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**Validated Analytical Data Summary Report
for White Oak Creek Watershed
Remedial Investigation
Supplemental Sampling,
Oak Ridge National Laboratory
Oak Ridge, Tennessee**

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Energy Systems Environmental Restoration Program

**Validated Analytical Data Summary Report
for White Oak Creek Watershed
Remedial Investigation Supplemental Sampling,
Oak Ridge National Laboratory,
Oak Ridge, Tennessee**

Date Issued—September 1996

Prepared by
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Oak Ridge, Tennessee 37830
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PREFACE

This *Validated Analytical Data Summary Report for White Oak Creek Watershed Remedial Investigation Supplemental Sampling, Oak Ridge National Laboratory, Oak Ridge, Tennessee*, was prepared in accordance with requirements under the Comprehensive Environmental Response, Compensation, and Liability Act for providing support for the White Oak Creek Watershed Remedial Investigation/Feasibility Study. This work was performed under Work Breakdown Structure 1.4.12.6.1.02.45. The objective of the report is to provide an overview of the activities completed during the supplemental sampling effort and to summarize the analytical results for each of the waste area groupings addressed during the project.

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ABBREVIATIONS

CDM Federal	CDM Federal Programs Corporation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLP	Contract Laboratory Program
DOE	U.S. Department of Energy
DQO	data quality objective
Energy Systems	Lockheed Martin Energy Systems, Inc.
EPA	U.S. Environmental Protection Agency
ESP	Environmental Surveillance Procedure
FOF	Field Operations Facility
FS	feasibility study
GPS	Global Positioning System
HAZWOPER	Hazardous Waste Operations and Emergency Response
HRE	Homogeneous Reactor Experiment
LLLW	liquid low-level waste
MAD	Measurement Applications and Development
MS	matrix spike
MSD	matrix spike duplicate
ORNL	Oak Ridge National Laboratory
PCB	polychlorinated biphenyl
PEMS	Project Environmental Management System
QC	quality control
RI	remedial investigation
SWMU	solid waste management unit
SWSA	solid waste storage area
WAG	Waste Area Grouping
WOC	White Oak Creek

EXECUTIVE SUMMARY

This Validated Analytical Data Summary Report describes the fieldwork and presents the validated analytical data collected to support the White Oak Creek Watershed Remedial Investigation (RI)/Feasibility Study (FS). Data were collected at various sites at the Oak Ridge National Laboratory to support the completion of a baseline ecological risk assessment for the project. A series of Data Quality Objectives meetings, held in February 1996, identified the absence of metals data as a data gap that would require filling before the RI/FS could be completed.

Mobilization for the field activities occurred in May 1996. In June, radiation walkover surveys were conducted and/or soil samples were collected from Waste Area Groupings 3, 4, 7, and 9. The analytical data were sent off-site for analysis and subsequently validated. The validated results are presented in tabular form by location.

1. INTRODUCTION

CDM Federal Programs Corporation (CDM Federal) was tasked by the Environmental Restoration Program of Lockheed Martin Energy Systems Inc. (Energy Systems), to collect supplemental surface soil data for the remedial investigation/feasibility study (RI/FS) for the White Oak Creek (WOC) watershed. The WOC watershed RI/FS is being conducted to define a remediation approach for complying with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at Oak Ridge National Laboratory (ORNL). The data generated from these supplemental sampling activities will be incorporated into the RI/FS to aid decision makers and stakeholders with the selection of remedial alternatives and establish remediation goals for the WOC watershed.

A series of Data Quality Objective (DQO) meetings were held in February 1996 to determine data needs for the WOC watershed RI/FS. The meetings were attended by representatives from the Tennessee Department of Environment and Conservation, the U.S. Environmental Protection Agency (EPA), the U.S. Department of Energy (DOE), and contractors to DOE. During the DQO meetings, it was determined that the human health risk associated with exposure to radionuclides was high enough to establish a baseline for action; however, it was also determined that the impacts associated with other analytes (mainly metals) were insufficient for determining the baseline ecological risk. Based on this premise, it was determined that additional sampling would be required at four of the Waste Area Groupings (WAGs) included in the WOC watershed to fulfill this data gap.

1.1 SITE DESCRIPTIONS

ORNL is located approximately 25 miles from Knoxville, Tennessee. The facility is currently managed by Energy Systems for DOE and is part of the Oak Ridge Reservation in Oak Ridge, Tennessee. The WOC watershed is composed of WAGs 2, 3, 4, 5, 6, 7, 8, 9, and 10, and adjacent uncontaminated areas. Supplemental sampling activities were conducted at WAGs 3, 4, 7, and 9. Figure 1.1 shows the location of ORNL and each of the WAGs that were addressed during the supplemental sampling effort. A brief description of each of these WAGs will be provided in subsequent sections.

1.1.1 WAG 3 – Solid Waste Storage Area 3

WAG 3 is located in Bethel Valley, approximately 0.6 mile west of the west entrance to the laboratory complex. WAG 3 is composed of three solid waste management units (SWMUs): the Closed Scrap Metal Area, Solid Waste Storage Area (SWSA) 3, and the Contractors Landfill. The Closed Scrap Metal Area functioned as the contractors landfill from the early 1950s to the mid-1960s. After reaching capacity the fill area was used for the surface storage of scrap metal. SWSA 3 was opened in 1946 for the disposal of radioactively contaminated waste. The area was closed in 1951 but remained in use until 1979 for the aboveground storage of equipment exhibiting low-level radioactive contamination. The Contractors Landfill was opened in 1975 for the disposal of construction debris and fly ash from the ORNL steam plant and currently remains in operation.

Fig. 1.1. WAG location map for WOC watershed RI/FS

SWSA 3 is known to contain solid waste in the form of sanitary waste, scrap, rubble, filters, oils, asbestos, lumber, equipment, shielding, and containerized wastes. The primary radiological contaminants are ^{90}Sr , ^{137}Cs , tritium, trivalent rare earths, and transuranic isotopes (Bates 1983). A 1978 soil survey found ^{238}Pu , ^{239}Pu , ^{241}Am , and ^{244}Cm in addition to the isotopes listed above. A 1988 survey confirmed the presence of radioactive contamination in the surface soils at SWSA 3. In addition to the radiological contaminants listed above, hazardous chemical wastes are also believed to have been buried at SWSA 3 and possibly at the Contractors' Landfill.

1.1.2 WAG 4 – Solid Waste Storage Area 4

WAG 4 lies within Melton Valley approximately 0.5 mile southwest of the main ORNL facilities. The area is accessed from Lagoon Road. WAG 4 is composed of three SWMUs: SWSA 4 and Pilot Pits 1 and 2 (Area 7811), and two abandoned underground pipelines located north of Lagoon Road used to transport liquid low-level waste (LLLW). The primary concern at WAG 4 is SWSA 4. SWSA 4 was opened in 1951 after the closure of SWSA 3. SWSA 4 was used for trench and auger disposal of low- and high-activity, radioactive, solid wastes, including transuranic wastes. Contaminants of concern are ^{90}Sr , ^{137}Cs , ^{60}Co , ^{210}Po , tritium, ^{125}Sb , and ^{239}Pu . Wastes were placed in shallow auger holes and trenches and were stockpiled on the ground for future burial. Wastes disposed of at SWSA 4 included paper, clothing, filters, equipment, animal carcasses, and related laboratory waste.

Area 7811 was constructed in 1955 and used intermittently until 1985 or 1986. Area 7811 is a small 0.5-acre site located in the southwest corner of WAG 4, adjacent to SWSA 4. Area 7811 was originally used for a pilot-scale radioactive waste disposal study on the fixation of high-level waste into a stable solid. Subsequent to this pilot test, this area has been used for a coal gasification project, a municipal solid waste leaching test, a low-level radioactive waste leaching experiment, and equipment storage.

SWSA 4 has been determined to be a source of radioactive contamination reported in groundwater samples and surface water samples collected from monitoring wells, surface seeps, and surface water bodies surrounding WAG 4. Due to the nature and vast array of waste types disposed of at SWSA 4, it is likely that hazardous nonradioactive wastes were also buried at SWSA 4.

1.1.3 WAG 7 – LLLW Pits and Trenches

WAG 7 is located in Melton Valley approximately 1 mile south of the ORNL main plant area. Located within WAG 7 are approximately 23 SWMUs including pits and trenches used for the disposal of LLLW, fuel wells that contained acid solutions enriched primarily with uranium from the Homogeneous Reactor Experiment (HRE), experimental hydrofracture injection sites, leak sites, shielded transfer tanks, and a decontamination facility. The seven pits and trenches have been determined to be the primary concern with regard to radioactivity. An estimated 42 million gal of LLLW containing an estimated 1.2 million Ci of beta radioactivity were transferred to these disposal units. It has been estimated that ~200,000 Ci of ^{90}Sr , 600,000 Ci of ^{137}Cs , and smaller volumes of uranium and transuranic isotopes remain at the facility.

The *Environmental Data Package for the ORNL Seepage Pits and Trenches Waste Area Grouping*, ORNL/RAP-10 (Spalding 1987) provides a complete compilation and summary of historical data, past releases, references, engineering drawings, and photographs for WAG 7. Surface seepage has been observed from six of the seven pits and trenches that were previously used

for disposal operations. Release of contaminants from WAG 7 has resulted in known or suspected contamination of soils, sediments, vegetation, biota, groundwater, and surface water.

1.1.4 WAG 9 – Homogeneous Reactor Experiment Area

WAG 9 is located in Melton Valley approximately 0.6 mile southeast of the ORNL plant facilities. Thirteen SWMUs have been identified at WAG 9, which include the HRE surface impoundment, two inactive low-level waste collection and storage tanks, a septic tank, a designated trash area, the waste evaporator, the waste evaporator loading area, the HRE cooling tower, the HRE reactor building, an absorber pit, valve pits, and a soil decontamination shed. The HRE surface impoundment was an unlined 316,000-gal earthen structure constructed in 1955 to hold contaminated condensate from the HRE waste evaporator. The impoundment was used for this purpose between 1957 to 1961. It was later used to house low-level shield water generated during cell maintenance. The impoundment was backfilled with clean fill and covered with asphalt in 1970 to minimize infiltration.

Release of contaminants from the WAG 9 facilities has resulted in known or suspected contamination of surface soils, subsurface soils, groundwater, and surface water. Although radiological contamination has been determined to be the most widespread concern, nonradioactive contamination is also believed to be a concern for surface and subsurface soils since groundwater samples collected from wells that are believed to contain contaminants originating from WAG 9 have reported elevated concentrations of both organics and metals.

2. OVERVIEW OF FIELD PROGRAM

2.1 OBJECTIVE OF THE WHITE OAK CREEK WATERSHED RI/FS

The objective of the WOC watershed RI/FS is to identify cleanup goals for CERCLA remediation projects. These goals will be developed using the results of a watershed-wide risk assessment and evaluation of potential remedial actions. The goals will identify contaminant concentrations at specific locations (sites) that are protective of human health and the environment and can be achieved in a cost-effective manner. A secondary objective of the watershed RI/FS is to identify specific actions that can be implemented to achieve the cleanup goals, and a sequence for implementation of remediation projects.

2.2 DATA QUALITY OBJECTIVES

The primary rationale for supplemental sampling was the fact that ecological risks could not be characterized using only radiological data and the required data had never been collected. The objectives of the supplemental surface soil sampling project were met with definitive data [formerly known as EPA quality control (QC) Level C data] as defined by *Data Quality Objectives Process For Superfund, Interim Final Guidance* (EPA 1993). All surface soil samples collected during the supplemental sampling activities were shipped to Lockheed Analytical Services in Las Vegas, Nevada, where they were analyzed for selected parameters using EPA-approved methods. The analytical requirements for each WAG or site within a particular WAG were based on data gaps identified during the review of existing data. To ensure that the quality of the analytical data is sufficient to be used for risk assessment purposes, all of the analytical data generated by Lockheed Analytical Services has been validated to meet Level C requirements as defined by ES/ER/TM-16 (Energy Systems 1992). In addition, 10% of the data packages has undergone validation consistent with ES/ER/TM-16 Level D validation.

2.3 OVERVIEW OF FIELD ACTIVITIES

2.3.1 Mobilization

Mobilization activities occurred from May 27 to June 4, 1996. Activities completed during mobilization included procurement of equipment and supplies, procurement of and coordination with the subcontracted analytical laboratory, procurement of site access clearance (Melton Valley Access), and completion of the readiness review. CDM Federal used existing facilities at the Environmental Restoration Field Operations Facility (FOF) for storage of equipment and supplies. While CDM Federal was mobilizing, the Energy Systems Measurement Applications and Development (MAD) Group conducted radiation walkover surveys at WAGs 3, 7, and 9 to locate the sampling locations specified in the *Sampling and Analysis Plan for White Oak Creek Watershed Remedial Investigation Supplemental Sampling*, Oak Ridge National Laboratory, Oak Ridge, Tennessee, ORNL/ER-369 (Energy Systems 1996).

Training and Site Access. All CDM Federal personnel were required to have 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training and 8-hour HAZWOPER annual refresher training in accordance with 29 CFR 1910.120. All personnel were

also required to have HAZWOPER Site Safety and Health Officer training and First Aid/CPR training, be respirator fit tested, and be actively participating in a medical monitoring program. Site-specific training requirements included General Employee Training, General Employee Radiation Training, Radiological Worker II Training, and Defensive Driving and Nonpaved Surfaces. All CDM Federal personnel completed a whole body count before entering the field and are currently participating in the ORNL bioassay program.

Site access requirements included Melton Valley Access clearance, an ORNL photo ID badge, and a thermoluminescent dosimeter. All work performed within a posted radiological area had to be completed under a radiological work permit.

Procurement of Equipment and Supplies. As CDM Federal received equipment and supplies, equipment was inventoried and checked to ensure that it was functioning correctly and that it was the proper equipment required to complete the activities specified in the sampling and analysis plan.

Readiness Review. A readiness review meeting was held on June 3, 1996, with representatives from Energy Systems and CDM Federal in attendance. A brief overview of the sampling required, anticipated schedule, and potential issues and concerns were addressed at that time. Final approval and signature of the project plans had been received before the readiness review meeting so that sampling activities could begin.

Radiation Walkover Survey. Radiation walkover surveys were conducted at WAGs 3, 7, and 9 by the MAD Group from ORNL. The objective of these surveys was to locate and mark "hot spots" identified during previous sampling activities at the selected WAGs. The hot spots were located using gamma scintillators, GM probes, and microrem meter. The data were reported in millirems/hour at the surface and 1 m above the surface. Table 2.1 summarizes the readings for each of the locations marked during the walkover surveys. Each location was marked with a wooden survey stake so that the field team could find the location during sample collection activities.

WAG 4 sampling locations were identified by the Energy Systems technical lead based on seep locations and existing nonradiological data needs rather than a radiological walkover survey. The *Site Investigation Report for Waste Area Grouping 4*, ORNL/ER-279 (Energy Systems 1994) provides the necessary radiological characterization for WAG 4.

2.3.2 Supplemental Sampling Activities

Surface Soil Sample Collection. Field operations for surface soil sampling were conducted in accordance with SOP-ESP-003.11, "Surface Soil Sampling with Spade, Trowel, Knife, Spoon, or Spatula." All samples were collected with a stainless steel scoop from a depth of 0 to 6 in. Individual sample aliquots were placed in a stainless steel bowl and composited before being placed into the prelabeled sample containers. All sampling locations were screened for alpha, beta, and gamma activity by a representative from the MAD Group before and during the sample collection process. The activity measured for each type of radiation was recorded in the field logbook and has been included in the sample summary Table 2.1. All equipment and personnel were also scanned/frisked before leaving a given site to ensure that contamination was not removed from the site.

Table 2.1. Summary of dose rates at sampling locations identified during radiation walkover surveys

Location ID	Stake ID	Dose rate (mrem/h) ^a		Description of location
		1 m above ground surface	Ground surface	
WAG 3 ^b				
SWSA3-1	WG3-2	0.4	2	90° W of true N, 266' from well 491
SWSA3-2	WG3-3	5	6	10° W of true N, 52' from well 492
SWSA3-3	WG3-5	0.8	5.5	120° E of true N, 177' from well 493
SWSA3-4	WG3-7	0.2	2	15° E of true S, 22' from well 493
SWSA3-5	WG3-8	0.05	0.1	77° E of true N, 97' from well 995, (6.5' from SWSA-3 fence)
Landfill 2	WG3-12	0.03	0.05	10° E of true S, 250' from well 790
Landfill 3	WG3-11	0.03	0.05	50° W of true N, 114' from well 1247
WAG 7 ^c				
Seep 1	WG7-1	1.3	7	35° E of true N, 137' from well 124
Seep 2	WG7-2	0.03	0.04	52° E of true N, 50' from well 124
Seep 3	WG7-3	0.2	3	80° E of true N, 45' from well 1077
Seep 4	WG7-4	0.04	0.04	30° E of true S, 57' from well 106
Seep 5	WG7-5	0.08	0.1	located adjacent to well 84
Seep 6	WG7-6	0.2	0.2	located adjacent to well 83
Seep 7	WG7-7	0.04	0.05	130° W of true N, 24' from well 97
LnLeak7b	WG7-9	1.2	6	60° E of true N, 35.5' from LLW Line 1
WAG 9				
HREDown 1	WG9-2	2	1.8	58' N, 28' W of well 1096
HREDown 2	WG9-3	3.3	7	41' N, 10' W of well 1096
HREDown 3	WG9-5	20000	1.6	11' S, 29' E of well 673
HREDown 4	WG9-6	4000	0.6	20' S of well 1096
HREDrain 1	WG9-8	3000	0.6	52'S, 18' W of well 1097
HREDrain 2	WG9-10	6000	1	40' S, 27' E of well 1097
HREDrain 3	WG9-11	6000	NR	48' S, 120' W of well 1097

^a Measurements were collected with a Bicron microrem meter.

