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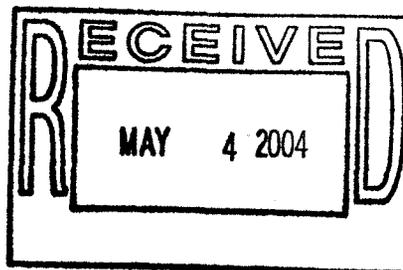
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**DATA SUMMARY 1
OPERABLE UNIT NO. 14
RADIOACTIVE SITES**

U.S. Department of Energy
Rocky Flats Environmental Technology Site
Golden, Colorado

ENVIRONMENTAL RESTORATION PROGRAM



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LIST OF ACRONYMS AND ABBREVIATIONS

ANOVA	analysis of variance
BNA	base/neutral acid extractable semivolatile organic compounds
BZME	toluene
cm ²	square centimeter
CDPHE	Colorado Department of Public Health and Environment
CEARP	Comprehensive Environmental Assessment and Response Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLP	Contract Laboratory Program
cpm	counts per minute
CRC	Chemical Rubber Company
CRDL	Contract Required Detection Limit
dicamba	a commercial herbicide
dichlorprop	a commercial herbicide
DOE	U.S. Department of Energy
dpm	disintegrations per minute
DQO	Data Quality Objective
EPA	U.S. Environmental Protection Agency
FIDLER	Field Instrument for the Detection of Low-Energy Radiation
FS	Feasibility Study
FSP	Field Sampling Plan
GRRASP	General Radiochemistry and Routine Analytical Services Protocol
HPGe	high purity germanium
IAG	Interagency Agreement
IFS	Integrated Field Sampling Plan
IHSS	Individual Hazardous Substance Site
IM/IRA	Interim Measure/Interim Remedial Action

LIST OF ACRONYMS AND ABBREVIATIONS

kg	kilogram
L	liter
lb	pound
LNAPL	light nonaqueous phase liquid
m	meter
m ³	cubic meter
MCPA	4-chloro, 2-methyl phenoxyacetic acid, a commercial herbicide
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
mg/kg	milligrams per kilogram
mL	milliliter
NaI	sodium iodide
NC	not calculable
nCi/g	nanocuries per gram
OP	Operating Procedure
OU	operable unit
PAH	polynuclear aromatic hydrocarbon
PARCC	precision, accuracy, representativeness, comparability, and completeness
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
pCi/g	picocuries per gram
pCi/L	picocuries per liter
pCi/lb	picocuries per pound
PRG	Preliminary Remediation Goal
QA	quality assurance
QC	quality control

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LIST OF ACRONYMS AND ABBREVIATIONS

RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RDL	Required Detection Limit
RF	Rocky Flats
RFEDS	Rocky Flats Environmental Data System
RFETS	Rocky Flats Environmental Technology Site
RFI	RCRA Facility Investigation
RI	Remedial Investigation
ROD	Record of Decision
RPD	relative percent difference
SOP	Standard Operating Procedure
SQL	sample quantitation limit
SVOC	semivolatile organic compound
TAL	target analyte list
TCA	trichloroethane
TCL	target compound list
TIC	tentatively identified compound
TOC	total organic carbon
UTL	upper tolerance limit
UTL _{99/99}	upper tolerance limit with 99 percent confidence of 99 percent coverage
VOC	volatile organic compound
μg/kg	micrograms per kilogram
μg/L	micrograms per liter
±	plus or minus
1,1,1-TCA	1,1,1-trichloroethane

EXECUTIVE SUMMARY

This document presents the results of the nonintrusive Phase I, Stage 1 field activities for Operable Unit No. 14 (OU14) at the U.S. Department of Energy Rocky Flats Environmental Technology Site. The nonintrusive field activities included surface radiological surveys, soil-gas surveys, and surface-soil sampling. These activities were conducted in accordance with the Final Phase I Resource Conservation and Recovery Act Facility Investigation/Comprehensive Environmental Response, Compensation, and Liability Act Remedial Investigation (RFI/RI) Work Plan, Operable Unit 14 - Radioactive Sites.

The purpose of this Data Summary is to describe the field activities and summarize the analytical results collected during this investigation. The Individual Hazardous Substance Sites (IHSSs) investigated in OU14 are as follows:

- Radioactive Site - 700 Area Site No. 1 (IHSS 131)
- Radioactive Site - Building 334 Parking Lot (IHSS 156.1)
- Radioactive Site - Building 444 Parking Lot (IHSS 160)
- Radioactive Site - Area West of Building 664 (IHSS 161)
- Radioactive Site - 700 Area Site No. 2 (IHSS 162)
- Radioactive Site - 800 Area Site No. 2 - Concrete Slab

- Radioactive Site - 800 Area Site No. 2 - Building 886 Spills (IHSS 164.2)
- Radioactive Site - 800 Area Site No. 2 - Building 889 Storage (IHSS 164.3)

This OU14 Data Summary discusses methods of investigation and specific activities for each IHSS. A brief history of each IHSS includes pertinent historical information and facility uses. The analytical data were summarized and compared to residential scenario Preliminary Remediation Goals (PRGs) and background values to determine whether potential contaminants are present at elevated levels. A statistical assessment of the surface-soil data for each IHSS was performed to determine whether (1) a sufficient number of samples was collected for a thorough characterization and (2) additional sampling activities are necessary.

All analytical results presented in this Data Summary are based on a March 17, 1995, data extraction from the Rocky Flats Environmental Data System (RFEDS). At the time of this extraction, not all of the results had been validated. This status of the data validation is discussed in further detail in Section 3.2, Data Quality Assessment.

An evaluation of nature and extent of contamination, or recommendations for further work, were not included in this Data Summary as per the modified scope of work.

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1.0 INTRODUCTION

Preparation of this document meets the requirements of the Phase I, Stage 1 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI)/Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation (RI) Work Plan. This Data Summary presents the results of the nonintrusive Phase I, Stage 1 activities for Operable Unit (OU) No. 14 at the U.S. Department of Energy (DOE) Rocky Flats Environmental Technology Site (RFETS) located in Golden, Colorado (Figure 1-1). Figure 1-2 is a map of the site location and local topography. The nonintrusive Phase I (screening level) activities include surface radiological surveys (i.e., high purity germanium [HPGe] and sodium iodide [NaI] surveys), shallow soil-gas surveys, and surface-soil sampling.

Phase I, Stage 1 activities are being conducted under the Phase I RFI/RI for OU14 (DOE 1992). The work is part of a comprehensive, multistage program of site characterization, feasibility studies (FS), and remedial/corrective actions currently in progress at RFETS. These activities are pursuant to an Interagency Agreement (IAG) among DOE, the U.S. Environmental Protection Agency (EPA), and the State of Colorado Department of Public Health and Environment (CDPHE), dated January 22, 1991 (DOE et al. 1991). The IAG program addresses both RCRA and CERCLA requirements. The purpose of this Data Summary is to report analytical results.

1.1 BACKGROUND

OU14 consists of eight Individual Hazardous Substance Sites (IHSSs) located throughout the RFETS Industrial Area. The IHSSs include an area with radiological contamination due to firefighting activities, an area of radiological contamination identified during ground

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monitoring activities, and areas that were used for surface storage of radiologically contaminated drums, boxes, equipment, a concrete slab, and soils. Figure 1-3 shows the locations of the eight IHSSs in OU14. Specific descriptions of each IHSS are in Section 3.0 of this report.

IHSSs at OU14 were evaluated in the draft Proposed Plan for Reorganization and Remediation of the Industrial Area Operable Units (DOE 1994). All IHSSs of the Industrial Area OUs were evaluated against a standard set of criteria and rated to assist in identifying those IHSSs that are candidates for closure or accelerated cleanup. This rating allowed for the expedited risk-based closure of the Industrial Area IHSSs by issuing a decision equivalent to a Record of Decision (ROD) for each IHSS or group of IHSSs before issuing RODs for each Industrial Area OU. The rating process was designed to allow potential changes of previously planned work scopes based on the collection of new data.

1.2 PURPOSE AND SCOPE

The following are the purposes of this Data Summary:

- Describe the field activities implemented during the nonintrusive Phase I, Stage 1 activities.
- Present analytical results from all nonintrusive activities for characterization of the OU14 IHSSs.
- Perform a statistical assessment of surface-soil data to examine sampling adequacy.

The Phase I, Stage 1 activities for OU14 were designed to detect contamination at each IHSS via nonintrusive or limited-intrusive screening-level surveys. These surveys were intended to provide an assessment of the presence or absence of contamination and to be a step toward defining the nature and extent of the contamination. The following are the activities that were undertaken for the Phase I, Stage 1 activities:

- visual inspections;
- surface radiological surveys;
- surface-soil sampling; and
- soil-gas surveys.

This document presents the results of these inspections, surveys, and sampling events for each individual IHSS. All results of the surface radiological survey are included as appendices or tables. After the activities for Phase I are completed, a comprehensive RFI/RI document will be prepared to summarize the findings and fulfill the initial objectives of the RFI/RI as defined in the OU14 RFI/RI Work Plan (DOE 1992).

1.3 REFERENCES

U.S. Department of Energy. 1994. *Proposed Plan for Reorganization and Remediation of the Industrial Area Operable Units at the Rocky Flats Environmental Technology Site, Draft.*

U.S. Department of Energy. 1992 (October). *Phase I RFI/RI Work Plan, Radioactive Sites Operable Unit No. 14, Rocky Flats Environmental Technology Site.* Golden, Colorado.

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U.S. Department of Energy, U.S. Environmental Protection Agency, and Colorado
Department of Health. 1991 (January). Rocky Flats Interagency Agreement.

2.0 METHODS OF INVESTIGATION

This section describes the investigative methods used during the data collection activities for Phase I, Stage 1 activities for OU14 and provides figures showing the locations sampled.

2.1 HIGH PURITY GERMANIUM SURVEY

In situ HPGe surveys were conducted at each of the OU14 IHSS locations in accordance with Operating Procedure (OP) GT.30 (EG&G 1994a). These in situ surveys were conducted for the purpose of identifying broad areas that are potentially contaminated with various radionuclides. An HPGe detector is a semiconductor radiation detector that measures in situ low energy X-ray and gamma-ray radiation. The HPGe detector has gamma-ray detection capabilities over a broad energy range, high resolution, excellent gain stability, and moderate area averaging. The field of view, or detection diameter, of the instrument varies with the height of the detector from the ground, the vertical distribution of radiation, and the gamma energy source (EG&G 1993a). The field of view is a circular area where 90 percent of the gamma rays originate that contribute to photopeak counts. Assuming a uniform vertical distribution of radiation and a detector height of 21 feet above the ground, the calculated field of view for the instrument is roughly 140 feet in diameter. It should be noted that the field of view may change photons detected (e.g., energy from americium-241 cannot be detected at as great a distance as that of radium-226). Hence, the field of view varies for various isotopes. For the HPGe surveys conducted for OU14, truck-mounted detectors were used. Truck-mounted detector grid spacing was established at 150 foot intervals for large area coverage. The results of the HPGe survey are compiled in Appendix A.

2.2 SODIUM IODIDE SURVEYS

The NaI scintillation detector, also referred to as Field Instrument for Detection of Low Energy Radiation (FIDLER), is used for detecting gamma photons. The NaI probe was used for health and safety purposes prior to surface-soil and soil-gas sample collection and to supplement the HPGe data at IHSSs where buildings or obstructions limited HPGe effectiveness. The NaI detector data provide spatial resolution of surficial radioactivity detected in HPGe readings, thereby enabling further resolution of the exact areas with high activity within a larger area.

The NaI detector consists of a single crystal of NaI to which a small amount of thallium has been added. The detector has a field of view of approximately 1 foot in diameter when held 2 inches above the ground. This instrument is designed to measure low-energy gamma rays and X rays. The FIDLER instrument provides a measurement of total counts per minute registered by the machine. However, no spectral data identifying counts per minute at a given energy level are provided. Thus, determination of the exact isotope measured by this machine is not possible. The procedure for use of the FIDLER at RFETS is outlined in OP FO.16 (EG&G 1994b).

2.3 VISUAL INSPECTIONS

A site reconnaissance of the eight IHSSs in OU14 was conducted to characterize local physical conditions. In addition to confirming possible hazards such as overhead utilities, areas of potentially affected media were also noted. In particular, areas of stressed vegetation, soil staining, and pavement/concrete staining were noted. In IHSSs where a specific sampling grid was not specified by the OU14 RFI/RI Work Plan (DOE 1992), surface-soil samples were located based on these visual inspections.

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2.4 SURFACE-SOIL SAMPLING

Surface-soil samples were collected from locations specified in Section 6.0, Field Sampling Plan (FSP), of the OU14 RFI/RI Work Plan (DOE 1992). Table 2-1 summarizes the analytes for IHSS surface-soil sampling.

Two methods of surface-soil sampling were employed during Phase I. In unpaved areas, the Rocky Flats (RF) Method was used, and in areas where pavement or concrete covered the ground surface, grab samples were collected after first cutting a hole through the asphalt or pavement with an electric coring device. Both grab sampling and RF Method sampling were conducted in accordance with ERPD OP GT.08 (EG&G 1993b). The analytical results of the soil samples collected are shown in Appendix B.

2.5 SOIL-GAS SURVEYS

Soil-gas samples were collected from locations specified in Section 6.0, Field Sampling Plan, of the OU14 RFI/RI Work Plan (DOE 1992). The samples were collected in accordance with ERPD OP GT.09 (EG&G 1992) and samples were analyzed using EPA Method 524.2 (EPA 1988).

Six analytes and the target detection limits specified in the OU14 RFI/RI Work Plan (DOE 1992) are provided in Table 2-2. Analytes and target detection limits in Table 2-2 are used for screening data in the discussion (Section 3.0) of this Data Summary. The analytical results of the soil-gas sampling are shown in Appendix C.

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Before soil-gas surveys were conducted, all sampling locations were cleared for underground utilities. Small-diameter stainless-steel probes were driven either hydraulically or with an electric rotary hammer into the soil to a depth of 5 feet below the ground surface. A vacuum was then applied to the probe to induce air flow. The soil-gas samples were collected in adsorbent cartridges that were transported to a mobile laboratory.

2.6 REFERENCES

EG&G Rocky Flats, Inc. 1994a. *Rocky Flats Environmental Management Department Operating Procedures, Vol. III: Geotechnical*. Manual No. 5-21000-OPS. Procedure No. GT.30, Rev. 0, Draft G. "In-Situ Characterization of Radionuclides."

EG&G Rocky Flats, Inc. 1994b. *Rocky Flats Environmental Management Department Operating Procedures, Vol. I: Field Operations*. Manual No. 5-21000-OPS-FO. No. FO.15 "Field Radiological Measurements."

EG&G Rocky Flats, Inc. 1993a (December). *Compendium of In Situ Radiological Methods and Applications at Rocky Flats Plant*.

EG&G Rocky Flats, Inc. 1993b (December). *Rocky Flats Environmental Management Department Operating Procedures, Vol. III: Geotechnical*. Manual No. 5-21000-OPS-GT. Procedure No. GT.08, Rev. 3, "Surface Soil Sampling."

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U.S. Department of Energy. 1992 (October). *Phase I RFI/RI Work Plan, Radioactive Sites Operable Unit No. 14, Rocky Flats Environmental Technology Site*. Golden, Colorado.

U.S. Environmental Protection Agency. 1988. *Methods for the Determination of Organic Compounds in Drinking Water*. EPA/600/4-88/039.

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3.0 DATA SUMMARY

This section presents the results of data collection activities for the initial OU14 Phase I, Stage 1 activities.

3.1 DATA EVALUATION

Analytical results for the various sampling and analysis activities were obtained from the Rocky Flats Environmental Data System (RFEDS). Each activity undertaken at an OU14 IHSS is introduced and an overview to the data use is provided.

3.1.1 In Situ High Purity Germanium Survey

HPGe data were generated for screening purposes to help identify areas that are potentially contaminated with radionuclides. Within the boundaries of OU14, there were 33 HPGe surveys conducted providing useful data for screening areas of possible radionuclide contamination. The HPGe detector allows detection and calculation of activities of gamma-emitting radionuclides in soils at the picocuries per gram (pCi/g) level for a variety of radionuclides (except for plutonium, which can only be measured at the nanocurie per gram [nCi/g] level). The radionuclides measured in OU14 include: potassium-40; radium-226; thorium-232; cesium-137; americium-241; plutonium-239 and -240; and uranium-233/234, -235, and -238. In general, the HPGe detector is accurate in identifying the presence of specific radionuclides because of its gamma spectrum resolution. However, the HPGe detector is generally considered inaccurate in the quantitation of specific radionuclides. In addition, some HPGe results indicate that inadequate shielding during HPGe surveys may lead to elevated activity readings resulting from "shine" from buildings that process or store radionuclides. Shine is radiation that emanates from radioactive materials stored within

buildings, causing elevated readings of nearby field HPGe measurements. For example, Building 776/777, which processed significant quantities of plutonium, caused elevated plutonium HPGe measurements in its vicinity. Similarly, Building 664 stores mixed waste, which may contain uranium-238, plutonium-239, americium-241, and other radionuclides. Therefore, HPGe survey data collected near this building may show any of these radionuclides as elevated due to shine from the building.

Because of the large area over which the instrument collects data, HPGe survey stations often count activity from more than one IHSS. The HPGe survey stations that are closest to the IHSS of concern are given preference in terms of analysis. HPGe station designations were typically combined with the OU for which the survey reading was made. Thus, station 6N-14 was surveyed primarily for the purpose of characterizing OU14. For OU14 IHSS 156.1, no HPGe survey was conducted within its boundaries. However, an OU13 HPGe survey (J-13) overlapped, so data generated from that survey were used to estimate radionuclide contamination in IHSS 156.1.

HPGe data obtained for OU14, as well as associated minimum detectable activity (MDA) and error terms, are contained in Appendix A. HPGe error terms account for the propagated statistical counting uncertainty for the sample and the associated analytical blanks at the 95 percent confidence level. These error terms represent a minimum estimate of error for the data (EG&G 1994a). Anomalous HPGe values were identified based on comparison of HPGe in situ analytical results to expected background activities of radionuclides. Error terms were taken into account in the comparison to background activities. More specifically, if the background value was located within the range of the reported HPGe result plus or minus (\pm) its associated error term, the HPGe result was considered to be statistically indistinguishable from background activities. For example, a reported HPGe uranium-238 value of 2.4 pCi/g is numerically greater than the background comparison value of 2.3

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pCi/g. However, after accounting for a hypothetical associated error term of ± 0.2 pCi/g, the range of possible uranium-238 values is 2.2 to 2.6 pCi/g. Since this range includes the background value of 2.3 pCi/g, the HPGe result is considered statistically indistinguishable from background.

Expected background activities were identified based on background HPGe data as well as a literature search of background activities that included Rock Creek data collected during the OU1 Phase III Investigation in 1991 and the OU2 Phase II Investigation in 1993 as presented in the OU6 Technical Memorandum No. 4 (DOE 1994a). These background values are shown on page 1 of Table 3-1. Page 2 of Table 3-1 contains the background values for the fallout radionuclides based on the preliminary *Draft Background and Soils Characterization Program Report* (EG&G 1995). For the fallout radionuclides (i.e., americium-241, cesium-134, cesium-137, plutonium-239/240 and strontium-89/90) the background values for surface soil shown on page 2 of Table 3-1 are believed to be more appropriate than those on page 1 of Table 3-1. This is due to the samples for the Background and Soils Characterization Program (EG&G 1995) being collected from a background location that is not potentially impacted by RFETS operations, and the use of a larger sample population (Siders 1995). However, at this time, the Characterization Program report is a preliminary draft document and has not yet undergone regulatory review. Therefore, detected activities will be compared to the background values found on page 1 of Table 3-1 until the Characterization Program report is finalized. Plate 1 shows americium-241 contours generated by HPGe for the Industrial Area.

A brief description of the various radionuclides measured and reported by the HPGe detector is presented below:

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Potassium-40 is a naturally occurring radioisotope that has not been used in significant quantities in production-related activities at RFETS. Background activities of potassium-40 could be expected to range up to 21.8 pCi/g. HPGe data for potassium-40 were generated primarily for calibration purposes for the HPGe detector. Nothing in the operational history of OU14 suggests that potassium-40 would be present in excess of natural background conditions due to production-related radionuclide or hazardous waste contamination.

However, it should be noted that potassium-40 above background activity levels may be present in soils on the plant site due to the usage of Polar Melt® de-icer, which is composed of potassium chloride. Potassium chloride has a 0.0117 percent natural abundance of potassium-40. In March 1992, a report titled *Possible Gross Beta Affects to Rocky Flats Plant's Storage Ponds Due to Polar Melt® De-icer Usage* (EG&G 1992b) evaluated how the usage of Polar Melt® affected gross beta activities in the drainage ponds. The activity of Polar Melt® was estimated to average 53 pCi/g or 24,040 picocuries per pound (pCi/lb). A total of 62,350 pounds of Polar Melt® were used during the 1990-91 snow season. Conclusions of the study indicated that 14.3 to 41.9 percent of the gross beta in the pond system during 1990-91 could be attributed to Polar Melt® in runoff. The average contribution of gross beta by Polar Melt® in the ponds was predicted to be 1.9 picocuries per liter (pCi/L) with contributions ranging as high as 3.9 pCi/L in March 1991 (EG&G 1992b).

Radium-226 is a naturally occurring radionuclide that was not used in significant quantities in production-related activities at RFETS. The background values generated by HPGe detectors for this radionuclide range up to 1.13 pCi/g. HPGe data for radium-226 were generated primarily for calibration purposes for the HPGe detector and for comparison of the total activities of radium-226 and uranium-238 in the surface soils. Nothing in the history of operations in OU14 suggests that radium-226 would be present in excess of natural background conditions due to radionuclide or hazardous waste contamination.

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Thorium-232 is the most abundant of the naturally occurring isotopes, being roughly three times as abundant as uranium, and roughly as abundant as lead and molybdenum (Cember 1978; Chemical Rubber Company [CRC] 1980). This metal is not known to have been used in significant quantities for production purposes at RFETS. Thorium-232 may have been used in light bulbs, crucibles, camera lenses, scientific instruments, or as a coating for tungsten wire in electronic equipment (CRC 1980). Background activities of thorium-232 could be expected to range up to 1.35 pCi/g. HPGe data for thorium-232 were generated primarily for calibration purposes for the HPGe detector. Nothing in the history of operations in OU14 suggests that thorium-232 would be present in excess of natural background conditions due to radionuclide or hazardous waste contamination.

Uranium-238 is a naturally occurring radionuclide that was widely used at RFETS, especially in the 400-area buildings. The maximum background activity of uranium-238 generated to date by HPGe detectors is 2.3 pCi/g. Therefore, the 2.3 pCi/g value was used as an initial indicator that anomalous uranium-238 values may exist.

Once anomalous uranium-238 activities were identified, further analysis of the data was conducted by evaluating the ratio of radium-226 activity to uranium-238 activity. Radium-226 is a daughter product of uranium-238 and has a half-life of 1,600 years versus the 4.51×10^9 year half-life of uranium-238. Thus, in naturally occurring materials, these two radionuclide should be in secular equilibrium and the ratio of the activities should be near unity (Cember 1978; Faure 1977). Based on the HPGe-generated data for background soils, this ratio is considerably less than unity in all cases, ranging from 0.35 to 0.51. The low ratios identified by the HPGe technology are expected to be due in part to the HPGe sensitivity to the two isotopes. In the OU14 HPGe data evaluation, ratios of radium-226 to uranium-238 activity that exceed 0.35 are considered to be indicative of naturally occurring

uranium-238 activities, and ratios below 0.35 are considered to be indicative of anthropogenic sources of uranium-238.

Thus, for HPGe OU14 survey results for uranium-238 to be identified as anomalously high, the survey station must demonstrate a uranium activity in excess of 2.3 pCi/g and a radium-226 to uranium-238 activity ratio of less than 0.35.

Uranium-235 is a naturally occurring radionuclide with a very low natural abundance (0.72 percent). Based on HPGe-generated data, the background activities for uranium-235 could range up to 0.10 pCi/g. The history of uranium-235 usage at RFETS in production-related activities indicates that this material could be found in excess of natural background activities in the general vicinity of the 800-area buildings (e.g., Buildings 881 and 883).

Cesium-137 is a man-made radionuclide found in surface soils because of fallout deposition from atmospheric testing of nuclear weapons. Cesium-137 activities up to 1.37 pCi/g are expected in areas where soils have remained undisturbed in recent years. Areas where soils have been disturbed would have lower activities of cesium-137 because of the mixing of cesium-137 in surface soils with less contaminated deeper soils. Nothing in the IHSS history of OU14 would suggest that cesium-137 might be present in excess of fallout activities.

Americium-241 is a daughter product of man-made plutonium-241 and is present in the plutonium handled at RFETS. Americium-241 is known to have been released to the environment at RFETS and is probably present in buildings that processed plutonium, including Buildings 371, 374, 776/777, 707, and 771. Some elevated americium-241 readings within OU14 could also be influenced by shine from buildings that store transuranic wastes, such as Building 664. Based on background HPGe readings, only americium-241 values above 0.1 pCi/g are considered to be anomalous.

Plutonium-239 is a man-made radionuclide that has been used extensively in production-related activities at RFETS. The MDA for plutonium-239 with the HPGe detector at RFETS is relatively high (on the order of nanocuries per gram). Thus, plutonium-239 values greater than the MDA are considered to be anomalous. As is the case with americium-241, elevated plutonium-239 readings within OU14 could be influenced by shine from buildings that processed plutonium, including buildings in the 700 and 300 areas, as well as buildings that store transuranic wastes, such as Building 664.

3.1.2 In Situ Sodium Iodide Survey

NaI surveys were conducted at every surface-soil and soil-gas sampling location in OU14 as part of a health and safety requirement and to supplement the HPGe data, particularly at IHSSs where buildings or obstructions limited HPGe effectiveness. The NaI data provide spatial resolution of surficial radioactivity detected in HPGe readings. In other words, the NaI data enable further resolution of the exact locations of high activity within the larger area measured by HPGe technology.

Prior to the use of the FIDLER instrument in each IHSS location, background readings were obtained by holding the instrument 15 feet outside of the established sampling grid and performing a one-minute scaler count. The upper limit of background values was then calculated based on Hyder's (1994) formula, two times the square root of background plus background:

$$(B+2\sqrt{B})$$

This calculation provides a statistical estimate of two standard deviations above the mean, given a normal distribution. This number represents the acceptable error, or reproducibility,

of the background reading. Thus, NaI readings above this value were considered potentially indicative of anomalous activity levels at the survey station (Hyder 1994). For IHSSs with large survey areas, more than one background reading was usually taken. For these IHSSs, each background reading was compared to the group of readings immediately following the background reading. In one case, an average of the background readings was used to assess elevated background readings because an initial background reading was not available. Field notes and data logs for NaI detector results obtained at OU14 are contained in Appendix D.

3.1.3 Surface-Soil Sampling

Table 2-1 summarizes the analytes for surface-soil sampling. The analytical results of surface-soil sampling were used to characterize contamination at each IHSS by identifying detected analytes, including those analytes reported as estimated concentrations below the method detection limit (MDL), examining the frequency of detection of detected analytes, delineating locations and areas of chemical detection, and identifying areas that may be of potential concern for future investigation. Areas of contamination that may be of potential concern were identified by comparing reported concentrations with chemical-specific background levels and preliminary remediation goals (PRGs). Background data for inorganics in surface soil were obtained from the OU6 Technical Memorandum 4 (DOE 1994a). (The background data used are results of sampling in the Rock Creek area during the 1991 OU1 Phase III investigation and the 1993 OU2 Phase II investigation). For each analyte, an upper tolerance limit (UTL) with 99 percent confidence and 99 percent coverage ($UTL_{99/99}$) was calculated assuming the background data were normally distributed (DOE 1994a). Surface-soil concentrations were compared with the $UTL_{99/99}$ reported in the OU6 technical memorandum (DOE 1994a).

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PRGs were obtained from the *Programmatic Risk-Based Preliminary Remediation Goals for the Rocky Flats Plant* (DOE 1994b). PRGs have been calculated for various scenarios at RFETS to obtain contaminant and medium-specific levels of exposure that protect human health. Ecological effects were not considered in the development of these goals. PRGs used to evaluate surface-soil results are those developed for the residential exposure scenario that examined exposure to a child via the soil ingestion pathway. The residential PRGs were used because the calculated surface-soil concentrations are the lowest, or most conservative, concentrations among the various surface-soil exposure scenarios assessed. If both an PRG and a background concentration were available for an analyte (e.g., for most of the inorganic analytes), comparison to the higher of the two concentrations was employed. This procedure helps to prevent characterization of existing background levels as site contamination and removes the consideration of potential health risks associated with naturally occurring levels. Background is assumed to be zero for organic analytes. When a PRG was not available for a particular analyte, it is assumed to be zero. PRGs were used where available.

Tables presenting analytical sampling results for each IHSS are presented with the data summary text and in Appendix B. The following tables were compiled for surface-soil sampling conducted at each IHSS:

- complete surface-soil data sets for the IHSS including duplicate samples (Appendix B);
- data tables showing only the detected analytes, associated MDLs from the OU14 Final Phase 1 RFI/RI Work Plan (DOE 1992), and reported positive results, including estimated concentrations, with the comparison to background and PRGs (introduced with summary text);

- data summary table for the detected analytes including MDLs, range of sample quantitation limits (SQLs) and associated locations, range of detected concentrations and associated locations, frequency of detection, and the average concentration of collected samples (with summary text);
- data summary table (similar to that above) for all analytes (Appendix B); and
- tentatively identified compounds (TICs) for each IHSS (Appendix B).

Figures and plates that show surface-soil sampling locations and reported concentrations of analytes detected at the various IHSSs, respectively, have also been developed. These graphical representations of the data are cited throughout the report. Nine plates have been prepared for this report. Each plate contains plotted concentrations of detected analytes. Inorganics shown are those concentrations that exceeded background levels, or in some cases the PRGs. Organic analytes were grouped for ease in presentation. The plates indicate locations where PRGs or background concentrations were exceeded (data flags were used for this purpose, with an asterisk [*] used to indicate an exceedence of a PRG and a pound sign [#] used to indicate an exceedence of a background level). It should be noted that "B" qualified data (i.e., analyte detected in blank) were not plotted in figures or on plates. The HPGe data for OU14 were generated on an IHSS-specific basis; thus, the results of this survey are also discussed on an IHSS-specific basis. However, HPGe data are also presented on Plate 1, which shows the Industrial Area and americium-241 specific activity contours.

3.1.4 Soil-Gas Survey

Results of the soil-gas survey were used as a screening technique by identifying volatile organic compounds (VOCs) that exceeded the target detection limit of 1.0 micrograms per

liter ($\mu\text{g/L}$). The target detection limit of $1.0 \mu\text{g/L}$ and the six target compounds specified in the OU14 RFI/RI Work Plan (DOE 1992) are listed in Section 2.0, Table 2-2 of this Data Summary. Soil-gas tables in this section are limited to only the six target compounds exhibiting concentrations that exceeded the target detection limit of $1.0 \mu\text{g/L}$. The analytical results from soil-gas EPA Method 524.2, including any detection below $1.0 \mu\text{g/L}$ and/or nondetects, and quality control (QC) data are listed in of Appendix C.

Field laboratory chemists flagged all data associated with method blank contaminants with a "B." These data were assessed and no significant bias was found for blank contaminants. When a blank value was detected above the action level of $1.0 \mu\text{g/L}$, the task manager requested resampling for all associated sample locations. The mobile laboratory reported all analytical results. Values found to be outside the linear calibration range were flagged as "J," indicating an estimation by the field chemists.

Field procedures specified collecting only a 1-liter volume of soil gas for the majority of sample locations. However, in instances where substantially high concentrations of VOCs were suspected, 100-milliliter (mL) and 10-mL samples were collected in addition to the 1-liter sample.

Although all data were taken into account, the data provided by the laboratory were evaluated to determine the most reliable results. In cases where more than one result was reported and no qualifier was provided by the mobile laboratory, an attempt to choose the best result was performed by first examining the dilution factors. One concentration was chosen over the other results by performing a comparison of the dilution factors for the 1-liter, 100-mL, or the 10-mL samples. If a dilution factor could not be used to differentiate the best value, the highest reported sample concentration was used for the soil-gas data assessment. All soil-gas results reported by the mobile laboratory are listed in Appendix C.

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The analytical data for each sample collected were evaluated by the onsite task manager to ensure that the data generated by the mobile laboratory during the soil-gas survey met the project requirements and data quality needs according to the parameters defined in the Quality Assurance Addendum—Section 10.0 of the OU14 Work Plan (DOE 1992). In addition, the mobile laboratory operations and procedures were audited by CDPHE and DOE chemists. The audit findings primarily addressed the calibration criteria of ± 50 percent. The auditors noted that the SW-846 requirement that specifies ± 30 percent criteria were not followed by the laboratory personnel. After review of the actual calibration data, the field laboratory chemists determined that a majority of calibration check compounds met the ± 30 percent criteria. The project-specific criteria of ± 50 percent provided a sufficient output of analytical results and the highest quality of data achievable. No formal data validation was performed for this field analytical Level II data set. The data generated for the soil-gas survey met their intended use by providing a preliminary assessment for site characterization.

In the following sections, soil-gas data are presented in tables and on plates that display all data that exceed the target detection limit of $1.0 \mu\text{g/L}$.

3.2 DATA QUALITY ASSESSMENT

In order to evaluate achievement of data quality objectives (DQOs), the *Rocky Flats Procedure for Evaluation of ERM Data for Usability in Final Reports* (EG&G 1994b) was used. Although this guidance had not been completed at the time of the OU14 Work Plan preparation, this Data Summary document has followed this guidance in evaluating surficial soils data. Measurements of data quality include precision, accuracy, representativeness, comparability, and completeness (also referred to as PARCC parameters). Precision, accuracy, and completeness are quantitative measures of data quality, while representativeness and comparability are qualitative statements that express the degree to

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which sample data represent actual conditions and describe the confidence with which one data set may be compared to another. Comparison of real samples with QC samples is an additional aspect of this evaluation. "Real" sample is an RFEDS database-specific term and refers to the primary sample as opposed to a QC sample (i.e., duplicate, blank, etc.). Data users did not use duplicate sample results as the primary result. After completing data evaluation, overall conclusions regarding the achievement of DQOs can be made and are provided at the end of this section. First, however, basic information about the DQOs for OU14 and a summary of validated data for OU14 are provided below.

Overview of DQOs for OU14. The OU14 Phase I RFI/RI Work Plan (DOE 1992) identified DQOs for RFI/RI activities. The purpose of these objectives was to accomplish the following:

- define the data needs for each of the RFI/RI tasks;
- coordinate activities to support those needs; and
- ensure the quality and quantity of the resultant data.

These objectives were determined based on a three-stage process. The first stage involved identifying the types of decisions the data needed to support. Considerations included: identification of the ultimate data users, evaluation of existing data, development of a site conceptual model, and identification of data objectives and decisions. The second stage involved identifying data uses and needs. Considerations included identifying data uses, data types, data quality needs, and data quantity needs; evaluating sampling and analysis options; and reviewing PARCC parameter information. The third stage involved designing a data collection program. More details on this process can be found in the OU14 Work Plan. As a result of this process, five major data objectives for OU14 were identified and are contained in Table 4-1 of the OU14 Work Plan (DOE 1992).

Of the data objectives identified for OU14, defining the horizontal nature and extent of contamination by characterizing surficial soils is of primary importance for evaluating the results of Stage 1 nonintrusive data collection activities.

Stage 1 nonintrusive FSAP activities include several tasks. Task 1 involved field screening and sampling activities at each IHSS based on the IAG requirements. Specific activities included geophysical surveys, radiation surveys, soil-gas surveys, and surficial soil sampling. The purpose of these activities was to provide screening-level and confirmatory-level data concerning the presence or absence of contaminants at the IHSSs. Task 2 will involve additional sampling after the results of Task 1 are evaluated.

Summary of Validated Data. Surface-soil samples were collected as specified in the Phase I RFI/RI Work Plan for OU14 (DOE 1992). A total of 404 surface-soil samples were collected within OU14 for analyses, 37 of which were field duplicates. Two samples collected in OU12 were also considered to be relevant to OU14 data interpretation for IHSS 161. Samples were sent to the RFETS subcontractor laboratory under the direction and management of RFETS personnel. Analyses were conducted as specified in the following documents: *General Radiochemistry and Routine Analytical Services Protocol (GRRASP)* (EG&G 1991a); *EPA Contract Laboratory Program, Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration* (EPA 1988); *EPA Contract Laboratory Program, Statement of Work for Organic Analysis, Multi-Media, Multi-Concentration* (EPA 1991); and *EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition* (EPA 1990). Analyses were completed for the following series of analytes:

- EPA Contract Laboratory Program (CLP) metals target analyte list (TAL) (7/88) (SMETCLP);

- additional metals by CLP methods (cesium, lithium, molybdenum, strontium, and tin) (METADD);
- total radiochemistry (americium-241, gross alpha, gross beta, plutonium-239/240, uranium-233/234, uranium-235, and uranium-238) (TRADS);
- EPA CLP semivolatile organics (BNACLCP);
- SW-846 volatile organics (VOACLCP);
- EPA chlorinated herbicides (HERB-8150);
- EPA pesticides/polychlorinated biphenyls (PCBs) (PESTCLCP); and
- pH.

After the analyses were completed, all data were sent by RFETS to an independent, third party subcontractor for data validation in accordance with the Site-wide Quality Assurance Project Plan (EG&G 1994c). Procedures used to validate the data are specified in the national functional guidelines for data validation (EPA 1994 a,b). After the evaluation, validation codes were assigned to the data. The "V" validation code indicates that the data have been validated. The "J" code indicates estimated data, and the "R" indicates rejected data (EPA 1994 a,b). All data rejected during the data validation process are presented in Appendix E, Table E-1. With the exception of gross alpha, all of the rejected data were values below detection limits, or "U" qualified data. The data on which this discussion is based are those that were available from RFEDS as of March 17, 1995. At that time, a considerable amount of data in each IHSS were yet to be validated as identified by the "Y"

qualifier. The following table provides a summary of the validation status of the real samples collected for OU14. As shown in this table, the value of data interpretation and evaluation for the radionuclides and organics is limited based on the small percentage of validated data. Nonetheless, this data evaluation was conducted assuming that all of the "Y" data are valid. Revisions to this data evaluation assessment are likely when validated data become available.

