discharges storm water runoff from the surface area east of the Chemical "A" Building exhibited elevated radioactivity. Water from surface water Source S-1 located in the southwest plant area also contains elevated radioactivity.

- The chemistry of the pond residues differs from pond to pond, as expected. However, the residues contained in each of the ponds appear to be fairly well homogenized. A variety of metals is present in each of the ponds on site, the most notable being chromium. Leachable concentrations of chromium in excess of 5.0 mg/l were identified in residue samples collected from Ponds Nos. 2 and 3. MIBK was identified within Ponds Nos. 2, 3, 8, and 9 residues. Fluoride was detected in all pond residues with the highest concentrations being identified in Ponds Nos. 2 and 3. Ammonia was present in each of the ponds at similar concentrations.

- The ore processing residues stored in Ponds Nos. 2 and 3 retain most of the radioactivity originally contained in the ores. The ore processing residues are licensed by the NRC as source materials. Radioactivity is also present throughout the wastewater treatment residue impoundments, Ponds Nos. 5, 7, 8, and 9.

- Surface contamination with radioactive materials is limited to roof surfaces subject to deposition of fugitive dust and areas formerly utilized for the management or processing of ores and ore residues. These areas include the entire Chemical "C" Building and specific locations in the Chemical "A" Building and R&D Building. Paved areas used for ore storage and transportation located west of the Chemical "A" Building also exhibit surface contamination with radioactive materials.

- Based upon the results of air monitoring activities, airborne concentrations of TSP and radioactivity were below applicable standards at all times prior to and during the performance of the remedial assessment.

- A groundwater divide in the unconsolidated zone of saturation is present on site which isolated the northwestern portion of the site from the remainder of the facility. This divide results in radial groundwater flow directions from

the northwestern plant area to the northeast, southeast, and southwest. Single well aquifer characterization tests indicated the hydraulic conductivities and average linear groundwater velocities associated with the three different flow directions were relatively low. The pumping test conducted on the shallow groundwater-bearing zone indicated that one groundwater well completed in this zone would not sustain pumping rates of much more than 0.1 gallon per minute for an extended period of time. Pumping of the well at this rate exhibited no effect on observation wells located no more than 35 feet away.

Tables

Table 1
Monitoring Well Installation Data Summary
Fansteel, Inc.
Muskogee, Oklahoma

Monitoring Well No.	Ground Surface Elevation (ft amsl)	Top of PVC Casing Elevation (ft amsl)	Groundwater Elevation[1] (ft amsl)	Total Depth (ft bgs)	Communication Interval (ft)	Communication Zone
MW-51S	540.90	542.75	511.45	31.8	13.0 - 35.0	Unconsolidated deposits
MW-52S	524.28	526.62	509.94	18.0	3.5 - 18.0	Unconsolidated sediments
MW-53S	537.70	539.53	511.69	33.5	13.0 - 33.5	Unconsolidated deposits
MW-54S	531.80	533.53	512.27	30.0	11.0 - 30.0	Unconsolidated deposits
MW-55S	524.60	526.70	508.49	22.5	5.0 - 22.5	Unconsolidated sediments
MW-56S	521.89	523.90	509.22	18.0	4.0 - 18.0	Unconsolidated sediments
MW-57S	522.42	524.44	510.80	19.0	2.5 - 19.0	Unconsolidated sediments
MW-58S	524.47	526.69	507.93	23.0	4.0 - 23.0	Unconsolidated sediments
MW-59S	515.66	517.25	507.21	15.5	4.0 - 15.5	Unconsolidated sediments

See footnote at end of table.

Table 1
(Continued)

Monitoring Well No.	Ground Surface Elevation (ft amsl)	Top of PVC Casing Elevation (ft amsl)	Groundwater Elevation[1] (ft amsl)	Total Depth (ft bgs)	Communication Interval (ft)	Communication Zone
MW-60S	519.88	522.10	508.45	17.0	4.0 - 17.0	Unconsolidated sediments
MW-61S	522.48	523.94	510.36	21.5	4.0 - 21.5	Unconsolidated sediments
MW-62S	522.66	523.96	510.89	20.2	4.0 - 20.2	Unconsolidated sediments
MW-63S	534.32	535.42	509.15	33.5	14.5 - 33.5	Unconsolidated sediments
MW-64S	532.50	534.13	508.01	31.0	12.0 - 31.0	Unconsolidated sediments
MW-65S	533.55	535.68	508.74	31.5	12.5 - 31.5	Unconsolidated sediments
MW-66S	520.83	522.53	509.57	22.0	5.0 - 22.0	Unconsolidated sediments
MW-67S	526.93	528.12	508.60	26.0	7.5 - 26.0	Unconsolidated sediments
MW-68S	527.78	529.89	509.33	26.8	9.0 - 26.8	Unconsolidated sediments
MW-69S	515.51	517.51	506.22	13.4	2.5 - 13.4	Unconsolidated sediments
MW-70S	533.45	535.27	509.33	32.0	12.0 - 32.0	Unconsolidated sediments

See footnote at end of table.

Table 1
(Continued)

Monitoring Well No.	Ground Surface Elevation (ft amsl)	Top of PVC Casing Elevation (ft amsl)	Groundwater Elevation[1] (ft amsl)	Total Depth (ft bgs)	Communication Interval (ft)	Communication Zone
MW-71S	526.91	529.46	505.57	24.0	5.5 - 24.0	Unconsolidated sediments
MW-72S	512.12	513.79	503.83	19.5	3.5 - 19.5	Unconsolidated sediments
MW-73S	519.82	521.40	506.38	14.0	3.5 - 14.0	Unconsolidated sediments
MW-74S	518.62	520.74	504.85	17.0	4.5 - 17.0	Unconsolidated sediments
MW-75S	510.81	511.65	504.99	9.0	3.5 - 9.0	Unconsolidated sediments
MW-151D	540.65	542.63	491.58	70.0	57.5 - 70.0	McCurtain Shale
MW-161D	522.16	524.25	503.3	46.0	34.0 - 46.0	McCurtain Shale
MW-167D	527.50	529.43	488.80	53.0	39.0 - 53.0	McCurtain Shale
MW-174D	518.51	520.32	499.31	38.0	27.0 - 38.0	McCurtain Shale

[1]Groundwater elevations for Wells MW-51S through MW-75S were measured on March 4, 1993. The groundwater elevation for Wells MW-151D, MW-161D, MW-167D, and MW-174D were measured on April 21, 1993.

Table 2
Typical Concentration Ranges,
Proposed RCRA Corrective Action Levels, and
TCLP Action Levels for Soils
Fansteel, Inc.
Muskogee, Oklahoma

Parameter	Typical Range (mg/kg)	Proposed RCRA Corrective Action Level (mg/kg)	TCLP Action Level (mg/l)
Silver	NA[1]	200	5.0
Arsenic	0.10 - 97	80	5.0
Barium	100 - 3,000	4,000	100
Cadmium	NA	40	1.0
Calcium	600 - 320,000	NA	NA
Chromium	3 - 2,000	400	5.0
Mercury	<0.01 - 4.6	20	0.2
Nickel	<5 - 700	2,000	NA
Lead	<10 - 700	NA	5.0
Antimony	<1 - 2.6	30	NA
Selenium	<0.1 - 4.3	NA	1.0
Tin	<0.1 - 7.4	NA	NA
Columbium	<10 - 100	NA	NA
Tantalum	NA	NA	NA
Fluoride	<10 - 1,900	NA	NA
MEK	NA	4	NA

[1]NA = Not available.

Table 3
Chemistry Data Summary
Soil Borings and Monitoring Wells
Fansteel, Inc.
Muskogee, Oklahoma

Parameter	Units	Sample Identification and Date				
		B1 (12.0-14.5) 4/1/91	B1 (17-19.5) 4/1/91	B1 (19.5-22) 4/1/91	B2 (9.5-12) 4/1/91	B2 (24.5-27) 4/1/91
Total Analyses:						
Silver	mg/kg	<10	<10	<10	<10	<10
Arsenic	mg/kg	1.2	5.3	3.1	1.4	0.9
Barium	mg/kg	290	120	1000	250	140
Cadmium	mg/kg	<10	<10	<10	<10	<10
Calcium	mg/kg	2900	750	600	1500	1800
Chromium	mg/kg	140	14	<10	230	57
Mercury	mg/kg	<0.01	<0.01	<0.01	0.74	0.07
Nickel	mg/kg	<10	32	79	<10	<10
Lead	mg/kg	19	19	67	25	14
Antimony	mg/kg	11	<10	<10	25	<10
Selenium	mg/kg	<1	<1	<1	<1	<1
Tin	mg/kg	1800	<100	<100	140	<100
Columbium	mg/kg	730	41	69	510	35
Tantalum	mg/kg	16	7	18	54	16
Fluoride	mg/kg	66000	13000	14000	60000	24000
Gross Alpha	pCi/g	6.7±6.3	1.1±0.6	1.0±0.6	2.4±0.8	2.0±0.7
Gross Beta	pCi/g	30.7±12.8	2.3±1.1	2.0±1.1	14±1.5	3.5±1.2
Isotopes:						
Uranium-233 & 234	pCi/g	(1)	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	220	780	380	180	300
pH	pH Units	-	-	-	-	-
Sulfate	mg/kg	<20	<20	<20	<20	40
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	75000	65000	64000	14000	26000

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B2 (27-31) 4/1/91	B3 (0-2) 4/1/91	B3 (7-9.5) 4/1/91	B4 (2-4.5) 4/1/91	B4 (7-10) 4/1/91
Total Analyses:						
Silver	mg/kg	<10	<10	<10	<10	<10
Arsenic	mg/kg	0.1	1.8	1.6	2.2	3.3
Barium	mg/kg	<100	<100	100	<100	<100
Cadmium	mg/kg	<10	<10	<10	<10	<10
Calcium	mg/kg	1500	8200	1800	84000	11600
Chromium	mg/kg	<10	11	17	62	15
Mercury	mg/kg	<0.01	<0.01	0.11	0.04	0.28
Nickel	mg/kg	<10	<10	13	<10	11
Lead	mg/kg	<10	<10	<10	<10	<10
Antimony	mg/kg	<10	<10	<10	<10	<10
Selenium	mg/kg	<1	<1	<1	<1	<1
Tin	mg/kg	<100	<100	<100	130	<100
Columbium	mg/kg	21	72	45	320	38
Tantalum	mg/kg	10	65	18	330	16
Fluoride	mg/kg	23000	150	150	720	130
Gross Alpha	pCi/g	12.0±7.1	2.3±0.7	1.4±0.6	1.2±0.5	1.2±0.5
Gross Beta	pCi/g	16.0±11.9	3.0±0.9	3.1±0.8	0.9±0.7	1.9±0.8
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	260	2	<2	<2	<2
pH	pH Units	-	-	-	-	-
Sulfate	mg/kg	<20	260	60	340	240
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	5700	<50	<50	<50	<50

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B5 (0-0.5) 2/3/93	B5 (9.0-10.5) 2/3/93	B5 (20.0-22.5) 2/3/93	B6 (0-0.5) 2/3/93	B6 (2.0-4.5) 2/3/93
Total Analyses:						
Silver	mg/kg	<2.3	<2.1	<2.4	<2.2	<2.5
Arsenic	mg/kg	0.72	1.5	1.2	0.70	1.7
Barium	mg/kg	29	100	270	46	100
Cadmium	mg/kg	<2.3	3.0	3.3	<2.2	3.2
Calcium	mg/kg	500	1500	1900	760	3400
Chromium	mg/kg	4.9	18	17	67	25
Mercury	mg/kg	0.091	<0.057	<0.060	<0.058	0.12
Nickel	mg/kg	<12	13	24	<11	13
Lead	mg/kg	3.2	5.4	6.1	7.6	8.9
Antimony	mg/kg	<23	<21	<24	<22	<25
Selenium	mg/kg	<0.23	<0.23	<0.24	<0.23	<0.25
Tin	mg/kg	<12	18	15	<11	23
Columbium	mg/kg	1.2	9.2	7.2	2.3	12
Tantalum	mg/kg	2.3	13	13	3.5	14
Fluoride	mg/kg	92	150	150	62	240
Gross Alpha	pCi/g	14±5	14±7	10±4	15±5	-
Gross Beta	pCi/g	22±5	23±6	24±5	23±5	-
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	<2.0	<2.0	7.6
pH	pH Units	6.59	6.60	5.23	7.03	7.83
Sulfate	mg/kg	44	46	24	38	110
TCLP Metals:						
Silver	mg/l	-	-	-	<0.10	-
Arsenic	mg/l	-	-	-	<0.10	-
Barium	mg/l	-	-	-	<10	-
Cadmium	mg/l	-	-	-	<0.10	-
Chromium	mg/l	-	-	-	<0.10	-
Mercury	mg/l	-	-	-	<0.010	-
Nickel	mg/l	-	-	-	<1.0	-
Lead	mg/l	-	-	-	<0.10	-
Selenium	mg/l	-	-	-	<0.10	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	No. 1	-
pH with Deionized Water	pH units	-	-	-	6.68	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	1.56	-
pH of TCLP Extract	pH units	-	-	-	4.95	-
Amount of Sample Extracted	g	-	-	-	40.0	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<1500	<1600	<1500	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B6 (7.0-9.5) 2/3/93	B6 (24.5-27.0) 2/3/93	B7 (0-0.5) 2/3/93	B7 (4.5-7.0) 2/3/93	B7 (24.5-27.0) 2/3/93
Total Analyses:						
Silver	mg/kg	-	<2.5	<2.3	<2.1	<2.1
Arsenic	mg/kg	-	2.5	0.67	1.9	0.63
Barium	mg/kg	-	320	38	120	64
Cadmium	mg/kg	-	3.3	<2.3	3.8	<2.1
Calcium	mg/kg	-	2300	600	1700	1500
Chromium	mg/kg	-	17	5.5	21	12
Mercury	mg/kg	-	<0.063	<0.059	<0.060	<0.053
Nickel	mg/kg	-	14	<10	11	<10
Lead	mg/kg	-	8.2	6.6	8.7	2.3
Antimony	mg/kg	-	<25	<23	<21	<21
Selenium	mg/kg	-	<0.25	<0.23	<0.24	<0.21
Tin	mg/kg	-	16	<11	20	<10
Columbium	mg/kg	-	6.3	2.3	8.4	4.2
Tantalum	mg/kg	-	11	3.5	14	5.3
Fluoride	mg/kg	-	170	190	400	130
Gross Alpha	pCi/g	14±6	11±5	12±5	17±7	14±6
Gross Beta	pCi/g	19±5	24±5	18±5	24±6	25±5
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	-	<2.0	<2.0	<2.0	<2.0
pH	pH Units	-	6.26	7.77	9.32	6.02
Sulfate	mg/kg	-	124	44	118	240
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Dejonized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	-	<1600	<1500	<1500	<1400

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B8 (0-0.5) 2/4/93	B8 (9.5-12.5) 2/4/93	B8 (2.0-3.5) 2/4/93	B8 (24.5-27.0) 2/4/93	B9 (0-0.5) 2/2/93
Total Analyses:						
Silver	mg/kg	<2.3	-	<2.3	<2.5	<2.4
Arsenic	mg/kg	2.4	-	4.9	15	2.5
Barium	mg/kg	43	-	60	54	95
Cadmium	mg/kg	<2.3	-	<2.3	<2.5	<2.4
Calcium	mg/kg	3200	-	20000	1500	2200
Chromium	mg/kg	9.0	-	14	7.5	12
Mercury	mg/kg	<0.057	-	<0.057	<0.061	<0.061
Nickel	mg/kg	<11	-	<11	<12	12
Lead	mg/kg	7.3	-	5.1	5.9	9.0
Antimony	mg/kg	<23	-	<23	<25	<24
Selenium	mg/kg	<0.23	-	<0.23	<0.25	<0.24
Tin	mg/kg	<11	-	13	<12	<12
Columbium	mg/kg	15	-	19	6.0	14
Tantalum	mg/kg	9.1	-	10	9.8	18
Fluoride	mg/kg	360	-	330	150	120
Gross Alpha	pCi/g	60±11	19±7	-	20±7	14±7
Gross Beta	pCi/g	40±7	18±7	-	26±6	24±6
Isotopes:						
Uranium-233 & 234	pCi/g	3.4±0.5	-	-	-	-
Uranium-235	pCi/g	0.0±0.1	-	-	-	-
Uranium-238	pCi/g	2.8±0.4	-	-	-	-
Thorium-228	pCi/g	4.6±0.6	-	-	-	-
Thorium-230	pCi/g	3.6±0.5	-	-	-	-
Thorium-232	pCi/g	4.8±0.6	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	1.4±0.8	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	3.2±0.8	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	4.1±0.8	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	0.0±7.4	-	-	-	-
Radium 226	pCi/g	4.9±0.9	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	3.4±0.4	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	3.3±0.2	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	3.4±0.2	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	3.6±0.5	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	3.1±0.5	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	5.0±0.4	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	5.3±0.4	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	5.2±0.6	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	4.3±0.2	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	6.2±1.5	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	4.9±0.3	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	0.28±0.19	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	17±1	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	2.6	-	30	<2.0	<2.0
pH	pH Units	7.33	-	11.94	7.57	6.47
Sulfate	mg/kg	160	-	80	240	54
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	-	<1500	<1600	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B9 (12.0-15.0) 2/2/93	B9 (15.0-17.0) 2/2/93	B10 (0-0.5) 2/2/93	B10 (2.0-4.5) 2/2/93	B10 (14.5-17.0) 2/2/93
Total Analyses:						
Silver	mg/kg	<2.5	<2.3	<2.3	<2.3	<2.4
Arsenic	mg/kg	2.3	2.0	0.77	0.49	5.2
Barium	mg/kg	53	97	69	91	64
Cadmium	mg/kg	<2.5	<2.3	3.0	3.5	<2.4
Calcium	mg/kg	3400	2000	2300	2600	1800
Chromium	mg/kg	9.0	15	17	23	10
Mercury	mg/kg	<0.063	<0.062	<0.062	<0.060	<0.63
Nickel	mg/kg	<13	<12	18	20	<13
Lead	mg/kg	4.9	3.7	4.7	6.3	7.1
Antimony	mg/kg	<25	<23	<23	<23	<24
Selenium	mg/kg	<0.25	<0.25	<0.25	<0.24	<0.25
Tin	mg/kg	<13	12	16	<12	<12
Columbium	mg/kg	7.5	5.0	7.4	7.2	7.5
Tantalum	mg/kg	10	8.7	11	12	11
Fluoride	mg/kg	220	210	130	140	52
Gross Alpha	pCi/g	12±7	14±7	18±6	42±9	13±5
Gross Beta	pCi/g	24±6	23±6	27±5	33±7	24±5
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	2.2±0.3	-
Uranium-235	pCi/g	-	-	-	0.0±0.1	-
Uranium-238	pCi/g	-	-	-	2.5±0.3	-
Thorium-228	pCi/g	-	-	-	1.1±0.3	-
Thorium-230	pCi/g	-	-	-	2.9±05	-
Thorium-232	pCi/g	-	-	-	1.2±0.3	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	4.5±0.9	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	2.8±0.6	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	3.4±0.5	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	52±23	-
Radium 226	pCi/g	-	-	-	4.5±0.7	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	3.0±0.3	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	2.7±0.2	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	2.7±0.2	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	3.0±0.5	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	2.5±0.5	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	1.3±0.3	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	1.3±0.3	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	1.5±0.3	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	1.3±0.1	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	1.4±0.2	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	0.15±0.14	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	19±1	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	<2.0	<2.0	<2.0
pH	pH Units	6.91	6.44	6.45	6.99	6.14
Sulfate	mg/kg	10000	4200	100	220	340
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	<1600	<1600	<1600	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B11 (0-0.5) 2/2/93	B11 (0.5-2.0) 2/2/93	B11 (14.5-17.0) 2/2/93	B12 (0-0.5) 2/3/93	B12 (7.5-10.0) 2/3/93
Total Analyses:						
Silver	mg/kg	<2.1	<2.4	<2.4	<2.2	<2.4
Arsenic	mg/kg	1.3	1.1	4.3	2.4	1.7
Barium	mg/kg	67	170	180	100	35
Cadmium	mg/kg	2.8	3.1	3.7	3.1	2.7
Calcium	mg/kg	1700	2100	2500	1900	1800
Chromium	mg/kg	22	17	18	21	14
Mercury	mg/kg	<0.062	<0.060	<0.063	0.12	0.091
Nickel	mg/kg	11	16	19	11	<12
Lead	mg/kg	9.0	8.4	6.8	11	5.8
Antimony	mg/kg	<21	<24	<24	<22	<24
Selenium	mg/kg	<0.25	<0.24	<0.25	<0.24	<0.24
Tin	mg/kg	18	14	16	19	13
Columbium	mg/kg	9.9	11	11	9.5	7.3
Tantalum	mg/kg	15	19	24	13	11
Fluoride	mg/kg	81	120	220	220	220
Gross Alpha	pCi/g	18±8	18±8	10±6	14±5	9±4
Gross Beta	pCi/g	21±6	22±6	25±6	20±5	26±5
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	<2.0	<2.0	<2.0
pH	pH Units	6.85	6.58	6.53	7.38	6.32
Sulfate	mg/kg	90	144	300	72	52
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	<1600	<1500	<1500	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B12 (17.5-19.0) 2/3/93	B13 (0-0.5) 2/2/93	B13 (0.5-2.5) 2/2/93	B13 (24.5-27.0) 2/2/93	B14 (0-0.5) 2/2/93
Total Analyses:						
Silver	mg/kg	<2.4	<2.1	<2.0	<2.4	<2.3
Arsenic	mg/kg	5.9	2.0	2.7	3.8	2.1
Barium	mg/kg	170	220	130	140	66
Cadmium	mg/kg	2.9	2.8	3.6	3.2	<2.3
Calcium	mg/kg	2000	1100	1500	1800	1200
Chromium	mg/kg	16	16	27	14	13
Mercury	mg/kg	<0.063	<0.059	<0.057	<0.062	<0.060
Nickel	mg/kg	15	17	15	17	11
Lead	mg/kg	5.6	8.3	6.5	5.8	7.7
Antimony	mg/kg	<24	<21	<20	<24	<23
Selenium	mg/kg	<0.25	<0.24	<0.23	<0.25	<0.24
Tin	mg/kg	13	11	15	<12	<11
Columbium	mg/kg	8.7	11	11	10	12
Tantalum	mg/kg	15	20	18	20	17
Fluoride	mg/kg	220	90	170	54	110
Gross Alpha	pCi/g	14±5	21±8	17±8	12±7	28±8
Gross Beta	pCi/g	25±5	26±6	22±6	24±6	24±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	0.5±0.3
Uranium-235	pCi/g	-	-	-	-	0.1±0.1
Uranium-238	pCi/g	-	-	-	-	0.5±0.2
Thorium-228	pCi/g	-	-	-	-	1.4±0.3
Thorium-230	pCi/g	-	-	-	-	0.9±0.3
Thorium-232	pCi/g	-	-	-	-	1.2±0.3
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	1.4±0.6
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	0.82±0.42
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	1.3±0.4
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	0.0±5.9
Radium 226	pCi/g	-	-	-	-	1.8±0.6
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	1.3±0.2
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	1.2±0.1
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	1.0±0.2
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	1.3±0.4
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	0.75±0.31
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	1.4±0.2
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	1.4±0.2
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	1.4±0.4
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	1.0±0.1
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	2.1±0.6
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	1.4±0.2
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	0.00±0.9
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	13±1
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	<2.0	<2.0	<2.0
pH	pH Units	6.81	6.84	7.22	7.42	6.68
Sulfate	mg/kg	600	66	66	72	320
TCLP Metals:						
Silver	mg/l	<0.10	-	-	-	-
Arsenic	mg/l	<0.10	-	-	-	-
Barium	mg/l	<10	-	-	-	-
Cadmium	mg/l	<0.10	-	-	-	-
Chromium	mg/l	<0.10	-	-	-	-
Mercury	mg/l	<0.010	-	-	-	-
Nickel	mg/l	<1.0	-	-	-	-
Lead	mg/l	<0.10	-	-	-	-
Selenium	mg/l	<0.10	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 1	-	-	-	-
pH with Deionized Water	pH units	7.53	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	1.68	-	-	-	-
pH of TCLP Extract	pH units	4.95	-	-	-	-
Amount of Sample Extracted	g	40.0	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	<1500	<1500	<1600	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B14 (2.5-5.0) 2/2/93	B14 (26.5-27.5) 2/2/93	B15 (0-0.5) 2/2/93	B15 (5.0-7.5) 2/2/93	B15 (9.2-10.0) 2/2/93
Total Analyses:						
Silver	mg/kg	<2.1	<2.5	<2.0	<2.1	<2.1
Arsenic	mg/kg	2.0	6.8	2.6	1.8	0.55
Barium	mg/kg	58	70	110	65	140
Cadmium	mg/kg	<2.1	<2.5	<2.0	<2.1	<2.1
Calcium	mg/kg	1400	1800	10000	1400	3400
Chromium	mg/kg	9.8	9.2	38	8.8	81
Mercury	mg/kg	<0.057	<0.063	0.058	<0.061	<0.059
Nickel	mg/kg	<11	<12	<10	<11	<11
Lead	mg/kg	4.6	6.8	6.3	3.8	4.9
Antimony	mg/kg	<21	<25	<20	<21	<21
Selenium	mg/kg	<0.23	<0.25	<0.22	<0.24	<0.24
Tin	mg/kg	<11	<12	25	<11	170
Columbium	mg/kg	9.0	10	53	6.1	11
Tantalum	mg/kg	12	24	17	12	7.1
Fluoride	mg/kg	170	300	470	640	9100
Gross Alpha	pCi/g	20±7	17±7	38±8	15±6	-
Gross Beta	pCi/g	25±6	25±6	27±5	23±6	-
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	0.5±0.3	-	-
Uranium-235	pCi/g	-	-	0.4±0.1	-	-
Uranium-238	pCi/g	-	-	0.7±0.2	-	-
Thorium-228	pCi/g	-	-	2.4±0.5	-	-
Thorium-230	pCi/g	-	-	1.6±0.4	-	-
Thorium-232	pCi/g	-	-	1.1±0.3	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	3.4±0.8	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	1.2±0.7	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	1.9±0.7	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	0.0±5.9	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	2.2±0.3	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	2.3±0.1	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	2.3±0.2	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	2.3±0.4	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	2.3±0.4	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	2.4±0.3	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	2.4±0.2	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	2.8±0.5	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	1.7±0.1	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	2.2±0.2	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	0.00±0.10	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	15±1	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	<2.0	<2.0	44
pH	pH Units	6.85	6.52	7.61	5.63	4.57
Sulfate	mg/kg	130	72	72	174	46
TCLP Metals:						
Silver	mg/l	-	-	-	-	<0.10
Arsenic	mg/l	-	-	-	-	<0.10
Barium	mg/l	-	-	-	-	<10
Cadmium	mg/l	-	-	-	-	<0.10
Chromium	mg/l	-	-	-	-	<0.10
Mercury	mg/l	-	-	-	-	<0.010
Nickel	mg/l	-	-	-	-	<1.0
Lead	mg/l	-	-	-	-	<0.10
Selenium	mg/l	-	-	-	-	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	No. 1
pH with Deionized Water	pH units	-	-	-	-	4.62
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	4.60
Amount of Sample Extracted	g	-	-	-	-	50.0
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<1600	<1400	<1600	2000

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B15 (10-12) 2/2/93	B17 (0-0.5) 2/2/93	B17 (0.5-2.5) 2/2/93	B17 (17.5-19.2) 2/2/93	B19 (0-0.5) 2/2/93
Total Analyses:						
Silver	mg/kg	-	<2.0	<2.3	<2.3	<2.1
Arsenic	mg/kg	-	2.9	2.0	0.79	1.6
Barium	mg/kg	-	37	75	250	85
Cadmium	mg/kg	-	2.0	<2.3	2.5	<2.1
Calcium	mg/kg	-	140000	2900	2300	89000
Chromium	mg/kg	-	17	<12	13	14
Mercury	mg/kg	-	<0.053	<0.060	<0.061	<0.058
Nickel	mg/kg	-	<10	<12	16	<11
Lead	mg/kg	-	3.1	1.9	3.7	2.3
Antimony	mg/kg	-	<20	<23	<23	<21
Selenium	mg/kg	-	0.32	<0.24	<0.24	<0.23
Tin	mg/kg	-	<10	<12	<12	12
Columbium	mg/kg	-	10	6.0	6.1	9.3
Tantalum	mg/kg	-	19	11	9.7	20
Fluoride	mg/kg	-	170	170	240	380
Gross Alpha	pCi/g	10±5	6±5	27±8	16±7	17±6
Gross Beta	pCi/g	28±5	5±5	22±6	26±6	19±5
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	0.3±0.2	-	-
Uranium-235	pCi/g	-	-	0.0±0.1	-	-
Uranium-238	pCi/g	-	-	0.5±0.2	-	-
Thorium-228	pCi/g	-	-	2.7±0.5	-	-
Thorium-230	pCi/g	-	-	11±1	-	-
Thorium-232	pCi/g	-	-	2.6±0.5	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	1.9±0.8	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	1.8±0.6	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	2.5±0.6	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	0.0±7.1	-	-
Radium 226	pCi/g	-	-	3.4±0.6	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	1.5±0.3	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	1.6±0.1	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	1.6±0.2	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	2.0±0.5	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	1.8±0.4	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	1.9±0.3	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	1.9±0.3	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	2.0±0.5	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	1.5±0.1	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	2.6±0.9	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	1.8±0.2	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	0.13±0.09	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	17±1	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	-	<2.0	4.8	<2.0	<2.0
pH	pH Units	-	7.96	7.06	6.75	7.72
Sulfate	mg/kg	-	1420	320	150	380
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	-	<1400	<1500	<1600	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B19 (2.0-3.4) 2/2/93	B19 (14.4-16.8) 2/2/93	B19 (14.4-17.0) 2/2/93	B20 (0-0.5) 2/1/93	B20 (2.5-4.0) 2/1/93
Total Analyses:						
Silver	mg/kg	<2.3	<2.1	-	<2.4	<2.4
Arsenic	mg/kg	1.1	1.9	-	3.5	1.3
Barium	mg/kg	77	68	-	66	47
Cadmium	mg/kg	<2.3	<2.1	-	<2.4	<2.4
Calcium	mg/kg	1300	1300	-	4900	1100
Chromium	mg/kg	13	12	-	22	6.0
Mercury	mg/kg	<0.059	<0.060	-	0.090	<0.062
Nickel	mg/kg	<12	<10	-	<12	<12
Lead	mg/kg	4.8	4.7	-	12	4.4
Antimony	mg/kg	<23	<21	-	<24	<24
Selenium	mg/kg	<0.23	<0.24	-	<0.24	<0.25
Tin	mg/kg	<12	<10	-	<12	<12
Columbium	mg/kg	7.1	4.8	-	24	1.2
Tantalum	mg/kg	11	11	-	15	2.5
Fluoride	mg/kg	240	280	-	1500	200
Gross Alpha	pCi/g	14±5	16±5	15±6	-	-
Gross Beta	pCi/g	20±5	24±5	25±6	-	-
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	-	<2.0	<2.0
pH	pH Units	6.42	6.51	-	7.81	7.62
Sulfate	mg/kg	76	122	-	72	54
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<1500	-	<1600	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B20 (6.0-7.0) 2/1/93	B21 (0-0.5) 2/1/93	B21 (0.5-2.5) 2/1/93	B21 (2.5-3.6) 2/1/93	B22 (0-0.5) 2/8/93
Total Analyses:						
Silver	mg/kg	<2.3	<2.3	<2.2	<2.3	<2.5
Arsenic	mg/kg	4.8	3.0	2.0	1.3	2.4
Barium	mg/kg	110	69	65	44	110
Cadmium	mg/kg	2.7	<2.3	<2.2	<2.3	<2.5
Calcium	mg/kg	1300	1500	1100	1500	2100
Chromium	mg/kg	24	9.1	8.2	6.0	18
Mercury	mg/kg	<0.062	<0.060	<0.064	<0.061	0.070
Nickel	mg/kg	16	<11	<11	<12	16
Lead	mg/kg	12	8.5	6.3	2.2	35
Antimony	mg/kg	<23	<23	<22	<23	<25
Selenium	mg/kg	<0.25	<0.24	<0.26	<0.24	<0.25
Tin	mg/kg	<11	<11	<11	<12	21
Columbium	mg/kg	2.5	4.8	5.1	<1.2	28
Tantalum	mg/kg	6.2	6.0	10	<1.2	14
Fluoride	mg/kg	200	310	2000	240	5600
Gross Alpha	pCi/g	-	-	-	-	56±10
Gross Beta	pCi/g	-	-	-	-	42±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	3.6±0.4
Uranium-235	pCi/g	-	-	-	-	0.3±0.1
Uranium-238	pCi/g	-	-	-	-	3.3±0.4
Thorium-228	pCi/g	-	-	-	-	2.1±0.4
Thorium-230	pCi/g	-	-	-	-	6.1±0.7
Thorium-232	pCi/g	-	-	-	-	2.1±0.4
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	4.2±1.5
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	4.0±0.7
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	3.4±0.7
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	0.0±7.7
Radium 226	pCi/g	-	-	-	-	7.8±0.8
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	4.4±0.4
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	4.6±0.2
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	4.3±0.2
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	4.8±0.6
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	4.4±0.6
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	2.2±0.3
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	2.2±0.3
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	2.2±0.5
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	1.9±0.1
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	2.6±1.0
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	2.0±0.2
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	0.33±0.15
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	15±1
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	<2.0	<2.0	<2.0
pH	pH Units	6.88	6.67	6.20	6.86	5.94
Sulfate	mg/kg	68	72	220	128	100
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	<1500	<1700	<1600	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B22 (4.5-7.0) 2/8/93	B22 (9.5-12.0) 2/8/93	B23 (0-0.5) 2/3/93	B23 (15.5-18.0) 2/3/93	B23 (23.0-25.0) 2/3/93
Total Analyses:						
Silver	mg/kg	<2.1	<2.5	<2.3	<2.2	<2.3
Arsenic	mg/kg	1.2	4.1	0.81	2.7	3.2
Barium	mg/kg	65	53	36	100	48
Cadmium	mg/kg	<2.1	<2.5	<2.3	2.7	<2.3
Calcium	mg/kg	660	910	1000	1400	1100
Chromium	mg/kg	5.2	6.7	6.9	14	8.1
Mercury	mg/kg	<0.054	<0.062	<0.059	<0.059	<0.060
Nickel	mg/kg	<11	<12	<12	<11	<12
Lead	mg/kg	3.3	4.6	3.8	5.3	4.0
Antimony	mg/kg	<21	<25	<23	<22	<23
Selenium	mg/kg	<0.21	<0.25	<0.23	<0.24	<0.24
Tin	mg/kg	<11	<12	<12	14	<12
Columbium	mg/kg	<2.2	7.5	4.7	9.5	7.2
Tantalum	mg/kg	13	15	4.7	13	12
Fluoride	mg/kg	240	320	350	190	120
Gross Alpha	pCi/g	9±4	14±5	14±5	7±6	16±5
Gross Beta	pCi/g	24±5	23±5	23±5	25±6	28±5
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	<2.0	<2.0	<2.0
pH	pH Units	5.95	6.56	7.92	7.23	7.56
Sulfate	mg/kg	68	62	60	58	62
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1400	<1600	<1500	<1500	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B24 (0-0.5) 2/5/93	B24 (9.5-12.0) 2/5/93	B24 (25.0-25.8) 2/5/93	B25 (0-0.5) 2/5/93	B25 (9.5-12.0) 2/5/93
Total Analyses:						
Silver	mg/kg	<2.4	<2.4	<2.4	<2.4	<2.4
Arsenic	mg/kg	3.8	3.2	2.4	2.7	1.1
Barium	mg/kg	57	79	68	79	120
Cadmium	mg/kg	3.6	2.4	<2.4	<2.4	2.8
Calcium	mg/kg	3600	1800	1500	11000	1900
Chromium	mg/kg	17	13	11	15	21
Mercury	mg/kg	<0.060	<0.059	0.060	<0.059	<0.060
Nickel	mg/kg	<12	13	<12	<12	16
Lead	mg/kg	11	5.3	2.4	5.1	2.7
Antimony	mg/kg	<24	<24	<24	<24	<24
Selenium	mg/kg	<0.24	0.24	<0.24	<0.24	<0.24
Tin	mg/kg	<12	<12	<12	<12	16
Columbium	mg/kg	11	11	4.8	4.7	7.2
Tantalum	mg/kg	14	17	7.2	11	14
Fluoride	mg/kg	290	130	160	190	140
Gross Alpha	pCi/g	16±8	12±6	12±7	20±8	19±8
Gross Beta	pCi/g	19±6	24±6	15±5	23±6	26±7
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	<2.0	7.0	<2.0
pH	pH Units	8.07	7.85	7.99	7.49	7.66
Sulfate	mg/kg	300	54	68	128	44
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	<1500	<1600	<1500	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B25 (23.5-26.8) 2/5/93	B26 (0-0.5) 2/5/93	B26 (0.5-2.0) 2/5/93	B26 (24.5-25.8) 2/5/93	B27 (0-0.5) 2/5/93
Total Analyses:						
Silver	mg/kg	<2.5	<2.4	<2.4	<2.4	<2.4
Arsenic	mg/kg	1.3	2.7	3.5	1.2	2.0
Barium	mg/kg	67	110	96	46	110
Cadmium	mg/kg	<2.5	3.0	2.7	<2.4	3.7
Calcium	mg/kg	1200	9800	2100	960	3200
Chromium	mg/kg	6.3	23	16	6.6	24
Mercury	mg/kg	<0.064	<0.060	<0.060	<0.061	<0.060
Nickel	mg/kg	<13	17	14	<12	17
Lead	mg/kg	91	7.5	13	3.9	11
Antimony	mg/kg	<25	<24	<24	<24	<24
Selenium	mg/kg	<0.25	<0.24	<0.24	<0.24	0.36
Tin	mg/kg	<13	23	13	<12	21
Columbium	mg/kg	2.5	17	14	4.8	4.8
Tantalum	mg/kg	5.1	16	17	7.3	8.4
Fluoride	mg/kg	210	500	220	260	3700
Gross Alpha	pCi/g	15±6	15±8	10±7	11±7	15±8
Gross Beta	pCi/g	23±6	26±6	27±5	24±5	31±7
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	18.8	<2.0	<2.0	<2.0
pH	pH Units	7.01	7.75	7.33	7.73	7.31
Sulfate	mg/kg	72	220	240	46	76
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<1500	<1600	<1600	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B27 (12.0-14.5) 2/5/93	B27 (24.5-26.6) 2/5/93	B28 (0-0.5) 2/5/93	B28 (7.0-9.5) 2/5/93	B28 (24.5-25.1) 2/5/93
Total Analyses:						
Silver	mg/kg	<2.4	<2.3	<2.5	<2.5	<2.3
Arsenic	mg/kg	2.4	1.4	2.9	2.1	0.24
Barium	mg/kg	85	31	170	110	42
Cadmium	mg/kg	2.8	<2.3	2.9	3.0	<2.3
Calcium	mg/kg	1600	1000	6500	2100	1000
Chromium	mg/kg	16	7.9	23	23	7.3
Mercury	mg/kg	<0.059	<0.057	<0.061	<0.061	<0.058
Nickel	mg/kg	<12	<11	15	17	<12
Lead	mg/kg	10	3.1	7.1	3.7	2.1
Antimony	mg/kg	<24	<23	<25	<25	<23
Selenium	mg/kg	<0.24	<0.23	<0.25	<0.25	<0.23
Tin	mg/kg	16	<11	20	22	<12
Columbium	mg/kg	9.5	2.3	8.6	8.6	<1.2
Tantalum	mg/kg	17	4.5	14	17	<1.2
Fluoride	mg/kg	2500	180	710	250	190
Gross Alpha	pCi/g	9±7	4±6	22±8	16±7	6±6
Gross Beta	pCi/g	26±6	27±6	20±5	24±6	19±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	0.3±0.5	-	-
Uranium-235	pCi/g	-	-	0.1±0.2	-	-
Uranium-238	pCi/g	-	-	0.3±0.3	-	-
Thorium-228	pCi/g	-	-	2.0±0.7	-	-
Thorium-230	pCi/g	-	-	1.4±0.7	-	-
Thorium-232	pCi/g	-	-	1.8±0.7	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	1.8±0.7	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	1.1±0.5	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	1.4±0.4	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	0.0±6.4	-	-
Radium 226	pCi/g	-	-	1.8±0.5	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	1.0±0.2	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	0.91±0.11	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	1.0±0.1	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	1.4±0.4	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	0.82±0.35	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	1.5±0.3	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	1.3±0.2	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	1.2±0.4	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	1.3±0.1	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	1.5±0.5	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	1.4±0.2	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	0.00±0.08	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	5.8	<2.0	<2.0
pH	pH Units	6.56	7.23	9.18	6.38	6.81
Sulfate	mg/kg	72	68	174	66	62
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<1500	<1600	<1600	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date					
		B29 (0-0.5) 2/2/93	B29 (0.5-2.5) 2/2/93	B29 (23.0-24.5) 2/2/93	B29 (24.5-25.5) 2/2/93	B30 (0-0.5) 2/1/93	B30 (3.4-4.8) 2/1/93
Total Analyses:							
Silver	mg/kg	<2.2	<2.3	<2.2	-	<2.1	<2.3
Arsenic	mg/kg	0.95	2.6	1.6	-	1.5	1.3
Barium	mg/kg	120	1400	50	-	90	110
Cadmium	mg/kg	2.7	<2.3	<2.2	-	<2.1	2.3
Calcium	mg/kg	4600	33000	2400	-	2100	2400
Chromium	mg/kg	38	27	11	-	12	13
Mercury	mg/kg	0.19	0.66	<0.061	-	<0.059	<0.060
Nickel	mg/kg	<11	14	<11	-	14	12
Lead	mg/kg	19	75	7.8	-	4.6	5.4
Antimony	mg/kg	<22	<23	<22	-	<21	<23
Selenium	mg/kg	<0.21	<0.24	<0.24	-	<0.23	<0.24
Tin	mg/kg	130	92	54	-	<10	16
Columbium	mg/kg	47	270	60	-	2.3	7.2
Tantalum	mg/kg	8.0	33	4.9	-	5.9	14
Fluoride	mg/kg	6400	43000	6500	-	75	140
Gross Alpha	pCi/g	46±9	14±6	-	9±5	-	12±6
Gross Beta	pCi/g	32±5	26±6	-	21±5	-	26±6
Isotopes:							
Uranium-233 & 234	pCi/g	3.6±0.5	5.6±0.6	-	-	-	-
Uranium-235	pCi/g	0.2±0.1	0.6±0.2	-	-	-	-
Uranium-238	pCi/g	3.6±0.4	6.1±0.6	-	-	-	-
Thorium-228	pCi/g	1.9±0.4	1.3±0.3	-	-	-	-
Thorium-230	pCi/g	2.6±0.5	0.7±0.3	-	-	-	-
Thorium-232	pCi/g	1.9±0.4	1.3±0.3	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	3.2±0.8	11±1	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	4.3±0.8	6.6±1.7	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	3.9±0.6	6.4±1.7	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	8.5±8.3	24±10	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	2.8±0.3	10±1	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	3.0±0.2	10±1	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	2.8±0.2	9.6±0.4	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	3.2±0.5	9.9±0.8	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	2.8±0.5	9.0±0.6	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	1.8±0.3	2.6±0.3	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	2.2±0.3	3.4±0.3	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	2.3±0.5	3.5±0.6	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	2.0±0.2	3.1±0.2	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	2.2±0.2	2.8±0.3	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	0.28±0.14	0.35±0.20	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	17±1	28±1	-	-	-	-
ASTM Analysis:							
Ammonia	mg/kg NH3-N	58	120	32	-	<2.0	<2.0
pH	pH Units	7.02	6.72	5.58	-	6.87	6.48
Sulfate	mg/kg	136	158	74	-	110	68
TCLP Metals:							
Silver	mg/l	<0.10	<0.10	-	-	-	-
Arsenic	mg/l	<0.10	<0.10	-	-	-	-
Barium	mg/l	<10	<10	-	-	-	-
Cadmium	mg/l	<0.10	<0.10	-	-	-	-
Chromium	mg/l	<0.10	<0.10	-	-	-	-
Mercury	mg/l	<0.010	<0.010	-	-	-	-
Nickel	mg/l	<1.0	<1.0	-	-	-	-
Lead	mg/l	<0.10	<0.10	-	-	-	-
Selenium	mg/l	<0.10	<0.10	-	-	-	-
TCLP Extraction Fluid Data:							
Extraction Fluid		No. 1	No. 1	-	-	-	-
pH with Deionized Water	pH units	6.76	6.65	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	2.09	3.36	-	-	-	-
pH of TCLP Extract	pH units	5.16	5.33	-	-	-	-
Amount of Sample Extracted	g	50.0	50.0	-	-	-	-
Volatile Organic Analyses:							
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<1600	<1600	-	<1500	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B30 (7.0-9.2) 2/1/93	B31 (0-0.5) 2/2/93	B31 (0.5-2.5) 2/2/93	B31 (7.5-9.0) 2/2/93	B32 (0-0.5) 2/3/93
Total Analyses:						
Silver	mg/kg	<2.2	<2.2	<2.1	<2.6	<2.3
Arsenic	mg/kg	5.3	3.0	1.6	1.7	5.4
Barium	mg/kg	72	59	91	200	150
Cadmium	mg/kg	2.7	<2.2	2.1	4.7	3.3
Calcium	mg/kg	1900	1900	1700	4600	3200
Chromium	mg/kg	10	<11	19	34	19
Mercury	mg/kg	<0.059	<0.060	<0.059	<0.065	<0.061
Nickel	mg/kg	17	<11	<11	24	15
Lead	mg/kg	7.8	8.8	9.8	16	6.8
Antimony	mg/kg	<22	<22	<21	<26	<23
Selenium	mg/kg	<0.24	<0.20	<0.23	<0.26	<0.24
Tin	mg/kg	<11	<11	<11	43	32
Columbium	mg/kg	5.9	6.0	5.9	9.1	12
Tantalum	mg/kg	11	8.4	9.4	10	15
Fluoride	mg/kg	210	160	120	280	720
Gross Alpha	pCi/g	-	19±6	16±6	21±6	27±7
Gross Beta	pCi/g	-	23±5	21±6	31±5	28±5
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	1.3±0.8
Uranium-235	pCi/g	-	-	-	-	0.1±0.2
Uranium-238	pCi/g	-	-	-	-	1.7±0.7
Thorium-228	pCi/g	-	-	-	-	4.0±1.1
Thorium-230	pCi/g	-	-	-	-	4.6±1.2
Thorium-232	pCi/g	-	-	-	-	2.5±0.8
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	2.0±0.6
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	1.5±1.0
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	2.0±0.3
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	11±6
Radium 226	pCi/g	-	-	-	-	3.4±0.6
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	1.7±0.3
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	1.7±0.1
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	1.5±0.2
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	1.6±0.5
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	1.3±0.4
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	1.9±0.3
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	1.6±0.2
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	1.4±0.3
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	1.5±0.1
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	2.5±0.7
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	1.7±0.2
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	0.16±0.12
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	15±1
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	<2.0	4.8	<2.0
pH	pH Units	7.56	6.68	7.50	6.88	6.38
Sulfate	mg/kg	74	90	150	184	132
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<1600	<1500	<1700	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B32 (7.0-9.5) 2/3/93	B32 (24.0-27.0) 2/3/93	B33 (0-0.5) 2/3/93	B33 (4.0-7.5) 2/3/93	B33 (20.0-22.5) 2/3/93
Total Analyses:						
Silver	mg/kg	<2.3	<2.4	<2.3	<2.2	<2.5
Arsenic	mg/kg	3.4	2.2	1.0	2.2	1.0
Barium	mg/kg	78	48	10	230	130
Cadmium	mg/kg	2.4	<2.4	<2.3	<2.2	<2.5
Calcium	mg/kg	1200	1300	290	17000	1400
Chromium	mg/kg	11	9.9	<2.3	14	10
Mercury	mg/kg	<0.060	<0.067	<0.059	<0.058	<0.062
Nickel	mg/kg	<11	<12	<11	<11	<12
Lead	mg/kg	4.3	4.5	5.5	8.7	3.6
Antimony	mg/kg	<23	<24	<23	<22	<25
Selenium	mg/kg	<0.24	<0.26	<0.23	<0.23	<0.25
Tin	mg/kg	14	<12	<11	20	<12
Columbium	mg/kg	9.6	7.9	3.5	110	6.2
Tantalum	mg/kg	12	13	4.7	20	7.4
Fluoride	mg/kg	200	490	97	210	150
Gross Alpha	pCi/g	20±8	10±5	16±6	51±11	6±5
Gross Beta	pCi/g	18±6	23±5	19±5	38±6	22±5
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	3.0±0.5	-
Uranium-235	pCi/g	-	-	-	0.1±0.1	-
Uranium-238	pCi/g	-	-	-	3.4±0.5	-
Thorium-228	pCi/g	-	-	-	2.4±0.4	-
Thorium-230	pCi/g	-	-	-	5.1±0.6	-
Thorium-232	pCi/g	-	-	-	2.9±0.5	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	4.1±1.2	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	3.4±0.7	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	2.9±0.5	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	0.0±6.4	-
Radium 226	pCi/g	-	-	-	5.6±0.7	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	3.7±0.3	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	3.8±0.2	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	3.7±0.2	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	3.5±0.5	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	3.4±0.4	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	2.6±0.3	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	3.1±0.3	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	2.8±0.4	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	2.6±0.1	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	3.6±0.8	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	2.5±0.2	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	0.20±0.12	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	17±1	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	156	<2.0	132	7.0
pH	pH Units	6.38	6.66	7.18	7.30	6.54
Sulfate	mg/kg	400	128	44	460	116
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	<1700	<1500	<1500	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B34 (0-0.5) 2/3/93	B34 (7.5-10.0) 2/3/93	B34 (21.0-22.0) 2/3/93	B35 (0-0.5) 2/3/93	B35 (10.0-11.0) 2/3/93
Total Analyses:						
Silver	mg/kg	<2.1	<2.2	<2.2	<2.0	<2.4
Arsenic	mg/kg	0.64	2.1	16	0.82	0.96
Barium	mg/kg	27	66	280	43	140
Cadmium	mg/kg	<2.1	<2.2	3.9	<2.0	2.7
Calcium	mg/kg	650	1100	1600	790	1800
Chromium	mg/kg	4.4	13	13	6.2	180
Mercury	mg/kg	0.10	0.099	0.10	0.10	0.096
Nickel	mg/kg	<11	<11	25	<10	<12
Lead	mg/kg	3.8	8.6	11	4.3	6.7
Antimony	mg/kg	<21	<22	<22	<20	<24
Selenium	mg/kg	<0.23	<0.23	<0.24	<0.023	<0.24
Tin	mg/kg	<11	<11	11	<10	100
Columbium	mg/kg	2.3	10	11	10	17
Tantalum	mg/kg	<1.1	11	18	13	16
Fluoride	mg/kg	230	420	160	43	17000
Gross Alpha	pCi/g	11±5	17±6	16±6	8±4	6±5
Gross Beta	pCi/g	16±5	28±5	24±5	21±5	9±4
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	<2.0	<2.0	480
pH	pH Units	5.48	6.56	6.77	6.79	4.69
Sulfate	mg/kg	76	114	114	66	136
TCLP Metals:						
Silver	mg/l	-	-	<0.10	-	<0.10
Arsenic	mg/l	-	-	<0.10	-	<0.10
Barium	mg/l	-	-	<10	-	<10
Cadmium	mg/l	-	-	<0.10	-	<0.10
Chromium	mg/l	-	-	<0.10	-	<0.10
Mercury	mg/l	-	-	<0.010	-	<0.010
Nickel	mg/l	-	-	<1.0	-	<1.0
Lead	mg/l	-	-	<0.10	-	<0.10
Selenium	mg/l	-	-	<0.10	-	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	No. 1	-	No. 1
pH with Deionized Water	pH units	-	-	6.28	-	4.79
pH After Addition of 1 Normal HCL	pH units	-	-	1.63	-	-
pH of TCLP Extract	pH units	-	-	4.96	-	4.97
Amount of Sample Extracted	g	-	-	40.0	-	40.0
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<1500	<1600	<1500	23000

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date					
		B35 (11.0-12.0) 2/3/93	B36 (0-0.5) 2/4/93	B36 (9.0-11.0) 2/4/93	B36 (11.0-13.0) 2/4/93	B36 (23.0-24.5) 2/4/93	B38 (0-0.5) 2/2/93
Total Analyses:							
Silver	mg/kg	<2.2	<2.4	-	<2.4	<2.5	<2.2
Arsenic	mg/kg	0.44	3.7	-	1.1	4.6	2.7
Barium	mg/kg	210	43	-	150	18	66
Cadmium	mg/kg	2.7	<2.4	-	<2.4	<2.5	<2.2
Calcium	mg/kg	3400	760	-	3000	1800	1400
Chromium	mg/kg	210	8.3	-	62	17	12
Mercury	mg/kg	0.090	<0.059	-	<0.060	<0.062	<0.059
Nickel	mg/kg	13	<12	-	<12	<12	<11
Lead	mg/kg	9.6	4.0	-	20	1.9	11
Antimony	mg/kg	<22	<24	-	<24	<25	<22
Selenium	mg/kg	<0.23	<0.24	-	<0.24	<0.25	<0.23
Tin	mg/kg	440	<12	-	480	13	<11
Columbium	mg/kg	23	3.5	-	35	38	21
Tantalum	mg/kg	16	4.7	-	11	1.2	12
Fluoride	mg/kg	53000	73	-	13000	2900	1900
Gross Alpha	pCi/g	27±6	27±8	360±20	-	17±7	27±7
Gross Beta	pCi/g	28±5	22±7	130±10	-	25±6	27±5
Isotopes:							
Uranium-233 & 234	pCi/g	-	0.8±0.3	18±1	-	-	1.3±0.4
Uranium-235	pCi/g	-	0.0±0.1	0.9±0.2	-	-	0.1±0.1
Uranium-238	pCi/g	-	1.1±0.4	18±1	-	-	0.9±0.2
Thorium-228	pCi/g	-	1.0±0.2	20±1	-	-	1.5±0.3
Thorium-230	pCi/g	-	1.2±0.3	30±1	-	-	1.4±0.3
Thorium-232	pCi/g	-	1.0±0.2	21±1	-	-	1.7±0.3
Lead-210 @ 46 KeV	pCi/g	-	1.5±0.7	15±2	-	-	2.3±0.6
Thorium-234 @ 63.3 KeV	pCi/g	-	1.6±0.5	15±3	-	-	1.7±0.6
Thorium-234 @ 92.6 KeV	pCi/g	-	1.3±0.4	19±2	-	-	1.5±0.4
Protactinium-234m @ 1001 KeV	pCi/g	-	0.0±5.4	0±13	-	-	0.0±6.0
Radium 226	pCi/g	-	2.2±0.5	40±2	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	1.1±0.2	22±1	-	-	1.6±0.3
Lead-214 @ 352.0 KeV	pCi/g	-	1.1±0.1	22±1	-	-	1.5±0.1
Bismuth-214 @ 609.4 KeV	pCi/g	-	1.1±0.1	22±1	-	-	1.5±0.2
Bismuth-214 @ 1120.4 KeV	pCi/g	-	1.0±0.3	22±1	-	-	1.4±0.4
Bismuth-214 @ 1764.7 KeV	pCi/g	-	1.0±0.3	20±1	-	-	1.7±0.4
Actinium-228 @ 338 KeV	pCi/g	-	0.88±0.20	20±1	-	-	1.8±0.3
Actinium-228 @ 911 KeV	pCi/g	-	0.90±0.18	20±1	-	-	1.9±0.2
Actinium-228 @ 968 KeV	pCi/g	-	0.74±0.39	22±1	-	-	1.6±0.4
Lead-212 @ 238 KeV	pCi/g	-	0.73±0.09	18±1	-	-	1.4±0.1
Bismuth-212 @ 727 KeV	pCi/g	-	1.2±0.6	22±3	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	1.0±0.2	19±1	-	-	1.6±0.2
Uranium-235 @ 143 KeV	pCi/g	-	0.00±0.83	0.92±0.35	-	-	0.00±0.01
Potassium-40 @ 1460 KeV	pCi/g	-	17±1	15±1	-	-	15±1
ASTM Analysis:							
Ammonia	mg/kg NH3-N	400	<2.0	-	54	26	<2.0
pH	pH Units	3.86	6.85	-	5.58	5.44	6.97
Sulfate	mg/kg	640	58	-	700	180	44
TCLP Metals:							
Silver	mg/l	<0.10	-	-	<0.10	-	-
Arsenic	mg/l	<0.10	-	-	<0.10	-	-
Barium	mg/l	<10	-	-	<10	-	-
Cadmium	mg/l	<0.10	-	-	<0.10	-	-
Chromium	mg/l	0.21	-	-	<0.10	-	-
Mercury	mg/l	<0.010	-	-	<0.010	-	-
Nickel	mg/l	<1.0	-	-	<1.0	-	-
Lead	mg/l	<0.10	-	-	<0.10	-	-
Selenium	mg/l	<0.10	-	-	<0.10	-	-
TCLP Extraction Fluid Data:							
Extraction Fluid		No. 1	-	-	No. 1	-	-
pH with Deionized Water	pH units	3.80	-	-	4.55	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-	-
pH of TCLP Extract	pH units	4.80	-	-	4.92	-	-
Amount of Sample Extracted	g	40.0	-	-	40.0	-	-
Volatile Organic Analyses:							
4-Methyl-2-pentanone (MIBK)	µg/kg	91000	<1500	-	6900	<1600	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B38 (2.5-5.0) 2/2/93	B38 (13.0-13.7) 2/2/93	B39 (0-0.5) 2/1/93	B39 (8.0-10.0) 2/1/93	B39 (12.0-13.0) 2/1/93
Total Analyses:						
Silver	mg/kg	<2.2	<2.0	<2.4	<2.1	<2.0
Arsenic	mg/kg	1.9	2.1	3.4	1.7	33
Barium	mg/kg	25	26	87	94	210
Cadmium	mg/kg	<2.2	<2.0	3.1	6.9	6.7
Calcium	mg/kg	580	770	1600	2000	2100
Chromium	mg/kg	4.0	<2.0	31	34	32
Mercury	mg/kg	<0.056	<0.055	<0.059	<0.056	<0.057
Nickel	mg/kg	<11	<10	12	37	51
Lead	mg/kg	5.6	1.6	7.8	14	6.3
Antimony	mg/kg	<22	<20	<22	<21	<20
Selenium	mg/kg	<0.22	<0.22	<0.24	<0.22	0.33
Tin	mg/kg	<11	32	35	17	16
Columbium	mg/kg	9.0	120	32	11	11
Tantalum	mg/kg	11	3.3	12	43	39
Fluoride	mg/kg	280	3700	360	190	150
Gross Alpha	pCi/g	9±5	6±3	-	28±8	-
Gross Beta	pCi/g	20±6	22±5	-	27±6	-
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	22	<2.0	<2.0	<2.0
pH	pH Units	6.38	5.23	6.11	6.88	6.98
Sulfate	mg/kg	44	136	54	66	200
TCLP Metals:						
Silver	mg/l	-	-	-	<0.10	<0.10
Arsenic	mg/l	-	-	-	<0.10	<0.10
Barium	mg/l	-	-	-	<10	<10
Cadmium	mg/l	-	-	-	<0.10	<0.10
Chromium	mg/l	-	-	-	<0.10	<0.10
Mercury	mg/l	-	-	-	<0.010	<0.010
Nickel	mg/l	-	-	-	<1.0	<1.0
Lead	mg/l	-	-	-	<0.10	<0.10
Selenium	mg/l	-	-	-	<0.10	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	No. 1	No. 1
pH with Deionized Water	pH units	-	-	-	7.34	7.11
pH After Addition of 1 Normal HCL	pH units	-	-	-	1.76	1.70
pH of TCLP Extract	pH units	-	-	-	4.96	4.90
Amount of Sample Extracted	g	-	-	-	50.0	50.0
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	1500	<1500	<1400	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date					
		B41 (0-0.5) 2/1/93	B41 (0.5-2.5) 2/1/93	B41 (9.3-11.1) 2/1/93	B42 (0-0.5) 2/1/93	B42 (0.5-2.0) 2/1/93	B42 (9.0-11.0) 2/1/93
Total Analyses:							
Silver	mg/kg	<2.1	<2.5	<2.4	<2.4	<2.4	<2.1
Arsenic	mg/kg	1.9	1.7	<0.24	0.66	<0.23	3.3
Barium	mg/kg	130	91	59	240	60	330
Cadmium	mg/kg	<2.1	<2.5	<2.4	2.5	<2.4	2.8
Calcium	mg/kg	1600	1400	1300	2400	1400	1800
Chromium	mg/kg	9.7	13	7.2	12	11	13
Mercury	mg/kg	<0.060	<0.062	<0.060	<0.059	<0.059	<0.058
Nickel	mg/kg	13	<12	<12	16	<12	19
Lead	mg/kg	5.5	4.0	<0.24	4.7	0.58	3.9
Antimony	mg/kg	<21	<25	<24	<24	<24	<21
Selenium	mg/kg	<0.24	<0.25	<0.24	<0.23	<0.23	<0.23
Tin	mg/kg	<11	<12	<12	<12	<12	<11
Columbium	mg/kg	9.6	3.7	3.6	4.7	3.5	5.8
Tantalum	mg/kg	12	4.9	8.4	8.2	7.1	12
Fluoride	mg/kg	150	240	260	560	240	1200
Gross Alpha	pCi/g	-	-	-	-	17±6	-
Gross Beta	pCi/g	-	-	-	-	30±6	-
Isotopes:							
Uranium-233 & 234	pCi/g	-	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-	-
ASTM Analysis:							
Ammonia	mg/kg NH3-N	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
pH	pH Units	6.50	7.12	6.89	6.28	6.51	6.55
Sulfate	mg/kg	150	44	94	48	52	102
TCLP Metals:							
Silver	mg/l	-	-	-	-	-	<0.10
Arsenic	mg/l	-	-	-	-	-	<0.10
Barium	mg/l	-	-	-	-	-	<10
Cadmium	mg/l	-	-	-	-	-	<0.10
Chromium	mg/l	-	-	-	-	-	<0.10
Mercury	mg/l	-	-	-	-	-	<0.010
Nickel	mg/l	-	-	-	-	-	<1.0
Lead	mg/l	-	-	-	-	-	<0.10
Selenium	mg/l	-	-	-	-	-	<0.10
TCLP Extraction Fluid Data:							
Extraction Fluid		-	-	-	-	-	No. 1
pH with Deionized Water	pH units	-	-	-	-	-	7.15
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-	1.67
pH of TCLP Extract	pH units	-	-	-	-	-	4.94
Amount of Sample Extracted	g	-	-	-	-	-	50.0
Volatile Organic Analyses:							
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	<1600	<1600	<1500	<1500	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B46 (0-0.5) 2/1/93	B46 (5.1-7.7) 2/1/93	B46 (19.8-22.0) 2/1/93	B47 (0-0.5) 2/4/93	B47 (0.5-2.5) 2/4/93
Total Analyses:						
Silver	mg/kg	<2.3	<2.1	<2.3	<2.3	-
Arsenic	mg/kg	1.5	<0.24	1.4	0.86	-
Barium	mg/kg	80	110	87	28	-
Cadmium	mg/kg	<2.3	2.4	<2.3	<2.3	-
Calcium	mg/kg	5000	1200	1600	640	-
Chromium	mg/kg	22	14	18	5.4	-
Mercury	mg/kg	<0.059	<0.059	<0.061	<0.059	-
Nickel	mg/kg	<12	20	<12	<12	-
Lead	mg/kg	5.5	6.6	3.6	2.2	-
Antimony	mg/kg	<23	<21	<23	<23	-
Selenium	mg/kg	<0.24	<0.24	<0.24	<0.23	-
Tin	mg/kg	<12	<11	<12	<12	-
Columbium	mg/kg	7.1	8.2	6.1	1.2	-
Tantalum	mg/kg	11	9.4	8.5	3.5	-
Fluoride	mg/kg	310	120	740	64	-
Gross Alpha	pCi/g	-	11±5	-	11±6	93±13
Gross Beta	pCi/g	-	24±6	-	29±6	53±17
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	5.1±0.6
Uranium-235	pCi/g	-	-	-	-	0.4±0.2
Uranium-238	pCi/g	-	-	-	-	5.8±0.7
Thorium-228	pCi/g	-	-	-	-	7.0±1.0
Thorium-230	pCi/g	-	-	-	-	11±1
Thorium-232	pCi/g	-	-	-	-	8.1±1.0
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	5.7±1.3
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	5.0±2.1
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	4.1±0.8
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	11±9
Radium 226	pCi/g	-	-	-	-	10±1
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	7.1±0.4
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	7.0±0.3
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	6.8±0.3
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	7.1±0.6
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	7.0±0.6
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	6.2±0.5
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	6.6±0.4
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	7.1±0.6
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	4.7±0.2
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	6.5±0.9
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	6.0±0.3
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	0.23±0.21
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	16±1
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	84	<2.0	-
pH	pH Units	7.53	5.33	6.70	6.41	-
Sulfate	mg/kg	178	360	118	54	-
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<1500	<1600	<1500	-

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B47 (15.0-17.5) 2/4/93	B47 (24.5-26.0) 2/4/93	B48 (0-0.5) 2/4/93	B48 (12.5-15.0) 2/4/93	B48 (24.5-26.0) 2/4/93
Total Analyses:						
Silver	mg/kg	<2.4	<2.5	<2.4	<2.4	<2.5
Arsenic	mg/kg	2.7	1.0	1.6	2.8	1.7
Barium	mg/kg	240	200	44	110	69
Cadmium	mg/kg	<2.4	<2.5	<2.4	<2.4	<2.5
Calcium	mg/kg	1600	1800	820	1700	1300
Chromium	mg/kg	54	18	6.7	21	18
Mercury	mg/kg	<0.060	<0.062	<0.060	<0.060	<0.063
Nickel	mg/kg	<12	<12	<12	<12	<13
Lead	mg/kg	9.2	5.3	5.4	14	3.8
Antimony	mg/kg	<24	<25	<24	<24	<25
Selenium	mg/kg	<0.24	<0.25	<0.24	<0.24	<0.25
Tin	mg/kg	710	240	<12	43	<13
Columbium	mg/kg	35	130	24	93	7.6
Tantalum	mg/kg	13	2.5	2.4	12	10
Fluoride	mg/kg	170	180	770	1100	1100
Gross Alpha	pCi/g	-	24±8	11±6	24±6	13±6
Gross Beta	pCi/g	-	36±6	26±6	33±5	30±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	0.6±0.8	-	1.3±0.5	-
Uranium-235	pCi/g	-	0.2±0.2	-	0.0±0.1	-
Uranium-238	pCi/g	-	0.6±0.4	-	2.0±0.6	-
Thorium-228	pCi/g	-	2.4±0.4	-	1.7±0.5	-
Thorium-230	pCi/g	-	2.0±0.4	-	2.9±0.6	-
Thorium-232	pCi/g	-	1.0±0.2	-	1.5±0.4	-
Lead-210 @ 46 KeV	pCi/g	-	2.8±0.7	-	2.1±0.9	-
Thorium-234 @ 63.3 KeV	pCi/g	-	1.1±0.6	-	2.5±0.7	-
Thorium-234 @ 92.6 KeV	pCi/g	-	1.5±0.4	-	2.2±0.4	-
Protactinium-234m @ 1001 KeV	pCi/g	-	0.0±7.7	-	0.0±6.2	-
Radium 226	pCi/g	-	4.6±0.8	-	3.5±0.6	-
Lead-214 @ 295.2 KeV	pCi/g	-	3.9±0.4	-	2.2±0.3	-
Lead-214 @ 352.0 KeV	pCi/g	-	4.1±0.2	-	2.2±0.1	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	3.9±0.2	-	2.0±0.2	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	4.2±0.6	-	2.2±0.4	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	3.7±0.6	-	1.8±0.3	-
Actinium-228 @ 338 KeV	pCi/g	-	1.8±0.3	-	1.7±0.3	-
Actinium-228 @ 911 KeV	pCi/g	-	1.9±03	-	1.8±0.2	-
Actinium-228 @ 968 KeV	pCi/g	-	2.1±0.4	-	1.9±0.4	-
Lead-212 @ 238 KeV	pCi/g	-	2.0±0.2	-	1.3±0.1	-
Bismuth-212 @ 727 KeV	pCi/g	-	2.5±0.8	-	2.4±0.6	-
Thallium-208 @ 583 KeV	pCi/g	-	2.1±0.2	-	1.7±0.2	-
Uranium-235 @ 143 KeV	pCi/g	-	0.17±0.15	-	0.00±0.10	-
Potassium-40 @ 1460 KeV	pCi/g	-	16±1	-	16±1	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	178	162	3.0	320	116
pH	pH Units	4.75	5.26	6.32	7.12	8.78
Sulfate	mg/kg	44	44	58	400	540
TCLP Metals:						
Silver	mg/l	<0.10	-	-	-	-
Arsenic	mg/l	<0.10	-	-	-	-
Barium	mg/l	<10	-	-	-	-
Cadmium	mg/l	<0.10	-	-	-	-
Chromium	mg/l	<0.10	-	-	-	-
Mercury	mg/l	<0.010	-	-	-	-
Nickel	mg/l	<1.0	-	-	-	-
Lead	mg/l	<0.10	-	-	-	-
Selenium	mg/l	<0.10	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 1	-	-	-	-
pH with Deionized Water	pH units	4.00	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	NA(2)	-	-	-	-
pH of TCLP Extract	pH units	4.89	-	-	-	-
Amount of Sample Extracted	g	40.0	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	190000	20000	<1500	<1600	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B49 (0-0.5) 2/5/93	B49 (0.5-2.0) 2/5/93	B49 (4.5-7.0) 2/5/93	B49 (17.0-19.0) 2/5/93	B50 (0-0.5) 2/5/93
Total Analyses:						
Silver	mg/kg	<2.4	-	<2.4	<2.4	<2.4
Arsenic	mg/kg	2.1	-	2.4	1.7	0.81
Barium	mg/kg	1000	-	87	69	460
Cadmium	mg/kg	2.5	-	2.6	<2.4	36
Calcium	mg/kg	9100	-	4300	1300	3900
Chromium	mg/kg	36	-	17	9.0	21
Mercury	mg/kg	0.072	-	<0.060	<0.059	0.076
Nickel	mg/kg	16	-	13	<12	<12
Lead	mg/kg	12	-	9.4	3.7	7.0
Antimony	mg/kg	<24	-	<24	<24	<24
Selenium	mg/kg	<0.24	-	<0.24	<0.24	<0.24
Tin	mg/kg	100	-	21	<12	46
Columbium	mg/kg	330	-	13	5.9	68
Tantalum	mg/kg	20	-	17	9.5	21
Fluoride	mg/kg	7900	-	3200	650	1800
Gross Alpha	pCi/g	42±10	61±12	-	10±6	61±12
Gross Beta	pCi/g	44±6	33±6	-	23±6	34±6
Isotopes:						
Uranium-233 & 234	pCi/g	3.2±0.4	3.7±0.5	-	-	4.2±0.5
Uranium-235	pCi/g	0.1±0.1	0.1±0.1	-	-	0.2±0.1
Uranium-238	pCi/g	3.5±0.4	4.1±0.5	-	-	4.8±0.5
Thorium-228	pCi/g	2.4±0.3	2.5±0.5	-	-	1.8±0.4
Thorium-230	pCi/g	4.6±0.4	5.0±0.6	-	-	3.4±0.5
Thorium-232	pCi/g	2.7±0.3	2.4±0.4	-	-	1.7±0.3
Lead-210 @ 46 KeV	pCi/g	5.2±0.9	3.9±0.8	-	-	3.2±1.6
Thorium-234 @ 63.3 KeV	pCi/g	4.3±1.5	5.2±0.9	-	-	4.9±1.2
Thorium-234 @ 92.6 KeV	pCi/g	3.4±0.5	4.0±0.6	-	-	4.5±1.0
Protactinium-234m @ 1001 KeV	pCi/g	15±7	0.0±7.7	-	-	0.0±6.2
Radium 226	pCi/g	6.8±0.7	7.7±0.8	-	-	6.3±0.7
Lead-214 @ 295.2 KeV	pCi/g	4.1±0.3	4.3±0.4	-	-	3.1±0.3
Lead-214 @ 352.0 KeV	pCi/g	4.2±0.2	4.6±0.2	-	-	3.4±0.2
Bismuth-214 @ 609.4 KeV	pCi/g	3.9±0.2	4.3±0.2	-	-	2.9±0.2
Bismuth-214 @ 1120.4 KeV	pCi/g	3.7±0.5	4.4±0.6	-	-	3.2±0.5
Bismuth-214 @ 1764.7 KeV	pCi/g	3.8±0.4	3.5±0.5	-	-	2.8±0.4
Actinium-228 @ 338 KeV	pCi/g	2.6±0.3	2.8±0.4	-	-	2.0±0.3
Actinium-228 @ 911 KeV	pCi/g	2.9±0.3	2.6±0.3	-	-	2.2±0.2
Actinium-228 @ 968 KeV	pCi/g	2.6±0.5	2.5±0.4	-	-	2.3±0.5
Lead-212 @ 238 KeV	pCi/g	2.5±0.1	2.4±0.2	-	-	2.0±0.1
Bismuth-212 @ 727 KeV	pCi/g	3.5±0.7	2.8±0.7	-	-	2.4±0.7
Thallium-208 @ 583 KeV	pCi/g	2.3±0.2	2.6±0.3	-	-	2.0±0.2
Uranium-235 @ 143 KeV	pCi/g	0.00±0.12	0.19±0.14	-	-	0.24±0.16
Potassium-40 @ 1460 KeV	pCi/g	17±1	18±1	-	-	17±1
ASTM Analysis:						
Ammonia	mg/kg NH3-N	32	-	<2.0	162	3.2
pH	pH Units	6.63	-	7.76	8.00	6.53
Sulfate	mg/kg	220	-	138	110	60
TCLP Metals:						
Silver	mg/l	<0.10	-	-	-	<0.10
Arsenic	mg/l	<0.10	-	-	-	<0.10
Barium	mg/l	<10	-	-	-	<10
Cadmium	mg/l	<0.10	-	-	-	<0.10
Chromium	mg/l	<0.10	-	-	-	<0.10
Mercury	mg/l	<0.010	-	-	-	<0.010
Nickel	mg/l	<1.0	-	-	-	<1.0
Lead	mg/l	<0.10	-	-	-	<0.10
Selenium	mg/l	<0.10	-	-	-	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 1	-	-	-	No. 1
pH with Deionized Water	pH units	5.89	-	-	-	6.63
pH After Addition of 1 Normal HCL	pH units	1.93	-	-	-	1.96
pH of TCLP Extract	pH units	4.95	-	-	-	5.00
Amount of Sample Extracted	g	40.0	-	-	-	40.0
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	-	<1500	<1500	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B50 (0.5-2.0) 2/5/93	B50 (9.5-12.0) 2/5/93	B50 (14.5-17.0) 2/5/93	B51 (0-0.5) 2/4/93	B51 (0.5-2.5) 2/4/93
Total Analyses:						
Silver	mg/kg	-	<2.4	<2.6	<2.3	-
Arsenic	mg/kg	-	2.3	4.6	1.1	-
Barium	mg/kg	-	160	57	32	-
Cadmium	mg/kg	-	<2.4	<2.6	<2.3	-
Calcium	mg/kg	-	1000	1200	1200	-
Chromium	mg/kg	-	13	8.9	6.1	-
Mercury	mg/kg	-	<0.059	<0.065	<0.057	-
Nickel	mg/kg	-	29	15	<11	-
Lead	mg/kg	-	6.5	4.4	3.4	-
Antimony	mg/kg	-	<24	<26	<23	-
Selenium	mg/kg	-	<0.24	<0.26	<0.23	-
Tin	mg/kg	-	<12	<13	<11	-
Columbium	mg/kg	-	9.5	6.5	2.3	-
Tantalum	mg/kg	-	9.5	10	2.3	-
Fluoride	mg/kg	-	310	280	98	-
Gross Alpha	pCi/g	31±9	-	19±8	4±5	74±12
Gross Beta	pCi/g	27±6	-	24±6	27±6	48±7
Isotopes:						
Uranium-233 & 234	pCi/g	1.9±0.4	-	-	-	2.3±0.5
Uranium-235	pCi/g	0.0±0.1	-	-	-	0.1±0.1
Uranium-238	pCi/g	2.0±0.4	-	-	-	2.2±0.4
Thorium-228	pCi/g	1.4±0.3	-	-	-	4.7±0.6
Thorium-230	pCi/g	1.5±0.3	-	-	-	5.4±0.6
Thorium-232	pCi/g	1.4±0.3	-	-	-	4.1±0.5
Lead-210 @ 46 KeV	pCi/g	1.4±0.7	-	-	-	3.2±1.0
Thorium-234 @ 63.3 KeV	pCi/g	2.6±1.0	-	-	-	2.7±2.0
Thorium-234 @ 92.6 KeV	pCi/g	2.0±0.5	-	-	-	3.5±0.7
Protactinium-234m @ 1001 KeV	pCi/g	11±1	-	-	-	0.0±7.6
Radium 226	pCi/g	3.5±0.7	-	-	-	10±1
Lead-214 @ 295.2 KeV	pCi/g	1.7±0.2	-	-	-	6.1±0.4
Lead-214 @ 352.0 KeV	pCi/g	1.6±0.1	-	-	-	6.1±0.3
Bismuth-214 @ 609.4 KeV	pCi/g	1.5±0.1	-	-	-	6.2±0.3
Bismuth-214 @ 1120.4 KeV	pCi/g	2.0±0.5	-	-	-	6.7±0.7
Bismuth-214 @ 1764.7 KeV	pCi/g	1.6±0.4	-	-	-	5.9±0.6
Actinium-228 @ 338 KeV	pCi/g	1.5±0.3	-	-	-	4.4±0.5
Actinium-228 @ 911 KeV	pCi/g	1.5±0.3	-	-	-	4.6±0.4
Actinium-228 @ 968 KeV	pCi/g	1.7±0.4	-	-	-	4.9±0.6
Lead-212 @ 238 KeV	pCi/g	1.3±0.1	-	-	-	4.6±0.3
Bismuth-212 @ 727 KeV	pCi/g	2.3±0.7	-	-	-	5.9±1.0
Thallium-208 @ 583 KeV	pCi/g	1.5±0.2	-	-	-	4.9±0.3
Uranium-235 @ 143 KeV	pCi/g	0.00±0.10	-	-	-	0.00±0.13
Potassium-40 @ 1460 KeV	pCi/g	15±1	-	-	-	17±1
ASTM Analysis:						
Ammonia	mg/kg NH3-N	-	62	<2.0	<2	-
pH	pH Units	-	5.70	6.19	6.91	-
Sulfate	mg/kg	-	220	240	62	-
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	-	<1500	<1700	<1500	-