^b Table does not include the two random "non-hot" spot locations from SWSA 3 area and the three locations from the Metals Scrap Yard.

^c Table does not include four random "non-hot" spot locations downgradient of Pits 2, 3, and 4.

Documentation and Records Management. Sample handling and sample identification requirements followed the procedures outlined in ER/ES/TM-16 and the Project Environmental Management System (PEMS). The objectives of the PEMS are to provide organization, integrity, security, traceability, and consistency of the data generated during a project. Specifically, the PEMS will support the project data life cycle including field sampling preparation; field measurements; sample tracking; laboratory analyses; data verification, validation, and assessment; data storage; and the transfer of data to the Oak Ridge Environmental Information System.

All sampling forms and logbooks were assigned a unique number and barcode label. These records were then tracked through the project database, ensuring legal defensibility. By scanning the barcode, the number of the form was recorded in the field by the field technician and then by the clerk who entered the information contained on the form into the PEMS.

Sample bottles were affixed with a barcode that carried the unique sample number. The sample number is linked to sample information (i.e., analysis, analytical method number, preservation requirements, volume requirements, etc.) in the database. After the sample was collected, the field technician scanned the barcode with an LDT Barcode Reader. At the conclusion of the sampling event, the data stored in the barcode reader was transferred to PEMS, and a completed chain-of-custody was printed for shipment of the samples to the analytical laboratory.

Equipment Decontamination. All surface soil sampling equipment was decontaminated between samples at the WAG 5 decontamination facility in accordance with Energy Systems Environmental Surveillance Procedure (ESP) 405-1 (formerly ESP-900).

All decontamination fluids were left onsite at the decontamination facility. Personal protective clothing (e.g., gloves) generated during the sampling and decontamination process was placed in a clear plastic rad bag and temporarily stored within the designated radiological buffer area at the WAG 5 decon facility until it could be surveyed by ORNL Health Physics and disposed of or placed in a permanent storage container.

Audits and Surveillances. A surveillance was conducted by Energy Systems of the WOC watershed supplemental sampling activities on June 11, 1996. No deficiencies were noted during the surveillance. CDM Federal did not complete an internal audit or surveillance because the field program was less than 2 weeks and because a surveillance had been completed by Energy Systems.

2.3.3 Global Positioning System Survey

After completing sampling at all sites, CDM Federal personnel and representatives from the Automated Sciences Group located each of the sampling locations using Global Positioning System (GPS). Differentially corrected GPS coordinates were obtained using Ashtech ME-XII dual-frequency codeless GPS receivers and dual frequency antennas. Real-time GPS positions were also obtained where possible using the commercially available AccQpoint® real-time range corrections, which provided sub-meter subscription. For sites where real-time signal was not obtainable, 10 minutes of static GPS data were collected at 20-second intervals. These data were collected and post-processed using the course/acquisition processing Ranger® software from Ashtech. Coordinate data were collected as latitude and longitude and converted to the local ORNL Plant Grid Coordinate System using the TORC program. These data were imported into an Arc/Info geographic information system coverage and then converted to Map/Info files for the purpose of creating a sampling location map.

2.4 SUMMARY OF SAMPLE COLLECTION REQUIREMENTS

A total of 56 samples were collected (including quality assurance/QC samples) during the WOC watershed RI/FS supplemental sampling effort. Sections 2.4.1–2.4.4 provide a summary of the sample collection requirements for each of the four WAGs addressed during the supplemental sampling effort. Table 2.2 provides a summary of relevant information pertaining to each of the samples collected during the WOC watershed RI/FS supplemental sampling effort, including sample IDs, stake numbers, locations, beta/gamma activities, and dose rate measured during collection of the samples, and the grid coordinate locations based on the GPS survey. The unvalidated analytical data for all samples collected and analyzed during the supplemental sampling effort have been included as Appendix A.

2.4.1 WAG 3 – Solid Waste Storage Area 3

Sampling at WAG 3 was started on June 5, 1996, and completed on June 6, 1996. A total of 19 samples (including QC samples) were collected during this period. Sampling locations are shown in Fig. 2.1. WAG 3 is divided into three waste units: SWSA 3, the Metals Scrap Yard, and the Contractors Landfill. A total of eight samples (seven locations) were collected from the SWSA 3 area, which included one duplicate sample from sample location SWSA3-7. Four of the samples were collected from hot spots identified during the radiation walkover survey. The remaining three sample locations were random non-hot spot locations. A total of four samples (three locations) were collected from the Contractors Landfill Area, which included one matrix spike/matrix spike duplicate (MS/MSD) sample from sample location Landfill 1. Samples collected from SWSA 3 and the Contractors Landfill were analyzed for gross alpha, gross beta, gamma, isotopic uranium, Contract Laboratory Program (CLP) metals, and CLP polychlorinated biphenyls (PCBs). Three locations were sampled in the Metals Scrapyard (total of five samples—three samples, one MS/MSD, and one duplicate). Samples from the Metals Scrapyard were analyzed for CLP metals and CLP PCBs only. In addition to the samples described above, a source water sample was collected from the deionized water system located at the FOF and an equipment rinseate sample was collected from the sampling equipment after the equipment had been decontaminated. Elevated beta/gamma activity and dose rate were measured during sampling at several of the sampling locations within SWSA 3.

2.4.2 WAG 4 – Solid Waste Storage Area 4

CDM Federal completed the collection of supplemental surface soil samples from WAG 4 on June 13, 1996. All samples were collected from known seep locations. A total of ten samples were collected and submitted for analysis. Sampling locations for WAG 4 are shown in Fig. 2.2. The sample breakdown for WAG 4 was as follows: seven designated surface soil, one source water (deionized water), one equipment rinseate, and one duplicate collected from the area identified as Seep 7. Since it had been determined that the existing data were sufficient to characterize WAG 4 with regard to radiological contamination, no samples were collected for those parameters. Samples were collected at non-hot spot locations and analyzed for CLP metals and PCBs.

Table 2.2. Sample summary table for WOC Watershed RI/FS Supplemental Sampling (1996)

Location ID	Stake ID	Collection date	Radiological field screening results		Grid coordinates ^a
			Beta/gamma (cpm)	Dose rate (mR/h)	
WAG 3					
SWSA3-1	WG3-2	6/5/96	10,000	2-3	N 21,883.17 E 26,281.37
SWSA3-2	WG3-3	6/5/96	400,000	60	N 21,822.52 E 26,269.21
SWSA3-3	WG3-5	6/5/96	30,000	8	N 21,649.79 E 26,063.86
SWSA3-4	WG3-7	6/5/96	4,000	0.3	N 21,782.22 E 25,998.28
SWSA3-5	WG3-8	6/6/96	700	0.1	N 21,993.63 E 25,964.59
SWSA3-6	SWSA3-6	6/6/96	60	NR	N 21,835.15 E 26,637.77
SWSA3-7	SWSA3-7	6/6/96	70	NR	N 21,601.34 E 26,308.35
Landfill 1	WG3-13	6/6/96	70	NR	N 21,813.66 E 25,560.71
Landfill 2	WG3-12	6/6/96	300	NR	N 21,291.97 E 25,181.67
Landfill 3	WG3-11	6/6/96	250	NR	N 21,373.38 E 24,774.05
Scrapyd-1	Scrapyd-1	6/6/96	70	NR	N 21,319.94 E 26,273.21
Scrapyd-2	Scrapyd-2	6/6/96	60	NR	N 21,182.60 E 26,244.75
Scrapyd-3	Scrapyd-3	6/6/96	60	NR	N 21,274.67 E 26,347.39
WAG 4					
Seep 1	Seep 1	6/13/96	70	NR	N 18,881.94 E 28,734.68
Seep 2	Seep 2	6/13/96	1,000	0.02	N 19,020.29 E 28,211.81
Seep 3	Seep 3	6/13/96	5,000	0.5	N 19,063.11 E 28,136.68
Seep 4	Seep 4	6/13/96	20,000	0.2	N 19,132.14 E 27,938.69
Seep 5	Seep 5	6/13/96	8,000	1	N 19,041.15 E 27,899.22
Seep 6	Seep 6	6/13/96	900	0.1	N 19,091.98 E 27,746.76
Seep 7	Seep 7	6/13/96	900	0.5	N 18,859.99 E 27,432.33
WAG 7					
Downgradient 1	Downgradient 1	6/11/96	100	NR	N 17,365.60 E 25,704.61
Downgradient 2	Downgradient 2	6/11/96	80	NR	N 17,272.48 E 25,633.69
Downgradient 3	Downgradient 3	6/11/96	80	NR	N 17,557.89 E 25,712.57
Downgradient 4	Downgradient 4	6/11/96	80	NR	N 17,736.58 E 25,731.55
Seep 1	WG7-1	6/11/96	50,000	10	N 17,953.73 E 26,189.22
Seep 2	WG7-2	6/11/96	200	NR	N 17,934.84 E 26,097.70
Seep 3	WG7-3	6/11/96	24,000	3	N 17,884.66 E 25,878.84
Seep 4	WG7-4	6/11/96	300	NR	N 17,473.82 E 25,559.31

Table 2.2 (continued)

Location ID	Stake ID	Collection date	Radiological field screening results		Grid coordinates ^a
			Beta/gamma (cpm)	Dose rate (mR/h)	
WAG 7 (continued)					
Seep 5	WG7-5	6/11/96	400	NR	N 17,165.86 E 26,242.52
Seep 6	WG7-6	6/11/96	700	0.2	N 17,265.42 E 26,205.05
Seep 7	WG7-7	6/11/96	200	NR	N 17,604.94 E 26,240.38
LnLeak7b	WG7-9	6/12/96	20,000	NR	N 17,592.38 E 28,024.33
WAG 9					
HREDown 1	WG9-2	6/10/96	18,000	10	N 18,723.58 E 31,541.71
HREDown 2	WG9-3	6/10/96	20,000	6	N 18,677.26 E 31,562.47
HREDown 3	WG9-5	6/10/96	20,000	1.6	N 18,583.27 E 31,538.64
HREDown 4	WG9-6	6/10/96	4,000	0.6	N 18,628.97 E 31,543.66
HREDrain 1	WG9-8	6/10/96	3,000	0.6	N 18,415.74 E 31,473.47
HREDrain 2	WG9-10	6/10/96	6,000	1	N 18,351.71 E 31,536.37
HREDrain 3	WG9-11	6/10/96	6,000	NR	N 18,368.04 E 31,388.91

^aCoordinates are in ORNL Plant Grid Coordinate System.

Fig. 2.1. Supplemental surface soil sampling locations for WAG 3

Fig. 2.2. Supplemental surface soil sampling locations for WAG 4

2.4.3 WAG 7 – LLLW Pits and Trenches

Sampling at WAG 7 was conducted on June 11 and June 12, 1996. Samples were collected at seven historical seeps, four random (non-hot spot) locations downgradient of Pits 2, 3, and 4, and one at the Line Leak Site 7b for a total of 12 locations. Sampling locations for WAG 7 are shown in Fig. 2.3. However, the total of 17 samples were collected from WAG 7 including QC samples. Duplicate samples were collected from the Line Leak Site 7b and Seep 1. An MS/MSD sample was collected from random downgradient non-hot spot #1. In addition, a source water blank consisting of deionized water from the FOF used to decontaminate equipment and an equipment rinseate sample were collected in conjunction with the sampling activities at WAG 7. The analytical requirements for these samples were as follows; gross alpha, gross beta, gamma, isotopic uranium, ^{99}Tc , ^{239}Pu , ^{230}Th , ^{237}Np , CLP metals, and CLP PCBs.

2.4.4 WAG 9 – Homogeneous Reactor Experiment Area

Sampling at WAG 9 was conducted on June 10, 1996. WAG 9 was divided into two areas: the floodplain area and the HRE Impoundment. Three locations were sampled from the floodplain area and four locations within the HRE Impoundment. Sampling locations for WAG 9 are shown in Fig. 2.4. Eight samples were collected from WAG 9 with the following sample breakdown: seven surface soil locations, one duplicate from floodplain area sample #1, one equipment rinseate, and one source water blank from the deionized water system at the FOF. The analytical requirements for WAG 9 samples were gross alpha, gross beta, gamma, isotopic uranium, CLP metals, and CLP PCBs.

Fig 2.3. Supplemental surface soil sampling locations for WAG 7

Fig. 2.4. Supplemental surface soil sampling locations for WAG 9

3. REFERENCES

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Appendix A

EXPLANATION OF DATA SUMMARY PRESENTATION

Appendix A**EXPLANATION OF DATA SUMMARY PRESENTATION**

CDM Federal Programs Corporation received the final data packages and electronic deliverables from Lockheed Analytical Services on July 15, 1996. All data packages were checked for completeness and forwarded to the data validation subcontractor. Once validation was completed, laboratory data qualifiers were replaced with validation qualifiers. The analytical data from the WOC watershed RI/FS supplemental sampling project have been summarized in the following tables. Table A.1 provides a listing of data validation qualifiers for organics, inorganics, and radionuclides. Tables A.2 through A.12 summarize the results by analysis (i.e., metals, radionuclides, PCBs) for each WAG.

Tables A.13 through A.23 provide a summary of samples with reported concentrations or activities exceeding the method detection limit or method detection activity for each compound, analyte, or isotope. The results shown in Tables A.13 through A.23 have not been compared to any background, regulatory, or risk-based thresholds. If there are two sample identification numbers for one location within a WAG, the second sample identification number denotes a field replicate (duplicate) sample taken at that particular sample location.

During the sampling event, appropriate quality control (QC) samples (i.e., equipment rinseates, field blanks, matrix spike, and matrix spike duplicates) were collected. The results for QC samples have not been included in the summary tables.

Table A.1. Data validation qualifiers for organics, inorganics, and radionuclides

Qualifier	Definition
U	Constituent was analyzed for but not detected.
J	Estimated value – constituent detected at or less than the method detection limit or method detection activity for a compound, analyte, or isotope.
UJ	This compound, analyte, or isotope was not detected at or above the reported sample method detection limit or method detection activity. However, the reported detection limit is approximate and may not represent the actual limit of detection necessary to accurately and precisely measure the analyte in the sample.