OU14 SURFACE SOILS DATA VALIDATION STATUS

(As of March 17, 1995)

Surface-Soils Analytical Groups	Samples Collected	Samples Reported by RFEDS	RFEDS Reported "Y" Data	% of Validated Data	Samples Outstanding (Not Reported by RFEDS)
EPA-CLP Semivolatile Organic Compounds (BNACLCP)	53	52	41	21%	1
EPA Chlorinated Herbicides (HERB8150)	2	2	2	0%	0
Additional Metals (METADD)	105*	105	1	99%	0
EPA Pesticide/PCB (PESTCLP)	2	2	2	0%	0
EPA-CLP Metals (SMETCLP)	105*	105	1	99%	0
Total Radionuclides (TRADS)	369*	349	324	7%	20
EPA-CLP Volatile Organics (VOACLCP)	53	53	20	62%	0
Water Quality Parameters List (pH)	18 (per Work Plan)	15	0	100%	3

* These numbers include two additional samples that were not taken with OU14 IHSSs but were considered to be useful for data interpretation for OU14.

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Rejection of volatile and semivolatile (BNACLCP) data usually occurs for surrogate recoveries below 10 percent. Based on the RFEDS data extraction of March 17, 1995, no data should be rejected for this reason.

PARCC Evaluation Process. The following sections numbered 1 through 5 contain the results of the data evaluation using the five PARCC parameters:

1. Precision - Precision is a quantitative measure of data quality that refers to the reproducibility or degree of agreement among replicate measurements of a parameter. The closer the numerical values of the measurements, the lower the relative percent difference (RPD) and the greater the precision (EG&G 1994b).

In order to evaluate precision as defined by "Evaluation of ERM Data for Usability in Final Reports" (EG&G 1994b), data for field-duplicate samples and their corresponding samples were assembled in Appendix E, Table E-2. This table only included data where at least one member of the pair had a detected concentration and both members were non-rejected data. A total of 37 field duplicate surface soil samples were collected and analyzed for the same parameters as the real samples. The OU14 Work Plan (DOE 1992) specified that duplicate samples were to be collected at a frequency of one pair per 20 samples, or 5 percent. The actual duplicate collection frequency was 10.5 percent; thus, actual duplicate collection exceeded the minimum requirements established in the OU14 Work Plan (DOE 1992).

To assess precision, the RPDs for each sample pair were calculated using the following equation:

$$RPD = \left\{ \frac{|C_1 - C_2|}{(C_1 + C_2)/2} \right\} \times 100$$

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where:

C_1 = Concentration of the analyte in the real sample

C_2 = Concentration of the analyte in the duplicate sample

For those samples where one of the pair was not detected, the RPD was considered not to be calculable (NC) and was not included in the accuracy evaluation. In accordance with the data evaluation guidance (EG&G 1994b), those samples with RPDs greater than 40 percent were not considered to be within accuracy goals. However, because the purpose of the Stage 1 sampling activities is to serve as a screening mechanism to focus future stages of investigation, these data are still considered usable for screening purposes. During decision making at individual IHSSs, these data are considered to be estimated. In a few instances, some of the data are not considered to be usable, even with an "estimated" qualification attached to them. These data are those for which there is an order of magnitude or greater difference between members of the sample pair. These data should be disregarded if they significantly differ from adjacent data points. These sample pairs are as follows:

IHSS/Location	Real Sample	Duplicate	Analyte
IHSS 156.1/SS434894	SSG2243	SSG2598	Americium-241
IHSS 162/SS452394	SSG2418	SSG2629	Plutonium-239/240
IHSS 162/SS454194	SSG2436	SSG2606	Uranium-235

It should be noted that after accounting for error terms, these data pairs remained within an order of magnitude of each other. The first pair consisted of validated data that were qualified as "U" and "J"; thus, they had been qualified by the laboratory as estimated and

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at values below detection limits. The latter two duplicate pairs were "Y" and "U" qualified; thus, they were both measured at values below detection limits.

Appendix E, Table E-3 was created to summarize the overall precision of the sample population. The overall precision compliance goal for surficial soils was 85 percent as specified in the evaluation guidance (EG&G 1994b). Appendix E, Table E-3 indicates that precision goals were not met by the following: bis(2-ethylhexyl) phthalate, lithium, copper, lead, sodium, americium-241, gross alpha, plutonium-239/240, uranium-235 and acetone. Explanations of these precision deficiencies are as follows:

- Acetone data were available for only one sample pair, which contained "B" and "Y" qualified data. Acetone is a common laboratory contaminant, which has been properly qualified as such in these data. In addition, the low number of sample pairs limits the value of assessing these data for precision.
- Bis(2-ethylhexyl) phthalate data were available for only two sample pairs, and one of these pairs was "J" qualified. The low number of sample pairs limits the value of assessing these data for precision.
- Lithium data were available for seven duplicate pairs, two of which exceeded the 40 percent criteria. All lithium found in Table E-3 were "B" qualified, indicating that the samples were influenced by laboratory contaminants.
- Copper data were available for eight duplicate pairs, two of which exceeded the 40 percent criteria. Both of these pairs were validated data. One pair was "J" qualified and one pair had no qualifier.

- Lead data were available for eight duplicate pairs, two of which exceeded the 40 percent criteria. Both of these pairs were validated, unqualified data.
- Sodium data were available for seven duplicate pairs, two of which exceeded the 40 percent criteria. Both of these pairs were validated data. These two samples were “B” qualified, indicating that the samples were influenced by laboratory contaminants.
- Americium-241 data were available for 18 duplicate pairs, 12 of which exceeded the 40 percent criteria. The data for the majority of these pairs were yet to be validated (“Y”) and contained “U” or “J” qualified data indicating that the large RPDs occurred due to measurements at or below the detection limits. The appropriate laboratory qualifiers were applied to the americium data.
- Gross alpha data were available for 31 duplicate pairs, seven of which exceeded the 40 percent criteria. Three of these seven pairs contained data validated and qualified by “A,” indicating that the data are acceptable with qualifications. The remaining four pairs were yet to be validated.
- Plutonium-239/240 data were available for 29 duplicate pairs, 12 of which exceeded the 40 percent criteria. Only two of these pairs contained validated data and the majority of the pairs contained “J,” “U,” or “B” qualifiers which appropriately identified limitations of the data.
- Uranium-235 data were available for 17 duplicate pairs, 12 of which exceeded the 40 percent criteria. None of these data had been validated and all of them contained “U” and/or “J” qualifiers indicating that the measured values were at or below detection limits. These data are considered to be appropriately qualified by the laboratory.

Overall, the data precision for the sample population is considered to be adequate for assessing the presence of the contaminants in OU14 at the screening level. No additional sampling is recommended based on the overall compliance with precision goals and only relatively minor deviations from those precision goals. When interpreting surface soils data, however, particular attention was given to gross alpha, copper, and lead, whose data qualifiers may not adequately identify limitations of these data. The remaining analytes are adequately flagged by laboratory qualifiers and are considered sufficiently precise for purposes of screening activities at OU14.

2. Accuracy - Accuracy is a quantitative measure of data quality that refers to the degree of difference between measured or calculated values and the true value of a parameter. The closer the measurement to the true value, the more accurate the measurement. Accuracy is assessed by comparing the required analytical method and required detection limit (RDL) with the actual method used and its detection limit for each medium and analyte (EG&G 1994b). For purposes of this discussion, RDL is used to generically reflect the MDA for radionuclide data and the Contract Required Detection Limit (CRDL) for organic data.

The OU14 Work Plan (DOE 1992) specified Analytical Levels IV and V for surficial soil samples following those methods identified in the GRRASP Parts A and B (EG&G 1991a). Level IV is required for conventional analytes and requires use of EPA CLP methods with stringent quality assurance and quality control. Level V is required for radionuclides and involves high quality nonstandard analytical methods, particularly those identified in the GRRASP. Table 6-2 of the OU14 Work Plan and Appendix B of the Integrated Field Sampling Plan (DOE 1994c) contained RDLs for analytes to be evaluated. In addition, Table 10-2 of the OU14 Work Plan contained required analytical methods, detection limits (RDLs) and DQOs for analyte groups. In summary, the OU14 Work Plan required the EPA

CLP methods for: target compound list (TCL) volatile and semi-volatiles, TAL metals, and a few additional metals. The GRRASP procedures were required for radionuclide analysis. The appropriate analytical methods were used for all required analytes.

Appendix E, Table E-4 contains a summary of elevated detection limits that were identified as a result of comparing the RDLs to the actual detection limits used for OU14 surficial soil sample analyses. As shown in the IHSS-specific tables, a significant number of analyses had detection limits above the required limits.

For the most part, TAL metals and additional metals had elevated detection limits. These detection limits corresponded to the RDL values for analyzing metals in water samples. The units used for surface soils were correct (mg/kg). The numerical values for detection limits for analytes in water are typically higher than those required for soils; thus, it appears that almost all of the metals had insufficient detection limits (elevated). A similar phenomenon was noted for the metals data for OU13. An RFEDS reporting error is suspected to be the source of these inaccuracies and is being further investigated.

For those IHSSs requiring analyses for organics, all analyte detection limits met RDLs with the exception of 2,4,5-trichlorophenoxyacetic acid (Silvex) at one sample location in IHSS 162 and vinyl acetate at one sample location in IHSS 164.2. The vinyl acetate detection limit was only slightly elevated at 11 $\mu\text{g}/\text{kg}$ versus the RDL of 10 $\mu\text{g}/\text{kg}$. Thus, no significant accuracy problems were identified for the organic analytes.

For those IHSSs requiring analyses for radionuclides, slightly elevated detection limits were noted for gross alpha in one sample, americium-241 in three samples and plutonium-239/240 in one sample. In all of these cases, the detection limits were still below background

comparison values as well as PRGs and do not significantly impact the usability of these data for OU14 Stage 1 activities.

3. Representativeness - Representativeness is a qualitative characteristic of data quality defined by the degree to which the sample data absolutely and exactly represent the characteristics of a target population. Representativeness is accomplished by obtaining an adequate number of samples from appropriate locations within the medium of interest (EG&G 1994b). Representativeness is evaluated by comparing the actual sample types and quantities collected with those stated in the OU14 Work Plan (DOE 1992) per medium and analytical suite and/or physical measurement.

Appendix E, Table E-5 summarizes a comparison of samples required in the OU14 Work Plan (DOE 1992) versus the actual samples collected and analyzed. The sample tracking spreadsheet that provides information regarding sample location number, sample identification number, sample collection number, sample collection date, sample type, and analytical requirements is included in Appendix F. This schedule was used to evaluate representativeness of samples because not all of the actual data were available based on the March 17, 1995, RFEDS data retrieval. The quantity of samples collected and the types of analyses conducted meet the DQO requirements of the OU14 Work Plan (DOE 1992). Additional real samples, identified by the sample identification number prefix "BFG" rather than "SSG," were collected in most analyte suites as a result of encountering fill materials identified in 16 soil samples. Additional samples were also collected in IHSS 131 based on a visual inspection of the site that indicated additional samples were required to adequately characterize the IHSS. At approximately 15 proposed sample locations, the planned samples could not be collected because Conexes or buildings covered the sample location. Overall, the data collected are considered to sufficiently represent the conditions in OU14 IHSSs.

4. **Completeness** - Completeness is a quantitative measure of data quality expressed as the percentage of valid or acceptable data obtained from a measurement system. Evaluating completeness involves reviewing analytical data with respect to matrix type and analytical suite for real samples and for quality control samples (EG&G 1994b). The numbers of real samples should comply with those specified in the OU14 Work Plan (DOE 1992).

The following formula was used to calculate data completeness for each analytical parameter:

$$\text{Completeness} = DP_u = [(DP_t - DP_n) / DP_t] \times 100$$

where:

DP_u = Percentage of usable data points

DP_n = Nonusable data points

DP_t = Total number of data points

The OU14 Work Plan (DOE 1992) did not specify data completeness percentages for the surface soil analysis. However, as shown in Appendix E, Table E-6, the available data were 99 to 100 percent complete. DQO guidance provided by the EPA (EPA 1987) states that environmental projects of this nature should require completeness goals of 80 to 85 percent. Because only a limited amount of data had been validated as of March 17, 1995, this completeness assessment must be reevaluated when more validated data are available.

5. **Comparability** - Comparability is a qualitative measure defined as the confidence with which one data set can be compared to another. In order for data sets to be comparable, they should have common protocols used for collection or synthesis of the samples, common matrix types (soil or water), common temporal considerations (periodical, seasonal, event-related), and comparable spatial distributions (three-dimensional) (EG&G 1994b). Evaluation

of comparability requires comparison of real samples with other real samples and comparison of real samples with background data.

The OU14 sample collection activities were conducted in accordance with the OPs that were clearly identified in the OU14 Work Plan's Field Sampling Plan in Table 6-3 (DOE 1992). Field notes taken during surficial soils sample collection indicate that these OPs were followed. The OPs specified the depths and soil quantities for surface-soil sampling. Similar protocols were followed with regard to sample locations within each IHSS or IHSS group. Specifically, surface samples were taken in each IHSS or IHSS group in areas of likely contamination based on historical information, HPGe detections, and visual inspections. The procedures followed were similar for each IHSS. The samples were collected between August 29 and December 1, 1994; thus, no significant seasonal effects are expected. Based on this information, the data collected are expected to be comparable to each other.

Background soils data that are expected to be comparable to these OU14 surficial soils data include the Rock Creek surficial soils data collected as part of RI/FS activities for OU1 in 1991 and OU2 in 1993 (DOE 1993). These sample collection activities followed standard procedures for surficial soil sample collection during RI/FS work (EG&G 1995). Additional background data which are pending approval for usage include surficial soils data collected during the Background Soils Characterization Program (BSCP), which followed similar sampling methods and analytical techniques as the OU projects at RFETS (EG&G 1995). These BSCP data are expected to have more accurate data for fallout-radionuclides than the Rock Creek surficial soils because of a larger sample population located in a slightly more remote area to RFETS (Siders 1995).

Comparison of Real Samples with Quality Control Samples. Identification of contaminants present in quality control (QC) field samples and comparison of these contaminant concentrations to concentrations in real samples is useful to assess whether proper QC was used in the field. This evaluation is similar to that performed in the laboratory with laboratory blanks, which may result in data being "B" qualified due to contaminant presence in the laboratory blank. For the OU14 field blanks, any contaminants detected in the field blanks have already been taken into account in the validation code assigned to the data. No data were rejected due to contamination in laboratory or field blanks although some samples were "B" qualified. Thus, the pertinent QC field samples for purposes of this evaluation are rinsates.

A total of 74 equipment rinsate blanks were collected and analyzed to determine the efficiency of the decontamination process and to ensure that no cross contamination occurred between sampling locations. The frequency specified for equipment rinsate blanks in the OU14 Work Plan (DOE 1992) was met. Appendix E, Table E-7 contains a summary of the contaminants detected in the rinsate samples and a comparison to concentrations of the contaminants in real samples collected in the same batch. The data contained in Table E-7 reflect only those data that were validated as of March 17, 1995. A total of 70 rinsate samples were available as of this date. As was the case with the real and duplicate samples, the radionuclides and organics data had generally not yet been validated.

In order to assess whether the contaminant concentration detected in the real sample was a "true detect," a series of decisions was made. If the detected analyte was a common laboratory contaminant and the real sample concentration was less than 10 times the rinsate concentration, the potential contaminant was considered to be a laboratory contaminant in the real sample. Common laboratory contaminants were considered to include compounds such as acetone and methylene chloride. If the detected analyte was not a common

laboratory contaminant and the real sample concentration was less than five times the rinsate concentration, then the potential contaminant was considered to be a laboratory contaminant in the real sample. For OU14, two common laboratory contaminants were identified in rinsate samples, acetone and methylene chloride; therefore, the decision-making criteria, or "threshold value," for these two analytes was 10 times the contaminant concentration detected in the rinsate sample. For all other analytes, five times the contaminant concentration detected in the rinsate sample was used as the threshold value.

As shown in Table E-7, no false detections were identified. Overall, results of the comparison of rinsate samples with real surficial soil sample results show that (1) a high level of quality control was used in the field sampling activities and (2) the contaminant detections in the real samples are considered to be true detections.

Conclusions of the DQO Evaluation. Given the DQOs defined in the OU14 Work Plan (DOE 1992) and the evaluation of PARCC parameters, conclusions drawn with regard to the OU14 DQOs are as follows:

1. The majority of the data met the precision requirements of 40 percent RPD and 85 percent overall compliance. Although some exceptions were noted, most of these were properly identified with laboratory qualifiers. Exceptions include validated, unqualified data for gross alpha, copper, and lead, which are considered to be estimated during data interpretation activities.
2. The detection limits used for OU14 laboratory analyses are considered to be sufficiently accurate with the exception of the metals data. The detection limits used for the metals data correspond to the RDLs for water analyses. An RFEDS reporting error is suspected to be the source of this problem and is being investigated. The detection limits currently

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reported by RFEDS are not considered sufficiently accurate enough to characterize surface soils.

3. Representativeness, completeness, and comparability goals were met by the data. When data validation is completed, the completeness evaluation must be re-evaluated. It should be noted that the value of the existing completeness evaluation is limited for the radionuclide and organics data because of the large quantity of unvalidated data.
4. Comparison of real samples to rinsates showed that all corresponding real sample detections were considered to be true detections relative to any contaminants contained in the rinsates.

Given the conclusions and qualifications identified above, the data are sufficiently precise, accurate, representative, complete, and comparable to screen areas of contamination within OU14. Although some individual samples have been qualified or rejected, the overall results of the surficial soils sampling program are acceptable.

3.3 IHSS 131-RADIOACTIVE SITE-700 AREA SITE NO. 1

IHSS 131 was defined as a result of documented releases and subsequent related activities. The location of this IHSS is on the north side of Building 776.

In June 1964, an explosion in Building 776 resulted in the release of plutonium. One account claimed an approximate area of 1,500 square feet surrounding the Building 776 gas bottle dock was affected. Radiological surveys showed activities to be present exceeding 300,000 disintegrations per minute (dpm) per 100 square centimeters (cm²). A later account claimed an area of approximately 40 square feet north of Building 776 was affected. Soil

from the area with the highest counts was removed and a seal coat of oil and approximately 2 inches of gravel were put in its place (EG&G 1992c).

Approximately 2,000 square feet on the west end of the north side of Building 776 was affected by the release of plutonium as a result of firefighting after the explosion. Radiological surveys detected plutonium contamination along three northern exterior walls of Building 776. Plutonium was tracked out of Door 17 in Building 776 by the firefighters during the blaze. To reduce mobility of the contaminated soil, the area around Door 17 was paved twice with asphalt. In the fall of 1971, the asphalt was removed and placed in barrels. New asphalt was later placed in the area of Door 17.

Contamination levels in three boreholes located to the northeast of IHSS 131 may indicate downgradient contamination from this IHSS. However, influence from other OUs, particularly the Solar Evaporation Ponds, may overshadow the potential impact from IHSS 131.

Volatile organics could also exist in IHSS 131 due to its location adjacent to OU8 IHSS 118.1. Evaluating the extent of volatile organic contamination from IHSS 118.1 was within the scope of OU8.

No IHSSs from other OUs overlap with IHSS 131.

3.3.1 HPGe Survey

The HPGe survey data for the single survey location within IHSS 131 (6U-14) provided no evidence to indicate anomalous activities for potassium-40, radium-226, thorium-232, uranium-238, uranium-235, or plutonium-239. These activities fell within the range of

background values in Table 3-1. However, americium-241 activity was elevated at 0.9 (± 3.8 percent) pCi/g. HPGe survey location 6S-14, which is located in IHSS 162 adjacent to IHSS 131, provides additional data for the northeastern corner of IHSS 131. This survey station also showed elevated americium-241 at 1.7 (± 2.1 percent) pCi/g in addition to elevated plutonium-239 at 1.4 (± 9.8 percent) nCi/g. These two radionuclides could reasonably be expected to be located in this IHSS based on contamination associated with the 1964 fire in Building 776. HPGe locations for IHSS 131 are illustrated on Plate 1, the Americium Specific Activity Map.

3.3.2 NaI Survey

The NaI survey identified 12 of 28 locations as being slightly elevated above background. The maximum expected background activity was 1,474 counts per minute (cpm), while the range of values that exceeded background varied from 1,476 to 3,032 cpm. Four locations exceeded background levels in the northwest corner of the IHSS, six locations in the south-central portion, one location in the north-central portion, and one in the southeast portion. Results of the NaI surveys for OU14 are presented in Appendix D.

3.3.3 Surface-Soil Sampling

Twenty-seven surface-soil samples were collected in and around IHSS 131. A total of 44 analytes were detected, including 18 inorganics, 19 organics, and 7 radionuclides. A discussion of detected analytes is presented below:

Chemical Data Summary. Surface-soil sampling locations are shown in Figure 3-1. Complete analytical results for IHSS 131 are included in Appendix B. To aid in determining whether hot spots exist, Table 3-2 lists all detected constituents and their reported

concentrations by sample location. This table also provides the MDLs, background concentrations, and PRGs, and indicates which sample analytes exceed either reference concentration. Table 3-3 summarizes the following information for detected analytes: the MDLs, the reported range for SQLs for each analyte with associated sample locations, the range of detected concentrations for each analyte with associated sample locations, the frequency of detection, and an average of each analyte. A plot of sampling locations, and a summary of analytical results for IHSS 131 are presented on Plate 2. Within this IHSS six metal species exceeded the background levels: arsenic, beryllium, chromium, copper, mercury, and zinc. Arsenic was widely distributed, and exceeded both the background levels and the established PRG at nearly every sampling location. Beryllium was found in a similar pattern, exceeding both the PRG and background levels at nearly every sampling location.

Neither arsenic nor beryllium are ever present in concentrations in excess of the background UTLs of 12.90 and 5.20 mg/kg, respectively. Thus, neither can be remediated and neither represents a risk in excess of the surrounding countryside. Mercury is present in one location (SS432294) at a concentration of 0.21 mg/kg, which is within the range of error measurement of both the MDL (0.2 mg/kg) and the background (0.2 mg/kg). The measured mercury concentration is two orders of magnitude less than the PRG of 82.3 mg/kg. Copper and chromium are present in elevated concentrations (greater than background) at the same location (SS432394). However, both are present in concentrations (81.8 and 25.9 mg/kg, respectively) that are orders of magnitude less than their respective PRGs of 11,000 and 939 mg/kg. The same argument holds for zinc, which is elevated at three locations—SS432194, SS432294, and SS432594. The maximum measured concentration (722 mg/kg) is less than one percent of the PRG of 82,300 mg/kg.

Polynuclear aromatic hydrocarbons (PAHs) present within IHSS 131, at concentrations greater than established PRGs, included indeno(1,2,3-cd) pyrene, dibenzo(a,h)anthracene,

benzo(b)fluoranthene, and benzo(a)anthracene. Benzo(a)pyrene was the most widely distributed (Plate 2). The most highly concentrated PAHs—benzo(a)anthracene and benzo(b)fluoranthene—are present in concentrations about 10 times their respective PRGs. These samples come from an area that has been paved with asphalt several times and that is the probable source of the PAHs.

Radiochemical Data Summary. Radiochemical analytical results are presented in Table 3-2, and summarized in Table 3-3.

Of the seven radionuclides analyzed, only three were present at levels exceeding background or the established PRG (americium-241, plutonium-239/240, and uranium-238). Americium-241 exceeded background activity levels, but did not exceed the established PRG. Locations with elevated levels of americium-241 were along the northern border, near the street, and the eastern border of the IHSS. Plutonium-239/240 also exceeded background activity levels, but did not exceed the established PRG. These locations were generally in front of Building 776 along the street and along the eastern border. With one exception (SS431794, plutonium-239/240 only), the americium-241 and plutonium-239/240 are always found together and the americium-241 has roughly one-tenth of the activity of the plutonium. The detected levels of uranium-238 exceeded both the PRG and background activity levels. Those sample locations were north of Building 776 and along the street north of the parking lot. All of the measured uranium-238 activities were less than the background UTL of 1.912 pCi/g.

3.4 IHSS 156.1-RADIOACTIVE SITE-BUILDING 334 PARKING LOT

In February 1973 a soil pile containing traces of plutonium was found west of Building 334 in the construction area for Building 371. Interview notes from the Comprehensive

Environmental Assessment and Response Program (CEARP) indicate the soil was removed from the area west of Building 334 and was spread over an area situated southwest of Building 371. Aerial photographs indicate the pile may have been present as early as 1969 (DOE 1992).

Portions of the pile may have originated either from the construction of Building 774 addition or from an area adjacent to Building 774 from which the soil was removed as a result of an overflow from two underground holding tanks. Before the material was removed, soil sample analyses showed activities in the pile ranging from 3 to 704 dpm per gram. The volume of soil was estimated to be 250 cubic yards at the time of removal. The parking lot for Building 371 and Building 223 (nitrogen plant) now occupy the site where the soil pile was deposited (DOE 1992).

Several metals were detected in borehole P114889 located in the south central portion of the IHSS, although measured concentrations were not high. The metals were antimony, arsenic, beryllium, and lead (DOE 1992).

Radionuclides detected in P114889 included plutonium-239/240, radium-226, radium-228, strontium-89/90 and americium-241. Similar concentrations of inorganics and radionuclides were observed in upgradient and downgradient borehole locations (DOE 1992).

Acetone and methylene chloride were the only organic constituents detected in borehole P114889. These contaminants were detected in many of the boreholes evaluated and are probably laboratory contaminants (DOE 1992).

Tetrachloroethene (PCE) and carbon tetrachloride were detected in the top four feet of soil collected from borehole P119389. This borehole is located upgradient, northwest of IHSS

156.1. The potential for migration of VOCs from the area to areas within IHSS 156.1 does exist given the general direction of groundwater flow in the area (DOE 1992). IHSS 156.1 and OU13 IHSS 186 sampling locations overlap. The overlapping sampling points were analyzed for radionuclides and evaluated with IHSS 156.1 sample locations.

3.4.1 HPGe Survey

No HPGe survey stations were located within IHSS 156.1 boundaries. However, station J-13, which is located in adjacent IHSS 186, encompasses the eastern boundary of the northern half of IHSS 156.1. This station provided no evidence to indicate anomalous activities of potassium-40, radium-226, thorium-232, uranium-238, uranium-235, americium-241 or plutonium-239 in IHSS 186. These activities fell within the expected range of values in Table 3-1. The HPGe survey location J-13 is illustrated on Plate 1. No anomalous activities are expected in IHSS 156.1.

3.4.2 NaI Survey

Two NaI surveys were conducted within IHSS 156.1. One was conducted in the northern half of the IHSS near Building 372A and one was conducted in the southern half near Building 334. In order to evaluate the survey data, a background comparison value was calculated based on the average of the background readings plus two times the square root of the average.

The northern NaI survey identified 29 out of 118 locations as being slightly elevated above background. The maximum expected background activity was 2,213 cpm, while the range of values that exceeded background varied from 2,221 to 2,794 cpm. Twenty-seven stations were located in a band that extended diagonally across the southern portion of the site from

the northwest corner of the IHSS to the southeastern corner of the site. These data suggest that further investigation in the southwestern triangular area of the IHSS may be appropriate.

The southern survey identified 13 out of 54 survey stations slightly elevated above background. The elevated NaI readings varied from 2,124 to 2,249 cpm as compared to the background comparison value of 2,122 cpm, which was calculated from the average of seven background readings plus two times the square root of the average. The elevated readings were scattered through the survey area with the exception of the northwestern quadrant where readings were not elevated. Results of the NaI survey are presented in Appendix D.

Overall, no clear conclusions may be drawn from the HPGe and NaI data with regard to radionuclide contamination in this IHSS. The NaI data suggest possible radionuclide contamination, but the limited HPGe data do not indicate radionuclide contamination.

3.4.3 Surface-Soil Sampling

Sixty-five surface-soil samples were collected in and around IHSS 156.1. A total of seven radionuclides were detected. No organic or inorganic samples were analyzed from this IHSS. A discussion of detected analytes is presented below.

Chemical Data Summary. Surface-soil sampling locations are shown in Figure 3-2. No organic or inorganic chemical analyses were performed on this IHSS.

Radiochemical Data Summary. Complete analytical results for IHSS 156.1 are included in Appendix B. Table 3-4 lists all detected constituents and their reported concentrations by sample location, as well as MDLs, background concentrations, and PRGs, and indicates which sample analytes exceed either reference concentrations. Table 3-5 summarizes the

following information for detected analytes: the MDLs, the reported range for SQLs for each analyte and associated sample locations, the range of detected concentrations for each analyte and associated sample locations, the frequency of detection, and the average site concentration of each analyte. Plate 3 is a plot of IHSS 156.1 sampling locations and the associated radionuclide analytical results. Only two radionuclides were detected at concentrations greater than background levels or established PRGs. Plutonium-239/240 exceeded background activity levels (0.132 pCi/g), but not the PRG (3.42 pCi/g), in both the north and south parking lots. Uranium-238 exceeded the established PRG at virtually all sampling locations in both the north and south parking lots. However, the uranium-238 activities are all consistently below the background UTL of 1.912 pCi/g.

3.5 IHSS 160-RADIOACTIVE SITE-BUILDING 444 PARKING LOT

IHSS 160 consists of an area that contains the Building 444 parking lot and a section of Seventh Avenue located east of Building 444. This area was previously used as a storage area containing punctured or leaking waste drums and boxes. Wastes resulting from the Building 776/777 fire in May 1969 were stored in this area. Both solid and liquid waste was stored here. These wastes contain uranium, plutonium, oil, and coolants. Surface soils were removed from the Building 444 parking lot and adjacent areas in the early 1970s. The destination of the excavated material is unknown. No activity was detected in a February 1973 alpha ground survey performed after the waste containers were removed.

Soil samples were previously collected around a concrete pad (used to store unused or unusable transformers) located near IHSS 160 at Building 668. Arochlor-1260 was detected in the soil samples with concentrations ranging from 170 to 1,600 micrograms per kilogram ($\mu\text{g}/\text{kg}$) (EG&G 1991b). Plutonium-239/240 activities in these soil samples ranged from 2.3 to 9.1 pCi/g. The background UTL for plutonium-239 is 0.0150 pCi/g (DOE 1992).

Plutonium-239/240 was detected at 15.9 pCi/g from 0 to 3 feet in borehole P313489, located in the extreme northeast corner of the IHSS. Radionuclide measurements at the other previously sampled borehole locations within the IHSS did not indicate high levels of contamination, although results did exceed background for most radionuclides. Inorganic constituents were not detected. 1,1,1-trichloroethane (1,1,1-TCA) was detected in each of the 2-foot interval samples collected from 0 to 10 feet. The total depth of this borehole is 24 feet and it was completed as a piezometer/groundwater monitoring well, although water quality data are not available (DOE 1992).

In P411589, at the southeast portion of the IHSS, PCE was detected at a concentration of 5 $\mu\text{g}/\text{kg}$ in the 12- to 14-foot interval and carbon disulfide was detected at a concentration of 9 $\mu\text{g}/\text{kg}$ in the 18- to 20-foot interval (DOE 1992).

Several organic constituents were previously detected in groundwater of downgradient monitor well 0187, including trichloroethene, PCE, and trans-1,2-dichloroethylene. This well may be impacted by contaminants from an adjoining or nearby IHSS (DOE 1992). For example, OU12's IHSS 120.1 is adjacent and to the west of IHSS 160. Some of the suspected contaminants from IHSS 120.1 are volatile organics and americium-241 (DOE 1992).

3.5.1 HPGe Survey

The HPGe survey data for two locations within IHSS 160, stations 4J-14 and 4I-14, provided no evidence to indicate anomalous activities for potassium-40, radium-226, thorium-232, uranium-238, or uranium-235. These activities fell within the expected range of values in Table 3-1. However, both locations had elevated activities of americium-241 at 1.5 (± 2.7 percent) and 12.4 (± 0.4 percent) pCi/g, respectively, and station 4I-14 showed elevated

plutonium-239 at 0.5 (± 36 percent) nCi/g. In addition, the southwestern corner of the IHSS was located within the radius of OU12 survey station N-12. Station N-12 is located at the northeast corner of Building 664 and includes the area between Buildings 664 and 668, which are known to contain radioactive mixed waste. Station N-12 showed highly elevated activities for all of the radionuclides surveyed and is probably influenced by shine from Building 664. Building 664 is a waste storage and shipping building that can handle considerable quantities of radioactive materials. HPGe locations for IHSS 160 are illustrated on Plate 1, the Americium Specific Activity Map.

3.5.2 NaI Survey

NaI surveys were conducted in two locations within IHSS 160: the southwest corner of the IHSS surrounding Building 668 in the N-12 HPGe survey area and the northeastern corner of the IHSS in the 4J-14 and 4I-14 HPGe survey location areas. The survey locations surrounding Building 668 showed elevated readings in only three of 36 locations; these three locations were located approximately 50 feet south of Building 668 and in close proximity to Building 664. The maximum expected background count in this area was estimated at 6,738 cpm, while the elevated measurements ranged from 8,819 to 11,210 cpm. Based on these data, it is expected that the elevated activities identified at HPGe station N-12 were strongly influenced by shine emanating from Building 664 rather than by soil contamination in this portion of the IHSS.

The northeastern NaI survey location showed elevated readings in 27 of 29 survey locations, indicating the likelihood of radionuclide contamination in the northeastern portion of the IHSS. The elevated count locations identified in the northeastern survey area varied from 1,606 to 2,039 cpm, while the maximum count rate expected for background levels in this area was 1,424 cpm. These survey results, in conjunction with the HPGe survey results at

4J-14 and 4I-14, indicate the likelihood of americium-241 and possibly plutonium-239 contamination in that portion of the IHSS. Contamination could be reasonably expected in this location based on historical storage of wastes from the 1969 Building 776/777 fire and known leakage of this waste in the northeastern portion of the IHSS. Results of the NaI survey are compiled in Appendix D.

3.5.3 Surface-Soil Sampling

Ninety-four surface-soil samples were collected in and around IHSS 160. A total of 28 analytes were detected, including 21 inorganics and 7 radionuclides. Organic chemicals were not subjected to analysis within this IHSS. A discussion of detected analytes is presented below.

Chemical Data Summary. Surface-soil sampling locations are shown in Figure 3-3. Complete analytical results for IHSS 160 are included in Appendix B. Table 3-6 lists all detected constituents and their reported concentrations by sample location. The table also provides the MDLs, background concentrations, and PRGs, indicating which sample analytes exceed either reference concentration. Table 3-7 summarizes the following information for detected analytes: the MDLs, the reported range of SQLs for each analyte and associated sample locations, the range of detected concentrations of each analyte and associated sample locations, the frequency of detection, and the average site concentration of each analyte. Plate 4 is a plot of the sampling locations and the detections in excess of their reference concentrations at each location. Arsenic was generally distributed throughout the area, with nearly all locations having concentrations greater than the established PRG. Beryllium concentrations were similar, with the PRG being exceeded at nearly all sampled locations. However, neither arsenic nor beryllium are ever present in concentrations in excess of their

respective background UTLs of 12.9 and 5.20 mg/kg. Thus, neither can be remediated and neither represents a risk in excess of the surrounding area outside of RFETS.

Other metals found at concentrations greater than background included copper, magnesium, chromium, lead, mercury, and zinc. Copper is measured in concentrations in excess of its background UTL of 27.3 mg/kg in 11 samples along the western side of the IHSS (range: 28 to 50.2 mg/kg). These concentrations are significantly below the copper PRG of 11,000 mg/kg. Chromium is elevated in two samples along the northwestern border of IHSS160 (59.7 and 78.2 mg/kg) also at concentrations less than the PRG of 892 mg/kg. Lead contamination is limited to one sample in the northwestern corner of the IHSS (SS440794; 426 mg/kg) and two samples in the northeastern corner (SS440594 and SS442194; 124 and 90.2 mg/kg, respectively). The background UTL for lead is 61.4 mg/kg. One sample (SS441694) contained mercury in a concentration of 0.27 mg/kg, which is more than 100 times less than the PRG of 82.1 mg/kg. As we have seen in other OUs, zinc contamination is widespread—14 samples—but less than its PRG of 82,300 mg/kg (range: 90.3 to 165 mg/kg).

Radiochemical Data Summary. Radiochemical analytical results are presented in Table 3-6, and summarized in Table 3-7. Plate 4 plots all sampling locations, and summarizes the radionuclide analyses. Only three radiochemicals were found at levels greater than background activities or the established PRG.

Gross alpha, from the northeast corner, and gross beta, from the northwest corner, exceeded background levels. Plutonium-239/240 was widely distributed around the northern two-thirds of the parking lot at levels exceeding background activities, the established PRG, or both.

3.5.4 Soil-Gas Sampling

Ninety-five soil-gas locations were sampled in IHSS 160. Figure 3-4 is a plot of the soil sampling locations and Table 3-8 contains the analytical results for the sample collected. Plate 5 plots the soil-gas sampling locations in IHSS 160 and the analytical results. The samples were collected on a 50-foot grid with the exception of eight soil-gas locations placed approximately 25 feet away from SG221494 (Figure 3-4) to further define the horizontal extent of PCE in the vicinity of this location.

Toluene concentrations exceeding the target detection limit of 1.0 $\mu\text{g/L}$ were detected at 18 locations in IHSS 160. All detections were in the northern half of the site. The highest concentration, 9.5 $\mu\text{g/L}$, was detected at location SG221394 in the central part of the northern half of the IHSS. Approximately 25 feet directly east at location SG239294 toluene decreased to 1.1 $\mu\text{g/L}$. The lowest concentration exceeding the target detection limit is approximately 225 feet southeast of SG221394 at location SG224394 where toluene was detected at 1.1 $\mu\text{g/L}$.

Benzene was detected at seven locations around the IHSS. Five of these locations were in the northern half of the IHSS. Benzene concentrations ranged from a minimum of 1.0 $\mu\text{g/L}$ at two locations in the northern half of the IHSS, to a maximum concentration of 2.2 $\mu\text{g/L}$ (SG239794).

PCE was detected in four locations in the north central part of IHSS 160. The initial measurements led to the installation of eight additional sampling locations within the original 50-foot grid to evaluate soil-gas PCE concentrations. The two highest concentrations (68 and 99 $\mu\text{g/L}$) are located in adjacent positions at the north end of the parking lot (SG221494 and

SG239594). The two lower concentrations (1.8 and 1.2 $\mu\text{g/L}$) are located within 75 feet at SG221394 and SG221694.

Acetone was detected at two locations in IHSS 160. In the southeast portion of the IHSS at location SG227094 acetone was detected at a concentration of 2.6 $\mu\text{g/L}$. In the northeast portion of the IHSS acetone was detected at a concentration of 3.2 $\mu\text{g/L}$. At location SG221595 benzene, toluene, and PCE were also detected. The widespread benzene and toluene distributions seem to indicate fuel releases.

3.6 IHSS 161-RADIOACTIVE SITE-AREAS WEST OF BUILDING 664

CEARP Phase I interviews indicate that low-level residual contamination from plutonium and uranium existed in Potential Area of Concern #400-807, which is adjacent to the west side of Building 664 (DOE 1986). The release occurred as a result of punctured or leaking drums and boxes containing solid and liquid wastes stored in the area. An attempt was made in the early 1970s to clean up the area by removing the contaminated soil. The destination of the excavated soils is unknown. Results of the radiometric survey, conducted in 1977, showed the presence of americium-241 and gamma activity in an area at the northwest corner of Building 664 (DOE 1992).