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B51 (10.0-12.5) 2/4/93	B51 (24.0-26.0) 2/4/93	B52 (0-0.5) 2/4/93	B52 (0.5-2.5) 2/4/93	B52 (24.0-25.5) 2/4/93
Total Analyses:						
Silver	mg/kg	<2.4	<2.6	<2.3	<2.3	<2.6
Arsenic	mg/kg	2.1	1.4	0.89	0.79	1.5
Barium	mg/kg	71	56	28	60	48
Cadmium	mg/kg	<2.4	<2.6	<2.3	<2.3	<2.6
Calcium	mg/kg	29000	2000	700	1100	1500
Chromium	mg/kg	11	24	3.8	10	9.6
Mercury	mg/kg	<0.059	<0.064	<0.057	<0.057	<0.065
Nickel	mg/kg	<12	<13	<11	<11	<13
Lead	mg/kg	4.9	5.9	2.3	4.9	9.8
Antimony	mg/kg	<24	<26	<23	<23	<26
Selenium	mg/kg	<0.24	<0.26	<0.23	<0.23	<0.26
Tin	mg/kg	22	17	<11	31	<13
Columbium	mg/kg	57	5.1	2.3	34	5.2
Tantalum	mg/kg	18	3.8	2.3	5.7	5.2
Fluoride	mg/kg	1400	5400	480	5600	580
Gross Alpha	pCi/g	-	17±7	6±5	55±10	16±6
Gross Beta	pCi/g	-	26±6	24±6	49±7	32±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	2.6±0.4	-
Uranium-235	pCi/g	-	-	-	0.2±0.1	-
Uranium-238	pCi/g	-	-	-	3.3±0.4	-
Thorium-228	pCi/g	-	-	-	4.8±0.6	-
Thorium-230	pCi/g	-	-	-	5.5±0.6	-
Thorium-232	pCi/g	-	-	-	4.3±0.6	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	3.9±1.0	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	2.5±1.8	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	3.5±0.7	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	0.0±6.5	-
Radium 226	pCi/g	-	-	-	7.8±0.8	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	4.7±0.4	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	4.5±0.2	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	4.1±0.2	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	4.4±0.5	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	4.4±0.5	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	5.0±0.4	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	5.5±0.4	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	5.2±0.6	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	4.9±0.2	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	4.9±0.8	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	4.9±0.3	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	0.00±0.13	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	16±1	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	320	22	<2.0	2.6	62
pH	pH Units	8.18	7.93	6.47	6.04	10.47
Sulfate	mg/kg	220	240	44	52	174
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<1700	<1500	<1500	<1700

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B53 (0-0.5) 2/8/93	B53 (9.0-12.5) 2/8/93	B53 (23.0-24.9) 2/8/93	B54 (0-0.5) 2/5/93	B54 (0.5-2.0) 2/5/93
Total Analyses:						
Silver	mg/kg	<2.4	<2.3	<2.5	<2.5	<2.5
Arsenic	mg/kg	0.64	2.3	1.4	3.5	1.9
Barium	mg/kg	24	100	130	200	2300
Cadmium	mg/kg	<2.4	<2.3	3.1	3.3	3.2
Calcium	mg/kg	530	1400	1600	3000	12000
Chromium	mg/kg	4.9	15	17	22	38
Mercury	mg/kg	<0.059	<0.057	<0.063	0.30	0.16
Nickel	mg/kg	<12	<11	24	16	30
Lead	mg/kg	2.5	5.9	4.3	35	83
Antimony	mg/kg	<24	<23	<25	<25	<25
Selenium	mg/kg	0.28	0.29	0.33	<0.25	<0.25
Tin	mg/kg	<12	16	92	21	43
Columbium	mg/kg	<1.2	95	6.3	26	110
Tantalum	mg/kg	<1.2	4.6	3.8	17	42
Fluoride	mg/kg	150	970	3300	4600	31000
Gross Alpha	pCi/g	6±6	17±8	13±7	92±15	73±13
Gross Beta	pCi/g	23±6	26±6	29±6	48±7	45±7
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	6.4±0.6	4.7±0.5
Uranium-235	pCi/g	-	-	-	0.2±0.1	0.1±0.1
Uranium-238	pCi/g	-	-	-	6.7±0.6	4.7±0.5
Thorium-228	pCi/g	-	-	-	2.8±0.5	2.7±0.4
Thorium-230	pCi/g	-	-	-	11±1	8.7±0.8
Thorium-232	pCi/g	-	-	-	3.3±0.5	3.3±0.5
Lead-210 @ 46 KeV	pCi/g	-	-	-	9.7±1.2	6.2±1.0
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	5.9±1.6	4.4±0.9
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	6.4±1.5	4.6±0.7
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	0.0±7.9	16±9
Radium 226	pCi/g	-	-	-	12±1	12±1
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	8.5±0.4	7.7±0.5
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	8.7±0.3	7.4±0.3
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	8.2±0.3	7.3±0.3
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	8.2±0.6	7.7±0.7
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	7.6±0.6	6.7±0.7
Actinium-228 @ 338 KeV	pCi/g	-	-	-	2.9±0.4	2.8±0.4
Actinium-228 @ 911 KeV	pCi/g	-	-	-	3.5±0.3	2.9±0.3
Actinium-228 @ 968 KeV	pCi/g	-	-	-	3.5±0.5	3.0±0.6
Lead-212 @ 238 KeV	pCi/g	-	-	-	2.2±0.1	2.6±0.2
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	3.9±0.8	4.6±1.0
Thallium-208 @ 583 KeV	pCi/g	-	-	-	3.1±0.3	2.8±0.3
Uranium-235 @ 143 KeV	pCi/g	-	-	-	0.29±0.18	0.28±0.15
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	20±1	18±1
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	178	300	34	38
pH	pH Units	6.16	7.90	6.47	8.46	7.50
Sulfate	mg/kg	74	220	740	240	480
TCLP Metals:						
Silver	mg/l	-	-	-	<0.10	<0.10
Arsenic	mg/l	-	-	-	<0.10	<0.10
Barium	mg/l	-	-	-	<10	<10
Cadmium	mg/l	-	-	-	<0.10	<0.10
Chromium	mg/l	-	-	-	<0.10	<0.10
Mercury	mg/l	-	-	-	<0.010	<0.010
Nickel	mg/l	-	-	-	<1.0	<1.0
Lead	mg/l	-	-	-	<0.10	<0.10
Selenium	mg/l	-	-	-	<0.10	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	No. 1	No. 1
pH with Deionized Water	pH units	-	-	-	9.48	8.06
pH After Addition of 1 Normal HCL	pH units	-	-	-	2.06	2.16
pH of TCLP Extract	pH units	-	-	-	5.23	5.02
Amount of Sample Extracted	g	-	-	-	40.0	40.0
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<1500	<1600	<1600	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B54 (19.0-21.8) 2/5/93	B55 (1.0-2.0) 2/4/93	B55 (7.0-9.5) 2/4/93	B55 (17.0-19.0) 2/4/93	B56 (0-0.5) 2/4/93
Total Analyses:						
Silver	mg/kg	<2.4	<2.3	<2.3	<2.5	<2.4
Arsenic	mg/kg	1.2	4.3	1.4	3.8	0.91
Barium	mg/kg	39	36	50	68	200
Cadmium	mg/kg	<2.4	<2.3	<2.3	<2.5	<2.4
Calcium	mg/kg	940	220000	1000	1300	140000
Chromium	mg/kg	6.7	86	8.1	8.7	6.3
Mercury	mg/kg	<0.059	<0.058	<0.058	<0.062	0.13
Nickel	mg/kg	<12	21	<12	<12	14
Lead	mg/kg	3.4	8.2	4.4	5.6	7.0
Antimony	mg/kg	<24	<23	<23	<25	<24
Selenium	mg/kg	<0.24	<0.23	<0.23	<0.25	<0.24
Tin	mg/kg	<12	16	<12	12	29
Columbium	mg/kg	2.4	210	6.9	5.0	35
Tantalum	mg/kg	3.6	28	5.8	6.2	20
Fluoride	mg/kg	110	6800	5800	220	3000
Gross Alpha	pCi/g	14±7	86±12	25±7	13±6	110±10
Gross Beta	pCi/g	25±6	69±7	26±6	24±6	62±7
Isotopes:						
Uranium-233 & 234	pCi/g	-	19±1	0.6±0.2	-	9.9±0.7
Uranium-235	pCi/g	-	0.6±0.2	0.0±0.1	-	0.3±0.1
Uranium-238	pCi/g	-	20±1	0.4±0.2	-	10±1
Thorium-228	pCi/g	-	12±1	1.6±0.4	-	12±1
Thorium-230	pCi/g	-	16±1	1.1±0.4	-	12±1
Thorium-232	pCi/g	-	13±1	1.7±0.4	-	11±1
Lead-210 @ 46 KeV	pCi/g	-	7.9±1.5	0.78±0.59	-	4.0±1
Thorium-234 @ 63.3 KeV	pCi/g	-	13±2	1.4±0.6	-	5.4±2.5
Thorium-234 @ 92.6 KeV	pCi/g	-	13±1	1.7±0.5	-	1.2±3.2
Protactinium-234m @ 1001 KeV	pCi/g	-	28±11	0.0±6.4	-	30±10
Radium 226	pCi/g	-	22±1	2.6±0.6	-	14±1
Lead-214 @ 295.2 KeV	pCi/g	-	13±1	1.5±0.2	-	6.8±0.4
Lead-214 @ 352.0 KeV	pCi/g	-	13±1	1.4±0.1	-	6.9±0.3
Bismuth-214 @ 609.4 KeV	pCi/g	-	13±1	1.3±0.2	-	6.7±0.3
Bismuth-214 @ 1120.4 KeV	pCi/g	-	13±1	1.8±0.4	-	6.9±0.7
Bismuth-214 @ 1764.7 KeV	pCi/g	-	13±1	1.5±0.4	-	6.1±0.6
Actinium-228 @ 338 KeV	pCi/g	-	11±1	1.6±0.3	-	9.4±0.6
Actinium-228 @ 911 KeV	pCi/g	-	13±1	1.6±0.3	-	11±1
Actinium-228 @ 968 KeV	pCi/g	-	13±1	1.7±0.4	-	11±1
Lead-212 @ 238 KeV	pCi/g	-	12±1	1.3±0.1	-	9.8±0.4
Bismuth-212 @ 727 KeV	pCi/g	-	14±1	2.7±0.7	-	11±1
Thallium-208 @ 583 KeV	pCi/g	-	12±1	1.7±0.2	-	9.7±0.4
Uranium-235 @ 143 KeV	pCi/g	-	0.60±0.26	0.00±0.09	-	0.29±0.24
Potassium-40 @ 1460 KeV	pCi/g	-	4.6±0.9	14±1	-	10±1
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	3.4	9.6	6.0	74
pH	pH Units	8.29	11.73	7.44	9.60	9.85
Sulfate	mg/kg	74	74	100	192	122
TCLP Metals:						
Silver	mg/l	-	<0.10	-	-	<0.10
Arsenic	mg/l	-	<0.10	-	-	<0.10
Barium	mg/l	-	<10	-	-	<10
Cadmium	mg/l	-	<0.10	-	-	<0.10
Chromium	mg/l	-	<0.10	-	-	<0.10
Mercury	mg/l	-	<0.010	-	-	<0.010
Nickel	mg/l	-	<1.0	-	-	<1.0
Lead	mg/l	-	<0.10	-	-	<0.10
Selenium	mg/l	-	<0.10	-	-	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		-	No. 2	-	-	No. 2
pH with Deionized Water	pH units	-	12.62	-	-	12.20
pH After Addition of 1 Normal HCL	pH units	-	12.35	-	-	8.32
pH of TCLP Extract	pH units	-	11.98	-	-	5.97
Amount of Sample Extracted	g	-	40.0	-	-	40.0
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<1500	<1500	<1600	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B56 (4.5-7.0) 2/4/93	B56 (12.0-14.5) 2/4/93	B56 (17.0-19.0) 2/4/93	B57 (0-0.5) 2/5/93	B57 (24.5-27.0) 2/5/93
Total Analyses:						
Silver	mg/kg	<2.3	-	<2.5	<2.5	<2.5
Arsenic	mg/kg	3.1	-	2.4	0.93	<0.25
Barium	mg/kg	3100	-	92	75	180
Cadmium	mg/kg	3.7	-	<2.5	<2.5	3.1
Calcium	mg/kg	5800	-	1100	1500	2800
Chromium	mg/kg	33	-	9.9	11	23
Mercury	mg/kg	0.092	-	<0.063	<0.06	<0.062
Nickel	mg/kg	17	-	<13	<12	20
Lead	mg/kg	25	-	5.8	7.2	6.1
Antimony	mg/kg	<23	-	<25	<25	<25
Selenium	mg/kg	<0.23	-	<0.25	<0.25	<0.25
Tin	mg/kg	34	-	<13	<12	14
Columbium	mg/kg	29	-	5.0	5.0	8.7
Tantalum	mg/kg	15	-	8.8	5.0	11
Fluoride	mg/kg	2200	-	270	84	200
Gross Alpha	pCi/g	-	18±6	19±7	19±8	16±8
Gross Beta	pCi/g	-	20±5	27±6	21±5	33±7
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	12.4	-	3.8	<2	<2
pH	pH Units	7.78	-	9.27	6.07	7.30
Sulfate	mg/kg	52	-	178	52	132
TCLP Metals:						
Silver	mg/l	<0.10	-	-	-	-
Arsenic	mg/l	<0.10	-	-	-	-
Barium	mg/l	220	-	-	-	-
Cadmium	mg/l	<0.10	-	-	-	-
Chromium	mg/l	<0.10	-	-	-	-
Mercury	mg/l	<0.010	-	-	-	-
Nickel	mg/l	<1.0	-	-	-	-
Lead	mg/l	<0.10	-	-	-	-
Selenium	mg/l	<0.10	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 1	-	-	-	-
pH with Deionized Water	pH units	7.89	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	1.90	-	-	-	-
pH of TCLP Extract	pH units	5.44	-	-	-	-
Amount of Sample Extracted	g	40.0	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	-	<1600	<1600	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B57 (29.5-32.0) 2/5/93	B58 (0-0.5) 2/9/93	B58 (2.0-4.5) 2/9/93	B58 (9.5-12.0) 2/9/93	B58 (14.5-17.0) 2/9/93
Total Analyses:						
Silver	mg/kg	<2.6	<2.4	<2.4	<2.4	-
Arsenic	mg/kg	0.38	1.6	2.3	2.2	-
Barium	mg/kg	58	500	96	99	-
Cadmium	mg/kg	<2.6	<2.4	<2.4	2.9	-
Calcium	mg/kg	1500	19000	11000	1900	-
Chromium	mg/kg	8.1	49	<2.4	20	-
Mercury	mg/kg	<0.064	0.091	<0.061	<0.060	-
Nickel	mg/kg	<13	15	<12	15	-
Lead	mg/kg	5.4	18	8.0	6.2	-
Antimony	mg/kg	<26	25	<24	<24	-
Selenium	mg/kg	<0.26	<0.24	<0.24	<0.24	-
Tin	mg/kg	<13	160	35	19	-
Columbium	mg/kg	8.9	200	53	17	-
Tantalum	mg/kg	15	19	16	13	-
Fluoride	mg/kg	170	320	3100	3500	-
Gross Alpha	pCi/g	11±6	29±8	50±11	-	12±7
Gross Beta	pCi/g	26±5	31±6	39±7	-	25±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	1.3±0.3	2.9±0.3	-	-
Uranium-235	pCi/g	-	0.1±0.1	0.0±0.1	-	-
Uranium-238	pCi/g	-	1.4±0.3	2.6±0.3	-	-
Thorium-228	pCi/g	-	1.3±0.3	3.2±0.4	-	-
Thorium-230	pCi/g	-	2.0±0.3	3.4±0.4	-	-
Thorium-232	pCi/g	-	1.5±0.3	1.9±0.3	-	-
Lead-210 @ 46 KeV	pCi/g	-	2.4±0.8	3.4±0.9	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	2.4±0.6	3.9±0.7	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	1.8±0.5	2.8±0.8	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	0.0±7.4	0.0±6.0	-	-
Radium 226	pCi/g	-	3.5±0.7	4.2±0.7	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	1.9±0.3	3.0±0.3	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	2.0±0.2	2.7±0.2	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	1.9±0.2	2.7±0.2	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	2.2±0.4	2.7±0.5	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	1.4±0.4	2.7±0.4	-	-
Actinium-228 @ 338 KeV	pCi/g	-	1.6±0.3	1.7±0.3	-	-
Actinium-228 @ 911 KeV	pCi/g	-	1.6±0.2	1.8±0.3	-	-
Actinium-228 @ 968 KeV	pCi/g	-	1.9±0.4	2.0±0.4	-	-
Lead-212 @ 238 KeV	pCi/g	-	1.6±0.1	1.8±0.1	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	1.5±0.6	2.3±0.7	-	-
Thallium-208 @ 583 KeV	pCi/g	-	1.6±0.2	1.7±0.2	-	-
Uranium-235 @ 143 KeV	pCi/g	-	0.00±0.09	0.14±0.13	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	18±1	17±1	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2	4.2	300	110	-
pH	pH Units	7.42	6.48	8.62	7.81	-
Sulfate	mg/kg	68	240	400	860	-
TCLP Metals:						
Silver	mg/l	-	<0.10	-	-	-
Arsenic	mg/l	-	<0.10	-	-	-
Barium	mg/l	-	<10	-	-	-
Cadmium	mg/l	-	<0.10	-	-	-
Chromium	mg/l	-	<0.10	-	-	-
Mercury	mg/l	-	<0.010	-	-	-
Nickel	mg/l	-	<1.0	-	-	-
Lead	mg/l	-	<0.10	-	-	-
Selenium	mg/l	-	<0.10	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	No. 1	-	-	-
pH with Deionized Water	pH units	-	6.13	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	1.83	-	-	-
pH of TCLP Extract	pH units	-	5.00	-	-	-
Amount of Sample Extracted	g	-	40.0	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1700	<1600	<1600	<1600	-

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B59 (0-0.5) 3/31/93	B59 (12.5-15.0) 3/31/93	B59 (2.5-5.0) 3/31/93	B60 (0-0.5) 3/31/93	B60 (5.0-7.5) 3/31/93
Total Analyses:						
Silver	mg/kg	<2.3	<2.4	<1.8	<2.3	<2.4
Arsenic	mg/kg	1.4	1.9	2.0	2.8	1.9
Barium	mg/kg	130	66	63	71	90
Cadmium	mg/kg	<2.3	<2.4	<1.8	<2.3	<2.4
Calcium	mg/kg	2000	2000	1600	1200	1800
Chromium	mg/kg	8.3	72	6.2	6.6	7.1
Mercury	mg/kg	0.14	<0.060	<0.061	<0.058	<0.059
Nickel	mg/kg	14	14	<9.2	<12	<12
Lead	mg/kg	6.6	5.0	6.8	14	7.0
Antimony	mg/kg	<23	<24	<18	<23	<24
Selenium	mg/kg	<0.20	<0.25	<0.23	<0.23	<0.24
Tin	mg/kg	14	<12	<9.2	<12	<12
Columbium	mg/kg	6.2	13	9.7	8.2	7.2
Tantalum	mg/kg	6.2	8.8	11	9.4	9.7
Fluoride	mg/kg	360	8800	990	780	350
Gross Alpha	pCi/g	10±5	59±10	9±6	21±7	19±7
Gross Beta	pCi/g	25±6	62±8	24±6	27±6	21±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	19±1	-	0.7±0.2	-
Uranium-235	pCi/g	-	2.0±0.3	-	0.0±0.1	-
Uranium-238	pCi/g	-	23±1	-	1.0±0.2	-
Thorium-228	pCi/g	-	0.9±0.3	-	1.7±0.4	-
Thorium-230	pCi/g	-	3.1±0.6	-	1.5±0.4	-
Thorium-232	pCi/g	-	1.0±0.3	-	1.3±0.4	-
Lead-210 @ 46 KeV	pCi/g	-	0.93±0.67	-	1.5±0.6	-
Thorium-234 @ 63.3 KeV	pCi/g	-	14±1	-	0.83±0.56.	-
Thorium-234 @ 92.6 KeV	pCi/g	-	9.2±0.6	-	1.2±0.3	-
Protactinium-234m @ 1001 KeV	pCi/g	-	27±7	-	0.0±6.0	-
Radium 226	pCi/g	-	12±1	-	1.8±0.5	-
Lead-214 @ 295.2 KeV	pCi/g	-	0.70±0.18	-	0.79±0.22	-
Lead-214 @ 352.0 KeV	pCi/g	-	0.59±0.11	-	0.73±0.10	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	0.78±0.14	-	0.74±0.14	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	0.63±0.34	-	1.2±0.4	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	0.81±0.29	-	0.00±0.24	-
Actinium-228 @ 338 KeV	pCi/g	-	0.75±0.22	-	1.0±0.2	-
Actinium-228 @ 911 KeV	pCi/g	-	0.68±0.20	-	1.0±0.2	-
Actinium-228 @ 968 KeV	pCi/g	-	0.58±0.23	-	1.0±03	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	0.75±0.76	-	1.5±0.6	-
Thallium-208 @ 583 KeV	pCi/g	-	0.61±0.17	-	0.91±0.18	-
Uranium-235 @ 143 KeV	pCi/g	-	0.65±0.12	-	0.00±0.08	-
Potassium-40 @ 1460 KeV	pCi/g	-	12±1	-	9.1±1.0	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	260	<2.0	<2.0	<2.0
pH	pH Units	6.11	5.79	6.19	6.29	5.94
Sulfate	mg/kg	68	420	46	54	58
TCLP Metals:						
Silver	mg/l	-	<0.10	-	-	-
Arsenic	mg/l	-	<0.10	-	-	-
Barium	mg/l	-	<10	-	-	-
Cadmium	mg/l	-	<0.10	-	-	-
Chromium	mg/l	-	<0.10	-	-	-
Mercury	mg/l	-	<0.010	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	<0.10	-	-	-
Selenium	mg/l	-	<0.10	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	No. 1	-	-	-
pH with Deionized Water	pH units	-	4.56	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	NAP	-	-	-
pH of TCLP Extract	pH units	-	4.82	-	-	-
Amount of Sample Extracted	g	-	40.0	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	22000	<1500	<1500	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B60 (15.0-17.0) 3/31/93	B61 (0-0.5) 4/1/93	B61 (15.0-17.0) 4/1/93	B61 (5.0-7.5) 4/1/93	B62 (0-0.5) 4/1/93
Total Analyses:						
Silver	mg/kg	<2.0	<2.3	<2.2	<2.4	<2.1
Arsenic	mg/kg	2.7	2.5	7.4	1.8	0.96
Barium	mg/kg	430	470	140	58	44
Cadmium	mg/kg	<2.0	2.6	8.1	<2.4	<2.1
Calcium	mg/kg	2200	2500	3200	1400	850
Chromium	mg/kg	14	240	24	8.1	5.1
Mercury	mg/kg	<0.063	1.4	<0.062	<0.052	<0.058
Nickel	mg/kg	15	16	31	<12	<11
Lead	mg/kg	11	76	7.4	7.0	5.6
Antimony	mg/kg	<20	<23	<22	<24	<21
Selenium	mg/kg	<0.24	<0.25	<0.22	<0.22	<0.23
Tin	mg/kg	13	63	20	<12	<11
Columbium	mg/kg	13	240	19	7.1	15
Tantalum	mg/kg	14	28	55	11	3.5
Fluoride	mg/kg	1200	13000	950	25	60
Gross Alpha	pCi/g	18±6	110±20	25±8	23±8	28±8
Gross Beta	pCi/g	21±6	61±7	25±6	20±6	28±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	8.3±0.7	1.7±0.3	0.6±0.2	1.0±0.2
Uranium-235	pCi/g	-	0.5±0.2	0.0±0.1	0.0±0.1	0.0±0.1
Uranium-238	pCi/g	-	7.5±0.7	1.8±03	0.8±0.2	0.9±0.2
Thorium-228	pCi/g	-	5.0±0.7	1.2±0.3	1.5±0.4	2.0±0.4
Thorium-230	pCi/g	-	14±1	1.1±0.3	0.8±0.3	2.0±0.4
Thorium-232	pCi/g	-	4.2±0.6	1.0±0.2	1.1±0.3	1.2±0.3
Lead-210 @ 46 KeV	pCi/g	-	10±2	1.9±0.7	1.2±0.6	1.7±0.7
Thorium-234 @ 63.3 KeV	pCi/g	-	11±3	1.4±0.5	1.6±0.5	1.9±0.6
Thorium-234 @ 92.6 KeV	pCi/g	-	9.9±2.3	2.1±0.6	1.5±0.4	2.2±0.7
Protactinium-234m @ 1001 KeV	pCi/g	-	24±9	0.0±5.8	0.0±7.2	7.0±8.8
Radium 226	pCi/g	-	17±1	2.2±0.5	1.6±0.5	2.6±0.5
Lead-214 @ 295.2 KeV	pCi/g	-	10±1	1.6±0.2	1.2±0.2	1.5±0.2
Lead-214 @ 352.0 KeV	pCi/g	-	10±1	1.5±0.1	1.2±0.1	1.6±0.1
Bismuth-214 @ 609.4 KeV	pCi/g	-	9.8±0.4	1.5±0.1	1.2±0.1	1.5±0.2
Bismuth-214 @ 1120.4 KeV	pCi/g	-	9.5±0.8	1.7±0.4	1.0±0.4	1.8±0.4
Bismuth-214 @ 1764.7 KeV	pCi/g	-	9.7±0.7	1.2±0.3	1.2±0.4	1.3±0.3
Actinium-228 @ 338 KeV	pCi/g	-	4.4±0.4	1.0±03	1.7±0.2	1.3±0.3
Actinium-228 @ 911 KeV	pCi/g	-	4.6±0.3	1.4±02	1.4±0.2	1.5±0.2
Actinium-228 @ 968 KeV	pCi/g	-	4.2±0.6	1.5±0.4	1.4±0.4	1.5±0.4
Lead-212 @ 238 KeV	pCi/g	-	4.3±0.2	1.2±0.1	1.2±0.1	0.98±0.10
Bismuth-212 @ 727 KeV	pCi/g	-	4.7±0.9	1.5±0.6	2.4±0.9	1.4±0.6
Thallium-208 @ 583 KeV	pCi/g	-	3.8±0.3	1.2±0.2	1.4±0.2	1.3±0.2
Uranium-235 @ 143 KeV	pCi/g	-	0.47±0.21	0.00±0.09	0.00±0.08	0.00±0.09
Potassium-40 @ 1460 KeV	pCi/g	-	16±1	17±1	14±1	13±1
ASTM Analysis:						
Ammonia	mg/kg NH3-N	130	<2.0	560	18.6	<2.0
pH	pH Units	5.64	5.81	7.68	6.83	6.68
Sulfate	mg/kg	94	440	240	76	54
TCLP Metals:						
Silver	mg/l	<0.10	<0.10	-	-	-
Arsenic	mg/l	<0.10	<0.10	-	-	-
Barium	mg/l	<10	<10	-	-	-
Cadmium	mg/l	<0.10	<0.10	-	-	-
Chromium	mg/l	<0.10	<0.10	-	-	-
Mercury	mg/l	<0.010	<0.010	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	<0.10	<0.10	-	-	-
Selenium	mg/l	<0.10	<0.10	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 1	No. 1	-	-	-
pH with Deionized Water	pH units	5.28	6.44	-	-	-
pH After Addition of 1 Normal HCL	pH units	1.59	1.79	-	-	-
pH of TCLP Extract	pH units	4.86	4.87	-	-	-
Amount of Sample Extracted	g	40.0	40.0	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	<1600	<1500	<1500	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B62 (10.0-12.5) 4/1/93	B62 (15.0-17.0) 4/1/93	B63 (0-0.5) 4/1/93	B63 (12.5-15.0) 4/1/93	B63 (15.0-17.5) 4/1/93
Total Analyses:						
Silver	mg/kg	<2.3	<2.3	<2.2	<2.6	<2.0
Arsenic	mg/kg	1.5	6.8	2.5	2.3	6.2
Barium	mg/kg	65	110	110	45	260
Cadmium	mg/kg	<2.3	3.6	<2.2	<2.6	7.4
Calcium	mg/kg	1100	5200	3100	1500	5300
Chromium	mg/kg	11	84	12	9.3	83
Mercury	mg/kg	<0.062	<0.059	<0.058	<0.058	<0.059
Nickel	mg/kg	<12	42	<11	17	55
Lead	mg/kg	8.2	9.9	16	7.1	11
Antimony	mg/kg	<23	<23	<22	<26	<20
Selenium	mg/kg	<0.24	<0.20	<0.22	<0.24	<0.23
Tin	mg/kg	<12	21	17	<13	21
Columbium	mg/kg	7.5	18	40	7.8	16
Tantalum	mg/kg	10	21	12	12	32
Fluoride	mg/kg	1100	5200	340	240	1000
Gross Alpha	pCi/g	19±7	36±10	20±8	22±8	26±8
Gross Beta	pCi/g	30±6	35±6	27±6	29±6	36±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	3.8±0.5	-	0.7±0.2	0.9±0.3
Uranium-235	pCi/g	-	0.2±0.1	-	0.0±0.1	0.0±0.1
Uranium-238	pCi/g	-	3.4±0.5	-	0.7±0.2	1.1±0.3
Thorium-228	pCi/g	-	1.0±0.3	-	0.9±0.3	1.5±0.4
Thorium-230	pCi/g	-	2.5±0.5	-	1.3±0.3	1.8±0.4
Thorium-232	pCi/g	-	1.6±0.4	-	1.0±0.3	1.9±0.4
Lead-210 @ 46 KeV	pCi/g	-	1.4±0.6	-	1.7±0.6	1.6±0.6
Thorium-234 @ 63.3 KeV	pCi/g	-	3.3±0.7	-	1.2±0.6	2.0±0.9
Thorium-234 @ 92.6 KeV	pCi/g	-	2.9±0.5	-	1.6±0.5	1.4±0.3
Protactinium-234m @ 1001 KeV	pCi/g	-	0.0±7.5	-	0.0±5.7	0.0±6.2
Radium 226	pCi/g	-	4.2±0.7	-	2.0±0.5	2.0±0.7
Lead-214 @ 295.2 KeV	pCi/g	-	1.3±0.2	-	1.1±0.2	1.5±0.2
Lead-214 @ 352.0 KeV	pCi/g	-	1.4±0.1	-	1.0±0.1	1.4±0.1
Bismuth-214 @ 609.4 KeV	pCi/g	-	1.4±0.2	-	0.90±0.14	1.6±0.2
Bismuth-214 @ 1120.4 KeV	pCi/g	-	1.8±0.4	-	1.2±0.4	1.4±0.4
Bismuth-214 @ 1764.7 KeV	pCi/g	-	1.2±0.3	-	0.93±0.24	1.4±0.3
Actinium-228 @ 338 KeV	pCi/g	-	1.6±0.3	-	1.3±0.2	1.6±0.3
Actinium-228 @ 911 KeV	pCi/g	-	1.4±0.2	-	1.2±0.2	1.5±0.2
Actinium-228 @ 968 KeV	pCi/g	-	1.3±0.3	-	1.1±0.4	1.4±0.4
Lead-212 @ 238 KeV	pCi/g	-	1.4±0.1	-	0.96±0.09	1.4±0.1
Bismuth-212 @ 727 KeV	pCi/g	-	1.4±0.8	-	1.8±0.6	1.8±0.6
Thallium-208 @ 583 KeV	pCi/g	-	1.3±0.2	-	1.1±0.2	1.4±0.2
Uranium-235 @ 143 KeV	pCi/g	-	0.18±0.12	-	0.00±0.08	0.00±0.09
Potassium-40 @ 1460 KeV	pCi/g	-	17±1	-	12±1	18±1
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	540	<2.0	260	520
pH	pH Units	5.44	6.32	6.34	7.12	6.88
Sulfate	mg/kg	108	480	54	76	660
TCLP Metals:						
Silver	mg/l	-	<0.10	-	-	<0.10
Arsenic	mg/l	-	<0.10	-	-	<0.10
Barium	mg/l	-	<10	-	-	<10
Cadmium	mg/l	-	<0.10	-	-	<0.10
Chromium	mg/l	-	<0.10	-	-	<0.10
Mercury	mg/l	-	<0.010	-	-	<0.010
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	<0.10	-	-	<0.10
Selenium	mg/l	-	<0.10	-	-	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		-	No. 1	-	-	No. 1
pH with Deionized Water	pH units	-	6.56	-	-	6.76
pH After Addition of 1 Normal HCL	pH units	-	1.75	-	-	1.62
pH of TCLP Extract	pH units	-	4.90	-	-	4.85
Amount of Sample Extracted	g	-	40.0	-	-	40.0
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	<1500	<1500	<1600	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B64 (0-0.5) 4/1/93	B64 (9.5-12.5) 4/1/93	B64 (18.0-20.0) 4/2/93	B65 (0-0.5) 4/2/93	B65 (15.0-17.5) 4/2/93
Total Analyses:						
Silver	mg/kg	<2.2	<2.2	<1.9	<1.9	<2.4
Arsenic	mg/kg	0.46	2.5	1.0	0.29	1.3
Barium	mg/kg	21	260	170	25	140
Cadmium	mg/kg	<2.2	<2.2	2.2	<1.9	<2.3
Calcium	mg/kg	470	8400	2800	370	5300
Chromium	mg/kg	3.0	87	180	<1.9	130
Mercury	mg/kg	<0.050	0.72	0.063	<0.052	<0.056
Nickel	mg/kg	11	<11	22	<9.7	51
Lead	mg/kg	2.8	13	9.7	2.8	9.8
Antimony	mg/kg	<22	56	<19	<19	28
Selenium	mg/kg	<0.21	<0.20	<0.23	<0.20	<0.21
Tin	mg/kg	<11	2200	310	<9.7	340
Columbium	mg/kg	2.2	400	48	1.1	65
Tantalum	mg/kg	2.2	20	13	1.1	11
Fluoride	mg/kg	750	190	14000	33	2000
Gross Alpha	pCi/g	18±7	41±10	44±11	18±7	110±20
Gross Beta	pCi/g	27±6	68±7	40±6	30±6	56±7
Isotopes:						
Uranium-233 & 234	pCi/g	-	4.3±0.5	1.7±0.4	-	0.3±0.2
Uranium-235	pCi/g	-	0.2±0.1	0.2±0.1	-	0.0±0.1
Uranium-238	pCi/g	-	4.0±0.5	1.8±0.3	-	0.7±0.2
Thorium-228	pCi/g	-	3.3±0.6	2.1±0.4	-	2.5±0.5
Thorium-230	pCi/g	-	4.2±0.7	1.6±0.4	-	3.6±0.6
Thorium-232	pCi/g	-	1.5±0.4	1.4±0.3	-	1.6±0.4
Lead-210 @ 46 KeV	pCi/g	-	4.2±1.8	2.7±0.7	-	12±2
Thorium-234 @ 63.3 KeV	pCi/g	-	6.3±1.2	2.6±0.6	-	2.0±1.3
Thorium-234 @ 92.6 KeV	pCi/g	-	4.7±1.0	1.4±0.3	-	0.00±0.40
Protactinium-234m @ 1001 KeV	pCi/g	-	11±7	0.0±7.8	-	0.0±9.5
Radium 226	pCi/g	-	7.1±0.7	5.2±0.8	-	16±1
Lead-214 @ 295.2 KeV	pCi/g	-	4.4±0.4	3.1±0.4	-	18±1
Lead-214 @ 352.0 KeV	pCi/g	-	4.4±0.2	3.4±0.2	-	18±1
Bismuth-214 @ 609.4 KeV	pCi/g	-	4.3±0.2	3.3±0.2	-	18±1
Bismuth-214 @ 1120.4 KeV	pCi/g	-	4.7±0.6	3.1±0.5	-	18±1
Bismuth-214 @ 1764.7 KeV	pCi/g	-	3.6±0.4	3.2±0.5	-	16±1
Actinium-228 @ 338 KeV	pCi/g	-	2.0±0.3	1.9±0.3	-	2.6±0.4
Actinium-228 @ 911 KeV	pCi/g	-	2.0±0.2	2.0±0.3	-	2.5±0.3
Actinium-228 @ 968 KeV	pCi/g	-	1.6±0.6	2.4±0.5	-	2.7±0.5
Lead-212 @ 238 KeV	pCi/g	-	2.0±1.3	2.2±0.2	-	2.9±0.2
Bismuth-212 @ 727 KeV	pCi/g	-	2.1±0.8	2.9±0.8	-	2.7±1.0
Thallium-208 @ 583 KeV	pCi/g	-	1.8±0.2	2.3±0.2	-	3.1±0.3
Uranium-235 @ 143 KeV	pCi/g	-	0.26±0.11	0.20±0.13	-	0.00±0.17
Potassium-40 @ 1460 KeV	pCi/g	-	33±1	20±1	-	21±1
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	140	240	<2.0	380
pH	pH Units	6.85	3.56	3.88	6.43	6.51
Sulfate	mg/kg	54	52	146	66	400
TCLP Metals:						
Silver	mg/l	-	-	<0.10	-	<0.10
Arsenic	mg/l	-	-	<0.10	-	<0.10
Barium	mg/l	-	-	<10	-	<10
Cadmium	mg/l	-	-	<0.10	-	<0.10
Chromium	mg/l	-	-	<0.10	-	<0.10
Mercury	mg/l	-	-	<0.010	-	<0.010
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	<0.10	-	<0.10
Selenium	mg/l	-	-	<0.10	-	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	No. 1	-	No. 1
pH with Deionized Water	pH units	-	-	4.28	-	6.84
pH After Addition of 1 Normal HCL	pH units	-	-	NAP	-	1.75
pH of TCLP Extract	pH units	-	-	4.78	-	5.24
Amount of Sample Extracted	g	-	-	40.0	-	40.0
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1400	30000	33000	<1400	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B65 (20.0-22.5) 4/2/93	B66 (0-0.5) 4/2/93	B66 (5.0-7.5) 4/2/93	B66 (17.5-20.0) 4/2/93	B67 (0-0.5) 4/3/93
Total Analyses:						
Silver	mg/kg	<2.1	<2.2	<2.1	<2.2	<2.3
Arsenic	mg/kg	3.8	0.67	2.2	6.4	1.1
Barium	mg/kg	52	28	88	170	51
Cadmium	mg/kg	2.8	<2.2	<2.1	<2.2	<2.3
Calcium	mg/kg	330	410	2700	640	780
Chromium	mg/kg	11	2.5	9.1	11	2.7
Mercury	mg/kg	<0.058	<0.055	<0.051	0.074	<0.058
Nickel	mg/kg	16	<11	<11	13	<12
Lead	mg/kg	5.7	3.6	11	30	5.2
Antimony	mg/kg	<20	<22	<21	<22	<23
Selenium	mg/kg	<0.23	0.33	<0.20	<0.22	<0.24
Tin	mg/kg	<10	<11	29	12	<12
Columbium	mg/kg	7.4	1.1	64	11	2.5
Tantalum	mg/kg	12	2.3	9.7	12	5.0
Fluoride	mg/kg	1500	19	1100	1300	40
Gross Alpha	pCi/g	39±10	11±5	34±8	17±6	14±5
Gross Beta	pCi/g	39±6	23±5	29±5	24±5	21±5
Isotopes:						
Uranium-233 & 234	pCi/g	4.9±0.6	-	1.8±0.2	-	-
Uranium-235	pCi/g	0.0±0.1	-	0.1±0.1	-	-
Uranium-238	pCi/g	5.1±0.6	-	1.9±0.3	-	-
Thorium-228	pCi/g	2.2±0.4	-	1.7±0.4	-	-
Thorium-230	pCi/g	3.8±0.6	-	2.8±0.5	-	-
Thorium-232	pCi/g	2.3±0.5	-	1.5±0.3	-	-
Lead-210 @ 46 KeV	pCi/g	1.4±0.7	-	1.6±0.6	-	-
Thorium-234 @ 63.3 KeV	pCi/g	5.1±0.6	-	1.9±0.5	-	-
Thorium-234 @ 92.6 KeV	pCi/g	3.8±0.4	-	2.4±0.5	-	-
Protactinium-234m @ 1001 KeV	pCi/g	0.0±7.1	-	0.0±6.9	-	-
Radium 226	pCi/g	4.5±0.7	-	4.0±0.7	-	-
Lead-214 @ 295.2 KeV	pCi/g	1.0±0.2	-	2.4±0.3	-	-
Lead-214 @ 352.0 KeV	pCi/g	0.98±0.10	-	2.3±0.2	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	1.0±0.1	-	2.1±0.2	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	1.4±0.4	-	2.2±0.5	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	1.2±0.3	-	2.4±0.4	-	-
Actinium-228 @ 338 KeV	pCi/g	1.6±0.3	-	2.0±0.3	-	-
Actinium-228 @ 911 KeV	pCi/g	1.6±0.3	-	1.8±0.3	-	-
Actinium-228 @ 968 KeV	pCi/g	1.6±0.4	-	1.9±0.5	-	-
Lead-212 @ 238 KeV	pCi/g	1.3±0.1	-	1.7±0.1	-	-
Bismuth-212 @ 727 KeV	pCi/g	2.0±0.6	-	2.4±0.7	-	-
Thallium-208 @ 583 KeV	pCi/g	1.7±0.2	-	1.8±0.2	-	-
Uranium-235 @ 143 KeV	pCi/g	0.24±0.10	-	0.22±0.13	-	-
Potassium-40 @ 1460 KeV	pCi/g	17±1	-	17±1	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	360	<2.0	114	128	<2.0
pH	pH Units	6.21	6.34	7.18	6.43	5.92
Sulfate	mg/kg	240	58	220	174	58
TCLP Metals:						
Silver	mg/l	-	-	-	<0.10	-
Arsenic	mg/l	-	-	-	<0.10	-
Barium	mg/l	-	-	-	<10	-
Cadmium	mg/l	-	-	-	<0.10	-
Chromium	mg/l	-	-	-	<0.10	-
Mercury	mg/l	-	-	-	<0.010	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	<0.10	-
Selenium	mg/l	-	-	-	<0.10	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	No. 1	-
pH with Deionized Water	pH units	-	-	-	5.65	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	1.61	-
pH of TCLP Extract	pH units	-	-	-	5.32	-
Amount of Sample Extracted	g	-	-	-	40.0	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	3400	<1400	<1300	<1500	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B67 (2.5-5.0) 4/3/93	B67 (7.5-10.0) 4/3/93	B68 (0-0.5) 4/3/93	B68 (2.5-5.0) 4/3/93	B68 (7.5-10.0) 4/3/93
Total Analyses:						
Silver	mg/kg	<2.0	<2.0	<2.3	<2.3	<2.3
Arsenic	mg/kg	0.66	0.29	2.3	2.2	1.1
Barium	mg/kg	87	25	66	67	48
Cadmium	mg/kg	<2.0	<2.0	<2.3	<2.3	<2.3
Calcium	mg/kg	<200	470	890	840	570
Chromium	mg/kg	<2.0	<2.0	6.3	5.4	3.5
Mercury	mg/kg	0.061	<0.057	<0.062	<0.058	<0.053
Nickel	mg/kg	<10	<10	<12	<12	<11
Lead	mg/kg	1.5	0.81	4.4	4.6	3.5
Antimony	mg/kg	<20	<20	<23	<23	<22
Selenium	mg/kg	<0.20	<0.20	<0.24	<0.23	0.50
Tin	mg/kg	<10	<10	<12	<12	<11
Columbium	mg/kg	1.1	3.4	6.1	4.9	2.3
Tantalum	mg/kg	3.2	11	8.6	8.5	4.7
Fluoride	mg/kg	180	130	290	79	68
Gross Alpha	pCi/g	8±5	15±5	13±5	6±5	5±4
Gross Beta	pCi/g	24±6	26±5	20±5	21±6	27±5
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	<2.0	<2.0	<2.0
pH	pH Units	8.85	5.82	6.14	5.84	6.61
Sulfate	mg/kg	58	54	52	52	58
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1300	<1400	<1500	<1500	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B69 (0-0.5) 4/3/93	B69 (0.5-2.5) 4/3/93	B69 (5.0-7.5) 4/3/93	B70 (0-0.5) 3/31/93	B70 (5.0-7.5) 3/31/93
Total Analyses:						
Silver	mg/kg	<2.1	<2.3	<2.0	<2.1	-
Arsenic	mg/kg	1.5	2.5	2.0	2.2	-
Barium	mg/kg	45	66	160	73	-
Cadmium	mg/kg	<2.1	<2.3	<2.0	<2.1	-
Calcium	mg/kg	3200	950	1000	1400	-
Chromium	mg/kg	19	7.3	7.3	7.8	-
Mercury	mg/kg	0.41	<0.058	<0.059	<0.054	-
Nickel	mg/kg	10	<11	11	<11	-
Lead	mg/kg	12	12	4.3	7.7	-
Antimony	mg/kg	<21	<23	<20	<21	-
Selenium	mg/kg	<0.2	<0.23	<0.23	0.44	-
Tin	mg/kg	77	11	<10	<11	-
Columbium	mg/kg	37	16	4.8	9.4	-
Tantalum	mg/kg	14	8.4	9.6	8.2	-
Fluoride	mg/kg	270	1100	49	230	-
Gross Alpha	pCi/g	18±6	20±6	9±5	14±6	9±5
Gross Beta	pCi/g	29±5	24±5	23±5	26±6	22±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	<2.0	<2.0	<2.0	-
pH	pH Units	6.16	6.09	9.25	5.92	-
Sulfate	mg/kg	46	62	66	54	-
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1400	<1500	<1500	<1500	-

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B70 (12.5-14.0) 3/31/93	B70 (14.0-16.5) 3/31/93	B71 (0-0.5) 3/31/93	B71 (7.5-10.0) 3/31/93	B71 (10.0-12.5) 3/31/93
Total Analyses:						
Silver	mg/kg	<1.9	<2.2	<2.2	<2.1	<2.1
Arsenic	mg/kg	0.88	1.5	1.5	2.5	1.9
Barium	mg/kg	29	59	57	59	46
Cadmium	mg/kg	<1.9	<2.2	<2.2	<2.1	<2.1
Calcium	mg/kg	2000	1600	1400	1200	1400
Chromium	mg/kg	10	13	11	6.4	4.1
Mercury	mg/kg	<0.051	<0.057	<0.06	<0.057	<0.057
Nickel	mg/kg	<9.3	<11	<11	<11	<11
Lead	mg/kg	2.5	3.5	8.7	6.0	6.3
Antimony	mg/kg	<19	<22	<22	<21	<21
Selenium	mg/kg	<0.20	<0.22	<0.25	<0.23	<0.22
Tin	mg/kg	130	42	52	<11	<11
Columbium	mg/kg	190	30	100	8.4	9.3
Tantalum	mg/kg	2.1	5.7	8.8	8.4	4.7
Fluoride	mg/kg	5200	2500	1000	330	2000
Gross Alpha	pCi/g	-	12±6	18±6	8±6	9±6
Gross Beta	pCi/g	-	24±6	22±6	24±6	32±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	10.6	5.6	<2.0	<2.0	9.2
pH	pH Units	5.67	5.38	5.49	6.05	5.83
Sulfate	mg/kg	62	62	52	54	46
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1300	<1400	<1600	<1500	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B72 (0-0.5) 4/1/93	B72 (12.5-15.0) 4/1/93	B72 (15.0-16.0) 4/1/93	B73 (0.8-2.0) 4/2/93	B73 (2.0-4.5) 4/2/93
Total Analyses:						
Silver	mg/kg	<2.2	<1.8	<2.4	<2.2	<1.9
Arsenic	mg/kg	1.5	1.1	1.5	4.9	1.9
Barium	mg/kg	46	57	100	600	54
Cadmium	mg/kg	<2.2	<1.8	<2.4	<2.2	<1.9
Calcium	mg/kg	1300	4400	5000	150000	890
Chromium	mg/kg	6.8	28	140	14	8.9
Mercury	mg/kg	<0.061	<0.053	<0.058	0.26	<0.059
Nickel	mg/kg	<11	<9.2	<12	<11	<9.4
Lead	mg/kg	7.7	4.2	7.5	13	7.4
Antimony	mg/kg	<22	<18	40	<22	<19
Selenium	mg/kg	<0.23	<0.17	<0.24	<0.20	<0.23
Tin	mg/kg	<11	96	630	25	<9.4
Columbium	mg/kg	8.9	120	160	160	4.7
Tantalum	mg/kg	8.9	3.4	6.3	33	3.5
Fluoride	mg/kg	1600	6800	12000	1300	160
Gross Alpha	pCi/g	20±8	24±8	120±20	-	13±6
Gross Beta	pCi/g	29±6	30±6	100±10	-	19±5
Isotopes:						
Uranium-233 & 234	pCi/g	-	5.5±0.9	44±2	-	-
Uranium-235	pCi/g	-	0.0±0.1	2.3±0.5	-	-
Uranium-238	pCi/g	-	5.0±0.8	47±2	-	-
Thorium-228	pCi/g	-	0.7±0.3	0.9±0.3	-	-
Thorium-230	pCi/g	-	1.7±0.4	0.9±0.3	-	-
Thorium-232	pCi/g	-	1.1±0.3	0.7±0.2	-	-
Lead-210 @ 46 KeV	pCi/g	-	1.3±0.5	1.5±1.1	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	5.1±0.7	49±3	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	3.5±0.3	32±1	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	15±9	74±12	-	-
Radium 226	pCi/g	-	4.4±0.6	34±1	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	0.47±0.19	0.84±0.25	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	0.50±0.09	1.2±0.1	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	0.60±0.11	0.98±0.14	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	0.00±0.28	1.3±0.4	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	0.62±0.32	1.1±0.3	-	-
Actinium-228 @ 338 KeV	pCi/g	-	0.75±0.22	1.4±0.3	-	-
Actinium-228 @ 911 KeV	pCi/g	-	0.56±0.21	1.3±0.2	-	-
Actinium-228 @ 968 KeV	pCi/g	-	0.82±0.31	0.92±0.28	-	-
Lead-212 @ 238 KeV	pCi/g	-	0.53±0.09	0.94±0.11	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	0.00±0.48	1.2±0.8	-	-
Thallium-208 @ 583 KeV	pCi/g	-	0.62±0.14	1.1±0.2	-	-
Uranium-235 @ 143 KeV	pCi/g	-	0.14±0.14	2.0±0.2	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	18±1	16±1	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2.0	30	108	<2.0	66
pH	pH Units	5.15	5.25	4.22	12.28	7.18
Sulfate	mg/kg	52	260	480	90	74
TCLP Metals:						
Silver	mg/l	-	-	<0.10	<0.10	-
Arsenic	mg/l	-	-	<0.10	<0.10	-
Barium	mg/l	-	-	<10	<10	-
Cadmium	mg/l	-	-	<0.10	<0.10	-
Chromium	mg/l	-	-	<0.10	<0.10	-
Mercury	mg/l	-	-	<0.010	<0.010	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	<0.10	<0.10	-
Selenium	mg/l	-	-	<0.10	<0.10	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	No. 1	No. 2	-
pH with Deionized Water	pH units	-	-	4.12	11.43	-
pH After Addition of 1 Normal HCL	pH units	-	-	NAP	9.57	-
pH of TCLP Extract	pH units	-	-	4.71	6.22	-
Amount of Sample Extracted	g	-	-	40.0	40.0	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	<1400	7600	<1300	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		B73 (4.5-7.0) 4/2/93	B73 (14.5-17.0) 4/2/93	B74 (0-0.5) 4/2/93	B74 (0.5-2.5) 4/2/93	B74 (10.0-12.5) 4/2/93
Total Analyses:						
Silver	mg/kg	-	<2.4	<2.4	<2.3	<2.3
Arsenic	mg/kg	-	1.7	2.8	1.1	2.4
Barium	mg/kg	-	98	47	120	77
Cadmium	mg/kg	-	<2.4	<2.4	<2.3	2.6
Calcium	mg/kg	-	1400	1300	700	2700
Chromium	mg/kg	-	7.9	12	7.5	21
Mercury	mg/kg	-	<0.055	0.073	<0.057	<0.061
Nickel	mg/kg	-	<12	<12	<11	15
Lead	mg/kg	-	5.8	7.1	11	6.3
Antimony	mg/kg	-	<24	<24	<23	<23
Selenium	mg/kg	-	<0.24	<0.24	<0.24	<0.24
Tin	mg/kg	-	<12	<12	<11	41
Columbium	mg/kg	-	6.0	110	13	3.7
Tantalum	mg/kg	-	11	9.6	4.8	7.3
Fluoride	mg/kg	-	90	1100	280	170
Gross Alpha	pCi/g	210±20	13±6	130±10	160±20	16±6
Gross Beta	pCi/g	81±7	25±5	69±7	89±8	24±5
Isotopes:						
Uranium-233 & 234	pCi/g	17±1	-	17±1	-	-
Uranium-235	pCi/g	0.9±0.2	-	0.8±0.2	-	-
Uranium-238	pCi/g	18±1	-	18±1	-	-
Thorium-228	pCi/g	15±1	-	7.1±0.7	-	-
Thorium-230	pCi/g	22±1	-	9.2±0.8	-	-
Thorium-232	pCi/g	11±1	-	6.0±0.7	-	-
Lead-210 @ 46 KeV	pCi/g	9.0±1.8	-	3.7±0.2	-	-
Thorium-234 @ 63.3 KeV	pCi/g	12±3	-	17±2	-	-
Thorium-234 @ 92.6 KeV	pCi/g	13±1	-	14±1	-	-
Protactinium-234m @ 1001 KeV	pCi/g	42±14	-	24±11	-	-
Radium 226	pCi/g	28±15	-	20±1	-	-
Lead-214 @ 295.2 KeV	pCi/g	18±1	-	5.7±0.4	-	-
Lead-214 @ 352.0 KeV	pCi/g	18±1	-	5.6±0.3	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	18±1	-	5.5±0.3	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	18±1	-	5.0±0.6	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	17±1	-	5.6±0.6	-	-
Actinium-228 @ 338 KeV	pCi/g	11±1	-	5.2±0.4	-	-
Actinium-228 @ 911 KeV	pCi/g	11±1	-	5.4±0.4	-	-
Actinium-228 @ 968 KeV	pCi/g	11±1	-	5.8±0.6	-	-
Lead-212 @ 238 KeV	pCi/g	8.2±0.3	-	4.8±0.3	-	-
Bismuth-212 @ 727 KeV	pCi/g	12±1	-	6.1±1.1	-	-
Thallium-208 @ 583 KeV	pCi/g	10±1	-	5.0±0.3	-	-
Uranium-235 @ 143 KeV	pCi/g	0.94±0.30	-	0.66±0.22	-	-
Potassium-40 @ 1460 KeV	pCi/g	10±1	-	15±1	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	-	<2.0	<2.0	<2.0	7.4
pH	pH Units	-	6.89	6.39	5.98	7.15
Sulfate	mg/kg	-	62	58	220	380
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	-	<1500	<1500	<1500	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-51S (0-2.0) 4/1/91	MW-51S (14.5-17.0) 4/1/91	MW-51S (27.0-29.5) 4/1/91	MW-52S (0-0.5) 2/10/93	MW-52S (3.5-7.0) 2/10/93
Total Analyses:						
Silver	mg/kg	<10	<10	<10	<2.4	<2.3
Arsenic	mg/kg	0.6	2	0.4	4.1	1.3
Barium	mg/kg	<100	100	<100	150	150
Cadmium	mg/kg	<10	<10	<10	<2.4	2.7
Calcium	mg/kg	900	1800	1000	2400	2600
Chromium	mg/kg	<10	17	<10	19	17
Mercury	mg/kg	0.11	0.07	0.07	<0.061	<0.057
Nickel	mg/kg	<10	13	<10	15	16
Lead	mg/kg	<10	<10	<10	11	4.6
Antimony	mg/kg	<10	<10	<10	<24	<23
Selenium	mg/kg	<1	<1	<1	<0.24	<0.23
Tin	mg/kg	<100	<100	<100	14	15
Columbium	mg/kg	36	52	30	6.1	7.9
Tantalum	mg/kg	9	16	5	12	15
Fluoride	mg/kg	86	210	130	410	260
Gross Alpha	pCi/g	2.4±0.7	1.5±0.6	1.4±0.5	17±5	9±5
Gross Beta	pCi/g	3.9±1.0	3.5±0.9	3.3±0.9	24±5	26±5
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2	4	<2	<2	3.6
pH	pH Units	-	-	-	3.40	6.47
Sulfate	mg/kg	<20	40	<20	44	44
TCLP Metals:						
Silver	mg/l	-	-	-	-	<0.10
Arsenic	mg/l	-	-	-	-	<0.10
Barium	mg/l	-	-	-	-	<10
Cadmium	mg/l	-	-	-	-	<0.10
Chromium	mg/l	-	-	-	-	<0.10
Mercury	mg/l	-	-	-	-	<0.010
Nickel	mg/l	-	-	-	-	<1.0
Lead	mg/l	-	-	-	-	0.11
Selenium	mg/l	-	-	-	-	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	No. 1
pH with Deionized Water	pH units	-	-	-	-	7.74
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	1.78
pH of TCLP Extract	pH units	-	-	-	-	4.84
Amount of Sample Extracted	g	-	-	-	-	40.0
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<50	<50	<50	<1600	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-52S (14.0-17.0) 2/10/93	MW-53S (0-0.5) 2/11/93	MW-53S (23.0-25.0) 2/11/93	MW-53S (25.0-27.0) 2/11/93	MW-54S (0-0.05) 2/11/93
Total Analyses:						
Silver	mg/kg	<2.6	<2.4	<2.4	<2.4	<2.5
Arsenic	mg/kg	2.2	2.6	1.2	2.1	3.0
Barium	mg/kg	86	60	70	60	89
Cadmium	mg/kg	<2.6	<2.4	<2.4	<2.4	4.0
Calcium	mg/kg	1300	1400	1900	1400	1500
Chromium	mg/kg	7.1	15	15	12	32
Mercury	mg/kg	<0.064	<0.060	<0.060	<0.061	<0.063
Nickel	mg/kg	<13	<12	<12	17	<13
Lead	mg/kg	6.7	11	9.3	8.0	18
Antimony	mg/kg	<26	<24	<24	<24	<25
Selenium	mg/kg	<0.26	<0.24	<0.24	<0.24	<0.25
Tin	mg/kg	<13	<12	<12	<12	23
Columbium	mg/kg	2.6	6.0	8.3	9.7	13
Tantalum	mg/kg	7.7	8.5	18	27	32
Fluoride	mg/kg	200	220	300	270	590
Gross Alpha	pCi/g	8±4	38±8	15±5	16±6	18±6
Gross Beta	pCi/g	19±5	21±5	32±6	28±5	22±5
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2	2	<2	<2	<2
pH	pH Units	3.50	5.99	6.75	6.66	6.72
Sulfate	mg/kg	44	44	68	44	44
TCLP Metals:						
Silver	mg/l	-	-	-	-	<0.10
Arsenic	mg/l	-	-	-	-	<0.10
Barium	mg/l	-	-	-	-	<10
Cadmium	mg/l	-	-	-	-	<0.10
Chromium	mg/l	-	-	-	-	<0.10
Mercury	mg/l	-	-	-	-	<0.010
Nickel	mg/l	-	-	-	-	<1.0
Lead	mg/l	-	-	-	-	<0.10
Selenium	mg/l	-	-	-	-	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	No. 1
pH with Deionized Water	pH units	-	-	-	-	6.12
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	1.66
pH of TCLP Extract	pH units	-	-	-	-	4.95
Amount of Sample Extracted	g	-	-	-	-	40.0
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1700	<1600	<1500	<1600	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-54S (2.0-4.5) 2/11/93	MW-54S (24.5-27.0) 2/11/93	MW-55S (0-0.5) 2/10/93	MW-55S (7.0-9.5) 2/10/93	MW-55S (14.5-17.0) 2/10/93
Total Analyses:						
Silver	mg/kg	<2.3	<2.4	<2.5	<2.4	2.5
Arsenic	mg/kg	7.1	3.6	2.0	0.96	2.8
Barium	mg/kg	74	68	55	75	67
Cadmium	mg/kg	<2.3	<2.4	<2.5	<2.4	<2.5
Calcium	mg/kg	1100	2100	44000	1000	1100
Chromium	mg/kg	23	14	23	12	12
Mercury	mg/kg	0.060	<0.059	<0.063	<0.060	<0.063
Nickel	mg/kg	<12	14	<13	<12	<13
Lead	mg/kg	6.9	5.9	10	4.2	20
Antimony	mg/kg	<23	<24	<25	<24	<25
Selenium	mg/kg	<0.23	<0.24	<0.25	<0.24	<0.25
Tin	mg/kg	<12	<12	19	12	<13
Columbium	mg/kg	5.8	5.9	50	3.6	3.8
Tantalum	mg/kg	10	12	23	11	8.9
Fluoride	mg/kg	330	280	490	250	230
Gross Alpha	pCi/g	20±6	12±5	20±6	11±5	10±4
Gross Beta	pCi/g	24±5	21±5	27±5	26±5	23±5
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2	<2	<2	<2	<2
pH	pH Units	6.57	6.83	7.62	6.98	6.36
Sulfate	mg/kg	44	52	44	44	44
TCLP Metals:						
Silver	mg/l	<0.10	-	<0.10	-	-
Arsenic	mg/l	<0.10	-	<0.10	-	-
Barium	mg/l	<10	-	<10	-	-
Cadmium	mg/l	<0.10	-	<0.10	-	-
Chromium	mg/l	<0.10	-	<0.10	-	-
Mercury	mg/l	<0.010	-	<0.010	-	-
Nickel	mg/l	<1.0	-	<1.0	-	-
Lead	mg/l	0.13	-	<0.10	-	-
Selenium	mg/l	<0.10	-	<0.10	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 1	-	No. 1	-	-
pH with Deionized Water	pH units	6.54	-	9.16	-	-
pH After Addition of 1 Normal HCL	pH units	1.63	-	4.89	-	-
pH of TCLP Extract	pH units	4.97	-	6.42	-	-
Amount of Sample Extracted	g	40.0	-	40.0	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<1500	<1600	<1600	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-56S (0-0.5) 2/9/93	MW-56S (3.5-5.5) 2/9/93	MW-56S (14.0-17.5) 2/9/93	MW-57S (0-0.5) 2/8/93	MW-57S (10.0-12.5) 2/8/93
Total Analyses:						
Silver	mg/kg	<2.4	<2.4	<2.5	<2.4	<2.4
Arsenic	mg/kg	1.7	1.2	0.83	1.5	1.2
Barium	mg/kg	86	200	76	77	130
Cadmium	mg/kg	2.6	2.6	2.9	3.1	<2.4
Calcium	mg/kg	1300	2300	2500	2400	2300
Chromium	mg/kg	19	19	16	19	17
Mercury	mg/kg	<0.060	<0.060	<0.063	<0.060	<0.060
Nickel	mg/kg	<12	23	14	20	13
Lead	mg/kg	8.0	12	7.1	7.3	3.9
Antimony	mg/kg	<24	<24	<25	<24	<24
Selenium	mg/kg	<0.24	<0.24	<0.25	0.38	<0.24
Tin	mg/kg	13	15	13	17	15
Columbium	mg/kg	4.8	4.8	5.0	3.6	2.4
Tantalum	mg/kg	11	13	13	3.6	4.8
Fluoride	mg/kg	170	1900	2000	280	270
Gross Alpha	pCi/g	23±7	12±6	16±6	18±5	13±5
Gross Beta	pCi/g	23±6	24±6	26±5	22±5	20±5
Isotopes:						
Uranium-233 & 234	pCi/g	0.3±0.3	-	-	-	-
Uranium-235	pCi/g	0.0±0.1	-	-	-	-
Uranium-238	pCi/g	0.5±0.3	-	-	-	-
Thorium-228	pCi/g	1.3±0.4	-	-	-	-
Thorium-230	pCi/g	0.7±0.3	-	-	-	-
Thorium-232	pCi/g	1.2±0.3	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	1.3±0.5	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	0.00±0.41	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	1.0±0.2	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	0.0±6.1	-	-	-	-
Radium 226	pCi/g	1.6±0.6	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	0.87±0.22	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	0.92±0.12	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	0.94±0.13	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	0.96±0.36	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	0.59±0.40	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	1.2±0.3	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	1.2±0.2	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	1.1±0.3	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	1.1±0.1	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	2.0±0.5	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	1.3±0.2	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	0.11±0.09	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	14±1	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2	<2	<2	<2	<2
pH	pH Units	8.10	7.36	6.48	6.95	6.35
Sulfate	mg/kg	82	74	76	86	104
TCLP Metals:						
Silver	mg/l	-	<0.10	-	-	-
Arsenic	mg/l	-	<0.10	-	-	-
Barium	mg/l	-	<10	-	-	-
Cadmium	mg/l	-	<0.10	-	-	-
Chromium	mg/l	-	<0.10	-	-	-
Mercury	mg/l	-	<0.010	-	-	-
Nickel	mg/l	-	<1.0	-	-	-
Lead	mg/l	-	<0.10	-	-	-
Selenium	mg/l	-	<0.10	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	No. 1	-	-	-
pH with Deionized Water	pH units	-	7.43	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	1.76	-	-	-
pH of TCLP Extract	pH units	-	4.88	-	-	-
Amount of Sample Extracted	g	-	40.0	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	<1600	<1600	<1600	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-57S (14.0-16.8) 2/8/93	MW-58S (0-0.5) 2/10/93	MW-58S (7.5-9.5) 2/10/93	MW-58S (19.0-20.0) 2/10/93	MW-59S (0-2.0) 4/1/91
Total Analyses:						
Silver	mg/kg	<2.5	<2.3	<2.3	<2.4	<10
Arsenic	mg/kg	3.3	4.8	2.2	2.3	2.9
Barium	mg/kg	100	110	130	47	<100
Cadmium	mg/kg	<2.5	<2.3	2.5	<2.4	<10
Calcium	mg/kg	1300	1400	1900	1300	1200
Chromium	mg/kg	9.9	18	19	7.7	10
Mercury	mg/kg	<0.061	<0.059	<0.057	<0.060	0.21
Nickel	mg/kg	<12	<12	18	<12	<10
Lead	mg/kg	4.6	8.8	5.4	5.5	10
Antimony	mg/kg	<25	<23	<23	<24	<10
Selenium	mg/kg	<0.25	<0.23	<0.23	<0.24	<1
Tin	mg/kg	<12	14	16	<12	<100
Columbium	mg/kg	3.7	3.5	3.4	2.4	33
Tantalum	mg/kg	4.9	11	9.1	9.6	14
Fluoride	mg/kg	210	260	310	300	150
Gross Alpha	pCi/g	16±6	14±5	11±5	12±5	1.3±0.6
Gross Beta	pCi/g	16±5	21±5	27±5	20±5	2.8±1.1
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2	<2	<2	<2	<2
pH	pH Units	5.82	6.58	6.39	5.80	-
Sulfate	mg/kg	76	280	44	94	60
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	<1500	<1500	<1600	<50

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-59S (4.5-7.0) 4/1/91	MW-59S (9.5-12.0) 4/1/91	MW-60S (0-0.5) 2/9/93	MW-60S (2.0-4.5) 2/9/93	MW-60S (9.5-12.0) 2/9/93
Total Analyses:						
Silver	mg/kg	-	-	<2.4	<2.4	<2.3
Arsenic	mg/kg	2.0	1.9	2.2	1.8	3.8
Barium	mg/kg	140	<100	61	92	410
Cadmium	mg/kg	<10	<10	<2.4	<2.4	<2.3
Calcium	mg/kg	2300	560	1200	2300	2300
Chromium	mg/kg	19	<10	11	15	16
Mercury	mg/kg	<0.01	0.06	<0.060	<0.059	<0.059
Nickel	mg/kg	12	<10	<12	<12	21
Lead	mg/kg	<1	<10	6.4	8.1	6.4
Antimony	mg/kg	<10	<10	<24	<24	<23
Selenium	mg/kg	<1	<1	<0.24	<0.24	<0.23
Tin	mg/kg	<100	<100	<12	16	15
Columbium	mg/kg	39	45	4.8	4.8	5.9
Tantalum	mg/kg	14	9	9.6	13	14
Fluoride	mg/kg	120	160	550	270	2700
Gross Alpha	pCi/g	1.7±0.7	0.8±0.6	20±7	12±6	19±7
Gross Beta	pCi/g	1.7±1.0	1.0±0.8	20±6	20±5	21±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2	32	<2	<2	<2
pH	pH Units	-	-	6.59	7.02	6.95
Sulfate	mg/kg	20	780	80	66	60
TCLP Metals:						
Silver	mg/l	-	-	-	-	<0.10
Arsenic	mg/l	-	-	-	-	<0.10
Barium	mg/l	-	-	-	-	<10
Cadmium	mg/l	-	-	-	-	<0.10
Chromium	mg/l	-	-	-	-	<0.10
Mercury	mg/l	-	-	-	-	<0.010
Nickel	mg/l	-	-	-	-	<1.0
Lead	mg/l	-	-	-	-	<0.10
Selenium	mg/l	-	-	-	-	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	No. 1
pH with Deionized Water	pH units	-	-	-	-	7.66
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	1.71
pH of TCLP Extract	pH units	-	-	-	-	4.91
Amount of Sample Extracted	g	-	-	-	-	40.0
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<50	<50	<1600	<1500	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-61S (0-2.0) 4/1/91	MW-61S (7.0-9.5) 4/1/91	MW-61S (14.5-17.0) 4/1/91	MW-62S (0-2.0) 4/1/91	MW-62S (7.0-9.5) 4/1/91
Total Analyses:						
Silver	mg/kg	<10	<10	<10	<10	<10
Arsenic	mg/kg	1.6	1.0	1.5	2.2	1.8
Barium	mg/kg	<100	2.0	<100	150	200
Cadmium	mg/kg	<10	<10	<10	<10	<10
Calcium	mg/kg	810	1500	600	2200	1200
Chromium	mg/kg	<10	11	<10	18	16
Mercury	mg/kg	0.02	0.11	0.09	<0.01	0.14
Nickel	mg/kg	<10	13	<10	13	14
Lead	mg/kg	<10	<10	<10	14	12
Antimony	mg/kg	<10	<10	<10	<10	<10
Selenium	mg/kg	<1	<1	<1	<1	<1
Tin	mg/kg	<100	<100	<100	<100	<100
Columbium	mg/kg	44	37	19	170	35
Tantalum	mg/kg	7	5	<5	75	7
Fluoride	mg/kg	190	120	370	3400	180
Gross Alpha	pCi/g	0.5±0.5	0.9±0.6	0.5±0.5	3.5±0.8	1.7±0.7
Gross Beta	pCi/g	1.5±1.1	1.2±1.1	<1.0	4.1±1.2	2.4±1.2
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2	<2	24	<2	<2
pH	pH Units	-	-	-	-	-
Sulfate	mg/kg	120	100	80	300	260
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<50	<50	<50	<50	<50

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-62S (12.0-14.5) 4/1/91	MW-63S (0-2.0) 4/1/91	MW-63S (9.5-12.0) 4/1/91	MW-63S (22.0-24.5) 4/1/91	MW-64S (0-0.5) 2/10/93
Total Analyses:						
Silver	mg/kg	<10	<10	<10	<10	<2.3
Arsenic	mg/kg	3.6	1.3	2.1	2.0	3.8
Barium	mg/kg	130	<100	<100	<100	180
Cadmium	mg/kg	<10	<10	<10	<10	3.5
Calcium	mg/kg	1000	880	1500	990	80000
Chromium	mg/kg	12	19	20	<10	56
Mercury	mg/kg	0.14	0.06	<0.01	<0.01	0.093
Nickel	mg/kg	18	11	14	<10	62
Lead	mg/kg	<10	13	10	<10	16
Antimony	mg/kg	<10	<10	<10	<10	<23
Selenium	mg/kg	<1	<1	<1	<1	<0.23
Tin	mg/kg	<100	<100	<100	<100	140
Columbium	mg/kg	31	42	26	25	3.5
Tantalum	mg/kg	5	16	12	19	4.7
Fluoride	mg/kg	120	220	140	70	25000
Gross Alpha	pCi/g	1.0±0.6	0.8±0.6	1.6±0.7	0.7±0.6	19±6
Gross Beta	pCi/g	2.9±1.2	1.2±1.1	2.6±1.0	1.7±1.0	26±5
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2	<2	<2	<2	380
pH	pH Units	-	-	-	-	9.03
Sulfate	mg/kg	220	20	<20	<20	68
TCLP Metals:						
Silver	mg/l	-	-	-	-	<0.10
Arsenic	mg/l	-	-	-	-	<0.10
Barium	mg/l	-	-	-	-	<10
Cadmium	mg/l	-	-	-	-	<0.10
Chromium	mg/l	-	-	-	-	<0.10
Mercury	mg/l	-	-	-	-	<0.010
Nickel	mg/l	-	-	-	-	<1.0
Lead	mg/l	-	-	-	-	<0.10
Selenium	mg/l	-	-	-	-	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	No. 1
pH with Deionized Water	pH units	-	-	-	-	8.23
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	2.50
pH of TCLP Extract	pH units	-	-	-	-	5.88
Amount of Sample Extracted	g	-	-	-	-	40.0
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<50	<50	<50	<50	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-64S (2.0-4.5) 2/10/93	MW-64S (14.5-17.0) 2/10/93	MW-64S (19.5-22.0) 2/10/93	MW-65S (0-0.5) 2/8/93	MW-65S (10.0-12.0) 2/8/93
Total Analyses:						
Silver	mg/kg	-	<2.4	<2.3	<2.3	-
Arsenic	mg/kg	-	3.2	2.3	0.74	-
Barium	mg/kg	-	89	52	37	-
Cadmium	mg/kg	-	<2.4	<2.3	<2.3	-
Calcium	mg/kg	-	1600	1000	730	-
Chromium	mg/kg	-	14	11	5.3	-
Mercury	mg/kg	-	<0.059	<0.057	<0.057	-
Nickel	mg/kg	-	15	<11	<11	-
Lead	mg/kg	-	12	4.6	3.5	-
Antimony	mg/kg	-	<24	<23	<23	-
Selenium	mg/kg	-	<0.24	<0.23	0.26	-
Tin	mg/kg	-	15	<11	<11	-
Columbium	mg/kg	-	4.7	3.4	<1.1	-
Tantalum	mg/kg	-	9.5	8.0	<1.1	-
Fluoride	mg/kg	-	240	200	91	-
Gross Alpha	pCi/g	17±6	-	8±4	22±8	41±10
Gross Beta	pCi/g	28±5	-	22±5	26±6	30±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	1.5±0.7	4.1±1.5
Uranium-235	pCi/g	-	-	-	0.0±0.1	0.0±0.1
Uranium-238	pCi/g	-	-	-	2.3±0.7	4.7±1.5
Thorium-228	pCi/g	-	-	-	0.9±0.5	1.5±0.4
Thorium-230	pCi/g	-	-	-	0.8±0.5	1.6±0.5
Thorium-232	pCi/g	-	-	-	1.6±0.6	1.1±0.4
Lead-210 @ 46 KeV	pCi/g	-	-	-	1.4±0.7	5.1±0.2
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	2.6±0.6	7.7±1.4
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	2.4±0.6	5.4±0.4
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	0.0±5.7	23±9
Radium 226	pCi/g	-	-	-	2.7±0.5	8.0±0.9
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	1.3±0.2	3.4±0.4
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	1.3±0.1	3.7±0.2
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	1.2±0.1	3.7±0.2
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	1.4±0.4	3.7±0.7
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	1.1±0.3	3.7±0.5
Actinium-228 @ 338 KeV	pCi/g	-	-	-	1.2±0.2	2.3±0.3
Actinium-228 @ 911 KeV	pCi/g	-	-	-	1.4±0.2	2.6±0.3
Actinium-228 @ 968 KeV	pCi/g	-	-	-	1.2±0.3	2.7±0.6
Lead-212 @ 238 KeV	pCi/g	-	-	-	0.97±0.10	2.2±0.2
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	1.8±0.6	3.0±0.9
Thallium-208 @ 583 KeV	pCi/g	-	-	-	1.0±0.2	2.5±0.3
Uranium-235 @ 143 KeV	pCi/g	-	-	-	0.00±0.09	0.18±0.17
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	18±1	20±1
ASTM Analysis:						
Ammonia	mg/kg NH3-N	-	<2	<2	<2	-
pH	pH Units	-	6.84	6.90	8.01	-
Sulfate	mg/kg	-	44	442	86	-
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	-	19000	83000	<1500	-