Location	Sample ID	Parameter Name	Result	Qual	Units
LANDFILL	B00004	PCB-1260	17	U	UG/KG
		PCB-1254	17	U	UG/KG
		PCB-1242	17	U	UG/KG
		PCB-1016	17	U	UG/KG
		PCB-1232	17	U	UG/KG
		PCB-1221	17	U	UG/KG
		PCB-1248	17	U	UG/KG
LANDFILL	B00007	Nickel	17.6	U	MG/KG
		Potassium	2100		MG/KG
		Calcium	5480		MG/KG
		Vanadium	29.4		MG/KG
		Thallium	1.3	U	MG/KG
		Arsenic	6.9		MG/KG
		Cadmium	1.3	U	MG/KG
		Barium	62		MG/KG
		Aluminum	23400		MG/KG
		Zinc	921	U	MG/KG
		Sodium	471		MG/KG
		Silver	1.8	U	MG/KG
		Lead	31.3		MG/KG
		Cobalt	13.9		MG/KG
		Antimony	0.76	U	MG/KG
		Magnesium	2010		MG/KG
		Iron	41800		MG/KG
		Chromium	27.4		MG/KG
		Beryllium	0.78		MG/KG
		Copper	25.3		MG/KG
		Manganese	464		MG/KG
LANDFILL	B00011	Selenium	0.76	U	MG/KG
		PCB-1260	51		UG/KG
		PCB-1242	15	U	UG/KG
		PCB-1232	15	U	UG/KG
		PCB-1221	15	U	UG/KG
		PCB-1248	15	U	UG/KG
		PCB-1016	15	U	UG/KG
LANDFILL	B00012	PCB-1254	15	U	UG/KG
		Nickel	14.7	U	MG/KG
		Calcium	36300		MG/KG
		Zinc	47.9	U	MG/KG
		Sodium	412		MG/KG
		Silver	1.6	U	MG/KG
		Lead	27.7		MG/KG
		Cobalt	14.3		MG/KG
		Cadmium	1.2	U	MG/KG
		Barium	93.2		MG/KG
		Arsenic	4.9		MG/KG
		Iron	24500		MG/KG
		Chromium	24.1		MG/KG
		Beryllium	0.73		MG/KG
		Copper	13.2		MG/KG
		Manganese	1200		MG/KG
		Aluminum	18700		MG/KG
LANDFILL	B00012	Antimony	0.7	U	MG/KG
		Thallium	1.2	U	MG/KG
		Magnesium	6610		MG/KG
		Vanadium	25.7		MG/KG
LANDFILL	B00012	Selenium	0.7	U	MG/KG
		Potassium	1560		MG/KG
LANDFILL	B00014	PCB-1260	160		UG/KG

Table A.2
and
Table A.3Metals Analyses (MG/KG)
PCB Analyses(UG/KG)

Location	Sample ID	Parameter Name	Result	Qual	Units
		PCB-1254	17		UG/KG
		PCB-1232	17		UG/KG
		PCB-1221	17		UG/KG
		PCB-1016	17		UG/KG
		PCB-1248	17		UG/KG
		PCB-1242	17		UG/KG
LANDFILL	B00015	Nickel	16.1	U	MG/KG
		Selenium	0.84	U	MG/KG
		Calcium	7940		MG/KG
		Magnesium	2150		MG/KG
		Arsenic	4.3		MG/KG
		Cadmium	1.4	U	MG/KG
		Lead	26.6		MG/KG
		Sodium	291		MG/KG
		Silver	2	U	MG/KG
		Iron	21600		MG/KG
		Chromium	20.3		MG/KG
		Beryllium	0.79		MG/KG
		Copper	17.6		MG/KG
		Manganese	574		MG/KG
		Aluminum	13300		MG/KG
		Zinc	69.1		MG/KG
		Cobalt	9.4		MG/KG
		Barium	158		MG/KG
		Antimony	0.84	U	MG/KG
		Thallium	1.4	U	MG/KG
		Vanadium	20.8		MG/KG
		Potassium	1920		MG/KG
SCRPYARD	B00016	Nickel	18.1	U	MG/KG
		Zinc	58.1		MG/KG
		Sodium	342		MG/KG
		Silver	1.7	U	MG/KG
		Lead	28.7		MG/KG
		Cobalt	10.2		MG/KG
		Cadmium	1.2	U	MG/KG
		Barium	173		MG/KG
		Arsenic	3.4		MG/KG
		Iron	23500		MG/KG
		Chromium	19.6		MG/KG
		Beryllium	1		MG/KG
		Copper	18.1		MG/KG
		Mercury	0.13	U	MG/KG
		Manganese	443		MG/KG
		Aluminum	15400		MG/KG
		Antimony	0.74	U	MG/KG
		Thallium	1.2	U	MG/KG
		Magnesium	2530		MG/KG
		Vanadium	21.3		MG/KG
		Selenium	0.74	U	MG/KG
		Calcium	5920		MG/KG
		Potassium	2080		MG/KG
SCRPYARD	B00019	Nickel	15.3	U	MG/KG
		Zinc	46.7		MG/KG
		Sodium	329		MG/KG
		Silver	1.6	U	MG/KG
SCRPYARD	B00019	Lead	27.7		MG/KG
		Cobalt	6.3		MG/KG
		Cadmium	1.1	U	MG/KG
		Barium	113		MG/KG

Table A.2
and
Table A.3Metals Analyses (MG/KG)
PCB Analyses(UG/KG)

Location	Sample ID	Parameter Name	Result	Qual	Units
		Arsenic	7.6		MG/KG
		Iron	31200		MG/KG
		Chromium	27.1		MG/KG
		Beryllium	1.3		MG/KG
		Copper	13.1		MG/KG
		Mercury	0.12	U	MG/KG
		Manganese	313		MG/KG
		Aluminum	11200		MG/KG
		Potassium	1220		MG/KG
		Calcium	1810		MG/KG
		Magnesium	1280		MG/KG
		Antimony	0.68	U	MG/KG
		Thallium	1.1	U	MG/KG
		Vanadium	34.6		MG/KG
		Selenium	0.68	U	MG/KG
SCRPYARD	B00020	Nickel	12.4	U	MG/KG
		Zinc	48.6		MG/KG
		Silver	1.6	U	MG/KG
		Lead	37.5		MG/KG
		Cobalt	6		MG/KG
		Cadmium	1.2	U	MG/KG
		Barium	126		MG/KG
		Arsenic	2.1		MG/KG
		Antimony	0.7	U	MG/KG
		Thallium	1.2	U	MG/KG
		Iron	16200		MG/KG
		Chromium	15.4		MG/KG
		Beryllium	0.81		MG/KG
		Copper	16.2		MG/KG
		Mercury	0.18		MG/KG
		Manganese	267		MG/KG
		Aluminum	11800		MG/KG
		Sodium	413	U	MG/KG
		Magnesium	1690		MG/KG
		Vanadium	17.3		MG/KG
		Potassium	1630		MG/KG
		Selenium	0.7	U	MG/KG
		Calcium	2430		MG/KG
SCRPYARD	B00021	Nickel	15.5	U	MG/KG
		Thallium	1.1	U	MG/KG
		Magnesium	2240		MG/KG
		Zinc	53.3		MG/KG
		Sodium	374		MG/KG
		Silver	1.6	U	MG/KG
		Lead	26		MG/KG
		Cobalt	8.1		MG/KG
		Cadmium	1.1	U	MG/KG
		Barium	168		MG/KG
		Arsenic	3.4		MG/KG
		Iron	23700		MG/KG
		Chromium	19.6		MG/KG
		Beryllium	1		MG/KG
		Copper	17.1		MG/KG
SCRPYARD	B00021	Mercury	0.21		MG/KG
		Manganese	314		MG/KG
		Aluminum	14800		MG/KG
		Antimony	0.68	U	MG/KG
		Vanadium	24.1		MG/KG
		Potassium	2020		MG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
		Selenium	0.68	U	MG/KG
		Calcium	2960		MG/KG
SWSA3-1	B00023	PCB-1260	16	U	UG/KG
		PCB-1242	16	U	UG/KG
		PCB-1248	16	U	UG/KG
		PCB-1232	16	U	UG/KG
		PCB-1221	16	U	UG/KG
		PCB-1016	16	U	UG/KG
		PCB-1254	16	U	UG/KG
SWSA3-1	B00024	Nickel	23.3	U	MG/KG
		Iron	51000		MG/KG
		Chromium	25.9		MG/KG
		Beryllium	1		MG/KG
		Copper	26.6		MG/KG
		Manganese	1220		MG/KG
		Aluminum	27400		MG/KG
		Zinc	66.1		MG/KG
		Sodium	401		MG/KG
		Silver	1.8	U	MG/KG
		Lead	44.1		MG/KG
		Cobalt	23.3		MG/KG
		Cadmium	1.3	U	MG/KG
		Barium	84.4		MG/KG
		Arsenic	7.5		MG/KG
		Antimony	0.76	U	MG/KG
		Thallium	1.3	U	MG/KG
		Magnesium	1500		MG/KG
		Vanadium	31.1		MG/KG
		Selenium	0.76	U	MG/KG
		Calcium	1160		MG/KG
		Potassium	2350		MG/KG
SWSA3-2	B00026	PCB-1260	18	U	UG/KG
		PCB-1254	18		UG/KG
		PCB-1248	18		UG/KG
		PCB-1221	18		UG/KG
		PCB-1232	18		UG/KG
		PCB-1016	18		UG/KG
		PCB-1242	18		UG/KG
SWSA3-2	B00027	Nickel	14.9	U	MG/KG
		Potassium	1990		MG/KG
		Selenium	0.78	U	MG/KG
		Calcium	2980		MG/KG
		Iron	44800		MG/KG
		Chromium	26.2		MG/KG
		Beryllium	0.79		MG/KG
		Copper	19.6		MG/KG
		Manganese	936		MG/KG
		Aluminum	21800		MG/KG
		Zinc	45.5		MG/KG
		Sodium	378	U	MG/KG
		Silver	1.8	U	MG/KG
SWSA3-2	B00027	Lead	36.7		MG/KG
		Cobalt	12.9		MG/KG
		Cadmium	1.3	U	MG/KG
		Barium	57.6		MG/KG
		Arsenic	6.9		MG/KG
		Antimony	0.78	U	MG/KG
		Thallium	1.3	U	MG/KG
		Magnesium	1380		MG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
		Vanadium	30.8		MG/KG
SWSA3-3	B00029	PCB-1260	28		UG/KG
		PCB-1254	17	U	UG/KG
		PCB-1248	17	U	UG/KG
		PCB-1221	17	U	UG/KG
		PCB-1232	17	U	UG/KG
		PCB-1016	17	U	UG/KG
		PCB-1242	17	U	UG/KG
SWSA3-3	B00030	Nickel	14.7	U	MG/KG
		Potassium	2070		MG/KG
		Thallium	1.2	U	MG/KG
		Magnesium	1330		MG/KG
		Chromium	22.8		MG/KG
		Beryllium	0.7		MG/KG
		Copper	16.7		MG/KG
		Manganese	1440		MG/KG
		Aluminum	19000	U	MG/KG
		Zinc	43.4		MG/KG
		Sodium	346	U	MG/KG
		Silver	1.7	U	MG/KG
		Lead	28.5		MG/KG
		Cobalt	13.8		MG/KG
		Cadmium	1.2	U	MG/KG
		Barium	56.5		MG/KG
		Arsenic	6.2		MG/KG
		Iron	39600		MG/KG
		Antimony	0.72	U	MG/KG
		Vanadium	28.1		MG/KG
		Selenium	0.72	U	MG/KG
		Calcium	1660		MG/KG
SWSA3-4	B00032	PCB-1260	17	U	UG/KG
		PCB-1221	17	U	UG/KG
		PCB-1232	17	U	UG/KG
		PCB-1016	17	U	UG/KG
		PCB-1254	17	U	UG/KG
		PCB-1242	17	U	UG/KG
		PCB-1248	17	U	UG/KG
SWSA3-4	B00033	Nickel	14.1	U	MG/KG
		Potassium	1780		MG/KG
		Iron	25800		MG/KG
		Chromium	11.9		MG/KG
		Beryllium	2.4		MG/KG
		Copper	21.8		MG/KG
		Manganese	1210		MG/KG
		Aluminum	16300		MG/KG
		Zinc	48.3		MG/KG
		Lead	31		MG/KG
		Cobalt	13.2		MG/KG
		Cadmium	1.3	U	MG/KG
SWSA3-4	B00033	Barium	61.9		MG/KG
		Arsenic	5.6		MG/KG
		Antimony	0.78	U	MG/KG
		Thallium	1.3	U	MG/KG
		Magnesium	950		MG/KG
		Sodium	399	U	MG/KG
		Silver	1.8	U	MG/KG
		Vanadium	1.8	U	MG/KG
		Selenium	0.78	U	MG/KG
		Calcium	3190		MG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
SWSA3-5	B00035	PCB-1260	17	U	UG/KG
		PCB-1221	17	U	UG/KG
		PCB-1232	17	U	UG/KG
		PCB-1016	17	U	UG/KG
		PCB-1254	17	U	UG/KG
		PCB-1242	17	U	UG/KG
		PCB-1248	17	U	UG/KG
SWSA3-5	B00036	Nickel	24.2		MG/KG
		Magnesium	2190		MG/KG
		Vanadium	30.7		MG/KG
		Iron	44700		MG/KG
		Chromium	32.7		MG/KG
		Beryllium	1.7		MG/KG
		Copper	20.4		MG/KG
		Manganese	1110		MG/KG
		Aluminum	22200		MG/KG
		Zinc	77.9		MG/KG
		Sodium	420	U	MG/KG
		Silver	1.7	U	MG/KG
		Lead	37.3		MG/KG
		Cobalt	21.1		MG/KG
		Cadmium	1.2	U	MG/KG
		Barium	98.8		MG/KG
		Arsenic	7.1		MG/KG
		Antimony	0.71	U	MG/KG
		Thallium	1.2	U	MG/KG
		Selenium	0.71	U	MG/KG
		Calcium	20800		MG/KG
		Potassium	2260		MG/KG
SWSA3-6	B00038	PCB-1260	17	U	UG/KG
		PCB-1221	17	U	UG/KG
		PCB-1232	17	U	UG/KG
		PCB-1016	17	U	UG/KG
		PCB-1254	17	U	UG/KG
		PCB-1242	17	U	UG/KG
		PCB-1248	17	U	UG/KG
SWSA3-6	B00039	Nickel	7.5		MG/KG
		Selenium	0.73	U	MG/KG
		Iron	24200		MG/KG
		Chromium	15.9		MG/KG
		Beryllium	0.53		MG/KG
		Copper	13.3		MG/KG
		Manganese	777		MG/KG
		Aluminum	13800		MG/KG
		Zinc	38.8		MG/KG
		Sodium	359	U	MG/KG
		Silver	1.7	U	MG/KG
		Lead	24.1		MG/KG
		Cobalt	9.3		MG/KG
SWSA3-6	B00039	Cadmium	1.2	U	MG/KG
		Barium	60		MG/KG
		Arsenic	4.9		MG/KG
		Antimony	0.73	U	MG/KG
		Thallium	1.2	U	MG/KG
		Magnesium	990		MG/KG
		Vanadium	20.7		MG/KG
		Calcium	2510		MG/KG
		Potassium	1880		MG/KG
		PCB-1260	19		UG/KG

Table A.2
and
Table A.3Metals Analyses (MG/KG)
PCB Analyses(UG/KG)

Location	Sample ID	Parameter Name	Result	Qual	Units
		PCB-1221	15	U	UG/KG
		PCB-1232	15	U	UG/KG
		PCB-1016	15	U	UG/KG
		PCB-1254	15	U	UG/KG
		PCB-1242	15	U	UG/KG
		PCB-1248	15	U	UG/KG
SWSA3-7	B00043	PCB-1260	16	U	UG/KG
		PCB-1254	16	U	UG/KG
		PCB-1232	16	U	UG/KG
		PCB-1221	16	U	UG/KG
		PCB-1016	16	U	UG/KG
		PCB-1248	16	U	UG/KG
		PCB-1242	16	U	UG/KG
SWSA3-7	B00044	Nickel	20.7	U	MG/KG
		Selenium	0.73	U	MG/KG
		Calcium	22300		MG/KG
		Magnesium	3190		MG/KG
		Antimony	0.73	U	MG/KG
		Barium	161		MG/KG
		Cobalt	15.4		MG/KG
		Silver	1.7	U	MG/KG
		Lead	37.1		MG/KG
		Iron	31700		MG/KG
		Chromium	22		MG/KG
		Beryllium	1.2		MG/KG
		Copper	19.3		MG/KG
		Manganese	1200		MG/KG
		Aluminum	19700		MG/KG
		Zinc	75.4		MG/KG
		Sodium	280	U	MG/KG
		Cadmium	1.2	U	MG/KG
		Arsenic	4.7		MG/KG
		Thallium	1.2	U	MG/KG
		Vanadium	26.2		MG/KG
		Potassium	2700		MG/KG
SWSA3-7	B00045	Nickel	22.1	U	MG/KG
		Potassium	2900		MG/KG
		Iron	36800		MG/KG
		Chromium	23.3		MG/KG
		Beryllium	1.3		MG/KG
		Copper	20.5		MG/KG
		Manganese	842		MG/KG
		Aluminum	21400		MG/KG
		Zinc	81		MG/KG
		Sodium	534	U	MG/KG
SWSA3-7	B00045	Silver	1.7	U	MG/KG
		Lead	35.8		MG/KG
		Cobalt	13		MG/KG
		Cadmium	1.2	U	MG/KG
		Barium	172		MG/KG
		Arsenic	4.8		MG/KG
		Antimony	0.74	U	MG/KG
		Thallium	1.2	U	MG/KG
		Magnesium	2980		MG/KG
		Vanadium	28.5		MG/KG
		Selenium	0.74	U	MG/KG
		Calcium	7190		MG/KG