In November 1988, a 1-inch-diameter hose ruptured on a forklift resulting in the release of hydraulic oil outside Building 664 that spread over the asphalt area and adjacent uncovered ground. Although a cleanup was attempted, the success of the cleanup is not known (DOE 1992).

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Other documented releases in this IHSS include an uncharacterized hydraulic oil spill. Americium-241 and volatile organics from OU12 IHSS 120.2 may have contaminated the area. Part of IHSS 120.2 is within the boundaries of IHSS 161 (DOE 1992).

Chemical data collected within the IHSS are available from borehole samples collected during 1989. The results do not indicate high concentrations of radionuclides or inorganics in the areas where the boreholes were drilled. With the exception of the common laboratory contaminants methylene chloride and acetone, PCE was the only other organic compound detected within the IHSS. PCE was detected at 7 $\mu\text{g}/\text{kg}$ in borehole P412189, located in the northwest portion of the IHSS (DOE 1992).

The northeast corner of IHSS 161 and OU12 IHSS 157.2 overlap. However, no sample locations within the two IHSSs are overlapping. Adjacent sampling locations have been sampled for radionuclide analyses and are evaluated along with the IHSS 161 sample locations.

IHSS 161 also overlaps with OU12 IHSS 120.2. However, no surface-soil sample locations are shared. Adjacent sampling locations have been sampled for radionuclide analyses and are evaluated along with IHSS 161 surface-soil sample data. Soil-gas locations are overlapping for these two IHSSs. Adjacent soil-gas locations are evaluated along with soil-gas locations for IHSS 161.

3.6.1 HPGe Survey

The HPGe survey data for three locations within IHSS 161 provided no evidence to indicate anomalous activities for potassium-40, radium-226, thorium-232, uranium-238, or uranium-235. These activities fell within the expected range of values in Table 3-1. However, all

of these locations showed elevated americium-241 activities ranging from 7.1 (± 0.7 percent) to 11.8 (± 0.4 percent) pCi/g, and two of these locations showed elevated plutonium-239 ranging from 1.3 (± 10.5 percent) to 1.8 (± 6.8 percent) nCi/g. The radii for two OU12 survey stations, stations U-12 and R-12, slightly overlap with the northeastern corner of IHSS 161. They also showed elevated americium-241 and plutonium-239 activities. As shown on Plate 1, Americium Specific Activity Map, the americium-241 activities are highest at and around Building 664 and gradually decrease with distance from the building. It is likely that the elevated americium and plutonium activities are influenced by shine from the radioactive mixed waste stored in this building.

3.6.2 NaI Survey

The pre-activity health and safety survey identified six of 28 sample locations as slightly elevated above background. The elevated NaI readings varied from 1,927 to 2,805 cpm as compared to the background value of 1,905 cpm. The background comparison value was calculated from the average of 26 background reading plus two times the square root of the average. Five of the elevated readings were located in the south-central portion of the IHSS, and one elevated reading was located approximately 60 feet west of the southwest corner of building 664. Results of the NaI surveys for OU14 are presented in Appendix D.

3.6.3 Surface-Soil Sampling

Twenty-eight surface-soil samples were collected in and around IHSS 161. A total of 28 analytes were detected, including 22 inorganics and 6 radionuclides. Organic chemicals were not subjected to analysis within this IHSS. A discussion of detected analytes is presented below.

Chemical Data Summary. Surface-soil sampling locations are shown in Figure 3-5. Complete analytical results for IHSS 161 are included in Appendix B. Table 3-9 lists all detected constituents and their reported concentrations by sample location. The table also provides the MDLs, background concentrations and PRGs, and indicates which sample analytes exceed either reference concentration. Table 3-10 summarizes the following information for detected analytes: the MDLs, the reported range for SQLs for each analyte and associated sample locations, the range of detected concentrations for each analyte and associated sample locations, the frequency of detection, and the average site concentration of each analyte. Plate 6 plots the sampling locations in IHSS 161 with a summary of analytical results.

Only two compounds, arsenic and beryllium, were found exceeding the established PRGs, but not the background, at this IHSS.

Radiochemical Data Summary. Table 3-9 contains the analytical results and Table 3-10 presents a summary of the radiochemical analyses. Plate 6 is a plot of the sample locations within IHSS 161, and includes soil sample analytical results for radionuclides.

In two isolated locations in the southern third of IHSS 161 (SS451194 and SS452094), plutonium-239/240 was detected at concentrations greater than background activity level, but less than the PRG. At location SS223093 (a common sample location in OU12), gross beta and uranium-233/234 exceeded background values but not the PRGs, and uranium-238 exceeded both the background value and the PRG. At location SS222693 (also a common sample location in OU12), uranium-233/234 exceeded the background value but not the PRG and uranium-238 exceeded the PRG but not the background value.

3.6.4 Soil-Gas Sampling

Soil-gas sampling locations shown in Figure 3-6 and Table 3-11 presents the analytical results. Twenty-eight locations were sampled on a 50-foot grid. Plate 6 depicts both the soil-gas sampling locations in IHSS 161 and the analytical results. Only one location, SG230194, exhibited concentrations that exceeded the target detection limit of 1.0 $\mu\text{g/L}$. At this location acetone was detected at a concentration of 1.5 $\mu\text{g/L}$. The common laboratory contaminant acetone was the only target analyte detected in this IHSS.

3.7 IHSS 162-RADIOACTIVE SITE-700 AREA SITE NO. 2

IHSS 162 is located along Eighth Street and extends from the south end of Building 771 to the north end of Building 850. Radiochemical activity was identified during ground monitoring activities in 1974. In response to this activity, Eighth Street was paved over to prevent mobilization of the affected material. In January 1981 an air sample taken during excavation activities at Eighth Street and Central Avenue yielded a long-lived alpha activity concentration, indicating the presence of residual activity in the area. Excavation crews were required to wet the surface soil prior to removal in order to reduce the airborne dispersion of the soil (DOE 1992).

No releases occurring in IHSS 162 south of the 700 Area are documented. There are at least 10 other IHSSs involving radioactive waste overlapping or in close proximity to this IHSS. According to the Historical Release Report it is possible that releases in the surrounding IHSSs may have affected this IHSS (DOE 1992).

PCB/Radiological Investigations. Four previously sampled PCB/radiological sampling locations lie within IHSS 162 or in the immediate vicinity. Analyses of samples taken at the

northwest and southwest corners of Building 776 showed the presence of PCBs in the soil. Arochlor-1260 was found in the samples with concentrations ranging from 69 to 480,000 $\mu\text{g}/\text{kg}$ (EG&G 1991b). A sample taken at the northwest corner of Building 776 had an americium-241 concentration of 6.8 pCi/g. The background UTL concentration is 0.0135 pCi/g (EG&G 1990). Samples collected also indicate plutonium-239,-240 and americium-241 are present at levels above sitewide background concentrations (DOE 1992).

Samples collected downgradient of the IHSS did not indicate contaminant concentrations substantially different from other boreholes within the plant's industrialized area.

It is likely that chemical contaminants found in the southern and central sections of the IHSS are the result of migration from an adjacent IHSS. Potential chemicals from an adjacent IHSS overlapping IHSS 162 include volatile organics, radionuclides, beryllium, iron, chromium, hexavalent chromium, nitric acid, hydrochloric acid, and fluoride (DOE 1992).

IHSS 162 overlaps with OU8 IHSSs 150.2 and 172. Overlapping locations have been sampled for radionuclides and are evaluated along with IHSS 162 sample data. IHSS 162 also overlaps with OU13 IHSS 190; however, no sampling requirements for either IHSS were affected.

3.7.1 HPGe Survey

Because the geographic area of IHSS 162 traverses a significant portion of the plant from north to south, the 13 HPGe survey stations located in IHSS 162 have been divided into two groups: four stations south of Central Avenue and nine stations north of Central Avenue. This division was made because the radionuclides handled during active production south of Central Avenue were typically uranium-238 and uranium-235. North of Central Avenue,

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especially in the 700 Area, significant quantities of plutonium were handled. HPGe locations for IHSS 162 are illustrated on Plate 1, the Americium Specific Activity Map.

The HPGe survey data for the four southern stations in IHSS 162 provided no evidence to indicate anomalous activities for potassium-40, radium-226, thorium-232, uranium-235, americium-241, or plutonium-239. These activities fell within the expected range of values in Table 3-1. However, three of four locations showed activities for uranium-238 above 2.3 pCi/g and radium-226 to uranium-238 ratios below the target ratio of 0.35, indicating these locations could be contaminated with anthropogenic uranium-238.

The HPGe survey data for the nine northern stations in IHSS 162 provided no evidence to indicate anomalous activities for radium-226 or uranium-235. Potassium-40 was slightly elevated at 24.3 (± 0.3 percent) pCi/g at station 6N-14. Thorium-232 was slightly elevated at six of nine stations with activities ranging from 1.42 (0.5 percent) to 2.02 (± 0.4 percent) pCi/g. Uranium-238 was slightly elevated at four of nine stations with activities at these stations ranging from 2.6 (± 5.4 percent) to 4.9 (± 3.0 percent) pCi/g. Americium-241 was elevated at eight of nine stations with activities ranging from 0.4 (± 10.79 percent) to 1,070 (± 0.0 percent) pCi/g, and plutonium-239/240 was elevated at seven of these eight stations with activities ranging from 1.4 (± 9.8 percent) to 45.9 (± 0.5 percent) nCi/g. The highest activities for plutonium-239 and americium-241 were located at station 6N-14, followed by stations 6M-14 and 6O-14, which are located directly south and north, respectively, of station 6N-14. 6N-14 is located southeast of Building 564 and northeast of Building 569. Building 707, a former plutonium fabrication building, is located east of station 6N-14. Plate 1 indicates that americium-241 activities are extremely elevated in the vicinity of Building 569 and gradually decrease with distance from the building. Based on the pattern of americium-241 readings, it is expected that materials contained in Building 569 are

significantly influencing HPGe measurements. Building 569 is a crate counting facility that could reasonably contain radioactive materials.

3.7.2 NaI Survey

Four NaI surveys were conducted as part of the Phase I, Stage 1 characterization within IHSS 162. These are identified as the "original survey" and surveys A, B, and C.

The original survey was located in the vicinity of HPGe survey locations 6M-14, 6N-14, 6O-14, and 6P-14. Of 68 readings in this survey area, 22 locations were elevated relative to an average background reading of 2,634 cpm. Twenty-one of these locations were located in a fan-shaped area east of Buildings 564 and Building 569. Based on a background reading of 10,206 cpm obtained near Building 569, field personnel determined that these elevated counts were a direct result of radioactive materials stored in that building. The other elevated location was located at the southwest corner of Building 707 and is also probably due to shine.

Survey A was located in the area just northwest of the northwestern corner of Building 776. Survey B was located in the immediate vicinity of the southwest corner of Building 776 and northwest corner of Building 778. Survey C was located in an area in the approximate location of Central Avenue. Seven of 17 locations in Survey A showed elevated counts. These seven locations were also primarily along the wall of Building 776. Three of 16 NaI locations in Survey B were identified with elevated counts. These locations were primarily in the northeastern corner of the survey with close proximity to Building 776. Nine of 45 locations in Survey C showed elevated counts. Seven of these nine locations are located north of Central Avenue. Results of the NaI surveys are presented in Appendix D.

3.7.3 Surface-Soil Sampling

Twenty-three surface-soil samples were collected in and around IHSS 162. A total of 51 analytes were detected, including 20 inorganics, 24 organics/pesticides, and seven radionuclides. A discussion of detected analytes is presented below.

Chemical Data Summary. Surface-soil sampling locations are shown in Figure 3-7. Complete analytical results for IHSS 162 are included in Appendix B. Table 3-12 lists all detected constituents and their reported concentrations by sample location. The table also provides the MDLs, background concentrations, and PRGs, indicating which analytes exceed either reference concentrations. Table 3-13 summarizes the following information for detected analytes: the MDLs, the reported range of SQLs for each analyte and associated sample locations, the range of detected concentrations for each analyte and associated sample locations, the frequency of detection, and the average site concentration of each analyte. Plate 7 shows a plot of sampling locations in IHSS 162 and the results of the analysis.

All samples from IHSS 162 were analyzed for radiochemicals. Locations SS452994 and SS453094 were also analyzed for VOCs, metals, PCBs, pesticides, and herbicides. The additional analyses were performed as a result of Tank 7 (OU9) being within 100 feet, as specified in the Integrated Field Sampling Plan (DOE 1994c).

Benzo(a)pyrene exceeded the established PRG at two locations (SS452994 and SS453094) in this IHSS. The BNAs 2,4,6-tribromophenol, 2-fluorobiphenyl, benzo(g,h,i)perylene, nitrobenzene-D5, phenanthrene, phenol-D5, terphenyl-D14, and o-fluorophenol were also detected at these two locations but a PRG has not been established for these compounds. The herbicide dichlorprop was detected at location SS452994, and dicamba and MCPA were detected at location SS453094. A PRG has not been established for any of these herbicides.

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Arsenic and beryllium exceeded the PRG, while copper and zinc exceeded the background level. Measured arsenic and beryllium concentrations were both well below the background UTLs of 12.9 and 5.20 mg/kg, respectively. The measured copper and zinc concentrations (27.4 and 163 mg/kg, respectively) are well below the PRGs of 11,000 mg/kg for copper and 82,300 mg/kg for zinc.

Radiological Data Summary. Analytical results are presented in Table 3-12, and summarized in Table 3-13. Plate 8 is a plot of sampling locations and a summary of radionuclides.

Three radionuclides were detected above background levels or established PRGs.

Plutonium-239/240 was detected along the southern edge of the IHSS at concentrations exceeding background levels, but well below the PRG of 3.42 pCi/g. Americium-241 was found in three of the four samples that contained plutonium-239/240. The americium-241 activities are less than 10 percent of those of plutonium-239/240. Uranium-238 was also found along nearly the entire length of the site with activities in the range of 0.52 to 1.4 pCi/g. Sixteen of the measured activities are in excess of the PRG of 0.80 pCi/g.

3.8 IHSS 164.1-RADIOACTIVE SITE-800 AREA SITE NO. 2-CONCRETE SLAB

In 1958 a radionuclide-contaminated concrete slab from Building 776 was placed in an area northwest of Building 881 for temporary storage. This slab affected several hundred square feet of ground surface. The exact identity of radioactive constituents is not known; however, the origin of the slab was from Building 776, which was a plutonium manufacturing facility. The slab was broken up and removed and the area was cleaned. The impacted area is now covered by the southeast corner of the Building 881 parking lot (DOE 1992).

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3.8.1 HPGe Survey

The HPGe survey data for the sole survey station in IHSS 164.1 provided no evidence to indicate anomalous activities for potassium-40, radium-226, uranium-238, uranium-235, americium-241, or plutonium-239. These activities fell within the expected range of values in Table 3-1. Thorium-232 was slightly elevated at 1.86 (± 0.4 percent) pCi/g, compared to the background of 1.25 pCi/g. HPGe locations for IHSS 164.1 are illustrated on Plate 1, the Americium Specific Activity Map.

3.8.2 NaI Survey

One NaI survey was located in IHSS 164.1. Out of 15 NaI locations in the survey, only three stations exceeded background. The elevated survey readings ranged from 2,000 to 2,200 cpm, compared to a maximum expected background count rate of 1,613 c/m for two locations and 1,866 cpm at the third location. Results of the NaI surveys for OU14 are presented in Appendix D.

3.8.3 Surface-Soil Sampling

Fifteen surface-soil samples were collected in and around IHSS 164.1 (Figure 3-8). A total of seven analytes were detected, all radionuclides. No samples were subjected to organic or inorganic analyses, as specified in the OU14 Work Plan (DOE 1992). A discussion of detected analytes is presented below.

Radiochemical Data Summary. Complete analytical results for IHSS 164.1 are included in Appendix B. Table 3-14 lists all detected constituents and their reported concentrations by sample location. The table also provides the MDLs, background concentrations, and PRGs,

and indicates which sample analytes exceed either reference concentrations. Table 3-15 summarizes the following information for detected analytes: the MDLs, the reported range of SQLs for each analyte and associated sample locations, the range of detected concentrations for each analyte and associated sample locations, the frequency of detection, and the average site concentration of each analyte. Plate 8 presents a sampling location plot of samples collected along with the analytical results for radiochemical analyses.

Uranium-238 was detected at eight locations in this IHSS, at activities exceeding the PRG. However, none of the measured activities exceeded the background value. These locations were in the eastern and southern portions of the site.

3.9 IHSS 164.2-RADIOACTIVE SITE-800 AREA SITE NO. 2-BUILDING 886 SPILLS

IHSS 164.2 is an area within and adjacent to Building 886 that has been affected by releases of uranium from spills and the movement of contaminated equipment. Historical information on this IHSS was derived from interviews with building personnel (DOE 1992).

A 1,000-liter low-level waste holding tank is located in a below grade, covered, underground concrete pit immediately to the west of Building 886. Uranium is present in the pit and groundwater has accumulated in the area, indicating the potential for groundwater contamination. Activities associated with the removal of waste solution from the pit may have resulted in spills onto the dirt or concrete. One known incident occurred on September 26, 1989, when a colorless liquid was found slowly dripping onto the concrete pad through the drain valve of an empty 500-gallon stainless steel transfer tank located outside the west side of the building. The release created a wet spot on the concrete approximately 5 inches in diameter. Radiological monitoring of the area after discovery indicated 650 cpm from a direct survey and 12 to 24 dpm from a removable contamination survey. The radiological

analyses indicated the level of contamination was low. Analyses of soil samples taken around the tank after the incident identified the contaminant as uranium. Removal and cleanup activities were performed and no residual contamination remained (DOE 1992).

Potential for contamination also occurred outside the west side of the building, before 1969, at the location of a filter plenum. Filter changes and clean-out operations were always a potential release source of uranium to the outside (DOE 1992).

Another potential source of contamination is south of the building in a storage shed used to store experimental equipment. Some of the equipment stored in this area is known to be contaminated by radionuclides. The area over which the equipment was transported between buildings has a potential of exposure to the radiological material (DOE 1992).

Additionally, within Building 886 experimental areas, contaminated solutions have periodically spilled onto the floor. The potential exists for solution leakage through cracks in the concrete slab (DOE 1992).

3.9.1 HPGe Survey

The HPGe survey data for five stations in IHSS 164.2 provided no evidence to indicate anomalous activities for potassium-40, radium-226, or plutonium-239. These activities fell within the expected range of values in Table 3-1. At stations 3R-14 and 3S-14, thorium-232 was slightly elevated at 1.39 (± 0.5 percent) and 1.68 (± 0.4 percent) pCi/g, respectively; and uranium-238 was slightly elevated at 3.7 (± 4.1 percent) and 4.8 (± 3.3 percent) pCi/g, respectively. Station 3T-14 showed elevated uranium-235 at 1.74 (± 1.0 percent) pCi/g and elevated uranium-238 at 4.5 (± 3.4 percent) pCi/g. HPGe locations for IHSS 164.2 are illustrated on Plate 1, the Americium Specific Activity Map.

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3.9.2 NaI Survey

A NaI survey was conducted in the southwestern portion of the IHSS, in the area surrounding a waste holding tank along the southwestern portion of Building 886 and near HPGe survey location 3T-14. NaI readings were elevated at six of 11 survey locations in the area located between the tank and the Building 886 wall. A horizontal NaI reading in this area showed a highly elevated reading of 23,660 cpm compared to the background value of 2,558 cpm, indicating that the NaI readings were influenced by materials contained in Building 886. These NaI survey data suggest that the elevated readings obtained at HPGe station 3T-14 was influenced by shine from enriched uranium used in Building 886. Results of the NaI surveys for OU14 are presented in Appendix D.

3.9.3 Surface-Soil Sampling

Fifty-seven surface-soil samples were collected in and around IHSS 164.2. A total of 55 analytes were detected, including 24 inorganics, 24 organics, and seven radionuclides. A discussion of detected analytes is presented below.

Chemical Data Summary. Surface-soil sampling locations are shown in Figure 3-9. Complete analytical results for IHSS 164.2 are included in Appendix B. Table 3-16 lists all detected constituents and their measured concentrations by sample location. The table also provides the MDLs, background concentrations, and PRGs, and indicates which sample analytes exceed either reference concentrations. Table 3-17 summarizes the following information for detected analytes: the MDLs, the reported range for SQLs for each analyte and associated sample locations, the range of detected concentrations for each analyte and associated sample locations, the frequency of detection, and the average site concentration of each analyte. Plate 9 is a plot of the sampling locations and the analytical results.

Benzo(a)pyrene was detected at seven locations within IHSS 164.2. The range of measured concentrations was 88 to 250 $\mu\text{g}/\text{kg}$ compared to the PRG of 87.7 $\mu\text{g}/\text{kg}$.

Arsenic and beryllium were measured in concentrations in excess of their respective PRGs (0.366 and 0.149 mg/kg, respectively), but less than their background UTLs (12.9 and 5.20, respectively). Six metals—calcium, copper, magnesium, mercury, strontium, and zinc—were measured in concentrations in excess of the background UTLs, but well below their PRGs. Calcium and zinc are the most widely spread contaminants. Calcium is not hazardous and does not have a PRG. All of the zinc concentrations are less than 334 mg/kg as opposed to the PRG of 82,300 mg/kg.

Radiochemical Data Summary. The radiochemical analyses results are presented in Table 3-16, with the data summarized in Table 3-17. Plate 9 is a plot of the sampling locations and the radionuclide data.

Four radiochemicals were recorded within this IHSS. Gross alpha was detected above background levels in one sample (SS459594) in the northeast corner. Uranium-238 is concentrated in samples from all quadrants of the IHSS. The uranium activities are in excess of the PRG of 0.80 pCi/g but less than the background activity of 1.912 pCi/g. Plutonium-239/240, plus or minus americium-241, are present in elevated activities over the eastern half of the IHSS. The americium and plutonium activities are in excess of their respective background activities of 0.0634 and 0.1321 pCi/g but less than the PRGs of 2.37 and 3.42, respectively. The elevated uranium-238 activities often coincide with those of americium-241 and plutonium-239/240 in the western half of the IHSS.

3.10 IHSS 164.3-RADIOACTIVE SITE-800 AREA SITE NO. 2 BUILDING 889 STORAGE

Building 889 is a decontamination facility first used in 1969. A storage pad located north of the building was used to store contaminated drums and uranium contaminated equipment prior to decontamination. An area west of Building 889 may have also been used for storage of contaminated equipment and drums (DOE 1992).

Three known incidents occurred in the 1980s involving contaminated equipment and drums. A waste drum containing uranium chips spontaneously ignited on June 16, 1982. No release of radiological material was reported as a result of this incident (DOE 1992).

In September 1983, plastic sheeting covering a set of contaminated tools was blown off by strong winds. Residual contaminants on these tools may have spread. On July 20, 1984, a uranium chip fire started in an improperly loaded drum. Neither documented responses nor the amount of contamination from the 1983 and 1984 incidents is known (DOE 1992).

Chemical data from groundwater monitoring well 6186, located within IHSS 164.3, did not indicate a substantial presence of contaminants.

3.10.1 HPGe Survey

The HPGe survey data for three stations in IHSS 164.3 provided no evidence to indicate anomalous activities for potassium-40, radium-226, thorium-232, or plutonium-239. These activities fell within the expected range of values in Table 3-1. All three stations showed elevated uranium-238 ranging from 21.9 (± 0.9 percent) to 29.3 (± 0.8 percent) pCi/g. One

station also showed elevated americium-241 at 0.3 (± 16.1 percent) pCi/g. HPGe locations for IHSS 164.3 are illustrated on Plate 1, the Americium Specific Activity Map.

3.10.2 NaI Survey

One NaI survey was conducted in IHSS 164.3. Out of 46 locations, 29 showed elevated counts. The majority of these sites, particularly those that are the most elevated relative to background, were located in close proximity to Building 884, which provides storage for a considerable quantity of radioactive waste. Results of the NaI surveys for OU14 are presented in Appendix D.

3.10.3 Surface-Soil Sampling

Forty-four surface-soil samples were collected in and around IHSS 164.3. A total of seven radionuclides were detected. As specified in the OU14 Work Plan (DOE 1992), no organic or inorganic analyses were performed. A discussion of detected radionuclides is presented below.

Chemical Data Summary. Surface-soil sampling locations are shown in Figure 3-10. Samples from within IHSS 164.3 were not analyzed for organic or inorganic constituents.

Radiochemical Data Summary. Complete analytical results for IHSS 164.3 are included in Appendix B. Table 3-18 lists all detected radionuclides and their reported concentrations by sample location. The table also provides the MDLs, background concentrations, and PRGs, and indicates which sample analytes exceed either reference concentration. Table 3-19 summarizes the following information for detected analytes: the MDLs, the reported range for SQLs for each analyte and associated sample locations, the range of detected concentrations for each analyte and associated sample locations, the frequency of detection,

and the average site concentration of each analyte. Figure 3-11 is a plot of sampling locations in IHSS 164.3 along with a summary of radiochemical data.

Americium-241 and plutonium-239/240 activities were found to be elevated above background levels in a southwest to northwest band across the IHSS. Activities for americium-241, a daughter of plutonium-239/240, are 20 to 40 percent of the plutonium-239/240 activities.

Uranium-233/234 activities were detected above the background level at one location (SS463494) north and four locations (SS463894, SS463994, SS464294, and SS464594) east of Building 884. Uranium-235 activities were detected above the PRG but not above background at one location (SS463394) north and one location (SS464294) east of Building 884. Uranium-235 activities were detected above both background and the PRG at two locations (SS463794 and SS463894) east of Building 884. Uranium-238 activities were detected above the PRG but not above background throughout the IHSS with the exception of the northwest corner, where uranium-238 was not detected, and above the PRG and background at locations (SS463394 and SS463494) north and four locations (SS463794, SS463894, SS464294, and SS464594) east of Building 884.

Gross alpha activity exceeded the background value at one location (SS465494) north of Building 889.

Generally, the area east of Building 884 contains the most elevated activities of all of the uranium isotopes and the area south of Building 884 contains the most elevated activities of plutonium-239/240 and americium-241.

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4.0 STATISTICAL ASSESSMENT OF SURFACE-SOIL DATA

Phase I, Stage 1 surface-soil sampling at each of the OU14 IHSSs was conducted at nodes of a regular grid overlain on the IHSS, as outlined in the OU14 Work Plan (DOE 1992a). A 25-foot grid spacing was used at IHSSs 131, 164.1, 164.2, and 164.3. A 50-foot grid spacing was used at IHSSs 156.1, 160, and 161. At IHSS 162, samples were collected at 100-foot centers along a line running north-south along the axis of the IHSS.

Because Phase I, Stage 1 soil concentration data have now been obtained, it is possible to investigate the variability of data within each IHSS and, specifically, examine whether the number of soil samples collected was sufficient to reliably estimate mean concentrations of chemicals within the area of each IHSS. For cases where the numbers of samples collected during Phase I, Stage 1 are not sufficient to estimate mean concentrations with the desired degree of confidence, plans for collecting additional samples during Phase I, Stage 2 investigations can be developed based on the observed variability of the Phase I, Stage 1 data.

According to the OU14 Work Plan (DOE 1992a), the Phase I, Stage 1 data were to be analyzed statistically in order to develop a Stage 2 sampling program. No specific statistical analyses of Stage 1 data were identified in the Work Plan. During Stage 2 investigations, radionuclide and inorganic elemental concentrations in soils were to be compared to background data using appropriate statistical analyses, such as analysis of variance (ANOVA), application of the Student t-test, or application of nonparametric techniques. The Stage 2 Sampling Plan would have been developed as part of the originally-proposed Technical Memorandum to be prepared at the end of Stage 1 investigations. Since the Technical Memorandum has been replaced by this Data Summary Report, Stage 2 activities are no longer being proposed within this document. For these reasons, only preliminary

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statistical analyses of Phase I, Stage 1 surface-soil data have been performed. In the absence of specific guidance from the Work Plan, these preliminary statistical analyses have been conducted using techniques originally developed for application to surface-soil data from OU10 (DOE 1992b, DOE 1995). Those techniques were designed to assess whether or not sufficient data had been collected to characterize the mean concentrations of individual chemicals at a given IHSS. Mean concentrations were emphasized at this stage of analysis because risk assessors commonly apply estimates of mean concentrations (such as upper confidence levels on mean values) when assessing risk or hazard due to exposure to COPCs.

This preliminary assessment of Phase I, Stage 1 data has involved two steps: data screening and parametric statistical computations. The data assessment also includes conclusions regarding the sufficiency of the quantity of Phase I, Stage 1 data for each IHSS.

4.1 DATA SCREENING

To perform an assessment of the Phase I, Stage 1 data with respect to the sufficiency of the number of samples, the data were screened through a hierarchy of processes:

1. Duplicates (i.e., concentrations for duplicate samples collected from the same nominal location) were treated in a manner consistent with that of the risk assessment. If both analyses indicated detected concentrations, the higher value was used as the concentration at the location. If one analysis indicated a detected concentration and the other analysis was below the detection level, the detected value was used as the concentration at the location. If both analyses were below the detection level, the value with the lower detection level was used to represent the concentration at that location.

2. The frequency of detections for each chemical was examined. For those chemicals for which all analytical results were less than the SQL, no further assessment was performed because no parametric statistical computations are possible. Furthermore, TICs were not addressed in this assessment.
3. For those chemicals for which more than approximately one-third of the analytical results were less than the detection level, no parametric statistical computations were conducted. However, in Section 3.0, the detected data were examined for consistency with trends observed from more complete data sets (e.g., presence of hot spots).
4. For data sets that included fewer than approximately one-third nondetects, parametric statistical computations were conducted by replacing the nondetected values with one-half the detection level (SQL) to obtain unbiased estimates of the means of the data distributions. Although RCRA guidance suggests that nonparametric methods be used to compare site data against standards whenever the frequency of nondetects exceeds 15 percent (EPA 1989), the present approach is consistent with RFETS data treatment for risk assessment. At this preliminary stage, the data are not being compared to standards. Furthermore, the draft Human Health Risk Assessment Methodology (EG&G 1994) indicates that nondetected values should be replaced with one-half the reported detection limit, and that graphical presentations of the data using box plots and histograms should be used when the percentage of nondetected values is 50 percent or less. In addition, recent information (Chromec 1994) suggests that simple substitution methods, such as replacing nondetected values with one-half the detection level, are nearly as accurate as the generally-preferred Maximum Likelihood Estimation method for dealing with nondetected values when the proportion of nondetected values is less than 80 percent.

5. For data sets for which all values were reported as detected (even if qualified as only estimated for some quality assurance [QA]/QC or data validation reason), the entire data set was used for parametric statistical computations as described in the following sections. The only data that were excluded from the analyses were those data that were reported as "rejected" by the data validation process.

The application of each of these screening steps is presented in the following IHSS-specific discussions.

4.2 PARAMETRIC STATISTICAL COMPUTATIONS

For those data sets that were not eliminated from further analyses by the screening process described in Section 4.1, the following statistical computations were conducted:

1. The number of samples, mean, standard deviation, coefficient of variation (ratio of standard deviation to mean), and coefficient of skewness were calculated.
2. The number of samples required was then calculated in a manner consistent with that used in the OU10 Work Plan (DOE 1992b) and the OU10 Technical Memorandum Number 1 (DOE 1995). The formula used is presented by Gilbert (1987):

$$n(\alpha, d) = (Z_{1-\alpha/2} \eta / d)^2$$

where

$$\begin{aligned} n(\alpha, d) &= \text{number of measurements required (sample size),} \\ Z_{1-\alpha/2} &= \text{the standard normal deviate that cuts off (100}\alpha/2\text{) percent of the upper tail of a standard normal distribution,} \end{aligned}$$

η = coefficient of variation, and
 d = relative error = $|\bar{x} - \mu| / \mu$, where \bar{x} is the sample mean (mean of the observed data) and μ is the true population mean, such that

$$\text{Prob} [|\bar{x} - \mu| > d\mu] = \alpha$$

3. The quantity $n(\alpha, d)$ can also be interpreted as the number of samples needed to ensure that

$$\text{Prob} [|\bar{x} - \mu| < d\mu] = 1 - \alpha, \text{ or}$$

$$\text{Prob} [\bar{x} / (1+d) < \mu < \bar{x} / (1-d)] = 1 - \alpha.$$

That is, if the number of samples is at least equal to $n(\alpha, d)$, then the probability is $1 - \alpha$ that the true mean of the data distribution is less than the sample mean (mean of the number of samples collected) divided by $1 - d$.

4. In the OU10 RFI/RI Work Plan (DOE 1992a), α and d were chosen, respectively, to be 0.05 and 0.2. To provide further information to aid in selecting numbers of additional samples needed during Phase I, Stage 2, the number of required samples, $n(\alpha, d)$, was also calculated for values of α ranging from 0.05 to 0.2, and values of the relative error, d , ranging from 0.2 to 0.5. That is, the sensitivity of the calculated numbers of required samples to the selection of the confidence level and the relative error was assessed. For example, if the number of physical samples collected is greater than or equal to $n(0.05, 0.2)$, then the statistical constraints of the OU10 Work Plan (DOE 1992a) would have been met. However, if the number of physical samples collected is less than $n(\alpha, d)$ except for, say, the case $\alpha = 0.2$ and $d = 0.5$, then we can conclude that the number

of physical samples is sufficient for $\alpha = 0.2$ and $d = 0.5$. That is, the number of physical samples is sufficient if we can accept an 80 percent confidence that the true population mean is less than twice the sample mean.

This sensitivity analysis can be used to identify appropriate confidence levels and relative error rates, per constituent and per IHSS, to achieve protectiveness within practical constraints on the numbers of Phase I, Stage 2 field samples that must be collected. In some cases, the sensitivity analysis may indicate that the numbers of samples already collected are sufficient to characterize the mean concentrations within the IHSS, or are sufficient so long as confidence and relative error requirements can be relaxed slightly. The analysis may also identify constituents with such high data variability that they must be assessed more thoroughly before any conclusions can be made regarding the numbers of field samples required.

Results of these analyses are discussed on an IHSS-specific basis in the following sections.

4.3 DATA ASSESSMENT CONCLUSIONS

This section presents conclusions regarding the sufficiency of the amount of Phase I, Stage 1 surface-soil data for estimating means of chemical concentrations. The results are presented on an IHSS-specific basis.

4.3.1 IHSS 131 - 700 Area Site No. 1

Surface-soil samples from IHSS 131 were analyzed for semivolatile organic compounds (SVOCs), metals, radionuclides, and VOCs. Most of the SVOCs were not detected in surface-soil samples from IHSS 131. However, a few PAHs, phthalates, and other

compounds were detected: 2,4-dimethylphenol, 2-methylnaphthalene, 4-methylphenol, 4-nitroaniline, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, benzoic acid, bis(2-ethylhexyl) phthalate, butyl benzyl phthalate, chrysene, di-n-butyl phthalate, di-n-octyl phthalate, dibenzo(a,h)anthracene, dibenzofuran, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. VOCs detected included acetone, cyclohexane, methylene chloride, PCE, toluene, total xylenes, and n-hexane. As expected, metals were detected in most or all samples. Only molybdenum, tin, antimony, selenium, and thallium were not detected in any sample. All of the radionuclides analyzed (americium-241, gross alpha, gross beta, plutonium-239/240, uranium-233/234, uranium-235, and uranium-238) were detected in each sample analyzed.

For the SVOCs that were detected, all but 14 were found in fewer than one-third of the samples. The statistical assessment was completed for the other 14 chemicals: acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-ethylhexyl) phthalate, butyl benzyl phthalate, chrysene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene. Of the VOCs detected, toluene and total xylenes were only detected in one or two samples. The statistical assessment was completed for the other five chemicals: acetone, cyclohexane, methylene chloride, PCE, and n-hexane. Of the metals that were detected, cadmium and mercury were detected in only three to five of the 16 samples so they were not carried forward through the statistical assessment.

Statistical summaries of the data for the remaining chemicals are provided in Table 4-1. For $\alpha = 0.05$ and $d = 0.2$, the numbers of samples collected during Phase I, Stage 1 are sufficient for two of the VOCs, 10 of the metals, and four of the radionuclides. However, if the statistical constraints are relaxed slightly, to $\alpha = 0.1$ and $d = 0.3$, then the numbers of samples collected are sufficient for the two phthalate esters, three of the VOCs, all of the

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metals except beryllium, copper, and zinc, and all of the radionuclides except americium-241 and plutonium-239/240.

For $d = 0.3$, sufficient samples have been collected for butyl benzyl phthalate with $\alpha = 0.05$, and for bis(2-ethylhexyl) phthalate with $\alpha = 0.1$. For benzo(a)pyrene and indeno(1,2,3-cd)pyrene, the number of samples collected is sufficient for $\alpha = 0.1$ and $d = 0.5$ (Table 4-1). Thus, the number of samples is sufficient if we can accept a 90 percent confidence that the true population means are less than twice the sample means of $427 \mu\text{g}/\text{kg}$ for benzo(a)pyrene and $283 \mu\text{g}/\text{kg}$ for indeno(1,2,3-cd)pyrene. For benzo(a)pyrene, the sample mean of $427 \mu\text{g}/\text{kg}$ exceeds the PRG of $87.7 \mu\text{g}/\text{kg}$ (Section 3.1). Thus, the distribution of concentrations will have to be investigated further to ascertain the presence of hot spots or more widely disseminated benzo(a)pyrene. For indeno(1,2,3-cd)pyrene, twice the sample mean of $283 \mu\text{g}/\text{kg}$, or $566 \mu\text{g}/\text{kg}$, is considerably less than the PRG of $877 \mu\text{g}/\text{kg}$ (Section 3.1). Thus, accepting a lower confidence level of 90 percent and a larger relative error of the mean of 0.5 is not unreasonable for this compound, and we can conclude that sufficient samples have been collected to characterize its mean concentration. For all of the other SVOCs, the data variability is so great that we cannot conclude that sufficient samples have been collected even with $\alpha = 0.2$ and $d = 0.5$ (Table 4-1). Further investigation of the variability of these data sets will be required, perhaps including geostatistical analyses to characterize spatial variability in the concentration distributions.

Similarly, sufficient samples have been collected to characterize the means of the distributions of acetone and methylene chloride with $\alpha = 0.05$ and $d = 0.2$ (Table 4-1). If the statistical constraints are relaxed slightly, to $\alpha = 0.1$ and $d = 0.3$, then the number of samples collected is also sufficient to characterize the mean of the distribution of cyclohexane. Sufficient samples have been collected to characterize the mean of the distribution of n-hexane with $\alpha = 0.2$ and $d = 0.5$. However, there are no PRGs for

cyclohexane or n-hexane, and the numbers of samples are very small, so the distributions of these chemicals will have to be considered further. In addition, the number of samples collected is not sufficient to characterize the mean of the distribution of PCE even with $\alpha = 0.2$ and $d = 0.5$ (Table 4-1), so further investigation of the variability of this data set will be required, perhaps including geostatistical analyses to characterize spatial variability in the concentration distributions.