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-65S (15.0-17.0) 2/8/93	MW-65S (23.5-26.2) 2/8/93	MW-66S (0-2) 4/1/91	MW-66S (4.5-7) 4/1/91	MW-66S (14.5-17) 4/1/91
Total Analyses:						
Silver	mg/kg	<2.5	<2.4	<10	<10	<10
Arsenic	mg/kg	1.6	1.7	6.0	1.7	2.1
Barium	mg/kg	110	50	360	<100	160
Cadmium	mg/kg	2.5	<2.4	<10	<10	<10
Calcium	mg/kg	780	1000	3100	710	1900
Chromium	mg/kg	15	8.2	46	<10	<10
Mercury	mg/kg	<0.061	<0.060	1.7	<0.01	0.11
Nickel	mg/kg	16	<12	14	<10	19
Lead	mg/kg	5.4	3.7	75	1.2	21
Antimony	mg/kg	<25	<24	<10	<10	<10
Selenium	mg/kg	<0.25	<0.24	<1	<1	<1
Tin	mg/kg	15	<12	<100	<100	<100
Columbium	mg/kg	3.7	1.2	2100	38	31
Tantalum	mg/kg	3.7	<1.2	1500	18	19
Fluoride	mg/kg	470	380	8900	440	6100
Gross Alpha	pCi/g	-	7±6	60±2.9	1.5±0.6	<0.5
Gross Beta	pCi/g	-	22±6	73±3.1	4.3±1.1	1.9±1.1
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	9.0	17.8	66	14	140
pH	pH Units	5.69	4.78	-	-	-
Sulfate	mg/kg	260	200	180	160	260
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pontanone (MIBK)	µg/kg	2400	<1600	<50	<50	<50

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-67S (0-2) 4/1/91	MW-67S (12-14.5) 4/1/91	MW-67S (19.5-22) 4/1/91	MW-67S (22-24.5) 4/1/91	MW-68S (0-0.5) 2/10/93
Total Analyses:						
Silver	mg/kg	<10	<10	<10	<10	<2.4
Arsenic	mg/kg	0.9	5.0	<0.1	1.8	1.8
Barium	mg/kg	<100	100	<100	<100	87
Cadmium	mg/kg	<10	<10	<10	<10	<2.3
Calcium	mg/kg	500	610	2100	1400	1300
Chromium	mg/kg	<10	48	16	<10	16
Mercury	mg/kg	<0.01	0.07	<0.01	<0.01	<0.060
Nickel	mg/kg	<10	12	42	<10	<12
Lead	mg/kg	12	21	22	11	15
Antimony	mg/kg	<10	<10	<10	<10	<24
Selenium	mg/kg	<1	<1	<1	<1	<0.24
Tin	mg/kg	<100	<100	<100	<100	13
Columbium	mg/kg	740	61	41	21	4.8
Tantalum	mg/kg	130	8	8	7	11
Fluoride	mg/kg	720	12000	5100	2200	210
Gross Alpha	pCi/g	5.9±1.0	1.5±0.6	1.4±0.6	22±1.3	15±5
Gross Beta	pCi/g	5.4±1.3	5.4±1.2	2.6±1.1	13±1.3	20±5
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	38	1580	1780	1300	<2
pH	pH Units	-	-	-	-	6.10
Sulfate	mg/kg	200	60	1120	960	96
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<50	160	<50	2500	<1600

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-68S (2.0-4.5) 2/10/93	MW-68S (14.5-17.0) 2/10/93	MW-68S (19.5-22.0) 2/10/93	MW-69S (0-0.5) 2/8/93	MW-69S (3.0-5.5) 2/8/93
Total Analyses:						
Silver	mg/kg	<2.2	-	<2.5	<2.4	<2.3
Arsenic	mg/kg	0.76	-	19	0.93	1.2
Barium	mg/kg	77	-	53	57	46
Cadmium	mg/kg	<2.2	-	<2.5	<2.4	<2.3
Calcium	mg/kg	1400	-	1300	1900	600
Chromium	mg/kg	16	-	9.8	15	6.6
Mercury	mg/kg	<0.056	-	<0.062	<0.060	<0.058
Nickel	mg/kg	<12	-	<12	<12	<12
Lead	mg/kg	3.2	-	8.1	9.0	3.3
Antimony	mg/kg	<22	-	<25	<24	<23
Selenium	mg/kg	<0.22	-	<0.25	<0.24	<0.23
Tin	mg/kg	<11	-	<12	47	<12
Columbium	mg/kg	3.4	-	<1.2	12	3.5
Tantalum	mg/kg	10	-	5.0	8.5	8.1
Fluoride	mg/kg	200	-	210	760	290
Gross Alpha	pCi/g	11±5	14±5	-	13±5	8±4
Gross Beta	pCi/g	25±5	21±5	-	23±5	23±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2	-	<2	<2	<2
pH	pH Units	6.11	-	7.02	6.19	7.02
Sulfate	mg/kg	44	-	44	96	114
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	-	<1600	<1600	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-69S (10.5-13.0) 2/8/93	MW-70S (0-2.0) 4/1/91	MW-70S (9.5-12.0) 4/1/91	MW-70S (19.5-22.0) 4/1/91	MW-71S (0-0.5) 2/8/93
Total Analyses:						
Silver	mg/kg	<2.3	<10	<10	<10	<2.3
Arsenic	mg/kg	2.5	0.8	1.5	1.3	1.3
Barium	mg/kg	38	<100	<100	<100	59
Cadmium	mg/kg	<2.3	<10	<10	<10	<2.3
Calcium	mg/kg	750	1200	1300	1100	870
Chromium	mg/kg	10	19	13	<10	13
Mercury	mg/kg	<0.057	0.12	0.06	<0.01	<0.059
Nickel	mg/kg	<11	<10	11	<10	<12
Lead	mg/kg	2.5	<10	<10	<10	4.2
Antimony	mg/kg	<23	<10	<10	<10	<23
Selenium	mg/kg	<0.23	<1	<1	<1	<0.23
Tin	mg/kg	<11	<100	<100	<100	15
Columbium	mg/kg	2.3	85	35	35	7.0
Tantalum	mg/kg	5.7	32	<5	<5	9.4
Fluoride	mg/kg	3100	2200	140	120	200
Gross Alpha	pCi/g	2±4	4.0±0.9	2.0±0.7	1.4±0.6	8±6
Gross Beta	pCi/g	24±5	8.2±1.2	4.0±1.0	2.0±1.0	19±6
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	<2	6	8	8	<2
pH	pH Units	6.33	-	-	-	6.11
Sulfate	mg/kg	164	460	<20	<20	74
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<50	<50	<50	<1500

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-71S (2.0-4.5) 2/8/93	MW-71S (17.0-19.5) 2/8/93	MW-71S (19.5-22.0) 2/8/93	MW-72S (0-2.0) 4/1/91	MW-72S (4.5-7.0) 4/1/91
Total Analyses:						
Silver	mg/kg	<2.4	-	<2.1	<10	<10
Arsenic	mg/kg	4.1	-	1.1	5.9	3.4
Barium	mg/kg	120	-	58	<100	160
Cadmium	mg/kg	<2.4	-	<2.1	<10	<10
Calcium	mg/kg	16000	-	1800	1800	7500
Chromium	mg/kg	36	-	9.1	20	24
Mercury	mg/kg	0.15	-	<0.053	0.02	<0.01
Nickel	mg/kg	<12	-	<12	14	20
Lead	mg/kg	19	-	2.2	<10	<10
Antimony	mg/kg	<24	-	<21	<10	<10
Selenium	mg/kg	<0.24	-	<0.21	<1	<1
Tin	mg/kg	140	-	160	<100	<100
Columbium	mg/kg	29	-	120	140	62
Tantalum	mg/kg	17	-	3.2	55	26
Fluoride	mg/kg	6000	-	4600	2200	910
Gross Alpha	pCi/g	-	160±20	21±8	3.5±0.8	3.0±0.8
Gross Beta	pCi/g	-	98±8	28±6	4.7±1.0	4.8±1.0
Isotopes:						
Uranium-233 & 234	pCi/g	-	54±3	2.2±0.9	-	-
Uranium-235	pCi/g	-	2.3±0.5	0.3±0.3	-	-
Uranium-238	pCi/g	-	59±3	1.7±0.6	-	-
Thorium-228	pCi/g	-	0.8±0.4	0.6±1.0	-	-
Thorium-230	pCi/g	-	0.4±0.4	1.5±1.3	-	-
Thorium-232	pCi/g	-	0.8±0.4	1.1±1.0	-	-
Lead-210 @ 46 KeV	pCi/g	-	0.0±1.0	0.97±0.57	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	61±3	2.4±0.7	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	37±2	1.4±0.3	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	110±10	0.0±5.6	-	-
Radium 226	pCi/g	-	41±1	2.1±0.5	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	0.93±0.16	0.77±0.12	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	0.83±0.12	0.72±0.11	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	0.89±0.14	0.68±0.12	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	1.0±0.4	1.0±0.5	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	0.84±0.30	0.75±0.30	-	-
Actinium-228 @ 338 KeV	pCi/g	-	1.1±0.3	0.70±0.26	-	-
Actinium-228 @ 911 KeV	pCi/g	-	1.1±0.2	0.64±0.21	-	-
Actinium-228 @ 968 KeV	pCi/g	-	0.96±0.30	0.81±0.40	-	-
Lead-212 @ 238 KeV	pCi/g	-	0.78±0.09	0.51±0.06	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	1.7±0.7	1.3±0.7	-	-
Thallium-208 @ 583 KeV	pCi/g	-	0.96±0.18	0.60±0.15	-	-
Uranium-235 @ 143 KeV	pCi/g	-	1.8±0.2	0.16±0.13	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	14±1	21±1	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	2.6	-	28	2	22
pH	pH Units	7.07	-	4.31	-	-
Sulfate	mg/kg	1720	-	1500	240	160
TCLP Metals:						
Silver	mg/l	<0.10	-	-	-	-
Arsenic	mg/l	<0.10	-	-	-	-
Barium	mg/l	<10	-	-	-	-
Cadmium	mg/l	<0.10	-	-	-	-
Chromium	mg/l	<0.10	-	-	-	-
Mercury	mg/l	<0.010	-	-	-	-
Nickel	mg/l	<1.0	-	-	-	-
Lead	mg/l	<0.10	-	-	-	-
Selenium	mg/l	<0.10	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 1	-	-	-	-
pH with Deionized Water	pH units	8.47	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	2.27	-	-	-	-
pH of TCLP Extract	pH units	5.64	-	-	-	-
Amount of Sample Extracted	g	40.0	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<1600	-	<1400	<50	<50

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-72S (7.0-9.5) 4/1/91	MW-73S (0-2.0) 4/1/91	MW-73S (9.5-12.0) 4/1/91	MW-73S (13.05-14.2) 4/1/91	MW-73S (14.7-15.0) 4/1/91
Total Analyses:						
Silver	mg/kg	<10	<10	<10	<10	-
Arsenic	mg/kg	1.8	2.2	1.4	1.9	-
Barium	mg/kg	170	<100	<100	<100	-
Cadmium	mg/kg	<10	<10	<10	<10	-
Calcium	mg/kg	3100	1600	710	690	-
Chromium	mg/kg	20	13	13	13	-
Mercury	mg/kg	0.03	1.2	0.03	0.06	-
Nickel	mg/kg	16	11	11	<10	-
Lead	mg/kg	<10	<10	<10	<10	-
Antimony	mg/kg	<10	<10	<10	<10	-
Selenium	mg/kg	<1	<1	<1	<1	-
Tin	mg/kg	<100	<100	<100	<100	-
Columbium	mg/kg	38	44	35	28	-
Tantalum	mg/kg	16	20	12	8	-
Fluoride	mg/kg	360	250	3300	3600	-
Gross Alpha	pCi/g	4.0±0.9	2.9±0.7	1.5±0.6	1.7±0.6	-
Gross Beta	pCi/g	6.3±0.9	4.4±1.0	3.1±0.9	1.0±0.9	-
Isotopes:						
Uranium-233 & 234	pCi/g	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-
ASTM Analysis:						
Ammonia	mg/kg NH3-N	12	8	138	280	-
pH	pH Units	-	-	-	-	-
Sulfate	mg/kg	120	<20	<20	520	-
TCLP Metals:						
Silver	mg/l	-	-	-	-	-
Arsenic	mg/l	-	-	-	-	-
Barium	mg/l	-	-	-	-	-
Cadmium	mg/l	-	-	-	-	-
Chromium	mg/l	-	-	-	-	-
Mercury	mg/l	-	-	-	-	-
Nickel	mg/l	-	-	-	-	-
Lead	mg/l	-	-	-	-	-
Selenium	mg/l	-	-	-	-	-
TCLP Extraction Fluid Data:						
Extraction Fluid		-	-	-	-	-
pH with Deionized Water	pH units	-	-	-	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	-	-
pH of TCLP Extract	pH units	-	-	-	-	-
Amount of Sample Extracted	g	-	-	-	-	-
Volatile Organic Analyses:						
4-Methyl-2-pentanone (MIBK)	µg/kg	<50	<50	<6250	45000	10000

See footnotes at end of table.

Table 3
(Continued)

Parameter	Units	Sample Identification and Date					
		MW-74S (0-0.5) 2/9/93	MW-74S (2.0-4.5) 2/9/93	MW-74S (12.0-15.0) 2/9/93	MW-75S (0-0.5) 2/9/93	MW-75S (0.5-2.0) 2/9/93	MW-75S (4.5-7.0) 2/9/93
Total Analyses:							
Silver	mg/kg	<2.4	<2.4	<2.1	<2.3	<2.2	<2.1
Arsenic	mg/kg	1.7	2.0	1.1	2.2	2.9	3.7
Barium	mg/kg	32	84	29	170	100	22
Cadmium	mg/kg	<2.4	<2.4	<2.1	<2.3	2.7	<2.1
Calcium	mg/kg	1500	2900	760	1500	2000	460
Chromium	mg/kg	6.4	13	4.0	15	15	4.8
Mercury	mg/kg	<0.060	<0.059	<0.053	<0.059	<0.056	<0.053
Nickel	mg/kg	<12	13	<11	33	18	<11
Lead	mg/kg	5.6	6.4	2.6	7.2	4.9	1.9
Antimony	mg/kg	<24	<24	<21	<23	<22	<21
Selenium	mg/kg	<0.24	<0.24	<0.21	<0.23	<0.22	<0.21
Tin	mg/kg	<12	14	83	13	15	<11
Columbium	mg/kg	12	5.9	74	9.4	7.8	2.1
Tantalum	mg/kg	7.1	12	3.2	9.4	16	8.5
Fluoride	mg/kg	450	200	1700	290	490	110
Gross Alpha	pCi/g	14±5	18±6	9±5	48±9	14±5	2±3
Gross Beta	pCi/g	23±5	26±5	18±5	32±6	20±5	26±5
Isotopes:							
Uranium-233 & 234	pCi/g	-	-	-	3.1±0.4	-	-
Uranium-235	pCi/g	-	-	-	0.1±0.1	-	-
Uranium-238	pCi/g	-	-	-	3.1±0.4	-	-
Thorium-228	pCi/g	-	-	-	2.0±0.5	-	-
Thorium-230	pCi/g	-	-	-	6.1±0.9	-	-
Thorium-232	pCi/g	-	-	-	2.1±0.5	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	4.6±0.8	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	2.6±0.6	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	2.4±0.7	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	0.0±7.0	-	-
Radium 226	pCi/g	-	-	-	6.0±0.7	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	3.4±0.2	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	3.6±0.2	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	3.2±0.2	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	3.5±0.4	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	2.9±0.4	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	1.6±0.3	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	1.9±0.2	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	1.6±0.4	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	1.6±0.1	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	1.8±0.8	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	1.6±0.2	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	0.17±0.10	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	16±01	-	-
ASTM Analysis:							
Ammonia	mg/kg NH3-N	<2	<2	17	<2	<2	<2
pH	pH Units	6.87	7.55	5.16	5.84	7.66	7.18
Sulfate	mg/kg	90	90	122	82	88	62
TCLP Metals:							
Silver	mg/l	-	-	-	<0.10	-	-
Arsenic	mg/l	-	-	-	<0.10	-	-
Barium	mg/l	-	-	-	<10	-	-
Cadmium	mg/l	-	-	-	<0.10	-	-
Chromium	mg/l	-	-	-	<0.10	-	-
Mercury	mg/l	-	-	-	<0.010	-	-
Nickel	mg/l	-	-	-	<1.0	-	-
Lead	mg/l	-	-	-	<0.10	-	-
Selenium	mg/l	-	-	-	<0.10	-	-
TCLP Extraction Fluid Data:							
Extraction Fluid		-	-	-	No. 1	-	-
pH with Deionized Water	pH units	-	-	-	5.86	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	-	1.77	-	-
pH of TCLP Extract	pH units	-	-	-	4.97	-	-
Amount of Sample Extracted	g	-	-	-	40.0	-	-
Volatile Organic Analyses:							
4-Methyl-2-pentanone (MIBK)	µg/kg	<1500	<1500	<1400	<1500	<1500	<1400

(1) Dash denotes not analyzed.
(2) NA = Not applicable.

Table 4
Chemistry Data Summary
Test Pits
Fansteel, Inc.
Muskogee, Oklahoma

		Sample Identification and Date					
		TP-1 (2.0)	TP-2 (2.4)	TP-3 (1.5)	TP-4 (3.0)	TP-5 (1.5)	TP-6 (0.8)
Parameter	Units	2/17/93	2/17/93	2/17/93	2/17/93	2/17/93	2/17/93
Total Analyses:							
Silver	mg/kg	<2.5	<2.4	<2.5	<2.5	<2.5	<2.4
Arsenic	mg/kg	1.8	1.8	3.8	2.5	2.0	1.1
Barium	mg/kg	69	83	82	91	76	45
Calcium	mg/kg	1100	850	1100	920	1200	910
Cadmium	mg/kg	<2.5	<2.4	2.6	3.3	<2.5	<2.4
Chromium	mg/kg	19	21	24	25	21	12
Mercury	mg/kg	<0.062	<0.060	<0.062	<0.063	<0.061	<0.060
Nickel	mg/kg	<12	<12	<12	<13	<12	<12
Lead	mg/kg	8.3	7.8	9.7	6.7	3.3	4.4
Antimony	mg/kg	<25	<24	<25	<25	<25	<24
Selenium	mg/kg	<0.25	<0.24	0.32	0.38	0.43	<0.24
Tin	mg/kg	14	20	21	22	15	<12
Columbium	mg/kg	5.0	6.0	7.4	8.8	6.1	1.2
Tantalum	mg/kg	10	11	14	14	14	4.8
Fluoride	mg/kg	260	1800	190	1800	180	6200
Moisture Content	%	17.6	16.5	17.2	20.4	15.6	13.7
Gross Alpha	pCi/g	18±6	17±5	19±6	18±6	20±6	16±5
Gross Beta	pCi/g	24±5	19±5	16±5	22±5	19±5	19±5
Isotopes:							
Uranium-233 & 234	pCi/g	(1)	-	-	-	-	-
Uranium-235	pCi/g	-	-	-	-	-	-
Uranium-238	pCi/g	-	-	-	-	-	-
Thorium-228	pCi/g	-	-	-	-	-	-
Thorium-230	pCi/g	-	-	-	-	-	-
Thorium-232	pCi/g	-	-	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	-	-	-
Radium 226	pCi/g	-	-	-	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	-	-	-
ASTM Analysis:							
Ammonia	mg/kg NH3-N	<2	<2	<2	<2	<2	<2
Sulfate	mg/kg	96	66	44	88	44	44
pH	pH Units	5.61	6.26	5.99	5.82	5.96	5.97
TCLP Metals:							
Silver	mg/l	-	-	<0.010	<0.10	-	-
Arsenic	mg/l	-	-	<0.01	<0.10	-	-
Barium	mg/l	-	-	<10	<10	-	-
Cadmium	mg/l	-	-	<0.01	<0.10	-	-
Chromium	mg/l	-	-	<0.01	<0.10	-	-
Mercury	mg/l	-	-	<0.010	<0.010	-	-
Nickel	mg/l	-	-	<1.0	<1.0	-	-
Lead	mg/l	-	-	<0.10	<0.10	-	-
Selenium	mg/l	-	-	<0.10	<0.10	-	-
TCLP Extraction Fluid Data:							
Extraction Fluid		-	-	No. 1	No. 1	-	-
pH with Deionized Water	pH units	-	-	5.80	5.74	-	-
pH After Addition of 1 Normal HCL	pH units	-	-	1.41	1.41	-	-
pH of TCLP Extract	pH units	-	-	4.97	4.93	-	-
Amount of Sample Extracted	g	-	-	40.0	40.0	-	-
Volatile Organic Analyses:							
4-Methyl-2-pentanone	µg/kg	<1600	<1600	<1600	<1600	<1600	<1500

See footnotes at end of table.

Table 4
(Continued)

Parameter	Units	Sample Identification and Date						
		TP-7 (1.0) 2/17/93	TP-8 (1.2) 2/17/93	TP-9 (1.7) 2/17/93	TP-10 (1.6) 2/17/93	TP-11 (2.5) 2/17/93	TP-12 (2.0) 2/17/93	TP-13 (2.5) 2/17/93
Total Analyses:								
Silver	mg/kg	<2.8	<2.6	<2.5	<2.5	<2.5	<2.2	<2.6
Arsenic	mg/kg	1.4	2.2	1.4	2.2	2.9	2.5	1.5
Barium	mg/kg	55	54	86	54	76	47	130
Calcium	mg/kg	1100	960	1500	830	1300	780	1500
Cadmium	mg/kg	<2.8	3.5	3.2	<2.5	<2.5	2.2	3.4
Chromium	mg/kg	14	19	26	23	18	16	36
Mercury	mg/kg	<0.071	<0.065	0.12	<0.062	<0.062	<0.0056	<0.065
Nickel	mg/kg	<14	<13	13	<12	<12	<11	15
Lead	mg/kg	4.8	7.4	9.7	7.8	8.1	7.8	14
Antimony	mg/kg	<28	<26	<25	<25	<25	<22	<26
Selenium	mg/kg	<0.28	0.34	<0.25	0.43	<0.25	0.33	0.41
Tin	mg/kg	<14	14	21	12	13	12	33
Columbium	mg/kg	1.4	3.9	6.3	3.7	5.0	5.6	7.8
Tantalum	mg/kg	5.7	13	15	11	12	12	16
Fluoride	mg/kg	120	150	130	150	220	120	320
Moisture Content	%	19.7	19.0	19.4	18.4	19.6	13.4	22.4
Gross Alpha	pCi/g	18±6	17±5	16±6	21±6	11±5	16±6	12±5
Gross Beta	pCi/g	20±5	21±5	18±5	21±5	17±5	19±5	16±5
Isotopes:								
Uranium-233 & 234	pCi/g	-	-	-	0.8±0.2	-	-	-
Uranium-235	pCi/g	-	-	-	0.0±0.1	-	-	-
Uranium-238	pCi/g	-	-	-	0.6±0.1	-	-	-
Thorium-228	pCi/g	-	-	-	1.3±0.3	-	-	-
Thorium-230	pCi/g	-	-	-	1.0±0.3	-	-	-
Thorium-232	pCi/g	-	-	-	1.0±0.3	-	-	-
Lead-210 @ 46 KeV	pCi/g	-	-	-	1.4±0.8	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	-	-	-	1.6±0.7	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	-	-	-	1.7±0.6	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	-	-	-	0.0±5.0	-	-	-
Radium 226	pCi/g	-	-	-	2.5±0.5	-	-	-
Lead-214 @ 295.2 KeV	pCi/g	-	-	-	1.2±0.2	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	-	-	-	1.2±0.1	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	-	-	-	1.2±0.1	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	-	-	-	1.4±0.4	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	-	-	-	1.2±0.3	-	-	-
Actinium-228 @ 338 KeV	pCi/g	-	-	-	1.5±0.3	-	-	-
Actinium-228 @ 911 KeV	pCi/g	-	-	-	1.7±0.2	-	-	-
Actinium-228 @ 968 KeV	pCi/g	-	-	-	1.1±0.3	-	-	-
Lead-212 @ 238 KeV	pCi/g	-	-	-	1.1±0.1	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	-	-	-	2.0±0.5	-	-	-
Thallium-208 @ 583 KeV	pCi/g	-	-	-	1.3±0.2	-	-	-
Uranium-235 @ 143 KeV	pCi/g	-	-	-	0.00±0.09	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	-	-	-	10±1	-	-	-
ASTM Analysis:								
Ammonia	mg/kg NH3-N	<2	<2	<2	<2	<2	<2	<2
Sulfate	mg/kg	44	44	46	66	58	44	48
pH	pH Units	6.32	6.18	6.43	6.26	6.54	5.83	5.95
TCLP Metals:								
Silver	mg/l	-	-	<0.10	<0.10	-	-	<0.10
Arsenic	mg/l	-	-	<0.10	<0.10	-	-	<0.10
Barium	mg/l	-	-	<10	<10	-	-	<10
Cadmium	mg/l	-	-	<0.10	<0.10	-	-	<0.10
Chromium	mg/l	-	-	<0.10	<0.10	-	-	<0.10
Mercury	mg/l	-	-	<0.010	<0.010	-	-	<0.010
Nickel	mg/l	-	-	<1.0	<1.0	-	-	<1.0
Lead	mg/l	-	-	<0.10	<0.10	-	-	<0.10
Selenium	mg/l	-	-	<0.10	<0.10	-	-	<0.10
TCLP Extraction Fluid Data:								
Extraction Fluid		-	-	No. 1	No. 1	-	-	No. 1
pH with Deionized Water	pH units	-	-	5.74	6.04	-	-	6.09
pH After Addition of 1 Normal HCL	pH units	-	-	1.41	1.39	-	-	1.53
pH of TCLP Extract	pH units	-	-	4.93	4.94	-	-	4.93
Amount of Sample Extracted	g	-	-	40.0	40.0	-	-	40.0
Volatile Organic Analyses:								
4-Methyl-2-pentanone	µg/kg	<1900	<1700	<1600	<1600	<1600	<1500	<1700

(1) Dash denotes not analyzed.

Table 5
Summary of Waste Chemistry Data
Pond 2 Residues
Fansteel, Inc.
Muskogee, Oklahoma

Parameter	Units	Sample Identification and Date				
		P2-1A (0-4) 2/19/93	P2-1B (4-8) 2/19/93	P2-1C (8-12.5) 2/19/93	P2-2A (0-3) 2/19/93	P2-2B (3-6) 2/19/93
Total Analyses:						
Cyanide	mg/kg	11	4.4	<1.9	<2.0	<2.0
Silver	mg/kg	21.7	39.2	23.9	49.6	10.0
Arsenic	mg/kg	<36.0	<39.0	<37.0	41.7	<36.0
Barium	mg/kg	585	452	524	1380	284
Beryllium	mg/kg	25.5	23.9	22.0	33.1	10.3
Cadmium	mg/kg	<3.60	<3.90	<3.70	<3.60	<3.60
Chromium	mg/kg	377	438	153	740	169
Mercury	mg/kg	2.74	0.685	0.312	0.774	1.15
Molybdenum	mg/kg	30	31	40	40	<18
Nickel	mg/kg	59.3	103	50.9	38.6	<18.0
Lead	mg/kg	167	<39.0	68.5	110	70.5
Antimony	mg/kg	346	118	384	284	61.9
Selenium	mg/kg	<0.360	<0.400	<0.370	<0.400	<0.390
Tin	mg/kg	3100	1600	6000	4000	830
Columbium	mg/kg	5000	1200	3100	3000	4800
Tantalum	mg/kg	2200	1700	2300	2000	980
Gross Alpha	pCi/g	2300±100	4800±100	3200±100	6200±100	3200±100
Gross Beta	pCi/g	920±20	2400±100	2000±100	2700±100	1500±100
Isotopes:						
Uranium-233 & 234	pCi/g	180±10	510±20	410±10	440±10	170±10
Uranium 235	pCi/g	5.8±1.7	19±3	22±3	19±3	5.3±1.7
Uranium-238	pCi/g	180±10	530±20	430±10	440±10	170±10
Thorium-230	pCi/g	640±40	780±40	850±40	650±30	420±30
Lead-210 @ 46 KeV	pCi/g	60±9	68±14	86±12	30±21	55±11
Thorium-234 @ 63.3 KeV	pCi/g	91±8	260±40	160±30	130±40	140±30
Protactinium-234m @ 1001 KeV	pCi/g	170±70	590±120	640±120	560±30	250±90
Radium 226	pCi/g	250±10	540±20	500±10	590±20	310±10
Lead-214 @ 295.2 KeV	pCi/g	170±10	370±10	330±10	400±10	240±10
Lead-214 @ 352.0 KeV	pCi/g	170±10	370±10	340±10	420±10	250±10
Bismuth-214 @ 609.4 KeV	pCi/g	170±10	360±10	330±10	420±10	240±10
Bismuth-214 @ 1120.4 KeV	pCi/g	160±10	360±10	330±10	420±10	240±10
Bismuth-214 @ 1764.7 KeV	pCi/g	160±10	350±10	300±10	380±10	220±10
Actinium-228 @ 338 KeV	pCi/g	140±10	300±10	230±10	460±10	230±10
Actinium-228 @ 911 KeV	pCi/g	160±10	340±10	260±10	500±10	250±10
Actinium-228 @ 968 KeV	pCi/g	160±10	340±10	260±10	500±20	260±10
Lead-212 @ 238 KeV	pCi/g	140±10	320±10	240±10	440±30	240±10
Bismuth-212 @ 727 KeV	pCi/g	170±10	370±20	300±20	540±20	270±20
Thallium-208 @ 583 KeV	pCi/g	150±10	320±10	240±10	480±10	230±10
Uranium-235 @ 143 KeV	pCi/g	5.8±1.9	15±3	13±2	15±3	8.1±2.2
ASTM Analysis:						
Alkalinity	mg/l $CaCO_3$	<2.00	<2.00	<2.00	<2.00	<2.00
Ammonia	mg/l NH3-N	5.8	8.9	8.1	2.7	1.3
Chloride	mg/l	<0.50	3.8	5.7	<0.50	<0.50
Fluoride	mg/l	410	140	110	580	450
Nitrate	mg/l NO_3-N	0.12	0.29	0.32	0.35	0.46
Sulfate	mg/l	6.6	510	26	50	2.6
pH	pH Units	2.89	3.34	3.38	2.42	2.70
Specific Conductance @ 25°C	µmhos/cm	1930	1380	845	4190	2020
Aluminum	mg/l	71	<10	34	170	91
Calcium	mg/l	53	35	13	200	91
Iron	mg/l	220	180	110	390	140
Potassium	mg/l	67	38	15	120	59
Magnesium	mg/l	20	25	16	40	25
Manganese	mg/l	52	70	33	96	33
Sodium	mg/l	19	18	<10	40	23

Table 5
(Continued)

Parameter	Units	Sample Identification and Date				
		P2-1A (0-4) 2/19/93	P2-1B (4-8) 2/19/93	P2-1C (8-12.5) 2/19/93	P2-2A (0-3) 2/19/93	P2-2B (3-6) 2/19/93
TCLP Metals:						
Silver	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Barium	mg/l	<10	<10	<10	<10	<10
Cadmium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	mg/l	7.2	3.0	0.47	15	4.4
Mercury	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Nickel	mg/l	<1.0	1.8	<1.0	<1.0	<1.0
Lead	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Selenium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 1	No. 1	No. 1	No. 1	No. 1
pH with Deionized Water	pH units	2.76	3.32	3.26	2.26	2.56
pH of TCLP Extract	pH units	4.44	4.65	4.74	4.17	4.39
Amount of Sample Extracted	g	50.0	50.0	50.0	50.0	50.0
Volatile Organic Analyses:						
Acetone	µg/kg	<2300	<2600	<2400	<2600	<2500
Benzene	µg/kg	<2300	<2600	<2400	<2600	<2500
Bromodichloromethane	µg/kg	<2300	<2600	<2400	<2600	<2500
Bromoform	µg/kg	<2300	<2600	<2400	<2600	<2500
Bromomethane	µg/kg	<2300	<2600	<2400	<2600	<2500
2-Butanone	µg/kg	<2300	<2600	<2400	<2600	<2500
Carbon Disulfide	µg/kg	<2300	<2600	<2400	<2600	<2500
Carbon Tetrachloride	µg/kg	<2300	<2600	<2400	<2600	<2500
Chlorobenzene	µg/kg	<2300	<2600	<2400	<2600	<2500
Dibromochloromethane	µg/kg	<2300	<2600	<2400	<2600	<2500
Chloroethane	µg/kg	<2300	<2600	<2400	<2600	<2500
Chloromethane	µg/kg	<2300	<2600	<2400	<2600	<2500
Chloroform	µg/kg	<2300	<2600	<2400	<2600	<2500
1,1-Dichloroethane	µg/kg	<2300	<2600	<2400	<2600	<2500
1,2-Dichloroethane	µg/kg	<2300	<2600	<2400	<2600	<2500
1,1-Dichloroethene	µg/kg	<2300	<2600	<2400	<2600	<2500
1,2-Dichloroethene	µg/kg	<2300	<2600	<2400	<2600	<2500
1,2-Dichloropropane	µg/kg	<2300	<2600	<2400	<2600	<2500
Cis-1,3-Dichloropropene	µg/kg	<2300	<2600	<2400	<2600	<2500
Trans-1,3-Dichloropropene	µg/kg	<2300	<2600	<2400	<2600	<2500
Ethylbenzene	µg/kg	<2300	<2600	<2400	<2600	<2500
2-Hexanone	µg/kg	<2300	<2600	<2400	<2600	<2500
Methylene Chloride	µg/kg	<2300	<2600	<2400	<2600	<2500
4-Methyl-2-pentanone	µg/kg	130000	160000	140000	43000	70000
Styrene	µg/kg	<2300	<2600	<2400	<2600	<2500
1,1,2,2-Tetrachloroethane	µg/kg	<2300	<2600	<2400	<2600	<2500
Tetrachloroethene	µg/kg	<2300	<2600	<2400	<2600	<2500
Toluene	µg/kg	<2300	<2600	<2400	<2600	<2500
1,1,1-Trichloroethane	µg/kg	<2300	<2600	<2400	<2600	<2500
1,1,2-Trichloroethane	µg/kg	<2300	<2600	<2400	<2600	<2500
Trichloroethene	µg/kg	<2300	<2600	<2400	<2600	<2500
Vinyl Chloride	µg/kg	<2300	<2600	<2400	<2600	<2500
Xylenes, Total	µg/kg	<2300	<2600	<2400	<2600	<2500

Table 5
(Continued)

Parameter	Units	Sample Identification and Date				
		P2-1A (0-4) 2/19/93	P2-1B (4-8) 2/19/93	P2-1C (8-12.5) 2/19/93	P2-2A (0-3) 2/19/93	P2-2B (3-6) 2/19/93
Semivolatile Organic Analyses:						
Acenaphthene	µg/kg	<1300	<1300	<1300	<1300	<1300
Acenaphthylene	µg/kg	<1300	<1300	<1300	<1300	<1300
Anthracene	µg/kg	<1300	<1300	<1300	<1300	<1300
Bis(2-chloroethyl)ether	µg/kg	<1300	<1300	<1300	<1300	<1300
Bis(2-chloroethoxy)methane	µg/kg	<1300	<1300	<1300	<1300	<1300
Bis(2-chloroisopropyl)ether	µg/kg	<1300	<1300	<1300	<1300	<1300
Bis(2-ethylhexyl)phthalate	µg/kg	<1300	<1300	<1300	<1300	<1300
Benzo(a)pyrene	µg/kg	<1300	<1300	<1300	<1300	<1300
Benzo(a)anthracene	µg/kg	<1300	<1300	<1300	<1300	<1300
Benzo(b)fluoranthene	µg/kg	<1300	<1300	<1300	<1300	<1300
Benzo(g,h,i)perylene	µg/kg	<1300	<1300	<1300	<1300	<1300
Benzo(k)fluoranthene	µg/kg	<1300	<1300	<1300	<1300	<1300
4-Bromophenyl Phenyl Ether	µg/kg	<1300	<1300	<1300	<1300	<1300
Butylbenzyl Phthalate	µg/kg	<1300	<1300	<1300	<1300	<1300
Carbazole	µg/kg	<1300	<1300	<1300	<1300	<1300
Chrysene	µg/kg	<1300	<1300	<1300	<1300	<1300
4-Chloroaniline	µg/kg	<1300	<1300	<1300	<1300	<1300
2-Chloronaphthalene	µg/kg	<1300	<1300	<1300	<1300	<1300
2-Chlorophenol	µg/kg	<1300	<1300	<1300	<1300	<1300
4-Chlorophenyl Phenyl Ether	µg/kg	<1300	<1300	<1300	<1300	<1300
o-Cresol	µg/kg	<1300	<1300	<1300	<1300	<1300
p-Cresol	µg/kg	<1300	<1300	<1300	<1300	<1300
Dibenzo(a,h)anthracene	µg/kg	<1300	<1300	<1300	<1300	<1300
Dibenzofuran	µg/kg	<1300	<1300	<1300	<1300	<1300
2,4-Dichlorophenol	µg/kg	<1300	<1300	<1300	<1300	<1300
1,2-Dichlorobenzene	µg/kg	<1300	<1300	<1300	<1300	<1300
1,3-Dichlorobenzene	µg/kg	<1300	<1300	<1300	<1300	<1300
1,4-Dichlorobenzene	µg/kg	<1300	<1300	<1300	<1300	<1300
3,3-Dichlorobenzidine	µg/kg	<1300	<1300	<1300	<1300	<1300
Diethyl Phthalate	µg/kg	<1300	<1300	<1300	<1300	<1300
Dimethyl Phthalate	µg/kg	<1300	<1300	<1300	<1300	<1300
2,4-Dimethylphenol	µg/kg	<1300	<1300	<1300	<1300	<1300
Di-N-butyl Phthalate	µg/kg	<1300	<1300	1400	<1300	1400
4,6-Dinitro-o-cresol	µg/kg	<6600	<6600	<6600	<6600	<6400
2,4-Dinitrotoluene	µg/kg	<1300	<1300	<1300	<1300	<1300
2,6-Dinitrotoluene	µg/kg	<1300	<1300	<1300	<1300	<1300
Di-N-octyl Phthalate	µg/kg	<1300	<1300	<1300	<1300	<1300
2,4-Dinitrophenol	µg/kg	<6600	<6600	<6600	<6600	<6400
Fluoranthene	µg/kg	<1300	<1300	<1300	<1300	<1300
Fluorene	µg/kg	<1300	<1300	<1300	<1300	<1300
Hexachlorocyclopentadiene	µg/kg	<1300	<1300	<1300	<1300	<1300
Hexachlorobenzene	µg/kg	<1300	<1300	<1300	<1300	<1300
Hexachlorobutadiene	µg/kg	<1300	<1300	<1300	<1300	<1300
Hexachloroethane	µg/kg	<1300	<1300	<1300	<1300	<1300
Indeno(1,2,3-c,d)pyrene	µg/kg	<1300	<1300	<1300	<1300	<1300
Isophorone	µg/kg	<1300	<1300	<1300	<1300	<1300
2-Methylnaphthalene	µg/kg	<1300	<1300	<1300	<1300	<1300
N-Nitrosodiphenylamine	µg/kg	<1300	<1300	<1300	<1300	<1300
N-Nitroso-di-n-propylamine	µg/kg	<1300	<1300	<1300	<1300	<1300
Naphthalene	µg/kg	<1300	<1300	<1300	<1300	<1300
2-Nitroaniline	µg/kg	<6600	<6600	<6600	<6600	<6400
3-Nitroaniline	µg/kg	<6600	<6600	<6600	<6600	<6400
4-Nitroaniline	µg/kg	<6600	<6600	<6600	<6600	<6400
Nitrobenzene	µg/kg	<1300	<1300	<1300	<1300	<1300
2-Nitrophenol	µg/kg	<1300	<1300	<1300	<1300	<1300
4-Nitrophenol	µg/kg	<6600	<6600	<6600	<6600	<6400
p-chloro-m-cresol	µg/kg	<1300	<1300	<1300	<1300	<1300
Pentachlorophenol	µg/kg	<6600	<6600	<6600	<6600	<6400
Phenanthrene	µg/kg	<1300	<1300	<1300	<1300	<1300
Phenol	µg/kg	<1300	<1300	<1300	<1300	<1300
Pyrene	µg/kg	<1300	<1300	<1300	<1300	<1300
2,4,5-Trichlorophenol	µg/kg	<6600	<6600	<6600	<6600	<6400
2,4,6-Trichlorophenol	µg/kg	<1300	<1300	<1300	<1300	<1300
1,2,4-Trichlorobenzene	µg/kg	<1300	<1300	<1300	<1300	<1300

Table 5
(Continued)

Parameter	Units	Sample Identification and Date			
		P2-2C (6-9) 2/19/93	P2-3A (0-4) 2/19/93	P2-3B (4-8) 2/19/93	P2-3C (8-12) 2/19/93
Total Analyses:					
Cyanide	mg/kg	<1.9	<1.8	<2.1	<1.9
Silver	mg/kg	38.5	40.9	52.7	30.3
Arsenic	mg/kg	<35.6	39.4	74.3	<37.0
Barium	mg/kg	972	1340	2180	649
Beryllium	mg/kg	26.0	29.7	32.2	30.8
Cadmium	mg/kg	<3.56	<3.08	<3.94	<3.70
Chromium	mg/kg	303	652	442	338
Mercury	mg/kg	1.20	0.260	0.459	2.45
Molybdenum	mg/kg	34	21	35	36
Nickel	mg/kg	22.7	27.3	22.6	68.9
Lead	mg/kg	96.7	92.0	85.9	166
Antimony	mg/kg	220	144	221	576
Selenium	mg/kg	<0.380	<0.350	<0.430	<0.380
Tin	mg/kg	3400	6000	4800	4700
Columbium	mg/kg	3200	1700	2500	11000
Tantalum	mg/kg	2200	970	1300	7100
Gross Alpha	pCi/g	5200±100	4900±100	6700±100	3800±100
Gross Beta	pCi/g	2200±100	2200±100	3100±100	1800±100
Isotopes:					
Uranium-233 & 234	pCi/g	290±10	320±20	550±25	230±10
Uranium 235	pCi/g	13±2	11±3	29±6	13±3
Uranium-238	pCi/g	280±10	350±20	580±30	250±10
Thorium-230	pCi/g	670±30	710±30	690±40	860±40
Lead-210 @ 46 KeV	pCi/g	40±13	57±10	56±19	77±12
Thorium-234 @ 63.3 KeV	pCi/g	210±60	220±40	280±30	130±10
Protactinium-234m @ 1001 KeV	pCi/g	310±120	520±120	660±150	390±120
Radium 226	pCi/g	530±20	510±20	720±20	400±10
Lead-214 @ 295.2 KeV	pCi/g	400±10	390±10	450±10	310±10
Lead-214 @ 352.0 KeV	pCi/g	410±10	400±10	470±10	310±10
Bismuth-214 @ 609.4 KeV	pCi/g	400±10	380±10	460±10	300±10
Bismuth-214 @ 1120.4 KeV	pCi/g	400±10	380±10	460±10	300±10
Bismuth-214 @ 1764.7 KeV	pCi/g	370±10	360±10	420±10	280±10
Actinium-228 @ 338 KeV	pCi/g	410±10	380±20	510±10	260±10
Actinium-228 @ 911 KeV	pCi/g	450±10	420±10	560±10	300±10
Actinium-228 @ 968 KeV	pCi/g	450±10	430±10	570±10	300±10
Lead-212 @ 238 KeV	pCi/g	400±20	400±10	440±10	280±10
Bismuth-212 @ 727 KeV	pCi/g	490±20	460±20	590±20	310±20
Thallium-208 @ 583 KeV	pCi/g	430±10	390±10	540±10	270±10
Uranium-235 @ 143 KeV	pCi/g	8.5±2.9	12±3	18±5	11±2
ASTM Analysis:					
Alkalinity	mg/l $CaCO_3$	<2.00	<2.00	<2.00	<2.00
Ammonia	mg/l NH3-N	1.6	2.8	1.9	3.0
Chloride	mg/l	<0.50	<0.50	<0.50	<0.50
Fluoride	mg/l	630	610	610	650
Nitrate	mg/l NO_3-N	<0.10	<0.10	<0.10	<0.10
Sulfate	mg/l	6.9	23	22	20
pH	pH Units	2.70	2.33	2.65	2.51
Specific Conductance @ 25°C	µmhos/cm	2740	5660	2900	3520
Aluminum	mg/l	120	270	160	110
Calcium	mg/l	110	300	110	53
Iron	mg/l	280	190	640	210
Potassium	mg/l	170	130	150	110
Magnesium	mg/l	33	38	18	50
Manganese	mg/l	66	47	150	27
Sodium	mg/l	32	58	31	48

Table 5
(Continued)

Parameter	Units	Sample Identification and Date			
		P2-2C (6-9) 2/19/93	P2-3A (0-4) 2/19/93	P2-3B (4-8) 2/19/93	P2-3C (8-12) 2/19/93
TCLP Metals:					
Silver	mg/l	<0.10	<0.10	<0.10	<0.10
Arsenic	mg/l	<0.10	<0.10	<0.10	<0.10
Barium	mg/l	<10	<10	<10	<10
Cadmium	mg/l	<0.10	<0.10	<0.10	<0.10
Chromium	mg/l	4.9	20	5.0	6.8
Mercury	mg/l	<0.010	<0.010	<0.010	<0.010
Nickel	mg/l	<1.0	<1.0	<1.0	<1.0
Lead	mg/l	<0.10	0.17	<0.10	<0.10
Selenium	mg/l	<0.10	<0.10	<0.10	<0.10
TCLP Extraction Fluid Data:					
Extraction Fluid		No. 1	No. 1	No. 1	No. 1
pH with Deionized Water	pH units	2.57	2.33	2.65	2.43
pH of TCLP Extract	pH units	4.40	3.74	4.23	4.33
Amount of Sample Extracted	g	40.0	40.0	40.0	40.0
Volatile Organic Analyses:					
Acetone	µg/kg	<25000	<23000	<28000	<25000
Benzene	µg/kg	<25000	<23000	<28000	<25000
Bromodichloromethane	µg/kg	<25000	<23000	<28000	<25000
Bromoform	µg/kg	<25000	<23000	<28000	<25000
Bromomethane	µg/kg	<25000	<23000	<28000	<25000
2-Butanone	µg/kg	<25000	<23000	<28000	<25000
Carbon Disulfide	µg/kg	<25000	<23000	<28000	<25000
Carbon Tetrachloride	µg/kg	<25000	<23000	<28000	<25000
Chlorobenzene	µg/kg	<25000	<23000	<28000	<25000
Dibromochloromethane	µg/kg	<25000	<23000	<28000	<25000
Chloroethane	µg/kg	<25000	<23000	<28000	<25000
Chloromethane	µg/kg	<25000	<23000	<28000	<25000
Chloroform	µg/kg	<25000	<23000	<28000	<25000
1,1-Dichloroethane	µg/kg	<25000	<23000	<28000	<25000
1,2-Dichloroethane	µg/kg	<25000	<23000	<28000	<25000
1,1-Dichloroethene	µg/kg	<25000	<23000	<28000	<25000
1,2-Dichloroethene	µg/kg	<25000	<23000	<28000	<25000
1,2-Dichloropropane	µg/kg	<25000	<23000	<28000	<25000
Cis-1,3-Dichloropropene	µg/kg	<25000	<23000	<28000	<25000
Trans-1,3-Dichloropropene	µg/kg	<25000	<23000	<28000	<25000
Ethylbenzene	µg/kg	<25000	<23000	<28000	<25000
2-Hexanone	µg/kg	<25000	<23000	<28000	<25000
Methylene Chloride	µg/kg	<25000	<23000	<28000	<25000
4-Methyl-2-pentanone	µg/kg	68000	61000	490000	730000
Styrene	µg/kg	<25000	<23000	<28000	<25000
1,1,2,2-Tetrachloroethane	µg/kg	<25000	<23000	<28000	<25000
Tetrachloroethene	µg/kg	<25000	<23000	<28000	<25000
Toluene	µg/kg	<25000	<23000	<28000	<25000
1,1,1-Trichloroethane	µg/kg	<25000	<23000	<28000	<25000
1,1,2-Trichloroethane	µg/kg	<25000	<23000	<28000	<25000
Trichloroethene	µg/kg	<25000	<23000	<28000	<25000
Vinyl Chloride	µg/kg	<25000	<23000	<28000	<25000
Xylenes, Total	µg/kg	<25000	<23000	<28000	<25000

Table 5
(Continued)

Parameter	Units	Sample Identification and Date			
		P2-2C (6-9) 2/19/93	P2-3A (0-4) 2/19/93	P2-3B (4-8) 2/19/93	P2-3C (8-12) 2/19/93
Semivolatile Organic Analyses:					
Acenaphthene	µg/kg	<1300	<1200	<3400	<1400
Acenaphthylene	µg/kg	<1300	<1200	<3400	<1400
Anthracene	µg/kg	<1300	<1200	<3400	<1400
Bis(2-chloroethyl)ether	µg/kg	<1300	<1200	<3400	<1400
Bis(2-chloroethoxy)methane	µg/kg	<1300	<1200	<3400	<1400
Bis(2-chloroisopropyl)ether	µg/kg	<1300	<1200	<3400	<1400
Bis(2-ethylhexyl)phthalate	µg/kg	<1300	<1200	<3400	<1400
Benzo(a)pyrene	µg/kg	<1300	<1200	<3400	<1400
Benzo(a)anthracene	µg/kg	<1300	<1200	<3400	<1400
Benzo(b)fluoranthene	µg/kg	<1300	<1200	<3400	<1400
Benzo(g,h,i)perylene	µg/kg	<1300	<1200	<3400	<1400
Benzo(k)fluoranthene	µg/kg	<1300	<1200	<3400	<1400
4-Bromophenyl Phenyl Ether	µg/kg	<1300	<1200	<3400	<1400
Butylbenzyl Phthalate	µg/kg	<1300	<1200	<3400	<1400
Carbazole	µg/kg	<1300	<1200	<3400	<1400
Chrysene	µg/kg	<1300	<1200	<3400	<1400
4-Chloroaniline	µg/kg	<1300	<1200	<3400	<1400
2-Chloronaphthalene	µg/kg	<1300	<1200	<3400	<1400
2-Chlorophenol	µg/kg	<1300	<1200	<3400	<1400
4-Chlorophenyl Phenyl Ether	µg/kg	<1300	<1200	<3400	<1400
o-Cresol	µg/kg	<1300	<1200	<3400	<1400
p-Cresol	µg/kg	<1300	<1200	<3400	<1400
Dibenzo(a,h)anthracene	µg/kg	<1300	<1200	<3400	<1400
Dibenzofuran	µg/kg	<1300	<1200	<3400	<1400
2,4-Dichlorophenol	µg/kg	<1300	<1200	<3400	<1400
1,2-Dichlorobenzene	µg/kg	<1300	<1200	<3400	<1400
1,3-Dichlorobenzene	µg/kg	<1300	<1200	<3400	<1400
1,4-Dichlorobenzene	µg/kg	<1300	<1200	<3400	<1400
3,3-Dichlorobenzidine	µg/kg	<1300	<1200	<3400	<1400
Diethyl Phthalate	µg/kg	<1300	<1200	<3400	<1400
Dimethyl Phthalate	µg/kg	<1300	<1200	<3400	<1400
2,4-Dimethylphenol	µg/kg	<1300	<1200	<3400	<1400
Di-N-butyl Phthalate	µg/kg	<1300	<1200	<3400	<1400
4,6-Dinitro-o-cresol	µg/kg	<6300	<5900	<17000	<6600
2,4-Dinitrotoluene	µg/kg	<1300	<1200	<3400	<1400
2,6-Dinitrotoluene	µg/kg	<1300	<1200	<3400	<1400
Di-N-octyl Phthalate	µg/kg	<1300	<1200	<3400	<1400
2,4-Dinitrophenol	µg/kg	<6300	<5900	<17000	<6600
Fluoranthene	µg/kg	<1300	<1200	<3400	<1400
Fluorene	µg/kg	<1300	<1200	<3400	<1400
Hexachlorocyclopentadiene	µg/kg	<1300	<1200	<3400	<1400
Hexachlorobenzene	µg/kg	<1300	<1200	<3400	<1400
Hexachlorobutadiene	µg/kg	<1300	<1200	<3400	<1400
Hexachloroethane	µg/kg	<1300	<1200	<3400	<1400
Indeno(1,2,3-c,d)pyrene	µg/kg	<1300	<1200	<3400	<1400
Isophorone	µg/kg	<1300	<1200	<3400	<1400
2-Methylnaphthalene	µg/kg	<1300	<1200	<3400	<1400
N-Nitrosodiphenylamine	µg/kg	<1300	<1200	<3400	<1400
N-Nitroso-di-n-propylamine	µg/kg	<1300	<1200	<3400	<1400
Naphthalene	µg/kg	<1300	<1200	<3400	<1400
2-Nitroaniline	µg/kg	<6300	<5900	<17000	<6600
3-Nitroaniline	µg/kg	<6300	<5900	<17000	<6600
4-Nitroaniline	µg/kg	<6300	<5900	<17000	<6600
Nitrobenzene	µg/kg	<1300	<1200	<3400	<1400
2-Nitrophenol	µg/kg	<1300	<1200	<3400	<1400
4-Nitrophenol	µg/kg	<6300	<5900	<17000	<6600
p-chloro-m-cresol	µg/kg	<1300	<1200	<3400	<1400
Pentachlorophenol	µg/kg	<6300	<5900	<17000	<6600
Phenanthrene	µg/kg	<1300	<1200	<3400	<1400
Phenol	µg/kg	<1300	<1200	<3400	<1400
Pyrene	µg/kg	<1300	<1200	<3400	<1400
2,4,5-Trichlorophenol	µg/kg	<6300	<5900	<17000	<6600
2,4,6-Trichlorophenol	µg/kg	<1300	<1200	<3400	<1400
1,2,4-Trichlorobenzene	µg/kg	<1300	<1200	<3400	<1400

Table 6
Summary of Waste Chemistry Data
Pond 3 Residues
Fansteel, Inc.
Muskogee, Oklahoma

Parameter	Units	Sample Identification and Date				
		P3-1A (0-5) 2/19/93	P3-1B (5-10) 2/19/93	P3-1C (10-16) 2/19/93	P3-2A (0-5) 2/19/93	P3-2B (5-10) 2/19/93
Total Analyses:						
Cyanide	mg/kg	15	5.9	15	5.3	1.9
Silver	mg/kg	24.7	26.5	37.0	12.4	29.7
Arsenic	mg/kg	93.6	65.7	83.0	30.7	109
Barium	mg/kg	939	987	1310	452	1200
Beryllium	mg/kg	19.4	32.0	30.8	8.50	17.4
Cadmium	mg/kg	<3.70	<4.70	<5.00	<2.90	<3.50
Chromium	mg/kg	476	1110	889	154	607
Mercury	mg/kg	1.45	0.248	0.665	1.70	3.51
Molybdenum	mg/kg	40	49	40	<15	48
Nickel	mg/kg	25.9	42.0	36.0	<15.0	37.2
Lead	mg/kg	83.8	79.7	98.4	58.2	115
Antimony	mg/kg	103	143	105	<29.0	127
Selenium	mg/kg	<0.400	<0.500	<0.560	<0.340	<0.380
Tin	mg/kg	770	2800	2600	210	830
Columbium	mg/kg	1100	2100	1400	2300	1300
Tantalum	mg/kg	1000	1300	950	2200	1200
Gross Alpha	pCi/g	5800±100	5200±100	7600±100	3400±100	5500±100
Gross Beta	pCi/g	2700±100	2900±100	3800±100	1800±100	2500±100
Isotopes:						
Uranium-233 & 234	pCi/g	570±20	860±30	950±30	290±20	650±50
Uranium 235	pCi/g	20±4	46±8	43±7	14±5	33±12
Uranium-238	pCi/g	580±20	910±30	1000±100	290±20	710±60
Thorium-230	pCi/g	770±30	780±30	800±40	790±30	1100±100
Lead-210 @ 46 KeV	pCi/g	63±13	39±17	61±14	71±10	64±10
Thorium-234 @ 63.3 KeV	pCi/g	230±10	210±30	340±30	180±10	240±40
Protactinium-234m @ 1001 KeV	pCi/g	680±130	790±130	980±170	430±130	660±140
Radium 226	pCi/g	730±20	670±20	860±20	490±20	610±20
Lead-214 @ 295.2 KeV	pCi/g	450±10	460±10	500±10	360±10	430±10
Lead-214 @ 352.0 KeV	pCi/g	480±10	470±10	510±10	380±10	440±10
Bismuth-214 @ 609.4 KeV	pCi/g	460±10	450±10	500±10	360±10	430±10
Bismuth-214 @ 1120.4 KeV	pCi/g	460±10	440±10	480±10	360±10	430±10
Bismuth-214 @ 1764.7 KeV	pCi/g	440±10	430±10	460±20	340±10	400±10
Actinium-228 @ 338 KeV	pCi/g	430±10	410±10	550±10	340±10	390±10
Actinium-228 @ 911 KeV	pCi/g	470±10	450±10	600±10	360±10	420±10
Actinium-228 @ 968 KeV	pCi/g	470±10	460±10	610±20	370±10	420±10
Lead-212 @ 238 KeV	pCi/g	410±20	410±10	540±30	320±20	400±10
Bismuth-212 @ 727 KeV	pCi/g	490±30	490±20	650±20	390±20	480±20
Thallium-208 @ 583 KeV	pCi/g	450±10	400±10	580±10	350±10	400±10
Uranium-235 @ 143 KeV	pCi/g	21±3	17±3	28±3	11±3	14±3
ASTM Analysis:						
Alkalinity	mg/l $CaCO_3$	<2.00	<2.00	<2.00	<2.00	<2.00
Ammonia	mg/l NH3-N	3.8	4.0	5.1	6.1	7.5
Chloride	mg/l	<0.50	<0.50	2.2	2.3	5.9
Fluoride	mg/l	330	640	610	280	290
Nitrate	mg/l NO_3-N	2.6	0.55	<0.10	1.0	0.45
Sulfate	mg/l	2.9	5.2	9.8	2.6	540
pH	pH Units	2.99	2.34	2.47	3.06	2.65
Specific Conductance @ 25°C	µmhos/cm	1330	4620	3860	1520	2250
Aluminum	mg/l	49	59	95	51	99
Calcium	mg/l	38	200	170	20	43
Iron	mg/l	74	280	300	56	94
Potassium	mg/l	82	63	59	170	91
Magnesium	mg/l	21	43	27	15	33
Manganese	mg/l	24	86	83	16	27
Sodium	mg/l	19	37	28	22	25

Table 6
(Continued)

Parameter	Units	Sample Identification and Date				
		P3-1A (0-5) 2/19/93	P3-1B (5-10) 2/19/93	P3-1C (10-16) 2/19/93	P3-2A (0-5) 2/19/93	P3-2B (5-10) 2/19/93
TCLP Metals:						
Silver	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	mg/l	<0.10	0.21	0.18	0.1	0.10
Barium	mg/l	<10	<10	<10	<10	<10
Cadmium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	mg/l	6.7	20	15	3.6	7.5
Mercury	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Nickel	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Lead	mg/l	<0.10	0.34	0.26	0.10	0.24
Selenium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 1	No. 1	No. 1	No. 1	No. 1
pH with Deionized Water	pH units	2.74	2.20	2.27	2.97	2.45
pH of TCLP Extract	pH units	4.59	4.26	4.29	4.60	4.52
Amount of Sample Extracted	g	50.0	50.0	50.0	50.0	50.0
Volatile Organic Analyses:						
Acetone	µg/kg	<26000	<33000	<3700	<2200	81000
Benzene	µg/kg	<26000	<33000	<3700	<2200	<25000
Bromodichloromethane	µg/kg	<26000	<33000	<3700	<2200	<25000
Bromoform	µg/kg	<26000	<33000	<3700	<2200	<25000
Bromomethane	µg/kg	<26000	<33000	<3700	<2200	<25000
2-Butanone	µg/kg	<26000	<33000	<3700	<2200	<25000
Carbon Disulfide	µg/kg	<26000	<33000	<3700	<2200	<25000
Carbon Tetrachloride	µg/kg	<26000	<33000	<3700	<2200	<25000
Chlorobenzene	µg/kg	<26000	<33000	<3700	<2200	<25000
Dibromochloromethane	µg/kg	<26000	<33000	<3700	<2200	<25000
Chloroethane	µg/kg	<26000	<33000	<3700	<2200	<25000
Chloromethane	µg/kg	<26000	<33000	<3700	<2200	<25000
Chloroform	µg/kg	<26000	<33000	<3700	<2200	<25000
1,1-Dichloroethane	µg/kg	<26000	<33000	<3700	<2200	<25000
1,2-Dichloroethane	µg/kg	<26000	<33000	<3700	<2200	<25000
1,1-Dichloroethene	µg/kg	<26000	<33000	<3700	<2200	<25000
1,2-Dichloroethene	µg/kg	<26000	<33000	<3700	<2200	<25000
1,2-Dichloropropane	µg/kg	<26000	<33000	<3700	<2200	<25000
Cis-1,3-Dichloropropene	µg/kg	<26000	<33000	<3700	<2200	<25000
Trans-1,3-Dichloropropene	µg/kg	<26000	<33000	<3700	<2200	<25000
Ethylbenzene	µg/kg	<26000	<33000	<3700	<2200	<25000
2-Hexanone	µg/kg	<26000	<33000	<3700	<2200	<25000
Methylene Chloride	µg/kg	<26000	<33000	<3700	<2200	<25000
4-Methyl-2-pentanone	µg/kg	150000	780000	130000	34000	330000
Styrene	µg/kg	<26000	<33000	<3700	<2200	<25000
1,1,2,2-Tetrachloroethane	µg/kg	<26000	<33000	<3700	<2200	<25000
Tetrachloroethene	µg/kg	<26000	<33000	<3700	<2200	<25000
Toluene	µg/kg	<26000	<33000	<3700	<2200	<25000
1,1,1-Trichloroethane	µg/kg	<26000	<33000	<3700	<2200	<25000
1,1,2-Trichloroethane	µg/kg	<26000	<33000	<3700	<2200	<25000
Trichloroethene	µg/kg	<26000	<33000	<3700	<2200	<25000
Vinyl Chloride	µg/kg	<26000	<33000	<3700	<2200	<25000
Xylenes, Total	µg/kg	<26000	<33000	<3700	<2200	<25000

Table 6
(Continued)

Parameter	Units	Sample Identification and Date				
		P3-1A (0-5) 2/19/93	P3-1B (5-10) 2/19/93	P3-1C (10-16) 2/19/93	P3-2A (0-5) 2/19/93	P3-2B (5-10) 2/19/93
Semivolatile Organic Analyses:						
Acenaphthene	µg/kg	<1300	<1300	<2000	<3200	<3400
Acenaphthylene	µg/kg	<1300	<1300	<2000	<3200	<3400
Anthracene	µg/kg	<1300	<1300	<2000	<3200	<3400
Bis(2-chloroethyl)ether	µg/kg	<1300	<1300	<2000	<3200	<3400
Bis(2-chloroethoxy)methane	µg/kg	<1300	<1300	<2000	<3200	<3400
Bis(2-chloroisopropyl)ether	µg/kg	<1300	<1300	<2000	<3200	<3400
Bis(2-ethylhexyl)phthalate	µg/kg	<1300	<1300	<2000	<3200	<3400
Benzo(a)pyrene	µg/kg	<1300	<1300	<2000	<3200	<3400
Benzo(a)anthracene	µg/kg	<1300	<1300	<2000	<3200	<3400
Benzo(b)fluoranthene	µg/kg	<1300	<1300	<2000	<3200	<3400
Benzo(g,h,i)perylene	µg/kg	<1300	<1300	<2000	<3200	<3400
Benzo(k)fluoranthene	µg/kg	<1300	<1300	<2000	<3200	<3400
4-Bromophenyl Phenyl Ether	µg/kg	<1300	<1300	<2000	<3200	<3400
Butylbenzyl Phthalate	µg/kg	<1300	<1300	<2000	<3200	<3400
Carbazole	µg/kg	<1300	<1300	<2000	<3200	<3400
Chrysene	µg/kg	<1300	<1300	<2000	<3200	<3400
4-Chloroaniline	µg/kg	<1300	<1300	<2000	<3200	<3400
2-Chloronaphthalene	µg/kg	<1300	<1300	<2000	<3200	<3400
2-Chlorophenol	µg/kg	<1300	<1300	<2000	<3200	<3400
4-Chlorophenyl Phenyl Ether	µg/kg	<1300	<1300	<2000	<3200	<3400
o-Cresol	µg/kg	<1300	<1300	<2000	<3200	<3400
p-Cresol	µg/kg	<1300	<1300	<2000	<3200	<3400
Dibenzo(a,h)anthracene	µg/kg	<1300	<1300	<2000	<3200	<3400
Dibenzofuran	µg/kg	<1300	<1300	<2000	<3200	<3400
2,4-Dichlorophenol	µg/kg	<1300	<1300	<2000	<3200	<3400
1,2-Dichlorobenzene	µg/kg	<1300	<1300	<2000	<3200	<3400
1,3-Dichlorobenzene	µg/kg	<1300	<1300	<2000	<3200	<3400
1,4-Dichlorobenzene	µg/kg	<1300	<1300	<2000	<3200	<3400
3,3-Dichlorobenzidine	µg/kg	<1300	<1300	<2000	<3200	<3400
Diethyl Phthalate	µg/kg	<1300	<1300	<2000	<3200	<3400
Dimethyl Phthalate	µg/kg	<1300	<1300	<2000	<3200	<3400
2,4-Dimethylphenol	µg/kg	<1300	<1300	<2000	<3200	<3400
Di-N-butyl Phthalate	µg/kg	1600	<1300	2700	<3200	<3400
4,6-Dinitro-o-cresol	µg/kg	<6600	<6600	<9900	<16000	<16000
2,4-Dinitrotoluene	µg/kg	<1300	<1300	<2000	<3200	<3400
2,6-Dinitrotoluene	µg/kg	<1300	<1300	<2000	<3200	<3400
Di-N-octyl Phthalate	µg/kg	<1300	<1300	<2000	<3200	<3400
2,4-Dinitrophenol	µg/kg	<6600	<6600	<9900	<16000	<16000
Fluoranthene	µg/kg	<1300	<1300	<2000	<3200	<3400
Fluorene	µg/kg	<1300	<1300	<2000	<3200	<3400
Hexachlorocyclopentadiene	µg/kg	<1300	<1300	<2000	<3200	<3400
Hexachlorobenzene	µg/kg	<1300	<1300	<2000	<3200	<3400
Hexachlorobutadiene	µg/kg	<1300	<1300	<2000	<3200	<3400
Hexachloroethane	µg/kg	<1300	<1300	<2000	<3200	<3400
Indeno(1,2,3-c,d)pyrene	µg/kg	<1300	<1300	<2000	<3200	<3400
Isophorone	µg/kg	<1300	<1300	<2000	<3200	<3400
2-Methylnaphthalene	µg/kg	<1300	<1300	<2000	<3200	<3400
N-Nitrosodiphenylamine	µg/kg	<1300	<1300	<2000	<3200	<3400
N-Nitroso-di-n-propylamine	µg/kg	<1300	<1300	<2000	<3200	<3400
Naphthalene	µg/kg	<1300	<1300	<2000	<3200	<3400
2-Nitroaniline	µg/kg	<6600	<6600	<9900	<16000	<16000
3-Nitroaniline	µg/kg	<6600	<6600	<9900	<16000	<16000
4-Nitroaniline	µg/kg	<6600	<6600	<9900	<16000	<16000
Nitrobenzene	µg/kg	<1300	<1300	<2000	<3200	<3400
2-Nitrophenol	µg/kg	<1300	<1300	<2000	<3200	<3400
4-Nitrophenol	µg/kg	<6600	<6600	<9900	<16000	<16000
p-chloro-m-cresol	µg/kg	<1300	<1300	<2000	<3200	<3400
Pentachlorophenol	µg/kg	<6600	<6600	<9900	<16000	<16000
Phenanthrene	µg/kg	<1300	<1300	<2000	<3200	<3400
Phenol	µg/kg	<1300	<1300	<2000	<3200	<3400
Pyrene	µg/kg	<1300	<1300	<2000	<3200	<3400
2,4,5-Trichlorophenol	µg/kg	<6600	<6600	<9900	<16000	<16000
2,4,6-Trichlorophenol	µg/kg	<1300	<1300	<2000	<3200	<3400
1,2,4-Trichlorobenzene	µg/kg	<1300	<1300	<2000	<3200	<3400

Table 6
(Continued)

Parameter	Units	Sample Identification and Date				
		P3-2C (10-15) 2/19/93	P3-3A (0-5) 2/19/93	P3-3B (5-10) 2/19/93	P3-3C (10-13) 2/19/93	P3-4A (0-3) 2/19/93
Total Analyses:						
Cyanide	mg/kg	<2.4	3.1	42	<2.5	6.4
Silver	mg/kg	30.4	34.4	19.4	19.3	22.2
Arsenic	mg/kg	107	<45.0	<40.0	47.9	<42.0
Barium	mg/kg	884	757	665	690	763
Beryllium	mg/kg	39.8	19.1	22.2	24.0	24.5
Cadmium	mg/kg	<4.50	5.90	<4.00	<4.60	<4.20
Chromium	mg/kg	1970	580	813	867	704
Mercury	mg/kg	0.286	0.598	<0.110	0.135	0.142
Molybdenum	mg/kg	45	31	36	35	45
Nickel	mg/kg	56.4	<22.0	31.3	50.7	26.3
Lead	mg/kg	98.6	<45.0	45.4	48.3	57.1
Antimony	mg/kg	197	61.4	74.2	93.2	171
Selenium	mg/kg	<0.480	<0.470	<0.450	<0.500	<0.470
Tin	mg/kg	1400	830	1600	2400	2900
Columbium	mg/kg	2600	720	1300	1900	1900
Tantalum	mg/kg	1100	610	590	1300	1000
Gross Alpha	pCi/g	6300±100	5400±100	3300±100	5500±100	5900±100
Gross Beta	pCi/g	3100±100	2900±100	1700±100	2700±100	2700±100
Isotopes:						
Uranium-233 & 234	pCi/g	800±30	510±20	420±20	340±20	420±40
Uranium 235	pCi/g	45±7	30±5	42±6	14±3	22±10
Uranium-238	pCi/g	870±30	560±20	460±20	340±20	430±40
Thorium-230	pCi/g	1200±100	950±40	690±30	920±40	700±30
Lead-210 @ 46 KeV	pCi/g	50±14	23±17	44±12	71±14	88±18
Thorium-234 @ 63.3 KeV	pCi/g	310±20	290±20	250±30	220±40	280±20
Protactinium-234m @ 1001 KeV	pCi/g	1000±200	830±130	670±110	480±90	650±100
Radium 226	pCi/g	840±20	720±20	550±20	590±20	660±20
Lead-214 @ 295.2 KeV	pCi/g	490±10	530±10	300±10	450±10	420±10
Lead-214 @ 352.0 KeV	pCi/g	510±10	540±10	320±10	460±10	440±10
Bismuth-214 @ 609.4 KeV	pCi/g	490±10	520±10	300±10	450±10	420±10
Bismuth-214 @ 1120.4 KeV	pCi/g	490±10	510±10	290±10	450±10	430±10
Bismuth-214 @ 1764.7 KeV	pCi/g	460±10	490±10	280±10	410±10	410±10
Actinium-228 @ 338 KeV	pCi/g	400±20	470±20	260±10	420±20	360±10
Actinium-228 @ 911 KeV	pCi/g	450±10	520±10	290±10	470±10	400±10
Actinium-228 @ 968 KeV	pCi/g	460±10	540±10	300±10	480±10	400±10
Lead-212 @ 238 KeV	pCi/g	400±20	490±10	250±20	440±10	350±20
Bismuth-212 @ 727 KeV	pCi/g	480±20	570±30	320±10	530±30	420±20
Thallium-208 @ 583 KeV	pCi/g	440±10	480±10	270±10	440±10	380±10
Uranium-235 @ 143 KeV	pCi/g	25±3	20±3	15±3	13±3	17±3
ASTM Analysis:						
Alkalinity	mg/l $CaCO_3$	<2.00	<2.00	<2.00	<2.00	<2.00
Ammonia	mg/l NH3-N	3.9	6.7	6.9	7.4	4.7
Chloride	mg/l	<0.50	4.1	<0.50	<0.50	3.5
Fluoride	mg/l	660	540	670	640	650
Nitrate	mg/l NO_3-N	<0.10	0.87	<0.10	0.34	<0.10
Sulfate	mg/l	540	2.7	3.0	5.2	2.7
pH	pH Units	2.10	2.67	2.63	2.66	2.42
Specific Conductance @ 25°C	µmhos/cm	5900	2400	6220	3910	4000
Aluminum	mg/l	73	53	25	53	40
Calcium	mg/l	96	71	270	250	230
Iron	mg/l	260	150	280	380	200
Potassium	mg/l	86	43	38	47	45
Magnesium	mg/l	29	30	48	47	55
Manganese	mg/l	27	46	71	85	50
Sodium	mg/l	36	17	32	29	28

Table 6
(Continued)

Parameter	Units	Sample Identification and Date				
		P3-2C (10-15) 2/19/93	P3-3A (0-5) 2/19/93	P3-3B (5-10) 2/19/93	P3-3C (10-13) 2/19/93	P3-4A (0-3) 2/19/93
TCLP Metals:						
Silver	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	mg/l	0.56	<0.10	<0.10	<0.10	0.15
Barium	mg/l	<10	<10	<10	<10	<10
Cadmium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	mg/l	36	10	13	13	13
Mercury	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Nickel	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Lead	mg/l	0.36	0.20	<0.10	<0.10	0.17
Selenium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 1	No. 1	No. 1	No. 1	No. 1
pH with Deionized Water	pH units	1.96	2.46	2.35	2.51	2.32
pH of TCLP Extract	pH units	4.33	4.53	4.28	4.25	4.26
Amount of Sample Extracted	g	50.0	50.0	50.0	50.0	50.0
Volatile Organic Analyses:						
Acetone	µg/kg	<31000	<31000	<30000	<33000	<30000
Benzene	µg/kg	<31000	<31000	<30000	<33000	<30000
Bromodichloromethane	µg/kg	<31000	<31000	<30000	<33000	<30000
Bromoform	µg/kg	<31000	<31000	<30000	<33000	<30000
Bromomethane	µg/kg	<31000	<31000	<30000	<33000	<30000
2-Butanone	µg/kg	<31000	<31000	<30000	<33000	<30000
Carbon Disulfide	µg/kg	<31000	<31000	<30000	<33000	<30000
Carbon Tetrachloride	µg/kg	<31000	<31000	<30000	<33000	<30000
Chlorobenzene	µg/kg	<31000	<31000	<30000	<33000	<30000
Dibromochloromethane	µg/kg	<31000	<31000	<30000	<33000	<30000
Chloroethane	µg/kg	<31000	<31000	<30000	<33000	<30000
Chloromethane	µg/kg	<31000	<31000	<30000	<33000	<30000
Chloroform	µg/kg	<31000	<31000	<30000	<33000	<30000
1,1-Dichloroethane	µg/kg	<31000	<31000	<30000	<33000	<30000
1,2-Dichloroethane	µg/kg	<31000	<31000	<30000	<33000	<30000
1,1-Dichloroethene	µg/kg	<31000	<31000	<30000	<33000	<30000
1,2-Dichloroethene	µg/kg	<31000	<31000	<30000	<33000	<30000
1,2-Dichloropropane	µg/kg	<31000	<31000	<30000	<33000	<30000
Cis-1,3-Dichloropropene	µg/kg	<31000	<31000	<30000	<33000	<30000
Trans-1,3-Dichloropropene	µg/kg	<31000	<31000	<30000	<33000	<30000
Ethylbenzene	µg/kg	<31000	<31000	<30000	<33000	<30000
2-Hexanone	µg/kg	<31000	<31000	<30000	<33000	<30000
Methylene Chloride	µg/kg	<31000	<31000	<30000	<33000	<30000
4-Methyl-2-pentanone	µg/kg	1300000	330000	850000	830000	660000
Styrene	µg/kg	<31000	<31000	<30000	<33000	<30000
1,1,2,2-Tetrachloroethane	µg/kg	<31000	<31000	<30000	<33000	<30000
Tetrachloroethene	µg/kg	<31000	<31000	<30000	<33000	<30000
Toluene	µg/kg	<31000	<31000	<30000	<33000	<30000
1,1,1-Trichloroethane	µg/kg	<31000	<31000	<30000	<33000	<30000
1,1,2-Trichloroethane	µg/kg	<31000	<31000	<30000	<33000	<30000
Trichloroethene	µg/kg	<31000	<31000	<30000	<33000	<30000
Vinyl Chloride	µg/kg	<31000	<31000	<30000	<33000	<30000
Xylenes, Total	µg/kg	<31000	<31000	<30000	<33000	<30000

Table 6
(Continued)