Location	Sample ID	Parameter Name	Resul	Qual	Units
LANDFILL1	B00001	Thallium-208	0.55		PCI/G
		Lead-214	1.02		PCI/G
		Bismuth-214	0.84		PCI/G
		Cesium-137	0.044	U	PCI/G
		Uranium-235	0.1	U	PCI/G
		Alpha activity	20.5		PCI/G
		Potassium-40	25.6		PCI/G
		Europium-155	0.108	U	PCI/G
		Europium-154	-0.04	U	PCI/G
		Lead-212	1.63		PCI/G
		Uranium-238	1.01		PCI/G
		Europium-152	0.005	U	PCI/G
		Cobalt-57	0.015	U	PCI/G
		Cesium-134	0.032	U	PCI/G
		Uranium-233/23	0.9		PCI/G
		Thorium-234	2.08		PCI/G
		Beta activity	30.2		PCI/G
		Cobalt-60	-0.01	U	PCI/G
		Actinium-228	1.54		PCI/G
		Uranium-235	0.071		PCI/G
LANDFILL2	B00010	Thallium-208	0.44		PCI/G
		Uranium-238	0.8		PCI/G
		Europium-152	0.078	U	PCI/G
		Cobalt-57	-0.03	U	PCI/G
		Cesium-134	0.052	U	PCI/G
		Europium-154	-0.03	U	PCI/G
		Lead-212	1.29		PCI/G
		Europium-155	0.15	U	PCI/G
		Uranium-233/23	0.78		PCI/G
		Potassium-40	16.9		PCI/G
		Thorium-234	1.3	U	PCI/G
		Alpha activity	16.6		PCI/G
		Beta activity	89		PCI/G
		Lead-214	1.05		PCI/G
		Bismuth-214	0.86		PCI/G
		Cesium-137	82.9		PCI/G
		Uranium-235	0.045		PCI/G
		Uranium-235	0.09	U	PCI/G
		Cobalt-60	0.041	U	PCI/G
		Actinium-228	1.08		PCI/G
LANDFILL3	B00013	Thallium-208	0.326		PCI/G
		Uranium-238	1.09		PCI/G
		Uranium-232	0.015	U	PCI/G
		Europium-152	0.018	U	PCI/G
		Cobalt-57	0.005	U	PCI/G
		Cesium-134	0.003	U	PCI/G
		Europium-154	0.017	U	PCI/G
		Lead-212	1.01		PCI/G
		Europium-155	0.04	U	PCI/G
		Uranium-233/23	1.09		PCI/G
		Potassium-40	14.1		PCI/G
		Thorium-234	2.27		PCI/G
		Alpha activity	20.8		PCI/G
		Beta activity	111.6		PCI/G
		Uranium-235	0.098		PCI/G
		Uranium-235	-0.03	U	PCI/G
		Cesium-137	85.3		PCI/G
		Cobalt-60	0.106		PCI/G
		Lead-214	0.72		PCI/G

Location	Sample ID	Parameter Name	Resul	Qual	Units
LANDFILL3	B00013	Bismuth-214	0.535		PCI/G
		Actinium-228	1.05		PCI/G
SWSA3-1	B00022	Thallium-208	0.535		PCI/G
		Uranium-238	1.76		PCI/G
		Europium-154	-0.03	U	PCI/G
		Lead-212	1.67		PCI/G
		Europium-155	0.09	U	PCI/G
		Uranium-233/23	1.23		PCI/G
		Potassium-40	22.9		PCI/G
		Thorium-234	1.8		PCI/G
		Alpha activity	19.8		PCI/G
		Beta activity	141		PCI/G
		Uranium-232	0.04	U	PCI/G
		Europium-152	0.06	U	PCI/G
		Cobalt-57	-0.01	U	PCI/G
		Cesium-134	0.051	U	PCI/G
		Uranium-235	0.082	U	PCI/G
		Uranium-235	-0.01	U	PCI/G
		Cesium-137	38.6		PCI/G
		Cobalt-60	-0.01	U	PCI/G
		Bismuth-214	0.74		PCI/G
		Actinium-228	1.59		PCI/G
		Lead-214	0.71		PCI/G
SWSA3-2	B00025	Thallium-208	0.65		PCI/G
		Uranium-233/23	1.46		PCI/G
		Potassium-40	23.2		PCI/G
		Thorium-234	-0.1		PCI/G
		Alpha activity	24.2		PCI/G
		Beta activity	8010		PCI/G
		Uranium-235	0.37		PCI/G
		Uranium-235	0.095		PCI/G
		Cesium-137	853		PCI/G
		Uranium-238	1.48		PCI/G
		Uranium-232	0.065	U	PCI/G
		Europium-152	0.09	U	PCI/G
		Cobalt-57	0.12	U	PCI/G
		Cesium-134	0.064	U	PCI/G
		Europium-154	0.069	U	PCI/G
		Lead-212	1.33		PCI/G
		Europium-155	0.01	U	PCI/G
		Cobalt-60	0.002	U	PCI/G
		Bismuth-214	0.67		PCI/G
		Actinium-228	1.78		PCI/G
		Lead-214	1		PCI/G
SWSA3-3	B00028	Thallium-208	54.8		PCI/G
		Lead-214	-0.1	UJ	PCI/G
		Actinium-228	193		PCI/G
		Cobalt-60	11.81		PCI/G
		Cobalt-57	-0.4	U	PCI/G
		Cesium-134	-0.8	U	PCI/G
		Europium-154	0.44	U	PCI/G
		Lead-212	165		PCI/G
		Europium-155	0	U	PCI/G
		Uranium-233/23	60.4		PCI/G
		Potassium-40	22.5		PCI/G
		Thorium-234	-2	U	PCI/G
		Alpha activity	3280		PCI/G
		Beta activity	55000		PCI/G
		Uranium-238	3.8		PCI/G

Location	Sample ID	Parameter Name	Resul	Qual	Units
SWSA3-3	B00028	Uranium-232	7.2		PCI/G
		Europium-152	-0.5	U	PCI/G
		Uranium-235	0.3	U	PCI/G
		Uranium-235	3.1		PCI/G
		Cesium-137	28000		PCI/G
		Bismuth-214	-2.8	U	PCI/G
SWSA3-4	B00031	Thallium-208	0.431		PCI/G
		Lead-214	1.1		PCI/G
		Alpha activity	16.7		PCI/G
		Beta activity	206		PCI/G
		Europium-152	0.026	U	PCI/G
		Cobalt-57	-0.01	U	PCI/G
		Cesium-134	0.031	U	PCI/G
		Europium-154	0.046	U	PCI/G
		Lead-212	1.41		PCI/G
		Europium-155	0.11	U	PCI/G
		Uranium-233/23	1.12		PCI/G
		Potassium-40	15.2		PCI/G
		Uranium-238	1.19		PCI/G
		Thorium-234	1.23	U	PCI/G
		Uranium-235	0.12	U	PCI/G
		Uranium-235	0.046		PCI/G
		Cesium-137	7.49		PCI/G
		Cobalt-60	0.011	U	PCI/G
		Bismuth-214	0.92		PCI/G
		Actinium-228	1.45		PCI/G
SWSA3-5	B00034	Thallium-208	0.52		PCI/G
		Uranium-238	1.83		PCI/G
		Uranium-232	0.106	UJ	PCI/G
		Europium-152	-0.05	U	PCI/G
		Cobalt-57	0.004	U	PCI/G
		Cesium-134	0	U	PCI/G
		Europium-154	-0.03	U	PCI/G
		Lead-212	1.77		PCI/G
		Europium-155	0.01	U	PCI/G
		Uranium-233/23	1.67		PCI/G
		Potassium-40	18.3		PCI/G
		Thorium-234	0.5		PCI/G
		Alpha activity	20.9		PCI/G
		Beta activity	465		PCI/G
		Uranium-235	0.34	U	PCI/G
		Uranium-235	0.065		PCI/G
		Cesium-137	325		PCI/G
		Cobalt-60	4.2		PCI/G
		Bismuth-214	0.66		PCI/G
		Actinium-228	1.36		PCI/G
		Lead-214	1.31		PCI/G
SWSA3-6	B00037	Thallium-208	0.55		PCI/G
		Uranium-238	1.1		PCI/G
		Europium-152	0.007	U	PCI/G
		Cobalt-57	-0.01	U	PCI/G
		Cesium-134	0.026	U	PCI/G
		Europium-154	0.036	U	PCI/G
		Lead-212	1.66		PCI/G
		Europium-155	0.181		PCI/G
		Uranium-233/23	1.15		PCI/G
		Potassium-40	16.1		PCI/G
		Thorium-234	2.18		PCI/G
		Alpha activity	24.3		PCI/G

Location	Sample ID	Parameter Name	Resul	Qual	Units
SWSA3-6	B00037	Beta activity	31.9		PCI/G
		Uranium-235	0.09	U	PCI/G
		Uranium-235	0.052		PCI/G
		Cesium-137	0.221		PCI/G
		Cobalt-60	0	U	PCI/G
		Bismuth-214	0.9		PCI/G
		Actinium-228	1.46		PCI/G
		Lead-214	1.08		PCI/G
SWSA3-7	B00040	Thallium-208	0.457		PCI/G
		Uranium-238	0.96		PCI/G
		Europium-152	0.01	U	PCI/G
		Cobalt-57	-0.01	U	PCI/G
		Cesium-134	0.02	U	PCI/G
		Europium-154	0.039	U	PCI/G
		Lead-212	1.33		PCI/G
		Europium-155	0.057	U	PCI/G
		Uranium-233/23	1.53		PCI/G
		Potassium-40	23.9		PCI/G
		Thorium-234	1.54		PCI/G
		Alpha activity	10.4		PCI/G
		Beta activity	37.6		PCI/G
		Uranium-235	0.04	U	PCI/G
		Uranium-235	0.115		PCI/G
		Cesium-137	0.826		PCI/G
		Cobalt-60	-0.01	U	PCI/G
		Bismuth-214	0.589		PCI/G
		Actinium-228	1.28		PCI/G
		Lead-214	0.721		PCI/G
SWSA3-7	B00041	Thallium-208	0.397		PCI/G
		Uranium-238	0.99		PCI/G
		Europium-152	0.004	U	PCI/G
		Cobalt-57	-0.01	U	PCI/G
		Cesium-134	0.024	U	PCI/G
		Europium-154	-0.02	U	PCI/G
		Lead-212	1.23		PCI/G
		Europium-155	0.039	U	PCI/G
		Uranium-233/23	1.46		PCI/G
		Potassium-40	24.1		PCI/G
		Thorium-234	0.93	U	PCI/G
		Alpha activity	14.8		PCI/G
		Beta activity	35.3		PCI/G
		Uranium-235	0.06	U	PCI/G
		Uranium-235	0.087		PCI/G
		Cesium-137	0.98		PCI/G
		Cobalt-60	-0.01	U	PCI/G
		Bismuth-214	0.602		PCI/G
		Actinium-228	1.35		PCI/G
		Lead-214	0.733		PCI/G

Location	Sample ID	Parameter Name	Result	Qual	Units
WAG4SEEP1	B00046	PCB-1260	27	UJ	UG/KG
		PCB-1254	22		UG/KG
		PCB-1248	22	U	UG/KG
		PCB-1221	22	U	UG/KG
		PCB-1232	22	U	UG/KG
		PCB-1016	22	U	UG/KG
		PCB-1242	22	U	UG/KG
WAG4SEEP2	B00047	PCB-1260	40	UJ	UG/KG
		PCB-1232	20	U	UG/KG
		PCB-1221	20	U	UG/KG
		PCB-1016	20	U	UG/KG
		PCB-1248	20	U	UG/KG
		PCB-1242	20	U	UG/KG
		PCB-1254	20	U	UG/KG
WAG4SEEP3	B00048	PCB-1260	84		UG/KG
		PCB-1242	39	U	UG/KG
		PCB-1232	39	U	UG/KG
		PCB-1221	39	U	UG/KG
		PCB-1016	39	U	UG/KG
		PCB-1248	39	U	UG/KG
		PCB-1254	39	U	UG/KG
WAG4SEEP4	B00049	PCB-1260	64		UG/KG
		PCB-1242	27	U	UG/KG
		PCB-1232	27	U	UG/KG
		PCB-1221	27	U	UG/KG
		PCB-1016	27	U	UG/KG
		PCB-1248	27	U	UG/KG
		PCB-1254	27	U	UG/KG
WAG4SEEP4	B00050	Nickel	49.6		MG/KG
		Potassium	7180		MG/KG
		Selenium	2		MG/KG
		Calcium	10300		MG/KG
		Sodium	886		MG/KG
		Silver	2.8	U	MG/KG
		Lead	29.7		MG/KG
		Cobalt	22.8		MG/KG
		Cadmium	1.4	U	MG/KG
		Barium	458		MG/KG
		Arsenic	10		MG/KG
		Antimony	1.4	U	MG/KG
		Iron	52500		MG/KG
		Chromium	50.6		MG/KG
		Beryllium	2.7		MG/KG
		Copper	29.9		MG/KG
		Manganese	3830		MG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
WAG4SEEP4	B00050	Aluminum	39200		MG/KG
		Zinc	97.7		MG/KG
		Thallium	2.8	U	MG/KG
		Magnesium	4900		MG/KG
		Vanadium	44.5		MG/KG
WAG4SEEP6	B00053	PCB-1260	18	U	UG/KG
		PCB-1232	18	U	UG/KG
		PCB-1221	18	U	UG/KG
		PCB-1016	18	U	UG/KG
		PCB-1248	18	U	UG/KG
		PCB-1254	18	U	UG/KG
		PCB-1242	18	U	UG/KG
WAG4SEEP6	B00054	Nickel	7860		MG/KG
		Potassium	3350		MG/KG
		Calcium	3400		MG/KG
		Silver	1.6	U	MG/KG
		Lead	10.9		MG/KG
		Cobalt	28.8		MG/KG
		Cadmium	0.82	U	MG/KG
		Barium	301		MG/KG
		Arsenic	4.7		MG/KG
		Antimony	0.82	U	MG/KG
		Thallium	1.6	U	MG/KG
		Iron	37300		MG/KG
		Chromium	37.2		MG/KG
		Beryllium	1.1		MG/KG
		Copper	18.2		MG/KG
		Manganese	1010		MG/KG
		Aluminum	19300		MG/KG
		Zinc	122		MG/KG
		Sodium	490		MG/KG
		Magnesium	5910		MG/KG
		Vanadium	22.4		MG/KG
		Selenium	1.1	U	MG/KG
WAG4SEEP7	B00055	PCB-1260	51		UG/KG
		PCB-1248	16	U	UG/KG
		PCB-1016	16	U	UG/KG
		PCB-1232	16	U	UG/KG
		PCB-1221	16	U	UG/KG
		PCB-1254	25		UG/KG
		PCB-1242	16	U	UG/KG
WAG4SEEP7	B00056	PCB-1260	48		UG/KG
		PCB-1232	18	U	UG/KG
		PCB-1221	18	U	UG/KG
		PCB-1016	18	U	UG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
WAG4SEEP7	B00056	PCB-1248	18	U	UG/KG
		PCB-1254	23		UG/KG
		PCB-1242	18	U	UG/KG
WAG4SEEP7	B00057	Nickel	21.4		MG/KG
		Zinc	76.6		MG/KG
		Sodium	528		MG/KG
		Silver	1.6	U	MG/KG
		Lead	64.2		MG/KG
		Cobalt	16.4		MG/KG
		Cadmium	0.82	U	MG/KG
		Barium	115		MG/KG
		Arsenic	5.9		MG/KG
		Iron	31100		MG/KG
		Chromium	25.3		MG/KG
		Beryllium	1.4		MG/KG
		Copper	20.8		MG/KG
		Manganese	725		MG/KG
		Aluminum	20800		MG/KG
		Antimony	0.82	U	MG/KG
		Thallium	1.6	U	MG/KG
		Magnesium	5960		MG/KG
		Vanadium	28.5		MG/KG
		Potassium	2630		MG/KG
		Selenium	1.1	U	MG/KG
		Calcium	22600		MG/KG
WAG4SEEP7	B00058	Nickel	25.6		MG/KG
		Manganese	825		MG/KG
		Aluminum	23100		MG/KG
		Zinc	74.1		MG/KG
		Sodium	495		MG/KG
		Silver	1.6	U	MG/KG
		Lead	36.4		MG/KG
		Cobalt	15.3		MG/KG
		Cadmium	0.86		MG/KG
		Barium	133		MG/KG
		Arsenic	5.7		MG/KG
		Iron	32500		MG/KG
		Chromium	28.9		MG/KG
		Beryllium	1.1		MG/KG
		Copper	19.9		MG/KG
		Potassium	3040		MG/KG
		Selenium	1.1	U	MG/KG
		Magnesium	4820		MG/KG
		Antimony	0.81	U	MG/KG
		Thallium	1.6	U	MG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
WAG4SEEP7	B00058	Vanadium	30.4		MG/KG
		Calcium	18400		MG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
DOWNGRAD1	B00062	PCB-1260	16	U	UG/KG
		PCB-1254	16	U	UG/KG
		PCB-1242	16	U	UG/KG
		PCB-1016	16	U	UG/KG
		PCB-1232	16	U	UG/KG
		PCB-1221	16	U	UG/KG
		PCB-1248	16	U	UG/KG
DOWNGRAD1	B00065	Nickel	34.1		MG/KG
		Potassium	3820		MG/KG
		Vanadium	29.2		MG/KG
		Thallium	1.5	U	MG/KG
		Arsenic	4.4		MG/KG
		Cadmium	0.75	U	MG/KG
		Lead	37.8		MG/KG
		Cobalt	23.1		MG/KG
		Iron	39000		MG/KG
		Chromium	37.4		MG/KG
		Beryllium	1.4		MG/KG
		Copper	20.2		MG/KG
		Manganese	701		MG/KG
		Aluminum	27200		MG/KG
		Zinc	88.9		MG/KG
		Sodium	461		MG/KG
		Silver	1.5	U	MG/KG
		Barium	130		MG/KG
		Antimony	0.75	U	MG/KG
		Magnesium	7000		MG/KG
		Selenium	0.99	U	MG/KG
		Calcium	1720		MG/KG
DOWNGRAD2	B00069	PCB-1260	17	U	UG/KG
		PCB-1254	17	U	UG/KG
		PCB-1232	17	U	UG/KG
		PCB-1221	17	U	UG/KG
		PCB-1016	17	U	UG/KG
		PCB-1248	17	U	UG/KG
		PCB-1242	17	U	UG/KG
DOWNGRAD2	B00070	Nickel	35.3		MG/KG
		Selenium	1.1	U	MG/KG
		Potassium	3550		MG/KG
		Calcium	808		MG/KG
		Magnesium	6890		MG/KG
		Antimony	0.81	U	MG/KG
		Barium	161		MG/KG
		Cobalt	23.5		MG/KG
		Cadmium	0.81	U	MG/KG
		Iron	41000		MG/KG
		Manganese	1610		MG/KG
		Aluminum	38400		MG/KG
		Zinc	85.3		MG/KG
		Sodium	519		MG/KG
		Silver	1.6	U	MG/KG
		Lead	34.3		MG/KG
		Arsenic	4.2		MG/KG
		Thallium	1.6	U	MG/KG
		Chromium	35.2		MG/KG
		Beryllium	1.8		MG/KG
		Copper	26		MG/KG