Sufficient samples have been collected to characterize the means of cesium, lithium, strontium, calcium, cobalt, iron, magnesium, manganese, potassium, and vanadium with $\alpha = 0.05$ and $d = 0.2$. If the statistical constraints are relaxed slightly, to $\alpha = 0.1$ and $d = 0.3$, then the numbers of samples collected are also sufficient to characterize the means of the distributions of aluminum, arsenic, barium, chromium, lead, nickel, silver, and sodium. For beryllium and copper, sufficient samples have been collected for $\alpha = 0.1$ and $d = 0.5$ (Table 4-1). Thus, sufficient samples have been collected for these two metals if we can accept a 90 percent confidence that the true population means are less than twice the sample means of 0.408 milligrams per kilogram (mg/kg) for beryllium and 20.63 mg/kg for copper. Twice the sample mean for copper, 41.26 mg/kg, is almost three orders of magnitude less than the PRG, although it does exceed the background $UTL_{99/99}$ of 27.3 mg/kg (Section 3.1). Thus, additional samples should not be needed for copper. Twice the sample mean for beryllium, 0.816 mg/kg, exceeds the PRG of 0.149 mg/kg, but it is considerably less than the background $UTL_{99/99}$ of 5.2 mg/kg (Section 3.1). Thus, further samples should not be needed for beryllium, pending a more complete comparison of the IHSS distribution with the background distribution of beryllium concentrations. For zinc, the data variability is so great that we cannot conclude that sufficient samples have been collected even with $\alpha = 0.2$ and $d = 0.5$ (Table 4-1). Further investigation of the variability of this data set will be required, perhaps including geostatistical analyses to characterize spatial variability in the concentration distributions.

Sufficient samples have been collected to characterize the means of gross alpha, gross beta, uranium 233/234 and uranium-238 with $\alpha = 0.05$ and $d = 0.2$. If the statistical constraints are relaxed slightly, to $\alpha = 0.05$ and $d = 0.3$, then the numbers of samples collected are also sufficient to characterize the mean of the distribution of uranium-235 (Table 4-1). For americium-241 and plutonium-239/240, sufficient samples have been collected for $\alpha = 0.2$ and $d = 0.5$. Thus, sufficient samples have been collected for these two radionuclides if we can accept an 80 percent confidence that the true population means are less than twice the sample means of 0.0816 pCi/g for americium-241 and 0.552 pCi/g for plutonium-239/240. Twice the sample mean for americium-241, 0.1632 pCi/g, is an order of magnitude less than the PRG of 2.37 pCi/g, although it does exceed the background $UTL_{99/99}$ of 0.0634 pCi/g (Section 3.1). Similarly, twice the sample mean for plutonium-239/240, 1.104 pCi/g, is less than the PRG of 3.42 pCi/g, but exceeds the background $UTL_{99/99}$ of 0.1321 pCi/g. Thus, further samples should not be needed for these radionuclides, pending a more complete comparison of the IHSSs with the background distributions.

4.3.2 IHSS 156.1 - Building 334 Parking Lot

Only radionuclides were analyzed in surface-soil samples from IHSS 156.1. Americium-241 was detected in all 62 samples where it was analyzed, and the other radionuclides analyzed (gross alpha, gross beta, plutonium-239/240, uranium-233/234, uranium-235, and uranium-238) were detected in all 65 samples.

Statistical summaries of the data for the radionuclides analyzed are provided in Table 4-2. For $\alpha = 0.05$ and $d = 0.2$, the numbers of samples collected during Phase I, Stage 1 are sufficient to characterize mean concentrations for all of the radionuclides except americium-241 and plutonium-239/240. However, if the statistical constraints are relaxed slightly, to

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$\alpha = 0.1$ and $d = 0.3$, then the number of samples collected are also sufficient for americium-241.

For plutonium-239/240, sufficient samples have been collected for $\alpha = 0.1$ and $d = 0.5$. Thus, sufficient samples have been collected for this radionuclide if we can accept a 90 percent confidence that the true population mean is less than twice the sample mean of 0.0184 pCi/g for plutonium-239/240. Twice the sample mean for plutonium-239/240, 0.0368 pCi/g, is less than both the PRG of 3.42 pCi/g and the background $UTL_{99/99}$ of 0.1321 pCi/g (Section 3.1). Thus, further samples are not needed to characterize the mean activities of any of the radionuclides.

4.3.3 IHSS 160 - Building 444 Parking Lot

Surface-soil samples from IHSS 160 were analyzed only for metals and radionuclides. As expected, metals were detected in most or all samples. Only cesium, tin, and thallium were not detected in any sample. All of the radionuclides analyzed (gross alpha, gross beta, plutonium-239/240, and total uranium) were detected in each sample for which they were analyzed.

Of the metals that were detected, molybdenum, antimony, cadmium, mercury, and selenium were detected in only four to 12 of the 45 samples so they were not carried forward through the statistical assessment.

Statistical summaries of the data for the remaining chemicals are provided in Table 4-3. For $\alpha = 0.05$ and $d = 0.2$, the numbers of samples collected during Phase I, Stage 1 are sufficient to characterize mean concentrations for 13 of the metals, gross alpha, and gross beta. However, if the statistical constraints are relaxed slightly, to $\alpha = 0.1$ and $d = 0.3$,

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then the numbers of samples collected are sufficient for all of the metals except chromium, lead, and sodium, and all of the radionuclides except plutonium-239/240.

For chromium, lead, and sodium, sufficient samples have been collected for $\alpha = 0.1$ and $d = 0.5$. Thus, sufficient samples have been collected for these three metals if we can accept a 90 percent confidence that the true population means are less than twice the sample means of 14.14 mg/kg for chromium, 33.24 mg/kg for lead, and 156.5 mg/kg for sodium. Twice the sample mean for chromium, 28.28 mg/kg, is more than an order of magnitude less than the PRG of 939 mg/kg, although it does exceed the background $UTL_{99/99}$ of 24.80 mg/kg (Section 3.1). Thus, additional samples should not be needed for chromium, pending a more complete comparison of the IHSS distribution with the background distribution of chromium concentrations. PRGs are not available for lead and sodium, so the concentrations of these metals observed at the IHSS can only be compared with the background $UTL_{99/99}$ values (Section 3.1). Twice the sample mean for lead, 66.48 mg/kg, is slightly greater than the $UTL_{99/99}$ of 61.40 mg/kg, so a more complete comparison should be made of the IHSS distribution with the background distribution of lead concentrations. For sodium, twice the sample mean, 313 mg/kg, is substantially less than the background $UTL_{99/99}$ of 1,108 mg/kg, so it is not unreasonable to accept a relative error in the mean of 0.5. Thus, sufficient samples have been collected to characterize the mean concentration of sodium at IHSS 160.

Sufficient samples have been collected to characterize the means of gross alpha and gross beta with $\alpha = 0.05$ and $d = 0.2$. If the statistical constraints are relaxed slightly, to $\alpha = 0.1$ and $d = 0.2$, then the numbers of samples collected are also sufficient to characterize the mean of the distribution of total uranium. For plutonium-239/240, the data variability is so great that we cannot conclude that sufficient samples have been collected even with $\alpha = 0.2$ and $d = 0.5$ (Table 4-3). Further investigation of the variability of this data set

will be required, perhaps including geostatistical analyses to characterize spatial variability in the concentration distributions.

4.3.4 IHSS 161 - Area West of Building 664

At IHSS 161, surface-soil samples were analyzed for metals and radionuclides. Twenty-eight samples were analyzed for gross alpha, gross beta, and plutonium-239/240; 24 samples were analyzed for total uranium; and only two samples were analyzed for metals, uranium-233/234, uranium-235, and uranium-238. Most of the metals were detected in both samples. Only tin, antimony, cadmium, mercury, selenium, and thallium were not detected in any sample. Cesium and molybdenum were detected in only one of the two samples. The radionuclides were detected in every sample where they were analyzed. Because of the limited number of samples for the metals and specific uranium isotopes, they were not carried forward through the statistical analyses. Only gross alpha, gross beta, plutonium-239/240, and total uranium are discussed further below.

Statistical summaries of the data for the radionuclides analyzed are provided in Table 4-4. For $\alpha = 0.05$ and $d = 0.2$, the numbers of samples collected during Phase I, Stage 1 are sufficient for all of the radionuclides except plutonium-239/240. Thus, sufficient samples have been collected to characterize the means of gross alpha, gross beta, and total uranium with $\alpha = 0.05$ and $d = 0.2$. For plutonium-239/240, sufficient samples have been collected for $\alpha = 0.2$ and $d = 0.5$. Thus, sufficient samples have been collected for this radionuclide if we can accept an 80 percent confidence that the true population mean is less than twice the sample mean of 0.0430 pCi/g for plutonium-239/240. Twice the sample mean for plutonium-239/240, 0.0860 pCi/g, is less than both the PRG of 3.42 pCi/g and the background $UTL_{99/99}$ of 0.1321 pCi/g (Section 3.1). Thus, further samples are not needed to characterize the mean activities of any of the radionuclides.

4.3.5 IHSS 162 - 700 Area Site No. 2

At IHSS 162, surface-soil samples were analyzed for semivolatile and volatile organics, metals, herbicides, pesticides and PCBs, and radionuclides. Twenty-one samples were analyzed for americium-241, gross alpha, gross beta, plutonium-239/240, uranium-233/234, uranium-235, and uranium-238. Only two samples were analyzed for SVOCs, VOCs, metals, herbicides, pesticides and PCBs.

Most of the SVOCs were not detected in either sample. Anthracene was detected in one sample, and 2,4,6-tribromophenol, 2-fluorobiphenyl, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, bis(2-ethylhexyl) phthalate, butyl benzyl phthalate, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, nitrobenzene-d5, phenanthrene, phenol-d5, terphenyl-d14, and o-fluorophenol were detected in both samples. Only three VOCs were detected, 2-butanone in one sample and acetone and methylene chloride in both samples. Among the herbicides, dicamba, dichlorprop, and MCPA were each detected in only one sample. None of the pesticides or PCBs were detected except dibutylchloroendate, which was detected in both samples. Most of the metals were detected in both samples. Only molybdenum, tin, antimony, mercury, selenium, silver, sodium, and thallium were not detected in either sample. Cadmium was detected in only one of the two samples. The radionuclides were detected in every sample where they were analyzed. Because of the limited number of samples for the SVOCs, VOCs, herbicides, pesticides and PCBs, and metals, they were not carried forward through the statistical analyses. Only americium-241, gross alpha, gross beta, plutonium-239/240, uranium-233/234, uranium-235, and uranium-238 are discussed further below.

Statistical summaries of the data for the radionuclides analyzed are provided in Table 4-5. For $\alpha = 0.05$ and $d = 0.2$, the numbers of samples collected during Phase I, Stage 1 are

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sufficient for all of the radionuclides except americium-241, plutonium-239/240, and uranium-235. Thus, sufficient samples have been collected to characterize the means of gross alpha, gross beta, uranium-233/234, and uranium-238 with $\alpha = 0.05$ and $d = 0.2$. If the statistical constraints are relaxed slightly, to $\alpha = 0.05$ and $d = 0.3$, then the numbers of samples collected are also sufficient to characterize the mean of the distribution of uranium-235. For americium-241 and plutonium-239/240, the data variability is so great that we cannot conclude that sufficient samples have been collected even with $\alpha = 0.2$ and $d = 0.5$ (Table 4-5). Further investigation of the variability of these data sets will be required, perhaps including geostatistical analyses to characterize spatial variability in the concentration distributions.

4.3.6 IHSS 164.1 - 800 Area Site No. 2 - Concrete Slab

Only radionuclides were analyzed in surface-soil samples from IHSS 164.1. The radionuclides analyzed (americium-241, gross alpha, gross beta, plutonium-239/240, uranium-233/234, uranium-235, and uranium-238) were detected in all 15 samples.

Statistical summaries of the data for the radionuclides analyzed are provided in Table 4-6. For $\alpha = 0.05$ and $d = 0.2$, the numbers of samples collected during Phase I, Stage 1 are sufficient for all of the radionuclides except americium-241, plutonium-239/240, and uranium-235. However, if the statistical constraints are relaxed slightly, to $\alpha = 0.05$ and $d = 0.3$, then the number of samples collected is also sufficient for uranium-235.

Sufficient samples have been collected to characterize the means of gross alpha, gross beta, uranium 233/234, and uranium-238 with $\alpha = 0.05$ and $d = 0.2$. If the statistical constraints are relaxed slightly, to $\alpha = 0.05$ and $d = 0.3$, then the number of samples collected is also sufficient to characterize the mean of the distribution of uranium-235 (Table 4-6). For

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americium-241, sufficient samples have been collected for $\alpha = 0.2$ and $d = 0.5$. For plutonium-239/240, sufficient samples have been collected for $\alpha = 0.1$ and $d = 0.5$. Thus, sufficient samples have been collected for these radionuclides if we can accept an 80 percent confidence that the true population mean is less than twice the sample mean of 0.00427 pCi/g for americium-241 and a 90 percent confidence that the true population mean is less than twice the sample mean of 0.0197 pCi/g for plutonium-239/240. Twice the sample mean for americium-241, 0.00854 pCi/g, is substantially less than the PRG of 2.37 pCi/g and the background $UTL_{99/99}$ of 0.0634 pCi/g. Twice the sample mean for plutonium-239/240, 0.0394 pCi/g, is less than both the PRG of 3.42 pCi/g and the background $UTL_{99/99}$ of 0.1321 pCi/g (Section 3.1). Thus, further samples are not needed to characterize the mean activities of any of the radionuclides.

4.3.7 IHSS 164.2 - 800 Area Site No. 2 - Building 886 Spills

Surface-soil samples from IHSS 164.2 were analyzed for SVOCs, metals, radionuclides, and VOCs. Most of the SVOCs were not detected in surface-soil samples from IHSS 164.2. However, a few PAHs, phthalates, and other compounds were detected: acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis(2-ethylhexyl) phthalate, butyl benzyl phthalate, carbazole, chrysene, di-n-butyl phthalate, di-n-octyl phthalate, dibenzofuran, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, pentachlorophenol, phenanthrene, and pyrene. VOCs detected included 1,2-dichloroethene, methylene chloride, PCE, and trichloroethene. As expected, metals were detected in most or all samples. Only cesium, molybdenum, antimony, and thallium were not detected in any sample. All of the radionuclides analyzed (americium-241, gross alpha, gross beta, plutonium-239/240, uranium-233/234, uranium-235, and uranium-238) were detected in each sample analyzed.

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For the SVOCs that were detected, all except nine were detected in fewer than one-third of the samples. The statistical assessment was completed for the other nine compounds: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-ethylhexyl) phthalate, chrysene, fluoranthene, phenanthrene, and pyrene. Of the VOCs detected, 1,2-dichloroethene, PCE, and trichloroethene were only detected in one to three samples. The statistical assessment was completed for the other VOC, methylene chloride. Of the metals that were detected, tin, cadmium, mercury, and selenium were detected in only one to five of the 32 samples so they were not carried forward through the statistical assessment.

Statistical summaries of the data for the remaining chemicals are provided in Table 4-7. For $\alpha = 0.05$ and $d = 0.2$, the numbers of samples collected during Phase I, Stage 1 are sufficient for six of the SVOCs, 15 of the metals, and five of the radionuclides. However, if the statistical constraints are relaxed slightly, to $\alpha = 0.1$ and $d = 0.3$, then the number of samples collected are sufficient for all of the analytes except sodium.

For sodium, the number of samples collected is sufficient for $\alpha = 0.1$ and $d = 0.5$ (Table 4-7). Thus, the number of samples is sufficient if we can accept a 90 percent confidence that the true population mean is less than twice the sample mean of 199 mg/kg for sodium. Twice the sample mean, or 398 mg/kg, is substantially less than the background $UTL_{99/99}$ of 1108 mg/kg (Section 3.1). There is no PRG for sodium. Thus, accepting a lower confidence level of 90 percent and a larger relative error of the mean of 0.5 is not unreasonable for sodium, and we can conclude that sufficient samples have been collected to characterize its mean.

4.3.8 IHSS 164.3 - 800 Area Site No. 2 - Building 886 Spills

Only radionuclides were analyzed in surface-soil samples from IHSS 164.3. The radionuclides analyzed (americium-241, gross alpha, gross beta, plutonium-239/240, uranium-233/234, uranium-235, and uranium-238) were detected in all 34 samples.

Statistical summaries of the data for the radionuclides analyzed are provided in Table 4-8. For $\alpha = 0.05$ and $d = 0.2$, the numbers of samples collected during Phase I, Stage 1 are sufficient to characterize mean concentrations for gross alpha and gross beta. However, if the statistical constraints are relaxed slightly, to $\alpha = 0.1$ and $d = 0.3$, then the numbers of samples collected are also sufficient for uranium-233/234 and uranium-235.

For americium-241, plutonium-239/240, and uranium-238, sufficient samples have been collected for $\alpha = 0.1$ and $d = 0.5$. Thus, sufficient samples have been collected for these radionuclides if we can accept a 90 percent confidence that the true population mean is less than twice the sample mean of 0.0495 pCi/g for americium-241, 0.217 pCi/g for plutonium-239/240, and 1.67 pCi/g for uranium-238. For each of americium-241 and plutonium-239/240, twice the sample mean is an order of magnitude less than the PRG but exceeds the background $UTL_{99/99}$ (Section 3.1). Thus further samples should not be needed for these radionuclides, pending a more complete comparison of the distributions of activities within the IHSS with the background distributions. For uranium-238, twice the sample mean, 3.34 pCi/g, exceeds both the PRG of 0.80 pCi/g and the background $UTL_{99/99}$ of 1.912 pCi/g (Section 3.1). Further investigation of the variability of the uranium-238 data set will be required, perhaps including geostatistical analyses to characterize spatial variability in the concentration distributions.

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Data Summary No. 2

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TABLE 2-1
 Analytical Parameters for Surface-Soil Samples
 from OU14 IHSSs
 Rocky Flats Environmental Technology Site

TARGET ANALYTE LIST (METALS)
Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Cesium*
Chromium
Cobalt
Copper
Cyanide
Iron
Lead
Lithium*
Magnesium
Manganese, total
Mercury
Molybdenum
Nickel
Potassium
Selenium
Silver
Sodium
Strontium*
Thallium
Tin
Vanadium
Zinc
Total Organic Carbon

TARGET COMPOUND LIST (VOLATILES)
Chloromethane
Bromomethane
Vinyl chloride
Chloroethane
Methylene chloride
Acetone
Carbon disulfide
1,1-Dichloroethene
1,1-Dichloroethane
1,2-Dichloroethene (total)
Chloroform
1,2-Dichloroethane
2-Butanone
1,1,1-Trichloroethane
Carbon tetrachloride
Vinyl acetate
Bromodichloromethane
1,2-Dichloropropane
cis-1,3-Dichloropropene
Trichloroethene
Dibromochloromethane
1,1,2-Trichloroethane
Benzene
trans-1,3-Dichloropropene
Bromoform
4-Methyl-2-pentanone
2-Hexanone
Tetrachloroethene
Toluene
1,1,2,2-Tetrachloroethane
Chlorobenzene
Ethyl benzene
Styrene
Total Xylenes

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TABLE 2-1
 Analytical Parameters for Surface-Soil Samples
 from OU14 IHSSs
 Rocky Flats Environmental Technology Site

TARGET COMPOUND LIST (SEMIVOLATILES)
Phenol
bis(2-Chloroethyl)ether
2-Chlorophenol
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Benzyl alcohol
1,2-Dichlorobenzene
2-Methylphenolhene
bis(2-Chloroisopropyl)ether
4-Methylphenol
N-Nitroso-di-n-propylamine
Hexachloroethane
Nitrobenzene
Isophorone
2-Nitrophenol
2,4-Dimethylphenol
Benzoic acid
bis(2-Chloroethoxy)methane
2,4-Dichlorophenol
1,2,4-Trichlorobenzene
Naphthalene
4-Chloroaniline
Hexachlorobutadiene
4-Chloro-3-methylphenol
2-Methylnaphthalene
Hexachlorocyclopentadiene
2,4,6-Trichlorophenol
2,4,5-Trichlorophenol
2-Chloronaphthalene
2-Nitroaniline
Dimethylphthalate
Acenaphthylene
2,6-Dinitrotoluene
3-Nitroaniline
Acenaphthene

2,4-Dinitrophenol
4-Nitrophenol
Dibenzofuran
4-Chlorophenyl-phenyl ether
Fluorene
4-Nitroaniline
4,6-Dinitro-2-methylphenol
N-nitrosodiphenylamine
4-Bromophenyl-phenylether
Hexachlorobenzene
Pentachlorophenol
Phenanthrene
Anthracene
Di-n-butylphthalate
Fluoranthene
Pyrene
Butylbenzylphthalate
3,3-Dichlorobenzidine
Benzo(a)anthracene
Chrysene
bis(2-Ethylhexyl)phthalate
Di-n-octylphthalate
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(a)pyrene
Indeno(1,2,3-cd)pyrene
Dibenz(a,h)anthracene
Benzo(g,h,i)perylene

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TABLE 2-1
Analytical Parameters for Surface-Soil Samples
from OU14 IHSSs
Rocky Flats Environmental Technology Site

RADIONUCLIDES
Gross alpha
Gross beta
Uranium 233+234, 235, and 238 (each isotope + total)
Americium 241
Plutonium 239+240

ANIONS
Nitrate/nitrite
Sulfate
Chloride
Fluoride
pH
Specific conductance

Note:

- Non-Contract Laboratory Program Target Analyte List metals

TABLE 2-2
Phase I Investigation for Soil-Gas Parameters
Rocky Flats Environmental Technology Site

SAMPLE TYPE	TARGET DETECTION LIMIT (µg/L)
Acetone	1
Carbon tetrachloride	1
PCE	1
Toluene	1
1,1,1-tetrachloride	1
Benzene	1

Notes:

µg/L = micrograms per liter

Reference DOE, Phase I RFI/RI Work Plan,
October 1992, Radioactive Sites Operable
Unit No. 14, Text Volume I of II

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TABLE 3-1
Background Activities of Specific Radionuclides for
the Denver Metropolitan Area and RFETS

RADIONUCLIDE	BACKGROUND ACTIVITIES IDENTIFIED IN LITERATURE SEARCH (pCi/g)	SOURCE	MAXIMUM BACKGROUND BASED ON WET CHEMISTRY ANALYSIS (pCi/g) *	MAXIMUM BACKGROUND ACTIVITY BASED ON HPGe REMOTE ANALYSIS (pCi/g)
Potassium-40	1.89-21	Henderson (1982) Faure (1977) NCRP (1987)	NR	12.8
Radium-226	0.017-1	Henderson (1982) EG&G (1992a) NCRP (1987)	0.96	1.13
Thorium-232	0.99-1.35	Henderson (1982) NCRP (1987)	NR	1.25
Uranium-238	1.08-1.78	Henderson (1982) NCRP (1987)	1.79	2.30
Uranium-235	0.01-0.09	NCRP (1987) EG&G (1992a)	0.11	0.10
Cesium-137	0.01-1.37	Henderson (1982) EG&G - EM(1990) EG&G (1992a) Faure (1977)	0.14	0.84
Americium-241	0.01-1.0 **	EG&G (1992a) CDH (1992) Henderson (1982)	0.02	0.10
Plutonium-239/240	0.009-5**	EG&G (1992a) CDH (1992) Henderson (1982)	0.02	†

Notes:

- CDH = Colorado Department of Health
- EG&G = EG&G Rocky Flats, Inc.
- EG&G -EM = EG&G Energy Measurements, Inc.
- HPGe = high purity germanium
- NCRP = National Council on Radiological Protection
- NR = Not reported
- pCi/g = picocuries per gram

* These numbers reported in the *Background Geochemical Characterization Report, Rocky Flats Plant, Golden, Colorado (DOE 1993)*.

** These maximum numbers are above "background" or fallout levels and are based on the known presence of these radionuclides in the environment at Rocky Flats.

† HPGe technology only capable of measuring this radionuclide in the nanocurie-per gram range.

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TABLE 3-1

Summary Statistics for BSCP* Group 2
Fallout Radionuclides and Supporting Data

Analyte (Fallout Radionuclides)	Distribution	Count (n)	% Non-Detect	Min	Max	Tol Fact	99/99 UTL	Mean	S.D.	Units
Americium-241	Nonparam	50	0	0.001	0.025	3.1369	0.037	0.0107	0.006	pCi/g
Cesium-134	Nonparam	50	0	0.05	0.3	3.1369	0.369	0.2	0.056	pCi/g
Cesium-137	Lognormal	50	0	0.3	1.7	3.1369	2.25	0.941	0.372	pCi/g
Plutonium-239,240	Lognormal	50	0	0.017	0.072	3.1369	0.084	0.038	0.014	pCi/g
Strontium-89/90	Lognormal	50	0	0.065	0.64	3.1369	0.708	0.254	0.128	pCi/g

Notes:

- Min = Minimum
- Max = Maximum
- n = number of samples
- nonparam = nonparametric
- pCi/g = picocuries per gram
- S.D. = Standard deviation
- Tol = Tolerance
- UTL = Upper Tolerance Limit

*Draft Background and Soils Characterization Program Report. Rocky Flats Environmental Technology Site. March 1995 (EG&G 1995).

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TABLE 3-2
Surface Soil Detectable Concentrations**
OU14 - IHSS 131

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS430094 SSG2195JE 17-Oct-94	SS430194 SSG2196JE 28-Oct-94	SS430294 SSG2197JE 28-Oct-94	SS430394 SSG2198JE 15-Nov-94	SS430494 SSG2199JE 14-Nov-94	SS430594 SSG2200JE 15-Nov-94	SS430694 SSG2201JE 15-Nov-94
Test Group:BNACLCP Units: µg/kg									
2,4-DIMETHYLPHENOL	330	5.49E 6 / 0.00E 0							
2-METHYLNAPHTHALENE	330	0.00E 0 / 0.00E 0							
4-METHYLPHENOL	330	1.37E 6 / 0.00E 0							
4-NITROANILINE	1600	0.00E 0 / 0.00E 0							
ACENAPHTHENE	330	1.65E 7 / 0.00E 0							
ACENAPHTHYLENE	330	0.00E 0 / 0.00E 0							
ANTHRACENE	330	8.23E 7 / 0.00E 0							
BENZO(a)ANTHRACENE	330	8.77E 2 / 0.00E 0							
BENZO(g)PYRENE	330	8.77E 1 / 0.00E 0							
BENZO(d)FLUORANTHENE	330	8.77E 2 / 0.00E 0							
BENZO(b)PERYLENE	330	0.00E 0 / 0.00E 0							
BENZO(k)FLUORANTHENE	330	8.77E 3 / 0.00E 0							
BENZOIC ACID	1600	1.00E 9 / 0.00E 0							
BIS(2-ETHYLHEXYL)PHTHALATE	330	4.57E 4 / 0.00E 0							
BUTYL BENZYL PHTHALATE	330	5.49E 7 / 0.00E 0							
CHRYSENE	330	8.77E 4 / 0.00E 0							
Di-n-BUTYL PHTHALATE	330	2.74E 7 / 0.00E 0							
Di-n-OCTYL PHTHALATE	330	4.57E 4 / 0.00E 0							
DIBENZO(a,h)ANTHRACENE	330	8.77E 1 / 0.00E 0							
DIBENZOFURAN	330	0.00E 0 / 0.00E 0							
FLUORANTHENE	330	1.10E 7 / 0.00E 0							
FLUORENE	330	1.10E 7 / 0.00E 0							
INDENO(1,2,3-cd)PYRENE	330	8.77E 2 / 0.00E 0							
NAPHTHALENE	330	1.10E 7 / 0.00E 0							
PHENANTHRENE	330	0.00E 0 / 0.00E 0							
PYRENE	330	8.23E 6 / 0.00E 0							
Test Group:METADD Units: mg/kg									
CESIUM	1000	0.00E 0 / 630.80E 0							
LITHIUM	100	5.49E 3 / 20.00E 0							
STRONTIUM	200	1.65E 5 / 90.10E 0							
TIN	200	0.00E 0 / 75.90E 0							
Test Group:SMETCLP Units: mg/kg									
ALUMINUM	200	7.96E 5 / 21915.40E 0							
ANTIMONY	60	1.10E 2 / 50.00E 0							
ARSENIC	10	3.66E-1 / 12.90E 0							
BARIUM	200	1.91E 4 / 528.00E 0							
BERYLLIUM	5	1.49E-1 / 5.20E 0							
CADMIUM	5	1.37E 2 / 5.00E 0							
CALCIUM	5000	0.00E 0 / 13573.30E 0							
CHROMIUM	10	9.39E 2 / 24.80E 0							
COBALT	50	1.65E 4 / 24.80E 0							

TABLE 3-2
Surface Soil Detectable Concentrations**
OU14 - IHSS 131

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS430094 SSG2195JE 17-Oct-94	SS430194 SSG2196JE 28-Oct-94	SS430294 SSG2197JE 28-Oct-94	SS430394 SSG2198JE 15-Nov-94	SS430494 SSG2199JE 14-Nov-94	SS430594 SSG2200JE 15-Nov-94	SS430694 SSG2201JE 15-Nov-94
COPPER	25	1.10E 4 / 27.30E 0					6790 :V	27.1 :JA	13.2 :JA
IRON	100	0.00E 0 / 28160.40E 0					5.9 :V	10.2 :V	4.9 :V
LEAD	3	0.00E 0 / 61.40E 0					1750 :V	1820 :V	2030 :V
MAGNESIUM	5000	0.00E 0 / 7011.50E 0					131 :V	167 :JA	160 :JA
MANGANESE	15	1.36E 3 / 2253.50E 0							
MERCURY	0.2	8.23E 1 / 0.20E 0							
NICKEL	40	5.49E 3 / 26.90E 0					5.3 B:V	5.6 B:V	6 B:V
POTASSIUM	5000	0.00E 0 / 5256.80E 0					1040 B:V	1450 :V	1160 :V
SILVER	10	1.37E 3 / 10.00E 0					.71 B:V		
SODIUM	5000	0.00E 0 / 1108.00E 0					122 B:V		
VANADIUM	50	1.92E 3 / 55.60E 0					10.3 B:V	13.9 :V	11.9 :V
ZINC	20	8.23E 4 / 86.60E 0					20.3 :V	32.5 :V	21 :V
Test Group:TRADS Units: pCi/g									
AMERICIUM-241	0	2.37E 0 / 6.34E-2	.028(.014) :Y	.23(.041) :Y#	.12(.03) :Y#				
GROSS ALPHA	0	0.00E 0 / 44.56E 0	28(4.2) :Y	23(3.9) :Y	28(4.2) :Y				
GROSS BETA	0	0.00E 0 / 55.35E 0	32(3.7) :Y	34(3.6) :Y	36(3.6) :Y				
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	.01(0.07) J:Y	1.5(.024) :Y#	1.5(.089) :Y#				
URANIUM-233-234	0	4.47E 1 / 17.69E-1	.97(.18) :Y	.82(.11) :Y	.92(.17) :Y				
URANIUM-235	0	1.73E-1 / 19.83E-2	.062(.046) J:Y	.064(.048) J:Y	.085(.064) J:Y				
URANIUM-238	0	8.00E-1 / 19.12E-1	1(.18) :Y*	.83(.11) :Y*	.82(.16) :Y*				
Test Group:VOACL P Units: µg/kg									
ACETONE	10	2.74E 7 / 0.00E 0					18 B:Y	31 B:Y	36 B:Y
CYCLOHEXANE	0	E 0 / E 0							
METHYLENE CHLORIDE	5	8.54E 4 / 0.00E 0					4 B:Y	5 B:Y	5 B:Y
TETRACHLOROETHENE	5	1.23E 4 / 0.00E 0					69 :Y	10 :Y	13 :Y
TOLUENE	5	5.49E 7 / 0.00E 0							
TOTAL XYLENES	5	5.49E 8 / 0.00E 0		2 J:A					
UNKNOWN TIC	0	E 0 / E 0							
UNKNOWN TIC : ALDOL CONDENSATION	0	E 0 / E 0							
UNKNOWN TIC : ALKANE	0	E 0 / E 0							
UNKNOWN TIC : C5H10	0	E 0 / E 0							
UNKNOWN TIC : C9H12	0	E 0 / E 0							
n-HEXANE	0	E 0 / E 0							

TABLE 3-2
Surface Soil Detectable Concentrations**
OU14 - IHSS 131

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS430794 SSG2202JE 15-Nov-94	SS430894 SSG2203JE 15-Nov-94	SS430994 SSG2204JE 15-Nov-94	SS430994 SSG2668JE 15-Nov-94	SS431094 SSG2205JE 14-Nov-94	SS431194 SSG2206JE 14-Nov-94	SS431294 SSG2207JE 11-Nov-94
Test Group:BNACL P Units: µg/kg									
2,4-DIMETHYLPHENOL	330	5.49E 6 / 0.00E 0							
2-METHYLNAPHTHALENE	330	0.00E 0 / 0.00E 0			53 J:Y.				
4-METHYLPHENOL	330	1.37E 6 / 0.00E 0							
4-NITROANILINE	1600	0.00E 0 / 0.00E 0							140 B:Y
ACENAPHTHENE	330	1.65E 7 / 0.00E 0			490 :Y	380 J:Y		91 J:Y	
ACENAPHTHYLENE	330	0.00E 0 / 0.00E 0							
ANTHRACENE	330	8.23E 7 / 0.00E 0			640 :Y	460 J:Y		110 J:Y	170 J:Y
BENZO(a)ANTHRACENE	330	8.77E 2 / 0.00E 0	35 J:Y		1400 :Y*	1200 :Y*		320 J:Y	590 :Y
BENZO(b)PYRENE	330	8.77E 1 / 0.00E 0	39 J:Y		1200 :Y*	860 :Y*		310 B:Y*	380 :Y*
BENZO(b)FLUORANTHENE	330	8.77E 2 / 0.00E 0			2500 :Y*	1900 :Y*		390 :Y	840 :Y
BENZO(g)PERYLENE	330	0.00E 0 / 0.00E 0						140 J:Y.	
BENZO(k)FLUORANTHENE	330	8.77E 3 / 0.00E 0			780 :Y	620 J:Y		130 J:Y	420 :Y
BENZOIC ACID	1600	1.00E 9 / 0.00E 0							64 J:Y
BIS(2-ETHYLHEXYL)PHTHALATE	330	4.57E 4 / 0.00E 0			100 J:Y	150 J:Y	40 J:Y	58 J:Y	86 J:Y
BUTYL BENZYL PHTHALATE	330	5.49E 7 / 0.00E 0	43 B:Y	58 B:Y	69 B:Y		450 B:Y	320 B:Y	180 B:Y
CHRYSENE	330	8.77E 4 / 0.00E 0	39 J:Y		1500 :Y	1400 :Y		360 :Y	590 :Y
DI-n-BUTYL PHTHALATE	330	2.74E 7 / 0.00E 0							
DI-n-OCTYL PHTHALATE	330	4.57E 4 / 0.00E 0			160 J:Y*	120 J:Y	140 B:Y	160 B:Y	
DIBENZO(a,h)ANTHRACENE	330	8.77E 1 / 0.00E 0			140 J:Y.	110 J:Y*		39 J:Y	
DIBENZOFURAN	330	0.00E 0 / 0.00E 0			3400 E:Y	2900 :Y		760 :Y	1300 :Y
FLUORANTHENE	330	1.10E 7 / 0.00E 0	82 J:Y	48 J:Y	420 :Y	330 J:Y		68 J:Y	94 J:Y
FLUORENE	330	1.10E 7 / 0.00E 0			440 :Y	320 J:Y		170 J:Y	150 J:Y
INDENO(1,2,3-cd)PYRENE	330	8.77E 2 / 0.00E 0			81 J:Y	75 J:Y			
NAPHTHALENE	330	1.10E 7 / 0.00E 0			3000 E:Y.	2300 :Y.		590 :Y.	800 :Y.
PHENANTHRENE	330	0.00E 0 / 0.00E 0	53 J:Y.		3700 E:Y	3100 :Y		830 B:Y	1200 B:Y
PYRENE	330	8.23E 6 / 0.00E 0	69 J:Y	40 J:Y					
Test Group:METADD Units: mg/kg									
CESIUM	1000	0.00E 0 / 630.80E 0					4.2 B:V	6.4 B:V	4.4 B:V
LITHIUM	100	5.49E 3 / 20.00E 0	6.6 B:V	6.8 B:V	4 B:V	7.8 B:V	6.4 B:V	6.1 B:V	8 B:V
STRONTIUM	200	1.65E 5 / 90.10E 0	13.6 B:V	13.4 B:V	15.2 B:V	18.2 B:V	15.2 B:V	14.5 B:V	22.5 B:V
TIN	200	0.00E 0 / 75.90E 0				4.6 B:V			
Test Group:SMETCLP Units: mg/kg									
ALUMINUM	200	7.96E 5 / 21915.40E 0	4060 :JA	4010 :JA	5030 :JA	7270 :JA	3500 :V	5040 :V	7890 :V
ANTIMONY	60	1.10E 2 / 50.00E 0							
ARSENIC	10	3.66E-1 / 12.90E 0	3.2 :V*	1.5 B:JA*	2.9 :V*	3.2 :V*	2.8 :V*	3.5 :V*	4 :V*
BARIUM	200	1.91E 4 / 528.00E 0	44.1 :V	46.2 :V	41.5 :V	80.8 :V	39.3 B:V	49 :V	69 :V
BERYLLIUM	5	1.49E-1 / 5.20E 0	.29 B:V*	.21 B:V*	.35 B:V*	.45 B:V*	.16 B:JA*	.25 B:JA*	.49 B:V*
CADMIUM	5	1.37E 2 / 5.00E 0			.63 B:V	.55 B:V			
CALCIUM	5000	0.00E 0 / 13573.30E 0	1970 :JA	2020 :JA	3510 :JA	3520 :JA	2220 :V	2230 :V	5100 :V
CHLORINE	10	9.39E 2 / 24.80E 0	7.6 :V	7.6 :V	12.7 :V	11.2 :V	6.8 :V	8.6 :V	11.6 :V
COBALT	50	1.65E 4 / 24.80E 0	3.7 B:JA	8.3 B:JA	3.8 B:JA	29.7 :JA*	5.4 B:V	6.9 B:V	6.4 B:V