Parameter	Units	Sample Identification and Date				
		P3-2C (10-15) 2/19/93	P3-3A (0-5) 2/19/93	P3-3B (5-10) 2/19/93	P3-3C (10-13) 2/19/93	P3-4A (0-3) 2/19/93
Semivolatile Organic Analyses:						
Acenaphthene	µg/kg	<1300	<3400	<660	<660	<660
Acenaphthylene	µg/kg	<1300	<3400	<660	<660	<660
Anthracene	µg/kg	<1300	<3400	<660	<660	<660
Bis(2-chloroethyl)ether	µg/kg	<1300	<3400	<660	<660	<660
Bis(2-chloroethoxy)methane	µg/kg	<1300	<3400	<660	<660	<660
Bis(2-chloroisopropyl)ether	µg/kg	<1300	<3400	<660	<660	<660
Bis(2-ethylhexyl)phthalate	µg/kg	<1300	<3400	<660	<660	<660
Benzo(a)pyrene	µg/kg	<1300	<3400	<660	<660	<660
Benzo(a)anthracene	µg/kg	<1300	<3400	<660	<660	<660
Benzo(b)fluoranthene	µg/kg	<1300	<3400	<660	<660	<660
Benzo(g,h,i)perylene	µg/kg	<1300	<3400	<660	<660	<660
Benzo(k)fluoranthene	µg/kg	<1300	<3400	<660	<660	<660
4-Bromophenyl Phenyl Ether	µg/kg	<1300	<3400	<660	<660	<660
Butylbenzyl Phthalate	µg/kg	<1300	<3400	<660	<660	<660
Carbazole	µg/kg	<1300	<3400	<660	<660	<660
Chrysene	µg/kg	<1300	<3400	<660	<660	<660
4-Chloroaniline	µg/kg	<1300	<3400	<660	<660	<660
2-Chloronaphthalene	µg/kg	<1300	<3400	<660	<660	<660
2-Chlorophenol	µg/kg	<1300	<3400	<660	<660	<660
4-Chlorophenyl Phenyl Ether	µg/kg	<1300	<3400	<660	<660	<660
o-Cresol	µg/kg	<1300	<3400	<660	<660	<660
p-Cresol	µg/kg	<1300	<3400	<660	<660	<660
Dibenzo(a,h)anthracene	µg/kg	<1300	<3400	<660	<660	<660
Dibenzofuran	µg/kg	<1300	<3400	<660	<660	<660
2,4-Dichlorophenol	µg/kg	<1300	<3400	<660	<660	<660
1,2-Dichlorobenzene	µg/kg	<1300	<3400	<660	<660	<660
1,3-Dichlorobenzene	µg/kg	<1300	<3400	<660	<660	<660
1,4-Dichlorobenzene	µg/kg	<1300	<3400	<660	<660	<660
3,3-Dichlorobenzidine	µg/kg	<1300	<3400	<660	<660	<660
Diethyl Phthalate	µg/kg	<1300	<3400	<660	<660	<660
Dimethyl Phthalate	µg/kg	<1300	<3400	<660	<660	<660
2,4-Dimethylphenol	µg/kg	<1300	<3400	<660	<660	<660
Di-N-butyl Phthalate	µg/kg	<1300	<3400	<660	<660	700
4,6-Dinitro-o-cresol	µg/kg	<6600	<17000	<3200	<3200	<3400
2,4-Dinitrotoluene	µg/kg	<1300	<3400	<660	<660	<660
2,6-Dinitrotoluene	µg/kg	<1300	<3400	<660	<660	<660
Di-N-octyl Phthalate	µg/kg	<1300	<3400	<660	<660	<660
2,4-Dinitrophenol	µg/kg	<6600	<17000	<3200	<3200	<3400
Fluoranthene	µg/kg	<1300	<3400	<660	<660	<660
Fluorene	µg/kg	<1300	<3400	<660	<660	<660
Hexachlorocyclopentadiene	µg/kg	<1300	<3400	<660	<660	<660
Hexachlorobenzene	µg/kg	<1300	<3400	<660	<660	<660
Hexachlorobutadiene	µg/kg	<1300	<3400	<660	<660	<660
Hexachloroethane	µg/kg	<1300	<3400	<660	<660	<660
Indeno(1,2,3-c,d)pyrene	µg/kg	<1300	<3400	<660	<660	<660
Isophorone	µg/kg	<1300	<3400	<660	<660	<660
2-Methylnaphthalene	µg/kg	<1300	<3400	<660	<660	<660
N-Nitrosodiphenylamine	µg/kg	<1300	<3400	<660	<660	<660
N-Nitroso-di-n-propylamine	µg/kg	<1300	<3400	<660	<660	<660
Naphthalene	µg/kg	<1300	<3400	<660	<660	<660
2-Nitroaniline	µg/kg	<6600	<17000	<3200	<3200	<3400
3-Nitroaniline	µg/kg	<6600	<17000	<3200	<3200	<3400
4-Nitroaniline	µg/kg	<6600	<17000	<3200	<3200	<3400
Nitrobenzene	µg/kg	<1300	<3400	<660	<660	<660
2-Nitrophenol	µg/kg	<1300	<3400	<660	<660	<660
4-Nitrophenol	µg/kg	<6600	<17000	<3200	<3200	<3400
p-chloro-m-cresol	µg/kg	<1300	<3400	<660	<660	<660
Pentachlorophenol	µg/kg	<6600	<17000	<3200	<3200	<3400
Phenanthrene	µg/kg	<1300	<3400	<660	<660	<660
Phenol	µg/kg	<1300	<3400	<660	<660	<660
Pyrene	µg/kg	<1300	<3400	<660	<660	<660
2,4,5-Trichlorophenol	µg/kg	<6600	<17000	<3200	<3200	<3400
2,4,6-Trichlorophenol	µg/kg	<1300	<3400	<660	<660	<660
1,2,4-Trichlorobenzene	µg/kg	<1300	<3400	<660	<660	<660

Table 6
(Continued)

Parameter	Units	Sample Identification and Date				
		P3-4B (3-6) 2/19/93	P3-4C (6-9) 2/19/93	P3-5A (0-3) 2/19/93	P3-5B (3-6) 2/19/93	P3-5C (6-9) 2/19/93
Total Analyses:						
Cyanide	mg/kg	110	36	<2.1	7.6	160
Silver	mg/kg	18.1	32.6	26.0	9.60	14.0
Arsenic	mg/kg	<50.0	<56.0	<38.0	<48.0	57.2
Barium	mg/kg	558	1720	942	288	534
Beryllium	mg/kg	21.2	30.9	18.4	20.8	22.9
Cadmium	mg/kg	<5.00	<5.60	<3.80	<4.80	<4.10
Chromium	mg/kg	430	1370	428	636	692
Mercury	mg/kg	<0.140	0.228	0.687	0.299	0.188
Molybdenum	mg/kg	<25	47	32	42	39
Nickel	mg/kg	<25.0	51.8	<19.0	34.2	40.1
Lead	mg/kg	56.8	137	73.1	67.5	65.8
Antimony	mg/kg	<50.0	105	49.4	241	174
Selenium	mg/kg	<0.540	<0.600	<0.410	<0.480	<0.440
Tin	mg/kg	1000	3900	660	3300	3000
Columbium	mg/kg	1700	1600	730	2300	4400
Tantalum	mg/kg	1100	1100	580	260	740
Gross Alpha	pCi/g	6400±100	6900±100	6500±100	840±40	4400±100
Gross Beta	pCi/g	3700±100	3800±100	3100±100	610±20	2100±100
Isotopes:						
Uranium-233 & 234	pCi/g	820±30	1000±100	820±30	170±20	350±20
Uranium 235	pCi/g	32±6	41±6	39±6	12±5	20±5
Uranium-238	pCi/g	850±30	1100±100	870±30	180±20	370±20
Thorium-230	pCi/g	850±40	810±30	430±20	210±20	490±30
Lead-210 @ 46 KeV	pCi/g	73±15	52±22	77±11	32±9	69±9
Thorium-234 @ 63.3 KeV	pCi/g	240±30	340±20	320±20	110±20	240±30
Protactinium-234m @ 1001 KeV	pCi/g	770±150	780±170	840±140	300±60	560±120
Radium 226	pCi/g	680±20	820±30	740±20	170±10	480±10
Lead-214 @ 295.2 KeV	pCi/g	440±10	470±10	510±10	90±3	320±10
Lead-214 @ 352.0 KeV	pCi/g	450±10	490±10	520±10	95±3	330±10
Bismuth-214 @ 609.4 KeV	pCi/g	440±10	480±10	500±10	90±3	310±10
Bismuth-214 @ 1120.4 KeV	pCi/g	440±10	470±10	500±10	93±4	310±10
Bismuth-214 @ 1764.7 KeV	pCi/g	400±10	420±10	460±10	84±4	290±10
Actinium-228 @ 338 KeV	pCi/g	470±20	620±20	440±10	85±4	310±10
Actinium-228 @ 911 KeV	pCi/g	530±10	680±10	470±10	94±3	350±10
Actinium-228 @ 968 KeV	pCi/g	540±10	690±10	490±10	98±4	350±10
Lead-212 @ 238 KeV	pCi/g	500±20	600±30	440±10	88±3	320±10
Bismuth-212 @ 727 KeV	pCi/g	580±20	720±30	520±20	100±10	380±20
Thallium-208 @ 583 KeV	pCi/g	500±10	640±20	440±10	88±3	320±10
Uranium-235 @ 143 KeV	pCi/g	21±3	21±4	21±3	5.7±1.4	14±3
ASTM Analysis:						
Alkalinity	mg/l $CaCO_3$	<2.00	<2.00	<2.00	3.00	<2.00
Ammonia	mg/l NH3-N	5.0	2.9	5.4	4.3	5.6
Chloride	mg/l	<0.50	2.6	1.6	48	8.7
Fluoride	mg/l	630	640	650	32	630
Nitrate	mg/l NO_3-N	<0.10	0.45	0.83	0.63	0.67
Sulfate	mg/l	5.4	6.0	2.9	210	3.1
pH	pH Units	2.47	2.37	2.72	5.56	2.94
Specific Conductance @ 25°C	µmhos/cm	4240	4550	2850	714	2910
Aluminum	mg/l	100	100	27	<10	28
Calcium	mg/l	150	170	120	160	160
Iron	mg/l	340	310	200	<10	300
Potassium	mg/l	60	21	48	14	35
Magnesium	mg/l	26	18	51	25	45
Manganese	mg/l	99	140	51	20	67
Sodium	mg/l	29	31	21	16	21

Table 6
(Continued)

Parameter	Units	Sample Identification and Date				
		P3-4B (3-6) 2/19/93	P3-4C (6-9) 2/19/93	P3-5A (0-3) 2/19/93	P3-5B (3-6) 2/19/93	P3-5C (6-9) 2/19/93
TCLP Metals:						
Silver	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	mg/l	<0.10	<0.10	<0.10	0.15	<0.10
Barium	mg/l	<10	<10	<10	<10	<10
Cadmium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	mg/l	15	18	9.2	<0.10	10
Mercury	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Nickel	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Lead	mg/l	0.17	0.20	<0.10	<0.10	<0.10
Selenium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 1	No. 1	No. 1	No. 1	No. 1
pH with Deionized Water	pH units	2.29	2.17	2.64	6.26	2.84
pH of TCLP Extract	pH units	4.27	4.27	4.46	5.10	4.39
Amount of Sample Extracted	g	50.0	50.0	50.0	50.0	50.0
Volatile Organic Analyses:						
Acetone	µg/kg	<35000	<39000	<27000	<31000	<28000
Benzene	µg/kg	<35000	<39000	<27000	<31000	<28000
Bromodichloromethane	µg/kg	<35000	<39000	<27000	<31000	<28000
Bromoform	µg/kg	<35000	<39000	<27000	<31000	<28000
Bromomethane	µg/kg	<35000	<39000	<27000	<31000	<28000
2-Butanone	µg/kg	<35000	<39000	<27000	<31000	<28000
Carbon Disulfide	µg/kg	<35000	<39000	<27000	<31000	<28000
Carbon Tetrachloride	µg/kg	<35000	<39000	<27000	<31000	<28000
Chlorobenzene	µg/kg	<35000	<39000	<27000	<31000	<28000
Dibromochloromethane	µg/kg	<35000	<39000	<27000	<31000	<28000
Chloroethane	µg/kg	<35000	<39000	<27000	<31000	<28000
Chloromethane	µg/kg	<35000	<39000	<27000	<31000	<28000
Chloroform	µg/kg	<35000	<39000	<27000	<31000	<28000
1,1-Dichloroethane	µg/kg	<35000	<39000	<27000	<31000	<28000
1,2-Dichloroethane	µg/kg	<35000	<39000	<27000	<31000	<28000
1,1-Dichloroethene	µg/kg	<35000	<39000	<27000	<31000	<28000
1,2-Dichloroethene	µg/kg	<35000	<39000	<27000	<31000	<28000
1,2-Dichloropropane	µg/kg	<35000	<39000	<27000	<31000	<28000
Cis-1,3-Dichloropropene	µg/kg	<35000	<39000	<27000	<31000	<28000
Trans-1,3-Dichloropropene	µg/kg	<35000	<39000	<27000	<31000	<28000
Ethylbenzene	µg/kg	<35000	<39000	<27000	<31000	<28000
2-Hexanone	µg/kg	<35000	<39000	<27000	<31000	<28000
Methylene Chloride	µg/kg	<35000	<39000	<27000	<31000	<28000
4-Methyl-2-pentanone	µg/kg	880000	800000	200000	750000	600000
Styrene	µg/kg	<35000	<39000	<27000	<31000	<28000
1,1,2,2-Tetrachloroethane	µg/kg	<35000	<39000	<27000	<31000	<28000
Tetrachloroethene	µg/kg	<35000	<39000	<27000	<31000	<28000
Toluene	µg/kg	<35000	<39000	<27000	<31000	<28000
1,1,1-Trichloroethane	µg/kg	<35000	<39000	<27000	<31000	<28000
1,1,2-Trichloroethane	µg/kg	<35000	<39000	<27000	<31000	<28000
Trichloroethene	µg/kg	<35000	<39000	<27000	<31000	<28000
Vinyl Chloride	µg/kg	<35000	<39000	<27000	<31000	<28000
Xylenes, Total	µg/kg	<35000	<39000	<27000	<31000	<28000

Table 6
(Continued)

Parameter	Units	Sample Identification and Date				
		P3-4B (3-6) 2/19/93	P3-4C (6-9) 2/19/93	P3-5A (0-3) 2/19/93	P3-5B (3-6) 2/19/93	P3-5C (6-9) 2/19/93
Semivolatile Organic Analyses:						
Acenaphthene	µg/kg	<990	<990	<660	<660	<660
Acenaphthylene	µg/kg	<990	<990	<660	<660	<660
Anthracene	µg/kg	<990	<990	<660	<660	<660
Bis(2-chloroethyl)ether	µg/kg	<990	<990	<660	<660	<660
Bis(2-chloroethoxy)methane	µg/kg	<990	<990	<660	<660	<660
Bis(2-chloroisopropyl)ether	µg/kg	<990	<990	<660	<660	<660
Bis(2-ethylhexyl)phthalate	µg/kg	<990	<990	<660	<660	<660
Benzo(a)pyrene	µg/kg	<990	<990	<660	<660	<660
Benzo(a)anthracene	µg/kg	<990	<990	<660	<660	<660
Benzo(b)fluoranthene	µg/kg	<990	<990	<660	<660	<660
Benzo(g,h,i)perylene	µg/kg	<990	<990	<660	<660	<660
Benzo(k)fluoranthene	µg/kg	<990	<990	<660	<660	<660
4-Bromophenyl Phenyl Ether	µg/kg	<990	<990	<660	<660	<660
Butylbenzyl Phthalate	µg/kg	<990	<990	<660	<660	<660
Carbazole	µg/kg	<990	<990	<660	<660	<660
Chrysene	µg/kg	<990	<990	<660	<660	<660
4-Chloroaniline	µg/kg	<990	<990	<660	<660	<660
2-Chloronaphthalene	µg/kg	<990	<990	<660	<660	<660
2-Chlorophenol	µg/kg	<990	<990	<660	<660	<660
4-Chlorophenyl Phenyl Ether	µg/kg	<990	<990	<660	<660	<660
o-Cresol	µg/kg	<990	<990	<660	<660	<660
p-Cresol	µg/kg	<990	<990	<660	<660	<660
Dibenzo(a,h)anthracene	µg/kg	<990	<990	<660	<660	<660
Dibenzofuran	µg/kg	<990	<990	<660	<660	<660
2,4-Dichlorophenol	µg/kg	<990	<990	<660	<660	<660
1,2-Dichlorobenzene	µg/kg	<990	<990	<660	<660	<660
1,3-Dichlorobenzene	µg/kg	<990	<990	<660	<660	<660
1,4-Dichlorobenzene	µg/kg	<990	<990	<660	<660	<660
3,3-Dichlorobenzidine	µg/kg	<990	<990	<660	<660	<660
Diethyl Phthalate	µg/kg	<990	<990	<660	<660	<660
Dimethyl Phthalate	µg/kg	<990	<990	<660	<660	<660
2,4-Dimethylphenol	µg/kg	<990	<990	<660	<660	<660
Di-N-butyl Phthalate	µg/kg	<990	<990	1600	760	<660
4,6-Dinitro-o-cresol	µg/kg	<5100	<4800	<3200	<3400	<3200
2,4-Dinitrotoluene	µg/kg	<990	<990	<660	<660	<660
2,6-Dinitrotoluene	µg/kg	<990	<990	<660	<660	<660
Di-N-octyl Phthalate	µg/kg	<990	<990	<660	<660	<660
2,4-Dinitrophenol	µg/kg	<5100	<4800	<3200	<3400	<3200
Fluoranthene	µg/kg	<990	<990	<660	<660	<660
Fluorene	µg/kg	<990	<990	<660	<660	<660
Hexachlorocyclopentadiene	µg/kg	<990	<990	<660	<660	<660
Hexachlorobenzene	µg/kg	<990	<990	<660	<660	<660
Hexachlorobutadiene	µg/kg	<990	<990	<660	<660	<660
Hexachloroethane	µg/kg	<990	<990	<660	<660	<660
Indeno(1,2,3-c,d)pyrene	µg/kg	<990	<990	<660	<660	<660
Isophorone	µg/kg	<990	<990	<660	<660	<660
2-Methylnaphthalene	µg/kg	<990	<990	<660	<660	<660
N-Nitrosodiphenylamine	µg/kg	<990	<990	<660	<660	<660
N-Nitroso-di-n-propylamine	µg/kg	<990	<990	<660	<660	<660
Naphthalene	µg/kg	<990	<990	<660	<660	<660
2-Nitroaniline	µg/kg	<5100	<4800	<3200	<3400	<3200
3-Nitroaniline	µg/kg	<5100	<4800	<3200	<3400	<3200
4-Nitroaniline	µg/kg	<5100	<4800	<3200	<3400	<3200
Nitrobenzene	µg/kg	<990	<990	<660	<660	<660
2-Nitrophenol	µg/kg	<990	<990	<660	<660	<660
4-Nitrophenol	µg/kg	<5100	<4800	<3200	<3400	<3200
p-chloro-m-cresol	µg/kg	<990	<990	<660	<660	<660
Pentachlorophenol	µg/kg	<5100	<4800	<3200	<3400	<3200
Phenanthrene	µg/kg	<990	<990	<660	<660	<660
Phenol	µg/kg	<990	<990	<660	<660	<660
Pyrene	µg/kg	<990	<990	<660	<660	<660
2,4,5-Trichlorophenol	µg/kg	<5100	<4800	<3200	<3400	<3200
2,4,6-Trichlorophenol	µg/kg	<990	<990	<660	<660	<660
1,2,4-Trichlorobenzene	µg/kg	<990	<990	<660	<660	<660

Table 7
Summary of Waste Chemistry Data
Pond 5 Residues
Fansteel, Inc.
Muskogee, Oklahoma

Parameter	Units	Sample Identification and Date		
		P5-1A 2/26/93	P5-1B 2/26/93	P5-1C 2/26/93
Total Analyses:				
Cyanide	mg/kg	<1.3	<1.9	<2.3
Silver	mg/kg	<2.27	<3.51	<4.12
Arsenic	mg/kg	<22.7	<35.1	<41.2
Barium	mg/kg	119	45.3	28.1
Beryllium	mg/kg	3.20	13.3	15.6
Cadmium	mg/kg	<2.27	<3.51	<4.12
Chromium	mg/kg	45.8	164	122
Mercury	mg/kg	0.410	0.288	<0.115
Molybdenum	mg/kg	13	21	<21
Nickel	mg/kg	17.5	143	103
Lead	mg/kg	<22.7	89.8	54.8
Antimony	mg/kg	26.2	579	328
Selenium	mg/kg	<0.250	<.390	<0.460
Tin	mg/kg	140	780	4200
Columbium	mg/kg	870	8100	4900
Tantalum	mg/kg	550	3500	1200
Gross Alpha	pCi/g	190±20	170±20	19±8
Gross Beta	pCi/g	88±8	170±20	17±5
Isotopes:				
Uranium-233 & 234	pCi/g	28±2	97±2	3.9±0.6
Uranium 235	pCi/g	1.4±0.4	5.0±0.6	0.0±0.1
Uranium-238	pCi/g	28±1	97±2	2.7±0.5
Thorium-230	pCi/g	12±1	8.8±0.7	1.2±0.3
Lead-210 @ 46 KeV	pCi/g	7.2±1.2	2.5±1.0	1.8±0.7
Thorium-234 @ 63.3 KeV	pCi/g	21±2	69±4	2.8±.0.6
Protactinium-234m @ 1001 KeV	pCi/g	50±13	140±10	0.0±5.3
Radium 226	pCi/g	27±1	57±2	2.9±0.6
Lead-214 @ 295.2 KeV	pCi/g	9.3±0.5	4.9±0.4	1.1±0.2
Lead-214 @ 352.0 KeV	pCi/g	9.7±0.4	5.0±0.2	1.1±0.1
Bismuth-214 @ 609.4 KeV	pCi/g	9.1±0.4	4.8±0.2	1.1±0.1
Bismuth-214 @ 1120.4 KeV	pCi/g	10±1	4.8±0.5	1.1±0.4
Bismuth-214 @ 1764.7 KeV	pCi/g	8.7±0.7	3.9±0.5	0.78±0.23
Actinium-228 @ 338 KeV	pCi/g	6.9±0.5	4.6±0.4	0.70±0.17
Actinium-228 @ 911 KeV	pCi/g	7.5±0.5	4.7±0.4	0.89±0.16
Actinium-228 @ 968 KeV	pCi/g	8.0±0.8	5.1±0.5	0.97±0.29
Lead-212 @ 238 KeV	pCi/g	6.7±0.4	3.9±0.2	0.67±0.08
Bismuth-212 @ 727 KeV	pCi/g	8.2±1.2	5.0±1.1	1.0±.0.4
Thallium-208 @ 583 KeV	pCi/g	7.2±0.4	4.4±0.3	0.59±0.13
Uranium-235 @ 143 KeV	pCi/g	0.87±0.23	2.3±0.2	0.23±0.10
ASTM Analysis:				
Alkalinity	mg/l $CaCO_3$	60.0	38.0	52.0
Ammonia	mg/l NH3-N	<0.10	0.89	16
Chloride	mg/l	<0.50	6.0	19
Fluoride	mg/l	9.6	4.5	5.4
Nitrate	mg/l NO_3-N	0.20	7.5	7.6
Sulfate	mg/l	94	750	660
pH	pH Units	7.93	6.48	9.16
Specific Conductance @ 25°C	µmhos/cm	384	2500	2410
Aluminum	mg/l	<10	<10	<10
Calcium	mg/l	57	560	520
Iron	mg/l	<10	<10	<10
Potassium	mg/l	<10	38	15
Magnesium	mg/l	<10	19	<10
Manganese	mg/l	<1.0	13	<1.0
Sodium	mg/l	13	39	22

Table 7
(Continued)

Parameter	Units	Sample Identification and Date		
		P5-1A 2/26/93	P5-1B 2/26/93	P5-1C 2/26/93
TCLP Metals:				
Silver	mg/l	<0.10	<0.10	<0.10
Arsenic	mg/l	<0.10	<0.10	<0.10
Barium	mg/l	<10	<10	<10
Cadmium	mg/l	<0.10	<0.10	<0.10
Chromium	mg/l	<0.10	<0.10	<0.10
Mercury	mg/l	<0.010	<0.010	<0.010
Nickel	mg/l	<1.0	1.3	<1.0
Lead	mg/l	<0.10	<0.10	<0.10
Selenium	mg/l	<0.10	<0.10	<0.10
TCLP Extraction Fluid Data:				
Extraction Fluid		No. 1	No. 1	No. 1
pH with Deionized Water	pH units	7.68	6.52	9.26
pH of TCLP Extract	pH units	5.70	4.99	5.45
Amount of Sample Extracted	g	40.0	40.0	40.0
Volatile Organic Analyses:				
Acetone	µg/kg	<1600	<2500	<3000
Benzene	µg/kg	<1600	<2500	<3000
Bromodichloromethane	µg/kg	<1600	<2500	<3000
Bromoform	µg/kg	<1600	<2500	<3000
Bromomethane	µg/kg	<1600	<2500	<3000
2-Butanone	µg/kg	<1600	<2500	<3000
Carbon Disulfide	µg/kg	<1600	<2500	<3000
Carbon Tetrachloride	µg/kg	<1600	<2500	<3000
Chlorobenzene	µg/kg	<1600	<2500	<3000
Dibromochloromethane	µg/kg	<1600	<2500	<3000
Chloroethane	µg/kg	<1600	<2500	<3000
Chloromethane	µg/kg	<1600	<2500	<3000
Chloroform	µg/kg	<1600	<2500	<3000
1,1-Dichloroethane	µg/kg	<1600	<2500	<3000
1,2-Dichloroethane	µg/kg	<1600	<2500	<3000
1,1-Dichloroethene	µg/kg	<1600	<2500	<3000
1,2-Dichloroethene	µg/kg	<1600	<2500	<3000
1,2-Dichloropropane	µg/kg	<1600	<2500	<3000
Cis-1,3-Dichloropropene	µg/kg	<1600	<2500	<3000
Trans-1,3-Dichloropropene	µg/kg	<1600	<2500	<3000
Ethylbenzene	µg/kg	<1600	<2500	<3000
2-Hexanone	µg/kg	<1600	<2500	<3000
Methylene Chloride	µg/kg	<1600	<2500	<3000
4-Methyl-2-pentanone	µg/kg	<1600	<2500	<3000
Styrene	µg/kg	<1600	<2500	<3000
1,1,2,2-Tetrachloroethane	µg/kg	<1600	<2500	<3000
Tetrachloroethene	µg/kg	<1600	<2500	<3000
Toluene	µg/kg	<1600	<2500	<3000
1,1,1-Trichloroethane	µg/kg	<1600	<2500	<3000
1,1,2-Trichloroethane	µg/kg	<1600	<2500	<3000
Trichloroethene	µg/kg	<1600	<2500	<3000
Vinyl Chloride	µg/kg	<1600	<2500	<3000
Xylenes, Total	µg/kg	<1600	<2500	<3000

Table 7
(Continued)

Parameter	Units	Sample Identification and Date		
		P5-1A 2/26/93	P5-1B 2/26/93	P5-1C 2/26/93
Semivolatile Organic Analyses:				
Acenaphthene	µg/kg	<410	<640	<760
Acenaphthylene	µg/kg	<410	<640	<760
Anthracene	µg/kg	<410	<640	<760
Bis(2-chloroethyl)ether	µg/kg	<410	<640	<760
Bis(2-chloroethoxy)methane	µg/kg	<410	<640	<760
Bis(2-chloroisopropyl)ether	µg/kg	<410	<640	<760
Bis(2-ethylhexyl)phthalate	µg/kg	<410	<640	<760
Benzo(a)pyrene	µg/kg	<410	<640	<760
Benzo(a)anthracene	µg/kg	<410	<640	<760
Benzo(b)fluoranthene	µg/kg	<410	<640	<760
Benzo(g,h,i)perylene	µg/kg	<410	<640	<760
Benzo(k)fluoranthene	µg/kg	<410	<640	<760
4-Bromophenyl Phenyl Ether	µg/kg	<410	<640	<760
Butylbenzyl Phthalate	µg/kg	<410	<640	<760
Carbazole	µg/kg	<410	<640	<760
Chrysene	µg/kg	<410	<640	<760
4-Chloroaniline	µg/kg	<410	<640	<760
2-Chloronaphthalene	µg/kg	<410	<640	<760
2-Chlorophenol	µg/kg	<410	<640	<760
4-Chlorophenyl Phenyl Ether	µg/kg	<410	<640	<760
o-Cresol	µg/kg	<410	<640	<760
p-Cresol	µg/kg	<410	<640	<760
Dibenzo(a,h)anthracene	µg/kg	<410	<640	<760
Dibenzofuran	µg/kg	<410	<640	<760
2,4-Dichlorophenol	µg/kg	<410	<640	<760
1,2-Dichlorobenzene	µg/kg	<410	<640	<760
1,3-Dichlorobenzene	µg/kg	<410	<640	<760
1,4-Dichlorobenzene	µg/kg	<410	<640	<760
3,3-Dichlorobenzidine	µg/kg	<410	<640	<760
Diethyl Phthalate	µg/kg	<410	<640	<760
Dimethyl Phthalate	µg/kg	<410	<640	<760
2,4-Dimethylphenol	µg/kg	<410	<640	<760
Di-N-butyl Phthalate	µg/kg	940	870	1300
4,6-Dinitro-o-cresol	µg/kg	<2100	<3200	<3800
2,4-Dinitrotoluene	µg/kg	<410	<640	<760
2,6-Dinitrotoluene	µg/kg	<410	<640	<760
Di-N-octyl Phthalate	µg/kg	<410	<640	<760
2,4-Dinitrophenol	µg/kg	<2100	<3200	<3800
Fluoranthene	µg/kg	<410	<640	<760
Fluorene	µg/kg	<410	<640	<760
Hexachlorocyclopentadiene	µg/kg	<410	<640	<760
Hexachlorobenzene	µg/kg	<410	<640	<760
Hexachlorobutadiene	µg/kg	<410	<640	<760
Hexachloroethane	µg/kg	<410	<640	<760
Indeno(1,2,3-c,d)pyrene	µg/kg	<410	<640	<760
Isophorone	µg/kg	<410	<640	<760
2-Methylnaphthalene	µg/kg	<410	<640	<760
N-Nitrosodiphenylamine	µg/kg	<410	<640	<760
N-Nitroso-di-n-propylamine	µg/kg	<410	<640	<760
Naphthalene	µg/kg	<410	<640	<760
2-Nitroaniline	µg/kg	<2100	<3200	<3800
3-Nitroaniline	µg/kg	<2100	<3200	<3800
4-Nitroaniline	µg/kg	<2100	<3200	<3800
Nitrobenzene	µg/kg	<410	<640	<760
2-Nitrophenol	µg/kg	<410	<640	<760
4-Nitrophenol	µg/kg	<2100	<3200	<3800
p-chloro-m-cresol	µg/kg	<410	<640	<760
Pentachlorophenol	µg/kg	<2100	<3200	<3800
Phenanthrene	µg/kg	<410	<640	<760
Phenol	µg/kg	<410	<640	<760
Pyrene	µg/kg	<410	<640	<760
2,4,5-Trichlorophenol	µg/kg	<2100	<3200	<3800
2,4,6-Trichlorophenol	µg/kg	<410	<640	<760
1,2,4-Trichlorobenzene	µg/kg	<410	<640	<760

Table 7
(Continued)

Parameter	Units	Sample Identification and Date			
		P5-2 2/26/93	P5-2A (0-1.45) 2/26/93	P5-2B (1.45-3) 2/26/93	P5-2C (3-4.45) 2/26/93
Total Analyses:					
Cyanide	mg/kg	<1.8	(1)	-	-
Silver	mg/kg	<3.41	-	-	-
Arsenic	mg/kg	<34.1	-	-	-
Barium	mg/kg	67.2	-	-	-
Beryllium	mg/kg	11.0	-	-	-
Cadmium	mg/kg	<3.41	-	-	-
Chromium	mg/kg	89.1	-	-	-
Mercury	mg/kg	<0.0920	-	-	-
Molybdenum	mg/kg	<17	-	-	-
Nickel	mg/kg	74.7	-	-	-
Lead	mg/kg	79.1	-	-	-
Antimony	mg/kg	467	-	-	-
Selenium	mg/kg	<0.370	-	-	-
Tin	mg/kg	520	-	-	-
Columbium	mg/kg	7900	-	-	-
Tantalum	mg/kg	5200	-	-	-
Gross Alpha	pCi/g	-	44±11	130±20	390±30
Gross Beta	pCi/g	-	34±6	52±7	140±10
Isotopes:					
Uranium-233 & 234	pCi/g	-	4.1±0.5	10±1	36±2
Uranium 235	pCi/g	-	0.1±0.1	0.6±0.2	1.5±0.3
Uranium-238	pCi/g	-	4.1±0.5	10±1	39±2
Thorium-230	pCi/g	-	2.8±0.5	11±1	38±2
Lead-210 @ 46 KeV	pCi/g	-	1.7±1.0	4.0±1.3	6.6±2.0
Thorium-234 @ 63.3 KeV	pCi/g	-	4.3±1.3	6.8±1.2	21±3
Protactinium-234m @ 1001 KeV	pCi/g	-	7.4±6.0	16±8	48±16
Radium 226	pCi/g	-	5.2±0.7	14±1	41±2
Lead-214 @ 295.2 KeV	pCi/g	-	2.2±0.3	6.0±0.4	19±1
Lead-214 @ 352.0 KeV	pCi/g	-	2.4±0.3	5.7±0.2	19±1
Bismuth-214 @ 609.4 KeV	pCi/g	-	2.0±0.2	5.6±0.3	19±1
Bismuth-214 @ 1120.4 KeV	pCi/g	-	2.3±0.4	5.8±0.7	18±1
Bismuth-214 @ 1764.7 KeV	pCi/g	-	2.4±0.4	5.3±0.6	16±1
Actinium-228 @ 338 KeV	pCi/g	-	2.5±0.3	7.0±0.5	22±1
Actinium-228 @ 911 KeV	pCi/g	-	2.7±0.3	7.5±0.4	24±1
Actinium-228 @ 968 KeV	pCi/g	-	2.7±0.4	8.6±0.6	24±1
Lead-212 @ 238 KeV	pCi/g	-	1.9±0.1	7.2±0.3	23±1
Bismuth-212 @ 727 KeV	pCi/g	-	2.7±0.7	9.2±1.2	26±2
Thallium-208 @ 583 KeV	pCi/g	-	2.3±0.2	7.4±0.4	22±1
Uranium-235 @ 143 KeV	pCi/g	-	0.20±0.13	0.35±0.19	1.1±0.4
ASTM Analysis:					
Alkalinity	mg/l $CaCO_3$	21.0	-	-	-
Ammonia	mg/l NH3-N	1.5	-	-	-
Chloride	mg/l	<0.50	-	-	-
Fluoride	mg/l	5.4	-	-	-
Nitrate	mg/l NO_3-N	2.5	-	-	-
Sulfate	mg/l	450	-	-	-
pH	pH Units	9.20	-	-	-
Specific Conductance @ 25°C	µmhos/cm	1310	-	-	-
Aluminum	mg/l	<10	-	-	-
Calcium	mg/l	280	-	-	-
Iron	mg/l	<10	-	-	-
Potassium	mg/l	12	-	-	-
Magnesium	mg/l	<10	-	-	-
Manganese	mg/l	<1.0	-	-	-
Sodium	mg/l	14	-	-	-

See footnotes at end of table.

Table 7
(Continued)

Parameter	Units	Sample Identification and Date			
		P5-2 2/26/93	P5-2A (0-1.45) 2/26/93	P5-2B (1.45-3) 2/26/93	P5-2C (3-4.45) 2/26/93
TCLP Metals:					
Silver	mg/l	<0.10	-	-	-
Arsenic	mg/l	<0.10	-	-	-
Barium	mg/l	<10	-	-	-
Cadmium	mg/l	<0.10	-	-	-
Chromium	mg/l	0.11	-	-	-
Mercury	mg/l	<0.010	-	-	-
Nickel	mg/l	<1.0	-	-	-
Lead	mg/l	<0.10	-	-	-
Selenium	mg/l	<0.10	-	-	-
TCLP Extraction Fluid Data:					
Extraction Fluid		No. 1	-	-	-
pH with Deionized Water	pH units	9.52	-	-	-
pH of TCLP Extract	pH units	6.04	-	-	-
Amount of Sample Extracted	g	40.0	-	-	-
Volatile Organic Analyses:					
Acetone	µg/kg	<2400	-	-	-
Benzene	µg/kg	<2400	-	-	-
Bromodichloromethane	µg/kg	<2400	-	-	-
Bromoform	µg/kg	<2400	-	-	-
Bromomethane	µg/kg	<2400	-	-	-
2-Butanone	µg/kg	<2400	-	-	-
Carbon Disulfide	µg/kg	<2400	-	-	-
Carbon Tetrachloride	µg/kg	<2400	-	-	-
Chlorobenzene	µg/kg	<2400	-	-	-
Dibromochloromethane	µg/kg	<2400	-	-	-
Chloroethane	µg/kg	<2400	-	-	-
Chloromethane	µg/kg	<2400	-	-	-
Chloroform	µg/kg	<2400	-	-	-
1,1-Dichloroethane	µg/kg	<2400	-	-	-
1,2-Dichloroethane	µg/kg	<2400	-	-	-
1,1-Dichloroethene	µg/kg	<2400	-	-	-
1,2-Dichloroethene	µg/kg	<2400	-	-	-
1,2-Dichloropropane	µg/kg	<2400	-	-	-
Cis-1,3-Dichloropropene	µg/kg	<2400	-	-	-
Trans-1,3-Dichloropropene	µg/kg	<2400	-	-	-
Ethylbenzene	µg/kg	<2400	-	-	-
2-Hexanone	µg/kg	<2400	-	-	-
Methylene Chloride	µg/kg	<2400	-	-	-
4-Methyl-2-pentanone	µg/kg	<2400	-	-	-
Styrene	µg/kg	<2400	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	<2400	-	-	-
Tetrachloroethene	µg/kg	<2400	-	-	-
Toluene	µg/kg	<2400	-	-	-
1,1,1-Trichloroethane	µg/kg	<2400	-	-	-
1,1,2-Trichloroethane	µg/kg	<2400	-	-	-
Trichloroethene	µg/kg	<2400	-	-	-
Vinyl Chloride	µg/kg	<2400	-	-	-
Xylenes, Total	µg/kg	<2400	-	-	-

See footnotes at end of table.

Table 7
(Continued)

Parameter	Units	Sample Identification and Date			
		P5-2 2/26/93	P5-2A (0-1.45) 2/26/93	P5-2B (1.45-3) 2/26/93	P5-2C (3-4.45) 2/26/93
Semivolatile Organic Analyses:					
Acenaphthene	µg/kg	<610	-	-	-
Acenaphthylene	µg/kg	<610	-	-	-
Anthracene	µg/kg	<610	-	-	-
Bis(2-chloroethyl)ether	µg/kg	<610	-	-	-
Bis(2-chloroethoxy)methane	µg/kg	<610	-	-	-
Bis(2-chloroisopropyl)ether	µg/kg	<610	-	-	-
Bis(2-ethylhexyl)phthalate	µg/kg	700	-	-	-
Benzo(a)pyrene	µg/kg	<610	-	-	-
Benzo(a)anthracene	µg/kg	<610	-	-	-
Benzo(b)fluoranthene	µg/kg	<610	-	-	-
Benzo(g,h,i)perylene	µg/kg	<610	-	-	-
Benzo(k)fluoranthene	µg/kg	<610	-	-	-
4-Bromophenyl Phenyl Ether	µg/kg	<610	-	-	-
Butylbenzyl Phthalate	µg/kg	<610	-	-	-
Carbazole	µg/kg	<610	-	-	-
Chrysene	µg/kg	<610	-	-	-
4-Chloroaniline	µg/kg	<610	-	-	-
2-Chloronaphthalene	µg/kg	<610	-	-	-
2-Chlorophenol	µg/kg	<610	-	-	-
4-Chlorophenyl Phenyl Ether	µg/kg	<610	-	-	-
o-Cresol	µg/kg	<610	-	-	-
p-Cresol	µg/kg	<610	-	-	-
Dibenzo(a,h)anthracene	µg/kg	<610	-	-	-
Dibenzofuran	µg/kg	<610	-	-	-
2,4-Dichlorophenol	µg/kg	<610	-	-	-
1,2-Dichlorobenzene	µg/kg	<610	-	-	-
1,3-Dichlorobenzene	µg/kg	<610	-	-	-
1,4-Dichlorobenzene	µg/kg	<610	-	-	-
3,3-Dichlorobenzidine	µg/kg	<610	-	-	-
Diethyl Phthalate	µg/kg	<610	-	-	-
Dimethyl Phthalate	µg/kg	<610	-	-	-
2,4-Dimethylphenol	µg/kg	<610	-	-	-
Di-N-butyl Phthalate	µg/kg	980	-	-	-
4,6-Dinitro-o-cresol	µg/kg	<3100	-	-	-
2,4-Dinitrotoluene	µg/kg	<610	-	-	-
2,6-Dinitrotoluene	µg/kg	<610	-	-	-
Di-N-octyl Phthalate	µg/kg	<610	-	-	-
2,4-Dinitrophenol	µg/kg	<3100	-	-	-
Fluoranthene	µg/kg	<610	-	-	-
Fluorene	µg/kg	<610	-	-	-
Hexachlorocyclopentadiene	µg/kg	<610	-	-	-
Hexachlorobenzene	µg/kg	<610	-	-	-
Hexachlorobutadiene	µg/kg	<610	-	-	-
Hexachloroethane	µg/kg	<610	-	-	-
Indeno(1,2,3-c,d)pyrene	µg/kg	<610	-	-	-
Isophorone	µg/kg	<610	-	-	-
2-Methylnaphthalene	µg/kg	<610	-	-	-
N-Nitrosodiphenylamine	µg/kg	<610	-	-	-
N-Nitroso-di-n-propylamine	µg/kg	<610	-	-	-
Naphthalene	µg/kg	<610	-	-	-
2-Nitroaniline	µg/kg	<3100	-	-	-
3-Nitroaniline	µg/kg	<3100	-	-	-
4-Nitroaniline	µg/kg	<3100	-	-	-
Nitrobenzene	µg/kg	<610	-	-	-
2-Nitrophenol	µg/kg	<610	-	-	-
4-Nitrophenol	µg/kg	<3100	-	-	-
p-chloro-m-cresol	µg/kg	<610	-	-	-
Pentachlorophenol	µg/kg	<3100	-	-	-
Phenanthrene	µg/kg	<610	-	-	-
Phenol	µg/kg	<610	-	-	-
Pyrene	µg/kg	<610	-	-	-
2,4,5-Trichlorophenol	µg/kg	<3100	-	-	-
2,4,6-Trichlorophenol	µg/kg	<610	-	-	-
1,2,4-Trichlorobenzene	µg/kg	<610	-	-	-

See footnotes at end of table.

Table 7
(Continued)

Parameter	Units	Sample Identification and Date			
		P5-3 2/26/93	P5-3A (0-1.6) 2/26/93	P5-3B (1.6-3.2) 2/26/93	P5-3C (3.2-4.9) 2/26/93
Total Analyses:					
Cyanide	mg/kg	<1.7	-	-	-
Silver	mg/kg	<3.19	-	-	-
Arsenic	mg/kg	<31.9	-	-	-
Barium	mg/kg	47.2	-	-	-
Beryllium	mg/kg	9.70	-	-	-
Cadmium	mg/kg	<3.19	-	-	-
Chromium	mg/kg	48.4	-	-	-
Mercury	mg/kg	<0.0860	-	-	-
Molybdenum	mg/kg	<16	-	-	-
Nickel	mg/kg	71.4	-	-	-
Lead	mg/kg	63.3	-	-	-
Antimony	mg/kg	409	-	-	-
Selenium	mg/kg	<0.340	-	-	-
Tin	mg/kg	1100	-	-	-
Columbium	mg/kg	1200	-	-	-
Tantalum	mg/kg	270	-	-	-
Gross Alpha	pCi/g	-	84±14	40±10	16±8
Gross Beta	pCi/g	-	31±6	21±6	22±6
Isotopes:					
Uranium-233 & 234	pCi/g	-	6.8±0.7	2.3±0.4	0.6±0.3
Uranium 235	pCi/g	-	0.1±0.2	0.1±0.1	0.0±0.1
Uranium-238	pCi/g	-	7.0±0.8	2.6±0.5	0.4±0.3
Thorium-230	pCi/g	-	7.3±0.9	1.2±0.4	0.4±0.3
Lead-210 @ 46 KeV	pCi/g	-	3.0±0.9	0.0±0.6	2.0±0.7
Thorium-234 @ 63.3 KeV	pCi/g	-	4.9±0.8	2.5±1.0	1.1±0.5
Protactinium-234m @ 1001 KeV	pCi/g	-	18±10	0.0±6.0	0.0±5.5
Radium 226	pCi/g	-	9.3±0.9	3.2±0.6	1.7±0.5
Lead-214 @ 295.2 KeV	pCi/g	-	4.1±0.4	1.5±0.2	0.98±0.20
Lead-214 @ 352.0 KeV	pCi/g	-	4.5±0.2	1.6±0.1	1.0±0.1
Bismuth-214 @ 609.4 KeV	pCi/g	-	4.1±0.3	1.4±0.2	1.0±0.1
Bismuth-214 @ 1120.4 KeV	pCi/g	-	4.1±0.6	1.5±0.4	0.97±0.42
Bismuth-214 @ 1764.7 KeV	pCi/g	-	3.8±0.6	1.6±0.3	0.57±0.31
Actinium-228 @ 338 KeV	pCi/g	-	3.9±0.4	1.5±0.3	1.1±0.2
Actinium-228 @ 911 KeV	pCi/g	-	4.3±0.4	1.8±0.2	1.3±0.2
Actinium-228 @ 968 KeV	pCi/g	-	4.2±0.5	1.7±0.4	1.2±0.4
Lead-212 @ 238 KeV	pCi/g	-	3.3±0.2	1.1±0.1	0.92±0.10
Bismuth-212 @ 727 KeV	pCi/g	-	4.4±1.0	2.4±0.7	1.3±0.7
Thallium-208 @ 583 KeV	pCi/g	-	3.9±0.3	1.4±0.2	1.2±0.2
Uranium-235 @ 143 KeV	pCi/g	-	0.00±0.12	0.22±0.11	0.00±0.09
ASTM Analysis:					
Alkalinity	mg/l $CaCO_3$	54.0	-	-	-
Ammonia	mg/l NH3-N	6.3	-	-	-
Chloride	mg/l	0.58	-	-	-
Fluoride	mg/l	3.8	-	-	-
Nitrate	mg/l NO_3-N	5.0	-	-	-
Sulfate	mg/l	900	-	-	-
pH	pH Units	10.31	-	-	-
Specific Conductance @ 25°C	µmhos/cm	2230	-	-	-
Aluminum	mg/l	<10	-	-	-
Calcium	mg/l	610	-	-	-
Iron	mg/l	<10	-	-	-
Potassium	mg/l	<10	-	-	-
Magnesium	mg/l	<10	-	-	-
Manganese	mg/l	<1.0	-	-	-
Sodium	mg/l	13	-	-	-

See footnotes at end of table.

Table 7
(Continued)

Parameter	Units	Sample Identification and Date			
		P5-3 2/26/93	P5-3A (0-1.6) 2/26/93	P5-3B (1.6-3.2) 2/26/93	P5-3C (3.2-4.9) 2/26/93
TCLP Metals:					
Silver	mg/l	<0.10	-	-	-
Arsenic	mg/l	<0.10	-	-	-
Barium	mg/l	<10	-	-	-
Cadmium	mg/l	<0.10	-	-	-
Chromium	mg/l	0.10	-	-	-
Mercury	mg/l	<0.010	-	-	-
Nickel	mg/l	<1.0	-	-	-
Lead	mg/l	<0.10	-	-	-
Selenium	mg/l	<0.10	-	-	-
TCLP Extraction Fluid Data:					
Extraction Fluid		No. 1	-	-	-
pH with Deionized Water	pH units	10.74	-	-	-
pH of TCLP Extract	pH units	5.80	-	-	-
Amount of Sample Extracted	g	40.0	-	-	-
Volatile Organic Analyses:					
Acetone	µg/kg	<2200	-	-	-
Benzene	µg/kg	<2200	-	-	-
Bromodichloromethane	µg/kg	<2200	-	-	-
Bromoform	µg/kg	<2200	-	-	-
Bromomethane	µg/kg	<2200	-	-	-
2-Butanone	µg/kg	<2200	-	-	-
Carbon Disulfide	µg/kg	<2200	-	-	-
Carbon Tetrachloride	µg/kg	<2200	-	-	-
Chlorobenzene	µg/kg	<2200	-	-	-
Dibromochloromethane	µg/kg	<2200	-	-	-
Chloroethane	µg/kg	<2200	-	-	-
Chloromethane	µg/kg	<2200	-	-	-
Chloroform	µg/kg	<2200	-	-	-
1,1-Dichloroethane	µg/kg	<2200	-	-	-
1,2-Dichloroethane	µg/kg	<2200	-	-	-
1,1-Dichloroethene	µg/kg	<2200	-	-	-
1,2-Dichloroethene	µg/kg	<2200	-	-	-
1,2-Dichloropropane	µg/kg	<2200	-	-	-
Cis-1,3-Dichloropropene	µg/kg	<2200	-	-	-
Trans-1,3-Dichloropropene	µg/kg	<2200	-	-	-
Ethylbenzene	µg/kg	<2200	-	-	-
2-Hexanone	µg/kg	<2200	-	-	-
Methylene Chloride	µg/kg	<2200	-	-	-
4-Methyl-2-pentanone	µg/kg	<2200	-	-	-
Styrene	µg/kg	<2200	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	<2200	-	-	-
Tetrachloroethene	µg/kg	<2200	-	-	-
Toluene	µg/kg	<2200	-	-	-
1,1,1-Trichloroethane	µg/kg	<2200	-	-	-
1,1,2-Trichloroethane	µg/kg	<2200	-	-	-
Trichloroethene	µg/kg	<2200	-	-	-
Vinyl Chloride	µg/kg	<2200	-	-	-
Xylenes, Total	µg/kg	<2200	-	-	-

See footnotes at end of table.

Table 7
(Continued)

Parameter	Units	Sample Identification and Date			
		P5-3 2/26/93	P5-3A (0-1.6) 2/26/93	P5-3B (1.6-3.2) 2/26/93	P5-3C (3.2-4.9) 2/26/93
Semivolatile Organic Analyses:					
Acenaphthene	µg/kg	<570	-	-	-
Acenaphthylene	µg/kg	<570	-	-	-
Anthracene	µg/kg	<570	-	-	-
Bis(2-chloroethyl)ether	µg/kg	<570	-	-	-
Bis(2-chloroethoxy)methane	µg/kg	<570	-	-	-
Bis(2-chloroisopropyl)ether	µg/kg	<570	-	-	-
Bis(2-ethylhexyl)phthalate	µg/kg	<570	-	-	-
Benzo(a)pyrene	µg/kg	<570	-	-	-
Benzo(a)anthracene	µg/kg	<570	-	-	-
Benzo(b)fluoranthene	µg/kg	<570	-	-	-
Benzo(g,h,i)perylene	µg/kg	<570	-	-	-
Benzo(k)fluoranthene	µg/kg	<570	-	-	-
4-Bromophenyl Phenyl Ether	µg/kg	<570	-	-	-
Butylbenzyl Phthalate	µg/kg	<570	-	-	-
Carbazole	µg/kg	<570	-	-	-
Chrysene	µg/kg	<570	-	-	-
4-Chloroaniline	µg/kg	<570	-	-	-
2-Chloronaphthalene	µg/kg	<570	-	-	-
2-Chlorophenol	µg/kg	<570	-	-	-
4-Chlorophenyl Phenyl Ether	µg/kg	<570	-	-	-
o-Cresol	µg/kg	<570	-	-	-
p-Cresol	µg/kg	<570	-	-	-
Dibenzo(a,h)anthracene	µg/kg	<570	-	-	-
Dibenzofuran	µg/kg	<570	-	-	-
2,4-Dichlorophenol	µg/kg	<570	-	-	-
1,2-Dichlorobenzene	µg/kg	<570	-	-	-
1,3-Dichlorobenzene	µg/kg	<570	-	-	-
1,4-Dichlorobenzene	µg/kg	<570	-	-	-
3,3-Dichlorobenzidine	µg/kg	<570	-	-	-
Diethyl Phthalate	µg/kg	<570	-	-	-
Dimethyl Phthalate	µg/kg	<570	-	-	-
2,4-Dimethylphenol	µg/kg	<570	-	-	-
Di-N-butyl Phthalate	µg/kg	880	-	-	-
4,6-Dinitro-o-cresol	µg/kg	<2800	-	-	-
2,4-Dinitrotoluene	µg/kg	<570	-	-	-
2,6-Dinitrotoluene	µg/kg	<570	-	-	-
Di-N-octyl Phthalate	µg/kg	<570	-	-	-
2,4-Dinitrophenol	µg/kg	<2800	-	-	-
Fluoranthene	µg/kg	<570	-	-	-
Fluorene	µg/kg	<570	-	-	-
Hexachlorocyclopentadiene	µg/kg	<570	-	-	-
Hexachlorobenzene	µg/kg	<570	-	-	-
Hexachlorobutadiene	µg/kg	<570	-	-	-
Hexachloroethane	µg/kg	<570	-	-	-
Indeno(1,2,3-c,d)pyrene	µg/kg	<570	-	-	-
Isophorone	µg/kg	<570	-	-	-
2-Methylnaphthalene	µg/kg	<570	-	-	-
N-Nitrosodiphenylamine	µg/kg	<570	-	-	-
N-Nitroso-di-n-propylamine	µg/kg	<570	-	-	-
Naphthalene	µg/kg	<570	-	-	-
2-Nitroaniline	µg/kg	<2800	-	-	-
3-Nitroaniline	µg/kg	<2800	-	-	-
4-Nitroaniline	µg/kg	<2800	-	-	-
Nitrobenzene	µg/kg	<570	-	-	-
2-Nitrophenol	µg/kg	<570	-	-	-
4-Nitrophenol	µg/kg	<2800	-	-	-
p-chloro-m-cresol	µg/kg	<570	-	-	-
Pentachlorophenol	µg/kg	<2800	-	-	-
Phenanthrene	µg/kg	<570	-	-	-
Phenol	µg/kg	<570	-	-	-
Pyrene	µg/kg	<570	-	-	-
2,4,5-Trichlorophenol	µg/kg	<2800	-	-	-
2,4,6-Trichlorophenol	µg/kg	<570	-	-	-
1,2,4-Trichlorobenzene	µg/kg	<570	-	-	-

(1) Dash denotes not analyzed.

Table 8
Summary of Waste Chemistry Data
Pond 6 Residues
Fansteel, Inc.
Muskogee, Oklahoma

Parameter	Units	Sample Identification and Date	
		P6-1 (0-3) 2/20/93	P6-2 (0-3) 2/20/93
Total Analyses:			
Cyanide	mg/kg	<2.6	<2.8
Silver	mg/kg	<4.72	<5.48
Arsenic	mg/kg	<47.2	<54.8
Barium	mg/kg	195	74.2
Beryllium	mg/kg	10.9	9.00
Cadmium	mg/kg	11.0	<5.48
Chromium	mg/kg	249	183
Mercury	mg/kg	0.221	0.414
Molybdenum	mg/kg	<24	<27
Nickel	mg/kg	64.8	29.7
Lead	mg/kg	<47.2	<54.8
Antimony	mg/kg	126	134
Selenium	mg/kg	<0.510	<0.570
Tin	mg/kg	1100	1400
Columbium	mg/kg	260	2700
Tantalum	mg/kg	310	960
Gross Alpha	pCi/g	110±20	150±20
Gross Beta	pCi/g	55±7	67±7
Isotopes:			
Uranium-233 & 234	pCi/g	8.4±0.7	17±1
Uranium-235	pCi/g	0.3±0.1	2.4±0.5
Uranium-238	pCi/g	8.6±0.7	19±1
Thorium-230	pCi/g	8.2±0.9	8.0±0.7
Lead-210 @ 46 KeV	pCi/g	3.1±1.0	4.0±0.8
Thorium-234 @ 63.3 KeV	pCi/g	7.9±0.8	14±2
Thorium-234 @ 92.6 KeV	pCi/g	7.0±1.0	11±2
Protactinium-234m @ 1001 KeV	pCi/g	20±8	33±9
Radium 226	pCi/g	12±1	15±1
Lead-214 @ 295.2 KeV	pCi/g	3.8±0.4	4.4±0.4
Lead-214 @ 352.0 KeV	pCi/g	4.4±0.2	4.6±0.2
Bismuth-214 @ 609.4 KeV	pCi/g	4.1±0.2	4.3±0.2
Bismuth-214 @ 1120.4 KeV	pCi/g	4.3±0.6	4.4±0.6
Bismuth-214 @ 1764.7 KeV	pCi/g	3.6±0.6	4.1±0.5
Actinium-228 @ 338 KeV	pCi/g	4.5±0.4	4.2±0.4
Actinium-228 @ 911 KeV	pCi/g	4.5±0.4	4.6±0.3
Actinium-228 @ 968 KeV	pCi/g	5.0±0.6	5.2±0.6
Lead-212 @ 238 KeV	pCi/g	4.2±0.3	3.9±0.2
Bismuth-212 @ 727 KeV	pCi/g	5.6±0.9	5.2±0.8
Thallium-208 @ 583 KeV	pCi/g	4.4±0.3	4.5±0.3
Uranium-235 @ 143 KeV	pCi/g	0.46±0.15	0.66±0.17
Potassium-40 @ 1460 KeV	pCi/g	9.9±01.0	7.2±0.8
ASTM Analysis:			
Alkalinity	mg/l $CaCO_3$	18.0	8.00
Ammonia	mg/l NH3-N	0.51	0.84
Chloride	mg/l	2.2	3.9
Fluoride	mg/l	11	4.6
Nitrate	mg/l NO_3-N	<0.10	0.14
Sulfate	mg/l	73	1200
pH	pH Units	7.93	8.08
Specific Conductance @ 25°C	µmhos/cm	283	2090
Aluminum	mg/l	<10	<10
Calcium	mg/l	41	520
Iron	mg/l	<10	<10
Potassium	mg/l	15	17
Magnesium	mg/l	<10	<10
Manganese	mg/l	<1.0	<1.0
Sodium	mg/l	<10	<10

Table 8
(Continued)

Parameter	Units	Sample Identification and Date P6-1 (0-3) 2/20/93	P6-2 (0-3) 2/20/93
TCLP Metals:			
Silver	mg/l	<0.10	<0.10
Arsenic	mg/l	<0.10	<0.10
Barium	mg/l	<10	<10
Cadmium	mg/l	<0.10	<0.10
Chromium	mg/l	<0.10	<0.10
Mercury	mg/l	<0.010	<0.010
Nickel	mg/l	<1.0	<1.0
Lead	mg/l	<0.10	<0.10
Selenium	mg/l	<0.10	<0.10
TCLP Extraction Fluid Data:			
Extraction Fluid		No. 1	No. 1
pH with Deionized Water	pH units	8.90	9.00
pH of TCLP Extract	pH units	5.76	5.29
Amount of Sample Extracted	g	40.0	40.0
Volatile Organic Analyses:			
Acetone	µg/kg	<3300	<3700
Benzene	µg/kg	<3300	<3700
Bromodichloromethane	µg/kg	<3300	<3700
Bromoform	µg/kg	<3300	<3700
Bromomethane	µg/kg	<3300	<3700
2-Butanone	µg/kg	<3300	<3700
Carbon Disulfide	µg/kg	<3300	<3700
Carbon Tetrachloride	µg/kg	<3300	<3700
Chlorobenzene	µg/kg	<3300	<3700
Dibromochloromethane	µg/kg	<3300	<3700
Chloroethane	µg/kg	<3300	<3700
Chloromethane	µg/kg	<3300	<3700
Chloroform	µg/kg	<3300	<3700
1,1-Dichloroethane	µg/kg	<3300	<3700
1,2-Dichloroethane	µg/kg	<3300	<3700
1,1-Dichloroethene	µg/kg	<3300	<3700
1,2-Dichloroethene	µg/kg	<3300	<3700
1,2-Dichloropropane	µg/kg	<3300	<3700
Cis-1,3-Dichloropropene	µg/kg	<3300	<3700
Trans-1,3-Dichloropropene	µg/kg	<3300	<3700
Ethylbenzene	µg/kg	<3300	<3700
2-Hexanone	µg/kg	<3300	<3700
Methylene Chloride	µg/kg	<3300	<3700
4-Methyl-2-pentanone	µg/kg	<3300	<3700
Styrene	µg/kg	<3300	<3700
1,1,2,2-Tetrachloroethane	µg/kg	<3300	<3700
Tetrachloroethene	µg/kg	<3300	<3700
Toluene	µg/kg	<3300	<3700
1,1,1-Trichloroethane	µg/kg	<3300	<3700
1,1,2-Trichloroethane	µg/kg	<3300	<3700
Trichloroethene	µg/kg	<3300	<3700
Vinyl Chloride	µg/kg	<3300	<3700
Xylenes, Total	µg/kg	<3300	<3700

Table 8
(Continued)

Parameter	Units	Sample Identification and Date	
		P6-1 (0-3) 2/20/93	P6-2 (0-3) 2/20/93
Semivolatile Organic Analyses:			
Acenaphthene	µg/kg	<990	<990
Acenaphthylene	µg/kg	<990	<990
Anthracene	µg/kg	<990	<990
Bis(2-chloroethyl)ether	µg/kg	<990	<990
Bis(2-chloroethoxy)methane	µg/kg	<990	<990
Bis(2-chloroisopropyl)ether	µg/kg	<990	<990
Bis(2-ethylhexyl)phthalate	µg/kg	<990	<990
Benzo(a)pyrene	µg/kg	<990	<990
Benzo(a)anthracene	µg/kg	<990	<990
Benzo(b)fluoranthene	µg/kg	<990	<990
Benzo(g,h,i)perylene	µg/kg	<990	<990
Benzo(k)fluoranthene	µg/kg	<990	<990
4-Bromophenyl Phenyl Ether	µg/kg	<990	<990
Butylbenzyl Phthalate	µg/kg	<990	<990
Carbazole	µg/kg	<990	<990
Chrysene	µg/kg	<990	<990
4-Chloroaniline	µg/kg	<990	<990
2-Chloronaphthalene	µg/kg	<990	<990
2-Chlorophenol	µg/kg	<990	<990
4-Chlorophenyl Phenyl Ether	µg/kg	<990	<990
o-Cresol	µg/kg	<990	<990
p-Cresol	µg/kg	<990	<990
Dibenzo(a,h)anthracene	µg/kg	<990	<990
Dibenzofuran	µg/kg	<990	<990
2,4-Dichlorophenol	µg/kg	<990	<990
1,2-Dichlorobenzene	µg/kg	<990	<990
1,3-Dichlorobenzene	µg/kg	<990	<990
1,4-Dichlorobenzene	µg/kg	<990	<990
3,3-Dichlorobenzidine	µg/kg	<990	<990
Diethyl Phthalate	µg/kg	<990	<990
Dimethyl Phthalate	µg/kg	<990	<990
2,4-Dimethylphenol	µg/kg	<990	<990
Di-N-butyl Phthalate	µg/kg	<990	<990
4,6-Dinitro-o-cresol	µg/kg	<4800	<4800
2,4-Dinitrotoluene	µg/kg	<990	<990
2,6-Dinitrotoluene	µg/kg	<990	<990
Di-N-octyl Phthalate	µg/kg	<990	<990
2,4-Dinitrophenol	µg/kg	<4800	<4800
Fluoranthene	µg/kg	<990	<990
Fluorene	µg/kg	<990	<990
Hexachlorocyclopentadiene	µg/kg	<990	<990
Hexachlorobenzene	µg/kg	<990	<990
Hexachlorobutadiene	µg/kg	<990	<990
Hexachloroethane	µg/kg	<990	<990
Indeno(1,2,3-c,d)pyrene	µg/kg	<990	<990
Isophorone	µg/kg	<990	<990
2-Methylnaphthalene	µg/kg	<990	<990
N-Nitrosodiphenylamine	µg/kg	<990	<990
N-Nitroso-di-n-propylamine	µg/kg	<990	<990
Naphthalene	µg/kg	<990	<990
2-Nitroaniline	µg/kg	<4800	<4800
3-Nitroaniline	µg/kg	<4800	<4800
4-Nitroaniline	µg/kg	<4800	<4800
Nitrobenzene	µg/kg	<990	<990
2-Nitrophenol	µg/kg	<990	<990
4-Nitrophenol	µg/kg	<4800	<4800
p-chloro-m-cresol	µg/kg	<990	<990
Pentachlorophenol	µg/kg	<4800	<4800
Phenanthrene	µg/kg	<990	<990
Phenol	µg/kg	<990	<990
Pyrene	µg/kg	<990	<990
2,4,5-Trichlorophenol	µg/kg	<4800	<4800
2,4,6-Trichlorophenol	µg/kg	<990	<990
1,2,4-Trichlorobenzene	µg/kg	<990	<990

Table 9
Summary of Waste Chemistry Data
Pond 7 Residues
Fansteel, Inc.
Muskogee, Oklahoma

Parameter	Units	Sample Identification and Date	
		P7-1 (0-3) 2/20/93	P7-2 (0-3) 2/20/93
Total Analyses:			
Cyanide	mg/kg	<3.3	<3.7
Silver	mg/kg	<5.71	<6.42
Arsenic	mg/kg	<57.1	<64.2
Barium	mg/kg	79.7	91.7
Beryllium	mg/kg	22.5	21.4
Cadmium	mg/kg	<5.71	<6.42
Chromium	mg/kg	358	406
Mercury	mg/kg	1.72	2.98
Molybdenum	mg/kg	<29	<32
Nickel	mg/kg	95.0	61.1
Lead	mg/kg	102	98.4
Antimony	mg/kg	623	366
Selenium	mg/kg	<0.650	<0.750
Tin	mg/kg	3000	3400
Columbium	mg/kg	7600	5700
Tantalum	mg/kg	1600	1900
Gross Alpha	pCi/g	310±30	680±40
Gross Beta	pCi/g	130±10	270±10
Isotopes:			
Uranium-233 & 234	pCi/g	26±2	74±4
Uranium-235	pCi/g	1.3±0.5	3.9±1.0
Uranium-238	pCi/g	25±2	81±5
Thorium-230	pCi/g	24±1	54±3
Lead-210 @ 46 KeV	pCi/g	12±3	16±6
Thorium-234 @ 63.3 KeV	pCi/g	26±4	57±4
Thorium-234 @ 92.6 KeV	pCi/g	20±2	51±7
Protactinium-234m @ 1001 KeV	pCi/g	32±16	88±24
Radium 226	pCi/g	32±2	92±3
Lead-214 @ 295.2 KeV	pCi/g	12±1	32±1
Lead-214 @ 352.0 KeV	pCi/g	13±1	35±1
Bismuth-214 @ 609.4 KeV	pCi/g	12±1	33±1
Bismuth-214 @ 1120.4 KeV	pCi/g	12±1	33±2
Bismuth-214 @ 1764.7 KeV	pCi/g	10±1	30±2
Actinium-228 @ 338 KeV	pCi/g	13±1	35±2
Actinium-228 @ 911 KeV	pCi/g	15±1	37±1
Actinium-228 @ 968 KeV	pCi/g	15±1	38±2
Lead-212 @ 238 KeV	pCi/g	14±1	33±2
Bismuth-212 @ 727 KeV	pCi/g	17±1	39±3
Thallium-208 @ 583 KeV	pCi/g	13±1	35±1
Uranium-235 @ 143 KeV	pCi/g	1.1±0.3	2.8±0.6
Potassium-40 @ 1460 KeV	pCi/g	5.1±1.0	5.6±1.8
ASTM Analysis:			
Alkalinity	mg/l $CaCO_3$	20.0	14.0
Ammonia	mg/l NH3-N	7.8	3.3
Chloride	mg/l	22	8.9
Fluoride	mg/l	5.4	9.9
Nitrate	mg/l NO_3-N	<0.10	<0.10
Sulfate	mg/l	720	140
pH	pH Units	8.02	9.57
Specific Conductance @ 25°C	µmhos/cm	1530	735
Aluminum	mg/l	<10	<10
Calcium	mg/l	64	240
Iron	mg/l	<10	<10
Potassium	mg/l	30	39
Magnesium	mg/l	<10	<10
Manganese	mg/l	<1.0	<1.0
Sodium	mg/l	40	53

Table 9
(Continued)

Parameter	Units	Sample Identification and Date P7-1 (0-3) 2/20/93	P7-2 (0-3) 2/20/93
TCLP Metals:			
Silver	mg/l	<0.10	<0.10
Arsenic	mg/l	<0.10	<0.10
Barium	mg/l	<10	<10
Cadmium	mg/l	<0.10	<0.10
Chromium	mg/l	<0.10	<0.10
Mercury	mg/l	<0.010	<0.010
Nickel	mg/l	<1.0	<1.0
Lead	mg/l	<0.10	<0.10
Selenium	mg/l	<0.10	<0.10
TCLP Extraction Fluid Data:			
Extraction Fluid		No. 1	No. 1
pH with Deionized Water	pH units	8.85	9.48
pH of TCLP Extract	pH units	5.41	5.56
Amount of Sample Extracted	g	40.0	40.0
Volatile Organic Analyses:			
Acetone	µg/kg	<4200	<4800
Benzene	µg/kg	<4200	<4800
Bromodichloromethane	µg/kg	<4200	<4800
Bromoform	µg/kg	<4200	<4800
Bromomethane	µg/kg	<4200	<4800
2-Butanone	µg/kg	<4200	<4800
Carbon Disulfide	µg/kg	<4200	<4800
Carbon Tetrachloride	µg/kg	<4200	<4800
Chlorobenzene	µg/kg	<4200	<4800
Dibromochloromethane	µg/kg	<4200	<4800
Chloroethane	µg/kg	<4200	<4800
Chloromethane	µg/kg	<4200	<4800
Chloroform	µg/kg	<4200	<4800
1,1-Dichloroethane	µg/kg	<4200	<4800
1,2-Dichloroethane	µg/kg	<4200	<4800
1,1-Dichloroethene	µg/kg	<4200	<4800
1,2-Dichloroethene	µg/kg	<4200	<4800
1,2-Dichloropropane	µg/kg	<4200	<4800
Cis-1,3-Dichloropropene	µg/kg	<4200	<4800
Trans-1,3-Dichloropropene	µg/kg	<4200	<4800
Ethylbenzene	µg/kg	<4200	<4800
2-Hexanone	µg/kg	<4200	<4800
Methylene Chloride	µg/kg	<4200	<4800
4-Methyl-2-pentanone	µg/kg	<4200	<4800
Styrene	µg/kg	<4200	<4800
1,1,2,2-Tetrachloroethane	µg/kg	<4200	<4800
Tetrachloroethene	µg/kg	<4200	<4800
Toluene	µg/kg	<4200	<4800
1,1,1-Trichloroethane	µg/kg	<4200	<4800
1,1,2-Trichloroethane	µg/kg	<4200	<4800
Trichloroethene	µg/kg	<4200	<4800
Vinyl Chloride	µg/kg	<4200	<4800
Xylenes, Total	µg/kg	<4200	<4800

Table 9
(Continued)

Parameter	Units	Sample Identification and Date P7-1 (0-3) 2/20/93	P7-2 (0-3) 2/20/93
Semivolatile Organic Analyses:			
Acenaphthene	µg/kg	<990	<1300
Acenaphthylene	µg/kg	<990	<1300
Anthracene	µg/kg	<990	<1300
Bis(2-chloroethyl)ether	µg/kg	<990	<1300
Bis(2-chloroethoxy)methane	µg/kg	<990	<1300
Bis(2-chloroisopropyl)ether	µg/kg	<990	<1300
Bis(2-ethylhexyl)phthalate	µg/kg	<990	1300
Benzo(a)pyrene	µg/kg	<990	<1300
Benzo(a)anthracene	µg/kg	<990	<1300
Benzo(b)fluoranthene	µg/kg	<990	<1300
Benzo(g,h,i)perylene	µg/kg	<990	<1300
Benzo(k)fluoranthene	µg/kg	<990	<1300
4-Bromophenyl Phenyl Ether	µg/kg	<990	<1300
Butylbenzyl Phthalate	µg/kg	<990	<1300
Carbazole	µg/kg	<990	<1300
Chrysene	µg/kg	<990	<1300
4-Chloroaniline	µg/kg	<990	<1300
2-Chloronaphthalene	µg/kg	<990	<1300
2-Chlorophenol	µg/kg	<990	<1300
4-Chlorophenyl Phenyl Ether	µg/kg	<990	<1300
o-Cresol	µg/kg	<990	<1300
p-Cresol	µg/kg	<990	<1300
Dibenzo(a,h)anthracene	µg/kg	<990	<1300
Dibenzofuran	µg/kg	<990	<1300
2,4-Dichlorophenol	µg/kg	<990	<1300
1,2-Dichlorobenzene	µg/kg	<990	<1300
1,3-Dichlorobenzene	µg/kg	<990	<1300
1,4-Dichlorobenzene	µg/kg	<990	<1300
3,3-Dichlorobenzidine	µg/kg	<990	<1300
Diethyl Phthalate	µg/kg	<990	<1300
Dimethyl Phthalate	µg/kg	<990	<1300
2,4-Dimethylphenol	µg/kg	<990	<1300
Di-N-butyl Phthalate	µg/kg	<990	<1300
4,6-Dinitro-o-cresol	µg/kg	<5100	<6400
2,4-Dinitrotoluene	µg/kg	<990	<1300
2,6-Dinitrotoluene	µg/kg	<990	<1300
Di-N-octyl Phthalate	µg/kg	<990	<1300
2,4-Dinitrophenol	µg/kg	<5100	<6400
Fluoranthene	µg/kg	<990	<1300
Fluorene	µg/kg	<990	<1300
Hexachlorocyclopentadiene	µg/kg	<990	<1300
Hexachlorobenzene	µg/kg	<990	<1300
Hexachlorobutadiene	µg/kg	<990	<1300
Hexachloroethane	µg/kg	<990	<1300
Indeno(1,2,3-c,d)pyrene	µg/kg	<990	<1300
Isophorone	µg/kg	<990	<1300
2-Methylnaphthalene	µg/kg	<990	<1300
N-Nitrosodiphenylamine	µg/kg	<990	<1300
N-Nitroso-di-n-propylamine	µg/kg	<990	<1300
Naphthalene	µg/kg	<990	<1300
2-Nitroaniline	µg/kg	<5100	<6400
3-Nitroaniline	µg/kg	<5100	<6400
4-Nitroaniline	µg/kg	<5100	<6400
Nitrobenzene	µg/kg	<990	<1300
2-Nitrophenol	µg/kg	<990	<1300
4-Nitrophenol	µg/kg	<5100	<6400
p-chloro-m-cresol	µg/kg	<990	<1300
Pentachlorophenol	µg/kg	<5100	<6400
Phenanthrene	µg/kg	<990	<1300
Phenol	µg/kg	<990	<1300
Pyrene	µg/kg	<990	<1300
2,4,5-Trichlorophenol	µg/kg	<5100	<6400
2,4,6-Trichlorophenol	µg/kg	<990	<1300
1,2,4-Trichlorobenzene	µg/kg	<990	<1300

Table 10
Summary of Waste Chemistry Data
Pond 8 Residues
Fansteel, Inc.
Muskogee, Oklahoma

Parameter	Units	Sample Identification and Date				
		P8-1A (0-7) 2/22/93	P8-1B (7-14) 2/22/93	P8-1C (14-21) 2/22/93	P8-2A (0-9) 2/22/93	P8-2B (9-14) 2/22/93
Total Analyses:						
Cyanide	mg/kg	<4.3	(1)	<3.5	<2.9	<2.2
Silver	mg/kg	<8.54	-	<6.69	<5.87	<3.86
Arsenic	mg/kg	<85.4	-	81.2	70.4	58.0
Barium	mg/kg	74.4	-	71.7	46.7	64.3
Beryllium	mg/kg	20.2	-	17.9	12.4	11.5
Cadmium	mg/kg	<8.54	-	<6.69	<5.87	<3.86
Chromium	mg/kg	992	-	486	275	74.7
Mercury	mg/kg	0.692	-	0.538	0.435	0.681
Molybdenum	mg/kg	<43	-	<33	<29	<19
Nickel	mg/kg	73.8	-	111	69.7	27.4
Lead	mg/kg	<85.4	-	<66.9	<58.7	<38.6
Antimony	mg/kg	168	-	356	158	120
Selenium	mg/kg	<0.850	-	<0.700	<0.590	<0.430
Tin	mg/kg	1600	-	1800	960	360
Columbium	mg/kg	3200	-	5400	3300	1900
Tantalum	mg/kg	1400	-	2700	1200	1400
Gross Alpha	pCi/g	300±20	150±20	240±20	120±20	160±20
Gross Beta	pCi/g	190±10	82±8	110±10	63±7	59±7
Isotopes:						
Uranium-233 & 234	pCi/g	74±5	28±2	32±2	16±1	9.6±0.9
Uranium-235	pCi/g	2.7±0.9	1.1±0.4	1.4±0.5	1.1±0.3	0.7±0.2
Uranium-238	pCi/g	73±5	31±2	34±2	17±1	9.9±0.9
Thorium-230	pCi/g	14±1	12±1	24±1	10±1	13±1
Lead-210 @ 46 KeV	pCi/g	9.0±2.2	2.4±2.2	10±2	4.2±1.9	3.1±1.1
Thorium-234 @ 63.3 KeV	pCi/g	60±5	21±2	26±4	12±1	6.6±2.1
Thorium-234 @ 92.6 KeV	pCi/g	48±4	14±1	21±3	11±1	8.8±1.0
Protactinium-234m @ 1001 KeV	pCi/g	130±20	42±14	50±14	27±9	13±10
Radium 226	pCi/g	57±2	26±1	32±1	19±1	13±1
Lead-214 @ 295.2 KeV	pCi/g	9.4±0.6	5.2±0.5	9.4±0.6	5.5±0.5	8.3±0.5
Lead-214 @ 352.0 KeV	pCi/g	9.7±0.4	5.9±0.3	9.9±0.3	6.4±0.3	8.4±0.3
Bismuth-214 @ 609.4 KeV	pCi/g	9.6±0.4	5.8±0.3	9.7±0.4	6.1±0.3	8.4±0.3
Bismuth-214 @ 1120.4 KeV	pCi/g	9.6±0.8	5.7±0.8	8.7±0.8	6.3±0.6	8.6±0.7
Bismuth-214 @ 1764.7 KeV	pCi/g	9.5±0.7	4.8±0.6	8.3±0.7	5.2±0.7	7.7±0.6
Actinium-228 @ 338 KeV	pCi/g	11±1	6.0±0.6	7.8±0.5	4.9±0.5	9.9±0.6
Actinium-228 @ 911 KeV	pCi/g	12±1	6.2±0.4	8.3±0.6	5.5±0.4	10±1
Actinium-228 @ 968 KeV	pCi/g	12±1	6.4±0.6	8.6±0.7	5.3±0.6	12±1
Lead-212 @ 238 KeV	pCi/g	11±1	5.7±0.4	8.3±0.3	4.9±0.4	10±1
Bismuth-212 @ 727 KeV	pCi/g	14±1	6.7±1.2	9.6±1.2	5.9±1.1	12±1
Thallium-208 @ 583 KeV	pCi/g	11±1	5.9±0.4	7.5±0.4	5.3±0.3	9.9±0.4
Uranium-235 @ 143 KeV	pCi/g	2.4±0.3	7.2±1.8	1.2±0.2	0.91±0.19	0.47±0.18
Potassium-40 @ 1460 KeV	pCi/g	6.0±0.1	4.9±1.0	5.3±0.9	5.0±0.9	2.2±0.8
ASTM Analysis:						
Alkalinity	mg/l $CaCO_3$	77.0	-	36.0	69.0	2080
Ammonia	mg/l NH_3-N	13	-	18	12	7.4
Chloride	mg/l	36	-	38	42	25
Fluoride	mg/l	8.1	-	9.0	4.1	2.4
Nitrate	mg/l NO_3-N	0.20	-	<0.10	<0.10	<0.10
Sulfate	mg/l	270	-	190	890	730
pH	pH Units	9.95	-	9.01	10.99	10.97
Specific Conductance @ 25°C	µmhos/cm	1060	-	1240	2060	8350
Aluminum	mg/l	<10	-	<10	<10	<10
Calcium	mg/l	110	-	130	410	1300
Iron	mg/l	<10	-	<10	<10	<10
Potassium	mg/l	43	-	52	74	32
Magnesium	mg/l	<10	-	<10	<10	<10
Manganese	mg/l	<1.0	-	<1.0	<1.0	<1.0
Sodium	mg/l	63	-	83	98	49

See footnotes at end of table.