Table A.7
and
Table A.8Metals Analyses (MG/KG)
PCB Analyses (UG/KG)

Location	Sample ID	Parameter Name	Result	Qual	Units
DOWNGRAD2	B00070	Vanadium	36.1		MG/KG
DOWNGRAD3	B00072	PCB-1260	17	U	UG/KG
		PCB-1242	17		UG/KG
		PCB-1248	17		UG/KG
		PCB-1232	17		UG/KG
		PCB-1221	17		UG/KG
		PCB-1016	17		UG/KG
		PCB-1254	17		UG/KG
DOWNGRAD3	B00073	Nickel	35.5		MG/KG
		Calcium	1510		MG/KG
		Iron	37400		MG/KG
		Aluminum	31800		MG/KG
		Cobalt	19.5		MG/KG
		Cadmium	0.76	U	MG/KG
		Barium	118		MG/KG
		Arsenic	4.5		MG/KG
		Antimony	0.76	U	MG/KG
		Thallium	1.5	U	MG/KG
		Magnesium	6930		MG/KG
		Vanadium	34.4		MG/KG
		Chromium	37.2		MG/KG
		Beryllium	1.3		MG/KG
		Copper	24.8		MG/KG
		Manganese	833		MG/KG
		Zinc	78		MG/KG
		Sodium	469		MG/KG
		Silver	1.5	U	MG/KG
		Lead	22.7		MG/KG
		Selenium	1	U	MG/KG
		Potassium	4620		MG/KG
DOWNGRAD4	B00075	PCB-1260	17	U	UG/KG
		PCB-1232	17	U	UG/KG
		PCB-1221	17	U	UG/KG
		PCB-1016	17	U	UG/KG
		PCB-1254	17	U	UG/KG
		PCB-1248	17	U	UG/KG
		PCB-1242	17	U	UG/KG
DOWNGRAD4	B00076	Nickel	28.7		MG/KG
		Potassium	3340		MG/KG
		Selenium	0.99	U	MG/KG
		Calcium	937		MG/KG
		Chromium	29.2		MG/KG
		Beryllium	0.94		MG/KG
		Copper	20.1		MG/KG
		Manganese	822		MG/KG
		Zinc	57.7		MG/KG
		Sodium	475		MG/KG
		Silver	1.5	U	MG/KG
		Lead	13.9		MG/KG
		Cobalt	18.1		MG/KG
		Cadmium	0.74	U	MG/KG
		Barium	105		MG/KG
		Arsenic	5.1		MG/KG
		Antimony	0.74	U	MG/KG
		Iron	29500		MG/KG
		Aluminum	22100		MG/KG
		Thallium	1.5	U	MG/KG

Table A.7
and
Table A.8Metals Analyses (MG/KG)
PCB Analyses (UG/KG)

Location	Sample ID	Parameter Name	Result	Qual	Units
DOWNGRAD4	B00076	Magnesium	4910		MG/KG
		Vanadium	25.7		MG/KG
LNLEAK7B	B00079	PCB-1260	17	U	UG/KG
		PCB-1248	17		UG/KG
		PCB-1232	17		UG/KG
		PCB-1221	17		UG/KG
		PCB-1016	17		UG/KG
		PCB-1242	17		UG/KG
		PCB-1254	17		UG/KG
LNLEAK7B	B00080	Nickel	25.4		MG/KG
		Potassium	3990		MG/KG
		Selenium	1	U	MG/KG
		Chromium	30.6		MG/KG
		Beryllium	1.2		MG/KG
		Copper	20.2		MG/KG
		Manganese	557		MG/KG
		Silver	1.5	U	MG/KG
		Lead	14.5		MG/KG
		Cobalt	12.2		MG/KG
		Cadmium	0.76	U	MG/KG
		Barium	92.2		MG/KG
		Arsenic	3.5		MG/KG
		Antimony	0.76	U	MG/KG
		Thallium	1.5	U	MG/KG
		Iron	34500		MG/KG
		Aluminum	30800		MG/KG
		Zinc	71.2		MG/KG
		Sodium	474		MG/KG
		Magnesium	6440		MG/KG
		Vanadium	32.6		MG/KG
		Calcium	1930		MG/KG
WAG7SEEP1	B00083	PCB-1260	18	U	UG/KG
		PCB-1248	18	U	UG/KG
		PCB-1016	18	U	UG/KG
		PCB-1232	18	U	UG/KG
		PCB-1221	18	U	UG/KG
		PCB-1254	18	U	UG/KG
		PCB-1242	18	U	UG/KG
WAG7SEEP1	B00084	PCB-1260	17	U	UG/KG
		PCB-1232	17	U	UG/KG
		PCB-1221	17	U	UG/KG
		PCB-1016	17	U	UG/KG
		PCB-1248	17	U	UG/KG
		PCB-1254	17	U	UG/KG
		PCB-1242	17	U	UG/KG
WAG7SEEP1	B00085	Nickel	22.9		MG/KG
		Iron	27700		MG/KG
		Zinc	64.1		MG/KG
		Sodium	475		MG/KG
		Silver	1.6	U	MG/KG
		Lead	30.7		MG/KG
		Cobalt	17.4		MG/KG
		Cadmium	0.8	U	MG/KG
		Barium	93.2		MG/KG
		Arsenic	4		MG/KG
		Chromium	25.8		MG/KG
		Beryllium	0.85		MG/KG

Table A.7
and
Table A.8Metals Analyses (MG/KG)
PCB Analyses (UG/KG)

Location	Sample ID	Parameter Name	Result	Qual	Units
WAG7SEEP1	B00085	Copper	18.4		MG/KG
		Manganese	876		MG/KG
		Aluminum	19400		MG/KG
		Antimony	0.8	U	MG/KG
		Thallium	1.6	U	MG/KG
		Magnesium	3940		MG/KG
		Vanadium	25.7		MG/KG
		Selenium	1.1	U	MG/KG
		Calcium	2560		MG/KG
		Potassium	1990		MG/KG
WAG7SEEP1	B00086	Nickel	21.3		MG/KG
		Iron	30900		MG/KG
		Chromium	27.2		MG/KG
		Beryllium	1		MG/KG
		Copper	17.8		MG/KG
		Manganese	955		MG/KG
		Aluminum	19800		MG/KG
		Zinc	68.9		MG/KG
		Sodium	529		MG/KG
		Silver	1.6	U	MG/KG
		Lead	33.3		MG/KG
		Cobalt	19.2		MG/KG
		Cadmium	0.82	U	MG/KG
		Barium	89.1		MG/KG
		Arsenic	4.9		MG/KG
		Potassium	1950		MG/KG
		Selenium	1.1	U	MG/KG
		Magnesium	3680		MG/KG
		Antimony	0.82	U	MG/KG
		Thallium	1.6	U	MG/KG
WAG7SEEP2	B00088	Vanadium	29.3		MG/KG
		Calcium	2290		MG/KG
		PCB-1260	21	U	UG/KG
		PCB-1232	21	U	UG/KG
		PCB-1221	21	U	UG/KG
		PCB-1016	21	U	UG/KG
		PCB-1248	21	U	UG/KG
WAG7SEEP2	B00089	PCB-1242	21	U	UG/KG
		PCB-1254	21	U	UG/KG
		Nickel	32.1		MG/KG
		Potassium	3650		MG/KG
		Selenium	1.2	U	MG/KG
		Vanadium	29.7		MG/KG
		Thallium	1.8	U	MG/KG
		Arsenic	5.4		MG/KG
		Cadmium	0.91	U	MG/KG
		Barium	127		MG/KG
		Iron	33400		MG/KG
		Chromium	31.9		MG/KG
		Beryllium	1.2		MG/KG
		Aluminum	23600		MG/KG
		Zinc	73.7		MG/KG
		Sodium	643		MG/KG
		Silver	1.8	U	MG/KG
		Lead	28.9		MG/KG
		Cobalt	21.1		MG/KG
		Antimony	0.91	U	MG/KG

Table A.7
and
Table A.8Metals Analyses (MG/KG)
PCB Analyses (UG/KG)

Location	Sample ID	Parameter Name	Result	Qual	Units
WAG7SEEP2	B00089	Magnesium	4550		MG/KG
		Copper	22.8		MG/KG
		Manganese	673		MG/KG
		Calcium	2880		MG/KG
WAG7SEEP3	B00091	PCB-1260	17	U	UG/KG
		PCB-1242	17	U	UG/KG
		PCB-1232	17	U	UG/KG
		PCB-1221	17	U	UG/KG
		PCB-1248	17	U	UG/KG
		PCB-1016	17	U	UG/KG
		PCB-1254	17	U	UG/KG
WAG7SEEP3	B00092	Nickel	39.4		MG/KG
		Potassium	5050		MG/KG
		Iron	39800		MG/KG
		Chromium	39.8		MG/KG
		Beryllium	1.2		MG/KG
		Zinc	75.6		MG/KG
		Sodium	466		MG/KG
		Silver	1.6	U	MG/KG
		Lead	17.2		MG/KG
		Cobalt	16.6		MG/KG
		Cadmium	0.79	U	MG/KG
		Barium	151		MG/KG
		Arsenic	7		MG/KG
		Antimony	0.79	U	MG/KG
		Thallium	1.6	U	MG/KG
		Magnesium	6690		MG/KG
		Copper	29.5		MG/KG
		Manganese	609		MG/KG
		Aluminum	30200		MG/KG
		Vanadium	30.9		MG/KG
		Selenium	1.1	U	MG/KG
		Calcium	3390		MG/KG
WAG7SEEP4	B00094	PCB-1260	16	U	UG/KG
		PCB-1232	16	U	UG/KG
		PCB-1221	16	U	UG/KG
		PCB-1248	16	U	UG/KG
		PCB-1016	16	U	UG/KG
		PCB-1242	16	U	UG/KG
		PCB-1254	16	U	UG/KG
WAG7SEEP4	B00095	Nickel	23.2		MG/KG
		Magnesium	5130		MG/KG
		Vanadium	28.4		MG/KG
		Aluminum	24600		MG/KG
		Sodium	1470		MG/KG
		Silver	1.6	U	MG/KG
		Lead	16.3		MG/KG
		Cobalt	20.2		MG/KG
		Cadmium	0.78	U	MG/KG
		Barium	105		MG/KG
		Arsenic	3.2		MG/KG
		Antimony	0.78	U	MG/KG
		Iron	29100		MG/KG
		Chromium	29.3		MG/KG
		Beryllium	1		MG/KG
		Copper	28.8		MG/KG
		Manganese	589		MG/KG

Table A.7
and
Table A.8Metals Analyses (MG/KG)
PCB Analyses (UG/KG)

Location	Sample ID	Parameter Name	Result	Qual	Units
WAG7SEEP4	B00095	Zinc	59.6		MG/KG
		Thallium	1.6	U	MG/KG
		Selenium	1	U	MG/KG
		Calcium	2150		MG/KG
		Potassium	2690		MG/KG
WAG7SEEP5	B00097	PCB-1260	19	U	UG/KG
		PCB-1254	19	U	UG/KG
		PCB-1242	19	U	UG/KG
		PCB-1016	19	U	UG/KG
		PCB-1232	19	U	UG/KG
		PCB-1221	19	U	UG/KG
		PCB-1248	19	U	UG/KG
WAG7SEEP5	B00098	Nickel	23.4		MG/KG
		Selenium	1.2		MG/KG
		Aluminum	18600		MG/KG
		Lead	37.4		MG/KG
		Cobalt	12.8		MG/KG
		Cadmium	0.81	U	MG/KG
		Barium	104		MG/KG
		Arsenic	3.9		MG/KG
		Antimony	0.81	U	MG/KG
		Thallium	1.6	U	MG/KG
		Magnesium	7780		MG/KG
		Iron	26200		MG/KG
		Chromium	31		MG/KG
		Beryllium	0.93		MG/KG
		Copper	18.3		MG/KG
		Manganese	541		MG/KG
		Zinc	71.6		MG/KG
		Sodium	843		MG/KG
		Silver	1.6	U	MG/KG
		Vanadium	21.5		MG/KG
		Calcium	73700		MG/KG
		Potassium	3300		MG/KG
WAG7SEEP6	B00100	PCB-1260	16	U	UG/KG
		PCB-1232	16	U	UG/KG
		PCB-1254	16	U	UG/KG
		PCB-1242	16	U	UG/KG
		PCB-1248	16	U	UG/KG
		PCB-1221	16	U	UG/KG
		PCB-1016	16	U	UG/KG
WAG7SEEP6	B00101	Nickel	39.6		MG/KG
		Magnesium	4960		MG/KG
		Vanadium	31.3		MG/KG
		Iron	42500		MG/KG
		Chromium	37.1		MG/KG
		Beryllium	1.1		MG/KG
		Copper	48		MG/KG
		Aluminum	24200		MG/KG
		Zinc	76.2		MG/KG
		Sodium	520		MG/KG
		Silver	1.6	U	MG/KG
		Lead	21.9		MG/KG
		Cobalt	30.9		MG/KG
		Cadmium	0.82	U	MG/KG
		Barium	309		MG/KG
		Arsenic	6		MG/KG

Table A.7
and
Table A.8Metals Analyses (MG/KG)
PCB Analyses (UG/KG)

Location	Sample ID	Parameter Name	Result	Qual	Units
WAG7SEEP6	B00101	Antimony	0.82	U	MG/KG
		Manganese	5960		MG/KG
		Thallium	2.5		MG/KG
		Selenium	1.1	U	MG/KG
		Calcium	3690		MG/KG
		Potassium	2950		MG/KG
WAG7SEEP7	B00103	PCB-1260	21	UJ	UG/KG
		PCB-1232	21	UJ	UG/KG
		PCB-1221	21	UJ	UG/KG
		PCB-1016	21	UJ	UG/KG
		PCB-1254	21	UJ	UG/KG
		PCB-1242	21	UJ	UG/KG
		PCB-1248	21	UJ	UG/KG
WAG7SEEP7	B00104	Nickel	30.6		MG/KG
		Potassium	4560		MG/KG
		Iron	35500		MG/KG
		Chromium	33.8		MG/KG
		Beryllium	1.3		MG/KG
		Copper	22.3		MG/KG
		Aluminum	30300		MG/KG
		Zinc	79.5		MG/KG
		Sodium	756		MG/KG
		Silver	1.9	U	MG/KG
		Lead	23.5		MG/KG
		Cobalt	18.8		MG/KG
		Cadmium	0.97	U	MG/KG
		Barium	141		MG/KG
		Manganese	1290		MG/KG
		Arsenic	4		MG/KG
		Antimony	0.97	U	MG/KG
		Thallium	1.9	U	MG/KG
		Magnesium	6320		MG/KG
		Vanadium	33.6		MG/KG
		Selenium	1.3	U	MG/KG
		Calcium	4170		MG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
DOWNGRAD1	B00059	Thallium-208	0.46		PCI/G
		Lead-214	0.75		PCI/G
		Actinium-228	1.52		PCI/G
		Cobalt-60	-0.018	U	PCI/G
		Cesium-137	11.1		PCI/G
		Uranium-235	0.17	U	PCI/G
		Beta activity	51.9		PCI/G
		Alpha activity	17.3		PCI/G
		Potassium-40	30		PCI/G
		Thorium-234	0.2	U	PCI/G
		Europium-152	0.12	U	PCI/G
		Cobalt-57	0.006	U	PCI/G
		Cesium-134	0.015	U	PCI/G
		Europium-154	-0.092	U	PCI/G
		Lead-212	1.34		PCI/G
		Europium-155	-0.04	U	PCI/G
		Curium-242	0	U	PCI/G
		Uranium-233/234	0.89		PCI/G
		Uranium-238	1.3		PCI/G
		Thorium-232	0.56		PCI/G
		Cm-245,246	0	U	PCI/G
		Cm-243/244	-0.0033	U	PCI/G
		Plutonium-239/240	0.039		PCI/G
		Neptunium-237	0.046	UJ	PCI/G
		Plutonium-238	0.007	U	PCI/G
		Thorium-228	0.64		PCI/G
		Thorium-230	0.29		PCI/G
		Uranium-235	0.072		PCI/G
		Americium-241	0.02	U	PCI/G
		Bismuth-214	0.59		PCI/G
DOWNGRAD2	B00068	Thallium-208	0.43		PCI/G
		Cesium-137	6.57		PCI/G
		Americium-241	0.062		PCI/G
		Uranium-233/234	1.01		PCI/G
		Thorium-228	0.93		PCI/G
		Potassium-40	21.6		PCI/G
		Thorium-234	1.05	U	PCI/G
		Alpha activity	10.8		PCI/G
		Thorium-230	0.46		PCI/G
		Beta activity	40.2		PCI/G
		Uranium-235	0.18		PCI/G
		Uranium-238	0.87		PCI/G
		Thorium-232	0.67		PCI/G
		Cm-245,246	0.021	U	PCI/G
		Cm-243/244	-0.0043	U	PCI/G
		Plutonium-239/240	0.05		PCI/G
		Neptunium-237	0.036	UJ	PCI/G
		Plutonium-238	0.013	U	PCI/G
		Europium-152	0.12	U	PCI/G
		Cobalt-57	0.004	U	PCI/G
		Cesium-134	-0.026	U	PCI/G
		Europium-154	0	U	PCI/G
		Lead-212	1.24		PCI/G
		Europium-155	0.13	U	PCI/G
		Curium-242	0	U	PCI/G
		Uranium-235	0.17	U	PCI/G