TABLE 3-2
Surface Soil Detectable Concentrations**
OU14 - IHSS 131

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS430794 SSG2202JE 15-Nov-94	SS430894 SSG2203JE 15-Nov-94	SS430994 SSG2204JE 15-Nov-94	SS430994 SSG2666JE 15-Nov-94	SS431094 SSG2205JE 14-Nov-94	SS431194 SSG2206JE 14-Nov-94	SS431294 SSG2207JE 11-Nov-94
COPPER	25	1.10E 4 / 27.30E 0	10.6 :JA	19.6 :JA	10.7 :JA	74.1 :JA#	10.9 :V	14.4 :V	17.8 :V
IRON	100	0.00E 0 / 28160.40E 0	9020 :V	8640 :V	7630 :V	10700 :V	7390 :V	8440 :V	10800 :V
LEAD	3	0.00E 0 / 61.40E 0	7.1 :V	6.8 :V	8.8 :V	17.6 :V	5.7 :V	14.7 :V	14.1 :V
MAGNESIUM	5000	0.00E 0 / 7011.50E 0	1990 :V	2040 :V	1270 :V	1940 :V	1900 :V	1830 :V	2030 :V
MANGANESE	15	1.36E 3 / 2253.50E 0	146 :JA	144 :JA	82.7 :JA	210 :JA	149 :V	148 :V	180 :V
MERCURY	0.2	8.23E 1 / 0.20E 0	6 B:V	5.9 B:V	6.4 B:V	.056 B:V	5.8 B:V	7.5 B:V	.054 B:V
NICKEL	40	5.49E 3 / 26.90E 0	6 B:V	5.9 B:V	6.4 B:V	9.4 :V	5.8 B:V	7.5 B:V	8.5 B:V
POTASSIUM	5000	0.00E 0 / 5256.80E 0	1220 :V	1230 :V	1310 :V	1400 :V	1160 :V	1280 :V	1310 :V
SILVER	10	1.37E 3 / 10.00E 0				4.1 :JA	.95 B:V	1.2 B:V	1 B:V
SODIUM	5000	0.00E 0 / 1108.00E 0				150 B:V	93.4 B:V	80.9 B:V	84.8 B:V
VANADIUM	50	1.92E 3 / 55.60E 0	14.5 :V	13.6 :V	15.4 :V	21 :V	11.8 :V	14.9 :V	21.1 :V
ZINC	20	8.23E 4 / 88.60E 0	29.5 :V	23.7 :V	73.2 :V	54 :V	23.6 :V	56.2 :V	76.2 :V
Test Group:TRADS Units: pCi/g									
AMERICIUM-241	0	2.37E 0 / 6.34E-2							
GROSS ALPHA	0	0.00E 0 / 44.56E 0							
GROSS BETA	0	0.00E 0 / 55.35E 0							
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2							
URANIUM-233,-234	0	4.47E 1 / 17.69E-1							
URANIUM-235	0	1.73E-1 / 19.83E-2							
URANIUM-238	0	8.00E-1 / 19.12E-1							
Test Group:VOACLPL Units: µg/kg									
ACETONE	10	2.74E 7 / 0.00E 0	50 B:Y	43 B:Y	30 B:Y	53 B:Y	71 B:Y	57 B:Y	30 B:Y
CYCLOHEXANE	0	E 0 / E 0					10 B:Y		8 B:Y
METHYLENE CHLORIDE	5	8.54E 4 / 0.00E 0	5 B:Y	6 B:Y	2 B:Y	3 J:Y	6 B:Y	5 B:Y	3 B:Y
TETRACHLOROETHENE	5	1.23E 4 / 0.00E 0	4 J:Y	9 :Y	120 :Y	140 :Y	8 :Y	2 J:Y	
TOLUENE	5	5.49E 7 / 0.00E 0				3 J:Y			
TOTAL XYLENES	5	5.49E 8 / 0.00E 0							
UNKNOWN TIC	0	E 0 / E 0							
UNKNOWN TIC; ALDOL CONDENSATION	0	E 0 / E 0							
UNKNOWN TIC; ALKANE	0	E 0 / E 0							
UNKNOWN TIC; C5H10	0	E 0 / E 0							
UNKNOWN TIC; C9H12	0	E 0 / E 0							
n-HEXANE	0	E 0 / E 0							7 J:Y

TABLE 3-2
Surface Soil Detectable Concentrations**
OU14 - IHSS 131

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS431394 SSG2208JE 2-Nov-94	SS431494 SSG2209JE 2-Nov-94	SS431594 SSG2210JE 11-Nov-94	SS431694 SSG2211JE 14-Nov-94	SS431794 SSG2212JE 14-Nov-94	SS431894 SSG2213JE 17-Oct-94	SS431994 BFG0133JE 17-Oct-94
Test Group:BNACL P Units: µg/kg									
2,4-DIMETHYLPHENOL	330	5.49E 6 / 0.00E 0			46 J:Y				
2-METHYLNAPHTHALENE	330	0.00E 0 / 0.00E 0							
4-METHYLPHENOL	330	1.37E 6 / 0.00E 0							
4-NITROANILINE	1600	0.00E 0 / 0.00E 0			62 J:Y				
ACENAPHTHENE	330	1.65E 7 / 0.00E 0	37 J:Y	63 J:Y	400 B:Y				
ACENAPHTHYLENE	330	0.00E 0 / 0.00E 0							
ANTHRACENE	330	8.23E 7 / 0.00E 0	55 J:Y	77 J:Y	460 :Y				
BENZO(a)ANTHRACENE	330	8.77E 2 / 0.00E 0	130 J:Y	210 J:Y	950 :Y*				
BENZO(b)PYRENE	330	8.77E 1 / 0.00E 0			1000 :Y*				
BENZO(b)FLUORANTHENE	330	8.77E 2 / 0.00E 0	120 J:Y	230 J:Y	1400 :Y*				
BENZO(g)PERYLENE	330	0.00E 0 / 0.00E 0							
BENZO(k)FLUORANTHENE	330	8.77E 3 / 0.00E 0	68 J:Y	110 J:Y	400 :Y				
BENZOIC ACID	1600	1.00E 9 / 0.00E 0			70 J:Y				
BIS(2-ETHYLHEXYL)PHTHALATE	330	4.57E 4 / 0.00E 0	91 B:Y	62 B:Y	62 J:Y				
BUTYL BENZYL PHTHALATE	330	5.49E 7 / 0.00E 0	78 B:Y	190 B:Y	150 B:Y				
CHRYSENE	330	8.77E 4 / 0.00E 0	100 J:Y	180 J:Y	950 :Y				
DI-n-BUTYL PHTHALATE	330	2.74E 7 / 0.00E 0	51 B:Y	39 B:Y					
DI-n-OCTYL PHTHALATE	330	4.57E 4 / 0.00E 0							
DIBENZO(a,h)ANTHRACENE	330	8.77E 1 / 0.00E 0							
DIBENZOFURAN	330	0.00E 0 / 0.00E 0			88 J:Y				
FLUORANTHENE	330	1.10E 7 / 0.00E 0	260 J:Y	470 :Y	2400 :Y				
FLUORENE	330	1.10E 7 / 0.00E 0	58 J:Y	67 J:Y	120 J:Y				
INDENO(1,2,3-cd)PYRENE	330	8.77E 2 / 0.00E 0			430 :Y				
NAPHTHALENE	330	1.10E 7 / 0.00E 0			180 J:Y				
PHENANTHRENE	330	0.00E 0 / 0.00E 0	190 J:Y	320 J:Y	2100 :Y				
PYRENE	330	8.23E 6 / 0.00E 0	68 J:Y	150 J:Y	3500 BE:Y				
Test Group:METADD Units: mg/kg									
CESIUM	1000	0.00E 0 / 630.80E 0							
LITHIUM	100	5.49E 3 / 20.00E 0	6.4 B:V	6 B:V	6.6 B:V				
STRONTIUM	200	1.65E 5 / 90.10E 0	20.2 B:V	19.8 B:V	18.6 B:JA				
TIN	200	0.00E 0 / 75.90E 0							
Test Group:SMETCLP Units: mg/kg									
ALUMINUM	200	7.96E 5 / 21915.40E 0	6630 :V	10400 :V	7370 :V				
ANTIMONY	60	1.10E 2 / 50.00E 0							
ARSENIC	10	3.66E-1 / 12.90E 0	3.1 :V*	6.1 :V*	3.7 :V*				
BARIUM	200	1.91E 4 / 528.00E 0	52.1 :V	68.5 :V	57.9 :V				
BERYLLIUM	5	1.49E-1 / 5.20E 0	.41 B:V*	.83 B:V*	.49 B:V*				
CADIUM	5	1.37E 2 / 5.00E 0							
CALCIUM	5000	0.00E 0 / 13573.30E 0	3590 :V	3340 :V	3770 :V				
CHROMIUM	10	9.39E 2 / 24.80E 0	9.4 :V	12.4 :V	9.6 :V				
COBALT	50	1.65E 4 / 24.80E 0	5.5 B:V	5.4 B:V	8.3 B:V				

TABLE 3-2
Surface Soil Detectable Concentrations**
OU14 - IHSS 131

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS431394 SSG2208JE 2-Nov-94	SS431494 SSG2209JE 2-Nov-94	SS431594 SSG2210JE 11-Nov-94	SS431694 SSG2211JE 14-Nov-94	SS431794 SSG2212JE 14-Nov-94	SS431894 SSG2213JE 17-Oct-94	SS431994 BFG0133JE 17-Oct-94
COPPER	25	1.10E 4 / 27.30E 0	22.2 :V	14.9 :V	18.1 :V				
IRON	100	0.00E 0 / 28160.40E 0	11300 :V	12900 :V	10100 :V				
LEAD	3	0.00E 0 / 61.40E 0	15.8 :V	16.9 :V	16.2 :V				
MAGNESIUM	5000	0.00E 0 / 7011.50E 0	2580 :V	1700 :V	1920 :V				
MANGANESE	15	1.36E 3 / 2253.50E 0	202 :JA	137 :JA	264 :V				
MERCURY	0.2	8.23E 1 / 0.20E 0							
NICKEL	40	5.49E 3 / 26.90E 0	8.2 B:V	9.8 :V	8.8 :V				
POTASSIUM	5000	0.00E 0 / 5256.80E 0	1200 :V	1130 B:V	1360 :V				
SILVER	10	1.37E 3 / 10.00E 0	.99 B:V		1.2 B:V				
SODIUM	5000	0.00E 0 / 1108.00E 0	154 B:V	140 B:V	119 B:V				
VANADIUM	50	1.92E 3 / 55.60E 0	19.8 :V	28.5 :V	19.5 :V				
ZINC	20	8.23E 4 / 86.60E 0	59.9 :V	41.5 :V	57.9 :V				
Test Group: TRADS Units: pCi/g									
AMERICIUM-241	0	2.37E 0 / 8.34E-2	.094(.028) :Y#	.03(.013) :Y		.07(.024) :Y#	.04(.02) :Y	.013(.005) :Y	.011(.01) :V
GROSS ALPHA	0	0.00E 0 / 44.56E 0	16(3) :Y	15(2.8) :Y		22(3.7) :Y	22(3.9) :Y	21(3.9) :Y	27(1.8) :A
GROSS BETA	0	0.00E 0 / 55.35E 0	24(3.5) :Y	20(3.3) :Y		36(3.7) :Y	33(3.5) :Y	30(3.5) :Y	31(1.6) :A
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	.5(.063) :Y#	.12(.028) :Y		.5(.037) :Y#	.45(.058) :Y#	.049(.013) :Y	.039(.012) :V
URANIUM-233,-234	0	4.47E 1 / 17.69E-1	.67(.15) :Y	.71(.24) :Y		.76(.21) :Y	.82(.11) :Y	.87(.16) :Y	.92(.16) :V
URANIUM-235	0	1.73E-1 / 19.83E-2					.059(.032) :Y		
URANIUM-238	0	8.00E-1 / 19.12E-1	.66(.15) :Y	.52(.18) :Y		.89(.21) :Y	.79(.11) :Y	.86(.16) :Y	.98(.16) :V
Test Group: VOACL P Units: µg/kg									
ACETONE	10	2.74E 7 / 0.00E 0	26 B:Y	26 B:Y	56 B:Y				
CYCLOHEXANE	0	E 0 / E 0			8 B:Y-				
METHYLENE CHLORIDE	5	8.54E 4 / 0.00E 0	9 B:Y	7 B:Y	4 B:Y				
TETRACHLOROETHENE	5	1.23E 4 / 0.00E 0			3 J:Y				
TOLUENE	5	5.49E 7 / 0.00E 0			1 J:Y				
TOTAL XYLENES	5	5.49E 8 / 0.00E 0							
UNKNOWN TIC	0	E 0 / E 0							
UNKNOWN TIC ; ALDOL CONDENSATION	0	E 0 / E 0							
UNKNOWN TIC ; ALKANE	0	E 0 / E 0							
UNKNOWN TIC ; C5H10	0	E 0 / E 0							
UNKNOWN TIC ; C9H12	0	E 0 / E 0							
n-HEXANE	0	E 0 / E 0			7 J:Y-				

TABLE 3-2
Surface Soil Detectable Concentrations**
OU14 - IHSS 131

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS431994 SSG2214JE 17-Oct-94	SS432094 SSG2215JE 14-Nov-94	SS432094 SSG2664JE 14-Nov-94	SS432194 SSG2216JE 11-Nov-94	SS432294 SSG2217JE 11-Nov-94	SS432394 SSG2218JE 2-Nov-94	SS432494 SSG2219JE 2-Nov-94
Test Group:BINACLIP Units: µg/kg									
2,4-DIMETHYLPHENOL	330	5.49E 6 / 0.00E 0				88 J.Y			
2-METHYLNAPHTHALENE	330	0.00E 0 / 0.00E 0				1100 :Y-	120 J.Y-		
4-METHYLPHENOL	330	1.37E 6 / 0.00E 0				120 J.Y			
4-NITROANILINE	1600	0.00E 0 / 0.00E 0				4200 BE:Y	570 B:Y		39 J.Y
ACENAPHTHENE	330	1.65E 7 / 0.00E 0				140 J.Y-			
ACENAPHTHYLENE	330	0.00E 0 / 0.00E 0				4800 E:Y	670 :Y		70 J.Y
ANTHRACENE	330	8.23E 7 / 0.00E 0				7900 E:Y*	1100 :Y*		120 J.Y
BENZO(a)ANTHRACENE	330	8.77E 2 / 0.00E 0				1700 :Y*	1100 :Y*		
BENZO(a)PYRENE	330	8.77E 1 / 0.00E 0				8800 E:Y*	1400 :Y*		180 J.Y
BENZO(b)FLUORANTHENE	330	8.77E 2 / 0.00E 0				3400 E:Y	350 J.Y-		
BENZO(ghi)PERYLENE	330	0.00E 0 / 0.00E 0				170 J.Y	780 :Y		110 J.Y
BENZO(k)FLUORANTHENE	330	8.77E 3 / 0.00E 0				170 J.Y	170 J.Y		
BENZOIC ACID	1600	1.00E 9 / 0.00E 0				170 J.Y	54 J.Y	300 B:Y	130 B:Y
BIS(2-ETHYLHEXYL)PHTHALATE	330	4.57E 4 / 0.00E 0				170 B:Y	110 B:Y	110 B:Y	380 B:Y
BUTYL BENZYL PHTHALATE	330	5.49E 7 / 0.00E 0					120 J.Y	75 J.Y	110 J.Y
CHRYSENE	330	8.77E 4 / 0.00E 0	7700 D:Y	920 D:Y				75 B:Y	58 B:Y
DI-n-BUTYL PHTHALATE	330	2.74E 7 / 0.00E 0							47 J.Y
DI-n-OCTYL PHTHALATE	330	4.57E 4 / 0.00E 0							
DIBENZO(a,h)ANTHRACENE	330	8.77E 1 / 0.00E 0							
DIBENZOFURAN	330	0.00E 0 / 0.00E 0				2100 DJ:Y-	180 DJ:Y-		
FLUORANTHENE	330	1.10E 7 / 0.00E 0				12000 E:Y	2500 D:Y		260 J.Y
FLUORENE	330	1.10E 7 / 0.00E 0				4000 E:Y	400 DJ:Y		40 J.Y
INDENO(1,2,3-cd)PYRENE	330	8.77E 2 / 0.00E 0				1500 :Y*	330 J.Y		
NAPHTHALENE	330	1.10E 7 / 0.00E 0				2000 :Y	300 J.Y		
PHENANTHRENE	330	0.00E 0 / 0.00E 0				13000 E:Y-	2500 :Y-		220 J.Y-
PYRENE	330	8.23E 6 / 0.00E 0				12000 BE:Y	3200 BE:Y		170 J.Y
Test Group:METADD Units: mg/kg									
CESIUM	1000	0.00E 0 / 630.80E 0				4.8 B:V	4.8 B:V		
LITHIUM	100	5.49E 3 / 20.00E 0				10.8 B:V	7.8 B:V	7.5 B:V	6.3 B:V
STRONTIUM	200	1.65E 5 / 90.10E 0				22 B:JA	21.8 B:JA	15.9 B:V	16.9 B:V
TIN	200	0.00E 0 / 75.90E 0							
Test Group:SMETCLP Units: mg/kg									
ALUMINIUM	200	7.96E 5 / 21915.40E 0				15000 :V	11200 :V	5790 :V	4440 :V
ANTIMONY	60	1.10E 2 / 50.00E 0							
ARSENIC	10	3.66E-1 / 12.90E 0				8.4 :V*	7.2 :V*	4.6 :V*	2.2 :V*
BARIUM	200	1.91E 4 / 528.00E 0				134 :V	105 :V	49.6 :V	45.6 :V
BERYLLIUM	5	1.49E-1 / 5.20E 0				1.2 :V*	1 B:V*	.65 B:V*	.28 B:V*
CADMIUM	5	1.37E 2 / 5.00E 0				.61 B:V	.83 B:V	1.7 :JA	
CALCIUM	5000	0.00E 0 / 13573.30E 0				3660 :V	3250 :V	2850 :V	2970 :V
CHROMIUM	10	9.39E 2 / 24.80E 0				15.9 :V	11.6 :V	25.9 :V#	8.2 :V
COBALT	50	1.65E 4 / 24.80E 0				8.6 B:V	7.6 B:V	9 B:V	5.4 B:V

TABLE 3-2
Surface Soil Detectable Concentrations**
OU14 - IHSS 131

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS431994 SSG2214JE 17-Oct-94	SS432094 SSG2215JE 14-Nov-94	SS432094 SSG2664JE 14-Nov-94	SS432194 SSG2216JE 11-Nov-94	SS432294 SSG2217JE 11-Nov-94	SS432394 SSG2218JE 2-Nov-94	SS432494 SSG2219JE 2-Nov-94
COPPER	25	1.10E 4 / 27.30E 0				15.8 :V	14 :V	81.8 :V#	21.2 :V
IRON	100	0.00E 0 / 28160.40E 0				15800 :V	12600 :V	17100 :V	10200 :V
LEAD	3	0.00E 0 / 61.40E 0				17.3 :V	12.1 :V	19.9 :V	18 :V
MAGNESIUM	5000	0.00E 0 / 7011.50E 0				2170 :V	1890 :V	1670 :V	2250 :V
MANGANESE	15	1.36E 3 / 2253.50E 0				187 :V	124 :V	216 :JA	185 :JA
MERCURY	0.2	8.23E 1 / 0.20E 0				.084 B:V	.21 :V#		
NICKEL	40	5.49E 3 / 26.90E 0				14.7 :V	14.7 :V	14.3 :V	6.4 B:V
POTASSIUM	5000	0.00E 0 / 5256.80E 0				1460 :V	1340 :V	1150 :V	1250 :V
SILVER	10	1.37E 3 / 10.00E 0				1.8 B:V	.99 B:V	1.3 B:V	.55 B:V
SODIUM	5000	0.00E 0 / 1108.00E 0				119 B:V	169 B:V	160 B:V	110 B:V
VANADIUM	50	1.92E 3 / 55.60E 0				36.2 :V	27.9 :V	17.8 :V	13.9 :V
ZINC	20	8.23E 4 / 88.60E 0				772 :V#	640 :V#	81.3 :V	86.1 :V
Test Group:TRADS Units: pCi/g									
AMERICIUM-241	0	2.37E 0 / 6.34E-2						.068(.024) :Y#	.35(.049) :Y#
GROSS ALPHA	0	0.00E 0 / 44.56E 0	14(3.2) :Y	12(2.8) :Y	14(3.1) :Y			14(2.8) :Y	18(3) :Y
GROSS BETA	0	0.00E 0 / 55.35E 0	26(3.5) :Y	32(3.7) :Y	34(3.6) :Y			28(3.3) :Y	22(3.3) :Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	.036(.01) :Y		.036(.017) :Y			.64(.088) :Y#	2.8(.14) :Y#
URANIUM-233-234	0	4.47E 1 / 17.69E-1	.71(.19) :Y	.41(.13) :Y	.41(.14) :Y			.72(.17) :Y	.5(.15) :Y
URANIUM-235	0	1.73E-1 / 19.83E-2							
URANIUM-238	0	8.00E-1 / 19.12E-1	.67(.17) :Y	.4(.13) :Y	.48(.14) :Y			.8(.2) :Y*	.52(.15) :Y
Test Group:VOACL P Units: ppb/kg									
ACETONE	10	2.74E 7 / 0.00E 0							
CYCLOHEXANE	0	E 0 / E 0				28 B:Y	29 B:Y	20 B:Y	29 B:Y
METHYLENE CHLORIDE	5	8.54E 4 / 0.00E 0				18 B:Y-			
TETRACHLOROETHENE	5	1.23E 4 / 0.00E 0				4 B:Y	4 B:Y	9 B:Y	8 B:Y
TOLUENE	5	5.49E 7 / 0.00E 0							
TOTAL XYLENES	5	5.49E 8 / 0.00E 0							
UNKNOWN TIC	0	E 0 / E 0							
UNKNOWN TIC : ALDOL CONDENSATION	0	E 0 / E 0							
UNKNOWN TIC : ALKANE	0	E 0 / E 0							
UNKNOWN TIC : C5H10	0	E 0 / E 0							
UNKNOWN TIC : C9H12	0	E 0 / E 0							
n-HEXANE	0	E 0 / E 0				24 J:Y-	24 J:Y-		

TABLE 3-2
Surface Soil Detectable Concentrations**
OU14 - IHSS 131

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKQND	SS432594 SSG220JE 14-Nov-94	SS432694 SSG221JE 14-Nov-94
Test Group:BNACL P Units: µg/kg				
2,4-DIMETHYLPHENOL	330	5.49E 6 / 0.00E 0		
2-METHYLNAPHTHALENE	330	0.00E 0 / 0.00E 0		
4-METHYLPHENOL	330	1.37E 6 / 0.00E 0		
4-NITROANILINE	1600	0.00E 0 / 0.00E 0		
ACENAPHTHENE	330	1.65E 7 / 0.00E 0		
ACENAPHTHYLENE	330	0.00E 0 / 0.00E 0		
ANTHRACENE	330	8.23E 7 / 0.00E 0	90 J:Y	
BENZO(a)ANTHRACENE	330	8.77E 2 / 0.00E 0	76 J:Y	120 J:Y
BENZO(b)PYRENE	330	8.77E 1 / 0.00E 0		100 J:Y*
BENZO(k)FLUORANTHENE	330	8.77E 2 / 0.00E 0	130 J:Y	150 J:Y
BENZO(g,h,i)PERYLENE	330	0.00E 0 / 0.00E 0		
BENZO(k)FLUORANTHENE	330	8.77E 3 / 0.00E 0		46 J:Y
BENZOIC ACID	1600	1.00E 9 / 0.00E 0	100 J:Y	45 J:Y
BIS(2-ETHYLHEXYL)PHTHALATE	330	4.57E 4 / 0.00E 0	400 :Y	
BUTYL BENZYL PHTHALATE	330	5.49E 7 / 0.00E 0	130 BJ:Y	140 BJ:Y
CHRYSENE	330	8.77E 4 / 0.00E 0		
DI-n-BUTYL PHTHALATE	330	2.74E 7 / 0.00E 0		
DI-n-OCTYL PHTHALATE	330	4.57E 4 / 0.00E 0		
DIBENZO(a,h)ANTHRACENE	330	8.77E 1 / 0.00E 0		
DIBENZOFURAN	330	0.00E 0 / 0.00E 0		
FLUORANTHENE	330	1.10E 7 / 0.00E 0	140 J:Y	250 J:Y
FLUORENE	330	1.10E 7 / 0.00E 0		
INDENO(1,2,3-cd)PYRENE	330	8.77E 2 / 0.00E 0		
NAPHTHALENE	330	1.10E 7 / 0.00E 0		
PHENANTHRENE	330	0.00E 0 / 0.00E 0	93 J:Y-	200 J:Y-
PYRENE	330	8.23E 6 / 0.00E 0	240 J:Y	310 J:Y
Test Group:METADD Units: mg/kg				
CESIUM	1000	0.00E 0 / 630.80E 0	4.1 B:V	4.5 B:V
LITHIUM	100	5.49E 3 / 20.00E 0	.99 B:V	5.7 B:V
STRONTIUM	200	1.65E 5 / 90.10E 0	12.3 B:JA	7.2 B:JA
TIN	200	0.00E 0 / 75.90E 0		
Test Group:SMETCLP Units: mg/kg				
ALUMINUM	200	7.96E 5 / 21915.40E 0	1460 :V	3380 :V
ANTIMONY	60	1.10E 2 / 50.00E 0	2.9 B:JA	
ARSENIC	10	3.66E-1 / 12.90E 0	8 :V*	2 B:V*
BARIUM	200	1.91E 4 / 528.00E 0	39.6 B:V	39.1 B:V
BERYLLIUM	5	1.49E-1 / 5.20E 0	.088 B:JA	.13 B:JA
CADMIUM	5	1.37E 2 / 5.00E 0	1.4 :V	
CALCIUM	5000	0.00E 0 / 13573.30E 0	1000 B:V	1250 :V
CHROMIUM	10	9.39E 2 / 24.80E 0	4.2 :V	6.5 :V
COBALT	50	1.65E 4 / 24.80E 0	1.1 B:V	6.6 B:V

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TABLE 3-2
Surface Soil Detectable Concentrations**
OU14 - IHSS 131

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGNL	SS432594 SSG2220JE 14-Nov-94	SS432694 SSG2221JE 14-Nov-94
COPPER	25	1.10E 4 / 27.30E 0	16.3 :V	16.5 :V
IRON	100	0.00E 0 / 28160.40E 0	3040 :V	7650 :V
LEAD	3	0.00E 0 / 61.40E 0	5.8 :V	9.7 :V
MAGNESIUM	5000	0.00E 0 / 7011.50E 0	417 B:V	1660 :V
MANGANESE	15	1.36E 3 / 2253.50E 0	32.1 :V	143 :V
MERCURY	0.2	8.23E 1 / 0.20E 0		
NICKEL	40	5.49E 3 / 28.90E 0	3 B:V	6 B:V
POTASSIUM	5000	0.00E 0 / 5256.80E 0	496 B:V	1150 :V
SILVER	10	1.37E 3 / 10.00E 0		7 B:V
SODIUM	5000	0.00E 0 / 1108.00E 0	115 B:V	
VANADIUM	50	1.92E 3 / 55.60E 0	9.8 B:V	11.3 :V
ZINC	20	8.23E 4 / 86.60E 0	128 :V#	44.3 :V
Test Group:TRADS Units: pCi/g				
AMERICIUM-241	0	2.37E 0 / 6.34E-2		
GROSS ALPHA	0	0.00E 0 / 44.56E 0		
GROSS BETA	0	0.00E 0 / 55.35E 0		
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2		
URANIUM-233-234	0	4.47E 1 / 17.69E-1		
URANIUM-235	0	1.73E-1 / 19.83E-2		
URANIUM-238	0	8.00E-1 / 19.12E-1		
Test Group:VOACL P Units: µg/kg				
ACETONE	10	2.74E 7 / 0.00E 0	74 B:Y	64 B:Y
CYCLOHEXANE	0	E 0 / E 0	10 B:Y-	
METHYLENE CHLORIDE	5	8.54E 4 / 0.00E 0	5 B:Y	7 B:Y
TETRACHLOROETHENE	5	1.23E 4 / 0.00E 0	3 J:Y	43 :Y
TOLUENE	5	5.49E 7 / 0.00E 0		
TOTAL XYLENES	5	5.49E 8 / 0.00E 0		
UNKNOWN TIC	0	E 0 / E 0		
UNKNOWN TIC ; ALDOL CONDENSATION	0	E 0 / E 0		
UNKNOWN TIC ; ALKANE	0	E 0 / E 0		
UNKNOWN TIC ; C5H10	0	E 0 / E 0		
UNKNOWN TIC ; C9H12	0	E 0 / E 0		
n-HEXANE	0	E 0 / E 0		

A = Validation Qualifier; laboratory qualifier considered acceptable
 B = Laboratory Qualifier; detected in blank
 BKGNL = Background concentration (DOE 1994a)
 BNACL P = EPA - CLP Semivolatile Organic Compounds
 E = Laboratory Qualifier; concentration exceeds calibration range of instrument-organic
 HERB150 = EPA Chlorinated Herbicides
 J = Laboratory Qualifier; estimated value
 MDL = Method Detection Limit
 METADD = Additional Metals
 mg/kg = milligram per kilogram
 NA = Not Analyzed
 PESTCLP = EPA Pesticide/PCB
 PRG = Preliminary Remediation Goal
 SMETCLP = EPA - CLP Metals
 TRADS = Total radionuclides
 U = Undetected
 V = Validation Qualifier; valid data
 VOACL P = EPA - CLP Volatile Organic Compounds
 Y = Validation Qualifier; in the process of being validated
 µg/g = microgram per gram
 µg/kg = microgram per kilogram
 # = Indicates compound exceeds background
 * = Indicates compound exceeds PRG
 ** = Based on March 17, 1995 data extraction from RFEDS
 - = Indicates PRG for that compound does not exist

TABLE 3-3
Surface Soil Detectable Concentration Data Summary***
OU14 - IHSS 131

Test Group:BNACLP	Units: µg/kg	MDL	SQL Minimum Value	SQL Minimum Location *	SQL Maximum Value	SQL Maximum Location *	Minimum Concentration	Minimum Concentration Location *	Maximum Concentration
2,4-DIMETHYLPHENOL		330	350	SS430694 (6)	400	SS432694 (1)	88 J:Y	SS432194 (1)	88 J:Y
2-METHYLNAPHTHALENE		330	350	SS430694 (6)	400	SS432694 (1)	46 J:Y	SS431594 (1)	1100 :Y
4-METHYLPHENOL		330	350	SS430694 (6)	400	SS432694 (1)	120 J:Y	SS432194 (1)	120 J:Y
4-NITROANILINE		1600	1700	SS430494 (11)	1900	SS432294 (2)	62 J:Y	SS431594 (1)	62 J:Y
ACENAPHTHENE		330	350	SS430694 (4)	400	SS432694 (1)	37 J:Y	SS431394 (1)	4200 BE:Y
ACENAPHTHYLENE		330	350	SS430694 (6)	400	SS432694 (1)	140 J:Y	SS432194 (1)	140 J:Y
ANTHRACENE		330	350	SS430694 (4)	400	SS432694 (1)	41 J:Y	SS430594 (1)	4800 E:Y
BENZO(a)ANTHRACENE		330	350	SS430694 (3)	360	SS430494 (2)	35 J:Y	SS430794 (1)	7900 E:Y
BENZO(a)PYRENE		330	350	SS430694 (3)	380	SS431494 (1)	39 J:Y	SS430794 (1)	1700 :Y
BENZO(b)FLUORANTHENE		330	350	SS430694 (4)	360	SS430494 (2)	120 J:Y	SS431394 (1)	8800 E:Y
BENZO(ghi)PERYLENE		330	350	SS430694 (5)	400	SS432694 (1)	61 J:Y	SS430594 (1)	350 J:Y
BENZO(k)FLUORANTHENE		330	350	SS430694 (4)	360	SS430494 (3)	46 J:Y	SS432694 (1)	3400 E:Y
BENZOIC ACID		1600	1700	SS430694 (9)	1800	SS431494 (2)	45 J:Y	SS432694 (1)	170 J:Y
BIS(2-ETHYLHEXYL)PHTHALATE		330	350	SS430694 (3)	3800	SS432194 (1)	37 J:Y	SS430594 (1)	460 :Y
BUTYL BENZYL PHTHALATE		330	3800	SS432194 (1)	3800	SS432194 (1)	43 B:Y	SS430794 (1)	450 B:Y
CHRYSENE		330	350	SS430694 (3)	360	SS430494 (2)	39 J:Y	SS430794 (1)	7700 D:Y
DI-n-BUTYL PHTHALATE		330	350	SS430694 (7)	3800	SS432194 (1)	39 B:Y	SS431494 (1)	75 B:Y
DI-n-OCTYL PHTHALATE		330	350	SS430694 (5)	3800	SS432194 (1)	47 J:Y	SS432494 (1)	160 B:Y
DIBENZO(a,h)ANTHRACENE		330	350	SS430694 (6)	3800	SS432194 (1)	39 J:Y	SS431194 (1)	160 J:Y
DIBENZOFURAN		330	350	SS430694 (7)	400	SS432694 (1)	88 J:Y	SS431594 (1)	2100 DJ:Y
FLUORANTHENE		330	350	SS430694 (2)	360	SS430494 (2)	48 J:Y	SS430894 (1)	12000 E:Y
FLUORENE		330	350	SS430694 (4)	400	SS432694 (1)	40 J:Y	SS432494 (1)	4000 E:Y
INDENO(1,2,3-cd)PYRENE		330	350	SS430694 (4)	400	SS432694 (1)	82 J:Y	SS430594 (1)	1500 :Y
NAPHTHALENE		330	350	SS430694 (6)	400	SS432694 (1)	81 J:Y	SS430994 (1)	2000 :Y
PHENANTHRENE		330	350	SS430694 (3)	360	SS430494 (2)	53 J:Y	SS430794 (1)	13000 E:Y
PYRENE		330	350	SS431094 (1)	360	SS432394 (1)	40 J:Y	SS430894 (1)	12000 BE:Y
Test Group:METADD	Units: mg/kg								
CESIUM		1000	4.1	SS430694 (1)	8.2	SS430994 (1)	4.1 B:V	SS432594 (1)	6.5 B:V
LITHIUM		100	**	**	**	**	.99 B:V	SS432594 (1)	10.8 B:V
STRONTIUM		200	**	**	**	**	7.2 B:J	SS432694 (1)	22.5 B:J
TIN		200	2	SS430694 (3)	3.7	SS430494 (1)	4.6 B:V	SS430994 (1)	4.6 B:V
Test Group:SMETCLP	Units: mg/kg								
ALUMINIUM		200	**	**	**	**	1460 :V	SS432594 (1)	15000 :V
ANTIMONY		60	2.2	SS430794 (1)	2.7	SS432194 (2)	2.9 B:J	SS432594 (1)	2.9 B:J
ARSENIC		10	**	**	**	**	1.2 B:J	SS430694 (1)	8.4 :V
BARIUM		200	**	**	**	**	39.1 B:V	SS432694 (1)	134 :V
BERYLLIUM		5	**	**	**	**	.088 B:J	SS432594 (1)	1.2 :V
CADMIUM		5	0.28	SS430794 (2)	0.33	SS431494 (1)	.61 B:V	SS432194 (1)	1.7 :J
CALCIUM		5000	**	**	**	**	1000 B:V	SS432594 (1)	5100 :V
CHROMIUM		10	**	**	**	**	4.2 :V	SS432594 (1)	25.9 :V
COBALT		50	**	**	**	**	1.1 B:V	SS432594 (1)	28.7 :J
COPPER		25	**	**	**	**	10.6 :J	SS430794 (1)	81.8 :V
IRON		100	**	**	**	**	3040 :V	SS432594 (1)	17100 :V
LEAD		3	**	**	**	**	4.9 :V	SS430694 (1)	19.9 :V

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TABLE 3-3
Surface Soil Detectable Concentration Data Summary
OU14 - IHSS 131

Test Group	MDL	Maximum Concentration Location *	Number of Detects	Total Number of Samples	Average Concentration
Test Group:BNACL P					
2,4-DIMETHYLPHENOL	330	SS432194 (1)	1	18	175.7222
2-METHYLNAPHTHALENE	330	SS432194 (1)	4	18	213.2778
4-METHYLPHENOL	330	SS432194 (1)	1	18	177.5
4-NITROANILINE	1600	SS431594 (1)	1	18	828.4445
ACENAPHTHENE	330	SS432194 (1)	9	18	425
ACENAPHTHYLENE	330	SS432194 (1)	1	18	178.6111
ANTHRACENE	330	SS432194 (1)	11	18	469.0555
BENZO(a)ANTHRACENE	330	SS432194 (1)	13	18	777.5555
BENZO(b)PYRENE	330	SS432194 (1)	9	18	424.1111
BENZO(k)FLUORANTHENE	330	SS432194 (1)	12	18	966.1111
BENZO(g,h)PERYLENE	330	SS432294 (1)	3	18	181.7222
BENZO(i)FLUORANTHENE	330	SS432194 (1)	11	18	419.8333
BENZOIC ACID	1600	SS432194 (2)	7	18	564.3333
BIS(2-ETHYLHEXYL)PHTHALATE	330	SS432594 (1)	16	25	231.8
BUTYL BENZYL PHTHALATE	330	SS431094 (1)	25	28	249.1154
CHRYSENE	330	SS432194 (1)	21	28	938.3077
Di-n-BUTYL PHTHALATE	330	SS432394 (1)	5	28	231
Di-n-OCTYL PHTHALATE	330	SS431194 (1)	6	24	240.7083
DIBENZO(a,h)ANTHRACENE	330	SS430994 (1)	3	25	249.16
DIBENZOFURAN	330	SS432194 (1)	7	25	324.32
FLUORANTHENE	330	SS432194 (1)	18	22	1281.818
FLUORENE	330	SS432194 (1)	10	22	359.0909
INDENO(1,2,3-cd)PYRENE	330	SS432194 (1)	7	20	273.35
NAPHTHALENE	330	SS432194 (1)	4	19	276.8947
PHENANTHRENE	330	SS432194 (1)	13	18	1339.5
PYRENE	330	SS432194 (1)	16	18	1460.333
Test Group:METADD					
Units: mg/kg					
CESIUM	1000	SS430494 (2)	9	18	4.0944
LITHIUM	100	SS432194 (1)	18	18	6.5494
STRONTIUM	200	SS431294 (1)	18	18	16.2444
TIN	200	SS430994 (1)	1	18	1.3528
Test Group:SMETCLP					
Units: mg/kg					
ALUMINUM	200	SS432194 (1)	18	18	6066.667
ANTIMONY	60	SS432594 (1)	1	18	1.3083
ARSENIC	10	SS432194 (1)	18	18	3.7944
BARIUM	200	SS432194 (1)	18	18	58.6167
BERYLLIUM	5	SS432194 (1)	18	18	0.4216
CADMIUM	5	SS432394 (1)	5	18	0.3953
CALCIUM	5000	SS431294 (1)	18	18	2679.444
CHROMIUM	10	SS432394 (1)	18	18	10.1556
COBALT	50	SS430994 (1)	18	18	7.9611
COPPER	25	SS432394 (1)	18	18	23.7722
IRON	100	SS432394 (1)	18	18	9929.444
LEAD	3	SS432394 (1)	18	18	12.15