Table 10
(Continued)

Parameter	Units	Sample Identification and Date				
		P8-1A (0-7) 2/22/93	P8-1B (7-14) 2/22/93	P8-1C (14-21) 2/22/93	P8-2A (0-9) 2/22/93	P8-2B (9-14) 2/22/93
TCLP Metals:						
Silver	mg/l	<0.10	-	<0.10	<0.10	<0.10
Arsenic	mg/l	0.11	-	<0.10	0.12	<0.10
Barium	mg/l	<10	-	<10	<10	<10
Cadmium	mg/l	<0.10	-	<0.10	<0.10	<0.10
Chromium	mg/l	<0.10	-	<0.10	<0.10	<0.10
Mercury	mg/l	<0.010	-	<0.010	<0.010	<0.010
Nickel	mg/l	<1.0	-	<1.0	<1.0	<1.0
Lead	mg/l	<0.10	-	<0.10	<0.10	<0.10
Selenium	mg/l	<0.10	-	<0.10	<0.10	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 1	-	No. 1	No. 1	No. 2
pH with Deionized Water	pH units	9.83	-	9.10	10.93	12.55
pH of TCLP Extract	pH units	5.92	-	5.50	6.93	11.97
Amount of Sample Extracted	g	40.0	-	40.0	40.0	40.0
Volatile Organic Analyses:						
Acetone	µg/kg	<57000	<42000	<4500	<38000	3000
Benzene	µg/kg	<57000	<42000	<4500	<38000	<28000
Bromodichloromethane	µg/kg	<57000	<42000	<4500	<38000	<28000
Bromoform	µg/kg	<57000	<42000	<4500	<38000	<28000
Bromomethane	µg/kg	<57000	<42000	<4500	<38000	<28000
2-Butanone	µg/kg	<57000	<42000	<4500	<38000	<28000
Carbon Disulfide	µg/kg	<57000	<42000	<4500	<38000	<28000
Carbon Tetrachloride	µg/kg	<57000	<42000	<4500	<38000	<28000
Chlorobenzene	µg/kg	<57000	<42000	<4500	<38000	<28000
Dibromochloromethane	µg/kg	<57000	<42000	<4500	<38000	<28000
Chloroethane	µg/kg	<57000	<42000	<4500	<38000	<28000
Chloromethane	µg/kg	<57000	<42000	<4500	<38000	<28000
Chloroform	µg/kg	<57000	<42000	<4500	<38000	<28000
1,1-Dichloroethane	µg/kg	<57000	<42000	<4500	<38000	<28000
1,2-Dichloroethane	µg/kg	<57000	<42000	<4500	<38000	<28000
1,1-Dichloroethene	µg/kg	<57000	<42000	<4500	<38000	<28000
1,2-Dichloroethene	µg/kg	<57000	<42000	<4500	<38000	<28000
1,2-Dichloropropane	µg/kg	<57000	<42000	<4500	<38000	<28000
Cis-1,3-Dichloropropene	µg/kg	<57000	<42000	<4500	<38000	<28000
Trans-1,3-Dichloropropene	µg/kg	<57000	<42000	<4500	<38000	<28000
Ethylbenzene	µg/kg	<57000	<42000	<4500	<38000	<28000
2-Hexanone	µg/kg	<57000	<42000	<4500	<38000	<28000
Methylene Chloride	µg/kg	<57000	<42000	<4500	<38000	<28000
4-Methyl-2-pentanone	µg/kg	120000	190000	37000	120000	120000
Styrene	µg/kg	<57000	<42000	<4500	<38000	<28000
1,1,2,2-Tetrachloroethane	µg/kg	<57000	<42000	<4500	<38000	<28000
Tetrachloroethene	µg/kg	<57000	<42000	<4500	<38000	<28000
Toluene	µg/kg	<57000	<42000	<4500	<38000	<28000
1,1,1-Trichloroethane	µg/kg	<57000	<42000	<4500	<38000	<28000
1,1,2-Trichloroethane	µg/kg	<57000	<42000	<4500	<38000	<28000
Trichloroethene	µg/kg	<57000	<42000	<4500	<38000	<28000
Vinyl Chloride	µg/kg	<57000	<42000	<4500	<38000	<28000
Xylenes, Total	µg/kg	<57000	<42000	<4500	<38000	<28000

See footnotes at end of table.

Table 10
(Continued)

Parameter	Units	Sample Identification and Date				
		P8-1A (0-7) 2/22/93	P8-1B (7-14) 2/22/93	P8-1C (14-21) 2/22/93	P8-2A (0-9) 2/22/93	P8-2B (9-14) 2/22/93
Semivolatile Organic Analyses:						
Acenaphthene	µg/kg	<1300	<990	<990	<990	<660
Acenaphthylene	µg/kg	<1300	<990	<990	<990	<660
Anthracene	µg/kg	<1300	<990	<990	<990	<660
Bis(2-chloroethyl)ether	µg/kg	<1300	<990	<990	<990	<660
Bis(2-chloroethoxy)methane	µg/kg	<1300	<990	<990	<990	<660
Bis(2-chloroisopropyl)ether	µg/kg	<1300	<990	<990	<990	<660
Bis(2-ethylhexyl)phthalate	µg/kg	<1300	<990	<990	<990	<660
Benzo(a)pyrene	µg/kg	<1300	<990	<990	<990	<660
Benzo(a)anthracene	µg/kg	<1300	<990	<990	<990	<660
Benzo(b)fluoranthene	µg/kg	<1300	<990	<990	<990	<660
Benzo(g,h,i)perylene	µg/kg	<1300	<990	<990	<990	<660
Benzo(k)fluoranthene	µg/kg	<1300	<990	<990	<990	<660
4-Bromophenyl Phenyl Ether	µg/kg	<1300	<990	<990	<990	<660
Butylbenzyl Phthalate	µg/kg	<1300	<990	<990	<990	<660
Carbazole	µg/kg	<1300	<990	<990	<990	<660
Chrysene	µg/kg	<1300	<990	<990	<990	<660
4-Chloroaniline	µg/kg	<1300	<990	<990	<990	<660
2-Chloronaphthalene	µg/kg	<1300	<990	<990	<990	<660
2-Chlorophenol	µg/kg	<1300	<990	<990	<990	<660
4-Chlorophenyl Phenyl Ether	µg/kg	<1300	<990	<990	<990	<660
o-Cresol	µg/kg	<1300	<990	<990	<990	<660
p-Cresol	µg/kg	<1300	<990	<990	<990	<660
Dibenzo(a,h)anthracene	µg/kg	<1300	<990	<990	<990	<660
Dibenzofuran	µg/kg	<1300	<990	<990	<990	<660
2,4-Dichlorophenol	µg/kg	<1300	<990	<990	<990	<660
1,2-Dichlorobenzene	µg/kg	<1300	<990	<990	<990	<660
1,3-Dichlorobenzene	µg/kg	<1300	<990	<990	<990	<660
1,4-Dichlorobenzene	µg/kg	<1300	<990	<990	<990	<660
3,3-Dichlorobenzidine	µg/kg	<1300	<990	<990	<990	<660
Diethyl Phthalate	µg/kg	<1300	<990	<990	<990	<660
Dimethyl Phthalate	µg/kg	<1300	<990	<990	<990	<660
2,4-Dimethylphenol	µg/kg	<1300	<990	<990	<990	<660
Di-N-butyl Phthalate	µg/kg	<1300	<990	1000	1400	<660
4,6-Dinitro-o-cresol	µg/kg	<6400	<4800	<5100	<5100	<3200
2,4-Dinitrotoluene	µg/kg	<1300	<990	<990	<990	<660
2,6-Dinitrotoluene	µg/kg	<1300	<990	<990	<990	<660
Di-N-octyl Phthalate	µg/kg	<1300	<990	<990	<990	<660
2,4-Dinitrophenol	µg/kg	<6400	<4800	<5100	<5100	<3200
Fluoranthene	µg/kg	<1300	<990	<990	<990	<660
Fluorene	µg/kg	<1300	<990	<990	<990	<660
Hexachlorocyclopentadiene	µg/kg	<1300	<990	<990	<990	<660
Hexachlorobenzene	µg/kg	<1300	<990	<990	<990	<660
Hexachlorobutadiene	µg/kg	<1300	<990	<990	<990	<660
Hexachloroethane	µg/kg	<1300	<990	<990	<990	<660
Indeno(1,2,3-c,d)pyrene	µg/kg	<1300	<990	<990	<990	<660
Isophorone	µg/kg	<1300	<990	<990	<990	<660
2-Methylnaphthalene	µg/kg	<1300	<990	<990	<990	<660
N-Nitrosodiphenylamine	µg/kg	<1300	<990	<990	<990	<660
N-Nitroso-di-n-propylamine	µg/kg	<1300	<990	<990	<990	<660
Naphthalene	µg/kg	<1300	<990	<990	<990	<660
2-Nitroaniline	µg/kg	<6400	<4800	<5100	<5100	<3200
3-Nitroaniline	µg/kg	<6400	<4800	<5100	<5100	<3200
4-Nitroaniline	µg/kg	<6400	<4800	<5100	<5100	<3200
Nitrobenzene	µg/kg	<1300	<990	<990	<990	<660
2-Nitrophenol	µg/kg	<1300	<990	<990	<990	<660
4-Nitrophenol	µg/kg	<6400	<4800	<5100	<5100	<3200
p-chloro-m-cresol	µg/kg	<1300	<990	<990	<990	<660
Pentachlorophenol	µg/kg	<6400	<4800	<5100	<5100	<3200
Phenanthrene	µg/kg	<1300	<990	<990	<990	<660
Phenol	µg/kg	<1300	<990	<990	<990	<660
Pyrene	µg/kg	<1300	<990	<990	<990	<660
2,4,5-Trichlorophenol	µg/kg	<6400	<4800	<5100	<5100	<3200
2,4,6-Trichlorophenol	µg/kg	<1300	<990	<990	<990	<660
1,2,4-Trichlorobenzene	µg/kg	<1300	<990	<990	<990	<660

See footnotes at end of table.

Table 10
(Continued)

Parameter	Units	Sample Identification and Date				
		P8-2C (14-20) 2/22/93	P8-3A (0-9) 2/22/93	P8-3B (9-18) 2/22/93	P8-3C (18-27) 2/22/93	P8-4A (0-9) 2/22/93
Total Analyses:						
Cyanide	mg/kg	<2.4	<3.8	<3.7	<2.9	<3.8
Silver	mg/kg	<4.70	<7.18	<7.32	<5.17	<7.54
Arsenic	mg/kg	66.0	<71.8	91.1	<51.7	86.7
Barium	mg/kg	105	42.3	72.7	24.2	60.0
Beryllium	mg/kg	12.7	13.6	12.1	8.40	27.3
Cadmium	mg/kg	<4.70	<7.18	<7.32	<5.17	<7.54
Chromium	mg/kg	127	527	204	311	777
Mercury	mg/kg	1.24	0.351	0.242	1.13	0.236
Molybdenum	mg/kg	<24	<36	<37	<26	38
Nickel	mg/kg	58.5	54.0	97.1	34.7	159
Lead	mg/kg	<47.0	<71.8	<73.2	<51.7	<75.4
Antimony	mg/kg	106	224	194	115	513
Selenium	mg/kg	<0.470	<0.760	<0.730	<0.580	<0.770
Tin	mg/kg	610	1000	1000	680	1700
Columbium	mg/kg	1500	4800	5300	2800	5200
Tantalum	mg/kg	3700	650	1400	750	1400
Gross Alpha	pCi/g	360±30	210±20	120±20	290±30	170±20
Gross Beta	pCi/g	150±10	100±10	76±8	110±10	88±8
Isotopes:						
Uranium-233 & 234	pCi/g	25±2	39±2	25±2	20±2	33±2
Uranium-235	pCi/g	1.6±0.5	1.5±0.4	0.8±0.3	1.2±0.3	1.9±0.5
Uranium-238	pCi/g	25±2	42±2	27±2	20±1	33±2
Thorium-230	pCi/g	29±2	12±1	6.8±0.7	21±1	9.9±0.9
Lead-210 @ 46 KeV	pCi/g	6.3±1.4	4.2±1.3	5.0±2.9	4.8±1.1	5.2±1.3
Thorium-234 @ 63.3 KeV	pCi/g	19±2	32±4	24±2	16±1	28±4
Thorium-234 @ 92.6 KeV	pCi/g	21±3	29±3	15±1	17±3	25±3
Protactinium-234m @ 1001 KeV	pCi/g	44±14	70±13	57±14	34±11	59±13
Radium 226	pCi/g	31±2	36±2	25±2	28±2	31±1
Lead-214 @ 295.2 KeV	pCi/g	18±1	7.4±0.5	3.3±0.6	11±1	5.2±0.5
Lead-214 @ 352.0 KeV	pCi/g	19±1	7.2±0.3	4.5±0.3	11±1	5.5±0.2
Bismuth-214 @ 609.4 KeV	pCi/g	19±1	7.1±0.3	4.1±0.3	11±1	5.2±0.3
Bismuth-214 @ 1120.4 KeV	pCi/g	19±1	7.1±0.7	3.9±0.6	11±1	5.2±0.7
Bismuth-214 @ 1764.7 KeV	pCi/g	18±1	6.1±0.7	3.8±0.7	9.9±0.8	4.3±0.6
Actinium-228 @ 338 KeV	pCi/g	20±1	7.8±0.6	4.5±0.5	18±1	5.8±0.6
Actinium-228 @ 911 KeV	pCi/g	23±1	8.8±0.5	4.5±0.4	18±1	6.3±0.4
Actinium-228 @ 968 KeV	pCi/g	23±1	9.1±0.8	5.0±0.8	18±1	6.9±0.6
Lead-212 @ 238 KeV	pCi/g	21±1	8.2±0.3	4.0±0.3	14±1	6.0±0.3
Bismuth-212 @ 727 KeV	pCi/g	26±2	10±1	6.1±1.3	19±2	6.3±1.3
Thallium-208 @ 583 KeV	pCi/g	22±1	8.2±0.4	4.3±0.4	17±1	5.6±0.4
Uranium-235 @ 143 KeV	pCi/g	1.1±0.3	1.4±0.2	1.4±0.2	1.0±0.3	1.4±0.2
Potassium-40 @ 1460 KeV	pCi/g	4.6±1.2	5.4±0.9	4.7±1.1	3.0±0.9	5.0±0.9
ASTM Analysis:						
Alkalinity	mg/l $CaCO_3$	2060	51.0	44.0	49.0	45.0
Ammonia	mg/l NH3-N	9.5	10	19	10	11
Chloride	mg/l	28	38	40	25	47
Fluoride	mg/l	2.9	6.1	5.5	4.0	5.4
Nitrate	mg/l NO_3-N	<0.10	0.43	0.14	<0.10	0.20
Sulfate	mg/l	790	310	640	780	540
pH	pH Units	12.67	8.93	9.45	10.53	9.12
Specific Conductance @ 25°C	µmhos/cm	8220	1400	1950	1880	1470
Aluminum	mg/l	<10	<10	<10	<10	<10
Calcium	mg/l	1200	190	320	440	250
Iron	mg/l	<10	<10	<10	<10	<10
Potassium	mg/l	32	41	62	40	57
Magnesium	mg/l	<10	<10	<10	<10	<10
Manganese	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Sodium	mg/l	51	62	86	56	80

See footnotes at end of table.

Table 10
(Continued)

Parameter	Units	Sample Identification and Date				
		P8-2C (14-20) 2/22/93	P8-3A (0-9) 2/22/93	P8-3B (9-18) 2/22/93	P8-3C (18-27) 2/22/93	P8-4A (0-9) 2/22/93
TCLP Metals:						
Silver	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	mg/l	0.14	<0.10	0.20	<0.10	0.11
Barium	mg/l	<10	<10	<10	<10	<10
Cadmium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Mercury	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Nickel	mg/l	<1.0	<1.0	<1.0	1.3	<1.0
Lead	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Selenium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 2	No. 1	No. 1	No. 1	No. 1
pH with Deionized Water	pH units	12.55	10.00	9.34	10.43	10.31
pH of TCLP Extract	pH units	11.62	5.95	6.38	5.76	5.46
Amount of Sample Extracted	g	40.0	40.0	40.0	40.0	40.0
Volatile Organic Analyses:						
Acetone	µg/kg	<31000	<50000	<48000	<37000	<50000
Benzene	µg/kg	<31000	<50000	<48000	<37000	<50000
Bromodichloromethane	µg/kg	<31000	<50000	<48000	<37000	<50000
Bromoform	µg/kg	<31000	<50000	<48000	<37000	<50000
Bromomethane	µg/kg	<31000	<50000	<48000	<37000	<50000
2-Butanone	µg/kg	<31000	<50000	<48000	<37000	<50000
Carbon Disulfide	µg/kg	<31000	<50000	<48000	<37000	<50000
Carbon Tetrachloride	µg/kg	<31000	<50000	<48000	<37000	<50000
Chlorobenzene	µg/kg	<31000	<50000	<48000	<37000	<50000
Dibromochloromethane	µg/kg	<31000	<50000	<48000	<37000	<50000
Chloroethane	µg/kg	<31000	<50000	<48000	<37000	<50000
Chloromethane	µg/kg	<31000	<50000	<48000	<37000	<50000
Chloroform	µg/kg	<31000	<50000	<48000	<37000	<50000
1,1-Dichloroethane	µg/kg	<31000	<50000	<48000	<37000	<50000
1,2-Dichloroethane	µg/kg	<31000	<50000	<48000	<37000	<50000
1,1-Dichloroethene	µg/kg	<31000	<50000	<48000	<37000	<50000
1,2-Dichloroethene	µg/kg	<31000	<50000	<48000	<37000	<50000
1,2-Dichloropropane	µg/kg	<31000	<50000	<48000	<37000	<50000
Cis-1,3-Dichloropropene	µg/kg	<31000	<50000	<48000	<37000	<50000
Trans-1,3-Dichloropropene	µg/kg	<31000	<50000	<48000	<37000	<50000
Ethylbenzene	µg/kg	<31000	<50000	<48000	<37000	<50000
2-Hexanone	µg/kg	<31000	<50000	<48000	<37000	<50000
Methylene Chloride	µg/kg	<31000	<50000	<48000	<37000	<50000
4-Methyl-2-pentanone	µg/kg	100000	86000	110000	57000	100000
Styrene	µg/kg	<31000	<50000	<48000	<37000	<50000
1,1,2,2-Tetrachloroethane	µg/kg	<31000	<50000	<48000	<37000	<50000
Tetrachloroethene	µg/kg	<31000	<50000	<48000	<37000	<50000
Toluene	µg/kg	<31000	<50000	<48000	<37000	<50000
1,1,1-Trichloroethane	µg/kg	<31000	<50000	<48000	<37000	<50000
1,1,2-Trichloroethane	µg/kg	<31000	<50000	<48000	<37000	<50000
Trichloroethene	µg/kg	<31000	<50000	<48000	<37000	<50000
Vinyl Chloride	µg/kg	<31000	<50000	<48000	<37000	<50000
Xylenes, Total	µg/kg	<31000	<50000	<48000	<37000	<50000

See footnotes at end of table.

Table 10
(Continued)

Parameter	Units	Sample Identification and Date				
		P8-2C (14-20) 2/22/93	P8-3A (0-9) 2/22/93	P8-3B (9-18) 2/22/93	P8-3C (18-27) 2/22/93	P8-4A (0-9) 2/22/93
Semivolatile Organic Analyses:						
Acenaphthene	µg/kg	<660	<1300	<1300	<990	<1300
Acenaphthylene	µg/kg	<660	<1300	<1300	<990	<1300
Anthracene	µg/kg	<660	<1300	<1300	<990	<1300
Bis(2-chloroethyl)ether	µg/kg	<660	<1300	<1300	<990	<1300
Bis(2-chloroethoxy)methane	µg/kg	<660	<1300	<1300	<990	<1300
Bis(2-chloroisopropyl)ether	µg/kg	<660	<1300	<1300	<990	<1300
Bis(2-ethylhexyl)phthalate	µg/kg	<660	<1300	<1300	<990	<1300
Benzo(a)pyrene	µg/kg	<660	<1300	<1300	<990	<1300
Benzo(a)anthracene	µg/kg	<660	<1300	<1300	<990	<1300
Benzo(b)fluoranthene	µg/kg	<660	<1300	<1300	<990	<1300
Benzo(g,h,i)perylene	µg/kg	<660	<1300	<1300	<990	<1300
Benzo(k)fluoranthene	µg/kg	<660	<1300	<1300	<990	<1300
4-Bromophenyl Phenyl Ether	µg/kg	<660	<1300	<1300	<990	<1300
Butylbenzyl Phthalate	µg/kg	<660	<1300	<1300	<990	<1300
Carbazole	µg/kg	<660	<1300	<1300	<990	<1300
Chrysene	µg/kg	<660	<1300	<1300	<990	<1300
4-Chloroaniline	µg/kg	<660	<1300	<1300	<990	<1300
2-Chloronaphthalene	µg/kg	<660	<1300	<1300	<990	<1300
2-Chlorophenol	µg/kg	<660	<1300	<1300	<990	<1300
4-Chlorophenyl Phenyl Ether	µg/kg	<660	<1300	<1300	<990	<1300
o-Cresol	µg/kg	<660	<1300	<1300	<990	<1300
p-Cresol	µg/kg	<660	<1300	<1300	<990	<1300
Dibenzo(a,h)anthracene	µg/kg	<660	<1300	<1300	<990	<1300
Dibenzofuran	µg/kg	<660	<1300	<1300	<990	<1300
2,4-Dichlorophenol	µg/kg	<660	<1300	<1300	<990	<1300
1,2-Dichlorobenzene	µg/kg	<660	<1300	<1300	<990	<1300
1,3-Dichlorobenzene	µg/kg	<660	<1300	<1300	<990	<1300
1,4-Dichlorobenzene	µg/kg	<660	<1300	<1300	<990	<1300
3,3-Dichlorobenzidine	µg/kg	<660	<1300	<1300	<990	<1300
Diethyl Phthalate	µg/kg	<660	<1300	<1300	<990	<1300
Dimethyl Phthalate	µg/kg	<660	<1300	<1300	<990	<1300
2,4-Dimethylphenol	µg/kg	<660	<1300	<1300	<990	<1300
Di-N-butyl Phthalate	µg/kg	900	1600	1800	<990	<1300
4,6-Dinitro-o-cresol	µg/kg	<3200	<6800	<6800	<5100	<6800
2,4-Dinitrotoluene	µg/kg	<660	<1300	<1300	<990	<1300
2,6-Dinitrotoluene	µg/kg	<660	<1300	<1300	<990	<1300
Di-N-octyl Phthalate	µg/kg	<660	<1300	<1300	<990	<1300
2,4-Dinitrophenol	µg/kg	<3200	<6800	<6800	<5100	<6800
Fluoranthene	µg/kg	<660	<1300	<1300	<990	<1300
Fluorene	µg/kg	<660	<1300	<1300	<990	<1300
Hexachlorocyclopentadiene	µg/kg	<660	<1300	<1300	<990	<1300
Hexachlorobenzene	µg/kg	<660	<1300	<1300	<990	<1300
Hexachlorobutadiene	µg/kg	<660	<1300	<1300	<990	<1300
Hexachloroethane	µg/kg	<660	<1300	<1300	<990	<1300
Indeno(1,2,3-c,d)pyrene	µg/kg	<660	<1300	<1300	<990	<1300
Isophorone	µg/kg	<660	<1300	<1300	<990	<1300
2-Methylnaphthalene	µg/kg	<660	<1300	<1300	<990	<1300
N-Nitrosodiphenylamine	µg/kg	<660	<1300	<1300	<990	<1300
N-Nitroso-di-n-propylamine	µg/kg	<660	<1300	<1300	<990	<1300
Naphthalene	µg/kg	<660	<1300	<1300	<990	<1300
2-Nitroaniline	µg/kg	<3200	<6800	<6800	<5100	<6800
3-Nitroaniline	µg/kg	<3200	<6800	<6800	<5100	<6800
4-Nitroaniline	µg/kg	<3200	<6800	<6800	<5100	<6800
Nitrobenzene	µg/kg	<660	<1300	<1300	<990	<1300
2-Nitrophenol	µg/kg	<660	<1300	<1300	<990	<1300
4-Nitrophenol	µg/kg	<3200	<6800	<6800	<5100	<6800
p-chloro-m-cresol	µg/kg	<660	<1300	<1300	<990	<1300
Pentachlorophenol	µg/kg	<3200	<6800	<6800	<5100	<6800
Phenanthrene	µg/kg	<660	<1300	<1300	<990	<1300
Phenol	µg/kg	<660	<1300	<1300	<990	<1300
Pyrene	µg/kg	<660	<1300	<1300	<990	<1300
2,4,5-Trichlorophenol	µg/kg	<3200	<6800	<6800	<5100	<6800
2,4,6-Trichlorophenol	µg/kg	<660	<1300	<1300	<990	<1300
1,2,4-Trichlorobenzene	µg/kg	<660	<1300	<1300	<990	<1300

See footnotes at end of table.

Table 10
(Continued)

Parameter	Units	Sample Identification and Date				
		P8-4B (9-18) 2/22/93	P8-4C (18-27) 2/22/93	P8-5A (0-7) 2/22/93	P8-5B (7-16) 2/22/93	P8-5C (16-24) 2/22/93
Total Analyses:						
Cyanide	mg/kg	<3.7	<3.1	<3.7	<3.0	<3.1
Silver	mg/kg	<6.83	<5.68	<7.20	<5.33	<5.75
Arsenic	mg/kg	<68.3	<56.8	77.5	<53.3	58.0
Barium	mg/kg	94.0	42.3	61.5	104	36.8
Beryllium	mg/kg	18.1	12.8	18.9	11.3	10.1
Cadmium	mg/kg	<6.83	<5.68	<7.20	<5.33	<5.75
Chromium	mg/kg	377	415	412	209	194
Mercury	mg/kg	0.222	1.12	0.298	0.197	0.666
Molybdenum	mg/kg	<34	<28	<36	<27	<29
Nickel	mg/kg	120	48.5	76.3	45.3	47.4
Lead	mg/kg	<68.3	<56.8	<72.0	<53.3	<57.5
Antimony	mg/kg	216	144	260	138	132
Selenium	mg/kg	<0.740	<0.610	<0.750	<0.600	<0.620
Tin	mg/kg	1600	860	1200	1300	760
Columbium	mg/kg	5500	5400	3900	3300	2500
Tantalum	mg/kg	840	3000	1400	1100	2800
Gross Alpha	pCi/g	120±20	300±20	160±20	140±20	310±30
Gross Beta	pCi/g	81±8	120±10	76±8	72±8	130±10
Isotopes:						
Uranium-233 & 234	pCi/g	31±2	20±1	30±2	19±1	23±2
Uranium-235	pCi/g	1.0±0.4	0.7±0.2	1.6±0.4	1.5±0.4	1.2±0.4
Uranium-238	pCi/g	31±2	21±1	30±2	21±1	24±2
Thorium-230	pCi/g	7.7±0.7	20±1	7.4±0.7	7.8±0.9	14±1
Lead-210 @ 46 KeV	pCi/g	2.9±2.2	4.7±1.8	3.9±1.3	2.2±1.4	5.9±1.5
Thorium-234 @ 63.3 KeV	pCi/g	26±2	17±2	27±2	14±2	19±2
Thorium-234 @ 92.6 KeV	pCi/g	18±1	17±1	18±1	14±2	20±3
Protactinium-234m @ 1001 KeV	pCi/g	55±13	44±11	28±2	27±10	34±18
Radium 226	pCi/g	28±1	27±1	28±2	18±1	32±2
Lead-214 @ 295.2 KeV	pCi/g	3.7±0.4	9.6±0.6	5.1±0.5	6.1±0.4	16±1
Lead-214 @ 352.0 KeV	pCi/g	4.2±0.2	10±1	5.6±0.3	6.4±0.2	17±1
Bismuth-214 @ 609.4 KeV	pCi/g	3.9±0.3	9.7±0.4	5.1±0.3	6.0±0.3	16±1
Bismuth-214 @ 1120.4 KeV	pCi/g	4.2±0.7	9.8±0.7	5.0±0.8	6.6±0.6	16±1
Bismuth-214 @ 1764.7 KeV	pCi/g	3.7±0.6	9.4±0.8	5.0±0.6	6.0±0.6	14±1
Actinium-228 @ 338 KeV	pCi/g	3.9±0.5	15±1	5.3±0.6	5.6±0.4	20±1
Actinium-228 @ 911 KeV	pCi/g	4.5±0.4	16±1	6.4±0.5	5.4±0.4	23±1
Actinium-228 @ 968 KeV	pCi/g	4.6±0.6	18±1	5.9±0.7	6.0±0.6	22±1
Lead-212 @ 238 KeV	pCi/g	4.2±0.3	16±1	5.4±0.4	4.5±0.2	18±1
Bismuth-212 @ 727 KeV	pCi/g	5.4±1.0	18±2	7.7±1.2	7.3±1.0	25±2
Thallium-208 @ 583 KeV	pCi/g	4.4±0.4	16±1	5.7±0.4	5.4±3	21±1
Uranium-235 @ 143 KeV	pCi/g	1.4±0.2	0.8±0.2	1.0±0.2	0.60±0.20	0.76±0.34
Potassium-40 @ 1460 KeV	pCi/g	5.3±1.0	5.1±0.7	3.2±1.0	2.6±0.7	0.00±0.70
ASTM Analysis:						
Alkalinity	mg/l $CaCO_3$	53.0	16.0	57.0	70.0	32.0
Ammonia	mg/l NH3-N	19	15	7.3	11	12
Chloride	mg/l	38	23	40	41	21
Fluoride	mg/l	6.3	6.2	4.8	3.7	6.4
Nitrate	mg/l NO_3-N	0.19	<0.10	0.21	<0.10	<0.10
Sulfate	mg/l	320	350	270	720	1200
pH	pH Units	9.56	7.84	9.78	11.02	9.69
Specific Conductance @ 25°C	µmhos/cm	1600	1560	1050	2060	2270
Aluminum	mg/l	<10	<10	<10	<10	<10
Calcium	mg/l	280	240	120	340	490
Iron	mg/l	<10	<10	<10	<10	<10
Potassium	mg/l	64	36	36	52	45
Magnesium	mg/l	<10	<10	<10	<10	<10
Manganese	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Sodium	mg/l	87	48	56	68	57

See footnotes at end of table.

Table 10
(Continued)

Parameter	Units	Sample Identification and Date				
		P8-4B (9-18) 2/22/93	P8-4C (18-27) 2/22/93	P8-5A (0-7) 2/22/93	P8-5B (7-16) 2/22/93	P8-5C (16-24) 2/22/93
TCLP Metals:						
Silver	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	mg/l	0.12	<0.10	0.11	<0.10	<0.10
Barium	mg/l	<10	<10	<10	<10	<10
Cadmium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	mg/l	<0.10	<0.10	0.18	<0.10	<0.10
Mercury	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Nickel	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Lead	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Selenium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 1	No. 1	No. 2	No. 1	No. 1
pH with Deionized Water	pH units	9.44	8.47	10.94	10.99	9.64
pH of TCLP Extract	pH units	5.61	5.44	5.10	7.73	6.00
Amount of Sample Extracted	g	40.0	40.0	40.0	40.0	40.0
Volatile Organic Analyses:						
Acetone	µg/kg	<48000	<3900	<4800	<38000	<41000
Benzene	µg/kg	<48000	<3900	<4800	<38000	<41000
Bromodichloromethane	µg/kg	<48000	<3900	<4800	<38000	<41000
Bromoform	µg/kg	<48000	<3900	<4800	<38000	<41000
Bromomethane	µg/kg	<48000	<3900	<4800	<38000	<41000
2-Butanone	µg/kg	<48000	<3900	<4800	<38000	<41000
Carbon Disulfide	µg/kg	<48000	<3900	<4800	<38000	<41000
Carbon Tetrachloride	µg/kg	<48000	<3900	<4800	<38000	<41000
Chlorobenzene	µg/kg	<48000	<3900	<4800	<38000	<41000
Dibromochloromethane	µg/kg	<48000	<3900	<4800	<38000	<41000
Chloroethane	µg/kg	<48000	<3900	<4800	<38000	<41000
Chloromethane	µg/kg	<48000	<3900	<4800	<38000	<41000
Chloroform	µg/kg	<48000	<3900	<4800	<38000	<41000
1,1-Dichloroethane	µg/kg	<48000	<3900	<4800	<38000	<41000
1,2-Dichloroethane	µg/kg	<48000	<3900	<4800	<38000	<41000
1,1-Dichloroethene	µg/kg	<48000	<3900	<4800	<38000	<41000
1,2-Dichloroethene	µg/kg	<48000	<3900	<4800	<38000	<41000
1,2-Dichloropropane	µg/kg	<48000	<3900	<4800	<38000	<41000
Cis-1,3-Dichloropropene	µg/kg	<48000	<3900	<4800	<38000	<41000
Trans-1,3-Dichloropropene	µg/kg	<48000	<3900	<4800	<38000	<41000
Ethylbenzene	µg/kg	<48000	<3900	<4800	<38000	<41000
2-Hexanone	µg/kg	<48000	<3900	<4800	<38000	<41000
Methylene Chloride	µg/kg	<48000	<3900	<4800	<38000	<41000
4-Methyl-2-pentanone	µg/kg	94000	4800	24000	54000	50000
Styrene	µg/kg	<48000	<3900	<4800	<38000	<41000
1,1,2,2-Tetrachloroethane	µg/kg	<48000	<3900	<4800	<38000	<41000
Tetrachloroethene	µg/kg	<48000	<3900	<4800	<38000	<41000
Toluene	µg/kg	<48000	<3900	<4800	<38000	<41000
1,1,1-Trichloroethane	µg/kg	<48000	<3900	<4800	<38000	<41000
1,1,2-Trichloroethane	µg/kg	<48000	<3900	<4800	<38000	<41000
Trichloroethene	µg/kg	<48000	<3900	<4800	<38000	<41000
Vinyl Chloride	µg/kg	<48000	<3900	<4800	<38000	<41000
Xylenes, Total	µg/kg	<48000	<3900	<4800	<38000	<41000

See footnotes at end of table.

Table 10
(Continued)

Parameter	Units	Sample Identification and Date				
		P8-4B (9-18) 2/22/93	P8-4C (18-27) 2/22/93	P8-5A (0-7) 2/22/93	P8-5B (7-16) 2/22/93	P8-5C (16-24) 2/22/93
Semivolatile Organic Analyses:						
Acenaphthene	µg/kg	<1300	<990	<1300	<990	<990
Acenaphthylene	µg/kg	<1300	<990	<1300	<990	<990
Anthracene	µg/kg	<1300	<990	<1300	<990	<990
Bis(2-chloroethyl)ether	µg/kg	<1300	<990	<1300	<990	<990
Bis(2-chloroethoxy)methane	µg/kg	<1300	<990	<1300	<990	<990
Bis(2-chloroisopropyl)ether	µg/kg	<1300	<990	<1300	<990	<990
Bis(2-ethylhexyl)phthalate	µg/kg	<1300	<990	<1300	<990	<990
Benzo(a)pyrene	µg/kg	<1300	<990	<1300	<990	<990
Benzo(a)anthracene	µg/kg	<1300	<990	<1300	<990	<990
Benzo(b)fluoranthene	µg/kg	<1300	<990	<1300	<990	<990
Benzo(g,h,i)perylene	µg/kg	<1300	<990	<1300	<990	<990
Benzo(k)fluoranthene	µg/kg	<1300	<990	<1300	<990	<990
4-Bromophenyl Phenyl Ether	µg/kg	<1300	<990	<1300	<990	<990
Butylbenzyl Phthalate	µg/kg	<1300	<990	<1300	<990	<990
Carbazole	µg/kg	<1300	<990	<1300	<990	<990
Chrysene	µg/kg	<1300	<990	<1300	<990	<990
4-Chloroaniline	µg/kg	<1300	<990	<1300	<990	<990
2-Chloronaphthalene	µg/kg	<1300	<990	<1300	<990	<990
2-Chlorophenol	µg/kg	<1300	<990	<1300	<990	<990
4-Chlorophenyl Phenyl Ether	µg/kg	<1300	<990	<1300	<990	<990
o-Cresol	µg/kg	<1300	<990	<1300	<990	<990
p-Cresol	µg/kg	<1300	<990	<1300	<990	<990
Dibenzo(a,h)anthracene	µg/kg	<1300	<990	<1300	<990	<990
Dibenzofuran	µg/kg	<1300	<990	<1300	<990	<990
2,4-Dichlorophenol	µg/kg	<1300	<990	<1300	<990	<990
1,2-Dichlorobenzene	µg/kg	<1300	<990	<1300	<990	<990
1,3-Dichlorobenzene	µg/kg	<1300	<990	<1300	<990	<990
1,4-Dichlorobenzene	µg/kg	<1300	<990	<1300	<990	<990
3,3-Dichlorobenzidine	µg/kg	<1300	<990	<1300	<990	<990
Diethyl Phthalate	µg/kg	<1300	<990	<1300	<990	<990
Dimethyl Phthalate	µg/kg	<1300	<990	<1300	<990	<990
2,4-Dimethylphenol	µg/kg	<1300	<990	<1300	<990	<990
Di-N-butyl Phthalate	µg/kg	2600	1400	<1300	<990	<990
4,6-Dinitro-o-cresol	µg/kg	<6800	<5100	<6800	<4800	<4800
2,4-Dinitrotoluene	µg/kg	<1300	<990	<1300	<990	<990
2,6-Dinitrotoluene	µg/kg	<1300	<990	<1300	<990	<990
Di-N-octyl Phthalate	µg/kg	<1300	<990	<1300	<990	<990
2,4-Dinitrophenol	µg/kg	<6800	<5100	<6800	<4800	<4800
Fluoranthene	µg/kg	<1300	<990	<1300	<990	<990
Fluorene	µg/kg	<1300	<990	<1300	<990	<990
Hexachlorocyclopentadiene	µg/kg	<1300	<990	<1300	<990	<990
Hexachlorobenzene	µg/kg	<1300	<990	<1300	<990	<990
Hexachlorobutadiene	µg/kg	<1300	<990	<1300	<990	<990
Hexachloroethane	µg/kg	<1300	<990	<1300	<990	<990
Indeno(1,2,3-c,d)pyrene	µg/kg	<1300	<990	<1300	<990	<990
Isophorone	µg/kg	<1300	<990	<1300	<990	<990
2-Methylnaphthalene	µg/kg	<1300	<990	<1300	<990	<990
N-Nitrosodiphenylamine	µg/kg	<1300	<990	<1300	<990	<990
N-Nitroso-di-n-propylamine	µg/kg	<1300	<990	<1300	<990	<990
Naphthalene	µg/kg	<1300	<990	<1300	<990	<990
2-Nitroaniline	µg/kg	<6800	<5100	<6800	<4800	<4800
3-Nitroaniline	µg/kg	<6800	<5100	<6800	<4800	<4800
4-Nitroaniline	µg/kg	<6800	<5100	<6800	<4800	<4800
Nitrobenzene	µg/kg	<1300	<990	<1300	<990	<990
2-Nitrophenol	µg/kg	<1300	<990	<1300	<990	<990
4-Nitrophenol	µg/kg	<6800	<5100	<6800	<4800	<4800
p-chloro-m-cresol	µg/kg	<1300	<990	<1300	<990	<990
Pentachlorophenol	µg/kg	<6800	<5100	<6800	<4800	<4800
Phenanthrene	µg/kg	<1300	<990	<1300	<990	<990
Phenol	µg/kg	<1300	<990	<1300	<990	<990
Pyrene	µg/kg	<1300	<990	<1300	<990	<990
2,4,5-Trichlorophenol	µg/kg	<6800	<5100	<6800	<4800	<4800
2,4,6-Trichlorophenol	µg/kg	<1300	<990	<1300	<990	<990
1,2,4-Trichlorobenzene	µg/kg	<1300	<990	<1300	<990	<990

(1) Dash denotes not analyzed.

Table 11
Summary of Waste Chemistry Data
Pond 9 Residues
Fansteel, Inc.
Muskogee, Oklahoma

Parameter	Units	Sample Identification and Date				
		P9-1A (0-6) 2/20/93	P9-1B (6-11) 2/20/93	P9-1C (11-16) 2/20/93	P9-2A (0-8) 2/20/93	P9-2B (8-15) 2/20/93
Total Analyses:						
Cyanide	mg/kg	460	<4.3	<3.0	<5.2	140
Silver	mg/kg	<4.96	<8.05	<5.33	<10.0	<9.71
Arsenic	mg/kg	<49.6	<80.5	<53.3	<100	<97.1
Barium	mg/kg	37.2	<16.1	22.2	29.4	<19.4
Beryllium	mg/kg	11.6	14.9	11.8	16.6	17.0
Cadmium	mg/kg	<4.96	<8.05	<5.33	<10.0	<9.71
Chromium	mg/kg	189	715	342	723	816
Mercury	mg/kg	1.73	<0.213	0.972	0.314	<0.243
Molybdenum	mg/kg	<25	<40	<27	<50	<49
Nickel	mg/kg	37.2	57.7	41.4	57.9	66.3
Lead	mg/kg	<49.6	<80.5	<53.3	<100	<97.1
Antimony	mg/kg	185	124	149	<100	362
Selenium	mg/kg	<0.530	<0.850	<0.610	<1.04	<0.970
Tin	mg/kg	1500	1100	580	920	1400
Columbium	mg/kg	3200	2800	3000	2100	3400
Tantalum	mg/kg	1200	740	1200	640	1100
Gross Alpha	pCi/g	77±11	50±9	21±6	82±11	-(1)
Gross Beta	pCi/g	49±7	50±6	33±6	91±8	-
Isotopes:						
Uranium-233 & 234	pCi/g	12±1	24±1	11±1	42±2	-
Uranium-235	pCi/g	1.6±0.3	1.1±0.2	0.4±0.2	1.9±0.3	-
Uranium-238	pCi/g	15±1	24±1	11±1	43±2	-
Thorium-230	pCi/g	13±2	4.1±0.8	3.3±1.0	14±1	-
Lead-210 @ 46 KeV	pCi/g	4.6±1.6	2.8±1.9	0.0±1.5	11±2	-
Thorium-234 @ 63.3 KeV	pCi/g	6.9±1.8	20±2	6.9±1.8	31±3	-
Thorium-234 @ 92.6 KeV	pCi/g	9.7±1.9	14±2	4.6±1.4	25±2	-
Protactinium-234m @ 1001 KeV	pCi/g	22±10	110±40	36±39	60±51	-
Radium 226	pCi/g	14±1	15±3	8.0±2.5	30±3	-
Lead-214 @ 295.2 KeV	pCi/g	5.4±0.4	0.0±0.4	1.1±0.5	2.2±1.1	-
Lead-214 @ 352.0 KeV	pCi/g	5.6±0.2	1.0±0.4	1.6±0.4	3.0±0.5	-
Bismuth-214 @ 609.4 KeV	pCi/g	5.3±0.2	0.9±0.6	1.1±0.5	3.0±0.7	-
Bismuth-214 @ 1120.4 KeV	pCi/g	5.2±0.6	1.7±1.6	0.0±1.3	3.3±1.9	-
Bismuth-214 @ 1764.7 KeV	pCi/g	4.9±0.5	0.0±1.2	0.0±1.3	4.1±2.0	-
Actinium-228 @ 338 KeV	pCi/g	4.9±0.4	2.1±0.9	1.7±0.9	3.3±1.0	-
Actinium-228 @ 911 KeV	pCi/g	5.4±0.3	1.4±0.8	1.4±1.2	3.6±1.1	-
Actinium-228 @ 968 KeV	pCi/g	5.3±0.5	0.0±1.4	1.5±1.2	5.1±1.8	-
Lead-212 @ 238 KeV	pCi/g	3.8±0.2	0.9±0.2	0.8±0.2	2.7±3.2	-
Bismuth-212 @ 727 KeV	pCi/g	6.0±0.8	0.0±2.7	0.0±2.4	9.1±3.9	-
Thallium-208 @ 583 KeV	pCi/g	4.9±0.3	1.6±0.8	1.2±0.6	3.2±0.8	-
Uranium-235 @ 143 KeV	pCi/g	0.43±0.18	0.9±0.5	0.7±0.7	1.4±0.7	-
Potassium-40 @ 1460 KeV	pCi/g	2.0±0.6	5.6±2.8	0.0±2.4	3.6±3.4	-
ASTM Analysis:						
Alkalinity	mg/l $CaCO_3$	<2.00	50.0	39.0	65.0	59.0
Ammonia	mg/l NH3-N	2.0	5.7	7.9	7.0	9.9
Chloride	mg/l	18	33	49	20	54
Fluoride	mg/l	3.9	5.9	4.0	7.2	6.4
Nitrate	mg/l NO_3-N	<0.10	<0.10	<0.10	<0.10	<0.10
Sulfate	mg/l	1100	660	1300	140	340
pH	pH Units	10.14	9.42	9.99	9.78	10.24
Specific Conductance @ 25°C	µmhos/cm	2160	1290	2400	952	1100
Aluminum	mg/l	<10	<10	<10	<10	<10
Calcium	mg/l	520	190	500	140	130
Iron	mg/l	<10	<10	<10	<10	<10
Potassium	mg/l	24	34	50	24	41
Magnesium	mg/l	<10	<10	<10	<10	<10
Manganese	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Sodium	mg/l	35	73	83	44	66

See footnotes at end of table.

Table 11
(Continued)

Parameter	Units	Sample Identification and Date				
		P9-1A (0-6) 2/20/93	P9-1B (6-11) 2/20/93	P9-1C (11-16) 2/20/93	P9-2A (0-8) 2/20/93	P9-2B (8-15) 2/20/93
TCLP Metals:						
Silver	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Barium	mg/l	<10	<10	<10	<10	<10
Cadmium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	mg/l	<0.10	0.34	0.23	0.30	0.28
Mercury	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Nickel	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Lead	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Selenium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 2	No. 2	No. 2	No. 2	No. 2
pH with Deionized Water	pH units	10.37	10.03	10.14	10.10	10.20
pH of TCLP Extract	pH units	4.77	4.77	4.51	4.54	4.69
Amount of Sample Extracted	g	40.0	40.0	40.0	40.0	40.0
Volatile Organic Analyses:						
Acetone	µg/kg	<3400	<5600	<3900	<68000	<6200
Benzene	µg/kg	<3400	<5600	<3900	<68000	<6200
Bromodichloromethane	µg/kg	<3400	<5600	<3900	<68000	<6200
Bromoform	µg/kg	<3400	<5600	<3900	<68000	<6200
Bromomethane	µg/kg	<3400	<5600	<3900	<68000	<6200
2-Butanone	µg/kg	<3400	<5600	<3900	<68000	<6200
Carbon Disulfide	µg/kg	<3400	<5600	<3900	<68000	<6200
Carbon Tetrachloride	µg/kg	<3400	<5600	<3900	<68000	<6200
Chlorobenzene	µg/kg	<3400	<5600	<3900	<68000	<6200
Dibromochloromethane	µg/kg	<3400	<5600	<3900	<68000	<6200
Chloroethane	µg/kg	<3400	<5600	<3900	<68000	<6200
Chloromethane	µg/kg	<3400	<5600	<3900	<68000	<6200
Chloroform	µg/kg	<3400	<5600	<3900	<68000	<6200
1,1-Dichloroethane	µg/kg	<3400	<5600	<3900	<68000	<6200
1,2-Dichloroethane	µg/kg	<3400	<5600	<3900	<68000	<6200
1,1-Dichloroethene	µg/kg	<3400	<5600	<3900	<68000	<6200
1,2-Dichloroethene	µg/kg	<3400	<5600	<3900	<68000	<6200
1,2-Dichloropropane	µg/kg	<3400	<5600	<3900	<68000	<6200
Cis-1,3-Dichloropropene	µg/kg	<3400	<5600	<3900	<68000	<6200
Trans-1,3-Dichloropropene	µg/kg	<3400	<5600	<3900	<68000	<6200
Ethylbenzene	µg/kg	<3400	<5600	<3900	<68000	<6200
2-Hexanone	µg/kg	<3400	<5600	<3900	<68000	<6200
Methylene Chloride	µg/kg	<3400	<5600	<3900	<68000	<6200
4-Methyl-2-pentanone	µg/kg	<3400	16000	25000	190000	80000
Styrene	µg/kg	<3400	<5600	<3900	<68000	<6200
1,1,2,2-Tetrachloroethane	µg/kg	<3400	<5600	<3900	<68000	<6200
Tetrachloroethene	µg/kg	<3400	<5600	<3900	<68000	<6200
Toluene	µg/kg	<3400	<5600	<3900	<68000	<6200
1,1,1-Trichloroethane	µg/kg	<3400	<5600	4700	<68000	<6200
1,1,2-Trichloroethane	µg/kg	<3400	<5600	<3900	<68000	<6200
Trichloroethene	µg/kg	<3400	<5600	<3900	<68000	<6200
Vinyl Chloride	µg/kg	<3400	<5600	<3900	<68000	<6200
Xylenes, Total	µg/kg	<3400	<5600	<3900	<68000	<6200

See footnotes at end of table.

Table 11
(Continued)

Parameter	Units	Sample Identification and Date				
		P9-1A (0-6) 2/20/93	P9-1B (6-11) 2/20/93	P9-1C (11-16) 2/20/93	P9-2A (0-8) 2/20/93	P9-2B (8-15) 2/20/93
Semivolatile Organic Analyses:						
Acenaphthene	µg/kg	<990	<1300	<990	<1700	<1600
Acenaphthylene	µg/kg	<990	<1300	<990	<1700	<1600
Anthracene	µg/kg	<990	<1300	<990	<1700	<1600
Bis(2-chloroethyl)ether	µg/kg	<990	<1300	<990	<1700	<1600
Bis(2-chloroethoxy)methane	µg/kg	<990	<1300	<990	<1700	<1600
Bis(2-chloroisopropyl)ether	µg/kg	<990	<1300	<990	<1700	<1600
Bis(2-ethylhexyl)phthalate	µg/kg	<990	<1300	1100	<1700	<1600
Benzo(a)pyrene	µg/kg	<990	<1300	<990	<1700	<1600
Benzo(a)anthracene	µg/kg	<990	<1300	<990	<1700	<1600
Benzo(b)fluoranthene	µg/kg	<990	<1300	<990	<1700	<1600
Benzo(g,h,i)perylene	µg/kg	<990	<1300	<990	<1700	<1600
Benzo(k)fluoranthene	µg/kg	<990	<1300	<990	<1700	<1600
4-Bromophenyl Phenyl Ether	µg/kg	<990	<1300	<990	<1700	<1600
Butylbenzyl Phthalate	µg/kg	<990	<1300	<990	<1700	<1600
Carbazole	µg/kg	<990	<1300	<990	<1700	<1600
Chrysene	µg/kg	<990	<1300	<990	<1700	<1600
4-Chloroaniline	µg/kg	<990	<1300	<990	<1700	<1600
2-Chloronaphthalene	µg/kg	<990	<1300	<990	<1700	<1600
2-Chlorophenol	µg/kg	<990	<1300	<990	<1700	<1600
4-Chlorophenyl Phenyl Ether	µg/kg	<990	<1300	<990	<1700	<1600
o-Cresol	µg/kg	<990	<1300	<990	<1700	<1600
p-Cresol	µg/kg	<990	<1300	<990	<1700	<1600
Dibenzo(a,h)anthracene	µg/kg	<990	<1300	<990	<1700	<1600
Dibenzofuran	µg/kg	<990	<1300	<990	<1700	<1600
2,4-Dichlorophenol	µg/kg	<990	<1300	<990	<1700	<1600
1,2-Dichlorobenzene	µg/kg	<990	<1300	<990	<1700	<1600
1,3-Dichlorobenzene	µg/kg	<990	<1300	<990	<1700	<1600
1,4-Dichlorobenzene	µg/kg	<990	<1300	<990	<1700	<1600
3,3-Dichlorobenzidine	µg/kg	<990	<1300	<990	<1700	<1600
Diethyl Phthalate	µg/kg	<990	<1300	<990	<1700	<1600
Dimethyl Phthalate	µg/kg	<990	<1300	<990	<1700	<1600
2,4-Dimethylphenol	µg/kg	<990	<1300	<990	<1700	<1600
Di-N-butyl Phthalate	µg/kg	1200	1300	<990	1800	1800
4,6-Dinitro-o-cresol	µg/kg	<4800	<6400	<4800	<8000	<8000
2,4-Dinitrotoluene	µg/kg	<990	<1300	<990	<1700	<1600
2,6-Dinitrotoluene	µg/kg	<990	<1300	<990	<1700	<1600
Di-N-octyl Phthalate	µg/kg	<990	<1300	<990	<1700	<1600
2,4-Dinitrophenol	µg/kg	<4800	<6400	<4800	<8000	<8000
Fluoranthene	µg/kg	<990	<1300	<990	<1700	<1600
Fluorene	µg/kg	<990	<1300	<990	<1700	<1600
Hexachlorocyclopentadiene	µg/kg	<990	<1300	<990	<1700	<1600
Hexachlorobenzene	µg/kg	<990	<1300	<990	<1700	<1600
Hexachlorobutadiene	µg/kg	<990	<1300	<990	<1700	<1600
Hexachloroethane	µg/kg	<990	<1300	<990	<1700	<1600
Indeno(1,2,3-c,d)pyrene	µg/kg	<990	<1300	<990	<1700	<1600
Isophorone	µg/kg	<990	<1300	<990	<1700	<1600
2-Methylnaphthalene	µg/kg	<990	<1300	<990	<1700	<1600
N-Nitrosodiphenylamine	µg/kg	<990	<1300	<990	<1700	<1600
N-Nitroso-di-n-propylamine	µg/kg	<990	<1300	<990	<1700	<1600
Naphthalene	µg/kg	<990	<1300	<990	<1700	<1600
2-Nitroaniline	µg/kg	<4800	<6400	<4800	<8000	<8000
3-Nitroaniline	µg/kg	<4800	<6400	<4800	<8000	<8000
4-Nitroaniline	µg/kg	<4800	<6400	<4800	<8000	<8000
Nitrobenzene	µg/kg	<990	<1300	<990	<1700	<1600
2-Nitrophenol	µg/kg	<990	<1300	<990	<1700	<1600
4-Nitrophenol	µg/kg	<4800	<6400	<4800	<8000	<8000
p-chloro-m-cresol	µg/kg	<990	<1300	<990	<1700	<1600
Pentachlorophenol	µg/kg	<4800	<6400	<4800	<8000	<8000
Phenanthrene	µg/kg	<990	<1300	<990	<1700	<1600
Phenol	µg/kg	<990	<1300	<990	<1700	<1600
Pyrene	µg/kg	<990	<1300	<990	<1700	<1600
2,4,5-Trichlorophenol	µg/kg	<4800	<6400	<4800	<8000	<8000
2,4,6-Trichlorophenol	µg/kg	<990	<1300	<990	<1700	<1600
1,2,4-Trichlorobenzene	µg/kg	<990	<1300	<990	<1700	<1600

See footnotes at end of table.

Table 11
(Continued)

Parameter	Units	Sample Identification and Date				
		P9-2C (15-22) 2/20/93	P9-3A (0-9) 2/20/93	P9-3B (9-16) 2/20/93	P9-3C (16-24) 2/20/93	P9-4A (0-8) 2/20/93
Total Analyses:						
Cyanide	mg/kg	<3.6	<4.2	<3.7	<3.7	<4.2
Silver	mg/kg	<7.18	<7.76	<6.50	<6.32	<8.01
Arsenic	mg/kg	<71.8	<77.6	<65.0	<63.2	<80.1
Barium	mg/kg	27.5	22.3	15.1	17.2	20.1
Beryllium	mg/kg	13.4	15.4	13.1	12.8	15.9
Cadmium	mg/kg	<7.18	<7.76	<6.50	<6.32	<8.01
Chromium	mg/kg	528	771	675	605	794
Mercury	mg/kg	0.216	<0.198	0.192	0.237	<0.212
Molybdenum	mg/kg	<36	<39	<33	<32	<40
Nickel	mg/kg	45.3	54.7	45.8	40.8	88.3
Lead	mg/kg	<71.8	<77.6	<65.5	<63.2	<80.1
Antimony	mg/kg	327	130	120	125	108
Selenium	mg/kg	<0.720	<0.776	<0.740	<0.750	<0.850
Tin	mg/kg	1200	1200	1200	1100	1100
Columbium	mg/kg	2600	2900	2700	3000	2500
Tantalum	mg/kg	840	980	1300	810	930
Gross Alpha	pCi/g	-	44±9	30±8	30±7	100±10
Gross Beta	pCi/g	-	54±6	24±5	32±6	100±10
Isotopes:						
Uranium-233 & 234	pCi/g	-	21±1	7.1±0.8	10±1	53±2
Uranium-235	pCi/g	-	1.2±0.3	0.6±0.2	0.5±0.2	2.8±0.4
Uranium-238	pCi/g	-	25±1	7.6±0.8	11±1	57±2
Thorium-230	pCi/g	-	0.9±3.8	2.4±0.9	9.0±5.0	10±2
Lead-210 @ 46 KeV	pCi/g	-	2.4±1.4	1.2±0.7	1.5±0.8	6.6±2.0
Thorium-234 @ 63.3 KeV	pCi/g	-	16±1	4.3±0.6	8.6±0.7	47±3
Thorium-234 @ 92.6 KeV	pCi/g	-	13±1	2.9±0.6	7.3±0.9	33±2
Protactinium-234m @ 1001 KeV	pCi/g	-	36±9	8.8±6.0	17±8	110±40
Radium 226	pCi/g	-	14±1	3.8±0.6	7.9±0.7	40±4
Lead-214 @ 295.2 KeV	pCi/g	-	1.7±0.3	0.76±0.22	0.98±0.22	3.3±1.2
Lead-214 @ 352.0 KeV	pCi/g	-	1.7±0.1	1.0±0.1	1.2±0.1	3.4±0.5
Bismuth-214 @ 609.4 KeV	pCi/g	-	1.7±0.2	0.75±0.12	1.1±0.1	2.7±0.6
Bismuth-214 @ 1120.4 KeV	pCi/g	-	1.7±0.4	0.77±0.36	0.86±0.38	3.4±2.0
Bismuth-214 @ 1764.7 KeV	pCi/g	-	1.6±0.4	0.83±0.28	1.2±0.4	0.0±1.1
Actinium-228 @ 338 KeV	pCi/g	-	1.6±0.3	0.62±0.26	0.81±0.24	4.0±1.2
Actinium-228 @ 911 KeV	pCi/g	-	1.6±0.2	0.58±0.16	0.77±0.15	4.0±1.2
Actinium-228 @ 968 KeV	pCi/g	-	1.1±0.4	0.44±0.25	0.67±0.25	6.9±2.3
Lead-212 @ 238 KeV	pCi/g	-	1.2±0.1	0.50±0.08	0.54±0.09	3.1±0.4
Bismuth-212 @ 727 KeV	pCi/g	-	1.6±0.5	0.00±0.44	0.66±0.56	7.5±3.7
Thallium-208 @ 583 KeV	pCi/g	-	1.2±0.2	0.60±0.15	0.72±0.14	3.7±0.9
Uranium-235 @ 143 KeV	pCi/g	-	0.75±0.14	0.27±0.10	0.47±0.12	2.6±0.8
Potassium-40 @ 1460 KeV	pCi/g	-	4.0±0.7	5.0±0.6	3.8±0.6	0.0±2.3
ASTM Analysis:						
Alkalinity	mg/l $CaCO_3$	30.0	28.0	20.0	59.0	35.0
Ammonia	mg/l NH3-N	12	5.4	14	14	8.4
Chloride	mg/l	50	32	53	59	42
Fluoride	mg/l	9.0	5.9	8.7	6.4	6.2
Nitrate	mg/l NO_3-N	<0.10	<0.10	<0.10	0.32	0.13
Sulfate	mg/l	860	1100	250	360	150
pH	pH Units	9.20	8.44	9.19	9.65	9.14
Specific Conductance @ 25°C	µmhos/cm	1760	2160	1030	1430	1660
Aluminum	mg/l	<10	<10	<10	<10	<10
Calcium	mg/l	300	420	88	190	330
Iron	mg/l	<10	<10	<10	<10	<10
Potassium	mg/l	50	44	37	45	29
Magnesium	mg/l	<10	<10	<10	<10	<10
Manganese	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Sodium	mg/l	80	54	78	82	53

See footnotes at end of table.

Table 11
(Continued)

Parameter	Units	Sample Identification and Date				
		P9-2C (15-22) 2/20/93	P9-3A (0-9) 2/20/93	P9-3B (9-16) 2/20/93	P9-3C (16-24) 2/20/93	P9-4A (0-8) 2/20/93
TCLP Metals:						
Silver	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	mg/l	<0.10	<0.10	0.11	0.16	0.23
Barium	mg/l	<10	<10	<10	<10	<10
Cadmium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	mg/l	<0.10	0.34	<0.10	0.25	0.11
Mercury	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Nickel	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Lead	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Selenium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 1	No. 2	No. 1	No. 2	No. 2
pH with Deionized Water	pH units	9.50	9.43	9.26	7.94	9.92
pH of TCLP Extract	pH units	5.59	4.52	5.45	4.51	4.61
Amount of Sample Extracted	g	40.0	40.0	40.0	40.0	40.0
Volatile Organic Analyses:						
Acetone	µg/kg	10000	<5200	13000	<48000	<54000
Benzene	µg/kg	<4600	<5200	<4800	<48000	<54000
Bromodichloromethane	µg/kg	<4600	<5200	<4800	<48000	<54000
Bromoform	µg/kg	<4600	<5200	<4800	<48000	<54000
Bromomethane	µg/kg	<4600	<5200	<4800	<48000	<54000
2-Butanone	µg/kg	<4600	<5200	<4800	<48000	<54000
Carbon Disulfide	µg/kg	<4600	<5200	<4800	<48000	<54000
Carbon Tetrachloride	µg/kg	<4600	<5200	<4800	<48000	<54000
Chlorobenzene	µg/kg	<4600	<5200	<4800	<48000	<54000
Dibromochloromethane	µg/kg	<4600	<5200	<4800	<48000	<54000
Chloroethane	µg/kg	<4600	<5200	<4800	<48000	<54000
Chloromethane	µg/kg	<4600	<5200	<4800	<48000	<54000
Chloroform	µg/kg	<4600	<5200	<4800	<48000	<54000
1,1-Dichloroethane	µg/kg	<4600	<5200	<4800	<48000	<54000
1,2-Dichloroethane	µg/kg	<4600	<5200	<4800	<48000	<54000
1,1-Dichloroethene	µg/kg	<4600	<5200	<4800	<48000	<54000
1,2-Dichloroethene	µg/kg	<4600	<5200	<4800	<48000	<54000
1,2-Dichloropropane	µg/kg	<4600	<5200	<4800	<48000	<54000
Cis-1,3-Dichloropropene	µg/kg	<4600	<5200	<4800	<48000	<54000
Trans-1,3-Dichloropropene	µg/kg	<4600	<5200	<4800	<48000	<54000
Ethylbenzene	µg/kg	<4600	<5200	<4800	<48000	<54000
2-Hexanone	µg/kg	<4600	<5200	<4800	<48000	<54000
Methylene Chloride	µg/kg	<4600	<5200	<4800	<48000	<54000
4-Methyl-2-pentanone	µg/kg	35000	6000	36000	120000	110000
Styrene	µg/kg	<4600	<5200	<4800	<48000	<54000
1,1,2,2-Tetrachloroethane	µg/kg	<4600	<5200	<4800	<48000	<54000
Tetrachloroethene	µg/kg	<4600	<5200	<4800	<48000	<54000
Toluene	µg/kg	<4600	<5200	<4800	<48000	<54000
1,1,1-Trichloroethane	µg/kg	<4600	<5200	<4800	<48000	<54000
1,1,2-Trichloroethane	µg/kg	<4600	<5200	<4800	<48000	<54000
Trichloroethene	µg/kg	<4600	<5200	<4800	<48000	<54000
Vinyl Chloride	µg/kg	<4600	<5200	<4800	<48000	<54000
Xylenes, Total	µg/kg	<4600	<5200	<4800	<48000	<54000

See footnotes at end of table.

Table 11
(Continued)

Parameter	Units	Sample Identification and Date				
		P9-2C (15-22) 2/20/93	P9-3A (0-9) 2/20/93	P9-3B (9-16) 2/20/93	P9-3C (16-24) 2/20/93	P9-4A (0-8) 2/20/93
Semivolatile Organic Analyses:						
Acenaphthene	µg/kg	<2600	<1300	<1300	<1300	<1300
Acenaphthylene	µg/kg	<2600	<1300	<1300	<1300	<1300
Anthracene	µg/kg	<2600	<1300	<1300	<1300	<1300
Bis(2-chloroethyl)ether	µg/kg	<2600	<1300	<1300	<1300	<1300
Bis(2-chloroethoxy)methane	µg/kg	<2600	<1300	<1300	<1300	<1300
Bis(2-chloroisopropyl)ether	µg/kg	<2600	<1300	<1300	<1300	<1300
Bis(2-ethylhexyl)phthalate	µg/kg	<2600	<1300	<1300	<1300	<1300
Benzo(a)pyrene	µg/kg	<2600	<1300	<1300	<1300	<1300
Benzo(a)anthracene	µg/kg	<2600	<1300	<1300	<1300	<1300
Benzo(b)fluoranthene	µg/kg	<2600	<1300	<1300	<1300	<1300
Benzo(g,h,i)perylene	µg/kg	<2600	<1300	<1300	<1300	<1300
Benzo(k)fluoranthene	µg/kg	<2600	<1300	<1300	<1300	<1300
4-Bromophenyl Phenyl Ether	µg/kg	<2600	<1300	<1300	<1300	<1300
Butylbenzyl Phthalate	µg/kg	<2600	<1300	<1300	<1300	<1300
Carbazole	µg/kg	<2600	<1300	<1300	<1300	<1300
Chrysene	µg/kg	<2600	<1300	<1300	<1300	<1300
4-Chloroaniline	µg/kg	<2600	<1300	<1300	<1300	<1300
2-Chloronaphthalene	µg/kg	<2600	<1300	<1300	<1300	<1300
2-Chlorophenol	µg/kg	<2600	<1300	<1300	<1300	<1300
4-Chlorophenyl Phenyl Ether	µg/kg	<2600	<1300	<1300	<1300	<1300
o-Cresol	µg/kg	<2600	<1300	<1300	<1300	<1300
p-Cresol	µg/kg	<2600	<1300	<1300	<1300	<1300
Dibenzo(a,h)anthracene	µg/kg	<2600	<1300	<1300	<1300	<1300
Dibenzofuran	µg/kg	<2600	<1300	<1300	<1300	<1300
2,4-Dichlorophenol	µg/kg	<2600	<1300	<1300	<1300	<1300
1,2-Dichlorobenzene	µg/kg	<2600	<1300	<1300	<1300	<1300
1,3-Dichlorobenzene	µg/kg	<2600	<1300	<1300	<1300	<1300
1,4-Dichlorobenzene	µg/kg	<2600	<1300	<1300	<1300	<1300
3,3-Dichlorobenzidine	µg/kg	<2600	<1300	<1300	<1300	<1300
Diethyl Phthalate	µg/kg	<2600	<1300	<1300	<1300	<1300
Dimethyl Phthalate	µg/kg	<2600	<1300	<1300	<1300	<1300
2,4-Dimethylphenol	µg/kg	<2600	<1300	<1300	<1300	<1300
Di-N-butyl Phthalate	µg/kg	<2600	1400	1600	<1300	2800
4,6-Dinitro-o-cresol	µg/kg	<13000	<6800	<6800	<6400	<6800
2,4-Dinitrotoluene	µg/kg	<2600	<1300	<1300	<1300	<1300
2,6-Dinitrotoluene	µg/kg	<2600	<1300	<1300	<1300	<1300
Di-N-octyl Phthalate	µg/kg	<2600	<1300	<1300	<1300	<1300
2,4-Dinitrophenol	µg/kg	<13000	<6800	<6800	<6400	<6800
Fluoranthene	µg/kg	<2600	<1300	<1300	<1300	<1300
Fluorene	µg/kg	<2600	<1300	<1300	<1300	<1300
Hexachlorocyclopentadiene	µg/kg	<2600	<1300	<1300	<1300	<1300
Hexachlorobenzene	µg/kg	<2600	<1300	<1300	<1300	<1300
Hexachlorobutadiene	µg/kg	<2600	<1300	<1300	<1300	<1300
Hexachloroethane	µg/kg	<2600	<1300	<1300	<1300	<1300
Indeno(1,2,3-c,d)pyrene	µg/kg	<2600	<1300	<1300	<1300	<1300
Isophorone	µg/kg	<2600	<1300	<1300	<1300	<1300
2-Methylnaphthalene	µg/kg	<2600	<1300	<1300	<1300	<1300
N-Nitrosodiphenylamine	µg/kg	<2600	<1300	<1300	<1300	<1300
N-Nitroso-di-n-propylamine	µg/kg	<2600	<1300	<1300	<1300	<1300
Naphthalene	µg/kg	<2600	<1300	<1300	<1300	<1300
2-Nitroaniline	µg/kg	<13000	<6800	<6800	<6400	<6800
3-Nitroaniline	µg/kg	<13000	<6800	<6800	<6400	<6800
4-Nitroaniline	µg/kg	<13000	<6800	<6800	<6400	<6800
Nitrobenzene	µg/kg	<2600	<1300	<1300	<1300	<1300
2-Nitrophenol	µg/kg	<2600	<1300	<1300	<1300	<1300
4-Nitrophenol	µg/kg	<13000	<6800	<6800	<6400	<6800
p-chloro-m-cresol	µg/kg	<2600	<1300	<1300	<1300	<1300
Pentachlorophenol	µg/kg	<13000	<6800	<6800	<6400	<6800
Phenanthrene	µg/kg	<2600	<1300	<1300	<1300	<1300
Phenol	µg/kg	<2600	<1300	<1300	<1300	<1300
Pyrene	µg/kg	<2600	<1300	<1300	<1300	<1300
2,4,5-Trichlorophenol	µg/kg	<13000	<6800	<6800	<6400	<6800
2,4,6-Trichlorophenol	µg/kg	<2600	<1300	<1300	<1300	<1300
1,2,4-Trichlorobenzene	µg/kg	<2600	<1300	<1300	<1300	<1300

See footnotes at end of table.

Table 11
(Continued)

Parameter	Units	Sample Identification and Date				
		P9-4B (8-16) 2/20/93	P9-4C (16-25) 2/20/93	P9-5A (0-9) 2/20/93	P9-5B (9-17) 2/20/93	P9-5C (17-25) 2/20/93
Total Analyses:						
Cyanide	mg/kg	32	<3.2	<3.6	<3.2	<3.4
Silver	mg/kg	<5.81	<6.40	<7.02	<6.02	<6.11
Arsenic	mg/kg	72.0	<64.0	<70.2	<60.2	74.5
Barium	mg/kg	21.8	25.6	15.2	27.6	35.9
Beryllium	mg/kg	12.7	11.5	12.7	14.5	13.2
Cadmium	mg/kg	<5.81	<6.40	<7.02	<6.02	<6.11
Chromium	mg/kg	420	325	521	488	385
Mercury	mg/kg	<0.171	0.216	0.224	<0.162	0.434
Molybdenum	mg/kg	<29	<32	<35	<30	<31
Nickel	mg/kg	75.4	52.9	66.3	45.9	52.1
Lead	mg/kg	<58.1	<64.0	<70.2	<60.2	<61.1
Antimony	mg/kg	232	230	118	228	254
Selenium	mg/kg	<0.690	<0.640	<0.730	<0.650	<0.680
Tin	mg/kg	940	890	850	1100	940
Columbium	mg/kg	4900	5100	2400	4800	5500
Tantalum	mg/kg	1200	1300	930	930	1100
Gross Alpha	pCi/g	37±8	51±9	-	34±8	60±10
Gross Beta	pCi/g	32±6	48±6	-	38±6	50±6
Isotopes:						
Uranium-233 & 234	pCi/g	11±1	16±1	-	11±1	21±1
Uranium-235	pCi/g	0.8±0.2	0.5±0.2	-	1.2±0.3	4±1
Uranium-238	pCi/g	13±1	17±1	-	14±1	26±1
Thorium-230	pCi/g	1.6±1.0	4.3±1.4	-	1.0±0.7	4.9±0.7
Lead-210 @ 46 KeV	pCi/g	2.0±2.0	2.8±0.9	-	1.8±1.3	2.3±0.7
Thorium-234 @ 63.3 KeV	pCi/g	6.9±1.9	11±2	-	8.7±0.8	14±1
Thorium-234 @ 92.6 KeV	pCi/g	6.7±1.4	8.8±1.2	-	7.5±1.0	12±1
Protactinium-234m @ 1001 KeV	pCi/g	0±29	28±9	-	18±7	33±7
Radium 226	pCi/g	9.5±2.5	11±1	-	9.4±0.7	13±1
Lead-214 @ 295.2 KeV	pCi/g	1.4±0.6	2.3±0.3	-	1.5±0.3	2.6±0.3
Lead-214 @ 352.0 KeV	pCi/g	1.6±0.4	2.6±0.2	-	1.8±0.1	2.9±0.2
Bismuth-214 @ 609.4 KeV	pCi/g	1.8±0.6	2.4±0.2	-	1.6±0.1	2.6±0.2
Bismuth-214 @ 1120.4 KeV	pCi/g	0.0±1.4	2.2±0.4	-	1.8±0.4	2.7±0.4
Bismuth-214 @ 1764.7 KeV	pCi/g	0.0±1.2	2.2±0.5	-	1.1±0.4	2.4±0.4
Actinium-228 @ 338 KeV	pCi/g	0.0±0.8	1.9±0.3	-	1.1±0.3	2.4±0.3
Actinium-228 @ 911 KeV	pCi/g	0.0±0.8	2.1±0.3	-	1.1±0.2	2.7±0.3
Actinium-228 @ 968 KeV	pCi/g	0.0±1.6	1.8±0.4	-	0.94±0.39	2.4±0.4
Lead-212 @ 238 KeV	pCi/g	1.1±0.3	2.0±0.1	-	1.1±0.1	1.9±0.1
Bismuth-212 @ 727 KeV	pCi/g	0.0±2.3	3.3±0.7	-	1.3±0.6	2.8±0.6
Thallium-208 @ 583 KeV	pCi/g	1.7±0.7	1.8±0.2	-	1.2±0.2	2.3±0.2
Uranium-235 @ 143 KeV	pCi/g	0.0±0.4	0.52±0.14	-	0.40±0.14	0.79±0.17
Potassium-40 @ 1460 KeV	pCi/g	5.5±3.3	4.4±0.6	-	5.4±0.6	4.8±0.7
ASTM Analysis:						
Alkalinity	mg/l $CaCO_3$	111	35.0	91.0	55.0	33.0
Ammonia	mg/l NH3-N	18	14	16	18	12
Chloride	mg/l	68	50	64	52	46
Fluoride	mg/l	7.4	4.9	6.5	13	8.6
Nitrate	mg/l NO_3-N	<0.10	0.14	0.23	0.29	0.30
Sulfate	mg/l	1600	1100	190	240	880
pH	pH Units	10.83	9.45	10.00	9.88	9.39
Specific Conductance @ 25°C	µmhos/cm	1090	2330	1150	1090	1980
Aluminum	mg/l	<10	<10	<10	<10	<10
Calcium	mg/l	64	440	130	61	320
Iron	mg/l	<10	<10	<10	<10	<10
Potassium	mg/l	54	61	39	65	56
Magnesium	mg/l	<10	<10	<10	<10	<10
Manganese	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Sodium	mg/l	100	95	72	100	82

See footnotes at end of table.