Location	Sample ID	Parameter Name	Result	Qual	Units
DOWNGRAD2	B00068	Cobalt-60	0.43		PCI/G
		Bismuth-214	0.58		PCI/G
		Actinium-228	1.22		PCI/G
		Lead-214	0.65		PCI/G
DOWNGRAD3	B00071	Thallium-208	0.389		PCI/G
		Lead-214	0.68		PCI/G
		Actinium-228	0.97		PCI/G
		Uranium-238	0.97		PCI/G
		Thorium-232	0.81		PCI/G
		Cm-245,246	0	U	PCI/G
		Cm-243/244	0	U	PCI/G
		Plutonium-239/240	0.094		PCI/G
		Neptunium-237	0.013	U	PCI/G
		Plutonium-238	0.115		PCI/G
		Uranium-233/234	1.05		PCI/G
		Thorium-228	0.73		PCI/G
		Potassium-40	26.8		PCI/G
		Thorium-234	0.4	U	PCI/G
		Alpha activity	13.5		PCI/G
		Thorium-230	0.52		PCI/G
		Beta activity	61.5		PCI/G
		Uranium-235	0.069		PCI/G
		Europium-152	-0.063		PCI/G
		Cobalt-57	0.02		PCI/G
		Cesium-134	-0.015	U	PCI/G
		Europium-154	-0.076	U	PCI/G
		Lead-212	1.1		PCI/G
		Europium-155	0.16	U	PCI/G
		Curium-242	0	U	PCI/G
		Uranium-235	0.03	U	PCI/G
		Cesium-137	7.86		PCI/G
		Americium-241	0.017	U	PCI/G
		Cobalt-60	0.115		PCI/G
		Bismuth-214	0.62		PCI/G
DOWNGRAD4	B00074	Thallium-208	0.3		PCI/G
		Uranium-235	0.114		PCI/G
		Uranium-235	0.07	U	PCI/G
		Uranium-238	0.97		PCI/G
		Thorium-232	0.62		PCI/G
		Cm-245,246	0.006	U	PCI/G
		Cm-243/244	0.032		PCI/G
		Plutonium-239/240	0.02		PCI/G
		Neptunium-237	0.003	U	PCI/G
		Plutonium-238	0.008	U	PCI/G
		Europium-152	0.06	U	PCI/G
		Cobalt-57	0.005	U	PCI/G
		Cesium-134	-0.001	U	PCI/G
		Europium-154	0.08	U	PCI/G
		Lead-212	1.05		PCI/G
		Europium-155	0.12	U	PCI/G
		Curium-242	0	U	PCI/G
		Uranium-233/234	1.05		PCI/G
		Thorium-228	0.8		PCI/G
		Potassium-40	17.2		PCI/G
		Thorium-234	0.73	U	PCI/G
		Alpha activity	11.6		PCI/G

Location	Sample ID	Parameter Name	Result	Qual	Units
DOWNGRAD4	B00074	Thorium-230	0.6		PCI/G
		Beta activity	40.4		PCI/G
		Cesium-137	3.07		PCI/G
		Americium-241	0.028	U	PCI/G
		Cobalt-60	-0.009	U	PCI/G
		Bismuth-214	0.53		PCI/G
		Actinium-228	1.05		PCI/G
		Lead-214	0.52		PCI/G
LNLEAK7B	B00077	Thallium-208	0.32	U	PCI/G
		Thorium-228	0.5		PCI/G
		Thorium-234	-1.7	U	PCI/G
		Alpha activity	14.6		PCI/G
		Thorium-230	0.41		PCI/G
		Beta activity	8440		PCI/G
		Uranium-235	0.083		PCI/G
		Uranium-235	0.1	U	PCI/G
		Cesium-137	5620		PCI/G
		Americium-241	0.111		PCI/G
		Cobalt-60	0.202		PCI/G
		Bismuth-214	0.65		PCI/G
		Actinium-228	1.09		PCI/G
		Lead-214	0.6	U	PCI/G
		Cobalt-57	0.09		PCI/G
		Cesium-134	0.062	U	PCI/G
		Europium-154	0.123	U	PCI/G
		Lead-212	0.85	U	PCI/G
		Europium-155	-0.9	U	PCI/G
		Curium-242	0.03	U	PCI/G
		Uranium-233/234	1.1		PCI/G
		Potassium-40	26		PCI/G
		Uranium-238	1.23		PCI/G
		Thorium-232	0.4		PCI/G
		Cm-245,246	0.01	U	PCI/G
		Cm-243/244	1.08		PCI/G
		Plutonium-239/240	0.051		PCI/G
		Neptunium-237	0.035	UJ	PCI/G
		Plutonium-238	0.242		PCI/G
		Europium-152	0.21	U	PCI/G
LNLEAK7B	B00078	Thallium-208	0.28	U	PCI/G
		Bismuth-214	0.56	U	PCI/G
		Actinium-228	1.18		PCI/G
		Americium-241	0.016	U	PCI/G
		Uranium-235	-0.015		PCI/G
		Thorium-230	0.23		PCI/G
		Potassium-40	26.5		PCI/G
		Thorium-234	4.2	U	PCI/G
		Europium-152	0.25	U	PCI/G
		Cobalt-57	0.23	U	PCI/G
		Cesium-134	-0.06	U	PCI/G
		Europium-154	0.17	U	PCI/G
		Lead-212	-1.1	U	PCI/G
		Europium-155	-0.3	U	PCI/G
		Curium-242	0	U	PCI/G
		Uranium-233/234	1.54		PCI/G
		Uranium-238	1.16		PCI/G
		Thorium-232	0.23	U	PCI/G

Location	Sample ID	Parameter Name	Result	Qual	Units
LNLEAK7B	B00078	Cm-245,246	0 U		PCI/G
		Cm-243/244	0.59		PCI/G
		Plutonium-239/240	0.126		PCI/G
		Neptunium-237	0.045 UJ		PCI/G
		Plutonium-238	0.29 U		PCI/G
		Thorium-228	0.3		PCI/G
		Alpha activity	19.1		PCI/G
		Beta activity	11730		PCI/G
		Uranium-235	-3.3 U		PCI/G
		Cesium-137	9190		PCI/G
		Cobalt-60	0.2		PCI/G
		Lead-214	0.8 U		PCI/G
WAG7SEEP1	B00081	Thallium-208	-3.5 U		PCI/G
		Thorium-234	13 U		PCI/G
		Alpha activity	20.2		PCI/G
		Thorium-230	0.86		PCI/G
		Beta activity	98000		PCI/G
		Uranium-235	0.035		PCI/G
		Uranium-235	-31 U		PCI/G
		Cesium-137	69100		PCI/G
		Americium-241	0.139		PCI/G
		Uranium-238	0.95		PCI/G
		Thorium-232	0.97		PCI/G
		Cm-245,246	0.037		PCI/G
		Uranium-232	0.054 U		PCI/G
		Cm-243/244	0.003 U		PCI/G
		Plutonium-239/240	0.37		PCI/G
		Neptunium-237	0.008 U		PCI/G
		Plutonium-238	0.013 U		PCI/G
		Europium-152	2.2 U		PCI/G
		Cobalt-57	1 U		PCI/G
		Cesium-134	0.3 U		PCI/G
		Europium-154	-0.2 U		PCI/G
		Lead-212	-14 U		PCI/G
		Europium-155	0 U		PCI/G
		Curium-242	-0.0024 U		PCI/G
		Uranium-233/234	1.61		PCI/G
		Thorium-228	1.05		PCI/G
		Potassium-40	10 U		PCI/G
		Cobalt-60	0.12 U		PCI/G
		Bismuth-214	2.6 U		PCI/G
		Actinium-228	0.1		PCI/G
		Lead-214	9 U		PCI/G
WAG7SEEP1	B00082	Thallium-208	-1.5		PCI/G
		Lead-214	-1 U		PCI/G
		Bismuth-214	-0.6 U		PCI/G
		Cobalt-60	0.05		PCI/G
		Uranium-238	1		PCI/G
		Thorium-232	1		PCI/G
		Cm-245,246	0.032 U		PCI/G
		Cm-243/244	0 U		PCI/G
		Plutonium-239/240	0.264		PCI/G
		Neptunium-237	0.051 U		PCI/G
		Plutonium-238	0.004 U		PCI/G
		Europium-152	0.48 U		PCI/G
		Cobalt-57	0.6		PCI/G

Location	Sample ID	Parameter Name	Result	Qual	Units
WAG7SEEP1	B00082	Cesium-134	0.41		PCI/G
		Uranium-233/234	1.56		PCI/G
		Thorium-228	1.53		PCI/G
		Potassium-40	16.5		PCI/G
		Thorium-234	18		PCI/G
		Alpha activity	105		PCI/G
		Thorium-230	0.9		PCI/G
		Beta activity	173700		PCI/G
		Uranium-235	0.049		PCI/G
		Europium-154	-0.14	U	PCI/G
		Lead-212	-7.9	U	PCI/G
		Europium-155	-3.1	U	PCI/G
		Curium-242	0.014	U	PCI/G
		Uranium-235	-7	U	PCI/G
		Cesium-137	71100		PCI/G
		Americium-241	0.081		PCI/G
		Actinium-228	2.3	U	PCI/G
WAG7SEEP2	B00087	Thallium-208	0.28	U	PCI/G
		Lead-214	0.91	U	PCI/G
		Uranium-235	-0.11	U	PCI/G
		Americium-241	6.7		PCI/G
		Uranium-238	1.2		PCI/G
		Thorium-232	0.98		PCI/G
		Cm-245,246	0		PCI/G
		Uranium-232	-0.02		PCI/G
		Cm-243/244	0.032		PCI/G
		Plutonium-239/240	21		PCI/G
		Neptunium-237	0.043	UJ	PCI/G
		Plutonium-238	0.344	U	PCI/G
		Europium-152	0.14	U	PCI/G
		Cobalt-57	-0.002	U	PCI/G
		Cesium-134	0.042	U	PCI/G
		Curium-242	0		PCI/G
		Uranium-233/234	1.6		PCI/G
		Thorium-228	1.48		PCI/G
		Potassium-40	17.5		PCI/G
		Thorium-234	0.51	U	PCI/G
		Alpha activity	35.7		PCI/G
		Thorium-230	0.85		PCI/G
		Beta activity	226		PCI/G
		Europium-154	-0.16	U	PCI/G
		Lead-212	1.12	U	PCI/G
		Europium-155	-0.1	U	PCI/G
		Uranium-235	0.38		PCI/G
		Cesium-137	26.8		PCI/G
		Americium-241	7.1		PCI/G
		Cobalt-60	11.72	U	PCI/G
		Bismuth-214	0.63		PCI/G
		Actinium-228	1.17		PCI/G
WAG7SEEP3	B00090	Thallium-208	-1	U	PCI/G
		Lead-214	-2.1	U	PCI/G
		Uranium-238	1.18		PCI/G
		Thorium-232	0.77		PCI/G
		Cm-245,246	0.034		PCI/G
		Cm-243/244	0	U	PCI/G
		Plutonium-239/240	0.3		PCI/G

Location	Sample ID	Parameter Name	Result	Qual	Units
WAG7SEEP3	B00090	Neptunium-237	0.033	U	PCI/G
		Plutonium-238	0.05		PCI/G
		Europium-152	-0.5	U	PCI/G
		Cobalt-57	-1.2	U	PCI/G
		Cesium-134	0.01	U	PCI/G
		Curium-242	0	U	PCI/G
		Uranium-233/234	5.65		PCI/G
		Thorium-228	1.05		PCI/G
		Potassium-40	22		PCI/G
		Thorium-234	0	U	PCI/G
		Alpha activity	24.3		PCI/G
		Thorium-230	0.52		PCI/G
		Beta activity	35800		PCI/G
		Europium-154	-1	U	PCI/G
		Lead-212	-3	U	PCI/G
		Europium-155	3.4	U	PCI/G
		Uranium-235	0.063		PCI/G
		Uranium-235	-1	U	PCI/G
		Cesium-137	9640		PCI/G
		Americium-241	0.113		PCI/G
		Cobalt-60	0.49	U	PCI/G
		Bismuth-214	-0.1	U	PCI/G
		Actinium-228	0.4	U	PCI/G
WAG7SEEP4	B00093	Thallium-208	0.25		PCI/G
		Uranium-238	3.68		PCI/G
		Thorium-232	0.8		PCI/G
		Cm-245,246	0.006	U	PCI/G
		Uranium-232	0.178		PCI/G
		Cm-243/244	-0.0046	U	PCI/G
		Plutonium-239/240	0.068		PCI/G
		Neptunium-237	0.032	U	PCI/G
		Plutonium-238	0.017	U	PCI/G
		Europium-152	0.11	U	PCI/G
		Cobalt-57	-0.029	U	PCI/G
		Cesium-134	-0.034	U	PCI/G
		Curium-242	0	U	PCI/G
		Thorium-228	0.97		PCI/G
		Potassium-40	18.2		PCI/G
		Thorium-234	2.1		PCI/G
		Alpha activity	26.4		PCI/G
		Thorium-230	0.62		PCI/G
		Beta activity	56.4		PCI/G
		Uranium-235	0.242		PCI/G
		Uranium-235	0.32		PCI/G
		Europium-154	0.05	U	PCI/G
		Lead-212	1.23		PCI/G
		Europium-155	0	U	PCI/G
		Uranium-233/234	7.95		PCI/G
		Cesium-137	0.4		PCI/G
		Americium-241	0.039	UJ	PCI/G
		Cobalt-60	16.4		PCI/G
		Bismuth-214	0.64		PCI/G
		Actinium-228	0.99	U	PCI/G
		Lead-214	0.62		PCI/G
WAG7SEEP5	B00096	Thallium-208	1.67		PCI/G
		Bismuth-214	0.4		PCI/G

Location	Sample ID	Parameter Name	Result	Qual	Units
WAG7SEEP5	B00096	Uranium-238	10.5		PCI/G
		Thorium-232	0.48		PCI/G
		Cm-245,246	0.08	U	PCI/G
		Uranium-232	10.8		PCI/G
		Cm-243/244	0.09	U	PCI/G
		Plutonium-239/240	0.15	U	PCI/G
		Neptunium-237	0.056	U	PCI/G
		Plutonium-238	-0.016	U	PCI/G
		Europium-152	0.04	U	PCI/G
		Cobalt-57	-0.02	U	PCI/G
		Cesium-134	-0.054	U	PCI/G
		Curium-242	-0.022	U	PCI/G
		Uranium-233/234	208		PCI/G
		Thorium-228	9.6		PCI/G
		Potassium-40	25.3		PCI/G
		Thorium-234	3.45		PCI/G
		Alpha activity	155		PCI/G
		Thorium-230	0.5		PCI/G
		Beta activity	98.1		PCI/G
		Europium-154	-0.11	U	PCI/G
		Lead-212	5.7		PCI/G
		Europium-155	0.22	U	PCI/G
		Uranium-235	3.8		PCI/G
		Uranium-235	-0.06	U	PCI/G
		Cesium-137	8.49		PCI/G
		Americium-241	0.15	U	PCI/G
		Cobalt-60	18.6		PCI/G
		Actinium-228	0.78		PCI/G
		Lead-214	0.61		PCI/G
WAG7SEEP6	B00099	Thallium-208	2.16		PCI/G
		Uranium-238	7.7		PCI/G
		Thorium-232	0.8		PCI/G
		Cm-245,246	0	U	PCI/G
		Uranium-232	7.3		PCI/G
		Cm-243/244	0.08	U	PCI/G
		Plutonium-239/240	0	U	PCI/G
		Neptunium-237	0.06	U	PCI/G
		Plutonium-238	0.07	U	PCI/G
		Europium-152	-0.01	U	PCI/G
		Cobalt-57	-0.013	U	PCI/G
		Cesium-134	-0.02	U	PCI/G
		Curium-242	0.044	U	PCI/G
		Thorium-228	6.9		PCI/G
		Potassium-40	15.4		PCI/G
		Thorium-234	2		PCI/G
		Alpha activity	310		PCI/G
		Thorium-230	0.83		PCI/G
		Beta activity	76		PCI/G
		Uranium-235	2.76		PCI/G
		Uranium-235	0.07	U	PCI/G
		Europium-154	0.04	U	PCI/G
		Lead-212	7.05		PCI/G
		Europium-155	0.03	U	PCI/G
		Uranium-233/234	164		PCI/G
		Cesium-137	14.4		PCI/G
		Americium-241	0.18	U	PCI/G