TABLE 3-3
Surface Soil Detectable Concentration Data Summary**
OU14 - IHSS 131

	MDL	SQL Minimum Value	SQL Minimum Location *	SQL Maximum Value	SQL Maximum Location *	Minimum Concentration	Minimum Concentration Location *	Maximum Concentration
MAGNESIUM	5000	**	**	**	**	417 B:V	SS432594 (1)	2580 :V
MANGANESE	15	**	**	**	**	32.1 :V	SS432594 (1)	284 :V
MERCURY	0.2	0.05	SS432594 (1)	0.06	SS431494 (1)	.054 B:V	SS431294 (1)	.21 :V
NICKEL	40	**	**	**	**	3 B:V	SS432594 (1)	14.7 :V
POTASSIUM	5000	**	**	**	**	496 B:V	SS432594 (1)	1460 :V
SILVER	10	0.49	SS430694 (2)	1.4	SS430894 (1)	.55 B:V	SS432494 (1)	4.1 :J
SODIUM	5000	60.3	SS432694 (1)	109	SS430794 (1)	80.9 B:V	SS431194 (1)	169 B:V
VANADIUM	50	**	**	**	**	9.8 B:V	SS432594 (1)	36.2 :V
ZINC	20	**	**	**	**	20.3 :V	SS430494 (1)	772 :V
Test Group:TRADS								
AMERICIUM-241	0.01	**	**	**	**	.002(.006) U:Y	SS430094 (2)	.35(.049) :Y
GROSS ALPHA	2	**	**	**	**	12(2.8) :Y	SS432094 (1)	28(4.5) :Y
GROSS BETA	4	**	**	**	**	20(3.3) :Y	SS431494 (1)	36(3.6) :Y
PLUTONIUM-239/240	0.01	**	**	**	**	.01(.007) J:Y	SS430094 (1)	2.6(.14) :Y
URANIUM-233,-234	0.08	**	**	**	**	.41(.13) :Y	SS432094 (2)	1.1(.23) :Y
URANIUM-235	0.08	**	**	**	**	(.024) U:Y:Y	SS431994 (1)	.085(.084) J:Y
URANIUM-238	0.07	**	**	**	**	.4(.13) :Y	SS432094 (1)	1.1(.21) :Y
Test Group:VOACL P								
ACETONE	10	48	SS430194 (1)	48	SS430194 (1)	18 B:Y	SS430494 (1)	74 B:Y
CYCLOHEXANE	0	**	**	**	**	8 B:Y	SS431294 (2)	18 B:Y
METHYLENE CHLORIDE	5	5	SS430194 (1)	5	SS430194 (1)	3 J:Y	SS430994 (2)	9 B:Y
TETRACHLOROETHENE	5	5	SS430194 (4)	6	SS431494 (4)	2 J:Y	SS431194 (1)	140 :Y
TOLUENE	5	5	SS430194 (12)	6	SS431494 (5)	1 J:Y	SS431594 (1)	3 J:Y
TOTAL XYLENES	5	5	SS430494 (12)	6	SS431494 (6)	2 J:A	SS430194 (1)	2 J:A
UNKNOWN TIC	0	**	**	**	**	6 J:Y	SS430994 (1)	20 J:Y
UNKNOWN TIC ; ALDOL CONDENSATION	0	**	**	**	**	8 J:Y	SS430994 (1)	8 J:Y
UNKNOWN TIC ; ALKANE	0	**	**	**	**	6 J:Y	SS430994 (1)	6 J:Y
UNKNOWN TIC ; C5H10	0	**	**	**	**	6 J:Y	SS430994 (1)	6 J:Y
UNKNOWN TIC ; C9H12	0	**	**	**	**	21 J:Y	SS430994 (1)	21 J:Y
n-HEXANE	0	**	**	**	**	7 J:Y	SS431294 (2)	24 J:Y

TABLE 3-3
Surface Soil Detectable Concentration Data Summary***
OU14 - IHSS 131

	MDL	Maximum Concentration Location *	Number of Detects	Total Number of Samples	Average Concentration
MAGNESIUM	5000	SS431394 (1)	18	18	1865.944
MANGANESE	15	SS431594 (1)	18	18	162.3945
MERCURY	0.2	SS432294 (1)	4	18	0.0424
NICKEL	40	SS432194 (2)	18	18	8.1056
POTASSIUM	5000	SS432194 (1)	18	18	1209.222
SILVER	10	SS430994 (1)	12	18	0.9753
SODIUM	5000	SS432294 (1)	13	18	102.6306
VANADIUM	50	SS432194 (1)	18	18	17.65
ZINC	20	SS432194 (1)	18	18	125.8445
Test Group: TRADS Units: pCi/g					
AMERICIUM-241	0.01	SS432494 (1)	16	16	0.0677
GROSS ALPHA	2	SS430094 (3)	16	16	20.5625
GROSS BETA	4	SS430394 (2)	16	16	29.8125
PLUTONIUM-239/240	0.01	SS432494 (1)	16	16	0.4538
URANIUM-233,-234	0.08	SS430394 (1)	16	16	0.7644
URANIUM-235	0.08	SS430394 (1)	16	16	0.0385
URANIUM-238	0.07	SS430394 (1)	16	16	0.7737
Test Group: VOACLP Units: µg/kg					
ACETONE	10	SS432594 (1)	18	19	40.2632
CYCLOHEXANE	0	SS432194 (1)	5	5	10.8
METHYLENE CHLORIDE	5	SS431394 (2)	18	19	5.3421
TETRACHLOROETHENE	5	SS430994 (1)	11	19	17.1579
TOLUENE	5	SS430994 (1)	2	19	2.5789
TOTAL XYLENES	5	SS430194 (1)	1	19	2.6318
UNKNOWN TIC	0	SS430994 (1)	3	3	13.3333
UNKNOWN TIC ; ALDOL CONDENSATION	0	SS430994 (1)	1	1	8
UNKNOWN TIC ; ALKANE	0	SS430994 (1)	1	1	6
UNKNOWN TIC ; C5H10	0	SS430994 (1)	1	1	6
UNKNOWN TIC ; C9H12	0	SS430994 (1)	1	1	21
n-HEXANE	0	SS432194 (2)	4	4	15.5

A = Validation Qualifier; laboratory qualifier
 B = Laboratory Qualifier; detected in blank
 BNAACL = EPA - CLP Semivolatile Organic Compounds
 Compounds
 E = Laboratory Qualifier; concentration exceeds
 G = Native analyte greater than four times spike
 spike-added-inorganics
 HERB8150 = EPA Chlorinated Herbicides
 J = Laboratory Qualifier; estimated value
 MDL = Method Detection Limit
 METADD = Additional Metals
 mg/kg = milligram per kilogram
 PESTCLP = EPA Pesticide/PCB
 SMETCLP = EPA - CLP Metals
 SQL = Sample Quantitation Limit
 TRADS = Total radionuclides
 U = Undetected
 V = Validation Qualifier; valid data
 VOACLP = EPA - CLP Volatile Organic Compounds
 Y = Validation Qualifier; in the process of being
 being validated
 µg/g = microgram per gram
 µg/kg = microgram per kilogram
 * = The number of sample locations at that value
 value is shown in parenthesis
 ** = All samples reported with positive results; no
 no nondetects reported
 *** = Based on March 17, 1995 data
 extraction from RFEDS

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TABLE 3-4
Surface Soil Detectable Concentrations**
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Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS432994 BFG0129JE 23-Sep-94	SS432994 SSG2224JE 23-Sep-94	SS433094 SSG2225JE 8-Nov-94	SS433194 SSG2226JE 8-Nov-94	SS433294 SSG2227JE 8-Nov-94	SS433394 SSG2228JE 27-Sep-94	SS433494 BFG0130JE 23-Sep-94	SS433494 SSG2228JE 23-Sep-94	SS433594 SSG2230JE 9-Nov-94
Test Group: TRADS Units: pCi/g											
AMERICIUM-241	0	2.37E 0 / 6.34E-2			.039(.013):Y						
GROSS ALPHA	0	0.00E 0 / 44.56E 0	19(4.5):A	13(4.2):A	15(3.4):Y	16(3.4):Y	19(3.8):Y	21(4.6):A	19(4.5):A	15(4.2):A	19(3.8):Y
GROSS BETA	0	0.00E 0 / 55.35E 0	33(3.8):A	28(3.4):A	26(3.2):Y	38(3.7):Y	35(3.6):Y	28(3.7):A	33(3.6):A	30(3.6):A	34(3.5):Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2			.16(.025):Y#						
URANIUM-233,-234	0	4.47E 1 / 17.69E-1	1(.17):V	1.1(1.6):V	1(26):Y	.97(1.9):Y	1.2(.23):Y	1(.27):V	1.1(24):V	1(0.97):V	.73(2.4):Y
URANIUM-235	0	1.73E-1 / 19.83E-2	.081(.054):J.V	.07(.043):J.V		.11(.057):J.Y				.049(.022):J.V	
URANIUM-238	0	8.00E-1 / 19.12E-1	1.2(.19):V*	1.1(1.6):V*	.89(.25):Y*	.83(.17):Y*	1.3(2.4):V*	.84(.23):V*	.98(.23):V*	1(0.94):V*	.78(2.4):Y

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS433694 SSG2231JE 9-Nov-94	SS433794 SSG2232JE 9-Nov-94	SS433894 SSG2233JE 27-Sep-94	SS433994 SSG2234JE 23-Sep-94	SS434094 SSG2235JE 23-Sep-94	SS434194 BFG0136JE 26-Oct-94	SS434294 BFG0135JE 20-Oct-94	SS434294 SSG2237JE 20-Oct-94
Test Group: TRADS Units: pCi/g										
AMERICIUM-241	0	2.37E 0 / 6.34E-2								
GROSS ALPHA	0	0.00E 0 / 44.56E 0	24(4):Y	14(3.7):Y	19(4.8):A	13(3.5):A	22(4.5):A	22(3.9):Y	15(3.6):Y	17(3.1):Y
GROSS BETA	0	0.00E 0 / 55.35E 0	35(3.7):Y	31(3.5):Y	36(3.7):A	26(3.4):A	28(3.7):A	33(3.6):Y	33(3.6):Y	30(2.8):Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2								
URANIUM-233,-234	0	4.47E 1 / 17.69E-1	1(26):Y	.94(2.4):Y	.78(2):Y	.88(26):V	.99(1.1):V	1.3(.28):Y	1.2(.29):Y	.71(1.19):Y
URANIUM-235	0	1.73E-1 / 19.83E-2					.072(.027):J.V			
URANIUM-238	0	8.00E-1 / 19.12E-1	.94(.23):Y*	.68(.19):Y	.94(.23):V*	.82(.23):V*	1(1.1):V*	1.1(25):V*	1.2(.28):V*	.55(.16):Y

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS434394 SSG2238JE 27-Sep-94	SS434694 SSG2241JE 26-Oct-94	SS434794 SSG2242JE 22-Sep-94	SS434894 SSG2243JE 27-Sep-94	SS434894 SSG2598JE 27-Sep-94	SS434994 SSG2244JE 26-Oct-94	SS435094 SSG2245JE 10-Nov-94	SS435194 SSG2246JE 3-Oct-94	SS435294 SSG2247JE 20-Oct-94
Test Group: TRADS Units: pCi/g											
AMERICIUM-241	0	2.37E 0 / 6.34E-2					.006(.005):J.V			.008(.008):J.Y	
GROSS ALPHA	0	0.00E 0 / 44.56E 0	16(4.3):A	16(4.1):Y	17(4.3):A	16(3.6):A	22(4.4):A	21(4):Y	12(3):Y	11(2.5):Y	10(2.8):Y
GROSS BETA	0	0.00E 0 / 55.35E 0	39(4):A	32(3.8):Y	38(4):A	39(3.8):A	35(3.7):A	26(3.3):Y	29(3.5):Y	24(3.4):Y	32(3.4):Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	.006(.003):J.V			.006(.004):J.V				.014(.005):J.Y	
URANIUM-233,-234	0	4.47E 1 / 17.69E-1	.96(.26):V	1.2(3):Y	1.1(1.6):V	.74(2):V	.74(2):V	.78(1.5):Y	1(23):Y	.72(1.7):Y	.61(.17):Y
URANIUM-235	0	1.73E-1 / 19.83E-2	.11(.097):J.V	.13(1):J.Y	.061(.041):J.V						
URANIUM-238	0	8.00E-1 / 19.12E-1	1.1(27):V*	1.3(31):Y*	1.1(15):V*	.75(18):V	.75(19):V	.99(17):V*	.93(21):Y*	.61(15):Y	.44(15):Y

TABLE 3-4
Surface Soil Detectable Concentrations**
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Sample Location: Sample Identification Number: Date Sampled:	Test Group: TRADS Units: pCi/g	MDL	PRG / BKGND	SS435394 SSG2248JE 27-Sep-94	SS435494 SSG2249JE 26-Oct-94	SS435594 SSG2250JE 3-Nov-94	SS435694 SSG2251JE 3-Oct-94	SS435794 SSG2252JE 9-Nov-94	SS435894 SSG2253JE 26-Sep-94	SS435994 SSG2254JE 3-Nov-94	SS436094 SSG2255JE 10-Nov-94	SS436194 SSG2256JE 3-Oct-94
AMERICIUM-241	2.37E 0 / 6.34E-2	0	17(4.1) A	18(3.6) Y	7.4(2.9) Y	7.8(2.7) Y	21(4.2) Y	21(4.2) Y	14(4) A	7.7(2.2) Y	13(3.9) Y	3.6(2) J.Y
GROSS ALPHA	0.00E 0 / 44.56E 0	0	38(3.7) A	23(3.5) Y	18(2.9) Y	21(3.2) Y	36(3.7) Y	20(3.9) Y	33(3.8) A	20(3.9) Y	24(3.2) Y	22(3.4) Y
GROSS BETA	0.00E 0 / 55.35E 0	0	3.42E 0 / 13.21E-2	0.06(0.05) J.V	.005(0.03) J.Y	.67(1.4) Y	1.1(1.3) Y	.64(2.4) Y	1.3(2) V	.74(1.9) Y	.5(1.9) Y	.082(0.05) J.Y
PLUTONIUM-239/240	4.47E 1 / 17.69E-1	0	75(22) V	.65(1.4) Y	.41(0.86) Y	.67(1.4) Y	.05(0.31) J.Y	.67(2.4) Y	1.1(1.9) V*	.67(2.4) Y	.8(1.9) Y*	.54(1.4) Y
URANIUM-233-234	1.73E-1 / 19.83E-2	0	.68(2) V	.72(1.4) Y	.47(0.95) Y	.71(1.5) Y	1.2(1.3) Y*	1.2(1.3) Y*	1.1(1.9) V*	.67(2.4) Y	.8(1.9) Y*	.54(1.4) Y
URANIUM-235	8.00E-1 / 19.12E-1	0										

Sample Location: Sample Identification Number: Date Sampled:	Test Group: TRADS Units: pCi/g	MDL	PRG / BKGND	SS436194 SSG2610JE 3-Oct-94	SS436294 SSG2257JE 26-Sep-94	SS436394 SSG2258JE 26-Sep-94	SS436494 SSG2259JE 3-Nov-94	SS436494 SSG2655JE 3-Nov-94	SS436594 SSG2281JE 3-Oct-94	SS436794 SSG2282JE 8-Nov-94	SS436894 SSG2283JE 26-Sep-94	SS436894 SSG2284JE 3-Oct-94
AMERICIUM-241	2.37E 0 / 6.34E-2	0	12(3.1) Y	17(3.7) A	27(4.6) A	8.4(2.3) Y	8(2.5) Y	18(3.8) Y	15(3.4) Y	15(4.3) A	16(3.3) Y	16(3.3) Y
GROSS ALPHA	0.00E 0 / 44.56E 0	0	28(3.4) Y	30(3.7) A	37(3.7) A	20(3.4) Y	22(3.2) Y	25(3.5) Y	32(3.8) Y	35(3.7) A	27(3.4) Y	27(3.4) Y
GROSS BETA	0.00E 0 / 55.35E 0	0	3.42E 0 / 13.21E-2	.016(0.07) J.V	.007(0.04) J.V	.62(2.1) Y	.45(1.9) Y	.006(0.03) J.Y	.55(1.5) Y	.84(2.1) V	.028(0.09) J.Y	.87(1.8) Y
PLUTONIUM-239/240	4.47E 1 / 17.69E-1	0	.84(18) Y	.72(1.9) V	.8(1.4) V	.62(2.1) Y	.45(1.9) Y	.78(1.9) Y	.47(1.3) Y	.47(1.3) Y	.84(2.1) V	.87(1.8) Y
URANIUM-233-234	1.73E-1 / 19.83E-2	0	.12(0.62) J.Y	.74(1.9) Y	1.1(1.7) V*	.54(1.8) Y	.67(2.2) Y	.74(1.7) Y	.47(1.3) Y	1.1(2.4) V*	.88(1.8) Y*	.88(1.8) Y*
URANIUM-235	8.00E-1 / 19.12E-1	0										

Sample Location: Sample Identification Number: Date Sampled:	Test Group: TRADS Units: pCi/g	MDL	PRG / BKGND	SS436894 SSG2611JE 3-Oct-94	SS437094 SSG2265JE 3-Oct-94	SS437194 SSG2266JE 28-Oct-94	SS437294 SSG2267JE 27-Sep-94	SS437394 SSG2268JE 26-Sep-94	SS437494 SSG2269JE 29-Nov-94	SS437594 SSG2270JE 29-Nov-94	SS437694 SSG2271JE 10-Nov-94	SS437694 SSG2661JE 10-Nov-94
AMERICIUM-241	2.37E 0 / 6.34E-2	0	29(4.7) Y	4.3(1.7) Y	10(3) Y	14(3.9) A	16(3.9) A	15(3.7) Y	14(2.9) Y	18(3.4) Y	14(3.1) Y	14(3.1) Y
GROSS ALPHA	0.00E 0 / 44.56E 0	0	26(3.4) Y	10(2.7) Y	22(3.3) Y	26(3.5) A	32(3.6) A	32(4.3) Y	25(3.3) Y	28(3.4) Y	30(3.7) Y	30(3.7) Y
GROSS BETA	0.00E 0 / 55.35E 0	0	3.42E 0 / 13.21E-2	.014(0.06) J.Y	.031(0.07) V	.58(1.5) V	1.1(2.6) V	.011(0.09) J.Y	.016(0.1) J.Y	.018(0.09) J.Y	.011(0.06) J.Y	.011(0.06) J.Y
PLUTONIUM-239/240	4.47E 1 / 17.69E-1	0	.92(24) Y	.65(1.7) Y	.91(1.8) Y	.58(1.5) V	1.1(2.6) V	.77(1.7) Y	.82(1.7) Y	.75(1.9) Y	.83(2.2) Y	.83(2.2) Y
URANIUM-233-234	1.73E-1 / 19.83E-2	0	.73(21) Y	.63(1.5) Y	.93(1.8) Y*	.76(1.8) Y*	1(2.4) V*	.9(1.8) Y*	.91(1.7) Y*	.78(1.9) Y	.68(2) Y	.68(2) Y
URANIUM-235	8.00E-1 / 19.12E-1	0										

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TABLE 3-4
Surface Soil Detectable Concentrations**
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Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS437794 SSG2272J5 10-Nov-94	SS437894 SSG2273JE 26-Sep-94	SS437994 SSG2274JE 3-Oct-94	SS438094 SSG2275JE 3-Oct-94	SS438194 SSG2276JE 29-Sep-94	SS438294 SSG2277JE 29-Sep-94	SS438294 SSG2804JE 29-Sep-94	SS438394 SSG2278JE 3-Oct-94	SS439494 SSG2279JE 3-Oct-94
Test Group: TRADS Units: pCi/g											
AMERICIUM-241	0	2.37E 0 / 6.34E-2	12(3.4):Y	13(3.6) A	16(3.4):Y	11(2.6):Y	11(3):Y	24(4.3):Y	13(3.1):Y	14(3.3):Y	20(3.6):Y
GROSS ALPHA	0	0.00E 0 / 44.56E 0	32(3.6):Y	35(3.6) A	30(3.5):Y	30(3.4):Y	24(3.2):Y	31(3.6):Y	28(3.6):Y	28(3.4):Y	31(3.7):Y
GROSS BETA	0	0.00E 0 / 55.35E 0	0.04(0.03) J:Y	0.04(0.03) J:Y	1(0.13):Y	0.03(0.07):Y	0.069(0.11):Y	0.06(0.16):Y	0.088(0.16):Y	0.04(0.08):Y	0.06(0.22):Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	85(2):Y	81(1.8):Y	67(1.8):Y	1.4(29):Y	78(17):Y	84(19):Y	85(13):Y	77(2):Y	88(22):Y
URANIUM-233,-234	0	4.47E 1 / 17.69E-1							0.63(0.39) J:Y		
URANIUM-235	0	1.73E-1 / 19.83E-2									
URANIUM-238	0	8.00E-1 / 19.12E-1	99(2):Y*	71(1.6):Y	71(1.8):Y	1.3(2.7):Y*	7(1.5):Y	66(1.7):Y	76(1.2):Y	69(1.7):Y	91(22):Y*

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS438594 SSG2280JE 18-Oct-94	SS438694 SSG2281JE 4-Oct-94	SS438794 SSG2282JE 18-Oct-94	SS438894 SSG2283JE 4-Oct-94	SS438994 SSG2284JE 4-Oct-94	SS439094 SSG2285JE 4-Oct-94	SS439194 SSG2286JE 13-Oct-94	SS439294 SSG2287JE 13-Oct-94	SS439394 SSG2288JE 20-Oct-94
Test Group: TRADS Units: pCi/g											
AMERICIUM-241	0	2.37E 0 / 6.34E-2	01(0.08) J:Y	10(2.6):Y	9.1(1.1):Y	14(3):Y	14(3.2):Y	13(3.1):Y	12(3.3):Y	10(2.8):Y	28(4):Y
GROSS ALPHA	0	0.00E 0 / 44.56E 0	14(1.4):Y	25(1.5):Y	20(1.4):Y	26(3.4):Y	27(3.3):Y	25(3.3):Y	27(3.7):Y	19(3.2):Y	32(3.5):Y
GROSS BETA	0	0.00E 0 / 55.35E 0	0.035(0.12):Y	0.15(0.05) J:Y	0.11(0.06) J:Y	0.12(0.17):Y	0.09(0.04) J:Y	0.15(0.06) J:Y	0.15(0.06) J:Y	0.22(0.08) J:Y	0.11(0.05) J:Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	7(22):Y	6(0.86):Y	86(15):Y	7(0.87):Y	98(21):Y	73(17):Y	62(2):Y	47(2):Y	98(22):Y
URANIUM-233,-234	0	4.47E 1 / 17.69E-1									
URANIUM-235	0	1.73E-1 / 19.83E-2	0.33(0.26) J:Y			0.44(0.22) J:Y					
URANIUM-238	0	8.00E-1 / 19.12E-1	46(1.8):Y	67(0.92):Y	61(1.2):Y	78(0.93):Y	1(21):Y*	82(1.7):Y*	74(2):Y	47(1.7):Y	12(25):Y*

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS439394 SSG22642JE 20-Oct-94	SS439494 SSG2289JE 20-Oct-94	SS439594 SSG2290JE 5-Oct-94	SS439694 SSG2291JE 5-Oct-94	SS439694 SSG2816JE 5-Oct-94
Test Group: TRADS Units: pCi/g							
AMERICIUM-241	0	2.37E 0 / 6.34E-2	26(4.1):Y	19(4.1):Y	19(3.7):Y	0.19(0.1) J:Y	0.035(0.12):Y
GROSS ALPHA	0	0.00E 0 / 44.56E 0	30(3.7):Y	32(3.7):Y	26(3.4):Y	14(3.4):Y	15(3.1):Y
GROSS BETA	0	0.00E 0 / 55.35E 0	0.023(0.09) J:Y	0.1(0.08) J:Y	0.04(0.12):Y	0.12(0.19):Y	0.25(3.3):Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	1(22):Y	78(23):Y	81(19):Y	66(1.6):Y	14(0.18):Y#
URANIUM-233,-234	0	4.47E 1 / 17.69E-1					62(1.6):Y
URANIUM-235	0	1.73E-1 / 19.83E-2	0.98(0.74) J:Y				
URANIUM-238	0	8.00E-1 / 19.12E-1	96(22):Y*	71(2):Y	65(1.5):Y	82(1.8):Y*	85(1.8):Y*

TABLE 3-4
Surface Soil Detectable Concentrations**
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Notes:

- A = Validation Qualifier; laboratory qualifier considered acceptable
- B = Laboratory Qualifier; detected in blank
- BKGND = Background concentration (DOE 1994a)
- BNACLP = EPA - CLP Semivolatile Organic Compounds
- E = Laboratory Qualifier; concentration exceeds calibration range of instrument-organic
- HERB150 = EPA Chlorinated Herbicides
- J = Laboratory Qualifier; estimated value
- MDL = Method Detection Limit
- METADD = Additional Metals
- mg/kg = milligram per kilogram
- NA = Not Analyzed
- PESTCLP = EPA Pesticide/PCB
- PRG = Preliminary Remediation Goal
- SMETCLP = EPA - CLP Metals
- TRADS = Total radionuclides
- U = Undetected
- V = Validation Qualifier; valid data
- VOACLP = EPA - CLP Volatile Organic Compounds
- Y = Validation Qualifier; in the process of being validated
- µg/g = microgram per gram
- µg/kg = microgram per kilogram
- # = Indicates compound exceeds background
- * = Indicates compound exceeds PRG
- ** = Based on March 17, 1995, data extraction from RFEDS
- .. = Indicates PRG for that compound does not exist

TABLE 3-3
Surface Soil Detectable Concentration Data Summary***
OU14 - IHSS 156-1

Test Group: TRADS	Units: pCi/g	MDL	SOL Minimum Value	SOL Minimum Location *	SOL Maximum Value	SOL Maximum Location *	Minimum Activity	Minimum Location *	Maximum Activity	Maximum Location *	Number of Detects	Total Number of Samples	Average Concentration
AMERICIUM-241		0.01	**	**	**	**	-.003(.003) U:Y	SS433784 (1)	.039(.013) :Y	SS433094 (1)	81	81	0.0057
GROSS ALPHA		2	**	**	**	**	3.6(2) J:Y	SS436194 (1)	29(4.7) :Y	SS436994 (1)	81	81	15.6457
GROSS BETA		4	**	**	**	**	10(2.7) :Y	SS437094 (1)	39(4) :A	SS434394 (2)	81	81	29
PLUTONIUM-239/240		0.005	**	**	**	**	-.004(.008) U:Y	SS433294 (1)	.16(.025) :Y	SS433094 (1)	81	81	0.0176
URANIUM-233-234		0.08	**	**	**	**	.41(.086) :Y	SS435594 (1)	1.4(.29) :Y	SS438094 (1)	81	81	0.8521
URANIUM-235		0.08	**	**	**	**	-.02(.04) U:Y	SS435994 (1)	.13(.1) J:Y	SS434694 (1)	81	81	0.0465
URANIUM-238		0.08	**	**	**	**	.44(.15) :Y	SS435294 (1)	1.3(.24) :Y	SS433294 (3)	81	81	0.8526

A = Validation Qualifier, laboratory qualifier considered acceptable
 B = Laboratory Qualifier, detected in blank
 BNACLP = EPA - CLP Semivolatile Organic Compounds
 E = Laboratory Qualifier, concentration exceeds calibration range of instrument-organic
 G = Native analyte greater than four times spike added - Inorganics
 HERB150 = EPA Chlorinated Herbicides
 J = Laboratory Qualifier, estimated value
 MDL = Method Detection Limit
 METADD = Additional Metals
 mg/kg = milligram per kilogram
 PESTCLP = EPA Pesticide/PCB
 SMETCLP = EPA - CLP Metals
 SOL = Sample Quantitation Limit
 TRADS = Total radionuclides
 U = Undetected
 V = Validation Qualifier, valid data
 YOACLP = EPA - CLP Volatile Organic Compounds
 Y = Validation Qualifier, in the process of being validated
 µg/g = microgram per gram
 µg/kg = microgram per kilogram
 * = The number of sample locations at that value is shown in parenthesis
 ** = All samples reported with positive results, no nondetects reported
 *** = Based on March 17, 1995, data extraction from RFEDS

TABLE 3-6
Surface Soil Detectable Concentrations**
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Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS439794 SSG2292JE 31-Aug-84	SS439894 SSG2293JE 31-Aug-84	SS439994 SSG2294JE 31-Aug-84	SS440094 SSG2295JE 31-Aug-84	SS440094 SSG2296JE 28-Aug-84	SS440284 SSG2297JE 28-Aug-84	SS440284 SSG2298JE 28-Aug-84	SS440394 SSG2299JE 28-Aug-84
Test Group:METADD Units: mg/kg										
LITHIUM	100	5.49E 3 / 20.00E 0	8 B:JA	7.9 B:JA	9.3 B:JA	16.6 B:JA	6.2 B:JA	5.5 B:JA	4.1 B:JA	5.7 B:JA
MOLYBDENUM	200	1.37E 3 / 40.00E 0	2.1 B:V	3.8 B:JA	5 B:JA	4.5 B:JA	21.1 B:JA	14.4 B:JA	8.3 B:JA	13.8 B:JA
STRONTIUM	200	1.65E 5 / 90.10E 0	64.3 :JA	26 B:JA	18.5 B:JA	16.1 B:JA				
Test Group:SMETGLP Units: mg/kg										
ALUMINIUM	200	7.96E 5 / 21915.40E 0	6810 :V	6910 :V	8240 :V	8810 :V	5100 :V	3970 :V	3140 :V	4260 :V
ANTIMONY	60	1.10E 2 / 50.00E 0								
ARSENIC	10	3.66E-1 / 12.90E 0	1.4 B:V	3.4 :V*	3.2 :V*	3 :V*	3.3 :V*	3 :V*	1.9 B:V*	3.3 :V*
BARIUM	200	1.91E 4 / 528.00E 0	160 :V	79.8 :V	103 :V	97.3 :V	129 :V	49.8 :V	39.8 B:V	49.2 :V
BERYLLIUM	5	1.49E-1 / 5.20E 0	.25 B:V	.68 B:V*	.75 B:V*	.85 B:V*	.4 B:V*	.37 B:V*	.25 B:V*	.37 B:V*
CADMIUM	5	1.37E 2 / 5.00E 0								
CALCIUM	5000	0.00E 0 / 13573.30E 0	3450 :V	16900 :V#	13400 :V	13500 :V	10800 :V	5740 :V	1480 :V	5870 :V
CHROMIUM	10	9.39E 2 / 24.80E 0	5.4 :V	7.8 :JA	8.3 :JA	7.8 :JA	22.3 :V	10.6 :V	13.1 :V	11.2 :V
COBALT	50	1.65E 4 / 24.80E 0	8.5 B:V	11.7 :V	13.8 :V	15.6 :V	6.3 B:V	4.3 B:V	3.5 B:V	4.7 B:V
COPPER	25	1.10E 4 / 27.30E 0	18.2 :V	25.6 :V	26.9 :V	39.7 :V#	18.1 :V	15.3 :V	10.7 :V	14.3 :V
IRON	100	0.00E 0 / 28160.40E 0	8970 :V	21300 :V	27600 :V	27700 :V	11100 :V	8630 :V	6870 :V	8850 :V
LEAD	3	0.00E 0 / 61.40E 0	11.7 :JA	7.8 :JA	4.5 :JA	5 :JA	48.4 :V	11.8 :V	56.6 :V	12.5 :V
MAGNESIUM	5000	0.00E 0 / 7011.50E 0	3240 :V	4530 :V	5850 :V	7830 :V#	2050 :V	1510 :V	1610 :V	1540 :V
MANGANESE	15	1.36E 3 / 2253.50E 0	248 :V	565 :V	635 :V	655 :V	431 :JA	168 :JA	189 :JA	178 :JA
MERCURY	0.2	6.23E 1 / 0.20E 0	6.7 B:V	6 B:V	6.4 B:V	11.5 :V	10.7 :V	8.3 B:V	5.7 B:V	6.1 B:V
NICKEL	40	5.49E 3 / 26.80E 0	2460 :V	2730 :V	3760 :V	3130 :V	1310 :V	1000 B:V	927 B:V	1040 B:V
POTASSIUM	5000	0.00E 0 / 5258.80E 0								
SELENIUM	5	1.37E 3 / 1.40E 0								
SILVER	10	1.37E 3 / 10.00E 0	1.4 B:JA	2.7 :JA	3.8 :JA	2.8 :JA				
SODIUM	5000	0.00E 0 / 1108.00E 0	1530 :V#	208 B:JA	174 B:JA	168 :JA	257 B:V	289 B:V	160 B:V	253 B:V
VANADIUM	50	1.92E 3 / 55.60E 0	18.7 :V	34 :V	45.6 :V	43.7 :V	21.1 :V	16.8 :V	12.2 :V	16.5 :V
ZINC	20	8.23E 4 / 88.60E 0	40.5 :V	60.4 :V	73.3 :V	78.6 :V	48.5 :JA	42.3 :JA	60.9 :JA	44.3 :JA
Test Group:TRADS Units: pCi/g										
GROSS ALPHA	0	0.00E 0 / 44.56E 0	29(4.1) :A	15(4.5) :A	17(3.4) :A	15(3.9) :A	6.9(2.5) :A	6.3(2.8) :A	6.2(2.8) :A	6.5(2.8) :A
GROSS BETA	0	0.00E 0 / 55.35E 0	35(2.8) :A	27(3.7) :A	26(2.6) :A	29(2.8) :A	25(3.3) :A	28(3.4) :A	35(3.9) :A	25(3.6) :A
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	.064(0.14) :V	.045(0.12) :V	.03(0.11) :V	.019(0.06) J:V	.01(0.05) J:V	.025(0.11) J:V	.052(0.1) :V	.03(0.09) :V
URANIUM, TOTAL	0	E 0 / E 0	2.2 :Y-	2 :Y-	1.5 :Y-	2 :Y-	.98 :Y-	1.4 :Y-	1.2 :Y-	1.1 :Y-

TABLE 3-6
Surface Soil Detectable Concentrations**
OU14 - IHSS 160

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS440494 SSG2299JE 29-Aug-94	SS440594 SSG2300JE 7-Sep-94	SS440694 SSG2301JE 2-Sep-94	SS440794 SSG2302JE 2-Sep-94	SS440894 SSG2303JE 2-Sep-94	SS440894 SSG2304JE 1-Sep-94	SS441084 SSG2305JE 1-Sep-94	SS441194 BFG0121JE 31-Aug-94
Test Group:METADD Units: mg/kg										
LITHIUM	100	5.49E 3 / 20.00E 0	5.2 B:JA	4.6 B:JA	6.7 B:JA	5 B:JA	3.9 B:JA	4.5 B:JA	4.8 B:JA	4.2 B:JA
MOLYBDENUM	200	1.37E 3 / 40.00E 0								1.4 B:V
STRONTIUM	200	1.65E 5 / 90.10E 0	13.1 B:JA	21.6 B:JA	18.6 B:JA	13.2 B:JA	17.8 B:JA	11.6 B:JA	10.5 B:JA	10 B:JA
Test Group:SMETCLP Units: mg/kg										
ALUMINUM	200	7.96E 5 / 21915.40E 0	5930 :V	4150 :V	8350 :V	4320 :V	4180 :V	3940 :V	4620 :V	4100 :V
ANTIMONY	60	1.10E 2 / 50.00E 0								
ARSENIC	10	3.68E-1 / 12.90E 0	3.3 :V*	3.1 :V*	5.8 :V*	2.6 :V*	3.3 :V*	2.3 :V*	2.8 :V*	2.8 :V*
BARIUM	200	1.91E 4 / 528.00E 0	59.6 :V	47.6 :V	78.5 :V	52.1 :V	37.4 B:V	51.6 :V	56.3 :V	67.8 :V
BERYLLIUM	5	1.49E-1 / 5.20E 0	.44 B:V*	.23 B:V*	.78 B:V*	.28 B:V*	.27 B:V*	.28 B:V*	.32 B:V*	.31 B:V*
CADMIUM	5	1.37E 2 / 5.00E 0								
CALCIUM	5000	0.00E 0 / 13573.30E 0	3410 :V	4170 :JA	4090 :JA	2840 :JA	4640 :JA	1140 :JA	1250 :JA	2050 :V
CHROMIUM	10	9.39E 2 / 24.80E 0	13.9 :V	16.6 :V	17.6 :V	105 :V#	6.7 :V	5.4 :V	4.9 :V	6.4 :V
COBALT	50	1.65E 4 / 24.80E 0	4.3 B:V	3.8 B:V	5.8 B:V	5.1 B:V	3.5 B:V	10.5 :V	4.8 B:V	3.8 B:V
COPPER	25	1.10E 4 / 27.30E 0	11.8 :V	26 :JA	22.3 :JA	15.9 :JA	19.7 :JA	18.5 :JA	7.8 :V	7.8 :V
IRON	100	0.00E 0 / 28160.40E 0	8270 :V	8940 :V	13100 :V	8470 :V	8070 :V	7760 :V	7430 :V	6790 :V
LEAD	3	0.00E 0 / 61.40E 0	58.5 :V	124 :V#	40.7 :V	426 :V#	16.3 :V	5.8 :V	5.2 :V	6.8 :JA
MAGNESIUM	5000	0.00E 0 / 7011.50E 0	1900 :V	2740 :V	2110 :V	1850 :V	2350 :V	1080 :V	1190 :V	1090 :V
MANGANESE	15	1.38E 3 / 2253.50E 0	165 :JA	215 :V	205 :V	162 :V	159 :V	145 :V	172 :V	151 :V
MERCURY	0.2	8.23E 1 / 0.20E 0		.049 B:V						
NICKEL	40	5.49E 3 / 26.90E 0	7.4 B:V	6 B:V	9.8 :V	5 B:V	6.4 B:V	6.2 B:V	5 B:V	5.3 B:V
POTASSIUM	5000	0.00E 0 / 5256.80E 0	1500 :V	1010 :V	1650 :V	1540 :V	971 B:V	784 B:V	898 B:V	887 B:V
SELENIUM	5	1.37E 3 / 1.40E 0								
SILVER	10	1.37E 3 / 10.00E 0	.97 B:JA					7.5 :V		1 :JA
SODIUM	5000	0.00E 0 / 1108.00E 0	118 B:V	344 B:V			308 B:V			56 B:V
VANADIUM	50	1.82E 3 / 55.60E 0	18.2 :V	15.8 :V	29 :V	13.6 :V	16 :V	11.9 :V	11.8 :V	10.9 :V
ZINC	20	8.23E 4 / 86.60E 0	78.1 :JA	125 :V#	91.6 :V#	45.6 :V	40.7 :V	24 :V	19.3 :V	21.8 :V
Test Group:TRADES Units: pCi/g										
GROSS ALPHA	0	0.00E 0 / 44.56E 0	18(3.8) :A	8.3(2.6) :A	16(3.8) :A	18(3.8) :A	9(3.7) :A	13(3.1) :A	14(3.1) :A	18(3.3) :A
GROSS BETA	0	0.00E 0 / 55.35E 0	39(3.7) :A	28(3.4) :A	27(2.7) :A	33(3) :A	24(3.6) :A	35(3.8) :A	30(3.5) :A	28(2.5) :A
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	1.8(.069) :V#	.38(.041) :V#	.062(.011) :V	.043(.01) :V	.048(.011) :V	.071(.012) B:V	.037(.01) B:V	7.6(.28) :V#
URANIUM, TOTAL	0	E 0 / E 0	1.7 :Y*	1.2 :Y*	4.6 :Y*	2.6 :Y*	1.4 :Y*	2.6 :Y*	2.8 :Y*	2.4 :Y*