Table 11
(Continued)

Parameter	Units	Sample Identification and Date				
		P9-4B (8-16) 2/20/93	P9-4C (16-25) 2/20/93	P9-5A (0-9) 2/20/93	P9-5B (9-17) 2/20/93	P9-5C (17-25) 2/20/93
TCLP Metals:						
Silver	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	mg/l	<0.10	0.20	0.14	0.26	0.24
Barium	mg/l	<10	<10	<10	<10	<10
Cadmium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	mg/l	0.34	<0.10	0.25	0.12	<0.10
Mercury	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Nickel	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Lead	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Selenium	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
TCLP Extraction Fluid Data:						
Extraction Fluid		No. 2	No. 1	No. 2	No. 2	No. 1
pH with Deionized Water	pH units	10.87	9.67	9.91	9.82	9.60
pH of TCLP Extract	pH units	4.68	5.55	4.54	4.53	5.16
Amount of Sample Extracted	g	40.0	40.0	40.0	40.0	40.0
Volatile Organic Analyses:						
Acetone	µg/kg	<45000	<42000	63000	<42000	11000
Benzene	µg/kg	<45000	<42000	<48000	<42000	<4500
Bromodichloromethane	µg/kg	<45000	<42000	<48000	<42000	<4500
Bromoform	µg/kg	<45000	<42000	<48000	<42000	<4500
Bromomethane	µg/kg	<45000	<42000	<48000	<42000	<4500
2-Butanone	µg/kg	<45000	<42000	<48000	<42000	<4500
Carbon Disulfide	µg/kg	<45000	<42000	<48000	<42000	<4500
Carbon Tetrachloride	µg/kg	<45000	<42000	<48000	<42000	<4500
Chlorobenzene	µg/kg	<45000	<42000	<48000	<42000	<4500
Dibromochloromethane	µg/kg	<45000	<42000	<48000	<42000	<4500
Chloroethane	µg/kg	<45000	<42000	<48000	<42000	<4500
Chloromethane	µg/kg	<45000	<42000	<48000	<42000	<4500
Chloroform	µg/kg	<45000	<42000	<48000	<42000	<4500
1,1-Dichloroethane	µg/kg	<45000	<42000	<48000	<42000	<4500
1,2-Dichloroethane	µg/kg	<45000	<42000	<48000	<42000	<4500
1,1-Dichloroethene	µg/kg	<45000	<42000	<48000	<42000	<4500
1,2-Dichloroethene	µg/kg	<45000	<42000	<48000	<42000	<4500
1,2-Dichloropropane	µg/kg	<45000	<42000	<48000	<42000	<4500
Cis-1,3-Dichloropropene	µg/kg	<45000	<42000	<48000	<42000	<4500
Trans-1,3-Dichloropropene	µg/kg	<45000	<42000	<48000	<42000	<4500
Ethylbenzene	µg/kg	<45000	<42000	<48000	<42000	<4500
2-Hexanone	µg/kg	<45000	<42000	<48000	<42000	<4500
Methylene Chloride	µg/kg	<45000	<42000	<48000	<42000	<4500
4-Methyl-2-pentanone	µg/kg	150000	110000	130000	160000	74000
Styrene	µg/kg	<45000	<42000	<48000	<42000	<4500
1,1,2,2-Tetrachloroethane	µg/kg	<45000	<42000	<48000	<42000	<4500
Tetrachloroethene	µg/kg	<45000	<42000	<48000	<42000	<4500
Toluene	µg/kg	<45000	<42000	<48000	<42000	<4500
1,1,1-Trichloroethane	µg/kg	<45000	<42000	<48000	<42000	<4500
1,1,2-Trichloroethane	µg/kg	<45000	<42000	<48000	<42000	<4500
Trichloroethene	µg/kg	<45000	<42000	<48000	<42000	<4500
Vinyl Chloride	µg/kg	<45000	<42000	<48000	<42000	<4500
Xylenes, Total	µg/kg	<45000	<42000	<48000	<42000	<4500

See footnotes at end of table.

Table 11
(Continued)

Parameter	Units	Sample Identification and Date				
		P9-4B (8-16) 2/20/93	P9-4C (16-25) 2/20/93	P9-5A (0-9) 2/20/93	P9-5B (9-17) 2/20/93	P9-5C (17-25) 2/20/93
Semivolatile Organic Analyses:						
Acenaphthene	µg/kg	<990	<990	<1300	<990	<990
Acenaphthylene	µg/kg	<990	<990	<1300	<990	<990
Anthracene	µg/kg	<990	<990	<1300	<990	<990
Bis(2-chloroethyl)ether	µg/kg	<990	<990	<1300	<990	<990
Bis(2-chloroethoxy)methane	µg/kg	<990	<990	<1300	<990	<990
Bis(2-chloroisopropyl)ether	µg/kg	<990	<990	<1300	<990	<990
Bis(2-ethylhexyl)phthalate	µg/kg	<990	<990	<1300	<990	<990
Benzo(a)pyrene	µg/kg	<990	<990	<1300	<990	<990
Benzo(a)anthracene	µg/kg	<990	<990	<1300	<990	<990
Benzo(b)fluoranthene	µg/kg	<990	<990	<1300	<990	<990
Benzo(g,h,i)perylene	µg/kg	<990	<990	<1300	<990	<990
Benzo(k)fluoranthene	µg/kg	<990	<990	<1300	<990	<990
4-Bromophenyl Phenyl Ether	µg/kg	<990	<990	<1300	<990	<990
Butylbenzyl Phthalate	µg/kg	<990	<990	<1300	<990	<990
Carbazole	µg/kg	<990	<990	<1300	<990	<990
Chrysene	µg/kg	<990	<990	<1300	<990	<990
4-Chloroaniline	µg/kg	<990	<990	<1300	<990	<990
2-Chloronaphthalene	µg/kg	<990	<990	<1300	<990	<990
2-Chlorophenol	µg/kg	<990	<990	<1300	<990	<990
4-Chlorophenyl Phenyl Ether	µg/kg	<990	<990	<1300	<990	<990
o-Cresol	µg/kg	<990	<990	<1300	<990	<990
p-Cresol	µg/kg	<990	<990	<1300	<990	<990
Dibenzo(a,h)anthracene	µg/kg	<990	<990	<1300	<990	<990
Dibenzofuran	µg/kg	<990	<990	<1300	<990	<990
2,4-Dichlorophenol	µg/kg	<990	<990	<1300	<990	<990
1,2-Dichlorobenzene	µg/kg	<990	<990	<1300	<990	<990
1,3-Dichlorobenzene	µg/kg	<990	<990	<1300	<990	<990
1,4-Dichlorobenzene	µg/kg	<990	<990	<1300	<990	<990
3,3-Dichlorobenzidine	µg/kg	<990	<990	<1300	<990	<990
Diethyl Phthalate	µg/kg	<990	<990	<1300	<990	<990
Dimethyl Phthalate	µg/kg	<990	<990	<1300	<990	<990
2,4-Dimethylphenol	µg/kg	<990	<990	<1300	<990	<990
Di-N-butyl Phthalate	µg/kg	1700	2200	2300	1300	1700
4,6-Dinitro-o-cresol	µg/kg	<4800	<5100	<6800	<5100	<4800
2,4-Dinitrotoluene	µg/kg	<990	<990	<1300	<990	<990
2,6-Dinitrotoluene	µg/kg	<990	<990	<1300	<990	<990
Di-N-octyl Phthalate	µg/kg	<990	<990	<1300	<990	<990
2,4-Dinitrophenol	µg/kg	<4800	<5100	<6800	<5100	<4800
Fluoranthene	µg/kg	<990	<990	<1300	<990	<990
Fluorene	µg/kg	<990	<990	<1300	<990	<990
Hexachlorocyclopentadiene	µg/kg	<990	<990	<1300	<990	<990
Hexachlorobenzene	µg/kg	<990	<990	<1300	<990	<990
Hexachlorobutadiene	µg/kg	<990	<990	<1300	<990	<990
Hexachloroethane	µg/kg	<990	<990	<1300	<990	<990
Indeno(1,2,3-c,d)pyrene	µg/kg	<990	<990	<1300	<990	<990
Isophorone	µg/kg	<990	<990	<1300	<990	<990
2-Methylnaphthalene	µg/kg	<990	<990	<1300	<990	<990
N-Nitrosodiphenylamine	µg/kg	<990	<990	<1300	<990	<990
N-Nitroso-di-n-propylamine	µg/kg	<990	<990	<1300	<990	<990
Naphthalene	µg/kg	<990	<990	<1300	<990	<990
2-Nitroaniline	µg/kg	<4800	<5100	<6800	<5100	<4800
3-Nitroaniline	µg/kg	<4800	<5100	<6800	<5100	<4800
4-Nitroaniline	µg/kg	<4800	<5100	<6800	<5100	<4800
Nitrobenzene	µg/kg	<990	<990	<1300	<990	<990
2-Nitrophenol	µg/kg	<990	<990	<1300	<990	<990
4-Nitrophenol	µg/kg	<4800	<5100	<6800	<5100	<4800
p-chloro-m-cresol	µg/kg	<990	<990	<1300	<990	<990
Pentachlorophenol	µg/kg	<4800	<5100	<6800	<5100	<4800
Phenanthrene	µg/kg	<990	<990	<1300	<990	<990
Phenol	µg/kg	<990	<990	<1300	<990	<990
Pyrene	µg/kg	<990	<990	<1300	<990	<990
2,4,5-Trichlorophenol	µg/kg	<4800	<5100	<6800	<5100	<4800
2,4,6-Trichlorophenol	µg/kg	<990	<990	<1300	<990	<990
1,2,4-Trichlorobenzene	µg/kg	<990	<990	<1300	<990	<990

(1) Dash denotes not analyzed.

Table 12
Chemistry Data Summary
Surface Sediment
Fansteel, Inc.
Muskogee, Oklahoma

Parameter	Units	Sample Identification and Date					
		SS-002 3/2/93	SS-003 3/2/93	SS-005 3/2/93	SS-1 3/2/93	SS-2 3/2/93	SS-3 3/2/93
Total Analyses:							
Silver	mg/kg	<3.3	<2.8	<2.8	<3.2	<2.8	<2.9
Arsenic	mg/kg	3.0	1.6	1.3	1.3	1.7	2.1
Barium	mg/kg	110	85	120	210	100	89
Calcium	mg/kg	3400	3200	2600	3800	2200	2200
Cadmium	mg/kg	<3.3	<2.8	<2.0	4.3	<2.8	<2.9
Chromium	mg/kg	16	24	20	34	18	14
Mercury	mg/kg	<0.081	<0.070	<0.070	<0.080	<0.070	<0.072
Nickel	mg/kg	<16	<14	<14	26	<14	<14
Lead	mg/kg	9.8	10	9.4	12	8.1	11
Antimony	mg/kg	<33	<28	<28	<32	<28	<29
Selenium	mg/kg	<0.33	<0.28	<0.28	<0.32	<0.28	<0.29
Tin	mg/kg	22	17	17	28	<14	<14
Columbium	mg/kg	39	13	7.0	13	9.9	14
Tantalum	mg/kg	9.8	13	5.6	13	5.6	12
Fluoride	mg/kg	3700	2100	200	270	240	440
Gross Alpha	pCi/g	28±7	24±6	16±6	110±70	18±5	15±5
Gross Beta	pCi/g	26±5	32±6	17±5	150±40	18±5	28±5
Isotopes:							
Uranium-233 & 234	pCi/g	2.7±0.3	5.9±0.4	-(1)	8.9±4.3	-	-
Uranium-235	pCi/g	0.1±0.1	0.6±0.1	-	-0.1±0.2	-	-
Uranium-238	pCi/g	2.8±0.3	6.5±0.4	-	5.4±3.3	-	-
Thorium-228	pCi/g	1.2±0.3	1.7±0.5	-	-	-	-
Thorium-230	pCi/g	1.7±0.4	3.2±0.7	-	8.6±0.8	-	-
Thorium-232	pCi/g	1.2±0.3	1.8±0.5	-	-	-	-
Lead-210 @ 46 KeV	pCi/g	1.3±0.6	1.4±0.7	-	-	-	-
Thorium-234 @ 63.3 KeV	pCi/g	2.9±0.6	5.8±0.7	-	-	-	-
Thorium-234 @ 92.6 KeV	pCi/g	2.5±0.5	4.8±0.4	-	-	-	-
Protactinium-234m @ 1001 KeV	pCi/g	12±8	18±9	-	-	-	-
Radium 226	pCi/g	3.9±0.7	5.9±0.7	-	5.9±0.8	-	-
Lead-214 @ 295.2 KeV	pCi/g	1.5±0.2	1.5±0.2	-	-	-	-
Lead-214 @ 352.0 KeV	pCi/g	1.5±0.1	1.3±0.1	-	-	-	-
Bismuth-214 @ 609.4 KeV	pCi/g	1.4±0.2	1.2±0.1	-	-	-	-
Bismuth-214 @ 1120.4 KeV	pCi/g	1.8±0.5	1.5±0.4	-	-	-	-
Bismuth-214 @ 1764.7 KeV	pCi/g	1.1±0.4	1.1±0.3	-	-	-	-
Actinium-228 @ 338 KeV	pCi/g	1.2±0.3	1.2±0.3	-	-	-	-
Actinium-228 @ 911 KeV	pCi/g	1.6±0.2	1.4±0.3	-	-	-	-
Actinium-228 @ 968 KeV	pCi/g	1.6±0.4	1.1±0.4	-	-	-	-
Lead-212 @ 238 KeV	pCi/g	1.1±0.1	1.2±0.1	-	-	-	-
Bismuth-212 @ 727 KeV	pCi/g	1.9±0.5	1.2±0.8	-	-	-	-
Thallium-208 @ 583 KeV	pCi/g	1.3±0.2	1.1±0.2	-	-	-	-
Uranium-235 @ 143 KeV	pCi/g	0.00±0.09	0.29±0.12	-	-	-	-
Potassium-40 @ 1460 KeV	pCi/g	16±1	15±1	-	-	-	-
ASTM Analysis:							
Ammonia	mg/kg NH3-N	26	<2	<2	<2	<2	<2
Sulfate	mg/kg	66	44	44	60	44	44
pH	pH Units	6.72	7.18	6.75	7.11	7.15	6.26
Volatile Organic Analyses:							
4-Methyl-2-pentanone	µg/kg	<2100	<1800	<1800	<2100	<1800	<1800

(1)Dash denotes not analyzed.

Table 13
Summary of USEPA Drinking Water Standards
Fansteel, Inc.
Muskogee, Oklahoma

Parameter	Units	Maximum Concentration Level
Fluoride	mg/l	4
Nitrate	mg/l	10
Sulfate	mg/l	250
Gross alpha	pCi/l	15
Gross beta	pCi/l	50
Silver (total)	µg/l	100
Aluminum (total)	µg/l	200
Arsenic (total)	µg/l	50
Barium (total)	µg/l	2,000
Cadmium (total)	µg/l	5
Chromium (total)	µg/l	100
Copper (total)	µg/l	1,000
Mercury (total)	µg/l	2
Manganese (total)	µg/l	50
Lead (total)	µg/l	15[1]
Selenium (total)	µg/l	50
MEK	µg/l	2,000[2]

[1]No maximum concentration level in effect. Represents action level for lead at the top of drinking water supply.

[2]Indicates Oklahoma state maximum concentration.

Table 14
Chemistry Data Summary
Surface Water
Fansteel, Inc.
Muskogee, Oklahoma

		Sample Identification and Date						
Parameter	Units	SS-001 3/3/93	SS-002 3/2/93	SS-003 3/2/93	SS-005 3/2/93	SS-1 3/2/93	SS-2 3/2/93	SS-3 3/2/93
Total Analyses:								
Fluoride	mg/l	9.4	12	1.3	2.7	0.44	2.6	2.1
Ammonia	mg/l NO_3-N	6.7	8.4	<0.10	<0.10	<0.10	<0.10	0.12
Nitrate-Nitrite	mg/l NO_3-N	10	15	<0.10	0.16	0.18	0.12	0.26
Sulfate	mg/l	390	84	23	31	58	27	36
Gross Alpha	pCi/l	4±8	45±18	2±1	3±2	110±70	2±2	3±2
Gross Beta	pCi/l	8±9	70±12	4±1	7±2	150±40	7±2	8±2
Isotopes:								
Uranium-233 & 234	pCi/l	-(1)	8.3±0.8	-	-	8.9±4.3	-	-
Uranium-235	pCi/l	-	0.5±0.2	-	-	-0.1±0.2	-	-
Uranium-238	pCi/l	-	8.2±0.8	-	-	5.4±3.3	-	-
Radium 226	pCi/l	-	3.4±0.7	-	-	5.9±0.8	-	-
Radium 228	pCi/l	-	1.5±1.0	-	-	11±3	-	-
Potassium-40	pCi/l	-	20	-	-	5.0	-	-
Thorium-228	pCi/l	-	1.8±0.5	-	-	14±1	-	-
Thorium-230	pCi/l	-	1.3±0.4	-	-	8.6±0.8	-	-
Thorium-232	pCi/l	-	1.8±0.4	-	-	17±1	-	-
Metals:								
Silver, Total	µg/l	<6.84	<6.84	<6.84	<6.84	<6.84	<6.84	<6.84
Arsenic, Total	µg/l	188	32.3	1.56	1.14	5.64	1.87	2.56
Barium, Total	µg/l	<9.84	200	49.4	92.5	1820	151	81.3
Calcium, Total	µg/l	111000	55900	11600	22400	45200	22700	31800
Cadmium, Total	µg/l	6.48	<4.04	5.11	12.2	20.8	15.2	5.51
Chromium, Total	µg/l	56.5	10.1	20.4	11.1	110	14.6	<10
Mercury, Total	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel, Total	µg/l	<11.1	28.4	<11.1	<11.1	103	<11.1	<11.1
Lead, Total	µg/l	1.74	276	149	84.2	25.8	237	18.5
Antimony, Total	µg/l	<29.7	85.1	<29.7	<29.7	<29.7	<29.7	<29.7
Selenium, Total	µg/l	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Tin, Total	µg/l	72	<50	<50	<50	120	<50	<50
Columbium, Total	µg/l	<100	<100	<100	<100	300	<100	<100
Tantalum, Total	µg/l	<100	<100	<100	<100	300	<100	<100
Volatile Organics:								
4-Methyl-2-pentanone	µg/l	500	<10	<10	<10	<10	<10	<10

(1)Dash denotes not analyzed.

Table 15
Chemistry Data Summary
Shallow Groundwater Zone
Fansteel, Inc.
Muskogee, Oklahoma

Parameter	Units	Sample Identification and Date				
		MW-51S 2/24/93	MW-52S 2/25/93	MW-53S 2/27/93	MW-54S 2/25/93	MW-55S 2/26/93
Total Analyses:						
Fluoride	mg/l	0.43	0.51	0.25	0.14	52
Ammonia	mg/l NO_3-N	<0.10	<0.10	<0.10	<0.10	4.2
Nitrate-Nitrite	mg/l NO_3-N	0.87	41	6.3	2.3	1.2
Sulfate	mg/l	19	2000	110	41	88
Gross Alpha	pCi/l	8±3	79±28	6±4	15±6	40±9
Gross Beta	pCi/l	8±3	160±30	10±4	25±6	36±6
Isotopes:						
Uranium-233 & 234	pCi/l	.(1)	0.7±0.4	-	-	1.4±0.4
Uranium-235	pCi/l	-	0.0±0.1	-	-	-0.1±0.1
Uranium-238	pCi/l	-	0.9±0.5	-	-	1.3±0.4
Radium 226	pCi/l	-	4.1±1.1	-	-	2.0±0.5
Radium 228	pCi/l	-	5.9±1.6	-	-	3.0±1.3
Potassium-40	pCi/l	-	2.0	-	-	4.8
Thorium-228	pCi/l	-	6.4±0.7	-	-	1.9±06
Thorium-230	pCi/l	-	4.0±0.6	-	-	1.0±0.4
Thorium-232	pCi/l	-	5.6±0.7	-	-	1.6±0.5
Total Metals:						
Silver, Total	µg/l	<6.84	<6.84	<6.84	<6.84	<6.84
Aluminum, Total	µg/l	1090	5650	-	-	-
Arsenic, Total	µg/l	<1	<1	3.88	<1	20.6
Barium, Total	µg/l	79.6	173	99.5	327	295
Beryllium, Total	µg/l	1.19	1.2	-	-	-
Calcium, Total	µg/l	33100	14400	24700	47600	22500
Cadmium, Total	µg/l	18.1	10.1	7.17	4.42	28.5
Cobalt, Total	µg/l	<8.54	9.98	-	-	-
Chromium, Total	µg/l	<10	<10	12.8	<10	63.5
Copper, Total	µg/l	12.6	20.5	-	-	-
Iron, Total	µg/l	926	9180	-	-	-
Mercury, Total	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2
Potassium, Total	µg/l	1850	6490	-	-	-
Magnesium, Total	µg/l	11800	5770	-	-	-
Manganese, Total	µg/l	207	619	-	-	-
Sodium, Total	µg/l	70400	32400	-	-	-
Nickel, Total	µg/l	<11.1	<11.1	<11.1	27	101
Lead, Total	µg/l	6.84	11.8	5.77	34.6	16.7
Antimony, Total	µg/l	<1.1	<1.1	<29.7	<29.7	35.3
Selenium, Total	µg/l	2.92	3.22	<0.8	<0.8	<0.8
Tin, Total	µg/l	<50	<50	<50	<50	66000
Thallium, Total	µg/l	<4	<4	-	-	-
Vanadium, Total	µg/l	<5.17	18	-	-	-
Zinc, Total	µg/l	20.4	56.7	-	-	-
Columbium, Total	µg/l	<10	<10	<100	20	50
Tantalum, Total	µg/l	40	60	<100	40	60

See footnotes at end of table.

Table 15
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-51S 2/24/93	MW-52S 2/25/93	MW-53S 2/27/93	MW-54S 2/25/93	MW-55S 2/26/93
Dissolved Metals:						
Silver, Dissolved	µg/l	-	-	-	-	<10
Arsenic, Dissolved	µg/l	-	-	-	-	12
Barium, Dissolved	µg/l	-	-	-	-	98
Calcium, Dissolved	µg/l	-	-	-	-	13000
Cadmium, Dissolved	µg/l	-	-	-	-	5.5
Chromium, Dissolved	µg/l	-	-	-	-	<10
Mercury, Dissolved	µg/l	-	-	-	-	<0.2
Nickel, Dissolved	µg/l	-	-	-	-	68
Lead, Dissolved	µg/l	-	-	-	-	1.6
Antimony, Dissolved	µg/l	-	-	-	-	6
Selenium, Dissolved	µg/l	-	-	-	-	<1
Tin, Dissolved	µg/l	-	-	-	-	<50
Columbium, Dissolved	µg/l	-	-	-	-	<100
Tantalum, Dissolved	µg/l	-	-	-	-	<100
Volatile Organics:						
Acetone	µg/l	<10	<10	-	-	-
Benzene	µg/l	<10	<10	-	-	-
Bromodichloromethane	µg/l	<10	<10	-	-	-
Bromoform	µg/l	<10	<10	-	-	-
Bromomethane	µg/l	<10	<10	-	-	-
2-Butanone	µg/l	<10	<10	-	-	-
Carbon Disulfide	µg/l	<10	<10	-	-	-
Carbon Tetrachloride	µg/l	<10	<10	-	-	-
Chlorobenzene	µg/l	<10	<10	-	-	-
Dibromochloromethane	µg/l	<10	<10	-	-	-
Chloroethane	µg/l	<10	<10	-	-	-
Chloromethane	µg/l	<10	<10	-	-	-
Chloroform	µg/l	<10	<10	-	-	-
1,1-Dichloroethane	µg/l	<10	<10	-	-	-
1,2-Dichloroethane	µg/l	<10	<10	-	-	-
1,1-Dichloroethene	µg/l	<10	<10	-	-	-
1,2-Dichloroethene	µg/l	<10	<10	-	-	-
1,2-Dichloropropane	µg/l	<10	<10	-	-	-
Cis-1,3-Dichloropropene	µg/l	<10	<10	-	-	-
Trans-1,3-Dichloropropene	µg/l	<10	<10	-	-	-
Ethylbenzene	µg/l	<10	<10	-	-	-
2-Hexanone	µg/l	<10	<10	-	-	-
Methylene Chloride	µg/l	<10	<10	-	-	-
4-Methyl-2-pentanone	µg/l	<10	<10	<10	<10	<10
Styrene	µg/l	<10	<10	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	<10	<10	-	-	-
Tetrachloroethene	µg/l	<10	<10	-	-	-
Toluene	µg/l	<10	<10	-	-	-
1,1,1-Trichloroethane	µg/l	<10	<10	-	-	-
1,1,2-Trichloroethane	µg/l	<10	<10	-	-	-
Trichloroethene	µg/l	<10	<10	-	-	-
Vinyl Chloride	µg/l	<10	<10	-	-	-
Xylenes, Total	µg/l	<10	<10	-	-	-

See footnotes at end of table.

Table 15
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-51S 2/24/93	MW-52S 2/25/93	MW-53S 2/27/93	MW-54S 2/25/93	MW-55S 2/26/93
Semivolatile Organics:						
Acenaphthene	µg/l	<10	<10	-	-	-
Acenaphthylene	µg/l	<10	<10	-	-	-
Bis(2-chloroethyl)ether	µg/l	<10	<10	-	-	-
Bis(2-chloroethoxy)methane	µg/l	<10	<10	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	<10	<10	-	-	-
Bis(2-ethylhexyl)phthalate	µg/l	<10	<10	-	-	-
Benzo(a)pyrene	µg/l	<10	<10	-	-	-
Benzo(a)anthracene	µg/l	<10	<10	-	-	-
Benzo(b)fluoranthene	µg/l	<10	<10	-	-	-
Benzo(g,h,i)perylene	µg/l	<10	<10	-	-	-
Benzo(k)fluoranthene	µg/l	<10	<10	-	-	-
4-Bromophenyl Phenyl Ether	µg/l	<10	<10	-	-	-
Butylbenzyl Phthalate	µg/l	<10	<10	-	-	-
Carbazole	µg/l	<10	<10	-	-	-
Chrysene	µg/l	<10	<10	-	-	-
4-Chloroaniline	µg/l	<10	<10	-	-	-
2-Chloronaphthalene	µg/l	<10	<10	-	-	-
2-Chlorophenol	µg/l	<10	<10	-	-	-
4-Chlorophenyl Phenyl Ether	µg/l	<10	<10	-	-	-
o-Cresol	µg/l	<10	<10	-	-	-
p-Cresols	µg/l	<10	<10	-	-	-
Dibenzo(a,h)anthracene	µg/l	<10	<10	-	-	-
Dibenzofuran	µg/l	<10	<10	-	-	-
2,4-Dichlorophenol	µg/l	<10	<10	-	-	-
1,2-Dichlorobenzene	µg/l	<10	<10	-	-	-
1,3-Dichlorobenzene	µg/l	<10	<10	-	-	-
1,4-Dichlorobenzene	µg/l	<10	<10	-	-	-
3,3-Dichlorobenzidine	µg/l	<10	<10	-	-	-
Diethyl Phthalate	µg/l	<10	<10	-	-	-
Dimethyl Phthalate	µg/l	<10	<10	-	-	-
2,4-Dimethylphenol	µg/l	<10	<10	-	-	-
Di-N-butyl Phthalate	µg/l	<10	<10	-	-	-
4,6-Dinitro-o-cresol	µg/l	<50	<50	-	-	-
2,4-Dinitrotoluene	µg/l	<10	<10	-	-	-
2,6-Dinitrotoluene	µg/l	<10	<10	-	-	-
Di-N-octyl Phthalate	µg/l	<10	<10	-	-	-
2,4-Dinitrophenol	µg/l	<50	<50	-	-	-
Fluoranthene	µg/l	<10	<10	-	-	-
Fluorene	µg/l	<10	<10	-	-	-
Hexachlorocyclopentadiene	µg/l	<10	<10	-	-	-
Hexachlorobenzene	µg/l	<10	<10	-	-	-
Hexachlorobutadiene	µg/l	<10	<10	-	-	-
Hexachloroethane	µg/l	<10	<10	-	-	-
Indeno(1,2,3-c,d)pyrene	µg/l	<10	<10	-	-	-
Isophorone	µg/l	<10	<10	-	-	-
2-Methylnaphthalene	µg/l	<10	<10	-	-	-
N-Nitrosodiphenylamine	µg/l	<10	<10	-	-	-
N-Nitrosodi-n-propylamine	µg/l	<10	<10	-	-	-
Naphthalene	µg/l	<10	<10	-	-	-
2-Nitroaniline	µg/l	<50	<50	-	-	-
3-Nitroaniline	µg/l	<50	<50	-	-	-
4-Nitroaniline	µg/l	<50	<50	-	-	-
Nitrobenzene	µg/l	<10	<10	-	-	-
2-Nitrophenol	µg/l	<10	<10	-	-	-
4-Nitrophenol	µg/l	<50	<50	-	-	-
p-chloro-m-cresol	µg/l	<10	<10	-	-	-
Pentachlorophenol	µg/l	<50	<50	-	-	-
Phenanthrene	µg/l	<10	<10	-	-	-
Phenol	µg/l	<10	<10	-	-	-
Pyrene	µg/l	<10	<10	-	-	-
2,4,5-Trichlorophenol	µg/l	<50	<50	-	-	-
2,4,6-Trichlorophenol	µg/l	<10	<10	-	-	-
1,2,4-Trichlorobenzene	µg/l	<10	<10	-	-	-

See footnotes at end of table.

Table 15
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-56S 2/24/93	MW-57S 2/25/93	MW-58S 2/25/93	MW-59S 2/27/93	MW-60S 2/25/93
Total Analyses:						
Fluoride	mg/l	1.1	19	2.0	0.35	7.4
Ammonia	mg/l NO_3-N	<0.10	98	38	82	120
Nitrate-Nitrite	mg/l NO_3-N	<0.10	30	<0.10	1.1	8.2
Sulfate	mg/l	2000	270	800	1600	780
Gross Alpha	pCi/l	76±28	23±8	5±8	19±17	24±17
Gross Beta	pCi/l	34±22	120±10	45±15	110±30	240±30
Isotopes:						
Uranium-233 & 234	pCi/l	37±1	1.9±0.5	-	-	0.4±0.6
Uranium-235	pCi/l	2.2±0.4	-0.1±0.1	-	-	-0.1±0.1
Uranium-238	pCi/l	29±1	0.8±0.4	-	-	-0.1±0.4
Radium 226	pCi/l	0.5±0.4	1.4±0.5	-	-	3.2±0.6
Radium 228	pCi/l	1.4±0.7	2.0±1.4	-	-	2.2±1.3
Potassium-40	pCi/l	1.9	80	-	-	210
Thorium-228	pCi/l	0.7±0.3	1.5±0.4	-	-	1.7±0.4
Thorium-230	pCi/l	0.6±0.3	0.9±0.3	-	-	0.4±0.3
Thorium-232	pCi/l	0.4±0.2	1.2±0.3	-	-	1.1±0.3
Total Metals:						
Silver, Total	µg/l	<6.84	<6.84	<6.84	<6.84	<6.84
Aluminum, Total	µg/l	-	-	-	-	5240
Arsenic, Total	µg/l	10.6	70.2	330	126	391
Barium, Total	µg/l	91.2	164	79.6	73.9	177
Beryllium, Total	µg/l	-	-	-	-	7
Calcium, Total	µg/l	500000	54100	187000	488000	195000
Cadmium, Total	µg/l	<4.04	8.45	5.18	5.86	7.2
Cobalt, Total	µg/l	-	-	-	-	28.6
Chromium, Total	µg/l	17.3	<10	<10	20.2	<10
Copper, Total	µg/l	-	-	-	-	29
Iron, Total	µg/l	-	-	-	-	8300
Mercury, Total	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2
Potassium, Total	µg/l	-	-	-	-	235000
Magnesium, Total	µg/l	-	-	-	-	41600
Manganese, Total	µg/l	-	-	-	-	6290
Sodium, Total	µg/l	-	-	-	-	696000
Nickel, Total	µg/l	133	34.3	40.7	157	73.6
Lead, Total	µg/l	55.3	15.8	5.17	4.74	11.9
Antimony, Total	µg/l	46.3	77.7	<29.7	<29.7	<1.1
Selenium, Total	µg/l	<0.8	<0.8	<0.8	<0.8	<0.8
Tin, Total	µg/l	160000	<50	<50	87	<50
Thallium, Total	µg/l	-	-	-	-	<4
Vanadium, Total	µg/l	-	-	-	-	18.8
Zinc, Total	µg/l	-	-	-	-	45.2
Columbium, Total	µg/l	50	20	10	<100	20
Tantalum, Total	µg/l	160	70	70	100	110

See footnotes at end of table.

Table 15
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-56S 2/24/93	MW-57S 2/25/93	MW-58S 2/25/93	MW-59S 2/27/93	MW-60S 2/25/93
Dissolved Metals:						
Silver, Dissolved	µg/l	-	-	-	-	-
Arsenic, Dissolved	µg/l	-	-	-	-	-
Barium, Dissolved	µg/l	-	-	-	-	-
Calcium, Dissolved	µg/l	-	-	-	-	-
Cadmium, Dissolved	µg/l	-	-	-	-	-
Chromium, Dissolved	µg/l	-	-	-	-	-
Mercury, Dissolved	µg/l	-	-	-	-	-
Nickel, Dissolved	µg/l	-	-	-	-	-
Lead, Dissolved	µg/l	-	-	-	-	-
Antimony, Dissolved	µg/l	-	-	-	-	-
Selenium, Dissolved	µg/l	-	-	-	-	-
Tin, Dissolved	µg/l	-	-	-	-	-
Columbium, Dissolved	µg/l	-	-	-	-	-
Tantalum, Dissolved	µg/l	-	-	-	-	-
Volatile Organics:						
Acetone	µg/l	-	-	-	-	<10
Benzene	µg/l	-	-	-	-	<10
Bromodichloromethane	µg/l	-	-	-	-	<10
Bromoform	µg/l	-	-	-	-	<10
Bromomethane	µg/l	-	-	-	-	<10
2-Butanone	µg/l	-	-	-	-	<10
Carbon Disulfide	µg/l	-	-	-	-	<10
Carbon Tetrachloride	µg/l	-	-	-	-	<10
Chlorobenzene	µg/l	-	-	-	-	<10
Dibromochloromethane	µg/l	-	-	-	-	<10
Chloroethane	µg/l	-	-	-	-	<10
Chloromethane	µg/l	-	-	-	-	<10
Chloroform	µg/l	-	-	-	-	<10
1,1-Dichloroethane	µg/l	-	-	-	-	<10
1,2-Dichloroethane	µg/l	-	-	-	-	<10
1,1-Dichloroethene	µg/l	-	-	-	-	<10
1,2-Dichloroethene	µg/l	-	-	-	-	<10
1,2-Dichloropropane	µg/l	-	-	-	-	<10
Cis-1,3-Dichloropropene	µg/l	-	-	-	-	<10
Trans-1,3-Dichloropropene	µg/l	-	-	-	-	<10
Ethylbenzene	µg/l	-	-	-	-	<10
2-Hexanone	µg/l	-	-	-	-	<10
Methylene Chloride	µg/l	-	-	-	-	<10
4-Methyl-2-pentanone	µg/l	<10	<10	<10	<10	<10
Styrene	µg/l	-	-	-	-	<10
1,1,2,2-Tetrachloroethane	µg/l	-	-	-	-	<10
Tetrachloroethene	µg/l	-	-	-	-	<10
Toluene	µg/l	-	-	-	-	<10
1,1,1-Trichloroethane	µg/l	-	-	-	-	<10
1,1,2-Trichloroethane	µg/l	-	-	-	-	<10
Trichloroethene	µg/l	-	-	-	-	<10
Vinyl Chloride	µg/l	-	-	-	-	<10
Xylenes, Total	µg/l	-	-	-	-	<10

See footnotes at end of table.

Table 15
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-56S 2/24/93	MW-57S 2/25/93	MW-58S 2/25/93	MW-59S 2/27/93	MW-60S 2/25/93
Semivolatile Organics:						
Acenaphthene	µg/l	-	-	-	-	<10
Acenaphthylene	µg/l	-	-	-	-	<10
Bis(2-chloroethyl)ether	µg/l	-	-	-	-	<10
Bis(2-chloroethoxy)methane	µg/l	-	-	-	-	<10
Bis(2-chloroisopropyl)ether	µg/l	-	-	-	-	<10
Bis(2-ethylhexyl)phthalate	µg/l	-	-	-	-	<10
Benzo(a)pyrene	µg/l	-	-	-	-	<10
Benzo(a)anthracene	µg/l	-	-	-	-	<10
Benzo(b)fluoranthene	µg/l	-	-	-	-	<10
Benzo(g,h,i)perylene	µg/l	-	-	-	-	<10
Benzo(k)fluoranthene	µg/l	-	-	-	-	<10
4-Bromophenyl Phenyl Ether	µg/l	-	-	-	-	<10
Butylbenzyl Phthalate	µg/l	-	-	-	-	<10
Carbazole	µg/l	-	-	-	-	<10
Chrysene	µg/l	-	-	-	-	<10
4-Chloroaniline	µg/l	-	-	-	-	<10
2-Chloronaphthalene	µg/l	-	-	-	-	<10
2-Chlorophenol	µg/l	-	-	-	-	<10
4-Chlorophenyl Phenyl Ether	µg/l	-	-	-	-	<10
o-Cresol	µg/l	-	-	-	-	<10
p-Cresols	µg/l	-	-	-	-	<10
Dibenzo(a,h)anthracene	µg/l	-	-	-	-	<10
Dibenzofuran	µg/l	-	-	-	-	<10
2,4-Dichlorophenol	µg/l	-	-	-	-	<10
1,2-Dichlorobenzene	µg/l	-	-	-	-	<10
1,3-Dichlorobenzene	µg/l	-	-	-	-	<10
1,4-Dichlorobenzene	µg/l	-	-	-	-	<10
3,3-Dichlorobenzidine	µg/l	-	-	-	-	<10
Diethyl Phthalate	µg/l	-	-	-	-	<10
Dimethyl Phthalate	µg/l	-	-	-	-	<10
2,4-Dimethylphenol	µg/l	-	-	-	-	<10
Di-N-butyl Phthalate	µg/l	-	-	-	-	<10
4,6-Dinitro-o-cresol	µg/l	-	-	-	-	<50
2,4-Dinitrotoluene	µg/l	-	-	-	-	<10
2,6-Dinitrotoluene	µg/l	-	-	-	-	<10
Di-N-octyl Phthalate	µg/l	-	-	-	-	<10
2,4-Dinitrophenol	µg/l	-	-	-	-	<50
Fluoranthene	µg/l	-	-	-	-	<10
Fluorene	µg/l	-	-	-	-	<10
Hexachlorocyclopentadiene	µg/l	-	-	-	-	<10
Hexachlorobenzene	µg/l	-	-	-	-	<10
Hexachlorobutadiene	µg/l	-	-	-	-	<10
Hexachloroethane	µg/l	-	-	-	-	<10
Indeno(1,2,3-c,d)pyrene	µg/l	-	-	-	-	<10
Isophorone	µg/l	-	-	-	-	<10
2-Methylnaphthalene	µg/l	-	-	-	-	<10
N-Nitrosodiphenylamine	µg/l	-	-	-	-	<10
N-Nitrosodi-n-propylamine	µg/l	-	-	-	-	<10
Naphthalene	µg/l	-	-	-	-	<10
2-Nitroaniline	µg/l	-	-	-	-	<50
3-Nitroaniline	µg/l	-	-	-	-	<50
4-Nitroaniline	µg/l	-	-	-	-	<50
Nitrobenzene	µg/l	-	-	-	-	<10
2-Nitrophenol	µg/l	-	-	-	-	<10
4-Nitrophenol	µg/l	-	-	-	-	<50
p-chloro-m-cresol	µg/l	-	-	-	-	<10
Pentachlorophenol	µg/l	-	-	-	-	<50
Phenanthrene	µg/l	-	-	-	-	<10
Phenol	µg/l	-	-	-	-	<10
Pyrene	µg/l	-	-	-	-	<10
2,4,5-Trichlorophenol	µg/l	-	-	-	-	<50
2,4,6-Trichlorophenol	µg/l	-	-	-	-	<10
1,2,4-Trichlorobenzene	µg/l	-	-	-	-	<10

See footnotes at end of table.

Table 15
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-61S 2/25/93	MW-62S 2/27/93	MW-63S 2/27/93	MW-64S 2/27/93	MW-65S 2/27/93
Total Analyses:						
Fluoride	mg/l	25	10	20	39	42
Ammonia	mg/l NO_3-N	150	250	130	69	94
Nitrate-Nitrite	mg/l NO_3-N	29	160	0.64	0.65	0.16
Sulfate	mg/l	51	1000	1900	720	420
Gross Alpha	pCi/l	-2±7	2±11	-13±14	12±13	19±10
Gross Beta	pCi/l	150±10	200±20	210±30	130±20	100±10
Isotopes:						
Uranium-233 & 234	pCi/l	0.7±0.4	4.3±0.5	0.2±0.5	6.2±0.7	3.0±0.4
Uranium-235	pCi/l	-0.1±0.2	0.2±0.1	0.0±0.1	0.4±0.2	0.0±0.1
Uranium-238	pCi/l	0.4±0.4	3.6±0.5	0.2±0.2	7.0±0.7	3.1±0.4
Radium 226	pCi/l	1.0±0.4	0.6±0.4	0.2±0.3	1.3±0.5	1.7±0.4
Radium 228	pCi/l	1.4±0.7	-	-	-	-
Potassium-40	pCi/l	130	-	-	-	-
Thorium-228	pCi/l	0.3±0.3	0.5±0.2	0.1±0.2	1.1±0.3	0.9±1.0
Thorium-230	pCi/l	0.2±0.2	0.3±0.2	0.4±0.3	0.8±0.3	0.7±0.3
Thorium-232	pCi/l	0.2±0.1	0.1±0.1	0.0±0.1	0.9±0.3	0.6±0.3
Total Metals:						
Silver, Total	µg/l	<6.84	<6.84	<6.84	<6.84	<6.84
Aluminum, Total	µg/l	6040	1980	-	-	-
Arsenic, Total	µg/l	405	538	1100	177	403
Barium, Total	µg/l	85.4	57.3	43.1	204	201
Beryllium, Total	µg/l	4.1	4.67	-	-	-
Calcium, Total	µg/l	73800	163000	281000	107000	66900
Cadmium, Total	µg/l	6.38	5.39	5.55	6.39	10.1
Cobalt, Total	µg/l	12.7	<8.54	-	-	-
Chromium, Total	µg/l	<10	<10	18.9	37.8	67.2
Copper, Total	µg/l	11	18.4	-	-	-
Iron, Total	µg/l	2540	2440	-	-	-
Mercury, Total	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2
Potassium, Total	µg/l	121000	182000	-	-	-
Magnesium, Total	µg/l	18600	48000	-	-	-
Manganese, Total	µg/l	1370	718	-	-	-
Sodium, Total	µg/l	181000	237000	-	-	-
Nickel, Total	µg/l	17.4	<11.1	55.7	71.7	81.7
Lead, Total	µg/l	6.69	3.19	2.44	9	10.3
Antimony, Total	µg/l	<1.1	<1.1	56.3	<29.7	38.2
Selenium, Total	µg/l	<0.8	0.8	<0.8	<0.8	<0.8
Tin, Total	µg/l	<50	<50	<50	<50	52
Thallium, Total	µg/l	<4	<4	-	-	-
Vanadium, Total	µg/l	9.38	5.41	-	-	-
Zinc, Total	µg/l	18.3	18.9	-	-	-
Columbium, Total	µg/l	<10	<100	<100	<100	<100
Tantalum, Total	µg/l	60	100	<100	<100	<100

See footnotes at end of table.

Table 15
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-61S 2/25/93	MW-62S 2/27/93	MW-63S 2/27/93	MW-64S 2/27/93	MW-65S 2/27/93
Dissolved Metals:						
Silver, Dissolved	µg/l	-	<10	<10	-	<10
Arsenic, Dissolved	µg/l	-	550	650	-	300
Barium, Dissolved	µg/l	-	26	26	-	73
Calcium, Dissolved	µg/l	-	180000	280000	-	53000
Cadmium, Dissolved	µg/l	-	<5	5.1	-	<5
Chromium, Dissolved	µg/l	-	<10	<10	-	<10
Mercury, Dissolved	µg/l	-	<0.2	<0.2	-	<0.2
Nickel, Dissolved	µg/l	-	<40	53	-	54
Lead, Dissolved	µg/l	-	<1	<1	-	<1
Antimony, Dissolved	µg/l	-	<3	4.2	-	7.2
Selenium, Dissolved	µg/l	-	<1	<1	-	<1
Tin, Dissolved	µg/l	-	53	61	-	<50
Columbium, Dissolved	µg/l	-	<100	<100	-	<100
Tantalum, Dissolved	µg/l	-	100	200	-	<100
Volatile Organics:						
Acetone	µg/l	<10	<10	-	-	-
Benzene	µg/l	<10	<10	-	-	-
Bromodichloromethane	µg/l	<10	<10	-	-	-
Bromoform	µg/l	<10	<10	-	-	-
Bromomethane	µg/l	<10	<10	-	-	-
2-Butanone	µg/l	<10	<10	-	-	-
Carbon Disulfide	µg/l	<10	<10	-	-	-
Carbon Tetrachloride	µg/l	<10	<10	-	-	-
Chlorobenzene	µg/l	<10	<10	-	-	-
Dibromochloromethane	µg/l	<10	<10	-	-	-
Chloroethane	µg/l	<10	<10	-	-	-
Chloromethane	µg/l	<10	<10	-	-	-
Chloroform	µg/l	<10	<10	-	-	-
1,1-Dichloroethane	µg/l	<10	<10	-	-	-
1,2-Dichloroethane	µg/l	<10	<10	-	-	-
1,1-Dichloroethene	µg/l	<10	<10	-	-	-
1,2-Dichloroethene	µg/l	<10	<10	-	-	-
1,2-Dichloropropane	µg/l	<10	<10	-	-	-
Cis-1,3-Dichloropropene	µg/l	<10	<10	-	-	-
Trans-1,3-Dichloropropene	µg/l	<10	<10	-	-	-
Ethylbenzene	µg/l	<10	<10	-	-	-
2-Hexanone	µg/l	<10	<10	-	-	-
Methylene Chloride	µg/l	<10	<10	-	-	-
4-Methyl-2-pentanone	µg/l	<10	<10	<10	430	<10
Styrene	µg/l	<10	<10	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	<10	<10	-	-	-
Tetrachloroethene	µg/l	<10	<10	-	-	-
Toluene	µg/l	<10	<10	-	-	-
1,1,1-Trichloroethane	µg/l	<10	<10	-	-	-
1,1,2-Trichloroethane	µg/l	<10	<10	-	-	-
Trichloroethene	µg/l	<10	<10	-	-	-
Vinyl Chloride	µg/l	<10	<10	-	-	-
Xylenes, Total	µg/l	<10	<10	-	-	-

See footnotes at end of table.

Table 15
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-61S 2/25/93	MW-62S 2/27/93	MW-63S 2/27/93	MW-64S 2/27/93	MW-65S 2/27/93
Semivolatile Organics:						
Acenaphthene	µg/l	<10	<10	-	-	-
Acenaphthylene	µg/l	<10	<10	-	-	-
Bis(2-chloroethyl)ether	µg/l	<10	<10	-	-	-
Bis(2-chloroethoxy)methane	µg/l	<10	<10	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	<10	<10	-	-	-
Bis(2-ethylhexyl)phthalate	µg/l	<10	<10	-	-	-
Benzo(a)pyrene	µg/l	<10	<10	-	-	-
Benzo(a)anthracene	µg/l	<10	<10	-	-	-
Benzo(b)fluoranthene	µg/l	<10	<10	-	-	-
Benzo(g,h,i)perylene	µg/l	<10	<10	-	-	-
Benzo(k)fluoranthene	µg/l	<10	<10	-	-	-
4-Bromophenyl Phenyl Ether	µg/l	<10	<10	-	-	-
Butylbenzyl Phthalate	µg/l	<10	<10	-	-	-
Carbazole	µg/l	<10	<10	-	-	-
Chrysene	µg/l	<10	<10	-	-	-
4-Chloroaniline	µg/l	<10	<10	-	-	-
2-Chloronaphthalene	µg/l	<10	<10	-	-	-
2-Chlorophenol	µg/l	<10	<10	-	-	-
4-Chlorophenyl Phenyl Ether	µg/l	<10	<10	-	-	-
o-Cresol	µg/l	<10	<10	-	-	-
p-Cresols	µg/l	<10	<10	-	-	-
Dibenzo(a,h)anthracene	µg/l	<10	<10	-	-	-
Dibenzofuran	µg/l	<10	<10	-	-	-
2,4-Dichlorophenol	µg/l	<10	<10	-	-	-
1,2-Dichlorobenzene	µg/l	<10	<10	-	-	-
1,3-Dichlorobenzene	µg/l	<10	<10	-	-	-
1,4-Dichlorobenzene	µg/l	<10	<10	-	-	-
3,3-Dichlorobenzidine	µg/l	<10	<10	-	-	-
Diethyl Phthalate	µg/l	<10	<10	-	-	-
Dimethyl Phthalate	µg/l	<10	<10	-	-	-
2,4-Dimethylphenol	µg/l	<10	<10	-	-	-
Di-N-butyl Phthalate	µg/l	<10	<10	-	-	-
4,6-Dinitro-o-cresol	µg/l	<50	<50	-	-	-
2,4-Dinitrotoluene	µg/l	<10	<10	-	-	-
2,6-Dinitrotoluene	µg/l	<10	<10	-	-	-
Di-N-octyl Phthalate	µg/l	<10	<10	-	-	-
2,4-Dinitrophenol	µg/l	<50	<50	-	-	-
Fluoranthene	µg/l	<10	<10	-	-	-
Fluorene	µg/l	<10	<10	-	-	-
Hexachlorocyclopentadiene	µg/l	<10	<10	-	-	-
Hexachlorobenzene	µg/l	<10	<10	-	-	-
Hexachlorobutadiene	µg/l	<10	<10	-	-	-
Hexachloroethane	µg/l	<10	<10	-	-	-
Indeno(1,2,3-c,d)pyrene	µg/l	<10	<10	-	-	-
Isophorone	µg/l	<10	<10	-	-	-
2-Methylnaphthalene	µg/l	<10	<10	-	-	-
N-Nitrosodiphenylamine	µg/l	<10	<10	-	-	-
N-Nitrosodi-n-propylamine	µg/l	<10	<10	-	-	-
Naphthalene	µg/l	<10	<10	-	-	-
2-Nitroaniline	µg/l	<50	<50	-	-	-
3-Nitroaniline	µg/l	<50	<50	-	-	-
4-Nitroaniline	µg/l	<50	<50	-	-	-
Nitrobenzene	µg/l	<10	<10	-	-	-
2-Nitrophenol	µg/l	<10	<10	-	-	-
4-Nitrophenol	µg/l	<50	<50	-	-	-
p-chloro-m-cresol	µg/l	<10	<10	-	-	-
Pentachlorophenol	µg/l	<50	<50	-	-	-
Phenanthrene	µg/l	<10	<10	-	-	-
Phenol	µg/l	<10	<10	-	-	-
Pyrene	µg/l	<10	<10	-	-	-
2,4,5-Trichlorophenol	µg/l	<50	<50	-	-	-
2,4,6-Trichlorophenol	µg/l	<10	<10	-	-	-
1,2,4-Trichlorobenzene	µg/l	<10	<10	-	-	-

See footnotes at end of table.

Table 15
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-66S 2/27/93	MW-67S 2/27/93	MW-68S 2/26/93	MW-69S 2/26/93	MW-70S 2/26/93
Total Analyses:						
Fluoride	mg/l	51	3600	5.0	21	16
Ammonia	mg/l NO_3-N	170	3500	<0.10	<0.10	5.8
Nitrate-Nitrite	mg/l NO_3-N	59	69	1.1	1.6	9.5
Sulfate	mg/l	880	2900	72	50	200
Gross Alpha	pCi/l	140±20	1300±100	52±13	30±7	1±8
Gross Beta	pCi/l	120±10	440±20	59±11	24±5	370±20
Isotopes:						
Uranium-233 & 234	pCi/l	970±30	900±30	1.5±0.4	0.7±0.2	2.6±0.6
Uranium-235	pCi/l	40±6	42±7	0.0±0.1	0.0±0.1	0.0±0.1
Uranium-238	pCi/l	980±30	900±30	1.3±0.3	0.4±0.2	2.1±0.4
Radium 226	pCi/l	1.5±0.5	0.1±0.8	2.0±0.5	2.0±0.6	1.1±0.7
Radium 228	pCi/l	-	-	-	2.3±1.5	-
Potassium-40	pCi/l	-	-	-	1.0	-
Thorium-228	pCi/l	0.4±0.4	0.5±1.5	3.0±0.6	2.1±0.4	0.0±0.2
Thorium-230	pCi/l	0.5±0.4	2.4±1.6	1.5±0.4	1.4±0.3	0.0±0.1
Thorium-232	pCi/l	0.6±0.4	0.0±0.1	2.3±0.5	1.5±0.3	0.1±0.1
Total Metals:						
Silver, Total	µg/l	<6.84	<6.84	<6.84	<6.84	<6.84
Aluminum, Total	µg/l	13200	37900	-	-	-
Arsenic, Total	µg/l	205	2830	6.87	9.44	126
Barium, Total	µg/l	99.9	23.8	184	277	239
Beryllium, Total	µg/l	11	16.6	-	-	-
Calcium, Total	µg/l	69500	1070	23200	23900	53800
Cadmium, Total	µg/l	6.03	6.69	11	10.2	5.32
Cobalt, Total	µg/l	13.7	<8.54	-	-	-
Chromium, Total	µg/l	<10	23	23.5	16.1	<10
Copper, Total	µg/l	20	7.92	-	-	-
Iron, Total	µg/l	6170	12200	-	-	-
Mercury, Total	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2
Potassium, Total	µg/l	68300	11700	-	-	-
Magnesium, Total	µg/l	39000	638	-	-	-
Manganese, Total	µg/l	17200	321	-	-	-
Sodium, Total	µg/l	211000	43200	-	-	-
Nickel, Total	µg/l	110	33.3	31.4	38.3	<11.1
Lead, Total	µg/l	8.24	1.59	11.8	140	1.48
Antimony, Total	µg/l	<1.1	3.05	<29.7	36	<29.7
Selenium, Total	µg/l	<0.8	<0.8	4.02	<0.8	<0.8
Tin, Total	µg/l	<50	110	<50	<50	<50
Thallium, Total	µg/l	<4	<4	-	-	-
Vanadium, Total	µg/l	13.4	23.3	-	-	-
Zinc, Total	µg/l	39.8	25.6	-	-	-
Columbium, Total	µg/l	<100	<100	<100	20	<100
Tantalum, Total	µg/l	<100	<100	<100	50	<100

See footnotes at end of table.

Table 15
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-66S 2/27/93	MW-67S 2/27/93	MW-68S 2/26/93	MW-69S 2/26/93	MW-70S 2/26/93
Dissolved Metals:						
Silver, Dissolved	µg/l	<10	<10	-	-	-
Arsenic, Dissolved	µg/l	430	4000	-	-	-
Barium, Dissolved	µg/l	63	93	-	-	-
Calcium, Dissolved	µg/l	67000	1000	-	-	-
Cadmium, Dissolved	µg/l	10	<5	-	-	-
Chromium, Dissolved	µg/l	<10	<10	-	-	-
Mercury, Dissolved	µg/l	<0.2	0.3	-	-	-
Nickel, Dissolved	µg/l	120	<40	-	-	-
Lead, Dissolved	µg/l	<1	3.6	-	-	-
Antimony, Dissolved	µg/l	4.3	12	-	-	-
Selenium, Dissolved	µg/l	<1	<1	-	-	-
Tin, Dissolved	µg/l	<50	110	-	-	-
Columbium, Dissolved	µg/l	<100	<100	-	-	-
Tantalum, Dissolved	µg/l	<100	100	-	-	-
Volatile Organics:						
Acetone	µg/l	<10	<100	-	-	-
Benzene	µg/l	<10	<100	-	-	-
Bromodichloromethane	µg/l	<10	<100	-	-	-
Bromoform	µg/l	<10	<100	-	-	-
Bromomethane	µg/l	<10	<100	-	-	-
2-Butanone	µg/l	<10	<100	-	-	-
Carbon Disulfide	µg/l	<10	<100	-	-	-
Carbon Tetrachloride	µg/l	<10	<100	-	-	-
Chlorobenzene	µg/l	<10	<100	-	-	-
Dibromochloromethane	µg/l	<10	<100	-	-	-
Chloroethane	µg/l	<10	<100	-	-	-
Chloromethane	µg/l	<10	<100	-	-	-
Chloroform	µg/l	<10	<100	-	-	-
1,1-Dichloroethane	µg/l	<10	<100	-	-	-
1,2-Dichloroethane	µg/l	<10	<100	-	-	-
1,1-Dichloroethene	µg/l	<10	<100	-	-	-
1,2-Dichloroethene	µg/l	<10	<100	-	-	-
1,2-Dichloropropane	µg/l	<10	<100	-	-	-
Cis-1,3-Dichloropropene	µg/l	<10	<100	-	-	-
Trans-1,3-Dichloropropene	µg/l	<10	<100	-	-	-
Ethylbenzene	µg/l	<10	<100	-	-	-
2-Hexanone	µg/l	<10	<100	-	-	-
Methylene Chloride	µg/l	<10	<100	-	-	-
4-Methyl-2-pentanone	µg/l	<10	820	<10	<10	<10
Styrene	µg/l	<10	<100	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	<10	<100	-	-	-
Tetrachloroethene	µg/l	<10	<100	-	-	-
Toluene	µg/l	<10	<100	-	-	-
1,1,1-Trichloroethane	µg/l	<10	<100	-	-	-
1,1,2-Trichloroethane	µg/l	<10	<100	-	-	-
Trichloroethene	µg/l	<10	<100	-	-	-
Vinyl Chloride	µg/l	<10	<100	-	-	-
Xylenes, Total	µg/l	<10	<100	-	-	-

See footnotes at end of table.

Table 15
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-66S 2/27/93	MW-67S 2/27/93	MW-68S 2/26/93	MW-69S 2/26/93	MW-70S 2/26/93
Semivolatile Organics:						
Acenaphthene	µg/l	<10	<10	-	-	-
Acenaphthylene	µg/l	<10	<10	-	-	-
Bis(2-chloroethyl)ether	µg/l	<10	<10	-	-	-
Bis(2-chloroethoxy)methane	µg/l	<10	<10	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	<10	<10	-	-	-
Bis(2-ethylhexyl)phthalate	µg/l	<10	<10	-	-	-
Benzo(a)pyrene	µg/l	<10	<10	-	-	-
Benzo(a)anthracene	µg/l	<10	<10	-	-	-
Benzo(b)fluoranthene	µg/l	<10	<10	-	-	-
Benzo(g,h,i)perylene	µg/l	<10	<10	-	-	-
Benzo(k)fluoranthene	µg/l	<10	<10	-	-	-
4-Bromophenyl Phenyl Ether	µg/l	<10	<10	-	-	-
Butylbenzyl Phthalate	µg/l	<10	<10	-	-	-
Carbazole	µg/l	<10	<10	-	-	-
Chrysene	µg/l	<10	<10	-	-	-
4-Chloroaniline	µg/l	<10	<10	-	-	-
2-Chloronaphthalene	µg/l	<10	<10	-	-	-
2-Chlorophenol	µg/l	<10	<10	-	-	-
4-Chlorophenyl Phenyl Ether	µg/l	<10	<10	-	-	-
o-Cresol	µg/l	<10	<10	-	-	-
p-Cresols	µg/l	<10	<10	-	-	-
Dibenzo(a,h)anthracene	µg/l	<10	<10	-	-	-
Dibenzofuran	µg/l	<10	<10	-	-	-
2,4-Dichlorophenol	µg/l	<10	<10	-	-	-
1,2-Dichlorobenzene	µg/l	<10	<10	-	-	-
1,3-Dichlorobenzene	µg/l	<10	<10	-	-	-
1,4-Dichlorobenzene	µg/l	<10	<10	-	-	-
3,3-Dichlorobenzidine	µg/l	<10	<10	-	-	-
Diethyl Phthalate	µg/l	<10	<10	-	-	-
Dimethyl Phthalate	µg/l	<10	<10	-	-	-
2,4-Dimethylphenol	µg/l	<10	<10	-	-	-
Di-N-butyl Phthalate	µg/l	<10	14	-	-	-
4,6-Dinitro-o-cresol	µg/l	<50	<50	-	-	-
2,4-Dinitrotoluene	µg/l	<10	<10	-	-	-
2,6-Dinitrotoluene	µg/l	<10	<10	-	-	-
Di-N-octyl Phthalate	µg/l	<10	<10	-	-	-
2,4-Dinitrophenol	µg/l	<50	<50	-	-	-
Fluoranthene	µg/l	<10	<10	-	-	-
Fluorene	µg/l	<10	<10	-	-	-
Hexachlorocyclopentadiene	µg/l	<10	<10	-	-	-
Hexachlorobenzene	µg/l	<10	<10	-	-	-
Hexachlorobutadiene	µg/l	<10	<10	-	-	-
Hexachloroethane	µg/l	<10	<10	-	-	-
Indeno(1,2,3-c,d)pyrene	µg/l	<10	<10	-	-	-
Isophorone	µg/l	<10	<10	-	-	-
2-Methylnaphthalene	µg/l	<10	<10	-	-	-
N-Nitrosodiphenylamine	µg/l	<10	<10	-	-	-
N-Nitrosodi-n-propylamine	µg/l	<10	<10	-	-	-
Naphthalene	µg/l	<10	<10	-	-	-
2-Nitroaniline	µg/l	<50	<50	-	-	-
3-Nitroaniline	µg/l	<50	<50	-	-	-
4-Nitroaniline	µg/l	<50	<50	-	-	-
Nitrobenzene	µg/l	<10	<10	-	-	-
2-Nitrophenol	µg/l	<10	<10	-	-	-
4-Nitrophenol	µg/l	<50	<50	-	-	-
p-chloro-m-cresol	µg/l	<10	<10	-	-	-
Pentachlorophenol	µg/l	<50	<50	-	-	-
Phenanthrene	µg/l	<10	<10	-	-	-
Phenol	µg/l	<10	<10	-	-	-
Pyrene	µg/l	<10	<10	-	-	-
2,4,5-Trichlorophenol	µg/l	<50	<50	-	-	-
2,4,6-Trichlorophenol	µg/l	<10	<10	-	-	-
1,2,4-Trichlorobenzene	µg/l	<10	<10	-	-	-

See footnotes at end of table.

Table 15
(Continued)

Parameter	Units	Sample Identification and Date					
		MW-71S 2/26/93	MW-72S 2/26/93	MW-73S 3/2/93	MW-73S 5/3/93	MW-74S 2/26/93	MW-75S 2/26/93
Total Analyses:							
Fluoride	mg/l	54	50	12	12	8.5	38
Ammonia	mg/l NO_3-N	92	44	0.39	0.39	180	<0.10
Nitrate-Nitrite	mg/l NO_3-N	<0.10	<0.10	2.1	2.1	<0.10	5.8
Sulfate	mg/l	590	1200	800	800	1600	100
Gross Alpha	pCi/l	29±14	7±9	830±120	-	2600±200	14±4
Gross Beta	pCi/l	140±20	10±14	1300±100	-	930±50	18±4
Isotopes:							
Uranium-233 & 234	pCi/l	19±1	-	42±13	-	21000±1000	-
Uranium-235	pCi/l	1.1±0.2	-	8.9±5.7	-	2100±100	-
Uranium-238	pCi/l	21±1	-	35±12	-	25000±1000	-
Radium 226	pCi/l	1.5±0.5	-	5.8±0.8	-	1.4±0.5	-
Radium 228	pCi/l	-	-	11±5	-	-	-
Potassium-40	pCi/l	-	-	26.5	-	-	-
Thorium-228	pCi/l	1.4±0.3	-	3.5±0.6	-	0.8±1.0	-
Thorium-230	pCi/l	1.7±0.4	-	1.2±0.4	-	0.0±0.4	-
Thorium-232	pCi/l	1.1±0.3	-	1.4±0.4	-	0.5±0.5	-
Total Metals:							
Silver, Total	µg/l	<6.84	<6.84	16.1	16.1	23.8	<6.84
Aluminum, Total	µg/l	26700	-	-	870000	394000	-
Arsenic, Total	µg/l	494	17.9	116	16	149	8.27
Barium, Total	µg/l	257	62.2	173	173	152	149
Beryllium, Total	µg/l	11.6	-	-	567	253	-
Calcium, Total	µg/l	48300	416000	5060	5050	9080	40000
Cadmium, Total	µg/l	12.8	9.12	79	79	119	5.65
Cobalt, Total	µg/l	15	-	-	117	290	-
Chromium, Total	µg/l	71.2	30.6	126	126	1580	<10
Copper, Total	µg/l	22.8	-	-	66.2	82.2	-
Iron, Total	µg/l	59600	-	-	418000	832000	-
Mercury, Total	µg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Potassium, Total	µg/l	97300	-	-	21600	35100	-
Magnesium, Total	µg/l	31300	-	-	1360	10000	-
Manganese, Total	µg/l	20000	-	-	155000	266000	-
Sodium, Total	µg/l	324000	-	-	39800	201000	-
Nickel, Total	µg/l	107	836	935	935	2380	11.8
Lead, Total	µg/l	13.6	<1	110	110	3.76	10.9
Antimony, Total	µg/l	<1.1	43.6	284	<3	<1.1	<29.7
Selenium, Total	µg/l	<0.8	<0.8	<0.8	<1	<0.8	<0.8
Tin, Total	µg/l	260	200	680	680	1200	<50
Thallium, Total	µg/l	<4	-	-	<4	<4	-
Vanadium, Total	µg/l	71.5	-	-	214	2640	-
Zinc, Total	µg/l	72.3	-	-	351	1480	-
Columbium, Total	µg/l	300	100	600	600	1900	<10
Tantalum, Total	µg/l	<100	200	400	400	600	40

See footnotes at end of table.

Table 15
(Continued)

Parameter	Units	Sample Identification and Date					
		MW-71S 2/26/93	MW-72S 2/26/93	MW-73S 3/2/93	MW-73S 5/3/93	MW-74S 2/26/93	MW-75S 2/26/93
Dissolved Metals:							
Silver, Dissolved	µg/l	-	-	60	-	27	-
Arsenic, Dissolved	µg/l	-	-	180	-	910	-
Barium, Dissolved	µg/l	-	-	230	-	96	-
Calcium, Dissolved	µg/l	-	-	8000	-	9900	-
Cadmium, Dissolved	µg/l	-	-	190	-	110	-
Chromium, Dissolved	µg/l	-	-	1400	-	1500	-
Mercury, Dissolved	µg/l	-	-	<0.2	-	0.2	-
Nickel, Dissolved	µg/l	-	-	2300	-	2300	-
Lead, Dissolved	µg/l	-	-	2	-	5.2	-
Antimony, Dissolved	µg/l	-	-	<3	-	4	-
Selenium, Dissolved	µg/l	-	-	<1	-	<1	-
Tin, Dissolved	µg/l	-	-	1300	-	1100	-
Columbium, Dissolved	µg/l	-	-	1400	-	1500	-
Tantalum, Dissolved	µg/l	-	-	900	-	800	-
Volatile Organics:							
Acetone	µg/l	<10	-	-	<10000	<10	-
Benzene	µg/l	<10	-	-	<10	<10	-
Bromodichloromethane	µg/l	<10	-	-	<10	<10	-
Bromoform	µg/l	<10	-	-	<10	<10	-
Bromomethane	µg/l	<10	-	-	<10	<10	-
2-Butanone	µg/l	<10	-	-	<10	21	-
Carbon Disulfide	µg/l	<10	-	-	<10	<10	-
Carbon Tetrachloride	µg/l	<10	-	-	<10	<10	-
Chlorobenzene	µg/l	<10	-	-	<10	<10	-
Dibromochloromethane	µg/l	<10	-	-	<10	<10	-
Chloroethane	µg/l	<10	-	-	<10	<10	-
Chloromethane	µg/l	<10	-	-	<10	<10	-
Chloroform	µg/l	<10	-	-	<10	<10	-
1,1-Dichloroethane	µg/l	<10	-	-	<10	<10	-
1,2-Dichloroethane	µg/l	<10	-	-	<10	<10	-
1,1-Dichloroethene	µg/l	<10	-	-	<10	<10	-
1,2-Dichloroethene	µg/l	<10	-	-	<10	64	-
1,2-Dichloropropane	µg/l	<10	-	-	<10	<10	-
Cis-1,3-Dichloropropene	µg/l	<10	-	-	<10	<10	-
Trans-1,3-Dichloropropene	µg/l	<10	-	-	<10	<10	-
Ethylbenzene	µg/l	<10	-	-	<10	<10	-
2-Hexanone	µg/l	<10	-	-	<10	33	-
Methylene Chloride	µg/l	<10	-	-	<10	<10	-
4-Methyl-2-pentanone	µg/l	37	<10	120000	41000	83000	<10
Styrene	µg/l	<10	-	-	<10	<10	-
1,1,2,2-Tetrachloroethane	µg/l	<10	-	-	<10	<10	-
Tetrachloroethene	µg/l	<10	-	-	<10	<10	-
Toluene	µg/l	<10	-	-	<10	<10	-
1,1,1-Trichloroethane	µg/l	<10	-	-	<10	<10	-
1,1,2-Trichloroethane	µg/l	<10	-	-	<10	<10	-
Trichloroethene	µg/l	<10	-	-	<10	<10	-
Vinyl Chloride	µg/l	<10	-	-	<10	<10	-
Xylenes, Total	µg/l	<10	-	-	<10	<10	-

See footnotes at end of table.

Table 15
(Continued)

Parameter	Units	Sample Identification and Date					
		MW-71S 2/26/93	MW-72S 2/26/93	MW-73S 3/2/93	MW-73S 5/3/93	MW-74S 2/26/93	MW-75S 2/26/93
Semivolatile Organics:							
Acenaphthene	µg/l	<10	-	-	<10	<10	-
Acenaphthylene	µg/l	<10	-	-	<10	<10	-
Bis(2-chloroethyl)ether	µg/l	<10	-	-	<10	<10	-
Bis(2-chloroethoxy)methane	µg/l	<10	-	-	<10	<10	-
Bis(2-chloroisopropyl)ether	µg/l	<10	-	-	<10	<10	-
Bis(2-ethylhexyl)phthalate	µg/l	<10	-	-	<10	<10	-
Benzo(a)pyrene	µg/l	<10	-	-	<10	<10	-
Benzo(a)anthracene	µg/l	<10	-	-	<10	<10	-
Benzo(b)fluoranthene	µg/l	<10	-	-	<10	<10	-
Benzo(g,h,i)perylene	µg/l	<10	-	-	<10	<10	-
Benzo(k)fluoranthene	µg/l	<10	-	-	<10	<10	-
4-Bromophenyl Phenyl Ether	µg/l	<10	-	-	<10	<10	-
Butylbenzyl Phthalate	µg/l	<10	-	-	<10	<10	-
Carbazole	µg/l	<10	-	-	<10	<10	-
Chrysene	µg/l	<10	-	-	<10	<10	-
4-Chloroaniline	µg/l	<10	-	-	<10	<10	-
2-Chloronaphthalene	µg/l	<10	-	-	<10	<10	-
2-Chlorophenol	µg/l	<10	-	-	<10	<10	-
4-Chlorophenyl Phenyl Ether	µg/l	<10	-	-	<10	<10	-
o-Cresol	µg/l	<10	-	-	<10	<10	-
p-Cresols	µg/l	<10	-	-	<10	<10	-
Dibenzo(a,h)anthracene	µg/l	<10	-	-	<10	<10	-
Dibenzofuran	µg/l	<10	-	-	<10	<10	-
2,4-Dichlorophenol	µg/l	<10	-	-	<10	<10	-
1,2-Dichlorobenzene	µg/l	<10	-	-	<10	<10	-
1,3-Dichlorobenzene	µg/l	<10	-	-	<10	<10	-
1,4-Dichlorobenzene	µg/l	<10	-	-	<10	<10	-
3,3-Dichlorobenzidine	µg/l	<10	-	-	<10	<10	-
Diethyl Phthalate	µg/l	<10	-	-	<10	<10	-
Dimethyl Phthalate	µg/l	<10	-	-	<10	<10	-
2,4-Dimethylphenol	µg/l	<10	-	-	<10	<10	-
Di-N-butyl Phthalate	µg/l	<10	-	-	<10	36	-
4,6-Dinitro-o-cresol	µg/l	<50	-	-	<50	<50	-
2,4-Dinitrotoluene	µg/l	<10	-	-	<10	<10	-
2,6-Dinitrotoluene	µg/l	<10	-	-	<10	<10	-
Di-N-octyl Phthalate	µg/l	<10	-	-	<10	<10	-
2,4-Dinitrophenol	µg/l	<50	-	-	<50	<50	-
Fluoranthene	µg/l	<10	-	-	<10	<10	-
Fluorene	µg/l	<10	-	-	<10	<10	-
Hexachlorocyclopentadiene	µg/l	<10	-	-	<10	<10	-
Hexachlorobenzene	µg/l	<10	-	-	<10	<10	-
Hexachlorobutadiene	µg/l	<10	-	-	<10	<10	-
Hexachloroethane	µg/l	<10	-	-	<10	<10	-
Indeno(1,2,3-c,d)pyrene	µg/l	<10	-	-	<10	<10	-
Isophorone	µg/l	<10	-	-	<10	<10	-
2-Methylnaphthalene	µg/l	<10	-	-	<10	<10	-
N-Nitrosodiphenylamine	µg/l	<10	-	-	<10	<10	-
N-Nitrosodi-n-propylamine	µg/l	<10	-	-	<10	<10	-
Naphthalene	µg/l	<10	-	-	<10	<10	-
2-Nitroaniline	µg/l	<50	-	-	<50	<50	-
3-Nitroaniline	µg/l	<50	-	-	<50	<50	-
4-Nitroaniline	µg/l	<50	-	-	<50	<50	-
Nitrobenzene	µg/l	<10	-	-	<10	<10	-
2-Nitrophenol	µg/l	<10	-	-	<10	<10	-
4-Nitrophenol	µg/l	<50	-	-	<50	<50	-
p-chloro-m-cresol	µg/l	<10	-	-	<10	<10	-
Pentachlorophenol	µg/l	<50	-	-	<50	<50	-
Phenanthrene	µg/l	<10	-	-	<10	<10	-
Phenol	µg/l	<10	-	-	<10	<10	-
Pyrene	µg/l	<10	-	-	<10	<10	-
2,4,5-Trichlorophenol	µg/l	<50	-	-	<50	<50	-
2,4,6-Trichlorophenol	µg/l	<10	-	-	<10	<10	-
1,2,4-Trichlorobenzene	µg/l	<10	-	-	<10	<10	-

(1) Dash denotes not analyzed.

Table 16
Chemistry Data Summary
Deep Groundwater Zone
Fansteel, Inc.
Muskogee, Oklahoma

Parameter	Units	Sample Identification and Date				
		MW-151D 3/3/93	MW-151D 4/22/93	MW-151D 4/30/93	MW-161D 3/3/93	MW-161D 4/30/93
Total Analyses:						
Fluoride	mg/l	0.34(1)	.(2)	-	1.1	-
Ammonia	mg/l NO_3-N	<0.10	-	-	0.33	-
Nitrate-Nitrite	mg/l NO_3-N	10	-	-	0.31	-
Sulfate	mg/l	5.9	-	-	220	-
Gross Alpha	pCi/l	26±11	3±0.3	-	4±6	-
Gross Beta	pCi/l	52±11	16±1	-	8±5	-
Isotopes:						
Uranium-233 & 234	pCi/l	9.1±0.8	-	-	-	-
Uranium 235	pCi/l	0.4±0.2	-	-	-	-
Uranium-238	pCi/l	5.0±0.6	-	-	-	-
Radium 226	pCi/l	1.2±0.5	-	-	-	-
Radium 228	pCi/l	0.4±2.1	-	-	-	-
Potassium 40	pCi/l	11.7	-	-	-	-
Thorium 228	pCi/l	2.1±0.4	-	-	-	-
Thorium-230	pCi/l	0.7±0.3	-	-	-	-
Thorium-232	pCi/l	1.3±0.4	-	-	-	-
Metals:						
Silver, Total	µg/l	<6.84	-	-	<6.84	-
Aluminum, Total	µg/l	3980	-	-	1500	-
Arsenic, Total	µg/l	120	-	-	4.6	-
Barium, Total	µg/l	75.6	-	-	80.6	-
Beryllium, Total	µg/l	1.41	-	-	1.83	-
Calcium, Total	µg/l	20100	-	-	43000	-
Cadmium, Total	µg/l	6.3	-	-	<4.04	-
Cobalt, Total	µg/l	<8.54	-	-	<8.54	-
Chromium, Total	µg/l	15.1	-	-	<10	-
Copper, Total	µg/l	26.3	-	-	<3.01	-
Iron, Total	µg/l	6440	-	-	1500	-
Mercury, Total	µg/l	<0.2	-	-	<0.2	-
Potassium, Total	µg/l	8550	-	-	5680	-
Magnesium, Total	µg/l	2220	-	-	7900	-
Manganese, Total	µg/l	144	-	-	93.7	-
Sodium, Total	µg/l	130000	-	-	154000	-
Nickel, Total	µg/l	<11.1	-	-	<11.1	-
Lead, Total	µg/l	38.8	-	-	122	-
Antimony, Total	µg/l	<1.1	-	-	<1.1	-
Selenium, Total	µg/l	4.78	-	-	1.03	-
Tin, Total	µg/l	<50	-	-	<50	-
Thallium, Total	µg/l	<4	-	-	<4	-
Vanadium, Total	µg/l	15	-	-	<5.17	-
Zinc, Total	µg/l	31.8	-	-	13.5	-
Columbium, Total	µg/l	<100	-	-	<100	-
Tantalum, Total	µg/l	<100	-	-	<100	-

See footnotes at end of table.