Location	Sample ID	Parameter Name	Result	Qual	Units
WAG7SEEP6	B00099	Cobalt-60	23		PCI/G
		Bismuth-214	0.79		PCI/G
		Actinium-228	0.39	U	PCI/G
		Lead-214	0.88		PCI/G
WAG7SEEP7	B00102	Thallium-208	0.21		PCI/G
		Lead-214	0.38		PCI/G
		Uranium-238	0.9		PCI/G
		Thorium-232	0.81		PCI/G
		Cm-245,246	-0.0033	U	PCI/G
		Cm-243/244	0.016	U	PCI/G
		Plutonium-239/240	0.044		PCI/G
		Neptunium-237	0.022	U	PCI/G
		Plutonium-238	0.014		PCI/G
		Europium-152	-0.04	U	PCI/G
		Cobalt-57	-0.008	U	PCI/G
		Cesium-134	0.061	U	PCI/G
		Curium-242	0	U	PCI/G
		Uranium-233/234	0.9		PCI/G
		Thorium-228	1.24		PCI/G
		Potassium-40	21.6		PCI/G
		Thorium-234	0.1	U	PCI/G
		Alpha activity	14.5		PCI/G
		Thorium-230	0.69		PCI/G
		Beta activity	193		PCI/G
		Europium-154	0.15	U	PCI/G
		Lead-212	1.05		PCI/G
		Europium-155	-0.07	U	PCI/G
		Uranium-235	0.042		PCI/G
		Uranium-235	-0.14	U	PCI/G
		Cesium-137	6.9		PCI/G
		Americium-241	0.017	U	PCI/G
		Cobalt-60	16.7		PCI/G
		Bismuth-214	0.61		PCI/G
		Actinium-228	0.29	U	PCI/G

Table A.10
and
Table A.11Metals Analyses (MG/KG)
PCB Analyses(UG/KG)

Location	Sample ID	Parameter Name	Result	Qual	Units
HREDRAIN1	B00107	PCB-1260	20		UG/KG
		PCB-1254	19	U	UG/KG
		PCB-1242	19	U	UG/KG
		PCB-1248	19	U	UG/KG
		PCB-1221	19	U	UG/KG
		PCB-1232	19	U	UG/KG
		PCB-1016	19	U	UG/KG
HREDRAIN1	B00108	PCB-1260	21		UG/KG
		PCB-1254	18	U	UG/KG
		PCB-1242	18	U	UG/KG
		PCB-1232	18	U	UG/KG
		PCB-1221	18	U	UG/KG
		PCB-1016	18	U	UG/KG
		PCB-1248	18	U	UG/KG
HREDRAIN1	B00109	Nickel	17.7		MG/KG
		Potassium	2890		MG/KG
		Magnesium	2490		MG/KG
		Antimony	0.87	U	MG/KG
		Barium	158		MG/KG
		Arsenic	4.3		MG/KG
		Iron	24800		MG/KG
		Copper	22.8		MG/KG
		Manganese	1230		MG/KG
		Aluminum	17500		MG/KG
		Zinc	89.2		MG/KG
		Sodium	602		MG/KG
		Silver	1.7	U	MG/KG
		Lead	17.9		MG/KG
		Cobalt	12.1		MG/KG
		Chromium	42.7		MG/KG
		Beryllium	0.73		MG/KG
		Cadmium	0.87	U	MG/KG
		Thallium	1.7	U	MG/KG
		Vanadium	26.3		MG/KG
		Calcium	3720		MG/KG
		Selenium	1.2	U	MG/KG
HREDRAIN1	B00110	Nickel	20.8		MG/KG
		Potassium	3060		MG/KG
		Selenium	1.1	U	MG/KG
		Iron	31300		MG/KG
		Manganese	1030		MG/KG
		Aluminum	17700		MG/KG
		Zinc	92.2		MG/KG
		Sodium	568		MG/KG
		Silver	1.7	U	MG/KG
		Lead	18.8		MG/KG
		Cobalt	12.9		MG/KG
		Cadmium	0.93		MG/KG
		Barium	151		MG/KG
		Arsenic	4.5		MG/KG

Table A.10
and
Table A.11Metals Analyses (MG/KG)
PCB Analyses(UG/KG)

Location	Sample ID	Parameter Name	Result	Qual	Units
		Antimony	0.84	U	MG/KG
		Chromium	42.3		MG/KG
		Beryllium	0.84		MG/KG
		Copper	29.2		MG/KG
		Thallium	1.7	U	MG/KG
		Magnesium	2610		MG/KG
		Vanadium	27		MG/KG
		Calcium	3120		MG/KG
HREDRAIN2	B00112	PCB-1260	100		UG/KG
		PCB-1232	25	U	UG/KG
		PCB-1221	25	U	UG/KG
		PCB-1016	25	U	UG/KG
		PCB-1254	25	U	UG/KG
		PCB-1242	25	U	UG/KG
		PCB-1248	25	U	UG/KG
HREDRAIN2	B00113	Nickel	29.2		MG/KG
		Potassium	4330		MG/KG
		Iron	32800		MG/KG
		Manganese	428		MG/KG
		Aluminum	22900		MG/KG
		Zinc	119		MG/KG
		Sodium	775		MG/KG
		Silver	2.2	U	MG/KG
		Lead	22.4		MG/KG
		Cobalt	14.8		MG/KG
		Cadmium	1.1	U	MG/KG
		Barium	226		MG/KG
		Arsenic	5.8		MG/KG
		Antimony	1.1	U	MG/KG
		Thallium	2.2	U	MG/KG
		Chromium	104		MG/KG
		Beryllium	1		MG/KG
		Copper	23.8		MG/KG
		Magnesium	5370		MG/KG
		Vanadium	34.4		MG/KG
		Selenium	1.5	U	MG/KG
		Calcium	14200		MG/KG
HREDRAIN3	B00115	PCB-1260	37		UG/KG
		PCB-1232	19	U	UG/KG
		PCB-1221	19	U	UG/KG
		PCB-1016	19	U	UG/KG
		PCB-1254	19	U	UG/KG
		PCB-1242	19	U	UG/KG
		PCB-1248	19	U	UG/KG
HREDRAIN3	B00116	Nickel	18.6		MG/KG
		Potassium	3260		MG/KG
		Iron	27000		MG/KG
		Beryllium	0.77		MG/KG
		Copper	27.3		MG/KG
		Manganese	1300		MG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
		Aluminum	18200		MG/KG
		Zinc	78.1		MG/KG
		Lead	15.8		MG/KG
		Cobalt	11.8		MG/KG
		Cadmium	0.83	U	MG/KG
		Barium	208		MG/KG
		Arsenic	4.2		MG/KG
		Antimony	0.83	U	MG/KG
		Thallium	1.7	U	MG/KG
		Magnesium	2690		MG/KG
		Chromium	53.5		MG/KG
		Sodium	549		MG/KG
		Silver	1.7	U	MG/KG
		Vanadium	27.1		MG/KG
		Selenium	1.1	U	MG/KG
		Calcium	3260		MG/KG
HREDOWN1	B00118	PCB-1260	25		UG/KG
		PCB-1221	22	U	UG/KG
		PCB-1232	22	U	UG/KG
		PCB-1016	22	U	UG/KG
		PCB-1254	22	U	UG/KG
		PCB-1242	22	U	UG/KG
		PCB-1248	22	U	UG/KG
HREDOWN1	B00119	Nickel	14.1		MG/KG
		Magnesium	1580		MG/KG
		Vanadium	22		MG/KG
		Iron	18700		MG/KG
		Chromium	21.7		MG/KG
		Beryllium	0.72		MG/KG
		Copper	14		MG/KG
		Manganese	543		MG/KG
		Aluminum	14500		MG/KG
		Zinc	46.2		MG/KG
		Sodium	653		MG/KG
		Silver	1.9	U	MG/KG
		Lead	19.5		MG/KG
		Cobalt	17		MG/KG
		Cadmium	2		MG/KG
		Barium	113		MG/KG
		Arsenic	3.7		MG/KG
		Antimony	0.94	U	MG/KG
		Thallium	1.9	U	MG/KG
		Selenium	1.3	U	MG/KG
		Calcium	3580		MG/KG
		Potassium	2100		MG/KG
HREDOWN2	B00121	PCB-1260	27		UG/KG
		PCB-1221	15	U	UG/KG
		PCB-1232	15	U	UG/KG
		PCB-1016	15	U	UG/KG
		PCB-1254	15	U	UG/KG

Table A.10
and
Table A.11Metals Analyses (MG/KG)
PCB Analyses(UG/KG)

Location	Sample ID	Parameter Name	Result	Qual	Units
		PCB-1242	15	U	UG/KG
		PCB-1248	15	U	UG/KG
HREDOWN2	B00122	Nickel	13.3		MG/KG
		Selenium	1.5	U	MG/KG
		Iron	20800		MG/KG
		Chromium	25.2		MG/KG
		Beryllium	0.75		MG/KG
		Copper	15.7		MG/KG
		Manganese	1980		MG/KG
		Aluminum	15200		MG/KG
		Zinc	238		MG/KG
		Lead	28.4		MG/KG
		Cobalt	13.5		MG/KG
		Cadmium	3.2		MG/KG
		Barium	193		MG/KG
		Arsenic	3.9		MG/KG
		Antimony	1.2	U	MG/KG
		Thallium	2.3	U	MG/KG
		Magnesium	1720		MG/KG
		Sodium	786		MG/KG
		Silver	2.3	U	MG/KG
		Vanadium	22.6		MG/KG
		Calcium	5630		MG/KG
		Potassium	2630		MG/KG
HREDOWN3	B00124	PCB-1260	59		UG/KG
		PCB-1221	22	U	UG/KG
		PCB-1232	22	U	UG/KG
		PCB-1016	22	U	UG/KG
		PCB-1254	22	U	UG/KG
		PCB-1242	22	U	UG/KG
		PCB-1248	22	U	UG/KG
HREDOWN3	B00125	Nickel	25.7		MG/KG
		Magnesium	3080		MG/KG
		Vanadium	30.4		MG/KG
		Iron	32000		MG/KG
		Chromium	40.4		MG/KG
		Beryllium	0.92		MG/KG
		Copper	27.6		MG/KG
		Manganese	1020		MG/KG
		Aluminum	21900		MG/KG
		Zinc	137		MG/KG
		Sodium	669		MG/KG
		Silver	2.1	U	MG/KG
		Lead	28.6		MG/KG
		Cobalt	13.5		MG/KG
		Cadmium	1	U	MG/KG
		Barium	329		MG/KG
		Arsenic	5.2		MG/KG
		Antimony	1	U	MG/KG
		Thallium	2.1	U	MG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
		Selenium	1.4	U	MG/KG
		Calcium	3660		MG/KG
		Potassium	4190		MG/KG
HREDOWN4	B00127	PCB-1260	160		UG/KG
		PCB-1221	20	U	UG/KG
		PCB-1232	20	U	UG/KG
		PCB-1016	20	U	UG/KG
		PCB-1254	20	U	UG/KG
		PCB-1242	20	U	UG/KG
		PCB-1248	20	U	UG/KG
HREDOWN4	B00128	Nickel	27.8		MG/KG
		Potassium	4430		MG/KG
		Iron	31500		MG/KG
		Chromium	37.4		MG/KG
		Beryllium	1		MG/KG
		Copper	23.3		MG/KG
		Manganese	750		MG/KG
		Aluminum	23000		MG/KG
		Zinc	102		MG/KG
		Sodium	644		MG/KG
		Silver	1.9	U	MG/KG
		Lead	26.3		MG/KG
		Cobalt	12.5		MG/KG
		Cadmium	1.2		MG/KG
		Barium	216		MG/KG
		Arsenic	5.2		MG/KG
		Antimony	0.96	U	MG/KG
		Thallium	1.9	U	MG/KG
		Magnesium	3590		MG/KG
		Vanadium	28.9		MG/KG
		Selenium	1.3	U	MG/KG
		Calcium	6030		MG/KG

Location	Sample ID	Parameter	Result	Qual	Units
HREDRAIN1	B00105	Thallium-208	0.53	U	PCI/G
		Lead-214	0.1	UJ	PCI/G
		Actinium-228	0.34	U	PCI/G
		Bismuth-214	-0.56	U	PCI/G
		Cobalt-60	-0.081	U	PCI/G
		Uranium-235	0.1	U	PCI/G
		Beta activity	2440		PCI/G
		Thorium-234	0.7	U	PCI/G
		Uranium-233/234	1.99		PCI/G
		Potassium-40	1.94		PCI/G
		Uranium-238	1.07		PCI/G
		Europium-152	-0.15	U	PCI/G
		Cobalt-57	-0.05	U	PCI/G
		Cesium-134	0.114	U	PCI/G
		Europium-154	-0.068	U	PCI/G
		Lead-212	-0.32	UJ	PCI/G
		Europium-155	-0.12	U	PCI/G
		Alpha activity	43		PCI/G
		Uranium-235	0.118		PCI/G
		Cesium-137	1350		PCI/G
HREDRAIN1	B00106	Thallium-208	0.58	U	PCI/G
		Lead-214	1	UJ	PCI/G
		Bismuth-214	0.93	U	PCI/G
		Cobalt-60	0.105		PCI/G
		Uranium-238	1.08		PCI/G
		Europium-152	0.06	U	PCI/G
		Cobalt-57	0.12	U	PCI/G
		Europium-154	0.328		PCI/G
		Lead-212	0.39	UJ	PCI/G
		Europium-155	-0.26	U	PCI/G
		Uranium-233/234	2.02		PCI/G
		Potassium-40	14		PCI/G
		Thorium-234	2.6	U	PCI/G
		Alpha activity	53		PCI/G
		Beta activity	2300		PCI/G
		Cesium-134	0.05	U	PCI/G
		Uranium-235	0.088		PCI/G
		Uranium-235	1.5	U	PCI/G
		Cesium-137	2850		PCI/G
		Actinium-228	1.23		PCI/G
HREDRAIN2	B00111	Thallium-208	0.7	U	PCI/G
		Lead-214	-0.8	UJ	PCI/G
		Beta activity	7220		PCI/G
		Uranium-235	0.174		PCI/G
		Uranium-238	1.15		PCI/G
		Uranium-232	0.026	U	PCI/G
		Europium-152	0.1	U	PCI/G
		Cobalt-57	0.22	U	PCI/G
		Cesium-134	0.26	U	PCI/G
		Europium-154	1.66		PCI/G

Location	Sample ID	Parameter	Result	Qual	Units
HREDRAIN2	B00111	Lead-212	-0.2	UJ	PCI/G
		Europium-155	0.2	U	PCI/G
		Uranium-233/234	1.84		PCI/G
		Potassium-40	16.8		PCI/G
		Thorium-234	-1.2	U	PCI/G
		Alpha activity	252		PCI/G
		Uranium-235	0.7	U	PCI/G
		Cesium-137	7990		PCI/G
		Cobalt-60	0.46	U	PCI/G
		Bismuth-214	0.96	U	PCI/G
		Actinium-228	0.68	U	PCI/G
HREDRAIN3	B00114	Thallium-208	0.1	U	PCI/G
		Lead-214	-0.1	UJ	PCI/G
		Uranium-238	0.78		PCI/G
		Europium-152	-0.02	U	PCI/G
		Cobalt-57	0.47	U	PCI/G
		Lead-212	-0.8	UJ	PCI/G
		Europium-155	0.4	U	PCI/G
		Uranium-233/234	1.88		PCI/G
		Potassium-40	15		PCI/G
		Thorium-234	3.7	U	PCI/G
		Alpha activity	87		PCI/G
		Beta activity	4550		PCI/G
		Uranium-235	0.079		PCI/G
		Cesium-134	0.19	U	PCI/G
		Europium-154	0.42	U	PCI/G
		Uranium-235	-1.3	U	PCI/G
		Cesium-137	4500		PCI/G
		Cobalt-60	0.059	U	PCI/G
		Bismuth-214	1.01		PCI/G
		Actinium-228	0.88		PCI/G
		Thallium-208	-0.42	U	PCI/G
		Uranium-235	0.79		PCI/G
		Uranium-235	2.8	U	PCI/G
HREDOWN1	B00117	Uranium-238	1.15		PCI/G
		Europium-152	0.02	U	PCI/G
		Cobalt-57	0.04	U	PCI/G
		Cesium-134	0.17	U	PCI/G
		Europium-154	0.09	U	PCI/G
		Lead-212	0.5	UJ	PCI/G
		Europium-155	-0.7	U	PCI/G
		Uranium-233/234	26.4		PCI/G
		Potassium-40	7.6		PCI/G
		Thorium-234	-0.8	U	PCI/G
		Alpha activity	49		PCI/G
		Beta activity	16440		PCI/G
		Cesium-137	7490		PCI/G
		Cobalt-60	0.69		PCI/G
		Bismuth-214	0.67	U	PCI/G
		Actinium-228	1.09	U	PCI/G