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TABLE 3-6
Surface Soil Detectable Concentrations**
OU14 - IHSS 160

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS441194 SSG2306JE 31-Aug-94	SS441294 SSG2307JE 31-Aug-94	SS441394 SSG2308JE 29-Aug-94	SS441494 SSG2309JE 7-Sep-94	SS441594 SSG2310JE 6-Sep-94	SS441694 SSG2311JE 2-Sep-94	SS441794 SSG2312JE 2-Sep-94	SS441894 SSG2313JE 12-Sep-94	SS441994 SSG2314JE 12-Sep-94
Test Group:METADD Units: mg/kg											
LITHIUM	100	5.49E 3 / 20.00E 0	5 B:JA	5 B:JA	5.3 B:JA	3.9 B:JA	10.5 B:JA	5.8 B:JA	5.8 B:JA	6.3 B:JA	6.9 B:JA
MOLYBDENUM	200	1.37E 3 / 40.00E 0	1.8 B:V							1.1 B:V	1.2 B:V
STRONTIUM	200	1.65E 5 / 80.10E 0	14.9 B:JA	10.6 B:JA	12.5 B:JA	14.6 B:JA	23.4 B:JA	18.2 B:JA	15.5 B:JA	13.1 B:JA	13.4 B:JA
Test Group:SMETCLP Units: mg/kg											
ALUMINUM	200	7.96E 5 / 21915.40E 0	6140 :V	4650 :V	5840 :V	3710 :V	13100 :V	5180 :V	6370 :V	6020 :V	7000 :V
ANTIMONY	60	1.10E 2 / 50.00E 0									
ARSENIC	10	3.66E-1 / 12.90E 0	6 :V	2.8 :V	3.3 :V	2.5 :V	8 :V	2.8 :V	3.7 :V	2.5 :V	3.2 :V
BARIUM	200	1.91E 4 / 528.00E 0	82.5 :V	53 :V	58.5 :V	32.5 B:V	99.5 :V	58.9 :V	84.8 :V	63.1 :V	59.9 :V
BERYLLIUM	5	1.49E-1 / 5.20E 0	4 B:V	29 B:V	43 B:V	15 B:V	1.6 :V	3 B:V	42 B:V		42 B:V
CADMIUM	5	1.37E 2 / 5.00E 0	42 B:V				1.8 :V				
CALCIUM	5000	0.00E 0 / 13573.30E 0	3000 :V	1300 :V	3110 :V	2810 :JA	4570 :JA	3450 :JA	3030 :JA	1250 :V	1480 :V
CHROMIUM	10	9.39E 2 / 24.80E 0	14.1 :V	8.8 :V	11.2 :V	9.9 :V	59.7 :V	10.3 :V	9.8 :V	7.9 :V	9.9 :V
COBALT	50	1.65E 4 / 24.80E 0	4.5 B:V	4.4 B:V	5.1 B:V	3.2 B:V	6.9 B:V	4.6 :V	4.9 B:V	7.5 B:V	6.7 B:V
COPPER	25	1.10E 4 / 27.30E 0	14.8 :V	9.7 :V	14.8 :V	14.3 :JA	42.5 :JA	21.6 :JA	17.8 :JA	13.6 :V	11.9 :V
IRON	100	0.00E 0 / 28160.40E 0	9270 :V	8070 :V	11300 :V	7470 :V	18400 :V	10300 :V	11100 :V	8760 :V	10100 :V
LEAD	3	0.00E 0 / 81.40E 0	42.2 :JA	18.1 :JA	45.9 :V	43 :V	33 :V	31.9 :V	17 :V	5.9 :V	10.4 :V
MAGNESIUM	5000	0.00E 0 / 7011.50E 0	1420 :V	1240 :V	2080 :V	2090 :V	2720 :V	1890 :V	2440 :V	1420 :V	1570 :V
MANGANESE	15	1.36E 3 / 2253.50E 0	222 :V	165 :V	212 :JA	151 :V	234 :V	193 :V	212 :V	135 :JA	181 :JA
MERCURY	0.2	8.25E 1 / 0.20E 0					0.87 B:V	27 :V			
NICKEL	40	5.49E 3 / 26.90E 0	7.2 B:V	5.8 B:V	8 B:V	5.6 B:V	13.2 :V	6.1 B:V	7.5 B:V	5.4 B:V	6.8 B:V
POTASSIUM	5000	0.00E 0 / 5258.80E 0	1390 :V	995 B:V	1660 :V	631 B:V	1820 :V	1930 :V	1810 :V	1040 :V	1350 :V
SELENIUM	5	1.37E 3 / 1.40E 0								3 :V	86 B:V
SILVER	10	1.37E 3 / 10.00E 0	1.8 B:JA							163 B:V	69.1 B:V
SODIUM	5000	0.00E 0 / 1108.00E 0	78.4 B:V	56.8 B:V	160 B:V	331 B:V				20.8 :V	17.5 :V
VANADIUM	50	1.92E 3 / 55.60E 0	19.1 :V	12.3 :V	22.8 :V	12.6 :V	37.1 :V	18.8 :V	20.8 :V	14.5 :V	27.6 :V
ZINC	20	8.23E 4 / 68.60E 0	48.6 :V	27.6 :V	106 :JA	57.3 :V	109 :V	55.7 :V	98.5 :V	22.3 :V	
Test Group:TRADES Units: pCi/g											
GROSS ALPHA	0	0.00E 0 / 44.56E 0	23(4.1) :A	130(11) :A	16(3) :A	13(3.7) :A	13(3.3) :A	25(5.4) :A	14(3.8) :A	19(3.7) :Y	19(3.7) :Y
GROSS BETA	0	0.00E 0 / 55.35E 0	19(2.2) :A	21(3.5) :A	30(2.5) :A	30(3.5) :A	55(4.4) :A	36(3.8) :A	26(2.5) :A	32(3.5) :Y	34(3.8) :Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	24(7) :V	150(5.3) :V	10(2.5) :V	2(0.67) :V	0.46(0.1) :V	0.83(0.16) :V	0.27(0.27) :V	0.08(0.04) :V	0.97(0.19) :V
URANIUM, TOTAL	0	E 0 / E 0	2.3 :Y	2.4 :Y	1.3 :Y	1.2 :Y	8.7 :Y	5 :Y	2 :Y	2.9 :Y	3.4 :Y

TABLE 3-6
Surface Soil Detectable Concentrations**
OU14 - IHSS 160

Sample Location: Sample Identification Number: Date Sampled: Test Group:METADD Units: mg/kg	MDL	PRG / BKGND	SS442094 SSG2315JE 12-Sep-94	SS442194 SSG2316JE 30-Aug-94	SS442294 SSG2317JE 8-Sep-94	SS442394 SSG2318JE 7-Sep-94	SS442494 SSG2319JE 6-Sep-94	SS442594 SSG2320JE 6-Sep-94	SS442694 SSG2321JE 6-Sep-94	SS442784 SSG2322JE 12-Sep-94	SS442894 BFG0124JE 12-Sep-94
LITHIUM	100	5.49E 3 / 20.00E 0	7.4 B:JA	5.9 B:JA	7.4 B:JA	4.6 B:JA	14.6 B:JA	10.2 B:JA	6.6 B:JA		
MOLYBDENUM	200	1.37E 3 / 40.00E 0	1.4 B:V	2.3 B:V	2 B:V						
STRONTIUM	200	1.65E 5 / 90.10E 0	14.6 B:JA	14.1 B:JA	14.4 B:JA	11.5 B:JA	23 B:JA	19.1 B:JA	13.3 B:JA		
Test Group:SMETCLP Units: mg/kg											
ALUMINIUM	200	7.96E 5 / 21915.40E 0	7930 :V	6320 :V	7900 :V	4270 :V	12500 :V	10400 :V	7140 :V		
ANTIMONY	60	1.10E 2 / 50.00E 0									
ARSENIC	10	3.66E-1 / 12.90E 0	3.8 :V*	4.9 :V*	3.7 :V*	2.2 :V*	8.6 :V*	4.3 :JA*	4.6 :V*		
BARIUM	200	1.91E 4 / 528.00E 0	67.6 :V	67.6 :V	58.1 :V	37.6 B:V	88.4 :V	97.1 :V	74 :V		
BERYLLIUM	5	1.49E-1 / 5.20E 0	.43 B:V*	.42 B:V*	.56 B:V*	.34 B:V*	1.6 :V*	1.3 :V*	.46 B:V*		
CADMIUM	5	1.37E 2 / 5.00E 0	.22 B:V	.22 B:V	.16 B:V		2 :V				
CALCIUM	5000	0.00E 0 / 13573.30E 0	2990 :V	3720 :V	4580 :V	2140 :JA	4570 :JA	4280 :JA	2370 :JA		
CHROMIUM	10	9.39E 2 / 24.80E 0	9.9 :V	6 :V	10.9 :V	10.4 :V	78.2 :V#	14.7 :V	10.2 :V		
COBALT	50	1.65E 4 / 24.80E 0	5.8 B:V	6 B:V	6.8 B:V	3.8 B:V	6.8 B:V	7.7 B:V	4.7 B:V		
COPPER	25	1.10E 4 / 27.30E 0	12.9 :V	16 :V	15.7 :V	16.2 :JA	50.2 :JA#	29.7 :JA#	19.4 :JA		
IRON	100	0.00E 0 / 28160.40E 0	11300 :V	10700 :V	15200 :V	7990 :V	16200 :V	19700 :V	12000 :V		
LEAD	3	0.00E 0 / 61.40E 0	12.1 :V	80.2 :JA#	28.9 :V	49.7 :V	24.7 :V	30.8 :V	35 :V		
MAGNESIUM	5000	0.00E 0 / 7011.50E 0	1800 :V	1780 :V	2610 :V	1700 :V	2080 :V	4040 :V	2180 :V		
MANGANESE	15	1.36E 3 / 2253.50E 0	193 :JA	239 :V	246 :JA	142 :V	174 :V	415 :V	260 :V		
MERCURY	0.2	8.23E 1 / 0.20E 0					.068 B:V				
NICKEL	40	5.49E 3 / 26.90E 0	6.7 B:V	11.3 :V	7.9 B:V	5.8 B:V	13 :V	8.4 :V	6.7 B:V		
POTASSIUM	5000	0.00E 0 / 5258.80E 0	1640 :V	1750 :V	2040 :V	1060 :V	1820 :V	2990 :V	1690 :V		
SELENIUM	5	1.37E 3 / 1.40E 0									
SILVER	10	1.37E 3 / 10.00E 0	.83 B:V	1.9 B:JA	.95 B:V						
SODIUM	5000	0.00E 0 / 1108.00E 0	118 B:V	76.2 B:V	101 B:V	159 B:V					
VANADIUM	50	1.92E 3 / 55.60E 0	19.9 :V	19.2 :V	30.7 :V	15.3 :V	40.5 :V	35.4 :V	21.5 :V		
ZINC	20	8.23E 4 / 88.60E 0	37.8 :V	59.9 :V	136 :V#	64.5 :V	84.7 :V	138 :V#	314 :V#		
Test Group:TRADES Units: pci/g											
GROSS ALPHA	0	0.00E 0 / 44.56E 0	14(3.1) :Y	35(4.5) :A	19(2.5) :Y	20(4.9) :A	19(3.9) :A	12(3.3) :A	9.8(3) :A	12(3.2) :Y	23(4.3) :Y
GROSS BETA	0	0.00E 0 / 55.35E 0	30(3.7) :Y	27(3.5) :A	31(2.5) :Y	30(3.6) :A	34(3.6) :A	29(3.5) :A	34(3.6) :A	27(3.5) :Y	32(3.6) :Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	1(05) B:Y#	38(1) :V*#	6.5(17) B:Y*#	9(21) :V*#	.028(.008) J:V	.11(.018) :V	.073(.012) :V	.084(.012) B:Y	.31(.029) B:Y#
URANIUM, TOTAL	0	E 0 / E 0	2.7 :Y-	2.9 :Y-	3.6 :Y-	1.3 :Y-	15 :Y-	3.5 :Y-	2.8 :Y-	2.8 :Y-	3.4 :Y-

TABLE 3-6
Surface Soil Detectable Concentrations**
OU14 - IHSS 160

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS442894 SSG2323JE 12-Sep-94	SS443094 SSG2325JE 30-Aug-94	SS443194 SSG2326JE 8-Sep-94	SS443194 SSG2573JE 8-Sep-94	SS443294 SSG2327JE 7-Sep-94	SS443394 SSG2328JE 18-Sep-94	SS443394 SSG2584JE 18-Sep-94	SS443494 SSG2329JE 8-Sep-94	SS443594 SSG2330JE 8-Sep-94
Test Group: MET/ADD Units: mg/kg											
LITHIUM	100	5.49E 3 / 20.00E 0						3.9 B:JA	3.7 B:JA	11.2 B:JA	7.4 B:JA
MOLYBDENUM	200	1.37E 3 / 40.00E 0						12.3 B:JA	12.4 B:JA	14.6 B:JA	12.8 B:JA
STRONTIUM	200	1.65E 5 / 90.10E 0									
Test Group: SMETCLP Units: mg/kg											
ALUMINUM	200	7.86E 5 / 21915.40E 0						3550 :V	3310 :V	10500 :V	8020 :V
ANTIMONY	60	1.10E 2 / 50.00E 0						3.4 B:JA	2.7 B:JA	2.7 B:JA	
ARSENIC	10	3.66E-1 / 12.90E 0						2.4 :JA*	2.4 :JA*	2.4 :JA*	4.4 :V*
BARIUM	200	1.91E 4 / 528.00E 0						40.3 :V	40.3 :V	92.9 :V	89.8 :V
BERYLLIUM	5	1.49E-1 / 5.20E 0						.28 B:V*	.23 B:V*	.38 B:V*	.43 B:V*
CADMIUM	5	1.37E 2 / 5.00E 0									
CALCIUM	5000	0.00E 0 / 13573.30E 0						2920 :V	2850 :V	3770 :V	2600 :V
CHROMIUM	10	9.39E 2 / 24.80E 0						5.4 :V	5 :V	7.2 :JA	8.4 :V
COBALT	50	1.65E 4 / 24.80E 0						3 B:V	2.7 B:V	8 B:V	6.1 B:V
COPPER	25	1.10E 4 / 27.30E 0						12.1 :V	11.4 :V	33.1 :JA*	18.7 :JA
IRON	100	0.00E 0 / 28160.40E 0						7380 :V	7190 :V	23700 :V	15400 :V
LEAD	3	0.00E 0 / 61.40E 0						11.4 :V	11.6 :V	13.6 :V	23.6 :V
MAGNESIUM	5000	0.00E 0 / 7011.50E 0						1620 :V	1580 :V	5720 :V	2870 :V
MANGANESE	15	1.38E 3 / 2253.50E 0						157 :V	157 :V	521 :V	352 :V
MERCURY	0.2	8.23E 1 / 0.20E 0									
NICKEL	40	5.49E 3 / 26.90E 0						3 B:V	3.1 B:V	5.5 B:V	5.9 B:V
POTASSIUM	5000	0.00E 0 / 5258.80E 0						1130 :V	1070 :V	3320 :V	2350 :V
SELENIUM	5	1.37E 3 / 1.40E 0									
SILVER	10	1.37E 3 / 10.00E 0									
SODIUM	5000	0.00E 0 / 1108.00E 0						116 B:V	121 B:V		
VANADIUM	50	1.82E 3 / 55.60E 0						11.9 :V	11 :V	32.1 :V	25.1 :V
ZINC	20	8.23E 4 / 86.60E 0						35.6 :V	39 :V	90.3 :V*	131 :V*
Test Group: TRADS Units: pCi/g											
GROSS ALPHA	0	0.00E 0 / 44.58E 0	12(3.4) :Y	11(2.9) :A	17(3.6) :Y	22(3.9) :Y	17(3.6) :A	6.9(2.4) :A	8(2.4) :A	9.5(3.1) :A	16(4.1) :A
GROSS BETA	0	0.00E 0 / 55.35E 0	26(3.3) :Y	28(3.4) :A	32(3.6) :Y	34(3.6) :Y	31(3.7) :A	29(3.5) :A	28(3.6) :A	22(3.5) :A	40(3.9) :A
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	2(02) B:Y*	45(042) :V*	9(56) :Y*	10(29) :Y*	4(12) :V*	028(007) :V	032(007) :V	032(009) :V	063(011) :V
URANIUM, TOTAL	0	E 0 / E 0	3 :Y	2.7 :Y	2.4 :Y	1.9 :Y	1.3 :Y	1.9 :Y	1.7 :Y	1.4 :Y	2.3 :Y

TABLE 3-6
Surface Soil Detectable Concentrations**
OU14 - IHSS 160

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS443694 SSG2331JE 17-Sep-94	SS443794 SSG2332JE 1-Sep-94	SS443894 BFG0122JE 1-Sep-94	SS443894 SSG2333JE 1-Sep-94	SS443994 SSG2334JE 1-Sep-94	SS444094 SSG2335JE 8-Sep-94	SS444094 SSG2575JE 8-Sep-94	SS444194 SSG2336JE 7-Sep-94	SS444294 SSG2337JE 18-Sep-94
Test Group: METADD Units: mg/kg											
LITHIUM	100	5.49E 3 / 20.00E 0									4.2 B:JA
MOLYBDENUM	200	1.37E 3 / 40.00E 0									12.2 B:JA
STRONTIUM	200	1.65E 5 / 90.10E 0									4340 :V
Test Group: SMETCLP Units: mg/kg											2.8 B:JA
ALUMINUM	200	7.96E 5 / 21915.40E 0									3 :JA*
ANTIMONY	60	1.10E 2 / 50.00E 0									47.6 :V
ARSENIC	10	3.66E-1 / 12.90E 0									.33 B:V*
BARIUM	200	1.91E 4 / 528.00E 0									2850 :V
BERYLLIUM	5	1.49E-1 / 5.20E 0									7.5 :V
CADMIUM	5	1.37E 2 / 5.00E 0									3.1 B:V
CALCIUM	5000	0.00E 0 / 13573.30E 0									13.8 :V
CHROMIUM	10	9.39E 2 / 24.80E 0									8030 :V
COBALT	50	1.65E 4 / 24.80E 0									13.3 :V
COPPER	25	1.10E 4 / 27.30E 0									1590 :V
IRON	100	0.00E 0 / 28160.40E 0									180 :V
LEAD	3	0.00E 0 / 81.40E 0									4.5 B:V
MAGNESIUM	5000	0.00E 0 / 7011.50E 0									1100 :V
MANGANESE	15	1.36E 3 / 2253.50E 0									.62 B:JA
MERCURY	0.2	8.23E 1 / 0.20E 0									84.9 B:V
NICKEL	40	5.49E 3 / 28.80E 0									14.6 :V
POTASSIUM	5000	0.00E 0 / 5256.80E 0									41.3 :V
SELENIUM	5	1.37E 3 / 1.40E 0									
SILVER	10	1.37E 3 / 10.00E 0									
SODIUM	5000	0.00E 0 / 1108.00E 0									
VANADIUM	50	1.92E 3 / 55.60E 0									
ZINC	20	8.23E 4 / 86.60E 0									
Test Group: TRADS Units: pCi/g											
GROSS ALPHA	0	0.00E 0 / 44.56E 0	12(3.1) :Y	13(3.1) :A	15(3.4) :A	21(3.9) :A	15(3.5) :A	18(3.5) :Y	12(2.9) :Y	12(3.9) :A	9.3(2.9) :A
GROSS BETA	0	0.00E 0 / 55.35E 0	29(3.4) :Y	25(3.3) :A	36(3.6) :A	35(3.7) :A	28(3.5) :A	29(3.6) :Y	35(3.9) :Y	34(3.6) :A	30(3.4) :A
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	.043(0.009) B:Y	.019(0.009) B:V	.094(0.021) :V	.13(0.024) :V	3(1.1) B:V#	4.2(1.4) B:Y#	12(3.5) B:Y#	3.8(1.1) :V#	.039(0.009) :V
URANIUM, TOTAL	0	E 0 / E 0	2.8 :Y-	2.6 :Y-	2.6 :Y-	2.7 :Y-	2.7 :Y-	2 :Y-	1.8 :Y-	1.1 :Y-	2.2 :Y-

TABLE 3-6
Surface Soil Detectable Concentrations**
OU14 - IHSS 160

Sample Location: Sample Identification Number: Date Sampled:	Units: mg/kg	MDL	PRG / BKGND	SS444294 SSG2585JE 18-Sep-84	SS444394 SSG2338JE 6-Sep-84	SS444494 SSG2339JE 6-Sep-84	SS444594 SSG2580JE 13-Sep-84	SS444694 SSG2341JE 13-Sep-84	SS444794 BFG0126JE 13-Sep-84	SS444794 BFG0126JE 13-Sep-84
LITHIUM	5.49E 3/ 20.00E 0	100		4.4 B:JA	7.9 B:JA	11.2 B:JA				
MOLYBDENUM	1.37E 3/ 40.00E 0	200								
STRONTIUM	1.65E 5/ 80.10E 0	200		12.7 B:JA	11.1 B:JA	14.9 B:JA				
Test Group:SMETCLP	Units: mg/kg									
ALUMINUM	7.86E 5/ 21915.40E 0	200		4740 :V	7680 :V	11700 :V				
ANTIMONY	1.10E 2/ 50.00E 0	60								
ARSENIC	3.66E-1/ 12.80E 0	10		3.2 :V*	2.6 :V*	4.7 :JA*				
BARIUM	1.91E 4/ 528.00E 0	200		49.4 :V	78.2 :V	114 :V				
BERYLLIUM	1.49E-1/ 5.20E 0	5		.31 B:V*	.35 B:V*	.57 B:V*				
CADMIUM	1.37E 2/ 5.00E 0	5								
CALCIUM	0.00E 0/ 13573.30E 0	5000		2300 :V	2510 I:JA	3490 I:JA				
CHROMIUM	9.39E 2/ 24.80E 0	10		7.9 :V	9.1 :V	10.2 :JA				
COBALT	1.85E 4/ 24.80E 0	50		3.7 B:V	6.1 B:V	9.2 B:V				
COPPER	1.10E 4/ 27.30E 0	25		17.4 :V	23.6 :JA	28 :JA*				
IRON	0.00E 0/ 28160.40E 0	100		8530 :V	17500 :V	23600 :V				
LEAD	0.00E 0/ 61.40E 0	3		13.5 :V	14.5 :V	24.1 :V				
MAGNESIUM	0.00E 0/ 7011.50E 0	5000		1840 :V	3770 :V	4590 :V				
MANGANESE	1.36E 3/ 2253.50E 0	15		182 :V	356 :V	492 :V				
MERCURY	8.23E 1/ 0.20E 0	0.2								
NICKEL	5.49E 3/ 26.90E 0	40		4.9 B:V	5 B:V	7.5 B:V				
POTASSIUM	0.00E 0/ 5258.80E 0	5000		1130 :V	2670 :V	3690 :V				
SELENIUM	1.37E 3/ 1.40E 0	5								
SILVER	1.37E 3/ 10.00E 0	10		.78 B:JA						
SODIUM	0.00E 0/ 1108.00E 0	5000		78 B:V						
VANADIUM	1.92E 3/ 55.60E 0	50		15.9 :V	24.8 :V	32.1 :V				
ZINC	8.23E 4/ 86.60E 0	20		41.1 :V	76 :V	165 :V#				
Test Group:TRADS	Units: pCi/g									
GROSS ALPHA	0.00E 0/ 44.56E 0	0		17(3.4) :A	6.6(2.7) :A	12(3.3) :A	13(2.2) :A	16(3.3) :A	16(3.4) :A	24(3.9) :A
GROSS BETA	0.00E 0/ 55.35E 0	0		31(3.4) :A	28(3.4) :A	29(3.7) :A	35(2.8) :A	22(3.4) :A	32(3.5) :A	30(3.7) :A
PLUTONIUM-239/240	3.42E 0/ 13.21E-2	0	E0/	.028(0.07) J:V	.078(0.13) :V	.053(0.11) :V	.008(0.04) J:V	.098(0.14) :V	.31(0.29) :V#	.52(0.33) :V#
URANIUM, TOTAL	E0/	0	E0/	2.5 :Y-	1.4 :Y-	1.8 :Y-	2.5 :Y-	2.6 :Y-	2.6 :Y-	2.8 :Y-

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TABLE 3-6
Surface Soil Detectable Concentrations**
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Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS444894 BFG0127JE 13-Sep-94	SS444894 SSG2343JE 13-Sep-94	SS444894 SSG2344JE 8-Sep-94	SS444994 SSG2578JE 8-Sep-94	SS445094 SSG2345JE 7-Sep-94	SS445194 SSG2346JE 16-Sep-94	SS445294 SSG2347JE 14-Sep-94	SS445394 SSG2348JE 14-Sep-94	SS445494 SSG2348JE 6-Sep-94	SS445594 SSG2350JE 6-Sep-94
Test Group:METADD Units: mg/kg												
LITHIUM	100	5.49E 3 / 20.00E 0						3.8 B:JA	15.2 B:JA	13 B:JA		
MOLYBDENUM	200	1.37E 3 / 40.00E 0						11 B:JA	5.7 B:JA	5 B:JA		
STRONTIUM	200	1.65E 5 / 90.10E 0							16.1 B:JA	16.1 B:JA		
Test Group:SMETCLP Units: mg/kg												
ALUMINUM	200	7.96E 5 / 21915.40E 0						4470 :V	12900 :V	12800 :V		
ANTIMONY	60	1.10E 2 / 50.00E 0							3.5 B:JA			
ARSENIC	10	3.66E-1 / 12.90E 0						2.3 :JA*	2.4 :JA*	5 :V*		
BARIUM	200	1.91E 4 / 528.00E 0						38.9 B:V	118 :V	133 :V		
BERYLLIUM	5	1.49E-1 / 5.20E 0						.35 B:V*	.47 B:V*	.6 B:V*		
CADMIUM	5	1.37E 2 / 5.00E 0										
CALCIUM	5000	0.00E 0 / 13573.30E 0						1890 :V	4270 :V	2930 :V		
CHROMIUM	10	9.39E 2 / 24.80E 0						5.5 :V	9.9 :JA	13.1 :JA		
CHROMIUM	50	1.65E 4 / 24.80E 0						3 B:V	10.2 :V	8.7 B:V		
COBALT	25	1.10E 4 / 27.30E 0						11.5 :V	50.1 :V#	34.5 :V#		
COPPER	100	0.00E 0 / 28160.40E 0						7570 :V	30000 :V#	24000 :V		
IRON	3	0.00E 0 / 61.40E 0						10.3 :V	16.2 :V	34.5 :V		
LEAD	5000	0.00E 0 / 7011.50E 0						1480 :V	7000 :V	5100 :V		
MAGNESIUM	15	1.36E 3 / 2253.50E 0						143 :V	659 :V	565 :V		
MANGANESE	0.2	8.23E 1 / 0.20E 0										
MERCURY	40	5.49E 3 / 26.90E 0						3.6 B:V	6.5 B:V	8.1 :V		
NICKEL	5000	0.00E 0 / 5256.80E 0						957 B:V	4300 :V	4070 :V		
POTASSIUM	5	1.37E 3 / 1.40E 0							.62 B:JA	.74 B:JA		
SELENIUM	10	1.37E 3 / 10.00E 0							1.2 B:JA	1.6 B:JA		
SILVER	5000	0.00E 0 / 1108.00E 0						87.1 B:V	155 B:JA	97.5 B:JA		
SODIUM	50	1.92E 3 / 55.60E 0						12.9 :V	40.8 :V	35.7 :V		
VANADIUM	20	8.23E 4 / 86.60E 0						38.7 :V	110 :V#	133 :V#		
Test Group:TRADS Units: pCi/g												
GROSS ALPHA	0	0.00E 0 / 44.56E 0	13(3.2) :A	17(3.3) :A	16(3.6) :Y	15(3.4) :Y	12(3.1) :A	7(2.1) :A	11(3.4) :A	6.6(2.6) :A	21(4.2) :A	20(3.9) :A
GROSS BETA	0	0.00E 0 / 55.35E 0	26(3.5) :A	23(3.3) :A	33(3.5) :Y	34(3.6) :Y	33(3.6) :A	24(3.4) :A	25(3.5) :A	27(3.6) :A	28(2.6) :A	28(2.7) :A
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	.97(.048) :V#	3.6(.12) :V#	2.8(.1) B:Y#	2.1(.083) B:Y#	2.7(.11) :V#	.03(.006) :V	.028(.008) J:V	.67(.036) :V#	.076(.017) :V	.07(.006) J:
URANIUM, TOTAL	0	E 0 / E 0	2.9 :Y-	2.9 :Y-	2.1 :Y-	1.7 :Y-	1.6 :Y-	1.6 :Y-	1.7 :Y-	2.9 :Y-	3.4 :Y-	2.9 :Y-

TABLE 3-6
Surface Soil Detectable Concentrations**
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Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS445694 SSG2351JE 6-Sep-84	SS445794 SSG2352JE 6-Sep-84	SS445894 SSG2353JE 8-Sep-84	SS445994 SSG2354JE 7-Sep-84	SS446094 SSG2355JE 16-Sep-84	SS446194 SSG2356JE 14-Sep-84	SS446294 SSG2357JE 14-Sep-84	SS446394 SSG2358JE 8-Sep-84	SS446594 SSG2360JE 7-Sep-84
Test Group:METADD Units: mg/kg											
LITHIUM	100	5.49E 3 / 20.00E 0					2.9 B:JA	3.6 B:JA	4.8 B:JA		
MOLYBDENUM	200	1.37E 3 / 40.00E 0									
STRONTIUM	200	1.65E 5 / 90.10E 0					11.7 B:JA	10.7 B:JA	10.3 B:JA		
Test Group:SMETCLP Units: mg/kg											
ALUMINUM	200	7.96E 5 / 21915.40E 0					2910 :V	4280 :V	4920 :V		
ANTIMONY	60	1.10E 2 / 50.00E 0					4.2 B:JA				
ARSENIC	10	3.66E 1 / 12.90E 0					3.5 :V*	5.1 :V*	4.5 :V*		
BARIUM	200	1.91E 4 / 528.00E 0					35.8 B:V	51.6 :V	54.3 :V		
BERYLLIUM	5	1.49E 1 / 5.20E 0					.24 B:V*	.32 B:V*	.33 B:V*		
CADMIUM	5000	0.00E 0 / 13573.30E 0					1500 :V	1440 :V	1590 :V		
CHROMIUM	10	9.39E 2 / 24.80E 0					5.1 :V	7.6 :V	10.2 :V		
COBALT	50	1.69E 4 / 24.80E 0					2.3 B:V	2.9 B:V	4.1 B:V		
COPPER	25	1.10E 4 / 27.30E 0					13.5 :V	12.5 :V	15.6 :V		
IRON	100	0.00E 0 / 28160.40E 0					5590 :V	8480 :V	9030 :V		
LEAD	3	0.00E 0 / 61.40E 0					8 :V	17.4 :V	31 :V		
MAGNESIUM	5000	0.00E 0 / 7011.50E 0					1220 :V	1030 :V	1480 :V		
MANGANESE	15	1.36E 3 / 2253.50E 0					103 :V	145 :V	169 :V		
MERCURY	0.2	8.23E 1 / 0.20E 0									
NICKEL	40	5.49E 3 / 28.90E 0					3.1 B:V	4.7 B:V	4.9 B:V		
POTASSIUM	5000	0.00E 0 / 5258.80E 0					756 B:V	1080 :V	1300 :V		
SELENIUM	5	1.37E 3 / 1.40E 0							.63 B:V		
SILVER	10	1.37E 3 / 10.00E 0						.93 B:JA	1.1 B:JA		
SODIUM	5000	0.00E 0 / 1108.00E 0					107 B:V				
VANADIUM	50	1.92E 3 / 55.60E 0					11.5 :V	16 :V	17.7 :V		
ZINC	20	8.23E 4 / 86.60E 0					38.6 :V	37.5 :V	126 :V#		
Test Group:TRADS Units: pCi/g											
GROSS ALPHA	0	0.00E 0 / 44.56E 0					11(3.2):A	9.9(2.6):A	14(3.2):A	17(3.6):A	18(3.4):A
GROSS BETA	0	0.00E 0 / 55.35E 0					27(3.4):A	22(3.1):A	24(3.3):A	28(3.4):A	27(3.6):A
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2					.048(0.008):V#	.089(0.014):V	.085(0.017):V	.01(0.008):V	.15(0.023):V#
URANIUM, TOTAL	0	E 0 / E 0					1.4 :Y-	2.5 :Y-	2.2 :Y-	2.2 :Y-	2.5 :Y-

TABLE 3-6
Surface Soil Detectable Concentrations**
OU14 - IHSS 160

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS446694 SSG2381JE 13-Sep-94	SS446794 SSG2362JE 8-Sep-94	SS446894 SSG2363JE 16-Sep-94	SS446994 SSG2384JE 14-Sep-94	SS447094 SSG2365JE 15-Sep-94	SS447194 SSG2368JE 6-Sep-94	SS447394 SSG2368JE 7-Sep-94	SS447494 SSG2369JE 13-Sep-94	SS447594 SSG2370JE 9-Sep-94
Test Group:METADD Units: mg/kg											
LITHIUM	100	5.49E 3 / 20.00E 0			2.6 B:JA	4 B:JA	5.9 B:JA				
MOLYBDENUM	200	1.37E 3 / 40.00E 0			11.7 B:JA	8.4 B:JA	12.2 B:JA				
STRONTIUM	200	1.65E 5 / 90.10E 0			2800 :V	3240 :V	6220 :V				
Test Group:SMETCLP Units: mg/kg											
ALUMINIUM	200	7.96E 5 / 21915.40E 0									
ANTIMONY	60	1.10E 2 / 50.00E 0									
ARSENIC	10	3.66E-1 / 12.90E 0			2.7 :JA*	1.4 B:JA*	5.2 :V*				
BARIUM	200	1.91E 4 / 528.00E 0			30.7 B:V	34.6 B:V	70.5 :V				
BERYLLIUM	5	1.49E-1 / 5.20E 0			.23 B:V*	.25 B:V*	.46 B:V*				
CADMIUM	5	1.37E 2 / 5.00E 0									
CALCIUM	5000	0.00E 0 / 13573.30E 0			2050 :V	1970 :V	1530 :V				
CHROMIUM	10	9.39E 2 / 24.80E 0			6.6 :V	6.7 :V	10.1 :V				
COBALT	50	1.65E 4 / 24.80E 0			2.1 B:V	3.8 B:V	5.7 B:V				
COPPER	25	1.10E 4 / 27.30E 0			29.2 :V#	8.1 :V	13.9 :V				
IRON	100	0.00E 0 / 28160.40E 0			5130 :V	6510 :V	9750 :V				
LEAD	3	0.00E 0 / 61.40E 0			13.4 :V	10.6 :V	24.9 :V				
MAGNESIUM	5000	0.00E 0 / 7011.50E 0			1010 :V	1270 :V	1320 :V				
MANGANESE	15	1.36E 3 / 2253.50E 0			120 :V	101 :V	198 :V				
MERCURY	0.2	6.23E 1 / 0.20E 0									
NICKEL	40	5.49E 3 / 28.80E 0			3.8 B:V	3.8 B:V	5.9 B:V				
POTASSIUM	5000	0.00E 0 / 5258.80E 0			652 B:V	1140 :V	1490 :V				
SELENIUM	5	1.37E 3 / 1.40E 0									
SILVER	10	1.37E 3 / 10.00E 0			.98 B:JA		1.6 B:JA				
SODIUM	5000	0.00E 0 / 1108.00E 0			134 B:V						
VANADIUM	50	1.82E 3 / 55.60E 0			10.4 :V	9.9 B:V	21 :V				
ZINC	20	8.23E 4 / 86.60E 0			56.9 :V	78.9 :V	56.1 :V				
Test Group:TRADES Units: pCi/g											
GROSS ALPHA	0	0.00E 0 / 44.56E 0			11(2.5) :A	30(5.1) :A	19(3.3) :A	16(3.7) :A	38(4.8) :A	14(3.3) :A	8.6(2.7) :Y
GROSS BETA	0	0.00E 0 / 55.35E 0			23(3.2) :A	52(4.2) :A	32(3.7) :A	29(2.7) :A	29(3.5) :A	26(3.5) :A	30(3.7) :Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2			.039(0.009) :V	.069(0.012) :V	.48(0.09) :V#	.011(.008) J:V	21(.46) B:V#	1.2(.056) :V#	.14(.02) B:Y#
URANIUM, TOTAL	0	E 0 / E 0			1.5 :Y-	2.7 :Y-	2.7 :Y-	2.8 :Y-	2.7 :Y-	2.8 :Y-	1.9 :Y-