Table 16
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-151D 3/3/93	MW-151D 4/22/93	MW-151D 4/30/93	MW-161D 3/3/93	MW-161D 4/30/93
Volatile Organics:						
Acetone	µg/l	-	-	<10	-	<10
Benzene	µg/l	-	-	<10	-	<10
Bromodichloromethane	µg/l	-	-	<10	-	<10
Bromoform	µg/l	-	-	<10	-	<10
Bromomethane	µg/l	-	-	<10	-	<10
2-Butanone	µg/l	-	-	<10	-	<10
Carbon Disulfide	µg/l	-	-	<10	-	<10
Carbon Tetrachloride	µg/l	-	-	<10	-	<10
Chlorobenzene	µg/l	-	-	<10	-	<10
Dibromochloromethane	µg/l	-	-	<10	-	<10
Chloroethane	µg/l	-	-	<10	-	<10
Chloromethane	µg/l	-	-	<10	-	<10
Chloroform	µg/l	-	-	<10	-	<10
1,1-Dichloroethane	µg/l	-	-	<10	-	<10
1,2-Dichloroethane	µg/l	-	-	<10	-	<10
1,1-Dichloroethene	µg/l	-	-	<10	-	<10
1,2-Dichloroethene	µg/l	-	-	<10	-	<10
1,2-Dichloropropane	µg/l	-	-	<10	-	<10
Cis-1,3-Dichloropropene	µg/l	-	-	<10	-	<10
Trans-1,3-Dichloropropene	µg/l	-	-	<10	-	<10
Ethylbenzene	µg/l	-	-	<10	-	<10
2-Hexanone	µg/l	-	-	<10	-	<10
Methylene Chloride	µg/l	-	-	<10	-	<10
4-Methyl-2-pentanone	µg/l	<10	-	<10	<10	<10
Styrene	µg/l	-	-	<10	-	<10
1,1,2,2-Tetrachloroethane	µg/l	-	-	<10	-	<10
Tetrachloroethene	µg/l	-	-	<10	-	<10
Toluene	µg/l	-	-	<10	-	<10
1,1,1-Trichloroethane	µg/l	-	-	<10	-	<10
1,1,2-Trichloroethane	µg/l	-	-	<10	-	<10
Trichloroethene	µg/l	-	-	<10	-	<10
Vinyl Chloride	µg/l	-	-	<10	-	<10
Xylenes, Total	µg/l	-	-	<10	-	<10

See footnotes at end of table.

Table 16
(Continued)

Parameter	Units	Sample Identification and Date				
		MW-151D 3/3/93	MW-151D 4/22/93	MW-151D 4/30/93	MW-161D 3/3/93	MW-161D 4/30/93
Semivolatile Organics:						
Acenaphthene	µg/l	-	-	<10	-	<10
Acenaphthylene	µg/l	-	-	<10	-	<10
Bis(2-chloroethyl)ether	µg/l	-	-	<10	-	<10
Bis(2-chloroethoxy)methane	µg/l	-	-	<10	-	<10
Bis(2-chloroisopropyl)ether	µg/l	-	-	<10	-	<10
Bis(2-ethylhexyl)phthalate	µg/l	-	-	<10	-	<10
Benzo(a)pyrene	µg/l	-	-	<10	-	<10
Benzo(a)anthracene	µg/l	-	-	<10	-	<10
Benzo(b)fluoranthene	µg/l	-	-	<10	-	<10
Benzo(g,h,i)perylene	µg/l	-	-	<10	-	<10
Benzo(k)fluoranthene	µg/l	-	-	<10	-	<10
4-Bromophenyl Phenyl Ether	µg/l	-	-	<10	-	<10
Butylbenzyl Phthalate	µg/l	-	-	<10	-	<10
Carbazole	µg/l	-	-	<10	-	<10
Chrysene	µg/l	-	-	<10	-	<10
4-Chloroaniline	µg/l	-	-	<10	-	<10
2-Chloronaphthalene	µg/l	-	-	<10	-	<10
2-Chlorophenol	µg/l	-	-	<10	-	<10
4-Chlorophenyl Phenyl Ether	µg/l	-	-	<10	-	<10
o-Cresol	µg/l	-	-	<10	-	<10
p-Cresols	µg/l	-	-	<10	-	<10
Dibenzo(a,h)anthracene	µg/l	-	-	<10	-	<10
Dibenzofuran	µg/l	-	-	<10	-	<10
2,4-Dichlorophenol	µg/l	-	-	<10	-	<10
1,2-Dichlorobenzene	µg/l	-	-	<10	-	<10
1,3-Dichlorobenzene	µg/l	-	-	<10	-	<10
1,4-Dichlorobenzene	µg/l	-	-	<10	-	<10
3,3-Dichlorobenzidine	µg/l	-	-	<10	-	<10
Diethyl Phthalate	µg/l	-	-	<10	-	<10
Dimethyl Phthalate	µg/l	-	-	<10	-	<10
2,4-Dimethylphenol	µg/l	-	-	<10	-	<10
Di-N-butyl Phthalate	µg/l	-	-	<10	-	<10
4,6-Dinitro-o-cresol	µg/l	-	-	<50	-	<50
2,4-Dinitrotoluene	µg/l	-	-	<10	-	<10
2,6-Dinitrotoluene	µg/l	-	-	<10	-	<10
Di-N-octyl Phthalate	µg/l	-	-	<10	-	<10
2,4-Dinitrophenol	µg/l	-	-	<50	-	<50
Fluoranthene	µg/l	-	-	<10	-	<10
Fluorene	µg/l	-	-	<10	-	<10
Hexachlorocyclopentadiene	µg/l	-	-	<10	-	<10
Hexachlorobenzene	µg/l	-	-	<10	-	<10
Hexachlorobutadiene	µg/l	-	-	<10	-	<10
Hexachloroethane	µg/l	-	-	<10	-	<10
Indeno(1,2,3-c,d)pyrene	µg/l	-	-	<10	-	<10
Isophorone	µg/l	-	-	<10	-	<10
2-Methylnaphthalene	µg/l	-	-	<10	-	<10
N-Nitrosodiphenylamine	µg/l	-	-	<10	-	<10
N-Nitrosodi-n-propylamine	µg/l	-	-	<10	-	<10
Naphthalene	µg/l	-	-	<10	-	<10
2-Nitroaniline	µg/l	-	-	<50	-	<50
3-Nitroaniline	µg/l	-	-	<50	-	<50
4-Nitroaniline	µg/l	-	-	<50	-	<50
Nitrobenzene	µg/l	-	-	<10	-	<10
2-Nitrophenol	µg/l	-	-	<10	-	<10
4-Nitrophenol	µg/l	-	-	<50	-	<50
p-chloro-m-cresol	µg/l	-	-	<10	-	<10
Pentachlorophenol	µg/l	-	-	<50	-	<50
Phenanthrene	µg/l	-	-	<10	-	<10
Phenol	µg/l	-	-	<10	-	<10
Pyrene	µg/l	-	-	<10	-	<10
2,4,5-Trichlorophenol	µg/l	-	-	<50	-	<50
2,4,6-Trichlorophenol	µg/l	-	-	<10	-	<10
1,2,4-Trichlorobenzene	µg/l	-	-	<10	-	<10

See footnotes at end of table.

Table 16
(Continued)

Parameter	Units	Sample Identification and Date			
		MW-167D 3/3/93	MW-167D 4/30/93	MW-174D 3/3/93	MW-174D 4/30/93
Total Analyses:					
Fluoride	mg/l	0.83	-	0.58(1)	-
Ammonia	mg/l NO_3-N	0.22	-	0.44	-
Nitrate-Nitrite	mg/l NO_3-N	0.55	-	0.33	-
Sulfate	mg/l	51	-	63	-
Gross Alpha	pCi/l	-1±6	-	10±10	-
Gross Beta	pCi/l	16±5	-	10±6	-
Isotopes:					
Uranium-233 & 234	pCi/l	-	-	-	-
Uranium 235	pCi/l	-	-	-	-
Uranium-238	pCi/l	-	-	-	-
Radium 226	pCi/l	-	-	-	-
Radium 228	pCi/l	-	-	-	-
Potassium 40	pCi/l	-	-	-	-
Thorium 228	pCi/l	-	-	-	-
Thorium-230	pCi/l	-	-	-	-
Thorium-232	pCi/l	-	-	-	-
Metals:					
Silver, Total	µg/l	<6.84	-	<6.84	-
Aluminum, Total	µg/l	1170	-	5140	-
Arsenic, Total	µg/l	3.88	-	11.3	-
Barium, Total	µg/l	350	-	85.4	-
Beryllium, Total	µg/l	2.94	-	1.65	-
Calcium, Total	µg/l	83600	-	24000	-
Cadmium, Total	µg/l	<4.04	-	<4.04	-
Cobalt, Total	µg/l	<8.54	-	<8.54	-
Chromium, Total	µg/l	<10	-	11	-
Copper, Total	µg/l	13.8	-	17.2	-
Iron, Total	µg/l	1190	-	7660	-
Mercury, Total	µg/l	<0.2	-	<0.2	-
Potassium, Total	µg/l	9860	-	3150	-
Magnesium, Total	µg/l	21200	-	4450	-
Manganese, Total	µg/l	448	-	166	-
Sodium, Total	µg/l	83200	-	171000	-
Nickel, Total	µg/l	<11.1	-	<11.1	-
Lead, Total	µg/l	8.71	-	9.2	-
Antimony, Total	µg/l	<1.1	-	<1.1	-
Selenium, Total	µg/l	<1	-	3.02	-
Tin, Total	µg/l	<50	-	<50	-
Thallium, Total	µg/l	<4	-	<4	-
Vanadium, Total	µg/l	<5.17	-	23.4	-
Zinc, Total	µg/l	17	-	52.7	-
Columbium, Total	µg/l	<100	-	<100	-
Tantalum, Total	µg/l	<100	-	<100	-

See footnotes at end of table.

Table 16
(Continued)

Parameter	Units	Sample Identification and Date			
		MW-167D 3/3/93	MW-167D 4/30/93	MW-174D 3/3/93	MW-174D 4/30/93
Volatile Organics:					
Acetone	µg/l	-	<10	-	<10
Benzene	µg/l	-	<10	-	<10
Bromodichloromethane	µg/l	-	<10	-	<10
Bromoform	µg/l	-	<10	-	<10
Bromomethane	µg/l	-	<10	-	<10
2-Butanone	µg/l	-	<10	-	<10
Carbon Disulfide	µg/l	-	<10	-	<10
Carbon Tetrachloride	µg/l	-	<10	-	<10
Chlorobenzene	µg/l	-	<10	-	<10
Dibromochloromethane	µg/l	-	<10	-	<10
Chloroethane	µg/l	-	<10	-	<10
Chloromethane	µg/l	-	<10	-	<10
Chloroform	µg/l	-	<10	-	<10
1,1-Dichloroethane	µg/l	-	<10	-	<10
1,2-Dichloroethane	µg/l	-	<10	-	<10
1,1-Dichloroethene	µg/l	-	<10	-	<10
1,2-Dichloroethene	µg/l	-	<10	-	<10
1,2-Dichloropropane	µg/l	-	<10	-	<10
Cis-1,3-Dichloropropene	µg/l	-	<10	-	<10
Trans-1,3-Dichloropropene	µg/l	-	<10	-	<10
Ethylbenzene	µg/l	-	<10	-	<10
2-Hexanone	µg/l	-	<10	-	<10
Methylene Chloride	µg/l	-	<10	-	<10
4-Methyl-2-pentanone	µg/l	<10	<10	13	<10
Styrene	µg/l	-	<10	-	<10
1,1,2,2-Tetrachloroethane	µg/l	-	<10	-	<10
Tetrachloroethene	µg/l	-	<10	-	<10
Toluene	µg/l	-	<10	-	<10
1,1,1-Trichloroethane	µg/l	-	<10	-	<10
1,1,2-Trichloroethane	µg/l	-	<10	-	<10
Trichloroethene	µg/l	-	<10	-	<10
Vinyl Chloride	µg/l	-	<10	-	<10
Xylenes, Total	µg/l	-	<10	-	<10

See footnotes at end of table.

Table 16
(Continued)

Parameter	Units	Sample Identification and Date			
		MW-167D 3/3/93	MW-167D 4/30/93	MW-174D 3/3/93	MW-174D 4/30/93
Semivolatile Organics:					
Acenaphthene	µg/l	-	<10	-	<10
Acenaphthylene	µg/l	-	<10	-	<10
Bis(2-chloroethyl)ether	µg/l	-	<10	-	<10
Bis(2-chloroethoxy)methane	µg/l	-	<10	-	<10
Bis(2-chloroisopropyl)ether	µg/l	-	<10	-	<10
Bis(2-ethylhexyl)phthalate	µg/l	-	<10	-	<10
Benzo(a)pyrene	µg/l	-	<10	-	<10
Benzo(a)anthracene	µg/l	-	<10	-	<10
Benzo(b)fluoranthene	µg/l	-	<10	-	<10
Benzo(g,h,i)perylene	µg/l	-	<10	-	<10
Benzo(k)fluoranthene	µg/l	-	<10	-	<10
4-Bromophenyl Phenyl Ether	µg/l	-	<10	-	<10
Butylbenzyl Phthalate	µg/l	-	<10	-	<10
Carbazole	µg/l	-	<10	-	<10
Chrysene	µg/l	-	<10	-	<10
4-Chloroaniline	µg/l	-	<10	-	<10
2-Chloronaphthalene	µg/l	-	<10	-	<10
2-Chlorophenol	µg/l	-	<10	-	<10
4-Chlorophenyl Phenyl Ether	µg/l	-	<10	-	<10
o-Cresol	µg/l	-	<10	-	<10
p-Cresols	µg/l	-	<10	-	<10
Dibenzo(a,h)anthracene	µg/l	-	<10	-	<10
Dibenzofuran	µg/l	-	<10	-	<10
2,4-Dichlorophenol	µg/l	-	<10	-	<10
1,2-Dichlorobenzene	µg/l	-	<10	-	<10
1,3-Dichlorobenzene	µg/l	-	<10	-	<10
1,4-Dichlorobenzene	µg/l	-	<10	-	<10
3,3-Dichlorobenzidine	µg/l	-	<10	-	<10
Diethyl Phthalate	µg/l	-	<10	-	<10
Dimethyl Phthalate	µg/l	-	<10	-	<10
2,4-Dimethylphenol	µg/l	-	<10	-	<10
Di-N-butyl Phthalate	µg/l	-	<10	-	<10
4,6-Dinitro-o-cresol	µg/l	-	<50	-	<50
2,4-Dinitrotoluene	µg/l	-	<10	-	<10
2,6-Dinitrotoluene	µg/l	-	<10	-	<10
Di-N-octyl Phthalate	µg/l	-	<10	-	<10
2,4-Dinitrophenol	µg/l	-	<50	-	<50
Fluoranthene	µg/l	-	<10	-	<10
Fluorene	µg/l	-	<10	-	<10
Hexachlorocyclopentadiene	µg/l	-	<10	-	<10
Hexachlorobenzene	µg/l	-	<10	-	<10
Hexachlorobutadiene	µg/l	-	<10	-	<10
Hexachloroethane	µg/l	-	<10	-	<10
Indeno(1,2,3-c,d)pyrene	µg/l	-	<10	-	<10
Isophorone	µg/l	-	<10	-	<10
2-Methylnaphthalene	µg/l	-	<10	-	<10
N-Nitrosodiphenylamine	µg/l	-	<10	-	<10
N-Nitrosodi-n-propylamine	µg/l	-	<10	-	<10
Naphthalene	µg/l	-	<10	-	<10
2-Nitroaniline	µg/l	-	<50	-	<50
3-Nitroaniline	µg/l	-	<50	-	<50
4-Nitroaniline	µg/l	-	<50	-	<50
Nitrobenzene	µg/l	-	<10	-	<10
2-Nitrophenol	µg/l	-	<10	-	<10
4-Nitrophenol	µg/l	-	<50	-	<50
p-chloro-m-cresol	µg/l	-	<10	-	<10
Pentachlorophenol	µg/l	-	<50	-	<50
Phenanthrene	µg/l	-	<10	-	<10
Phenol	µg/l	-	<10	-	<10
Pyrene	µg/l	-	<10	-	<10
2,4,5-Trichlorophenol	µg/l	-	<50	-	<50
2,4,6-Trichlorophenol	µg/l	-	<10	-	<10
1,2,4-Trichlorobenzene	µg/l	-	<10	-	<10

(1) Fluoride concentration was resampled on April 2, 1993 for comparison of results indicated on March 3, 1993 for MW-151D and MW-174D. The March 3 result was 2.3 and 9.3 milligrams per liter respectively.
(2) Dash denotes not analyzed.

Table 17
Background Soil Radioactivity Analysis Results[1]
Fansteel, Inc.
Muskogee, Oklahoma

Sample Number	Gross Alpha	Gross Beta	Uranium[2]	Radium-226	Radium-228	Thorium[3]
1	14 ± 5	21 ± 5	0.3	0.96 ± 0.13	1.2 ± 0.2	3.2
2	11 ± 6	26 ± 6	0.3	0.97 ± 0.13	1.2 ± 0.3	2.8
3	10 ± 5	8 ± 5	0.8	0.86 ± 0.13	0.52 ± 0.15	1.0
4	20 ± 6	23 ± 5	0.8	0.90 ± 0.13	1.3 ± 0.2	2.4
5	16 ± 6	26 ± 5	1.0	0.90 ± 0.13	1.1 ± 0.2	4.9
6	21 ± 6	24 ± 5	0.8	0.81 ± 0.13	1.4 ± 0.2	5.9
7	20 ± 4	23 ± 5	0.8	0.88 ± 0.13	1.2 ± 0.2	2.7
8	18 ± 6	19 ± 5	0.9	0.83 ± 0.13	1.3 ± 0.2	4.7
9	2 ± 4	13 ± 5	3.1	1.1 ± 0.1	0.65 ± 0.15	2.2
10	18 ± 6	21 ± 5	0.7	1.0 ± 0.1	1.4 ± 0.1	4.2
11	13 ± 5	25 ± 5	1.5	0.95 ± 0.12	1.3 ± 0.2	2.9
12	16 ± 5	14 ± 5	1.6	0.99 ± 0.14	1.2 ± 0.2	3.4
13	18 ± 5	18 ± 5	1.3	1.1 ± 0.1	1.4 ± 0.2	4.1
14	18 ± 6	18 ± 5	1.6	1.0 ± 0.1	0.96 ± 0.22	3.3
15	22 ± 6	15 ± 5	2.1	0.95 ± 0.12	1.4 ± 0.2	3.4
16	13 ± 5	22 ± 5	1.6	1.1 ± 0.1	1.2 ± 0.2	3.7
17	11 ± 5	23 ± 5	1.0	0.92 ± 0.13	1.0 ± 0.2	3.5
18	20 ± 6	18 ± 5	1.3	0.80 ± 0.12	1.2 ± 0.2	3.0
19	13 ± 5	24 ± 5	0.3	0.91 ± 0.11	1.1 ± 0.2	3.7
20	18 ± 6	18 ± 5	1.4	1.1 ± 0.2	1.4 ± 0.2	2.5
21	14 ± 5	24 ± 5	0.9	1.1 ± 0.1	1.4 ± 0.2	2.9
22	12 ± 5	24 ± 5	1.1	0.91 0.14	1.1 ± 0.2	3.2
23	18 ± 6	24 ± 5	1.1	1.0 ± 0.1	1.1 ± 0.2	3.1

See footnotes at end of table.

Table 17
(Continued)

Sample Number	Gross Alpha	Gross Beta	Uranium[2]	Radium-226	Radium-228	Thorium[3]
24	10 ± 4	13 ± 5	0.8	0.95 ± 0.12	0.87 ± 0.19	3.7
25	11 ± 5	22 ± 5	0.2	0.74 ± 0.12	1.1 ± 0.2	3.6
26	19 ± 6	25 ± 5	1.4	0.98 ± 0.13	1.2 ± 0.2	3.9
27	15 ± 6	19 ± 5	0.7	0.98 ± 0.14	0.95 ± 0.21	3.7
28	17 ± 5	19 ± 5	1.7	0.95 ± 0.13	1.2 ± 0.2	3.5
29	13 ± 5	19 ± 5	1.5	0.81 ± 0.14	0.98 ± 0.21	2.2
30	18 ± 6	28 ± 5	0.1	1.1 ± 0.1	1.4 ± 0.2	2.7
Average	15.6	20.5	1.08	0.95	1.16	3.33
Standard Deviation	4.5	4.6	0.62	0.10	0.22	0.92
Maximum	22 ± 6	28 ± 5	3.1	1.1 ± 0.2	1.4 ± 0.2	5.9

[1]All results presented in this table are in picocuries per gram.

[2]Uranium concentrations include U-238, U-235, and U-234.

[3]Throium concentrations include Th-22P, Th-230, and Th-232.

Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G0001	O	04/26/93	14	11	16	10	71	55	543	22	22147	18349	8056	
G0002	O	04/26/93	16	11	27	10	70	55	509	22	22576	18894	8056	
G0003	O	04/26/93	20	11	48	11	74	55	645	23	22616	19605	8056	
G0004	O	04/26/93	23	11	64	12	89	55	1154	24	22380	20516	8056	
G0005	O	04/26/93	24	11	69	12	73	55	611	23	23953	20990	8056	
G0006	O	04/26/93	13	11	11	10	79	55	815	23	24342	20800	8056	
G0007	O	04/26/93	13	11	11	10	74	55	645	23	24898	21734	8056	
G0008	O	04/26/93	17	11	32	11	73	55	611	23	25913	24826	8056	
G0009	O	04/26/93	32	11	112	13	73	55	611	23	26717	24021	8056	
G0010	O	04/26/93	21	11	53	11	70	55	509	22	26005	23325	8056	
G0011	O	04/26/93	13	11	11	10	89	55	1154	24	27411	22271	8056	
G0012	O	04/26/93	28	11	91	12	95	55	1358	24	25117	21834	8056	
G0013	O	04/26/93	19	11	43	11	85	55	1019	24	26354	21608	8056	
G0014	O	04/26/93	19	11	43	11	72	55	577	23	26304	20427	8056	
G0015	O	04/26/93	14	11	16	10	63	55	272	22	24298	20483	8056	
G0016	O	04/26/93	32	11	112	13	81	55	883	23	23073	19586	8056	
G0017	O	04/26/93	6	11	ID	8	74	55	645	23	22125	19070	8056	
G0018	O	04/26/93	17	11	32	11	61	55	204	22	19896	19725	8056	
G0019	O	04/26/93	36	11	133	14	70	55	509	22	21076	16796	8056	
G0020	O	04/26/93	23	11	64	12	83	55	951	23	21341	16716	8056	
G0021	O	04/26/93	14	11	16	10	74	55	645	23	18969	18917	8056	
G0022	O	04/26/93	14	11	16	10	84	55	985	24	18582	17550	8056	
G0033	O	04/26/93	15	11	21	10	75	55	679	23	15485	17551	8056	
G0034	O	04/26/93	16	11	27	10	65	55	340	22	17479	20573	8056	
G0035	O	04/26/93	28	11	91	12	85	55	1019	24	18474	21653	8056	
G0036	O	04/26/93	20	11	48	11	69	55	475	22	18926	22196	8056	
G0037	O	04/26/93	27	11	85	12	89	55	1154	24	18469	23914	8056	
G0038	O	04/26/93	27	11	85	12	64	55	306	22	20091	24876	8056	
G0039	O	04/26/93	20	11	48	11	83	55	951	23	21635	26966	8056	
G0040	O	04/26/93	24	11	69	12	64	55	306	22	22494	29175	8056	
G0041	O	04/26/93	14	11	16	10	80	55	849	23	24775	31469	8056	
G0042	O	04/26/93	34	11	123	13	96	55	1392	25	26596	32930	8056	
G0043	O	04/26/93	26	11	80	12	76	55	713	23	24223	32046	8056	
G0044	O	04/26/93	29	11	96	13	95	55	1358	24	25623	31352	8056	
G0045	O	04/26/93	11	11	ID	9	83	55	951	23	24093	31190	8056	
G0046	O	04/26/93	23	11	64	12	81	55	883	23	27187	28369	8056	
G0047	O	04/26/93	23	11	64	12	89	55	1154	24	23947	30004	8056	
G0048	O	04/26/93	27	11	85	12	96	55	1392	25	23318	28499	8056	
G0049	O	04/26/93	31	11	107	13	90	55	1188	24	22990	29202	8056	
G0050	O	04/26/93	41	11	160	14	70	55	509	22	22971	27854	8056	
G0051	O	04/26/93	16	11	27	10	78	55	781	23	22287	26997	8056	
G0052	O	04/26/93	21	11	53	11	109	55	1834	26	22846	23810	8056	

ID = Indistinguishable from Background

CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm^2

Beta shading indicates radioactivity >1000dpm/100cm^2

Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm²)	Alpha CI (dpm/ 100cm²)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm²)	Beta-Gamma CI (dpm/ 100cm²)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G0053	O	04/26/93	23	11	64	12	91	55	1222	24	23372	22813	8056	
G0054	O	04/26/93	40	11	155	14	96	55	1392	25	21640	22285	8056	
G0055	O	04/26/93	14	11	16	10	74	55	645	23	23070	22522	8056	
G0056	O	04/26/93	12	11	5	10	71	55	543	22	22622	22146	8056	
G0057	O	04/26/93	7	11	ID	8	73	55	611	23	19346	24247	8056	
G0058	O	04/26/93	14	11	16	10	72	55	577	23	22222	28769	8056	
G0059	O	04/26/93	13	11	11	10	99	55	1494	25	26460	23551	8056	
G0060	O	04/26/93	26	11	80	12	66	55	374	22	29672	26185	8056	
G0061	O	04/26/93	25	11	75	12	87	55	1087	24	28298	26112	8056	
G0062	O	04/26/93	14	11	16	10	81	55	883	23	31617	30308	8056	
G0063	O	04/26/93	29	11	96	13	87	55	1087	24	31841	26404	8056	
G0064	O	04/26/93	7	11	ID	8	80	55	849	23	32833	26615	8056	
G0065	O	04/26/93	10	11	ID	9	74	55	645	23	34887	26162	8056	
G0066	O	04/26/93	18	11	37	11	100	55	1528	25	35101	31167	8056	
G0067	O	04/26/93	29	11	96	13	82	55	917	23	33584	33808	8056	
G0068	O	04/26/93	16	11	27	10	85	55	1018	24	31475	31318	8056	
G0069	O	04/26/93	21	11	53	11	98	55	1460	25	33485	31962	8056	
G0070	O	04/26/93	20	11	48	11	92	55	1256	24	28778	27634	8056	
G0071	O	04/26/93	22	11	59	11	90	55	1188	24	26213	24705	8056	
G0072	O	04/26/93	25	11	75	12	68	55	441	22	24810	23200	8056	
G0073	O	04/26/93	15	11	21	10	79	55	815	23	21912	19361	8056	
G0074	O	04/26/93	17	11	32	11	86	55	1053	24	21493	16781	8056	
G0075	O	04/26/93	9	11	ID	9	76	55	713	23	18032	17278	8056	
G0076	O	04/26/93	15	11	21	10	89	55	1154	24	19498	17187	8056	
G0087	O	04/27/93	11	7	21	8	81	49	1087	23	19626	19742	7123	
G0088	O	04/27/93	10	7	16	8	82	49	1121	23	18034	21060	7123	
G0089	O	04/27/93	12	7	27	9	69	49	679	22	18977	22190	7123	
G0090	O	04/27/93	11	7	21	8	71	49	747	22	18473	22947	7123	
G0091	O	04/27/93	9	7	11	8	67	49	611	22	18526	24666	7123	
G0092	O	04/27/93	12	7	27	9	78	49	985	23	22346	29423	7123	
G0093	O	04/27/93	15	7	43	9	71	49	747	22	26758	33438	7123	
G0094	O	04/27/93	18	7	59	10	98	49	1664	24	25243	34929	7123	
G0095	O	04/27/93	12	7	27	9	67	49	611	22	25811	37347	7123	
G0096	O	04/27/93	12	7	27	9	80	49	1053	23	25875	38815	7123	
G0097	O	04/27/93	5	7	ID	7	61	49	407	21	26442	39730	7123	
G0098	O	04/27/93	16	7	48	10	63	49	475	21	27123	39088	7123	
G0099	O	04/27/93	18	7	59	10	73	49	815	22	28271	43265	7123	
G0100	O	04/27/93	19	7	64	10	72	49	781	22	28794	41406	7123	
G0101	O	04/27/93	19	7	64	10	100	49	1732	24	28540	41347	7123	
G0102	O	04/27/93	15	7	43	9	89	49	1358	23	30899	39828	7123	
G0103	O	04/27/93	18	7	59	10	100	49	1732	24	29131	36912	7123	
G0104	O	04/27/93	30	7	123	12	102	49	1800	25	28165	34198	7123	

ID = Indistinguishable from Background
CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm²
Beta shading indicates radioactivity >1000dpm/100cm²

Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@int.r) cpm	Gamma Bkg (cpm)	Comments
G0105	O	04/27/93	12	7	27	9	59	49	340	21	23109	30285	7123	
G0106	O	04/27/93	10	7	16	8	65	49	543	21	23149	22667	7123	
G0107	O	04/27/93	13	7	32	9	95	49	1562	24	22838	28681	7123	
G0108	O	04/27/93	12	7	27	9	77	49	951	22	24223	24988	7123	
G0109	O	04/27/93	14	7	37	9	67	49	611	22	22141	24294	7123	
G0110	O	04/27/93	14	7	37	9	93	49	1494	24	23971	20241	7123	
G0111	O	04/27/93	19	7	64	10	89	49	1358	23	24049	22694	7123	
G0112	O	04/27/93	20	7	69	10	92	49	1460	24	27175	31247	7123	
G0113	O	04/27/93	23	7	85	11	109	49	2037	25	32887	30969	7123	
G0114	O	04/27/93	10	7	16	8	89	49	1358	23	31084	27309	7123	
G0115	O	04/27/93	27	7	107	12	101	49	1766	24	35079	29240	7123	
G0116	O	04/27/93	12	7	27	9	86	49	1256	23	38229	31471	7123	
G0117	O	04/27/93	24	7	91	11	92	49	1460	24	39816	39595	7123	
G0118	O	04/27/93	16	7	48	10	100	49	1732	24	41291	36743	7123	
G0119	O	04/27/93	35	7	149	13	128	49	2683	27	44677	38492	7123	
G0120	O	04/27/93	21	7	75	11	116	49	2275	26	44111	38223	7123	
G0121	O	04/27/93	26	7	101	11	88	49	1324	23	45318	50203	7123	
G0122	O	04/27/93	24	7	91	11	105	49	1902	25	43243	46606	7123	
G0123	O	04/27/93	15	7	43	9	93	49	1494	24	43677	44879	7123	
G0124	O	04/27/93	18	7	59	10	114	49	2207	26	41532	41821	7123	
G0125	O	04/27/93	18	7	59	10	110	49	2071	25	36817	38712	7123	
G0126	O	04/27/93	11	7	21	8	77	49	951	22	30488	25823	7123	
G0127	O	04/27/93	10	7	16	8	106	49	1935	25	28762	30169	7123	
G0128	O	04/27/93	7	7	ID	7	84	49	1188	23	19242	28225	7123	
G0129	O	04/27/93	10	7	16	8	89	49	1358	23	23057	26502	7123	
G0130	O	04/27/93	11	7	21	8	72	49	781	22	21445	24667	7123	
G0131	O	04/27/93	21	7	75	11	95	49	1562	24	19246	22534	7123	
G0132	O	04/27/93	15	7	43	9	65	49	543	21	20084	19522	7123	
G0143	O	04/27/93	8	7	5	8	80	49	1053	23	20171	20730	7123	
G0144	O	04/27/93	12	7	27	9	74	49	849	22	19218	25445	7123	
G0145	O	04/27/93	15	7	43	9	84	49	1188	23	20775	27276	7123	
G0146	O	04/27/93	18	7	59	10	83	49	1154	23	27688	31288	7123	
G0147	O	04/27/93	23	7	85	11	64	49	509	21	23339	32705	7123	
G0148	O	04/27/93	12	7	27	9	94	49	1528	24	28424	39374	7123	
G0149	O	04/27/93	20	7	69	10	124	49	2547	26	38099	46454	7123	
G0150	O	04/27/93	43	7	192	14	197	49	5025*	31	43125	52816	7123	
G0151	O	04/27/93	51	7	235	15	154	49	3565	28	46925	57832	7123	
G0152	O	04/27/93	34	7	144	13	169	49	4075	30	51324	59218	7123	
G0153	O	04/27/93	64	7	304	17	173	49	4211	30	55553	64697	7123	
G0154	O	04/27/93	30	7	123	12	130	49	2750	27	57195	73436	7123	
G0155	O	04/27/93	43	7	192	14	160	49	3769	29	56153	76452	7123	
G0156	O	04/27/93	35	7	149	13	138	49	3022	27	56540	67583	7123	

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CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm^2

Beta shading indicates radioactivity >1000dpm/100cm^2

Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (Bkgd.) cpm	Gamma Bkg (cpm)	Comments
G0157	O	04/27/93	28	7	112	12	129	49	2716	27	50920	69787	7123	
G0158	O	04/27/93	32	7	133	12	147	49	3328	28	48086	62089	7123	
G0159	O	04/27/93	58	7	272	16	111	49	2105	25	47220	62296	7123	
G0160	O	04/27/93	23	7	85	11	113	49	2173	25	40780	46462	7123	
G0161	O	04/27/93	14	7	37	9	80	49	1053	23	31609	37779	7123	
G0162	O	04/27/93	15	7	43	9	73	49	815	22	30955	28464	7123	
G0163	O	04/27/93	12	7	27	9	86	49	1256	23	27834	36042	7123	
G0164	O	04/27/93	18	7	59	10	78	49	985	23	30589	25666	7123	
G0165	O	04/27/93	17	7	53	10	87	49	1290	23	25105	25977	7123	
G0166	O	04/27/93	8	7	5	8	78	49	985	23	22923	20125	7123	
G0167	O	04/27/93	36	7	155	13	105	49	1902	25	28081	30411	7123	
G0168	O	04/27/93	49	7	224	15	106	49	1935	25	29770	34259	7123	
G0169	O	04/27/93	9	7	11	8	82	49	1121	23	31241	34975	7123	
G0170	O	04/27/93	20	7	69	10	87	49	1290	23	30941	37332	7123	
G0171	O	04/27/93	20	7	69	10	68	49	645	22	33633	40974	7123	
G0172	O	04/28/93	45	8	197	15	95	51	1494	24	45170	54941	8414	
G0173	O	04/28/93	40	8	171	14	96	51	1528	24	53491	98031	8414	
G0175	O	05/20/93	15	7	44	9	87	51	1452	23	11565	13179	3471	
G0176	O	05/20/93	17	7	56	10	77	51	1048	23	11648	10866	3471	
G0177	O	05/20/93	20	7	72	10	97	51	1855	24	12949	11183	3471	
G0178	O	05/20/93	7	7	ID	7	77	51	1048	23	8333	8186	3471	
G0179	O	05/20/93	3	7	ID	6	76	51	1008	23	7656	7651	3471	
G0180	O	05/20/93	10	7	17	8	67	51	645	22	6685	6319	3471	
G0191	O	05/20/93	17	7	56	10	83	51	1290	23	5584	5255	3471	
G0192	O	05/20/93	8	7	6	8	68	51	685	22	7208	5406	3471	
G0193	O	05/20/93	19	7	67	10	70	51	766	22	7747	5148	3471	
G0194	O	05/20/93	15	7	44	9	82	51	1250	23	9287	8239	3471	
G0195	O	05/20/93	15	7	44	9	115	51	2581	26	10066	9548	3471	
G0196	O	05/20/93	18	7	61	10	136	51	3427	27	12678	13043	3471	
G0197	O	04/28/93	35	8	144	13	109	51	1969	25	58213	121936	8414	
G0198	O	04/28/93	36	8	149	13	93	51	1426	24	54795	69374	8414	
G0199	O	04/28/93	37	8	155	13	82	51	1053	23	36040	44198	8414	
G0200	O	04/28/93	58	8	267	16	112	51	2071	26	40502	38987	8414	
G0201	O	04/28/93	22	8	75	11	83	51	1087	23	32712	33363	8414	
G0202	O	04/28/93	19	8	59	10	79	51	951	23	29135	29141	8414	
G0203	O	04/28/93	24	8	85	11	142	51	3090	28	19494	47478	8414	
G0204	O	04/28/93	12	8	21	9	213	51	5501*	32	80478	86667	8414	
G0205	O	04/28/93	24	8	85	11	86	51	1188	23	38473	40372	8414	
G0206	O	04/28/93	12	8	21	9	101	51	1698	25	36053	44137	8414	
G0207	O	04/28/93	21	8	69	11	81	51	1019	23	37000	46218	8414	
G0208	O	04/28/93	24	8	85	11	108	51	1935	25	43413	51244	8414	
G0209	O	04/28/93	26	8	96	12	91	51	1358	24	59604	90161	8414	

ID = Indistinguishable from Background
CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm^2
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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (Bmtr) cpm	Gamma Bkg (cpm)	Comments
G0210	O	05/20/93	49	7	233	15	117	51	2661	26	13821	18189	3471	
G0211	O	05/20/93	12	7	28	9	79	51	1129	23	9730	7877	3471	
G0212	O	05/20/93	20	7	72	10	83	51	1290	23	10669	8848	3471	
G0213	O	05/20/93	3	7	ID	6	63	51	484	21	8379	7422	3471	
G0214	O	05/20/93	14	7	39	9	73	51	887	22	8046	7307	3471	
G0215	O	05/20/93	6	7	ID	7	48	51	ID	20	6029	4592	3471	
G0226	O	05/20/93	12	7	28	9	67	51	645	22	6160	5677	3471	
G0227	O	05/20/93	6	7	ID	7	89	51	1532	24	7376	7091	3471	
G0228	O	05/20/93	19	7	67	10	81	51	1210	23	7808	7843	3471	
G0229	O	05/20/93	16	7	50	10	71	51	806	22	8647	9329	3471	
G0230	O	05/20/93	19	7	67	10	91	51	1613	24	8970	9426	3471	
G0231	O	05/20/93	19	7	67	10	148	51	3911	28	12811	17351	3471	
G0232	O	04/28/93	12	8	21	9	77	51	883	23	60668	88779	8414	
G0233	O	04/28/93	17	8	48	10	77	51	883	23	46046	53363	8414	
G0234	O	04/28/93	8	8	ID	8	108	51	1935	25	45705	44563	8414	
G0235	O	04/28/93	15	8	37	10	103	51	1766	25	43197	45335	8414	
G0236	O	04/28/93	25	8	91	11	100	51	1664	25	48755	46643	8414	
G0237	O	04/28/93	19	8	59	10	296	51	8319*	37	100506	115491	8414	
G0238	O	04/28/93	16	8	43	10	104	51	1800	25	27688	36582	8414	
G0239	O	04/28/93	19	8	59	10	843	51	26893*	60	316856	241466	8414	
G0240	O	04/28/93	19	8	59	10	717	51	22615*	55	250407	201930	8414	
G0241	O	04/28/93	11	8	16	9	582	51	18031*	50	150767	133483	8414	
G0242	O	05/21/93	6	5	6	7	78	40	1532	22	9586	11242	3174	
G0243	O	05/21/93	11	5	33	8	54	40	565	19	10365	8471	3174	
G0244	O	05/21/93	8	5	17	7	73	40	1331	21	11429	11501	3174	
G0245	O	05/21/93	21	5	89	10	135	40	3831	26	19171	23302	3174	
G0246	O	05/20/93	21	7	78	11	118	51	2702	26	13034	17941	3471	
G0247	O	05/20/93	19	7	67	10	90	51	1573	24	11606	10724	3471	
G0248	O	05/20/93	24	7	94	11	108	51	2298	25	12227	11359	3471	
G0249	O	05/20/93	13	7	33	9	74	51	927	22	8809	8422	3471	
G0250	O	05/20/93	16	7	50	10	78	51	1089	23	8622	7464	3471	
G0251	O	05/20/93	13	7	33	9	51	51	ID	20	5404	5997	3471	
G0262	O	05/20/93	5	7	ID	7	58	51	282	21	3304	5074	3471	
G0263	O	05/20/93	11	7	22	8	84	51	1331	23	7392	8329	3471	
G0264	O	05/20/93	7	7	ID	7	77	51	1048	23	7667	6538	3471	
G0265	O	05/20/93	48	7	228	15	111	51	2419	25	12908	8594	3471	
G0266	O	05/20/93	28	7	117	12	90	51	1573	24	10055	7550	3471	
G0267	O	05/20/93	8	7	6	8	87	51	1452	23	9915	13799	3471	
G0268	O	05/21/93	17	5	67	9	73	40	1331	21	13876	15813	3174	
G0269	O	05/21/93	14	5	50	9	87	40	1895	23	12392	12732	3174	
G0270	O	04/28/93	107	8	528	21	127	51	2581	27	45388	54442	8414	
G0271	O	04/28/93	15	8	37	10	460	51	13888*	45	200537	186386	8414	

ID = Indistinguishable from Background
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Alpha shading indicates radioactivity >200dpm/100cm^2
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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm²)	Alpha CI (dpm/ 100cm²)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm²)	Beta-Gamma CI (dpm/ 100cm²)	Gamma (Surf) cpm	Gamma (Bimtr) cpm	Gamma Bkg (cpm)	Comments
G0272	O	04/28/93	19	8	59	10	644	51	20136*	53	209728	160169	8414	
G0273	O	04/28/93	17	8	48	10	819	51	26078*	59	302511	244157	8414	
G0274	O	04/28/93	41	8	176	14	1363	51	44550*	75	262803	138700	8414	
G0275	O	04/28/93	13	8	27	9	647	51	20238*	53	227408	195905	8414	
G0276	O	04/28/93	8	8	ID	8	330	51	9474*	39	136854	129446	8414	
G0277	O	04/28/93	37	8	155	13	772	51	24482*	57	281481	218044	8414	
G0278	O	04/28/93	15	8	37	10	341	51	9847*	40	123910	132711	8414	
G0279	O	04/28/93	32	8	128	13	194	51	4856	31	71945	62467	8414	
G0280	O	05/20/93	8	7	6	8	82	51	1250	23	10999	12681	3471	
G0281	O	05/21/93	14	5	50	9	79	40	1573	22	10653	12419	3174	
G0282	O	05/21/93	12	5	39	8	103	40	2540	24	13436	17762	3174	
G0283	O	05/20/93	12	7	28	9	68	51	685	22	9340	11653	3471	
G0284	O	05/20/93	23	7	89	11	76	51	1008	23	10386	10312	3471	
G0285	O	05/20/93	22	7	83	11	88	51	1532	24	10945	10119	3471	
G0286	O	05/20/93	16	7	50	10	65	51	565	22	8653	8350	3471	
G0287	O	05/20/93	11	7	22	8	81	51	1210	23	7762	7316	3471	
G0288	O	05/20/93	13	7	33	9	67	51	645	22	6790	7130	3471	
G0288	O	05/26/93	12	11	5	10	49	49	ID	20	3898	4317	2976	
G0317	O	05/26/93	7	11	ID	8	43	49	ID	19	5236	5195	2976	
G0318	O	05/20/93	14	7	39	9	58	51	282	21	6480	4302	3471	
G0319	O	05/20/93	21	7	78	11	68	51	685	22	7097	4771	3471	
G0320	O	05/20/93	17	7	56	10	92	51	1653	24	9809	7640	3471	
G0321	O	05/20/93	11	7	22	8	83	51	1290	23	9612	6100	3471	
G0322	O	05/20/93	15	7	44	9	69	51	726	22	8570	6820	3471	
G0323	O	05/20/93	52	7	250	15	201	51	6048*	32	13123	15571	3471	
G0324	O	05/20/93	19	7	67	10	113	51	2500	26	17050	31765	3471	
G0325	O	05/20/93	44	7	208	14	354	51	12218*	40	44331	52367	3471	
G0326	O	05/20/93	21	7	78	11	113	51	2500	26	19853	32567	3471	
G0327	O	05/20/93	14	7	39	9	116	51	2621	26	20066	23362	3471	
G0328	O	05/20/93	13	7	33	9	93	51	1694	24	15035	19850	3471	
G0329	O	05/20/93	10	7	17	8	85	51	1371	23	12510	14140	3471	
G0330	O	05/20/93	8	7	6	8	80	51	1169	23	11719	11927	3471	
G0331	O	05/20/93	16	7	50	10	73	51	887	22	11092	12810	3471	
G0332	O	04/28/93	24	8	85	11	336	51	9677*	39	121562	113759	8414	
G0333	O	04/28/93	14	8	32	9	203	51	5161*	32	65756	80416	8414	
G0334	O	04/28/93	11	8	16	9	298	51	8387*	37	111893	104069	8414	
G0335	O	04/28/93	28	8	107	12	809	51	25739*	59	284497	238682	8414	
G0336	O	04/28/93	38	8	160	14	93	51	1426	24	32155	46909	8414	
G0337	O	04/28/93	38	8	160	14	120	51	2343	26	35130	34070	8414	
G0338	O	04/28/93	37	8	155	13	389	51	11477*	42	119323	121604	8414	
G0339	O	04/28/93	20	8	64	11	242	51	6486*	34	88081	92415	8414	
G0340	O	04/28/93	19	8	59	10	256	51	6961*	35	86804	88343	8414	

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Alpha shading indicates radioactivity >200dpm/100cm²
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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G0341	O	04/28/93	15	8	37	10	492	51	14975*	47	178371	142982	8414	
G0342	O	04/28/93	17	8	48	10	449	51	13514*	45	167188	135235	8414	
G0343	O	05/20/93	10	7	17	8	58	51	282	21	10136	12034	3471	
G0344	O	05/25/93	11	4	36	8	80	42	1532	22	11827	12836	2954	
G0345	O	05/25/93	314	4	1590*	36	631	42	23750*	52	64556	24687	2954	
G0346	O	05/25/93	91	4	446	19	372	42	13306*	41	43178	23550	2954	
G0347	O	05/25/93	55	4	262	15	144	42	4113	27	12678	16469	2954	
G0348	O	05/25/93	20	4	82	10	84	42	1694	22	10941	16384	2954	
G0349	O	05/25/93	14	4	51	8	92	42	2016	23	11580	16488	2954	
G0350	O	05/25/93	11	4	36	8	82	42	1613	22	12631	16808	2954	
G0351	O	05/25/93	15	4	56	9	89	42	1895	23	12223	17171	2954	
G0352	O	05/25/93	16	4	62	9	74	42	1290	22	11283	15185	2954	
G0353	O	05/25/93	54	4	256	15	123	42	3266	26	12211	15750	2954	
G0354	O	05/25/93	46	4	215	14	88	42	1855	23	10647	12440	2954	
G0355	O	05/25/93	17	4	67	9	81	42	1573	22	9403	9966	2954	
G0356	O	05/25/93	16	4	62	9	83	42	1653	22	8913	9707	2954	
G0357	O	05/25/93	28	4	123	11	81	42	1573	22	9167	9055	2954	
G0358	O	05/25/93	8	4	21	7	88	42	1855	23	8865	8569	2954	
G0359	O	05/25/93	12	4	41	8	76	42	1371	22	8364	7828	2954	
G0360	O	05/25/93	8	4	21	7	68	42	1048	21	6763	6652	2954	
G0361	O	05/26/93	13	11	10	10	82	49	1331	23	5983	6478	2976	
G0362	O	05/26/93	15	11	21	10	89	49	1613	23	6589	6085	2976	
G0385	O	05/26/93	10	11	ID	9	57	49	323	21	5548	5479	2976	
G0386	O	05/26/93	9	11	ID	9	70	49	847	22	6540	6515	2976	
G0387	O	05/26/93	17	11	31	11	66	49	685	21	4943	6017	2976	
G0388	O	05/25/93	9	4	26	7	48	42	242	19	5304	4150	2954	
G0389	O	05/25/93	33	4	149	12	68	42	1048	21	8593	6126	2954	
G0390	O	05/25/93	13	4	46	8	74	42	1290	22	8015	6115	2954	
G0391	O	05/25/93	21	4	87	10	64	42	887	21	8678	8335	2954	
G0392	O	05/25/93	18	4	72	9	77	42	1411	22	9815	9064	2954	
G0393	O	05/25/93	23	4	97	10	102	42	2419	24	11222	7420	2954	
G0394	O	05/25/93	27	4	118	11	73	42	1250	21	11480	9913	2954	
G0395	O	05/25/93	40	4	185	13	96	42	2177	23	12818	12979	2954	
G0396	O	05/25/93	11	4	36	8	80	42	1532	22	11820	8319	2954	
G0397	O	05/25/93	8	4	21	7	83	42	1653	22	9726	10410	2954	
G0398	O	05/25/93	16	4	62	9	62	42	806	20	12399	8095	2954	
G0399	O	05/25/93	11	4	36	8	83	42	1653	22	11973	12780	2954	
G0400	O	05/25/93	14	4	51	8	85	42	1734	23	12891	9487	2954	
G0401	O	05/25/93	8	4	21	7	69	42	1089	21	12745	10398	2954	
G0402	O	05/25/93	9	4	26	7	88	42	1855	23	12217	10492	2954	
G0403	O	04/28/93	17	8	48	10	188	51	4652	31	48156	56930	8414	
G0404	O	04/28/93	24	8	85	11	269	51	7402*	36	97184	102509	8414	

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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (Bimtr) cpm	Gamma Bkg (cpm)	Comments
G0405	O	04/28/93	27	8	101	12	358	51	10424*	40	116121	110019	8414	
G0406	O	04/28/93	288	8	1493*	34	4633	51	155586*	137	550551	358714	8414	
G0407	O	04/28/93	463	8	2427*	43	1933	51	63905*	89	288030	293660	8414	
G0408	O	04/28/93	26	8	96	12	73	51	747	22	29794	49515	8414	
G0409	O	04/28/93	18	8	53	10	1006	51	32428*	65	305312	152148	8414	
G0410	O	04/28/93	46	8	203	15	428	51	12801*	44	118331	128630	8414	
G0411	O	04/28/93	504	8	2643*	45	5016	51	168581*	142	519490	347483	8414	
G0412	O	04/28/93	60	8	277	16	347	51	10051*	40	92931	90604	8414	
G0413	O	04/28/93	35	8	144	13	557	51	17182*	49	174897	115398	8414	
G0414	O	05/04/93	56	11	231	16	116	57	1903	26	26743	28054	7304	Concrete
G0415	O	05/25/93	12	4	41	8	79	42	1492	22	8993	13679	2954	
G0416	O	05/25/93	20	4	82	10	88	42	1855	23	10687	12549	2954	
G0417	O	05/25/93	7	4	15	7	86	42	1774	23	11395	12318	2954	
G0418	O	05/25/93	7	4	15	7	83	42	1653	22	9798	11259	2954	
G0419	O	05/25/93	8	4	21	7	69	42	1089	21	9483	10508	2954	
G0420	O	05/25/93	16	4	62	9	62	42	806	20	9171	10840	2954	
G0421	O	05/25/93	14	4	51	8	70	42	1129	21	9409	10700	2954	
G0422	O	05/25/93	45	4	210	14	95	42	2137	23	9545	9820	2954	
G0423	O	05/25/93	24	4	103	11	85	42	1734	23	10028	10282	2954	
G0424	O	05/25/93	18	4	72	9	99	42	2298	24	9578	9412	2954	
G0425	O	05/25/93	15	4	56	9	91	42	1976	23	10530	9591	2954	
G0426	O	05/25/93	16	4	62	9	76	42	1371	22	9458	8810	2954	
G0427	O	05/25/93	14	4	51	8	64	42	887	21	7624	7609	2954	
G0428	O	05/25/93	12	4	41	8	61	42	766	20	7034	7194	2954	
G0429	O	05/26/93	15	11	21	10	52	49	121	20	5850	6452	2976	
G0430	O	05/26/93	15	11	21	10	59	49	403	21	5823	5528	2976	
G0431	O	05/26/93	13	11	10	10	85	49	1452	23	6472	5874	2976	
G0432	O	05/26/93	23	11	62	12	103	49	2177	25	5916	5758	2976	
G0455	O	05/26/93	16	11	26	10	65	49	645	21	5357	4892	2976	
G0456	O	05/26/93	16	11	26	10	90	49	1653	24	7620	5493	2976	
G0457	O	05/26/93	22	11	56	11	63	49	565	21	5678	5609	2976	
G0458	O	05/26/93	32	11	108	13	63	49	565	21	5970	5089	2976	
G0459	O	05/26/93	10	11	ID	9	59	49	403	21	5721	5200	2976	
G0460	O	05/25/93	7	4	15	7	46	42	161	19	5280	6685	2954	
G0461	O	05/25/93	17	4	67	9	73	42	1250	21	8004	5755	2954	
G0462	O	05/25/93	10	4	31	7	82	42	1613	22	8098	7853	2954	
G0463	O	05/25/93	10	4	31	7	75	42	1331	22	8223	7935	2954	
G0464	O	05/25/93	15	4	56	9	98	42	2258	24	8838	6506	2954	
G0465	O	05/25/93	13	4	46	8	74	42	1290	22	8347	5869	2954	
G0466	O	05/25/93	8	4	21	7	71	42	1169	21	9164	5396	2954	
G0467	O	05/25/93	7	4	15	7	62	42	806	20	9014	5450	2954	
G0468	O	05/25/93	14	4	51	8	85	42	1734	23	9196	6319	2954	

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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (Gint.z) cpm	Gamma Bkg (cpm)	Comments
G0469	O	05/25/93	13	4	46	8	76	42	1371	22	9568	6899	2954	
G0470	O	05/25/93	17	4	67	9	80	42	1532	22	10359	9035	2954	
G0471	O	05/25/93	20	4	82	10	91	42	1976	23	9466	8031	2954	
G0472	O	06/01/93	17	6	59	10					40904	34850	3088	
G0473	O	06/01/93	26	6	107	11					17468	18361	3088	
G0474	O	06/01/93	13	6	37	9					10178	10027	3088	
G0475	O	06/01/93	49	6	228	15					21920	14727	3088	
G0476	O	06/01/93	38	6	171	13					23265	21884	3088	
G0477	O	06/01/93	21	6	80	10					11452	11899	3088	
G0478	O	05/26/93	109	11	503	22	221	49	6935*	33	26803	11955	2976	
G0479	O	05/26/93	20	11	46	11	65	49	645	21	9136	8916	2976	
G0480	O	05/26/93	8	11	ID	9	73	49	968	22	7807	8850	2976	
G0481	O	05/26/93	53	11	215	16	103	49	2177	25	10776	9736	2976	
G0482	O	05/26/93	35	11	123	14	103	49	2177	25	7459	8500	2976	
G0483	O	05/26/93	23	11	62	12	76	49	1089	22	8036	6799	2976	
G0484	O	05/26/93	16	11	26	10	70	49	847	22	7811	9063	2976	
G0485	O	05/26/93	13	11	10	10	43	49	ID	19	4996	6247	2976	
G0486	O	05/26/93	9	11	ID	9	38	49	ID	19	5104	6041	2976	
G0487	O	05/26/93	12	11	5	10	66	49	685	21	6211	6104	2976	
G0488	O	05/26/93	16	11	26	10	68	49	766	22	6005	6568	2976	
G0489	O	05/26/93	20	11	46	11	57	49	323	21	6365	6826	2976	
G0490	O	05/26/93	88	11	393	20	84	49	1411	23	9183	7779	2976	
G0491	O	05/26/93	30	11	97	13	63	49	565	21	7186	6504	2976	
G0492	O	05/26/93	11	11	ID	9	69	49	806	22	6380	5770	2976	
G0493	O	05/26/93	10	11	ID	9	64	49	605	21	6346	5741	2976	
G0494	O	05/26/93	14	11	15	10	48	49	ID	20	5101	4776	2976	
G0513	O	05/26/93	10	11	ID	9	55	49	242	20	4640	4453	2976	
G0514	O	05/26/93	19	11	41	11	59	49	403	21	5819	5351	2976	
G0515	O	05/26/93	9	11	ID	9	67	49	726	22	6580	6273	2976	
G0516	O	05/26/93	11	11	ID	9	73	49	968	22	6273	5964	2976	
G0517	O	05/26/93	6	11	ID	8	78	49	1169	23	7686	5885	2976	
G0518	O	05/26/93	15	11	21	10	76	49	1089	22	6706	6143	2976	
G0519	O	05/26/93	15	11	21	10	68	49	766	22	6587	4920	2976	
G0520	O	05/26/93	14	11	15	10	66	49	685	21	7187	5173	2976	
G0521	O	05/26/93	16	11	26	10	68	49	766	22	7241	5861	2976	
G0522	O	05/26/93	23	11	62	12	77	49	1129	22	7111	4876	2976	
G0523	O	05/26/93	12	11	5	10	56	49	282	20	6749	6376	2976	
G0524	O	05/26/93	9	11	ID	9	79	49	1210	23	7729	6536	2976	
G0525	O	05/26/93	21	11	51	11	84	49	1411	23	9282	6660	2976	
G0526	O	05/26/93	34	11	118	13	116	49	2702	26	8727	9285	2976	
G0527	O	05/26/93	37	11	133	14	94	49	1815	24	7650	8862	2976	
G0528	O	05/26/93	18	11	36	11	113	49	2581	25	10678	9984	2976	

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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm²)	Alpha CI (dpm/ 100cm²)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm²)	Beta-Gamma CI (dpm/ 100cm²)	Gamma (Surf) cpm	Gamma (Bimts) cpm	Gamma Bkg (cpm)	Comments
G0529	O	05/26/93	21	11	51	11	149	49	4032	28	13506	9348	2976	
G0530	O	05/26/93	20	11	46	11	188	49	5605*	31	19969	12881	2976	
G0531	O	05/26/93	18	11	36	11	105	49	2258	25	11271	11054	2976	
G0532	O	05/26/93	12	11	5	10	78	49	1169	23	9375	11680	2976	
G0533	O	05/26/93	24	11	67	12	184	49	5444*	31	25828	15493	2976	
G0534	O	05/26/93	11	11	ID	9	140	49	3669	27	14363	11448	2976	
G0535	O	05/26/93	18	11	36	11	86	49	1492	23	7265	7447	2976	
G0536	O	05/26/93	15	11	21	10	67	49	726	22	5154	6428	2976	
G0537	O	05/26/93	18	11	36	11	74	49	1008	22	6634	7111	2976	
G0538	O	05/26/93	13	11	10	10	80	49	1250	23	6498	6612	2976	
G0539	O	05/26/93	17	11	31	11	69	49	806	22	6933	6699	2976	
G0540	O	05/26/93	9	11	ID	9	55	49	242	20	6123	6281	2976	
G0541	O	05/26/93	14	11	15	10	71	49	887	22	6709	6335	2976	
G0542	O	05/26/93	20	11	46	11	68	49	766	22	6223	6357	2976	
G0543	O	05/26/93	8	11	ID	9	107	49	2339	25	7691	6932	2976	
G0544	O	05/26/93	16	11	26	10	53	49	161	20	4782	5381	2976	
G0545	O	05/26/93	5	11	ID	8	58	49	363	21	4512	4436	2976	
G0546	O	05/26/93	14	11	15	10	33	49	ID	18	3349	3607	2976	
G0575	O	05/27/93	11	10	5	9	75	42	1331	22	6742	6641	3028	
G0576	O	05/27/93	16	10	31	10	72	42	1210	21	6264	5013	3028	
G0577	O	05/27/93	9	10	ID	9	68	42	1048	21	6337	5462	3028	
G0578	O	05/27/93	11	10	5	9	87	42	1815	23	7320	5604	3028	
G0579	O	05/27/93	16	10	31	10	78	42	1452	22	7334	5860	3028	
G0580	O	05/27/93	19	10	46	11	77	42	1411	22	7444	6845	3028	
G0581	O	05/27/93	39	10	149	14	80	42	1532	22	11578	9313	3028	
G0582	O	05/27/93	188	10	913	28	276	42	9435*	36	53163	26513	3028	
G0583	O	06/02/93	6	8	ID	7					4239	4021	3158	
G0584	O	06/02/93	6	8	ID	7					4648	4160	3158	
G0585	O	06/02/93	11	8	16	9					5176	4633	3158	
G0586	O	05/27/93	33	10	118	13	156	42	4597	28	18297	15602	3028	
G0587	O	05/27/93	40	10	154	14	113	42	2863	25	13334	13358	3028	
G0588	O	05/27/93	17	10	36	10	81	42	1573	22	8923	9596	3028	
G0589	O	05/27/93	26	10	82	12	152	42	4435	28	19024	11828	3028	
G0590	O	05/27/93	15	10	26	10	69	42	1089	21	5157	5550	3028	
G0591	O	05/27/93	11	10	5	9	86	42	1774	23	6511	6135	3028	
G0592	O	05/27/93	19	10	46	11	74	42	1290	22	6076	5727	3028	
G0593	O	05/27/93	5	10	ID	8	72	42	1210	21	6735	6221	3028	
G0594	O	05/27/93	35	10	128	13	200	42	6371*	31	7107	11052	3028	
G0621	O	05/27/93	26	10	82	12	74	42	1290	22	4676	4081	3028	
G0622	O	05/27/93	10	10	ID	9	81	42	1573	22	7396	6120	3028	
G0623	O	05/27/93	12	10	10	9	62	42	806	20	5951	5456	3028	
G0624	O	05/27/93	13	10	15	10	71	42	1169	21	5571	5190	3028	

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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/100cm²)	Alpha CI (dpm/100cm²)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/100cm²)	Beta-Gamma CI (dpm/100cm²)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G0625	O	05/27/93	14	10	21	10	81	42	1573	22	5768	4910	3028	
G0626	O	05/27/93	13	10	15	10	80	42	1532	22	7791	5647	3028	
G0627	O	05/27/93	13	10	15	10	101	42	2379	24	10379	8910	3028	
G0628	O	05/27/93	25	10	77	12	138	42	3871	27	12773	9947	3028	
G0629	O	06/02/93	9	8	5	8					4744	4371	3158	
G0630	O	06/02/93	16	8	43	10					5372	4379	3158	
G0631	O	06/02/93	8	8	ID	8					4751	4458	3158	
G0632	O	06/02/93	8	8	ID	8					4888	4439	3158	
G0633	O	06/02/93	3	8	ID	7					5024	4957	3158	
G0634	O	05/27/93	14	10	21	10	82	42	1613	22	7483	6995	3028	
G0635	O	05/27/93	17	10	36	10	84	42	1694	22	6483	6237	3028	
G0636	O	05/27/93	15	10	26	10	89	42	1895	23	6308	6190	3028	
G0637	O	05/27/93	26	10	82	12	89	42	1895	23	8208	7487	3028	
G0638	O	05/27/93	21	10	56	11	68	42	1048	21	6181	6030	3028	
G0639	O	05/27/93	15	10	26	10	70	42	1129	21	5637	5297	3028	
G0640	O	05/27/93	14	10	21	10	62	42	806	20	4697	4771	3028	
G0641	O	05/27/93	9	10	ID	9	69	42	1089	21	6266	4500	3028	
G0642	O	05/27/93	22	10	62	11	62	42	806	20	2995	3277	3028	
G0676	O	06/02/93	9	8	5	8					4268	3707	3158	
G0677	O	06/02/93	9	8	5	8					4201	3946	3158	
G0678	O	06/02/93	13	8	27	9					4175	3760	3158	
G0679	O	06/02/93	14	8	32	9					4372	4137	3158	
G0680	O	06/02/93	10	8	11	8					4275	3983	3158	
G0681	O	06/02/93	6	8	ID	7					4904	4720	3158	
G0682	O	06/02/93	6	8	ID	7					5316	5647	3158	
G0683	O	05/28/93	15	6	46	9	65	36	1208	20	6059	5554	2990	
G0684	O	05/28/93	17	6	56	10	79	36	1792	21	5941	5643	2990	
G0685	O	05/28/93	15	6	46	9	97	36	2542	23	7734	7371	2990	
G0686	O	05/28/93	12	6	31	8	91	36	2292	23	6328	6415	2990	
G0687	O	05/28/93	16	6	51	9	79	36	1792	21	6314	5937	2990	
G0688	O	05/28/93	13	6	36	9	74	36	1583	21	6011	5354	2990	
G0689	O	05/28/93	9	6	15	8	63	36	1125	20	5730	5107	2990	
G0690	O	05/28/93	5	6	ID	7	71	36	1458	21	5454	5062	2990	
G0691	O	05/28/93	8	6	10	7	60	36	1000	20	6049	5109	2990	
G0692	O	05/28/93	8	6	10	7	68	36	1333	20	5355	4702	2990	
G0693	O	05/28/93	17	6	56	10	58	36	917	19	5096	4472	2990	
G0694	O	05/28/93	13	6	36	9	69	36	1375	20	5327	4509	2990	
G0695	O	05/28/93	11	6	26	8	76	36	1667	21	5361	4870	2990	
G0696	O	05/28/93	12	6	31	8	45	36	375	18	4913	4259	2990	
G0697	O	05/28/93	16	6	51	9	68	36	1333	20	4768	4271	2990	
G0698	O	05/28/93	12	6	31	8	43	36	292	18	2110	2889	2990	
G0728	O	06/02/93	7	8	ID	8					4605	3779	3158	

ID = Indistinguishable from Background
CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm²
Beta shading indicates radioactivity >1000dpm/100cm²

Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/100cm²)	Alpha CI (dpm/100cm²)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/100cm²)	Beta-Gamma CI (dpm/100cm²)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G0729	O	06/02/93	9	8	5	8					5959	6981	3158	
G0730	O	06/02/93	13	8	27	9					4244	3888	3158	
G0731	O	06/02/93	9	8	5	8					4161	3781	3158	
G0732	O	06/02/93	8	8	ID	8					4143	3684	3158	
G0733	O	06/02/93	6	8	ID	7					4452	4124	3158	
G0734	O	06/02/93	9	8	5	8					5303	3923	3158	
G0735	O	05/28/93	22	6	82	11	101	36	2708	23	9115	7561	2990	
G0736	O	05/28/93	15	6	46	9	69	36	1375	20	6482	6664	2990	
G0737	O	05/28/93	22	6	82	11	75	36	1625	21	6261	5425	2990	
G0738	O	05/28/93	17	6	56	10	69	36	1375	20	6060	5424	2990	
G0739	O	05/28/93	10	6	21	8	80	36	1833	22	5734	5331	2990	
G0740	O	05/28/93	18	6	62	10	67	36	1292	20	5882	5308	2990	
G0741	O	05/28/93	10	6	21	8	69	36	1375	20	5513	5163	2990	
G0742	O	05/28/93	6	6	ID	7	66	36	1250	20	5380	4793	2990	
G0743	O	05/28/93	6	6	ID	7	56	36	833	19	4982	4687	2990	
G0744	O	05/28/93	7	6	5	7	49	36	542	18	4828	4606	2990	
G0745	O	05/28/93	12	6	31	8	61	36	1042	20	7454	4627	2990	
G0746	O	05/28/93	8	6	10	7	65	36	1208	20	4789	4404	2990	
G0747	O	05/28/93	5	6	ID	7	52	36	667	19	4670	4305	2990	
G0748	O	05/28/93	11	6	26	8	57	36	875	19	4803	4471	2990	
G0749	O	05/28/93	10	6	21	8	68	36	1333	20	4734	4412	2990	
G0750	O	05/28/93	12	6	31	8	70	36	1417	21	4812	4404	2990	
G0751	O	05/28/93	9	6	15	8	62	36	1083	20	4916	4207	2990	
G0752	O	05/28/93	9	6	15	8	33	36	ID	17	3200	3269	2990	
G0780	O	06/03/93	6	7	ID	7					7355	6434	2938	
G0780	O	06/22/93					71	60	645	23				
G0781	O	06/03/93	10	7	16	8					6218	5772	2938	
G0781	O	06/22/93					63	60	176	22				
G0782	O	06/03/93	6	7	ID	7					4507	4211	2938	
G0782	O	06/22/93					59	60	ID	22				
G0783	O	06/03/93	7	7	ID	7					3947	3709	2938	
G0783	O	06/22/93					70	60	587	23				
G0784	O	06/03/93	7	7	ID	7					3879	3126	2938	
G0784	O	06/22/93					66	60	352	22				
G0785	O	06/02/93	10	8	11	8					4376	4129	3158	
G0786	O	06/02/93	7	8	ID	8					4726	3671	3158	
G0787	O	05/28/93	13	6	36	9	71	36	1458	21	5289	4790	2990	
G0788	O	05/28/93	11	6	26	8	69	36	1375	20	5180	4624	2990	
G0789	O	05/28/93	2	6	ID	6	47	36	458	18	5106	4509	2990	
G0790	O	05/28/93	9	6	15	8	65	36	1208	20	5120	4531	2990	
G0791	O	05/28/93	12	6	31	8	58	36	917	19	4930	4653	2990	
G0792	O	05/28/93	12	6	31	8	70	36	1417	21	4603	4154	2990	

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CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm²
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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (Bimtx) cpm	Gamma Bkg (cpm)	Comments
G0793	O	05/28/93	2	6	ID	6	49	36	542	18	4555	3903	2990	
G0794	O	05/28/93	9	6	15	8	57	36	875	19	4230	3827	2990	
G0795	O	05/28/93	14	6	41	9	70	36	1417	21	4433	3910	2990	
G0796	O	05/28/93	9	6	15	8	66	36	1250	20	4622	4011	2990	
G0797	O	05/28/93	13	6	36	9	70	36	1417	21	4502	3963	2990	
G0798	O	05/28/93	11	6	26	8	58	36	917	19	4546	4090	2990	
G0799	O	05/28/93	6	6	ID	7	71	36	1458	21	4769	4117	2990	
G0800	O	05/28/93	10	6	21	8	81	36	1875	22	4648	3773	2990	
G0824	O	06/03/93	9	7	11	8					34156	24440	2938	
G0824	O	06/22/93					119	60	3460	27				
G0825	O	06/03/93	8	7	5	8					6143	5554	2938	
G0825	O	06/22/93					80	60	1173	24				
G0826	O	06/03/93	10	7	16	8					4038	3901	2938	
G0826	O	06/22/93					86	60	1525	24				
G0827	O	06/03/93	9	7	11	8					3882	3809	2938	
G0827	O	06/22/93					65	60	293	22				
G0828	O	06/03/93	7	7	ID	7					4002	3741	2938	
G0828	O	06/22/93					70	60	587	23				
G0829	O	06/03/93	5	7	ID	7					4402	4158	2938	
G0829	O	06/22/93					83	60	1349	24				
G0830	O	06/03/93	15	7	43	9					4408	4208	2938	
G0830	O	06/22/93					65	60	293	22				
G0831	O	06/02/93	8	8	ID	8					3886	3437	3158	
G0832	O	06/01/93	23	6	91	11					19354	10887	3088	
G0833	O	06/01/93	17	6	59	10					9038	8474	3088	
G0834	O	06/01/93	12	6	32	8					5804	5561	3088	
G0835	O	06/01/93	10	6	21	8					5076	4937	3088	
G0836	O	06/01/93	15	6	48	9					5291	4798	3088	
G0837	O	06/01/93	8	6	11	7					5022	4714	3088	
G0838	O	06/01/93	12	6	32	8					5295	4864	3088	
G0839	O	06/01/93	12	6	32	8					5174	4704	3088	
G0840	O	06/01/93	11	6	27	8					4856	4774	3088	
G0841	O	06/01/93	19	6	69	10					5133	4524	3088	
G0842	O	06/01/93	15	6	48	9					4873	4149	3088	
G0880	O	06/03/93	22	7	80	11					4799	4504	2938	
G0880	O	06/22/93					71	60	645	23				
G0881	O	06/03/93	41	7	181	14					4939	4541	2938	
G0881	O	06/22/93					52	60	ID	21				
G0882	O	06/03/93	13	7	32	9					4462	4320	2938	
G0882	O	06/22/93					76	60	938	23				
G0883	O	06/03/93	10	7	16	8					4389	3988	2938	
G0883	O	06/22/93					74	60	821	23				

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Alpha shading indicates radioactivity >200dpm/100cm^2
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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@Int.r) cpm	Gamma Bkg (cpm)	Comments
G0884	O	06/03/93	8	7	5	8					4740	4331	2938	
G0884	O	06/22/93					85	60	1466	24				
G0885	O	06/03/93	8	7	5	8					4587	4365	2938	
G0885	O	06/22/93					80	60	1173	24				
G0886	O	06/03/93	9	7	11	8					4231	4016	2938	
G0886	O	06/22/93					67	60	411	23				
G0887	O	06/03/93	8	7	5	8					5022	4652	2938	
G0887	O	06/22/93					89	60	1701	24				
G0888	O	06/02/93	14	8	32	9					4192	3155	3158	
G0889	O	06/03/93	11	7	21	8					4353	3873	2938	
G0889	O	06/22/93					65	60	293	22				
G0890	O	05/06/93	18	11	36	11	82	55	871	23	8672	8204	8191	
G0891	O	06/01/93	9	6	16	8					4580	4333	3088	
G0892	O	06/01/93	11	6	27	8					4460	3959	3088	
G0893	O	06/01/93	11	6	27	8					4782	4057	3088	
G0894	O	06/01/93	6	6	ID	7					4544	4013	3088	
G0895	O	06/01/93	13	6	37	9					4932	4235	3088	
G0896	O	06/01/93	14	6	43	9					4525	4102	3088	
G0897	O	06/01/93	13	6	37	9					4503	4174	3088	
G0898	O	06/01/93	7	6	5	7					4641	4179	3088	
G0899	O	06/01/93	9	6	16	8					4321	3938	3088	
G0900	O	06/01/93	7	6	5	7					4264	3884	3088	
G0901	O	06/01/93	7	6	5	7					4241	3868	3088	
G0902	O	06/01/93	6	6	ID	7					4037	3852	3088	
G0958	O	06/03/93	19	7	64	10					5250	5355	2938	
G0958	O	06/22/93					69	60	528	23				
G0959	O	06/03/93	10	7	16	8					4557	4046	2938	
G0959	O	06/22/93					84	60	1408	24				
G0960	O	06/03/93	12	7	27	9					5030	4289	2938	
G0960	O	06/22/93					63	60	176	22				
G0961	O	06/03/93	15	7	43	9					5242	4103	2938	
G0961	O	06/22/93					61	60	59	22				
G0962	O	06/03/93	14	7	37	9					6590	5158	2938	
G0962	O	06/22/93					127	60	3930	27				
G0963	O	06/03/93	7	7	ID	7					4958	4177	2938	
G0963	O	06/22/93					74	60	821	23				
G0964	O	06/03/93	12	7	27	9					4928	4266	2938	
G0964	O	06/22/93					80	60	1173	24				
G0965	O	06/03/93	11	7	21	8					6232	4837	2938	
G0965	O	06/22/93					75	60	880	23				
G0966	O	06/03/93	8	7	5	8					4068	4014	2938	
G0966	O	06/22/93					64	60	235	22				

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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G0967	O	06/03/93	7	7	ID	7					3649	3611	2938	
G0967	O	06/22/93					62	60	117	22				
G0968	O	06/03/93	7	7	ID	7					3562	3527	2938	
G0968	O	06/25/93					60	49	591	21				
G0969	O	06/03/93	8	7	5	8					3797	3684	2938	
G0969	O	06/25/93					59	49	538	21				
G0970	O	05/06/93	12	11	5	10	61	55	194	22	8524	8860	8191	
G0971	O	06/02/93	13	8	27	9					5237	4834	3158	
G0972	O	06/02/93	6	8	ID	7					4437	4225	3158	
G0973	O	06/02/93	10	8	11	8					4828	4667	3158	
G0974	O	06/02/93	5	8	ID	7					4495	4298	3158	
G0975	O	06/02/93	7	8	ID	8					4592	4260	3158	
G0976	O	06/02/93	9	8	5	8					5064	4651	3158	
G0977	O	06/02/93	12	8	21	9					4802	4574	3158	
G0978	O	06/02/93	14	8	32	9					4789	4398	3158	
G0979	O	06/02/93	9	8	5	8					4327	4031	3158	
G0980	O	06/02/93	13	8	27	9					4224	3802	3158	
G0981	O	06/02/93	11	8	16	9					4270	3876	3158	
G0982	O	06/02/93	12	8	21	9					4183	3880	3158	
G1045	O	06/03/93	23	7	85	11					4473	3673	2938	
G1045	O	06/22/93					59	60	ID	22				
G1046	O	06/03/93	11	7	21	8					4092	3503	2938	
G1046	O	06/22/93					54	60	ID	21				
G1047	O	06/03/93	6	7	ID	7					4288	3926	2938	
G1047	O	06/22/93					59	60	ID	22				
G1048	O	06/03/93	58	7	272	16					6597	4519	2938	
G1048	O	06/22/93					132	60	4223	28				
G1049	O	06/04/93	14	7	35	9					4423	4372	3127	
G1049	O	06/23/93					70	67	176	23				
G1050	O	06/04/93	18	7	54	10					4947	4384	3127	
G1050	O	06/23/93					68	67	59	23				
G1051	O	06/04/93	11	7	20	8					5056	4019	3127	
G1051	O	06/23/93					59	67	ID	22				
G1052	O	06/04/93	18	7	54	10					10094	6916	3127	
G1052	O	06/23/93					115	67	2815	27				
G1053	O	06/04/93	26	7	94	11					6474	5584	3127	
G1053	O	06/23/93					117	67	2933	27				
G1054	O	06/04/93	11	7	20	8					6824	6039	3127	
G1054	O	06/23/93					99	67	1877	26				
G1055	O	06/04/93	2	7	ID	6					4758	4516	3127	
G1055	O	06/23/93					54	67	ID	22				
G1056	O	06/04/93	10	7	15	8					8711	8934	3127	