Location	Sample ID	Parameter	Result	Qual	Units
HREDOWN1	B00117	Lead-214	-0.7	UJ	PCI/G
HREDOWN2	B00120	Thallium-208	1.3	U	PCI/G
		Bismuth-214	-0.6	U	PCI/G
		Uranium-238	1.39		PCI/G
		Europium-152	-1.2	U	PCI/G
		Cobalt-57	0.08	U	PCI/G
		Lead-212	-2.9	UJ	PCI/G
		Europium-155	-0.8	U	PCI/G
		Uranium-233/234	17.3		PCI/G
		Potassium-40	9.1		PCI/G
		Thorium-234	-3	U	PCI/G
		Alpha activity	23.9		PCI/G
		Beta activity	27800		PCI/G
		Uranium-235	0.63		PCI/G
		Cesium-134	0.35	U	PCI/G
		Europium-154	0.04	U	PCI/G
		Uranium-235	2.9	U	PCI/G
		Cesium-137	24100		PCI/G
		Cobalt-60	0.67		PCI/G
		Actinium-228	0.23	U	PCI/G
		Lead-214	-2.6	UJ	PCI/G
HREDOWN3	B00123	Thallium-208	-0.7	U	PCI/G
		Uranium-235	0.28		PCI/G
		Uranium-235	-5.4	U	PCI/G
		Uranium-238	1.32		PCI/G
		Uranium-232	0.032	U	PCI/G
		Europium-152	-0.28	U	PCI/G
		Cobalt-57	0.75	U	PCI/G
		Cesium-134	0.05	U	PCI/G
		Europium-154	2.13		PCI/G
		Lead-212	-4	UJ	PCI/G
		Europium-155	-1.1	U	PCI/G
		Uranium-233/234	8.01		PCI/G
		Potassium-40	17.7		PCI/G
		Thorium-234	5	U	PCI/G
		Alpha activity	337		PCI/G
		Beta activity	6980		PCI/G
		Cesium-137	20600		PCI/G
		Cobalt-60	0.56		PCI/G
		Bismuth-214	1.6	U	PCI/G
		Actinium-228	0.57	U	PCI/G
		Lead-214	1.6	UJ	PCI/G
HREDOWN4	B00126	Thallium-208	0.46		PCI/G
		Lead-214	0.57	UJ	PCI/G
		Uranium-238	1.14		PCI/G
		Europium-152	0.106	U	PCI/G
		Cobalt-57	-0.01	U	PCI/G
		Cesium-134	0.017	U	PCI/G
		Europium-154	0.004	U	PCI/G
		Lead-212	1.21	UJ	PCI/G

Location	Sample ID	Parameter	Result	Qual	Units
HREDOWN4	B00126	Europium-155	0.07	U	PCI/G
		Uranium-233/234	1.5		PCI/G
		Potassium-40	23.2		PCI/G
		Thorium-234	3.6	U	PCI/G
		Alpha activity	14.1		PCI/G
		Beta activity	5020		PCI/G
		Uranium-235	0.121		PCI/G
		Uranium-235	0.04	U	PCI/G
		Cesium-137	763		PCI/G
		Cobalt-60	0.051		PCI/G
		Bismuth-214	0.56		PCI/G
		Actinium-228	1.34		PCI/G

Location	Sample ID	Parameter Name	Result	Qual	Units
LANDFILL1	B00007	Arsenic	6.9		MG/KG
		Cobalt	13.9		MG/KG
		Manganese	464		MG/KG
		Iron	41800		MG/KG
LANDFILL2	B00011	PCB-1260	51		UG/KG
LANDFILL2	B00012	Arsenic	4.9		MG/KG
		Manganese	1200		MG/KG
		Iron	24500		MG/KG
		Cobalt	14.3		MG/KG
LANDFILL3	B00014	PCB-1260	160		UG/KG
LANDFILL3	B00015	Zinc	69.1		MG/KG
		Iron	21600		MG/KG
		Manganese	574		MG/KG
SCRPYARD1	B00016	Arsenic	3.4		MG/KG
		Cobalt	10.2		MG/KG
		Iron	23500		MG/KG
		Manganese	443		MG/KG
		Zinc	58.1		MG/KG
SCRPYARD2	B00019	Arsenic	7.6		MG/KG
		Cobalt	6.3		MG/KG
		Zinc	46.7		MG/KG
		Manganese	313		MG/KG
		Iron	31200		MG/KG
SCRPYARD3	B00020	Zinc	48.6		MG/KG
		Iron	16200		MG/KG
		Manganese	267		MG/KG
SCRPYARD3	B00021	Arsenic	3.4		MG/KG
		Iron	23700		MG/KG
		Manganese	314		MG/KG
		Zinc	53.3		MG/KG
		Cobalt	8.1		MG/KG
SWSA3-1	B00024	Arsenic	7.5		MG/KG
		Iron	51000		MG/KG
		Manganese	1220		MG/KG
		Zinc	66.1		MG/KG
		Cobalt	23.3		MG/KG
SWSA3-2	B00027	Arsenic	6.9		MG/KG
		Zinc	45.5		MG/KG
		Iron	44800		MG/KG
		Manganese	936		MG/KG
		Cobalt	12.9		MG/KG
SWSA3-3	B00029	PCB-1260	28		UG/KG
SWSA3-3	B00030	Cobalt	13.8		MG/KG
		Iron	39600		MG/KG
		Zinc	43.4		MG/KG
		Manganese	1440		MG/KG
SWSA3-4	B00033	Arsenic	5.6		MG/KG
		Iron	25800		MG/KG
		Manganese	1210		MG/KG
		Zinc	48.3		MG/KG
SWSA3-5	B00036	Cobalt	13.2		MG/KG
		Arsenic	7.1		MG/KG
		Cobalt	21.1		MG/KG
		Zinc	77.9		MG/KG
		Iron	44700		MG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
SWSA3-5	B00036	Manganese	1110		MG/KG
SWSA3-6	B00039	Arsenic	4.9		MG/KG
		Iron	24200		MG/KG
		Zinc	38.8		MG/KG
		Manganese	777		MG/KG
SWSA3-7	B00042	PCB-1260	19		UG/KG
SWSA3-7	B00044	Arsenic	4.7		MG/KG
		Cobalt	15.4		MG/KG
		Manganese	1200		MG/KG
		Iron	31700		MG/KG
		Zinc	75.4		MG/KG
SWSA3-7	B00045	Arsenic	4.8		MG/KG
		Iron	36800		MG/KG
		Manganese	842		MG/KG
		Zinc	81		MG/KG
		Cobalt	13		MG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
LANDFILL1	B00001	Lead-214	1.02		PCI/G
		Alpha activity	20.5		PCI/G
		Uranium-238	1.01		PCI/G
		Lead-212	1.63		PCI/G
LANDFILL2	B00010	Lead-214	1.05		PCI/G
		Alpha activity	16.6		PCI/G
		Uranium-238	0.8		PCI/G
		Lead-212	1.29		PCI/G
LANDFILL3	B00013	Lead-214	0.72		PCI/G
		Alpha activity	20.8		PCI/G
		Uranium-238	1.09		PCI/G
		Lead-212	1.01		PCI/G
SWSA3-1	B00022	Lead-214	0.71		PCI/G
		Uranium-238	1.76		PCI/G
		Alpha activity	19.8		PCI/G
		Lead-212	1.67		PCI/G
SWSA3-2	B00025	Lead-214	1		PCI/G
		Uranium-238	1.48		PCI/G
		Lead-212	1.33		PCI/G
SWSA3-3	B00028	Uranium-238	3.8		PCI/G
		Lead-212	165		PCI/G
SWSA3-4	B00031	Lead-214	1.1		PCI/G
		Alpha activity	16.7		PCI/G
		Uranium-238	1.19		PCI/G
		Lead-212	1.41		PCI/G
SWSA3-5	B00034	Lead-214	1.31		PCI/G
		Uranium-238	1.83		PCI/G
		Lead-212	1.77		PCI/G
		Alpha activity	20.9		PCI/G
SWSA3-6	B00037	Lead-214	1.08		PCI/G
		Lead-212	1.66		PCI/G
		Uranium-238	1.1		PCI/G
		Alpha activity	24.3		PCI/G
SWSA3-7	B00040	Lead-214	0.721		PCI/G
		Uranium-238	0.96		PCI/G
		Lead-212	1.33		PCI/G
		Alpha activity	10.4		PCI/G
SWSA3-7	B00041	Lead-214	0.733		PCI/G
		Uranium-238	0.99		PCI/G
		Lead-212	1.23		PCI/G
		Alpha activity	14.8		PCI/G

Location	Sample ID	Parameter Name	Result	Qual	Units
WAG4SEEP1	B00046	PCB-1260	27		UG/KG
WAG4SEEP2	B00047	PCB-1260	40		UG/KG
WAG4SEEP4	B00049	PCB-1260	64		UG/KG
WAG4SEEP4	B00050	Selenium	2		MG/KG
		Sodium	886		MG/KG
		Manganese	3830		MG/KG
		Cobalt	22.8		MG/KG
		Arsenic	10		MG/KG
WAG4SEEP6	B00054	Arsenic	4.7		MG/KG
		Manganese	1010		MG/KG
		Sodium	490		MG/KG
WAG4SEEP7	B00055	PCB-1254	25		UG/KG
WAG4SEEP7	B00056	PCB-1254	23		UG/KG
WAG4SEEP7	B00057	Nickel	21.4		MG/KG
		Arsenic	5.9		MG/KG
		Sodium	528		MG/KG
		Manganese	725		MG/KG
WAG4SEEP7	B00058	Nickel	25.6		MG/KG
		Arsenic	5.7		MG/KG
		Sodium	495		MG/KG
		Manganese	825		MG/KG
		Cobalt	15.3		MG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
DOWNGRAD1	B00065	Arsenic	4.4		MG/KG
		Sodium	461		MG/KG
		Manganese	701		MG/KG
DOWNGRAD2	B00070	Arsenic	4.2		MG/KG
		Manganese	1610		MG/KG
		Sodium	519		MG/KG
DOWNGRAD3	B00073	Arsenic	4.5		MG/KG
		Manganese	833		MG/KG
		Sodium	469		MG/KG
DOWNGRAD4	B00076	Arsenic	5.1		MG/KG
		Manganese	822		MG/KG
		Sodium	475		MG/KG
LNLEAK7B	B00080	Nickel	25.4		MG/KG
		Arsenic	3.5		MG/KG
		Manganese	557		MG/KG
		Sodium	474		MG/KG
WAG7SEEP1	B00085	Arsenic	4		MG/KG
		Sodium	475		MG/KG
		Manganese	876		MG/KG
WAG7SEEP1	B00086	Nickel	21.3		MG/KG
		Arsenic	4.9		MG/KG
		Manganese	955		MG/KG
		Sodium	529		MG/KG
WAG7SEEP2	B00089	Arsenic	5.4		MG/KG
		Sodium	643		MG/KG
		Manganese	673		MG/KG
WAG7SEEP3	B00092	Arsenic	7		MG/KG
		Sodium	466		MG/KG
		Cobalt	16.6		MG/KG
		Manganese	609		MG/KG
WAG7SEEP4	B00095	Nickel	23.2		MG/KG
		Magnesium	5130		MG/KG
		Arsenic	3.2		MG/KG
		Manganese	589		MG/KG
WAG7SEEP5	B00098	Selenium	1.2		MG/KG
		Manganese	541		MG/KG
		Arsenic	3.9		MG/KG
		Cobalt	12.8		MG/KG
WAG7SEEP6	B00101	Thallium	2.5		MG/KG
		Manganese	5960		MG/KG
		Sodium	520		MG/KG
		Arsenic	6		MG/KG
WAG7SEEP7	B00103	PCB-1260	21		UG/KG
WAG7SEEP7	B00104	Arsenic	4		MG/KG
		Sodium	756		MG/KG
		Manganese	1290		MG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
DOWNGRAD1	B00059	Uranium-235	0.072		PCI/G
		Thorium-230	0.29		PCI/G
		Alpha activity	17.3		PCI/G
		Uranium-238	1.3		PCI/G
		Uranium-233/234	0.89		PCI/G
DOWNGRAD2	B00068	Uranium-235	0.18		PCI/G
		Uranium-238	0.87		PCI/G
		Uranium-233/234	1.01		PCI/G
		Alpha activity	10.8		PCI/G
		Thorium-230	0.46		PCI/G
DOWNGRAD3	B00071	Uranium-235	0.069		PCI/G
		Thorium-230	0.52		PCI/G
		Alpha activity	13.5		PCI/G
		Uranium-238	0.97		PCI/G
		Uranium-233/234	1.05		PCI/G
DOWNGRAD4	B00074	Uranium-235	0.114		PCI/G
		Uranium-233/234	1.05		PCI/G
		Uranium-238	0.97		PCI/G
		Alpha activity	11.6		PCI/G
		Thorium-230	0.6		PCI/G
LNLEAK7B	B00077	Uranium-235	0.083		PCI/G
		Uranium-238	1.23		PCI/G
		Uranium-233/234	1.1		PCI/G
		Alpha activity	14.6		PCI/G
		Thorium-230	0.41		PCI/G
LNLEAK7B	B00078	Uranium-235	-0.015		PCI/G
		Alpha activity	19.1		PCI/G
		Uranium-238	1.16		PCI/G
		Thorium-230	0.23		PCI/G
WAG7SEEP1	B00081	Uranium-235	0.035		PCI/G
		Uranium-238	0.95		PCI/G
		Uranium-233/234	1.61		PCI/G
		Alpha activity	20.2		PCI/G
		Thorium-230	0.86		PCI/G
WAG7SEEP1	B00082	Uranium-235	0.049		PCI/G
		Thorium-230	0.9		PCI/G
		Alpha activity	105		PCI/G
		Uranium-233/234	1.56		PCI/G
		Thorium-228	1.53		PCI/G
WAG7SEEP2	B00087	Uranium-238	1		PCI/G
		Thorium-230	0.85		PCI/G
		Uranium-233/234	1.6		PCI/G
		Alpha activity	35.7		PCI/G
WAG7SEEP3	B00090	Uranium-235	0.063		PCI/G
		Alpha activity	24.3		PCI/G
		Uranium-233/234	5.65		PCI/G
		Uranium-238	1.18		PCI/G
		Thorium-230	0.52		PCI/G
WAG7SEEP4	B00093	Uranium-238	3.68		PCI/G
		Uranium-233/234	7.95		PCI/G
		Alpha activity	26.4		PCI/G
		Uranium-235	0.242		PCI/G
		Thorium-230	0.62		PCI/G
WAG7SEEP5	B00096	Uranium-235	3.8		PCI/G
		Alpha activity	155		PCI/G

Location	Sample ID	Parameter Name	Result	Qual	Units
WAG7SEEP5	B00096	Uranium-238	10.5		PCI/G
		Uranium-233/234	208		PCI/G
		Thorium-230	0.5		PCI/G
WAG7SEEP6	B00099	Uranium-235	2.76		PCI/G
		Thorium-230	0.83		PCI/G
		Uranium-238	7.7		PCI/G
		Uranium-233/234	164		PCI/G
		Alpha activity	310		PCI/G
WAG7SEEP7	B00102	Uranium-235	0.042		PCI/G
		Thorium-230	0.69		PCI/G
		Uranium-238	0.9		PCI/G
		Uranium-233/234	0.9		PCI/G
		Alpha activity	14.5		PCI/G

Location	Sample ID	Parameter Name	Result	Qual	Units
HREDOWN1	B00118	PCB-1260	25		UG/KG
HREDOWN2	B00121	PCB-1260	27		UG/KG
HREDOWN3	B00124	PCB-1260	59		UG/KG
HREDOWN4	B00127	PCB-1260	160		UG/KG
HREDOWN4	B00128	Arsenic	5.2		MG/KG
		Cobalt	12.5		MG/KG
		Sodium	644		MG/KG

Location	Sample ID	Parameter Name	Result	Qual	Units
HREDOWN1	B00117	Alpha activity	49		PCI/G
		Uranium-238	1.15		PCI/G
HREDOWN2	B00120	Alpha activity	23.9		PCI/G
		Uranium-238	1.39		PCI/G
HREDOWN3	B00123	Alpha activity	337		PCI/G
		Uranium-238	1.32		PCI/G
HREDOWN4	B00126	Alpha activity	14.1		PCI/G
		Uranium-238	1.14		PCI/G

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