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Alpha shading indicates radioactivity >200dpm/100cm^2
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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G1056	O	06/23/93					88	67	1232	25				
G1057	O	06/04/93	9	7	10	8					6444	6257	3127	
G1057	O	06/23/93					84	67	997	25				
G1058	O	06/04/93	8	7	5	8					8763	7470	3127	
G1058	O	06/23/93					70	67	176	23				
G1059	O	06/04/93	4	7	ID	7					5966	6229	3127	
G1059	O	06/23/93					63	67	ID	23				
G1060	O	06/04/93	4	7	ID	7					5163	5489	3127	
G1060	O	06/23/93					67	67	ID	23				
G1061	O	06/04/93	3	7	ID	6					13157	8283	3127	
G1061	O	06/23/93					120	67	3109	27				
G1062	O	06/04/93	11	7	20	8					8093	6555	3127	
G1062	O	06/23/93					89	67	1290	25				
G1063	O	06/04/93	8	7	5	8					9168	10610	3127	
G1063	O	06/23/93					91	67	1408	25				
G1064	O	06/04/93	7	7	ID	7					52291	19918	3127	
G1064	O	06/23/93					313	67	14428*	39				
G1065	O	06/04/93	11	7	20	8					7148	9874	3127	
G1065	O	06/23/93					71	67	235	23				
G1066	O	06/04/93	9	7	10	8					11356	9827	3127	
G1066	O	06/23/93					109	67	2463	27				
G1067	O	06/04/93	8	7	5	8					8126	12036	3127	
G1067	O	06/23/93					89	67	1290	25				
G1068	O	06/04/93	6	7	ID	7					5332	5402	3127	
G1068	O	06/23/93					69	67	117	23				
G1069	O	06/04/93	9	7	10	8					5236	4743	3127	
G1069	O	06/23/93					82	67	880	24				
G1070	O	06/04/93	14	7	35	9					6361	5103	3127	
G1070	O	06/23/93					83	67	938	24				
G1093	O	06/07/93	4	5	ID	6					7249	8104	6308	
G1093	O	06/22/93					39	60	ID	20				
G1094	O	06/07/93	6	5	5	7					10207	9707	6308	
G1094	O	06/22/93					74	60	821	23				
G1095	O	06/07/93	15	5	53	9					22816	18729	6308	
G1095	O	06/22/93					69	60	528	23				
G1096	O	06/17/93	7	6	5	7	13	39	ID	14	8234	8359	5397	
G1097	O	06/17/93	2	6	ID	6	71	39	2294	21	8459	8676	5397	
G1098	O	06/17/93	2	6	ID	6	63	39	1720	20	7853	7347	5397	
G1099	O	06/17/93	15	6	44	9	81	39	3011	22	11016	9783	5397	
G1102	O	06/07/93	6	5	5	7					7900	7577	6308	
G1102	O	06/22/93					57	60	ID	22				
G1103	O	06/07/93	3	5	ID	6					10733	9497	6308	

ID = Indistinguishable from Background
CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm^2
Beta shading indicates radioactivity >1000dpm/100cm^2

Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (Limit) cpm	Gamma Bkg (cpm)	Comments
G1103	O	06/22/93					64	60	235	22				
G1104	O	06/07/93	42	5	197	14					22770	18729	6308	
G1104	O	06/22/93					119	60	3460	27				
G1105	O	06/17/93	2	6	ID	6	74	39	2509	21	7009	7644	5397	
G1106	O	06/17/93	6	6	ID	7	58	39	1362	20	8404	8292	5397	
G1107	O	06/17/93	5	6	ID	7	69	39	2151	21	7509	7049	5397	
G1108	O	06/17/93	42	6	178	14	115	39	5448*	25	10886	8955	5397	
G1111	O	06/07/93	6	5	5	7					8777	7528	6308	
G1111	O	06/22/93					65	60	293	22				
G1112	O	06/07/93	8	5	16	7					8333	7869	6308	
G1112	O	06/22/93					59	60	ID	22				
G1113	O	06/07/93	24	5	101	11					28692	22810	6308	
G1113	O	06/22/93					150	60	5279*	29				
G1114	O	06/17/93	8	6	10	7	52	39	932	19	7229	6912	5397	
G1115	O	06/17/93	5	6	ID	7	61	39	1577	20	6517	6488	5397	
G1116	O	06/17/93	6	6	ID	7	78	39	2796	22	7935	7241	5397	
G1117	O	06/17/93	110	6	514	22	94	39	3943	23	10216	8232	5397	
G1120	O	06/07/93	3	5	ID	6					6845	7286	6308	
G1120	O	06/22/93					66	60	352	22				
G1121	O	06/14/93	10	5	25	8					7636	7082	5674	
G1122	O	06/14/93	66	5	301	17					30338	23099	5674	
G1123	O	06/17/93	2	6	ID	6	69	39	2151	21	7651	6952	5397	
G1124	O	06/17/93	6	6	ID	7	63	39	1720	20	6735	6471	5397	
G1125	O	06/17/93	7	6	5	7	73	39	2437	21	7595	6990	5397	
G1126	O	06/17/93	15	6	44	9	66	39	1935	20	7530	6894	5397	
G1129	O	06/14/93	5	5	ID	6					6004	5939	5674	
G1130	O	06/14/93	16	5	54	9					6986	6317	5674	
G1132	O	06/17/93	3	6	ID	6	75	39	2581	21	7181	6812	5397	
G1134	O	06/17/93	3	6	ID	6	56	39	1219	19	6965	6350	5397	
G1135	O	06/17/93	6	6	ID	7	48	39	645	19	7078	6627	5397	
G1138	O	06/14/93	4	5	ID	6					6086	5352	5674	
G1139	O	06/14/93	8	5	15	7					6647	6009	5674	
G1141	O	06/17/93	9	6	15	8	65	39	1864	20	7404	6550	5397	
G1142	O	06/17/93	9	6	15	8	52	39	932	19	6083	5753	5397	
G1143	O	06/17/93	7	6	5	7	46	39	502	18	5075	5073	5397	
G1144	O	06/17/93	3	6	ID	6	60	39	1505	20	6632	6404	5397	
G1146	O	06/14/93	12	5	35	8					6165	5469	5674	
G1147	O	06/14/93	2	5	ID	5					6949	6302	5674	
G1148	O	06/14/93	8	5	15	7					7147	6076	5674	
G1150	O	06/16/93	5	6	ID	7	64	47	1219	21	6631	6372	5646	
G1151	O	06/16/93	7	6	5	7	69	47	1577	22	7574	6963	5646	
G1152	O	06/16/93	9	6	15	8	53	47	430	20	6645	5963	5646	

ID = Indistinguishable from Background
CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm^2
Beta shading indicates radioactivity >1000dpm/100cm^2

Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (Bkgd.) cpm	Gamma Bkg (cpm)	Comments
G1153	O	06/17/93	6	6	ID	7	64	39	1792	20	7162	6916	5397	
G1157	O	06/14/93	13	5	40	8					6163	5644	5674	
G1158	O	06/14/93	7	5	10	7					6704	6077	5674	
G1159	O	06/14/93	12	5	35	8					6308	5535	5674	
G1161	O	06/16/93	2	6	ID	6	64	47	1219	21	7236	5954	5646	
G1162	O	06/16/93	4	6	ID	6	61	47	1004	21	6769	6294	5646	
G1163	O	06/17/93	5	6	ID	7	61	39	1577	20	7105	6737	5397	
G1164	O	06/17/93	15	6	44	9	69	39	2151	21	7124	6579	5397	
G1170	O	06/14/93	9	5	20	7					6413	5437	5674	
G1171	O	06/14/93	7	5	10	7					6444	5796	5674	
G1172	O	06/14/93	6	5	5	7					6077	5329	5674	
G1174	O	06/16/93	5	6	ID	7	51	47	287	20	6927	6008	5646	
G1175	O	06/16/93	3	6	ID	6	57	47	717	20	5933	5736	5646	
G1176	O	06/17/93	9	6	15	8	57	39	1290	20	7525	6785	5397	
G1177	O	06/17/93	5	6	ID	7	66	39	1935	20	6892	6588	5397	
G1187	O	06/16/93	4	6	ID	6	58	47	789	20	6724	6268	5646	
G1188	O	06/17/93	4	6	ID	6	60	39	1505	20	6959	6576	5397	
G1189	O	06/17/93	6	6	ID	7	75	39	2581	21	6718	6315	5397	
G1190	O	06/14/93	5	5	ID	6					8159	5927	5674	
G1190	O	06/17/93	2	6	ID	6	55	39	1147	19	6734	6255	5397	
G1191	O	06/14/93	5	5	ID	6					8159	5927	5674	
G1192	O	06/14/93	5	5	ID	6					6769	6192	5674	
G1193	O	06/14/93	5	5	ID	6					6510	6328	5674	
G1194	O	06/14/93	18	5	64	10					10434	7835	5674	
G1195	O	06/14/93	39	5	168	13					7191	6766	5674	
G1196	O	06/14/93	3	5	ID	6					6861	6125	5674	
G1197	O	06/14/93	4	5	ID	6					6535	6181	5674	
G1198	O	06/14/93	2	5	ID	5					6633	5866	5674	
G1199	O	06/14/93	3	5	ID	6					6778	6001	5674	
G1200	O	06/14/93	6	5	5	7					6925	6119	5674	
G1201	O	06/14/93	13	5	40	8					6847	6463	5674	
G1202	O	06/14/93	7	5	10	7					6878	6497	5674	
G1203	O	06/14/93	7	5	10	7					6706	6379	5674	
G1204	O	06/14/93	5	5	ID	6					7229	6414	5674	
G1205	O	06/14/93	5	5	ID	6					6777	6452	5674	
G1206	O	06/14/93	8	5	15	7					5677	6043	5674	
G1207	O	06/14/93	2	5	ID	5					5322	5759	5674	
G1208	O	06/14/93	3	5	ID	6					6947	6738	5674	
G1209	O	06/14/93	8	5	15	7					7028	6348	5674	
G1218	O	06/16/93	5	6	ID	7	53	47	430	20	5466	5438	5646	
G1219	O	06/16/93	3	6	ID	6	65	47	1290	21	6249	6026	5646	
G1220	O	06/16/93	9	6	15	8	55	47	573	20	6395	6506	5646	

ID = Indistinguishable from Background
CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm^2
Beta shading indicates radioactivity >1000dpm/100cm^2

Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G1221	O	06/16/93	9	6	15	8	73	47	1864	22	6413	6355	5646	
G1222	O	06/16/93	4	6	ID	6	63	47	1147	21	6607	6595	5646	
G1223	O	06/16/93	6	6	ID	7	79	47	2294	22	6846	6443	5646	
G1224	O	06/16/93	4	6	ID	6	68	47	1505	21	7017	6571	5646	
G1225	O	06/16/93	1	6	ID	5	52	47	358	20	6093	6152	5646	
G1226	O	06/16/93	6	6	ID	7	62	47	1075	21	6157	5677	5646	
G1227	O	06/16/93	5	6	ID	7	61	47	1004	21	6205	6007	5646	
G1228	O	03/09/93	9	15	ID	10	59	50	290	21	11463	11373	8700	
G1229	O	03/09/93	16	15	5	11	68	50	581	22	11428	11115	8700	
G1230	O	03/09/93	11	15	ID	10	68	50	581	22	12752	11278	8700	
G1231	O	03/09/93	18	15	16	11	80	50	968	23	11071	11536	8700	
G1232	O	03/09/93	15	15	ID	11	71	50	677	22	11302	11159	8700	
G1233	O	03/09/93	17	15	11	11	53	50	97	20	11554	11581	8700	
G1234	O	03/09/93	10	15	ID	10	72	50	710	22	11297	11114	8700	
G1235	O	03/09/93	7	15	ID	9	64	50	452	21	11128	11133	8700	
G1252	O	03/09/93	9	15	ID	10	66	50	516	22	11927	11727	8700	
G1253	O	03/09/93	9	15	ID	10	59	50	290	21	12753	13147	8700	
G1254	O	03/09/93	9	15	ID	10	59	50	290	21	12194	12233	8700	
G1255	O	03/09/93	13	15	ID	11	51	50	32	20	12577	12872	8700	
G1256	O	03/09/93	16	15	5	11	55	50	161	20	12762	12916	8700	
G1257	O	03/09/93	20	15	27	12	71	50	677	22	17265	15002	8700	
G1258	O	03/09/93	19	15	21	12	54	50	129	20	12274	12098	8700	
G1259	O	03/09/93	18	15	16	11	76	50	839	22	11343	11659	8700	
G1260	O	03/09/93	15	15	ID	11	69	50	613	22	12531	12799	8700	
G1261	O	03/09/93	9	15	ID	10	64	50	452	21	12342	13108	8700	
G1262	O	03/09/93	17	15	11	11	58	50	258	21	15886	17457	8700	
G1263	O	03/09/93	11	15	ID	10	89	50	1258	24	23871	23783	8700	
G1264	O	03/09/93	14	15	ID	11	53	50	97	20	12591	13235	8700	
G1265	O	03/09/93	17	15	11	11	72	50	710	22	13094	13208	8700	
G1266	O	03/09/93	10	15	ID	10	57	50	226	21	12827	12776	8700	
G1267	O	03/09/93	6	15	ID	9	70	50	645	22	12255	12122	8700	
G1284	O	04/23/93	11	7	23	8	74	50	815	22	12421	11635	8411	
G1285	O	04/23/93	12	7	29	9	60	50	340	21	13118	13166	8411	
G1286	O	04/23/93	15	7	46	9	84	50	1154	23	12832	13346	8411	
G1287	O	04/23/93	11	7	23	8	48	50	ID	20	13172	11763	8411	
G1288	O	04/23/93	6	7	ID	7	56	50	204	21	14410	13725	8411	
G1289	O	04/23/93	11	7	23	8	88	50	1290	23	16907	16445	8411	
G1290	O	04/23/93	16	7	52	10	58	50	272	21	13422	13196	8411	
G1291	O	04/23/93	7	7	ID	7	77	50	917	23	13838	12630	8411	
G1292	O	04/23/93	8	7	6	8	69	50	645	22	14790	13616	8411	
G1293	O	04/23/93	9	7	12	8	59	50	306	21	14958	15571	8411	
G1294	O	04/23/93	11	7	23	8	70	50	679	22	17164	16625	8411	

ID = Indistinguishable from Background
CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm^2
Beta shading indicates radioactivity >1000dpm/100cm^2

Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm²)	Alpha CI (dpm/ 100cm²)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm²)	Beta-Gamma CI (dpm/ 100cm²)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G1295	O	04/23/93	7	7	ID	7	55	50	170	20	14500	14435	8411	
G1296	O	04/23/93	8	7	6	8	60	50	340	21	14410	15181	8411	
G1297	O	04/23/93	15	7	46	9	57	50	238	21	14328	13583	8411	
G1298	O	04/23/93	7	7	ID	7	63	50	441	21	13887	13511	8411	
G1299	O	04/23/93	5	7	ID	7	62	50	407	21	13601	13047	8411	
G1316	O	04/23/93	13	7	35	9	66	50	543	22	14002	13733	8411	
G1317	O	04/23/93	11	7	23	8	56	50	204	21	15169	14887	8411	
G1318	O	04/23/93	8	7	6	8	69	50	645	22	15995	16430	8411	
G1319	O	04/23/93	14	7	41	9	76	50	883	22	16305	16859	8411	
G1320	O	04/23/93	8	7	6	8	66	50	543	22	15933	16573	8411	
G1321	O	04/23/93	9	7	12	8	69	50	645	22	16424	18194	8411	
G1322	O	04/23/93	9	7	12	8	71	50	713	22	16672	15832	8411	
G1323	O	04/23/93	8	7	6	8	66	50	543	22	15074	15917	8411	
G1324	O	04/23/93	18	7	64	10	98	50	1630	24	21101	21754	8411	
G1325	O	04/23/93	14	7	41	9	81	50	1053	23	19128	19214	8411	
G1326	O	04/23/93	13	7	35	9	81	50	1053	23	18782	20534	8411	
G1327	O	04/23/93	8	7	6	8	69	50	645	22	18061	19945	8411	
G1328	O	04/23/93	11	7	23	8	78	50	951	23	17872	17123	8411	
G1329	O	04/23/93	6	7	ID	7	89	50	1324	24	16929	17703	8411	
G1330	O	04/23/93	17	7	58	10	96	50	1562	24	17600	17711	8411	
G1331	O	04/23/93	12	7	29	9	82	50	1087	23	15464	15307	8411	
G1333	O	06/17/93	7	6	5	7	62	39	1649	20	7253	6496	5397	
G1464	O	04/21/93	8	10	ID	8	62	57	170	22	9799	9313	7832	
G1465	O	04/21/93	9	10	ID	9	72	57	509	23	9619	9128	7832	
G1466	O	04/21/93	10	10	ID	9	69	57	407	22	9790	9210	7832	
G1467	O	04/21/93	8	10	ID	8	70	57	441	23	10327	9252	7832	
G1468	O	04/21/93	4	10	ID	7	48	57	ID	20	8777	8496	7832	
G1469	O	04/21/93	15	10	29	10	63	57	204	22	10572	9977	7832	
G1470	O	04/21/93	20	10	58	11	70	57	441	23	11095	10145	7832	
G1471	O	04/21/93	13	10	17	10	84	57	917	24	11083	11263	7832	
G1472	O	04/21/93	11	10	6	9	57	57	ID	21	11295	10694	7832	
G1473	O	04/21/93	11	10	6	9	52	57	ID	21	11398	11093	7832	
G1474	O	04/21/93	10	10	ID	9	60	57	102	22	12289	11265	7832	
G1477	O	04/22/93	18	7	64	10	71	47	815	22	12023	12708	7917	
G1478	O	04/22/93	14	7	41	9	72	47	849	22	12163	12042	7917	
G1479	O	04/22/93	8	7	6	8	62	47	509	21	11495	10880	7917	
G1480	O	04/22/93	27	7	116	12	65	47	611	21	11019	10806	7917	
G1481	O	04/22/93	13	7	35	9	75	47	951	22	11497	10668	7917	
G1482	O	04/22/93	6	7	ID	7	55	47	272	20	11007	10458	7917	
G1483	O	04/22/93	18	7	64	10	83	47	1222	23	10959	9827	7917	
G1484	O	04/22/93	14	7	41	9	69	47	747	22	10274	9715	7917	
G1485	O	04/22/93	18	7	64	10	69	47	747	22	10899	9787	7917	

ID = Indistinguishable from Background
CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm²
Beta shading indicates radioactivity >1000dpm/100cm²

Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (Bimt.z) cpm	Gamma Bkg (cpm)	Comments
G1486	O	04/22/93	14	7	41	9	60	47	441	21	10334	9797	7917	
G1487	O	04/22/93	7	7	ID	7	77	47	1019	22	10561	9524	7917	
G1488	O	04/22/93	17	7	58	10	63	47	543	21	9929	9645	7917	
G1489	O	04/22/93	13	7	35	9	62	47	509	21	10347	9288	7917	
G1490	O	04/22/93	18	7	64	10	67	47	679	21	9807	9306	7917	
G1491	O	04/22/93	10	7	17	8	68	47	713	21	11082	10285	7917	
G1492	O	04/22/93	14	7	41	9	91	47	1494	23	10757	10054	7917	
G1493	O	04/22/93	8	7	6	8	83	47	1222	23	10058	9825	7917	
G1494	O	04/22/93	23	7	93	11	54	47	238	20	10639	9960	7917	
G1495	O	04/22/93	10	7	17	8	78	47	1053	22	10276	9693	7917	
G1496	O	04/22/93	13	7	35	9	58	47	374	20	10725	9755	7917	
G1497	O	04/22/93	8	7	6	8	75	47	951	22	11126	10746	7917	
G1498	O	04/22/93	11	7	23	8	73	47	883	22	10792	10729	7917	
G1499	O	04/22/93	9	7	12	8	69	47	747	22	11359	10921	7917	
G1500	O	04/22/93	18	7	64	10	62	47	509	21	11718	11359	7917	
G1501	O	04/22/93	9	7	12	8	61	47	475	21	11839	10821	7917	
G1502	O	04/22/93	13	7	35	9	61	47	475	21	11084	10800	7917	
G1503	O	04/22/93	7	7	ID	7	84	47	1256	23	11096	11022	7917	
G1504	O	04/22/93	6	7	ID	7	68	47	713	21	11192	10697	7917	
G1505	O	04/22/93	14	7	41	9	60	47	441	21	11360	11267	7917	
G1506	O	04/22/93	9	7	12	8	76	47	985	22	11064	10525	7917	
G1507	O	04/22/93	14	7	41	9	70	47	781	22	10556	10177	7917	
G1508	O	04/22/93	13	7	35	9	63	47	543	21	10577	10093	7917	
G1509	O	04/22/93	15	7	46	9	83	47	1222	23	10701	10144	7917	
G1510	O	04/22/93	10	7	17	8	69	47	747	22	11012	10221	7917	
G1511	O	04/22/93	6	7	ID	7	65	47	611	21	10000	9292	7917	
G1512	O	04/22/93	10	7	17	8	68	47	713	21	10797	10192	7917	
G1513	O	04/22/93	9	7	12	8	70	47	781	22	9239	9425	7917	
G1514	O	04/22/93	8	7	6	8	75	47	951	22	10010	9780	7917	
G1515	O	04/22/93	6	7	ID	7	69	47	747	22	9999	9676	7917	
G1516	O	04/22/93	12	7	29	9	69	47	747	22	10858	10166	7917	
G1517	O	04/22/93	8	7	6	8	68	47	713	21	10328	10155	7917	
G1518	O	04/22/93	11	7	23	8	75	47	951	22	10947	10260	7917	
G1519	O	04/22/93	12	7	29	9	74	47	917	22	11187	10399	7917	
G1520	O	04/22/93	19	7	70	10	71	47	815	22	10745	9889	7917	
G1521	O	04/22/93	11	7	23	8	74	47	917	22	10889	10834	7917	
G1522	O	04/22/93	15	7	46	9	77	47	1019	22	10704	10668	7917	
G1523	O	04/22/93	8	7	6	8	69	47	747	22	11416	10499	7917	
G1524	O	04/22/93	19	7	70	10	54	47	238	20	11002	10325	7917	
G1525	O	04/22/93	14	7	41	9	63	47	543	21	10904	10028	7917	
G1526	O	04/22/93	9	7	12	8	79	47	1087	22	10987	10044	7917	
G1527	O	04/22/93	26	7	110	11	71	47	815	22	9998	9737	7917	

ID = Indistinguishable from Background

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Alpha shading indicates radioactivity >200dpm/100cm^2

Beta shading indicates radioactivity >1000dpm/100cm^2

Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G1528	O	04/22/93	13	7	35	9	71	47	815	22	10177	10301	7917	
G1529	O	04/22/93	10	7	17	8	54	47	238	20	9658	9274	7917	
G1530	O	04/22/93	11	7	23	8	58	47	374	20	10707	9871	7917	
G1531	O	04/22/93	6	7	ID	7	62	47	509	21	10859	10223	7917	
G1532	O	04/22/93	12	7	29	9	74	47	917	22	11041	10488	7917	
G1533	O	04/22/93	9	7	12	8	67	47	679	21	10576	9709	7917	
G1534	O	04/22/93	12	7	29	9	73	47	883	22	11593	10500	7917	
G1535	O	04/22/93	15	7	46	9	56	47	306	20	10567	10008	7917	
G1536	O	04/22/93	17	7	58	10	58	47	374	20	10876	10259	7917	
G1537	O	04/22/93	7	7	ID	7	79	47	1087	22	10926	9419	7917	
G1538	O	04/22/93	10	7	17	8	58	47	374	20	10770	9909	7917	
G1539	O	04/22/93	11	7	23	8	71	47	815	22	11119	10049	7917	
G1540	O	04/22/93	8	7	6	8	68	47	713	21	11141	10429	7917	
G1541	O	04/22/93	10	7	17	8	60	47	441	21	10792	9721	7917	
G1542	O	04/23/93	17	7	58	10	75	50	849	22	10946	9906	8411	
G1543	O	04/23/93	8	7	6	8	86	50	1222	23	11785	11277	8411	
G1544	O	04/23/93	14	7	41	9	65	50	509	21	11572	11061	8411	
G1545	O	04/23/93	10	7	17	8	57	50	238	21	11111	10443	8411	
G1546	O	04/23/93	16	7	52	10	46	50	ID	20	10348	9141	8411	
G1547	O	04/23/93	12	7	29	9	54	50	136	20	10128	9217	8411	
G1548	O	04/23/93	13	7	35	9	73	50	781	22	9290	9346	8411	
G1549	O	04/23/93	11	7	23	8	73	50	781	22	9673	8226	8411	
G1550	O	04/23/93	12	7	29	9	79	50	985	23	9085	8256	8411	
G1551	O	04/23/93	8	7	6	8	59	50	306	21	9005	8148	8411	
G1552	O	04/23/93	6	7	ID	7	75	50	849	22	9253	8716	8411	
G2006	O	04/23/93	13	7	35	9	70	50	679	22	10852	9556	8411	
G2207	O	04/27/93	7	7	ID	7	89	49	1358	23	22140	22818	7123	
G2208	O	04/28/93	27	8	101	12	134	51	2818	27	45301	64455	8414	
G2209	O	05/04/93	175	11	841	27	381	57	10452*	42	39604	38485	7304	
G2210	O	05/04/93	80	11	354	19	172	57	3710	30	42205	40697	7304	
G2211	O	05/04/93	199	11	964	29	554	57	16032*	49	35907	31608	7304	
G2212	O	05/04/93	98	11	446	21	247	57	6129*	35	62637	75256	7304	
G2213	O	05/25/93	15	4	56	9	129	42	3508	26	18098	12503	2954	
G2214	O	05/04/93	62	11	262	17	181	57	4000	31	55909	68379	7304	
G2215	O	05/04/93	41	11	154	14	108	57	1645	26	27264	25056	7304	
G2216	O	05/04/93	31	11	103	13	83	57	839	24	22825	19822	7304	
G2217	O	06/01/93	43	6	197	14					74676	48284	3088	
G2218	O	06/01/93	54	6	256	15					13913	10668	3088	
G2219	O	05/04/93	16	11	26	10	92	57	1129	24	17920	20081	7304	
G2221	O	05/04/93	35	11	123	14	288	57	7452*	37	25695	30881	7304	
G2222	O	05/04/93	51	11	205	16	106	57	1581	26	30455	35857	7304	
G2223	O	05/04/93	31	11	103	13	114	57	1839	26	24530	37355	7304	

ID = Indistinguishable from Background
CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm^2
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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/100cm²)	Alpha CI (dpm/100cm²)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/100cm²)	Beta-Gamma CI (dpm/100cm²)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G2224	O	05/25/93	98	4	482	20	311	42	10847*	38	36338	16618	2954	
G2225	O	05/04/93	22	11	56	11	95	57	1226	25	20021	21968	7304	
G2226	O	05/04/93	50	11	200	16	113	57	1806	26	25277	25998	7304	
G2227	O	05/04/93	56	11	231	16	109	57	1677	26	23464	24077	7304	
G2228	O	05/04/93	34	11	118	13	128	57	2290	27	22773	18910	7304	
G2229	O	05/04/93	44	11	169	15	110	57	1710	26	20028	17383	7304	
G2230	O	05/04/93	17	11	31	11	76	57	613	23	18885	16540	7304	
G2231	O	05/04/93	31	11	103	13	64	57	226	22	19916	18193	7304	
G2232	O	05/04/93	22	11	56	11	75	57	581	23	18882	27006	7304	
G2233	O	05/04/93	49	11	195	15	164	57	3452	30	23974	27190	7304	
G2234	O	05/04/93	38	11	138	14	118	57	1968	26	19511	18467	7304	
G2235	O	05/04/93	52	11	210	16	106	57	1581	26	19237	18094	7304	
G2236	O	05/04/93	59	11	246	17	132	57	2419	27	16446	19376	7304	
G2237	O	05/04/93	104	11	477	21	234	57	5710*	34	13307	15076	7304	
G2238	O	05/04/93	98	11	446	21	128	57	2290	27	12864	16859	7304	
G2239	O	05/04/93	75	11	328	19	132	57	2419	27	14467	18492	7304	
G2240	O	05/04/93	28	11	87	12	97	57	1290	25	14718	16018	7304	
G2241	O	05/04/93	49	11	195	15	127	57	2258	27	17598	20793	7304	
G2242	O	05/04/93	76	11	333	19	99	57	1355	25	15415	20007	7304	
G2243	O	05/04/93	17	11	31	11	67	57	323	22	12735	16167	7304	
G2244	O	05/05/93	48	5	221	15	92	40	1677	23	18774	20804	7298	
G2245	O	05/05/93	16	5	56	9	76	40	1161	22	18158	27618	7298	
G2246	O	05/05/93	36	5	159	13	66	40	839	21	19176	34978	7298	
G2247	O	05/05/93	40	5	179	13	90	40	1613	23	19479	18493	7298	
G2248	O	05/05/93	42	5	190	14	89	40	1581	23	20650	18808	7298	
G2249	O	05/05/93	44	5	200	14	91	40	1645	23	19129	17572	7298	
G2250	O	05/05/93	47	5	213	14	121	40	2613	25	18949	17976	7298	
G2251	O	05/05/93	34	5	149	12	126	40	2774	26	16190	16419	7298	
G2252	O	05/04/93	21	11	51	11	92	57	1129	24	12739	14391	7304	
G2253	O	05/04/93	15	11	21	10	151	57	3032	29	60695	23817	7304	
G2254	O	05/04/93	43	11	164	15	77	57	645	23	15071	15298	7304	
G2255	O	05/04/93	96	11	436	21	126	57	2226	27	15600	15395	7304	
G2256	O	05/04/93	62	11	262	17	164	57	3452	30	15742	15011	7304	
G2257	O	05/04/93	51	11	205	16	136	57	2548	28	14386	12038	7304	
G2258	O	05/04/93	52	11	210	16	160	57	3323	29	14743	11495	7304	
G2259	O	06/02/93	4	8	ID	7					3913	3817	3158	
G2260	O	05/04/93	44	11	169	15	112	57	1774	26	12492	19681	7304	
G2261	O	05/04/93	8	11	ID	9	39	57	ID	20	10874	11913	7304	
G2262	O	05/04/93	16	11	26	10	82	57	806	24	12787	13809	7304	
G2263	O	05/05/93	45	5	205	14	124	40	2710	26	16300	17481	7298	
G2264	O	05/05/93	78	5	374	18	112	40	2323	25	17517	21039	7298	
G2265	O	05/05/93	48	5	221	15	88	40	1548	23	16289	19553	7298	

ID = Indistinguishable from Background
CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm²
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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G2266	O	05/05/93	45	5	205	14	90	40	1613	23	17165	20076	7298	
G2267	O	05/05/93	14	5	46	9	68	40	903	21	17574	20414	7298	
G2268	O	05/05/93	34	5	149	12	84	40	1419	22	16778	25050	7298	
G2269	O	05/05/93	40	5	179	13	90	40	1613	23	14835	23513	7298	
G2270	O	05/05/93	109	5	533	21	118	40	2516	25	16860	17206	7298	
G2271	O	05/05/93	69	5	328	17	97	40	1839	23	17236	18328	7298	
G2272	O	05/05/93	74	5	354	18	105	40	2097	24	15489	17829	7298	
G2273	O	05/05/93	80	5	383	18	141	40	3258	27	21444	19962	7298	
G2274	O	05/05/93	61	5	287	16	134	40	3032	26	16661	17491	7298	
G2275	O	05/05/93	112	5	548	22	184	40	4645	30	33059	40559	7298	
G2276	O	05/05/93	93	5	451	20	123	40	2677	26	22388	24361	7298	
G2277	O	05/05/93	97	5	472	20	123	40	2677	26	17326	18019	7298	
G2278	O	05/05/93	158	5	785	26	105	40	2097	24	14971	17284	7298	
G2279	O	05/05/93	89	5	431	19	80	40	1290	22	14976	16690	7298	
G2280	O	05/05/93	23	5	92	11	70	40	968	21	13177	18919	7298	
G2281	O	05/05/93	21	5	82	10	122	40	2645	25	13443	18205	7298	
G2282	O	05/05/93	381	5	1928*	39	196	40	5032*	31	15831	14780	7298	
G2283	O	05/05/93	85	5	410	19	127	40	2806	26	14401	15690	7298	
G2284	O	05/05/93	69	5	328	17	106	40	2129	24	15754	19218	7298	
G2285	O	05/05/93	37	5	164	13	128	40	2839	26	14253	17856	7298	
G2286	O	05/05/93	72	5	344	18	135	40	3065	26	35371	38888	7298	
G2287	O	05/05/93	67	5	318	17	105	40	2097	24	15875	18170	7298	
G2288	O	05/05/93	22	5	87	10	110	40	2258	24	22665	23499	7298	
G2289	O	05/05/93	12	5	36	8	73	40	1065	21	15353	18796	7298	
G2290	O	05/05/93	50	5	231	15	91	40	1645	23	15780	17135	7298	
G2291	O	05/05/93	28	5	118	11	122	40	2645	25	21819	23072	7298	
G2292	O	05/05/93	27	5	113	11	119	40	2548	25	37888	45668	7298	
G2293	O	05/05/93	64	5	303	17	82	40	1355	22	16012	13855	7298	
G2294	O	06/02/93	12	8	21	9					4479	3985	3158	
G2295	O	06/02/93	12	8	21	9					4442	4349	3158	
G2296	O	06/02/93	9	8	5	8					5256	4860	3158	
G2297	O	06/02/93	6	8	ID	7					4628	4523	3158	
G2298	O	06/02/93	10	8	11	8					4521	4278	3158	
G2299	O	06/02/93	7	8	ID	8					5164	4404	3158	
G2300	O	06/02/93	16	8	43	10					4956	5193	3158	
G2301	O	05/05/93	28	5	118	11	84	40	1419	22	13534	16391	7298	
G2302	O	05/05/93	17	5	62	9	91	40	1645	23	21667	22057	7298	
G2303	O	05/05/93	19	5	72	10	104	40	2065	24	21991	25215	7298	
G2304	O	06/02/93	10	8	11	8					5639	6226	3158	
G2305	O	06/02/93	7	8	ID	8					3740	4745	3158	
G2306	O	06/02/93	10	8	11	8					4209	4415	3158	
G2307	O	06/02/93	5	8	ID	7					4000	4113	3158	

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Alpha shading indicates radioactivity >200dpm/100cm^2
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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (Bimtr) cpm	Gamma Bkg (cpm)	Comments
G2308	O	06/02/93	11	8	16	9					4039	3982	3158	
G2309	O	06/02/93	10	8	11	8					4067	3841	3158	
G2310	O	06/02/93	8	8	ID	8					3908	3795	3158	
G2311	O	06/02/93	11	8	16	9					4299	4675	3158	
G2312	O	06/02/93	9	8	5	8					5965	6010	3158	
G2313	O	06/02/93	8	8	ID	8					4023	3922	3158	
G2314	O	06/02/93	10	8	11	8					3991	3877	3158	
G2315	O	06/02/93	5	8	ID	7					4129	3649	3158	
G2316	O	06/02/93	2	8	ID	6					4669	4380	3158	
G2317	O	06/02/93	11	8	16	9					4937	4836	3158	
G2318	O	05/05/93	39	5	174	13	70	40	968	21	14590	14262	7298	
G2319	O	05/05/93	21	5	82	10	65	40	806	20	11057	12529	7298	
G2320	O	05/05/93	13	5	41	8	62	40	710	20	12553	15291	7298	
G2321	O	05/05/93	13	5	41	8	87	40	1516	23	17060	19515	7298	
G2322	O	06/02/93	11	8	16	9					5162	5139	3158	
G2323	O	06/02/93	8	8	ID	8					4530	3827	3158	
G2324	O	06/02/93	7	8	ID	8					4260	3788	3158	
G2325	O	06/02/93	18	8	53	10					4433	3826	3158	
G2326	O	06/02/93	11	8	16	9					4662	4461	3158	
G2327	O	06/02/93	14	8	32	9					5964	6151	3158	
G2328	O	06/02/93	6	8	ID	7					3379	3899	3158	
G2329	O	05/05/93	12	5	36	8	68	40	903	21	7063	12210	7298	
G2330	O	05/05/93	38	5	169	13	117	40	2484	25	21206	21093	7298	
G2331	O	05/05/93	31	5	133	12	115	40	2419	25	12808	17743	7298	
G2332	O	06/03/93	12	7	27	9					9561	9528	2938	
G2332	O	06/22/93					67	60	411	23				
G2333	O	06/03/93	11	7	21	8					5678	5059	2938	
G2333	O	06/22/93					83	60	1349	24				
G2334	O	06/03/93	12	7	27	9					4718	4298	2938	
G2334	O	06/22/93					68	60	469	23				
G2335	O	06/03/93	4	7	ID	7					4288	3876	2938	
G2335	O	06/22/93					71	60	645	23				
G2336	O	06/03/93	10	7	16	8					4024	3318	2938	
G2336	O	06/22/93					74	60	821	23				
G2337	O	06/03/93	9	7	11	8					4396	3914	2938	
G2337	O	06/22/93					52	60	ID	21				
G2338	O	06/03/93	5	7	ID	7					4157	3878	2938	
G2338	O	06/22/93					61	60	59	22				
G2339	O	05/05/93	9	5	21	7	49	40	290	19	5125	6403	7298	
G2340	O	05/05/93	27	5	113	11	52	40	387	19	9884	12828	7298	
G2341	O	05/05/93	40	5	179	13	68	40	903	21	10960	12676	7298	
G2342	O	05/05/93	33	5	144	12	79	40	1258	22	10305	12416	7298	

ID = Indistinguishable from Background
CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm^2
Beta shading indicates radioactivity >1000dpm/100cm^2

Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G2343	O	06/01/93	16	6	53	9					6187	5302	3088	
G2344	O	05/05/93	7	5	10	7	64	40	774	20	11332	13409	7298	
G2345	O	05/05/93	23	5	92	11	56	40	516	20	8959	9912	7298	
G2346	O	05/06/93	29	11	92	13	81	55	839	23	9295	8998	8191	
G2347	O	05/06/93	18	11	36	11	62	55	226	22	9768	10285	8191	
G2348	O	05/06/93	19	11	41	11	66	55	355	22	10310	11002	8191	
G2349	O	05/05/93	15	5	51	9	72	40	1032	21	10087	11714	7298	
G2350	O	05/05/93	39	5	174	13	93	40	1710	23	9878	12898	7298	
G2351	O	05/05/93	28	5	118	11	81	40	1323	22	10824	11810	7298	
G2352	O	05/05/93	94	5	456	20	138	40	3161	27	10517	11755	7298	
G2353	O	06/03/93	21	7	75	11					6648	6768	2938	
G2353	O	06/22/93					80	60	1173	24				
G2354	O	06/22/93					73	60	762	23				
G2354	O	06/03/93	26	7	101	11					5742	5147	2938	
G2355	O	06/03/93	15	7	43	9					4243	4008	2938	
G2355	O	06/22/93					71	60	645	23				
G2356	O	06/03/93	24	7	91	11					4459	4135	2938	
G2356	O	06/22/93					68	60	469	23				
G2357	O	06/03/93	7	7	ID	7					4585	4113	2938	
G2357	O	06/22/93					67	60	411	23				
G2358	O	06/03/93	9	7	11	8					4375	4133	2938	
G2358	O	06/22/93					70	60	587	23				
G2359	O	06/03/93	11	7	21	8					4866	4258	2938	
G2359	O	06/22/93					70	60	587	23				
G2360	O	06/03/93	8	7	5	8					4198	4049	2938	
G2360	O	06/22/93					81	60	1232	24				
G2361	O	05/06/93	16	11	26	10	66	55	355	22	8863	9403	8191	
G2362	O	05/06/93	32	11	108	13	85	55	968	24	8265	9771	8191	
G2363	O	06/03/93	15	7	43	9					5603	4770	2938	
G2363	O	06/22/93					76	60	938	23				
G2364	O	06/03/93	11	7	21	8					4741	4206	2938	
G2364	O	06/22/93					61	60	59	22				
G2365	O	05/06/93	8	11	ID	9	77	55	710	23	9214	8384	8191	
G2367	O	05/06/93	10	11	ID	9	60	55	161	21	9829	10982	8191	
G2367	O	06/01/93	6	6	ID	7					3064	3159	3088	
G2368	O	06/01/93	24	6	96	11					7976	5608	3088	
G2369	O	06/01/93	14	6	43	9					11117	6835	3088	
G2370	O	06/01/93	17	6	59	10					2723	2607	3088	
G2371	O	06/01/93	15	6	48	9					3828	3591	3088	
G2372	O	06/01/93	7	6	5	7					4886	4008	3088	
G2373	O	06/01/93	13	6	37	9					4590	3669	3088	
G2374	O	06/01/93	12	6	32	8					4239	3652	3088	

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Alpha shading indicates radioactivity >200dpm/100cm^2
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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G2375	O	06/01/93	11	6	27	8					4548	3574	3088	
G2376	O	06/01/93	13	6	37	9					4581	3911	3088	
G2377	O	06/01/93	9	6	16	8					4361	3603	3088	
G2378	O	06/01/93	9	6	16	8					4017	3632	3088	
G2379	O	06/01/93	14	6	43	9					4258	3549	3088	
G2380	O	06/01/93	8	6	11	7					4425	3415	3088	
G2381	O	06/01/93	20	6	75	10					4251	3541	3088	
G2382	O	06/01/93	6	6	ID	7					4825	3559	3088	
G2383	O	06/01/93	11	6	27	8					4126	3744	3088	
G2385	O	06/01/93	9	6	16	8					2840	2812	3088	
G2386	O	06/01/93	8	6	11	7					4029	3775	3088	
G2387	O	05/06/93	12	11	5	10	63	55	258	22	7832	8228	8191	
G2388	O	05/06/93	13	11	10	10	62	55	226	22	8184	8131	8191	
G2389	O	05/06/93	14	11	15	10	67	55	387	22	6682	6670	8191	
G2411	O	05/21/93	65	5	333	17	116	40	3065	25	20913	26109	3174	
G2412	O	05/21/93	50	5	250	15	186	40	5887*	30	26653	70387	3174	
G2413	O	05/21/93	54	5	272	15	813	40	31189*	58	106197	100741	3174	
G2414	O	05/21/93	34	5	161	12	714	40	27177*	55	103506	88658	3174	
G2415	O	05/21/93	18	5	72	10	103	40	2540	24	29195	56848	3174	
G2416	O	05/21/93	24	5	106	11	105	40	2621	24	24124	55178	3174	
G2417	O	05/21/93	54	5	272	15	100	40	2419	24	22788	51507	3174	
G2418	O	05/21/93	27	5	122	11	141	40	4073	27	19568	32429	3174	
G2419	O	05/25/93	28	4	123	11	75	42	1331	22	12153	16555	2954	
G2420	O	05/25/93	35	4	159	12	141	42	3992	27	17990	22727	2954	
G2421	O	05/27/93	4	10	ID	7	44	42	81	19	2710	3026	3028	
G2422	O	05/27/93	5	10	ID	8	36	42	ID	18	3114	3128	3028	
G2423	O	05/27/93	9	10	ID	9	41	42	ID	18	3032	2795	3028	
G2424	O	05/27/93	8	10	ID	8	54	42	484	20	3083	3018	3028	
G2425	O	05/27/93	8	10	ID	8	48	42	242	19	3304	2831	3028	
G2426	O	05/27/93	6	10	ID	8	36	42	ID	18	3572	3045	3028	
G2427	O	05/27/93	6	10	ID	8	56	42	565	20	3133	2898	3028	
G2428	O	05/27/93	18	10	41	11	59	42	685	20	4770	4280	3028	
G2429	O	05/27/93	5	10	ID	8	34	42	ID	17	3022	3194	3028	
G2430	O	05/27/93	13	10	15	10	36	42	ID	18	3346	3051	3028	
G2431	O	05/27/93	13	10	15	10	65	42	927	21	5885	5848	3028	
G2432	O	05/27/93	17	10	36	10	94	42	2097	23	7649	6179	3028	
G2433	O	05/27/93	5	10	ID	8	72	42	1210	21	5136	4021	3028	
G2434	O	05/27/93	13	10	15	10	69	42	1089	21	4935	4098	3028	
G2435	O	05/27/93	16	10	31	10	48	42	242	19	4729	3933	3028	
G2436	O	05/27/93	29	10	97	12	82	42	1613	22	5742	4474	3028	
G2437	O	05/27/93	13	10	15	10	37	42	ID	18	3076	2954	3028	
G2438	O	05/27/93	10	10	ID	9	55	42	524	20	5483	4464	3028	

ID = Indistinguishable from Background
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Alpha shading indicates radioactivity >200dpm/100cm^2
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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm²)	Alpha CI (dpm/ 100cm²)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm²)	Beta-Gamma CI (dpm/ 100cm²)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G2439	O	05/27/93	12	10	10	9	70	42	1129	21	5948	4043	3028	
G2440	O	05/27/93	8	10	ID	8	78	42	1452	22	5752	4325	3028	
G2441	O	05/27/93	9	10	ID	9	68	42	1048	21	6067	5146	3028	
G2442	O	05/27/93	23	10	67	11	76	42	1371	22	6532	4620	3028	
G2443	O	05/27/93	11	10	5	9	77	42	1411	22	6503	4931	3028	
G2444	O	05/27/93	9	10	ID	9	90	42	1935	23	7178	5235	3028	
G2445	O	05/27/93	44	10	174	15	120	42	3145	25	10575	6792	3028	
G2446	O	05/28/93	7	6	5	7	44	36	333	18	2513	3128	2990	
G2447	O	05/28/93	10	6	21	8	77	36	1708	21	5292	4555	2990	
G2448	O	05/28/93	15	6	46	9	72	36	1500	21	4939	4489	2990	
G2449	O	05/28/93	9	6	15	8	66	36	1250	20	4751	4474	2990	
G2450	O	05/28/93	55	6	251	16	81	36	1875	22	6366	5099	2990	
G2451	O	05/28/93	13	6	36	9	65	36	1208	20	6065	5031	2990	
G2452	O	05/28/93	22	6	82	11	55	36	792	19	5374	5208	2990	
G2453	O	05/28/93	14	6	41	9	69	36	1375	20	5680	5246	2990	
G2454	O	05/28/93	13	6	36	9	62	36	1083	20	5617	5399	2990	
G2455	O	05/28/93	7	6	5	7	71	36	1458	21	5809	5401	2990	
G2456	O	05/28/93	7	6	5	7	73	36	1542	21	6002	5434	2990	
G2457	O	05/28/93	14	6	41	9	75	36	1625	21	6889	6172	2990	
G2458	O	05/28/93	13	6	36	9	75	36	1625	21	6892	6556	2990	
G2459	O	05/28/93	9	6	15	8	81	36	1875	22	7950	7675	2990	
G2460	O	05/28/93	19	6	67	10	83	36	1958	22	6156	5591	2990	
G2461	O	05/28/93	2	6	ID	6	46	36	417	18	2973	3137	2990	
G2462	O	05/28/93	9	6	15	8	80	36	1833	22	4882	4238	2990	
G2463	O	05/28/93	7	6	5	7	70	36	1417	21	4563	3948	2990	
G2464	O	05/28/93	11	6	26	8	56	36	833	19	4430	3626	2990	
G2465	O	05/28/93	7	6	5	7	55	36	792	19	4429	4007	2990	
G2466	O	05/28/93	15	6	46	9	56	36	833	19	4637	3495	2990	
G2467	O	05/28/93	4	6	ID	6	72	36	1500	21	4462	3666	2990	
G2468	O	05/28/93	11	6	26	8	56	36	833	19	4564	3750	2990	
G2469	O	05/28/93	4	6	ID	6	75	36	1625	21	4666	3772	2990	
G2470	O	05/28/93	12	6	31	8	65	36	1208	20	4980	3822	2990	
G2471	O	05/28/93	8	6	10	7	64	36	1167	20	4807	4000	2990	
G2472	O	05/28/93	11	6	26	8	73	36	1542	21	5224	4279	2990	
G2473	O	05/28/93	13	6	36	9	58	36	917	19	5639	4490	2990	
G2474	O	05/28/93	18	6	62	10	71	36	1458	21	5755	4445	2990	
G2475	O	05/28/93	16	6	51	9	85	36	2042	22	6161	4226	2990	
G2476	O	05/28/93	6	6	ID	7	77	36	1708	21	5818	4455	2990	
G2477	O	05/28/93	11	6	26	8	73	36	1542	21	5932	5168	2990	
G2478	O	05/28/93	6	6	ID	7	70	36	1417	21	6221	4808	2990	
G2479	O	05/28/93	10	6	21	8	70	36	1417	21	4299	4645	2990	
G2480	O	05/28/93	27	6	108	11	62	36	1083	20	4761	5914	2990	

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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (Blmtr) cpm	Gamma Bkg (cpm)	Comments
G2481	O	05/28/93	11	6	26	8	65	36	1208	20	4158	5191	2990	
G2482	O	05/28/93	8	6	10	7	59	36	958	19	3702	4389	2990	
G2483	O	05/28/93	8	6	10	7	73	36	1542	21	4251	4329	2990	
G2484	O	05/28/93	8	6	10	7	76	36	1667	21	4424	3864	2990	
G2485	O	05/28/93	9	6	15	8	73	36	1542	21	4606	3753	2990	
G2486	O	05/28/93	7	6	5	7	71	36	1458	21	4594	3753	2990	
G2487	O	05/28/93	5	6	ID	7	59	36	958	19	5387	3853	2990	
G2488	O	06/01/93	15	6	48	9					4700	4516	3088	
G2489	O	06/01/93	16	6	53	9					5366	5294	3088	
G2490	O	06/01/93	24	6	96	11					5566	4999	3088	
G2491	O	06/01/93	25	6	101	11					5332	5074	3088	
G2492	O	06/01/93	16	6	53	9					5190	4814	3088	
G2493	O	06/01/93	11	6	27	8					5089	4976	3088	
G2494	O	06/01/93	10	6	21	8					5707	5258	3088	
G2495	O	06/01/93	17	6	59	10					5573	4996	3088	
G2496	O	06/01/93	37	6	165	13					5537	5204	3088	
G2497	O	05/28/93	13	6	36	9	73	36	1542	21	6170	5544	2990	
G2498	O	05/28/93	8	6	10	7	56	36	833	19	4620	4257	2990	
G2499	O	06/02/93	6	8	ID	7					5663	6218	3158	
G2500	O	06/03/93	9	7	11	8					4216	3774	2938	
G2500	O	06/22/93					71	60	645	23				
G2501	O	06/02/93	7	8	ID	8					4173	4130	3158	
G2502	O	06/02/93	7	8	ID	8					4243	3776	3158	
G2503	O	06/02/93	9	8	5	8					4730	3823	3158	
G2504	O	06/02/93	6	8	ID	7					4415	4034	3158	
G2505	O	06/02/93	12	8	21	9					4581	4114	3158	
G2506	O	06/02/93	5	8	ID	7					4600	4368	3158	
G2507	O	06/02/93	12	8	21	9					4349	4193	3158	
G2508	O	06/02/93	9	8	5	8					5023	4367	3158	
G2509	O	06/02/93	11	8	16	9					4662	4421	3158	
G2510	O	06/02/93	7	8	ID	8					4566	4336	3158	
G2511	O	06/02/93	9	8	5	8					4312	3924	3158	
G2512	O	06/02/93	9	8	5	8					4873	4577	3158	
G2513	O	06/02/93	14	8	32	9					5228	4300	3158	
G2514	O	06/02/93	14	8	32	9					2900	2714	3158	
G2515	O	06/03/93	7	7	ID	7					4302	3761	2938	
G2515	O	06/22/93					73	60	762	23				
G2516	O	06/03/93	7	7	ID	7					4216	3517	2938	
G2516	O	06/25/93					76	49	1452	22				
G2517	O	06/02/93	6	8	ID	7					5469	3647	3158	
G2518	O	06/03/93	7	7	ID	7					4330	4369	2938	
G2518	O	06/22/93					68	60	469	23				

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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (Bkmtr) cpm	Gamma Bkg (cpm)	Comments
G2519	O	06/03/93	9	7	11	8					4740	4479	2938	
G2519	O	06/22/93					59	60	ID	22				
G2520	O	06/03/93	7	7	ID	7					6514	5412	2938	
G2520	O	06/22/93					69	60	528	23				
G2521	O	06/03/93	13	7	32	9					6158	5405	2938	
G2521	O	06/22/93					74	60	821	23				
G2522	O	06/03/93	15	7	43	9					5195	4702	2938	
G2522	O	06/22/93					70	60	587	23				
G2523	O	06/03/93	14	7	37	9					7187	5569	2938	
G2523	O	06/22/93					60	60	ID	22				
G2524	O	06/03/93	21	7	75	11					5859	4510	2938	
G2524	O	06/22/93					58	60	ID	22				
G2525	O	06/03/93	24	7	91	11					4965	4416	2938	
G2525	O	06/22/93					57	60	ID	22				
G2526	O	06/02/93	8	8	ID	8					3383	3366	3158	
G2527	O	06/02/93	10	8	11	8					5274	5130	3158	
G2528	O	06/04/93	5	7	ID	7					4599	4274	3127	
G2528	O	06/23/93					77	67	587	24				
G2529	O	06/04/93	2	7	ID	6					4585	4213	3127	
G2529	O	06/23/93					76	67	528	24				
G2530	O	06/04/93	14	7	35	9					4301	4039	3127	
G2530	O	06/23/93					71	67	235	23				
G2531	O	06/04/93	3	7	ID	6					4573	4239	3127	
G2531	O	06/23/93					62	67	ID	23				
G2532	O	06/04/93	5	7	ID	7					3679	4203	3127	
G2532	O	06/23/93					72	67	293	24				
G2533	O	06/04/93	5	7	ID	7					4274	4574	3127	
G2533	O	06/23/93					67	67	ID	23				
G2534	O	06/04/93	7	7	ID	7					4271	4447	3127	
G2534	O	06/23/93					58	67	ID	22				
G2535	O	06/04/93	3	7	ID	6					3793	4111	3127	
G2535	O	06/23/93					60	67	ID	23				
G2536	O	06/04/93	8	7	5	8					3881	4021	3127	
G2536	O	06/23/93					48	67	ID	21				
G2537	O	06/04/93	1	7	ID	6					3827	4004	3127	
G2537	O	06/23/93					46	67	ID	21				
G2538	O	06/04/93	1	7	ID	6					3720	3801	3127	
G2538	O	06/23/93					54	67	ID	22				
G2539	O	06/04/93	5	7	ID	7					3880	3894	3127	
G2539	O	06/23/93					70	67	176	23				
G2540	O	06/04/93	8	7	5	8					4520	4556	3127	
G2540	O	06/23/93					62	67	ID	23				

ID = Indistinguishable from Background
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Alpha shading indicates radioactivity >200dpm/100cm^2
Beta shading indicates radioactivity >1000dpm/100cm^2

Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G2541	O	06/04/93	8	7	5	8					4020	4472	3127	
G2541	O	06/23/93					60	67	ID	23				
G2542	O	06/04/93	7	7	ID	7					3618	3515	3127	
G2542	O	06/23/93					59	67	ID	22				
G2543	O	06/04/93	3	7	ID	6					4580	4071	3127	
G2543	O	06/23/93					47	67	ID	21				
G2544	O	06/04/93	9	7	10	8					4964	4410	3127	
G2544	O	06/23/93					49	67	ID	22				
G2545	O	06/04/93	8	7	5	8					6305	5907	3127	
G2545	O	06/23/93					54	67	ID	22				
G2546	O	06/03/93	20	7	69	10					6800	6192	2938	
G2546	O	06/22/93					58	60	ID	22				
G2547	O	06/03/93	14	7	37	9					5230	4828	2938	
G2547	O	06/22/93					85	60	2053	25				
G2548	O	06/03/93	15	7	43	9					5301	5359	2938	
G2548	O	06/22/93					65	60	293	22				
G2549	O	06/03/93	23	7	85	11					5783	5122	2938	
G2549	O	06/22/93					54	60	ID	21				
G2550	O	06/03/93	24	7	91	11					6247	4547	2938	
G2550	O	06/22/93					94	60	1994	25				
G2551	O	06/03/93	35	7	149	13					7217	5794	2938	
G2551	O	06/22/93					82	60	1290	24				
G2552	O	06/03/93	17	7	53	10					8366	5477	2938	
G2552	O	06/22/93					76	60	938	23				
G2553	O	06/03/93	20	7	69	10					5029	3921	2938	
G2553	O	06/22/93					64	60	235	22				
G2554	O	06/03/93	13	7	32	9					4705	4398	2938	
G2554	O	06/22/93					57	60	ID	22				
G2555	O	06/03/93	19	7	64	10					4690	4336	2938	
G2555	O	06/22/93					58	60	ID	22				
G2556	O	06/03/93	27	7	107	12					6180	5774	2938	
G2556	O	06/22/93					45	60	ID	20				
G2557	O	06/04/93	7	7	ID	7					5301	6660	3127	
G2557	O	06/23/93					65	67	ID	23				
G2558	O	06/04/93	13	7	30	9					4546	5851	3127	
G2558	O	06/23/93					93	67	1525	25				
G2559	O	06/04/93	23	7	79	11					4981	4156	3127	
G2559	O	06/23/93					92	67	1466	25				
G2560	O	06/04/93	8	7	5	8					5849	4378	3127	
G2560	O	06/23/93					76	67	528	24				
G2561	O	06/04/93	4	7	ID	7					4863	4327	3127	
G2561	O	06/23/93					77	67	587	24				

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Alpha shading indicates radioactivity >200dpm/100cm^2
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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G2562	O	06/04/93	1	7	ID	6					7008	6373	3127	
G2562	O	06/23/93					83	67	938	24				
G2563	O	06/04/93	3	7	ID	6					5192	4573	3127	
G2563	O	06/23/93					70	67	176	23				
G2564	O	06/04/93	4	7	ID	7					4098	4483	3127	
G2564	O	06/23/93					48	67	ID	21				
G2565	O	06/04/93	ID	7	ID	5					4213	5455	3127	
G2565	O	06/23/93					70	67	176	23				
G2566	O	06/04/93	4	7	ID	7					4641	5182	3127	
G2566	O	06/23/93					81	67	821	24				
G2567	O	06/04/93	13	7	30	9					4333	5121	3127	
G2567	O	06/23/93					79	67	704	24				
G2568	O	06/04/93	4	7	ID	7					4540	4927	3127	
G2568	O	06/23/93					63	67	ID	23				
G2569	O	06/04/93	6	7	ID	7					4811	5046	3127	
G2569	O	06/23/93					75	67	469	24				
G2570	O	06/04/93	2	7	ID	6					5973	6381	3127	
G2570	O	06/23/93					66	67	ID	23				
G2571	O	06/04/93	7	7	ID	7					5816	6263	3127	
G2571	O	06/23/93					63	67	ID	23				
G2572	O	06/04/93	4	7	ID	7					4975	4293	3127	
G2572	O	06/23/93					61	67	ID	23				
G2573	O	06/04/93	7	7	ID	7					6229	5773	3127	
G2573	O	06/23/93					82	67	880	24				
G2574	O	06/04/93	4	7	ID	7					4082	4060	3127	
G2574	O	06/23/93					59	67	ID	22				
G2575	O	06/04/93	12	7	25	9					6259	5442	3127	
G2575	O	06/23/93					78	67	645	24				
G2576	O	06/04/93	22	7	74	11					19891	7487	3127	
G2576	O	06/23/93					141	67	4340	29				
G2577	O	06/04/93	14	7	35	9					17158	10176	3127	
G2577	O	06/23/93					137	67	4106	29				
G2578	O	06/04/93	10	7	15	8					15279	11283	3127	
G2578	O	06/23/93					252	67	10850*	36				
G2579	O	06/07/93	58	5	203	16					26040	31705	6308	
G2579	O	06/22/93					121	60	3578	27				
G2580	O	06/07/93	22	5	91	10					10325	10588	6308	
G2580	O	06/22/93					82	60	1290	24				
G2581	O	06/07/93	12	5	37	8					10569	9879	6308	
G2581	O	06/22/93					76	60	938	23				
G2582	O	06/07/93	9	5	21	7					11224	9363	6308	
G2582	O	06/22/93					67	60	411	23				

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Alpha shading indicates radioactivity >200dpm/100cm^2
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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm²)	Alpha CI (dpm/ 100cm²)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm²)	Beta-Gamma CI (dpm/ 100cm²)	Gamma (Surf) cpm	Gamma (@Intr) cpm	Gamma Bkg (cpm)	Comments
G2583	O	06/01/93	20	6	75	10					22117	20335	3088	
G2584	O	06/01/93	14	6	43	9					38799	36829	3088	
G2585	O	06/07/93	8	5	16	7					11340	9568	6308	
G2585	O	06/22/93					57	60	ID	22				
G2586	O	06/07/93	16	5	59	9					13755	12349	6308	
G2586	O	06/22/93					103	60	2522	26				
G2587	O	06/07/93	15	5	53	9					22826	23663	6308	
G2587	O	06/22/93					146	60	5044*	29				
G2588	O	06/17/93	18	6	59	10	84	39	3226	22	9295	8460	5397	
G2589	O	06/17/93	1	6	ID	5	88	39	3513	23	8160	7638	5397	
G2590	O	06/17/93	8	6	10	7	58	39	1362	20	8780	8407	5397	
G2591	O	06/17/93	6	6	ID	7	70	39	2222	21	8791	9023	5397	
G2592	O	06/07/93	18	5	69	10					15271	13857	6308	
G2592	O	06/22/93					71	60	645	23				
G2593	O	06/07/93	11	5	32	8					19085	15483	6308	
G2593	O	06/22/93					91	60	1818	25				
G2594	O	06/07/93	27	5	117	11					24358	21787	6308	
G2594	O	06/22/93					102	60	2463	25				
G2595	O	06/07/93	27	5	117	11					21787	9146	6308	
G2595	O	06/22/93					68	60	469	23				
G2596	O	06/07/93	6	5	5	7					8952	8466	6308	
G2596	O	06/22/93					65	60	293	22				
G2597	O	06/07/93	7	5	11	7					11291	11843	6308	
G2597	O	06/22/93					87	60	1584	24				
G2598	O	06/07/93	27	5	117	11					17616	14623	6308	
G2598	O	06/22/93					98	60	2229	25				
G2599	O	06/17/93	20	6	69	10	105	39	4731	24	11301	9136	5397	
G2600	O	06/17/93	9	6	15	8	72	39	2366	21	7657	7338	5397	
G2601	O	06/17/93	4	6	ID	6	73	39	2437	21	7555	7163	5397	
G2602	O	06/17/93	8	6	10	7	61	39	1577	20	7426	7175	5397	
G2603	O	06/07/93	22	5	91	10					17366	16176	6308	
G2603	O	06/22/93					95	60	2053	25				
G2604	O	06/07/93	8	5	16	7					12357	12745	6308	
G2604	O	06/22/93					79	60	1114	24				
G2605	O	06/07/93	65	5	320	17					28935	34719	6308	
G2605	O	06/22/93					151	60	5337*	29				
G2606	O	06/07/93	10	5	27	8					9850	9499	6308	
G2606	O	06/22/93					78	60	1056	23				
G2607	O	06/07/93	8	5	16	7					8016	7509	6308	
G2607	O	06/22/93					48	60	ID	21				
G2608	O	06/07/93	152	5	784	25					43107	44875	6308	
G2608	O	06/22/93					242	60	10674*	35				

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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant — GD-DIRT-EAST

Grid Loc	In/Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/100cm²)	Alpha CI (dpm/100cm²)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/100cm²)	Beta-Gamma CI (dpm/100cm²)	Gamma (Surf) cpm	Gamma (Bintr) cpm	Gamma Bkg (cpm)	Comments
G2609	O	06/07/93	44	5	208	14					119128	77828	6308	
G2609	O	06/22/93					452	60	22991*	45				
G2610	O	06/17/93	7	6	5	7	66	39	1935	20	7168	6918	5397	
G2611	O	06/17/93	2	6	ID	6	63	39	1720	20	7495	7053	5397	
G2612	O	06/17/93	2	6	ID	6	50	39	789	19	6528	6695	5397	
G2613	O	06/17/93	4	6	ID	6	54	39	1075	19	6520	6508	5397	
G2614	O	06/07/93	26	5	112	11					21785	19460	6308	
G2614	O	06/22/93					132	60	4223	28				
G2615	O	06/07/93	36	5	165	13					17871	15192	6308	
G2615	O	06/22/93					113	60	3109	26				
G2616	O	06/07/93	10	5	27	8					12786	11288	6308	
G2616	O	06/22/93					121	60	3578	27				
G2617	O	06/07/93	4	5	ID	6					8375	7380	6308	
G2617	O	06/22/93					68	60	469	23				
G2618	O	06/07/93	6	5	5	7					6801	6982	6308	
G2618	O	06/22/93					64	60	235	22				
G2619	O	06/14/93	20	5	74	10					21248	17381	5674	
G2620	O	06/14/93	34	5	143	12					19796	14731	5674	
G2621	O	06/17/93	5	6	ID	7	66	39	1935	20	6776	6501	5397	
G2622	O	06/17/93	9	6	15	8	66	39	1935	20	7361	6672	5397	
G2623	O	06/17/93	8	6	10	7	56	39	1219	19	6700	6362	5397	
G2624	O	06/17/93	4	6	ID	6	72	39	2366	21	7085	6827	5397	
G2625	O	06/14/93	4	5	ID	6					6883	6384	5674	
G2626	O	06/14/93	20	5	74	10					6401	6149	5674	
G2627	O	06/14/93	2	5	ID	5					5436	5493	5674	
G2628	O	06/14/93	5	5	ID	6					6112	6058	5674	
G2629	O	06/17/93	8	6	10	7	56	39	1219	19	6984	6633	5397	
G2630	O	06/17/93	7	6	5	7	55	39	1147	19	6889	6223	5397	
G2631	O	06/17/93	4	6	ID	6	51	39	860	19	5312	5499	5397	
G2632	O	06/17/93	14	6	40	9	39	39	ID	18	6669	6505	5397	
G2633	O	06/17/93	1	6	ID	5	65	39	1864	20	7284	6897	5397	
G2634	O	06/17/93	1	6	ID	5	58	39	1362	20	6875	5706	5397	
G2635	O	06/17/93	9	6	15	8	73	39	2437	21	7338	6903	5397	
G2636	O	06/17/93	1	6	ID	5	56	39	1219	19	7123	6492	5397	
G2637	O	06/14/93	4	5	ID	6					4695	5173	5674	
G2638	O	06/14/93	3	5	ID	6					6146	5500	5674	
G2639	O	06/14/93	6	5	5	7					6287	5226	5674	
G2640	O	06/14/93	8	5	15	7					6601	6259	5674	
G2641	O	06/14/93	3	5	ID	6					6494	5789	5674	
G2642	O	06/16/93	1	6	ID	5	51	47	287	20	6483	6117	5646	
G2643	O	06/16/93	5	6	ID	7	88	47	2939	23	7346	6460	5646	
G2644	O	06/17/93	6	6	ID	7	66	39	1935	20	7020	6853	5397	

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Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G2645	O	06/17/93	9	6	15	8	54	39	1075	19	7089	6677	5397	
G2646	O	06/17/93	4	6	ID	6	54	39	1075	19	7183	6679	5397	
G2647	O	06/17/93	8	6	10	7	69	39	2151	21	7229	6847	5397	
G2648	O	06/16/93	4	6	ID	6	63	47	1147	21	7320	6214	5646	
G2649	O	06/16/93	2	6	ID	6	58	47	789	20	6671	6049	5646	
G2650	O	06/14/93	4	5	ID	6					6295	5839	5674	
G2651	O	06/14/93	9	5	20	7					6592	6172	5674	
G2652	O	06/14/93	8	5	15	7					6400	5580	5674	
G2653	O	06/14/93	1	5	ID	5					6438	5533	5674	
G2654	O	06/14/93	4	5	ID	6					6121	5997	5674	
G2655	O	06/14/93	8	5	15	7					6616	5626	5674	
G2656	O	06/16/93	2	6	ID	6	53	47	430	20	6797	5977	5646	
G2657	O	06/16/93	1	6	ID	5	41	47	ID	19	5840	5440	5646	
G2658	O	06/17/93	5	6	ID	7	66	39	1935	20	6686	6407	5397	
G2659	O	06/17/93	3	6	ID	6	59	39	1434	20	7004	6584	5397	
G2660	O	06/16/93	4	6	ID	6	60	47	932	21	7067	6390	5646	
G2661	O	06/16/93	4	6	ID	6	52	47	358	20	5272	6239	5646	
G2662	O	06/17/93	2	6	ID	6	61	39	1577	20	7163	6740	5397	
G2663	O	06/16/93	5	6	ID	7	56	47	645	20	6770	6158	5646	
G2664	O	06/16/93	6	6	ID	7	71	47	1720	22	5732	5703	5646	
G2665	O	06/16/93	3	6	ID	6	70	47	1649	22	7280	6729	5646	
G2666	O	06/16/93	3	6	ID	6	68	47	1505	21	7094	6370	5646	
G2667	O	06/16/93	4	6	ID	6	73	47	1864	22	6614	6256	5646	
G2668	O	06/16/93	6	6	ID	7	66	47	1362	21	6469	6316	5646	
G2669	O	06/16/93	2	6	ID	6	56	47	645	20	6639	5959	5646	
G2670	O	06/16/93	6	6	ID	7	56	47	645	20	6566	5747	5646	
G2671	O	06/16/93	6	6	ID	7	65	47	1290	21	8747	6355	5646	
G2672	O	06/16/93	5	6	ID	7	65	47	1290	21	6664	5892	5646	
G2673	O	06/16/93	8	6	10	7	74	47	1935	22	6840	5970	5646	
G2674	O	06/16/93	8	6	10	7	55	47	573	20	7121	5918	5646	
G2675	O	06/14/93	10	5	25	8					6275	6171	5674	
G2676	O	06/14/93	4	5	ID	6					6782	6088	5674	
G2677	O	06/14/93	5	5	ID	6					6470	6137	5674	
G2678	O	06/14/93	5	5	ID	6					6597	6210	5674	
G2679	O	06/14/93	10	5	25	8					6495	6193	5674	
G2680	O	06/14/93	6	5	5	7					6634	6539	5674	
G2681	O	06/14/93	9	5	20	7					6757	6749	5674	
G2682	O	06/14/93	12	5	35	8					6737	6488	5674	
G2683	O	06/14/93	3	5	ID	6					6696	6504	5674	
G2684	O	06/14/93	7	5	10	7					2304	2223	5674	
G2685	O	06/14/93	7	5	10	7					2412	2214	5674	
G2686	O	06/14/93	7	5	10	7					2312	2333	5674	

ID = Indistinguishable from Background
CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm^2
Beta shading indicates radioactivity >1000dpm/100cm^2

Table 18
Site Grounds Instrument Results
Radioactivity Survey
Fansteel, Inc.
(Continued)

Grounds, Surface, East Plant

GD-DIRT-EAST

Grid Loc	In/ Out	Survey Date	Alpha Gross Cts (cpm)	Alpha Bkg (cpm)	Alpha Net (dpm/ 100cm^2)	Alpha CI (dpm/ 100cm^2)	Beta-Gamma Gross Cts (cpm)	Beta-Gamma Bkg (cpm)	Beta-Gamma Net (dpm/ 100cm^2)	Beta-Gamma CI (dpm/ 100cm^2)	Gamma (Surf) cpm	Gamma (@1mtr) cpm	Gamma Bkg (cpm)	Comments
G2687	O	06/14/93	1	5	ID	5					1866	1969	5674	
G2688	O	06/16/93	3	6	ID	6	71	47	1720	22	5728	5370	5646	
G2689	O	06/16/93	4	6	ID	6	58	47	789	20	5514	5255	5646	
G2690	O	06/16/93	2	6	ID	6	45	47	ID	19	5583	5373	5646	
G2691	O	06/16/93	9	6	15	8	68	47	1505	21	6248	5650	5646	
G2692	O	06/16/93	1	6	ID	5	64	47	1219	21	6072	5553	5646	
G2693	O	06/16/93	1	6	ID	5	73	47	1864	22	6443	5911	5646	

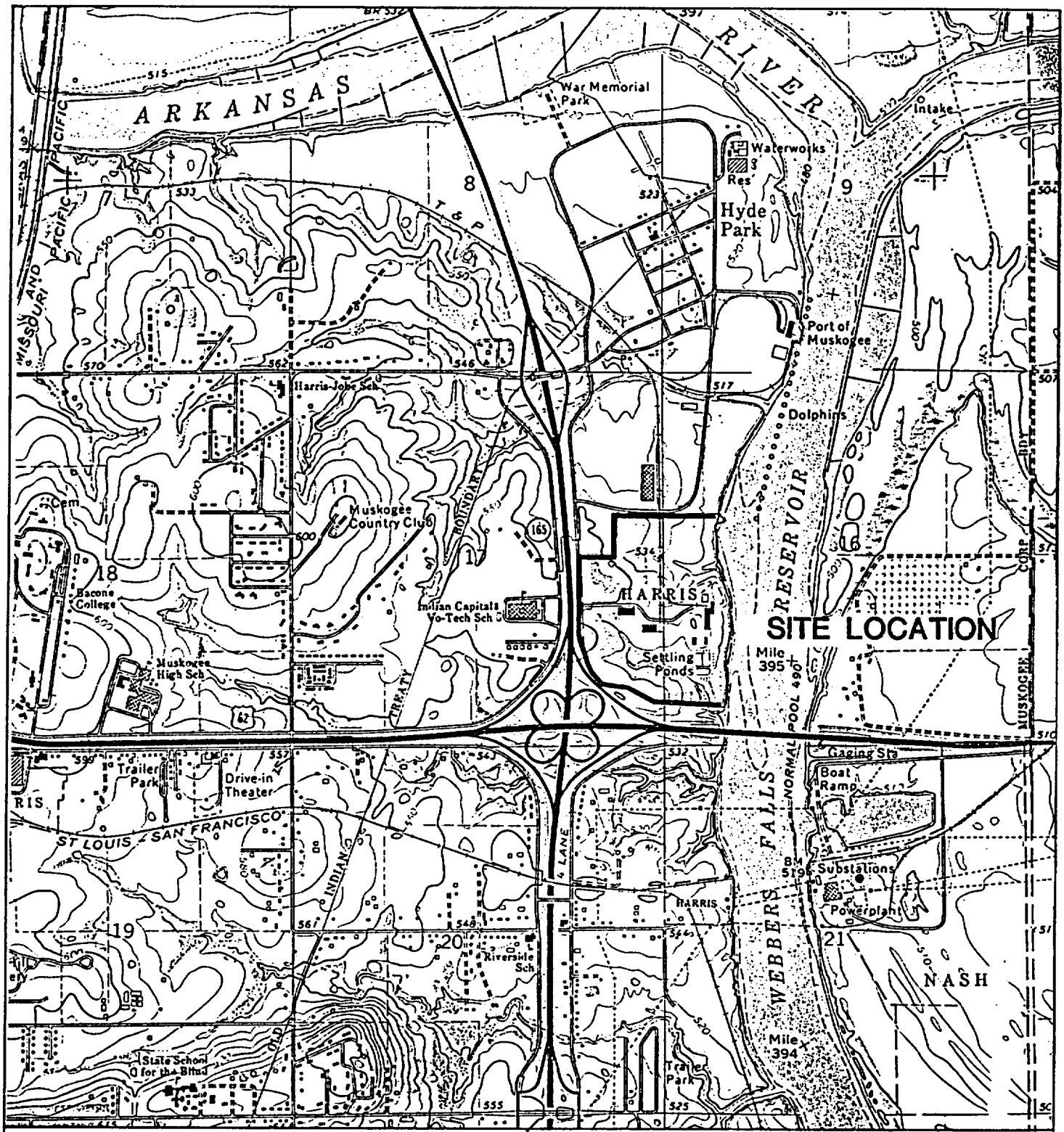
ID = Indistinguishable from Background

CI = Confidence Interval

Alpha shading indicates radioactivity >200dpm/100cm^2

Beta shading indicates radioactivity >1000dpm/100cm^2

Figures



SCALE – FEET

0 2000

N

FIGURE 1

SITE LOCATION MAP

REFERENCE
USGS 7.5-MIN TOPOGRAPHIC QUADRANGLE
NORTHEAST MUSKOGEE, OKLAHOMA
DATED 1974
SCALE 1:24000.

PREPARED FOR
FANSTEEL, INC.
MUSKOGEE, OKLAHOMA

APPROVED	JH 12/27/93
CHECKED	12/27/93
DRAWN	JWK/061593
DRAWING NUMBER	0111-A11

REVISION	DATE	DESCRIPTION

Earth Sciences Consultants, Inc.

122293-1709JWK T 0111011

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SITE PLAN
REMEDIATION ASSESSMENT
FANSTEEL, INC.
MUSKOGEE, OKLAHOMA"

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TOP OF BEDROCK CONTOUR MAP
REMEDIATION ASSESSMENT
FANSTEEL, INC.
MUSKOGEE, OKLAHOMA"

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"FIGURE 13
SUMMARY OF WASTE SAMPLE
POND SEDIMENTS
RADIOACTIVITY CONSTITUENTS
REMEDIATION ASSESSMENT
FANSTEEL, INC.
MUSKOGEE, OKLAHOMA"

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"FIGURE 14
SUMMARY OF GROUNDWATER AND SURFACE WATER QUALITY MAP FOR RADIOACTIVE CONSTITUENTS
FANSTEEL, INC.
MUSKOGEE, OKLAHOMA"

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