TABLE 3-6
Surface Soil Detectable Concentrations**
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Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS447694 SSG2371JE 9-Sep-84	SS447794 SSG2372JE 16-Sep-84	SS447894 SSG2373JE 15-Sep-84	SS447994 SSG2374JE 7-Sep-84	SS448194 BFG0123JE 7-Sep-84	SS448194 SSG2376JE 7-Sep-84	SS448294 BFG0128JE 15-Sep-84	SS448294 SSG2377JE 15-Sep-84	SS448394 SSG2378JE 9-Sep-84
Test Group:METADD Units: mg/kg											
LITHIUM	100	5.49E 3/ 20.00E 0	2.4 B:JA	8.6 B:JA							
MOLYBDENUM	200	1.37E 3/ 40.00E 0		3.6 B:V							
STRONTIUM	200	1.65E 5/ 90.10E 0	17.4 B:JA	13.5 B:JA							
Test Group:SMIETCLP Units: mg/kg											
ALUMINUM	200	7.96E 5/ 21915.40E 0	2760 :V	8500 :V							
ANTIMONY	60	1.10E 2/ 50.00E 0		3.6 B:JA							
ARSENIC	10	3.66E-1/ 12.90E 0	5.4 :V*	3.5 :V*							
BARIUM	200	1.91E 4/ 528.00E 0	33.5 B:V	85.6 :V							
BERYLLIUM	5	1.49E-1/ 5.20E 0	.23 B:V*	.55 B:V*							
CADMIUM	5	1.37E 2/ 5.00E 0		3.3 :V							
CALCIUM	5000	0.00E 0/ 13573.30E 0	2500 :V	3860 :V							
CHROMIUM	10	8.39E 2/ 24.80E 0	5.9 :V	13.4 :V							
COBALT	50	1.65E 4/ 24.80E 0	2.2 B:V	8.3 B:V							
COPPER	25	1.10E 4/ 27.30E 0	18.1 :V	29.1 :V#							
IRON	100	0.00E 0/ 28160.40E 0	4800 :V	17400 :V							
LEAD	3	0.00E 0/ 61.40E 0	7.4 :V	27.1 :V							
MAGNESIUM	5000	0.00E 0/ 7011.50E 0	1060 :V	3760 :V							
MANGANESE	15	1.36E 3/ 2259.50E 0	79.8 :V	394 :V							
MERCURY	0.2	6.23E 1/ 0.20E 0									
NICKEL	40	5.49E 3/ 26.90E 0	4.1 B:V	7.4 B:V							
POTASSIUM	5000	0.00E 0/ 5256.80E 0	614 B:V	2680 :V							
SELENIUM	5	1.37E 3/ 1.40E 0									
SILVER	10	1.37E 3/ 10.00E 0		1.7 B:JA							
SODIUM	5000	0.00E 0/ 1108.00E 0	159 B:V	98.8 B:V							
VANADIUM	50	1.92E 3/ 55.60E 0	13.4 :V	28.9 :V							
ZINC	20	6.23E 4/ 66.60E 0	29.8 :V	117 :V#							
Test Group:TRADS Units: pCi/g											
GROSS ALPHA	0	0.00E 0/ 44.56E 0	13(2.7) :Y	12(2.7) :A	13(2.7) :A	6.9(2.7) :A	12(9) :A	20(3.6) :A	14(2.9) :A	17(3.1) :A	13(3) :Y
GROSS BETA	0	0.00E 0/ 55.35E 0	32(3.5) :Y	27(3.5) :A	21(3.3) :A	23(3.5) :A	24(3.5) :A	27(3.4) :A	21(3.2) :A	34(3.8) :A	29(3.7) :Y
PLUTONIUM-239/240	0	3.42E 0/ 13.21E-2	.17(0.14) B:Y	.014(0.005) J:V	.094(0.015) :V	.035(0.008) B:V	.023(0.009) B:V	.07(0.013) B:V	.11(0.017) :V	.19(0.018) :V#	.16(0.017) B:Y#
URANIUM, TOTAL	0	E 0/ E 0	1.6 :Y-	2.4 :Y-	2.5 :Y-	1.5 :Y-	2.1 :Y-	3.2 :Y-	2.6 :Y-	3.5 :Y-	2.3 :Y-

TABLE 3-6
Surface Soil Detectable Concentrations**
OU14 - IHSS 160

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS448494 SSG2378JE 9-Sep-94	SS448594 SSG2380JE 19-Sep-94	SS448694 SSG2381JE 15-Sep-94	SS448794 SSG2382JE 19-Sep-94	SS448894 SSG2383JE 7-Sep-94	SS448994 SSG2384JE 7-Sep-94	SS449094 SSG2385JE 7-Sep-94	SS449194 SSG2386JE 15-Sep-94	SS449294 SSG2387JE 9-Sep-94
Test Group:METADD Units: mg/kg											
LITHIUM	100	5.49E 3 / 20.00E 0	3.9 B:JA	4.1 B:JA	3.4 B:JA						
MOLYBDENUM	200	1.37E 3 / 40.00E 0									
STRONTIUM	200	1.65E 5 / 90.10E 0	24.1 B:JA	16.1 B:JA	21.4 B:JA						
Test Group:SMETGLP Units: mg/kg											
ALUMINUM	200	7.96E 5 / 21915.40E 0	3030 :V	2560 :V	2770 :V						
ANTIMONY	60	1.10E 2 / 50.00E 0	3 B:JA								
ARSENIC	10	3.66E-1 / 12.90E 0	1.7 B:JA*	1.6 B:JA*	2.2 :JA*						
BARIIUM	200	1.91E 4 / 528.00E 0	53.2 :V	45.5 :V	46.9 :V						
BERYLLIUM	5	1.49E-1 / 5.20E 0	.3 B:V*	.24 B:V*	.25 B:V*						
CADMIUM	5	1.37E 2 / 5.00E 0									
CALCIUM	5000	0.00E 0 / 13573.30E 0	1730 :V	897 :V	1660 :V						
CHROMIUM	10	9.39E 2 / 24.80E 0	4.9 :V	4.7 :V	4.1 :V						
COBALT	50	1.65E 4 / 24.80E 0	5.1 B:V	5.4 B:V	5.7 B:V						
COPPER	25	1.10E 4 / 27.30E 0	17.4 :V	16.4 :V	21 :V						
IRON	100	0.00E 0 / 28160.40E 0	5980 :V	5690 :V	5450 :V						
LEAD	3	0.00E 0 / 61.40E 0	13.9 :V	11.4 :V	17.6 :V						
MANGANESE	5000	0.00E 0 / 7011.50E 0	1020 B:V	797 B:V	958 B:V						
MERCURY	15	1.36E 3 / 2253.50E 0	147 :V	120 :V	124 :V						
NICKEL	40	5.49E 3 / 26.90E 0	3.1 B:V	2.8 B:V	2.7 B:V						
POTASSIUM	5000	0.00E 0 / 5256.80E 0	895 B:V	1410 :V	889 B:V						
SELENIUM	5	1.37E 3 / 1.40E 0									
SILVER	10	1.37E 3 / 10.00E 0	.85 B:JA	.99 B:JA							
SODIUM	5000	0.00E 0 / 1108.00E 0	137 B:V	538 B:V	86 B:V						
VANADIUM	50	1.92E 3 / 55.60E 0	9.3 B:V	8.4 B:V	8.6 B:V						
ZINC	20	8.23E 4 / 86.60E 0	37 :V	31.8 :V	43.8 :V						
Test Group:TRADS Units: pci/g											
GROSS ALPHA	0	0.00E 0 / 44.56E 0	16(3.1) :A	15(3) :A	17(3.3) :A	14(3.2) :A	19(3.6) :A	19(3.6) :A	19(3.5) :A	17(3.3) :A	13(3.5) :Y
GROSS BETA	0	0.00E 0 / 55.35E 0	34(3.7) :Y	38(3.6) :A	38(3.7) :A	35(3.6) :A	41(3.8) :A	44(4.1) :A	44(4.1) :A	39(3.9) :A	32(3.5) :Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	.22(.02) B:Y#			.017(.007) J:V	.009(.005) B:V	.004(.003) B:V	.004(.003) B:V	3.1 :Y-	.035(.008) B:Y
URANIUM, TOTAL	0	E 0 / E 0	4 :Y-	2.6 :Y-	3.2 :Y-	3 :Y-	3.3 :Y-	3.5 :Y-	3.5 :Y-	3.1 :Y-	2.1 :Y-

TABLE 3-6
Surface Soil Detectable Concentrations**
OU14 - IHSS 160

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS49394 SSG2388JE 14-Sep-84
Test Group:METADD Units: mg/kg			
LITHIUM	100	5.49E 3 / 20.00E 0	
MOLYBDENUM	200	1.37E 3 / 40.00E 0	
STRONTIUM	200	1.65E 5 / 80.10E 0	
Test Group:SMETCLP Units: mg/kg			
ALUMINUM	200	7.96E 5 / 21915.40E 0	
ANTIMONY	60	1.10E 2 / 50.00E 0	
ARSENIC	10	3.66E-1 / 12.90E 0	
BARIUM	200	1.81E 4 / 528.00E 0	
BERYLLIUM	5	1.49E-1 / 5.20E 0	
CADMIUM	5	1.37E 2 / 5.00E 0	
CALCIUM	5000	0.00E 0 / 13573.30E 0	
CHROMIUM	10	8.39E 2 / 24.80E 0	
COBALT	50	1.85E 4 / 24.80E 0	
COPPER	25	1.10E 4 / 27.30E 0	
IRON	100	0.00E 0 / 28160.40E 0	
LEAD	3	0.00E 0 / 61.40E 0	
MAGNESIUM	5000	0.00E 0 / 7011.50E 0	
MANGANESE	15	1.36E 3 / 2253.50E 0	
MERCURY	0.2	8.23E 1 / 0.20E 0	
NICKEL	40	5.49E 3 / 26.80E 0	
POTASSIUM	5000	0.00E 0 / 5258.80E 0	
SELENIUM	5	1.37E 3 / 1.40E 0	
SILVER	10	1.37E 3 / 10.00E 0	
SODIUM	5000	0.00E 0 / 1108.00E 0	
VANADIUM	50	1.92E 3 / 55.60E 0	
ZINC	20	8.23E 4 / 86.60E 0	
Test Group:TRADS Units: pci/g			
GROSS ALPHA	0	0.00E 0 / 44.56E 0	20(4.1):A
GROSS BETA	0	0.00E 0 / 55.35E 0	27(3.4):A
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	
URANIUM, TOTAL	0	E 0 / E 0	1.2:Y-

A = Validation Qualifier; laboratory qualifier considered acceptable
 B = Laboratory Qualifier; detected in blank
 BKGND = Background concentration (DOE 1894a)
 BNACLP = EPA - CLP Semivolatile Organic Compounds
 E = Laboratory Qualifier; concentration exceeds calibration range of instrument-organic
 HERB8150 = EPA Chlorinated Herbicides
 J = Laboratory Qualifier; estimated value
 MDL = Method Detection Limit
 METADD = Additional Metals
 mg/kg = milligram per kilogram
 NA = Not Analyzed
 PESTCLP = EPA Pesticide/PCB
 PRG = Preliminary Remediation Goal
 SMETCLP = EPA - CLP Metals
 TRADS = Total radionuclides
 U = Undetected
 V = Validation Qualifier; valid data
 VOACLP = EPA - CLP Volatile Organic Compounds
 Y = Validation Qualifier; in the process of being validated
 µg/g = microgram per gram
 µg/kg = microgram per kilogram
 \$ = Indicates compound exceeds background
 * = Indicates compound exceeds PRG
 ** = Based on March 17, 1995, data extraction from RFEEDS
 - = Indicates PRG for that compound does not exist

TABLE 3-7
Surface Soil Detectable Concentration Data Summary***
OU14 - IHSS 160

Test Group:METADD	Units: mg/kg	MDL	SQL Minimum Value	SQL Minimum Location*	SQL Maximum Value	SQL Maximum Location*	Minimum Concentration	Minimum Concentration Location*	Maximum Concentration
LITHIUM		100	**	**	**	**	2.4 B:J	SS447794 (1)	16.6 B:J
MOLYBDENUM		200	0.8	SS441094 (1)	2.8	SS446294 (1)	1.1 B:V	SS441894 (1)	5.7 B:J
STRONTIUM		200	**	**	**	**	8.4 B:J	SS446994 (1)	64.3 :J
Test Group:SMETCLP	Units: mg/kg								
ALUMINUM		200	**	**	**	**	2560 :V	SS448694 (1)	13100 :V
ANTIMONY		60	2.5	SS441494 (7)	2.9	SS440694 (1)	2.6 B:J	SS444294 (1)	4.2 B:J
ARSENIC		10	**	**	**	**	1.4 B:V	SS439794 (2)	6.6 :V
BARIUM		200	**	**	**	**	30.7 B:V	SS446894 (1)	160 :V
BERYLLIUM		5	0.33	SS441894 (1)	0.33	SS441894 (1)	15 B:V	SS441494 (1)	1.6 :V
CADMIUM		5	0.15	SS441494 (3)	1.3	SS442294 (1)	.16 B:V	SS442294 (1)	3.3 :V
CALCIUM		5000	**	**	**	**	897 :V	SS448694 (1)	16900 :V
CHROMIUM		10	**	**	**	**	4.1 :V	SS448794 (1)	105 :V
COBALT		50	**	**	**	**	2.1 B:V	SS446894 (1)	15.6 :V
COPPER		25	9.5	SS441094 (1)	9.5	SS441094 (1)	7.6 :V	SS441194 (2)	50.2 :J
IRON		100	**	**	**	**	4800 :V	SS447794 (1)	30000 :V
LEAD		3	**	**	**	**	5 :J	SS440094 (1)	426 :V
MAGNESIUM		5000	**	**	**	**	797 B:V	SS448694 (1)	7830 :V
MANGANESE		15	**	**	**	**	79.8 :V	SS447794 (1)	659 :V
MERCURY		0.2	0.04	SS442394 (2)	0.06	SS439894 (2)	0.49 B:V	SS440694 (1)	27 :V
NICKEL		40	**	**	**	**	2.7 B:V	SS448794 (1)	13.2 :V
POTASSIUM		5000	**	**	**	**	614 B:V	SS447794 (1)	4300 :V
SELENIUM		5	0.53	SS441494 (6)	0.62	SS440694 (1)	62 B:J	SS445294 (1)	74 B:J
SILVER		10	0.77	SS442394 (2)	6.1	SS441094 (1)	.82 B:J	SS444294 (1)	7.5 :V
SODIUM		5000	46.8	SS441094 (1)	124	SS443494 (1)	56 B:V	SS441194 (2)	1530 :V
VANADIUM		50	**	**	**	**	8.4 B:V	SS448694 (1)	45.6 :V
ZINC		20	**	**	**	**	19.3 :V	SS441094 (1)	314 :V
Test Group:TRADS	Units: pCi/g								
GROSS ALPHA		3	**	**	**	**	6.3(2.8):A	SS440294 (1)	130(11):A
GROSS BETA		4	**	**	**	**	19(2.2):A	SS441194 (1)	55(4.4):A
PLUTONIUM-239/240		0.005	**	**	**	**	(.002) U:V:V	SS448594 (1)	150(S.3):VV
URANIUM, TOTAL		0.08	**	**	**	**	.98 :Y	SS440194 (1)	23 :Y
Test Group:WQPL	Units: pH								
pH		0.01	**	**	**	**	7.4 :V	SS440694 (2)	9 :V

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TABLE 3-7
Surface Soil Detectable Concentration Data Summary***
OU14 - IHSS 160

Test Group:METADD	Units: mg/kg	MDL	Maximum Concentration Location *	Number of Defects	Total Number of Samples	Average Concentration
LITHIUM		100	SS440094 (1)	52	52	6.45
MOLYBDENUM		200	SS445294 (1)	18	52	1.4031
STRONTIUM		200	SS439794 (1)	52	52	15.8462
Test Group:SMETCLP	Units: mg/kg					
ALUMINUM		200	SS441594 (1)	52	52	6165.769
ANTIMONY		60	SS446094 (1)	7	52	1.5933
ARSENIC		10	SS442494 (1)	52	52	3.5154
BARIUM		200	SS439794 (1)	52	52	67.6598
BERYLLIUM		5	SS441594 (2)	51	52	0.4455
CADMIUM		5	SS447894 (1)	6	52	0.2728
CALCIUM		5000	SS439894 (1)	52	52	3613.404
CHROMIUM		10	SS440794 (1)	52	52	13.5192
COBALT		50	SS440094 (1)	52	52	5.7769
COPPER		25	SS442494 (1)	51	52	19.9221
IRON		100	SS445294 (1)	52	52	11794.62
LEAD		3	SS440794 (1)	52	52	32.9348
MAGNESIUM		5000	SS440094 (1)	52	52	2367.598
MANGANESE		15	SS445294 (1)	52	52	246.4192
MERCURY		0.2	SS441694 (1)	5	52	0.0338
NICKEL		40	SS441594 (1)	52	52	6.4635
POTASSIUM		5000	SS445294 (1)	52	52	1677.808
SELENIUM		5	SS445394 (1)	3	52	0.305
SILVER		10	SS440994 (1)	24	52	1.1975
SODIUM		5000	SS439794 (1)	34	52	146.9202
VANADIUM		50	SS440094 (1)	52	52	20.426
ZINC		20	SS442694 (1)	52	52	71.4173
Test Group:TRADS	Units: pCi/g					
GROSS ALPHA		3	SS441294 (1)	119	119	16.0882
GROSS BETA		4	SS441594 (1)	119	119	30
PLUTONIUM-239/240		0.005	SS441294 (1)	119	119	3.0347
URANIUM, TOTAL		0.08	SS443594 (1)	119	119	2.7168
Test Group:WQPL	Units: pH					
pH		0.01	SS440894 (1)	13	13	8

A = Validation Qualifier, laboratory qualifier considered acceptable
 B = Laboratory Qualifier, detected in blank
 BNACLP = EPA - CLP Semi-volatile Organic Compounds
 E = Laboratory Qualifier, concentration exceeds calibration range of instrument-inorganic
 G = Native analyte greater than four times split added - Inorganics
 HERB8150 = EPA Chlorinated Herbicides
 J = Laboratory Qualifier, estimated value
 MDL = Method Detection Limit
 METADD = Additional Metals
 mg/kg = milligram per kilogram
 PESTCLP = EPA Pesticide/PCB
 SMETCLP = EPA - CLP Metals
 SQL = Sample Quantitation Limit
 TRADS = Total radionuclides
 U = Undetected
 V = Validation Qualifier, valid data
 VOACLP = EPA - CLP Volatile Organic Compounds
 Y = Validation Qualifier. In the process of being validated.
 µg/g = microgram per gram
 µg/kg = microgram per kilogram
 * = The number of sample locations at that value is shown in parentheses
 ** = All samples reported with positive results; no nondetects reported
 *** = Based on March 17, 1995, data extraction from RFEDS

Table 3-8
Target Analytes for OU14 - IHSS 160 Soil-Gas Environmental Samples
 (Concentrations Above Detection Limit for Six Chemicals of Concern*)

	160	160	160	160	160	160	160	160	160	160	160	160	160
IHSS	160	160	160	160	160	160	160	160	160	160	160	160	160
Sample Location:	SG220194	SG220394	SG220494	SG220594	SG220694	SG220794	SG220894	SG220994	SG221094	SG221194	SG221294	SG221394	SG221494
Sample Identification Number:	SGG2201JE	SGG2203JE	SGG2204JE	SGG2205JE	SGG2206JE	SGG2207JE	SGG2208JE	SGG2209JE	SGG2210JE	SGG2211JE	SGG2212JE	SGG2213JE	SGG2214JE*
Date Sampled:	9/26/94	9/26/94	9/26/94	9/26/94	9/26/94	9/26/94	9/26/94	9/26/94	9/26/94	9/26/94	9/26/94	9/26/94	10/13/94
Test Group:GC/MS													
Units: µg/L													
Acetone													3.2
Benzene													1
Tetrachloroethene													43
Toluene	1.5	1.9	2.6 J	1.8	1.1	9.5 J	4.2 J	2.5 J	1.2				6.3 J
Trichloroethene													1.2

	160	160	160	160	160	160	160	160	160	160	160	160	160
IHSS	160	160	160	160	160	160	160	160	160	160	160	160	160
Sample Location:	SG221694	SG222394	SG222494	SG222594	SG222694	SG222794	SG222894	SG222994	SG223094	SG223194	SG223294	SG223394	SG223494
Sample Identification Number:	SGG2216JE	SGG2223JE	SGG2224JE	SGG2225JE	SGG2226JE	SGG2227JE	SGG2228JE	SGG2229JE	SGG2230JE	SGG2231JE	SGG2232JE	SGG2233JE*	SGG2234JE
Date Sampled:	10/13/94	9/23/94	9/23/94	9/23/94	9/23/94	9/23/94	9/23/94	9/23/94	9/23/94	9/23/94	9/23/94	10/13/94	9/22/94
Test Group:GC/MS													
Units: µg/L													
Acetone													1
Benzene													1.2
Tetrachloroethene	1.8												2.3 J
Toluene		2.1	8.9 J	2.7 J						3 J	1.8	12 J	
Trichloroethene													

	160	160	160	160	160	160	160	160	160	160	160	160	160
IHSS	160	160	160	160	160	160	160	160	160	160	160	160	160
Sample Location:	SG224294	SG224394	SG224494	SG224594	SG224694	SG224794	SG224894	SG224994	SG225094	SG225194	SG225294	SG225394	SG225494
Sample Identification Number:	SGG2242JE	SGG2243JE	SGG2244JE	SGG2245JE	SGG2246JE	SGG2247JE	SGG2248JE	SGG2249JE	SGG2250JE	SGG2251JE	SGG2252JE*	SGG2253JE*	SGG2254JE*
Date Sampled:	9/22/94	9/22/94	10/14/94	9/23/94	9/23/94	9/23/94	9/23/94	9/23/94	9/23/94	9/23/94	9/23/94	10/11/94	10/14/94
Test Group:GC/MS													
Units: µg/L													
Acetone													
Benzene			1	1.8	1					2.6			2.2
Tetrachloroethene													99
Toluene	4.3 J	3.5 J	1.1		6.2 J	8.3	7.1 J	6.4					
Trichloroethene													

Notes:

* The target detection limit of 1.0 µg/L applies to the following chemicals of concern: acetone, benzene, carbon tetrachloride, tetrachloroethene, toluene, trichloroethene.

J = estimated quantity
 * = most reliable data
 µg/L = micrograms per liter

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TABLE 3-9
Surface Soil Detectable Concentrations**
OU14 - IHSS 161

Sample Location: Sample Identification Number: Date Sampled:	Units: pCi/g	MDL	PRG / BKGND	SS222693 SSG1468JE 18-Apr-94	SS223093 SSG1472JE 19-Apr-94	SS449484 SSG2389JE 21-Sep-94	SS449594 SSG2390JE 21-Sep-94	SS449694 SSG2391JE 21-Sep-94	SS449794 SSG2392JE 22-Sep-94	SS449984 SSG2394JE 21-Sep-94	SS450094 SSG2395JE 21-Sep-94	SS450194 SSG2396JE 22-Sep-94	SS450294 SSG2397JE 22-Sep-94
Test Group: TRADS													
GROSS ALPHA	0	0.00E 0 / 44.56E 0		39.02(7.43) :V	41.84(7.74) :V	12(3.4) :A	17(4.2) :A	12(3.3) :A	8(3) :A	17(3.2) :A	12(3.1) :A	25(4.1) :A	
GROSS BETA	0	0.00E 0 / 55.35E 0		53.32(4.98) :V	57.76(5.29) :V	25(2.5) :A	27(3.6) :A	28(3.6) :A	22(3.4) :A	31(2.7) :A	29(3.4) :A	41(4) :A	
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2		.003(.009) J:V	.047(.01) :V	.012(.004) J:V	.035(.008) :V	.033(.008) :V	.014(.005) J:V	.008(.005) J:V	.021(.006) J:V	.004(.003) J:V	
URANIUM, TOTAL	0	E 0 / E 0				2.3 :Y	2.5 :Y	2.3 :Y	2 :Y	2.5 :Y	2.5 :Y	2 :Y	2.7 :Y
URANIUM-233	0	4.47E 1 / 17.69E-1		1.946(.425) :V	2.091(.309) :V								
URANIUM-235	0	1.73E-1 / 19.83E-2		.106(.08) :V	.091(.047) :V								
URANIUM-238	0	8.00E-1 / 19.12E-1		1.587(.369) :V	1.996(.298) :V								

Sample Location: Sample Identification Number: Date Sampled:	Units: pCi/g	MDL	PRG / BKGND	SS450494 SSG2399JE 21-Sep-94	SS450594 SSG2400JE 21-Sep-94	SS450694 SSG2401JE 21-Sep-94	SS450794 SSG2402JE 20-Sep-94	SS450894 SSG2403JE 20-Sep-94	SS450994 SSG2404JE 20-Sep-94	SS451094 SSG2405JE 21-Sep-94
Test Group: TRADS										
GROSS ALPHA	0	0.00E 0 / 44.56E 0		14(4) :A	10(2.8) :A	9.4(3.1) :A	12(3.7) :A	13(2.9) :A	11(2.7) :A	16(3.4) :A
GROSS BETA	0	0.00E 0 / 55.35E 0		26(3.3) :A	31(2.8) :A	31(3.5) :A	34(4) :A	37(3.5) :A	29(3.6) :A	35(3.8) :A
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2		.012(.005) J:V	.022(.006) J:V	.016(.004) J:V	.004(.003) J:V	.007(.004) J:V	.009(.005) J:V	.013(.006) J:V
URANIUM, TOTAL	0	E 0 / E 0		2.6 :Y	2.3 :Y	2 :Y	2.5 :Y	1.7 :Y	2.1 :Y	2.5 :Y
URANIUM-233	0	4.47E 1 / 17.69E-1								
URANIUM-235	0	1.73E-1 / 19.83E-2								
URANIUM-238	0	8.00E-1 / 19.12E-1								

Sample Location: Sample Identification Number: Date Sampled:	Units: pCi/g	MDL	PRG / BKGND	SS451194 SSG2406JE 20-Sep-94	SS451294 SSG2407JE 20-Sep-94	SS451394 SSG2408JE 20-Sep-94	SS451494 SSG2409JE 20-Sep-94	SS451594 SSG2410JE 20-Sep-94	SS451694 SSG2411JE 20-Sep-94	SS451794 SSG2412JE 20-Sep-94	SS451894 SSG2413JE 20-Sep-94	SS451994 SSG2414JE 20-Sep-94	SS452094 SSG2415JE 20-Sep-94
Test Group: TRADS													
GROSS ALPHA	0	0.00E 0 / 44.56E 0		14(3.9) :A	28(4.8) :A	15(4) :A	14(4.2) :A	11(3.2) :A	21(4.3) :A	19(3.9) :A	15(4.3) :A	16(4.7) :A	14(4.2) :A
GROSS BETA	0	0.00E 0 / 55.35E 0		25(3.5) :A	37(3.9) :A	35(3.6) :A	34(3.7) :A	29(3.6) :A	33(3.6) :A	30(3.5) :A	30(3.5) :A	28(3.7) :A	35(3.8) :A
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2		.32(.027) :V	.02(.008) J:V	.017(.006) J:V	.018(.007) J:V	.009(.006) J:V	.095(.012) :V	.088(.01) :V	.029(.006) J:V	.059(.008) :V	.23(.017) :V
URANIUM, TOTAL	0	E 0 / E 0		2.4 :Y	2.6 :Y	2 :Y	1.7 :Y	1.8 :Y	3.5 :Y	2.9 :Y	2.6 :Y	2.9 :Y	2.9 :Y
URANIUM-233	0	4.47E 1 / 17.69E-1											
URANIUM-235	0	1.73E-1 / 19.83E-2											
URANIUM-238	0	8.00E-1 / 19.12E-1											

Notes:

A = Validation Qualifier; laboratory qualifier considered acceptable
 B = Laboratory Qualifier; detected in blank
 BKGND = Background concentration (DOE 1994a)
 BNAOCLP = EPA - CLP Semivolatile Organic Compounds
 E = Laboratory Qualifier; concentration exceeds calibration range of instrument-organic
 HERB8150 = EPA Chlorinated Herbicides
 J = Laboratory Qualifier; estimated value
 MDL = Method Detection Limit
 METADO = Additional Metals
 mg/kg = milligram per kilogram
 NA = Not Analyzed
 PESTOCLP = EPA Pesticide/PCB
 PRG = Preliminary Remediation Goal
 SMETCLP = EPA - CLP Metals

TRADS = Total radionuclides
 U = Undetected
 V = Validation Qualifier; valid data
 VOACLCP = EPA - CLP Volatile Organic Compounds
 Y = Validation Qualifier; in the process of being validated
 µg/g = microgram per gram
 µg/kg = microgram per kilogram
 # = Indicates compound exceeds background
 * = Indicates compound exceeds PRG
 ** = Based on March 17, 1995, data extraction from RFEDS
 - = Indicates PRG for that compound does not exist

TABLE 3-10
Surface Soil Detectable Concentrations Data Summary***
OU14 - IHSS 161

Test Group: TRADS	Units: pCi/g	MDL	SQL Minimum Value	SQL Minimum Location *	SQL Maximum Value	SQL Maximum Location *	Minimum Concentration	Minimum Location *	Maximum Concentration	Maximum Location *	Number of Detects	Total Number of Samples	Average Concentration
GROSS ALPHA		4	**	**	**	**	2.7(2.6) U/A	SS451094 (1)	41.84(7.74) :V	SS223093 (1)	31	31	16.6116
GROSS BETA		5	**	**	**	**	22(3.4) :A:V	SS449994 (1)	57.76(5.29) :V	SS223093 (1)	31	31	31.9703
PLUTONIUM-239/240		0.004	**	**	**	**	-.002(0.03) J:V	SS223093 (1)	.32(.027) :V	SS451194 (1)	31	31	0.0395
URANIUM TOTAL		0.008	**	**	**	**	1.7 :Y	SS450794 (2)	3.5 :Y	SS451694 (1)	29	29	2.4069
URANIUM-233, -234		0.039	**	**	**	**	1.946(.425) :V	SS227693 (1)	2.091(1.309) :V	SS223093 (1)	2	2	2.0185
URANIUM-235		0.039	**	**	**	**	.091(.047) :V	SS223093 (1)	.106(.08) :V	SS222893 (1)	2	2	0.0985
URANIUM-238		0.037	**	**	**	**	1.587(.369) :V	SS227693 (1)	1.996(.298) :V	SS223093 (1)	2	2	1.7915

Notes:

- A = Validation Qualifier; laboratory qualifier considered acceptable
- B = Laboratory Qualifier; detected in blank
- BNACL P = EPA - CLP Semivolatile Organic Compounds
- E = Laboratory Qualifier; concentration exceeds calibration range of instrument-organic
- HERB8150 = EPA Chlorinated Herbicides
- J = Laboratory Qualifier; estimated value
- MDL = Method Detection Limit
- METADO = Additional Metals
- mg/kg = milligram per kilogram
- PESTCLP = EPA Pesticide/PCB
- SMETCLP = EPA - CLP Metals
- SQL = Sample Quantitation Limit
- TRADS = Total radionuclides
- U = Undetected
- V = Validation Qualifier; valid data
- VOACL P = EPA - CLP Volatile Organic Compounds
- Y = Validation Qualifier; in the process of being validated
- µg/g = microgram per gram
- µg/kg = microgram per kilogram
- * = The number of sample locations at that value is in parentheses
- ** = All samples reported with positive results; no nondetects reported
- *** = Based on March 17, 1995, data extraction from REEDS

TABLE 3-11
Target Analytes for OU14
IHSS 161 Soil-Gas Environmental Samples
(Concentrations above detection limit
for six chemicals of concern ¹)

IHSS	161
Sample Location:	SG230194
Sample Identification Number	SGG2301JE
Date Sampled:	10/14/94
Test Group: GC/MS	Units: µg/L
Acetone	1.5
Benzene	
Tetrachloroethene	
Toluene	
Trichloroethene	

Notes:

¹ The target detection limit of 1.0 µg/L applies to the following chemicals of concern:
acetone, benzene, carbon tetrachloride, tetrachloroethene, toluene, trichloroethene.

J = Estimated quantity

* = Most reliable data

µg/L = Micrograms per liter

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LE 3-12
Surface Soil Detectable Concentrations**
OU14 - IHSS 162

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS452394 SSG2418JE 12-Oct-94	SS452394 SSG2417JE 12-Oct-94	SS452494 SSG2419JE 12-Oct-94	SS452594 SSG2420JE 12-Oct-94	SS452694 SSG2421JE 11-Oct-94	SS452694 SSG2628JE 11-Oct-94	SS452784 SSG2422JE 11-Oct-94	SS452884 SSG2423JE 12-Oct-94	SS452894 SSG2424JE 1-Dec-94	SS453084 SSG2425JE 1-Dec-94	SS453194 SSG2426JE 22-Nov-94
Test Group: BNACLP Units: %REC	0	0.00E 0 / 0.00E 0									84 .Y.	81 .Y.	
2,4,6-TRIBROMOPHENOL	0	0.00E 0 / 0.00E 0									84 .Y.	63 .Y.	
2-FLUOROBIPHENYL	330	8.23E 7 / 0.00E 0									39 J.Y	300 J.Y	
ANTHRACENE	330	8.77E 2 / 0.00E 0									74 J.Y	410 .Y.	
BENZO(a)ANTHRACENE	330	8.77E 1 / 0.00E 0									110 J.Y	680 .Y	
BENZO(b)FLUORANTHENE	330	8.77E 2 / 0.00E 0									140 J.Y	180 J.Y.	
BENZO(k)FLUORANTHENE	330	8.77E 3 / 0.00E 0									74 J.Y.	230 J.Y	
BENZO(a)PERYLENE	330	4.57E 4 / 0.00E 0									58 J.Y	100 J.Y	
BIS(2-ETHYLHEXYL)PHTHALATE	330	5.49E 7 / 0.00E 0									59 J.Y	160 J.Y	
BUTYL BENZYL PHTHALATE	330	8.77E 4 / 0.00E 0									100 J.Y	440 .Y	
CHRYSENE	330	8.77E 1 / 0.00E 0									180 J.Y	860 .Y	
DIBENZO(a,h)ANTHRACENE	330	1.10E 7 / 0.00E 0									65 J.Y	210 J.Y	
FLUORANTHENE	330	8.77E 2 / 0.00E 0									61 .Y.	360 .Y.	
INDENOL(1,2,3-cd)PYRENE	0	0.00E 0 / 0.00E 0									72 J.Y.	58 .Y.	
NITROBENZENE-D5	330	0.00E 0 / 0.00E 0									64 .Y.	58 .Y.	
PHENANTHRENE	0	0.00E 0 / 0.00E 0									160 J.Y	680 .Y	
PHENOL-D5	330	8.23E 8 / 0.00E 0									54 .Y.	56 .Y.	
PYRENE	0	0.00E 0 / 0.00E 0									59 .Y.	57 .Y.	
TERPHENYL-D14	0	0.00E 0 / 0.00E 0									150 .Y.		
6-FLUOROPHENOL	0	E 0 / E 0									10 J.Y.		
Test Group: HERB150 Units: µg/kg	0	E 0 / E 0										1100 J.Y.	
DICAMBA	0	E 0 / E 0											
DICHLORPROP	0	E 0 / E 0											
MCPA	0	E 0 / E 0											
Test Group: METADD Units: mg/kg	1000	0.00E 0 / 630.80E 0											
CESIUM	100	5.49E 3 / 20.00E 0											
LITHIUM	200	1.65E 5 / 90.10E 0											
STROMTIUM	0	E 0 / E 0											
Test Group: PESTCLP Units: %REC	0	E 0 / E 0											
Di-BUTYLCHLORENDATE	200	7.96E 5 / 21915.40E 0											
Test Group: SMETCLP Units: mg/kg	10	3.66E-1 / 12.90E 0											
ALUMINIUM	200	1.91E 4 / 528.00E 0											
ARSENIC	200	1.49E-3 / 5.20E 0											
BARIUM	5	1.37E 2 / 5.00E 0											
BERYLLIUM	5000	0.00E 0 / 13573.30E 0											
CADMIUM	10	9.39E 2 / 24.80E 0											
CALCIUM	50	1.65E 4 / 24.80E 0											
CHROMIUM	25	1.10E 4 / 27.30E 0											
COBALT	100	0.00E 0 / 28160.40E 0											
COPPER	3	0.00E 0 / 61.40E 0											
LEAD	5000	0.00E 0 / 7011.50E 0											
MAGNESIUM	15	1.36E 3 / 2253.50E 0											
MANGANESE	40	5.49E 3 / 26.90E 0											
NICKEL	5000	0.00E 0 / 5256.80E 0											
POTASSIUM	50	1.92E 3 / 55.60E 0											
VANADIUM	20	8.23E 4 / 86.60E 0											
ZINC	0	2.37E 0 / 6.34E-2											
Test Group: TRADS Units: µg/g	0	0.00E 0 / 44.56E 0											
AMERICIUM-241	0	0.00E 0 / 55.35E 0											
GROSS ALPHA	0	3.47E 0 / 13.21E-2											
GROSS BETA	0	4.47E 1 / 17.69E-1											
PLUTONIUM-239/240	0	1.73E-1 / 19.83E-2											
URANIUM-233-234	0	8.00E-1 / 18.12E-1											
URANIUM-235	0	1.65E 8 / 0.00E 0											
URANIUM-238	10	2.74E 7 / 0.00E 0											
Test Group: VOACL P Units: µg/kg	5	8.54E 4 / 0.00E 0											
2-BUTANONE	0	1.65E 8 / 0.00E 0											
ACETONE	10	2.74E 7 / 0.00E 0											
METHYLENE CHLORIDE	5	8.54E 4 / 0.00E 0											

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Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGNL	SS453294 SSG2471JE 22-Nov-94	SS453394 SSG2478JE 22-Nov-94	SS453694 SSG2491JE 1-Dec-94	SS453794 SSG2432JE 22-Nov-94	SS453894 SSG2433JE 22-Nov-94	SS453994 SSG2434JE 22-Nov-94	SS454094 SSG2435JE 22-Nov-94	SS454194 SSG2436JE 29-Sep-94	SS454294 SSG2437JE 29-Sep-94	SS454394 SSG2438JE 29-Sep-94
Test Group: BNAICLP Units: %REC	0	0.00E 0 / 0.00E 0										
2,4,6-TRIBROMOPHENOL	0	0.00E 0 / 0.00E 0										
2-FLUOROBIPHENYL	330	8.23E 7 / 0.00E 0										
ANTHRACENE	330	8.77E 7 / 0.00E 0										
BENZO(a)ANTHRACENE	330	8.77E 7 / 0.00E 0										
BENZO(a)PYRENE	330	8.77E 7 / 0.00E 0										
BENZO(b)FLUORANTHENE	330	0.00E 0 / 0.00E 0										
BENZO(k)FLUORANTHENE	330	8.77E 7 / 0.00E 0										
BIS(2-ETHYLHEXYL)PHTHALATE	330	4.57E 4 / 0.00E 0										
BUTYL BENZYL PHTHALATE	330	5.49E 7 / 0.00E 0										
CHRYSENE	330	8.77E 4 / 0.00E 0										
DIBENZO(a,h)ANTHRACENE	330	8.77E 7 / 0.00E 0										
FLUORANTHENE	330	1.10E 7 / 0.00E 0										
INDENOL(1,2,3-cd)PYRENE	330	8.77E 7 / 0.00E 0										
NITROBENZENE-D5	0	0.00E 0 / 0.00E 0										
PHENANTHRENE	330	0.00E 0 / 0.00E 0										
PHENOL-D5	0	0.00E 0 / 0.00E 0										
PYRENE	330	8.23E 6 / 0.00E 0										
TERPHENYL-D14	0	0.00E 0 / 0.00E 0										
o-FLUOROPHENOL	0	0.00E 0 / 0.00E 0										
Test Group: HERB8150 Units: µg/kg												
DICAMBA	0	E 0 / E 0										
DICHLORPROP	0	E 0 / E 0										
MCPA	0	E 0 / E 0										
Test Group: METADD Units: mg/kg												
CESIUM	1000	0.00E 0 / 630.80E 0										
LITHIUM	100	5.49E 3 / 20.00E 0										
STRONTIUM	200	1.65E 5 / 90.10E 0										
Test Group: PESTICLP Units: %REC												
DI-BUTYLCHLORENDATE	0	E 0 / E 0										
Test Group: SMETICLP Units: mg/kg												
ALUMINUM	200	7.96E 5 / 21915.40E 0										
ARSENIC	10	3.66E-1 / 12.90E 0										
BARIUM	200	1.91E 4 / 528.00E 0										
BERYLLIUM	5	1.49E-1 / 5.20E 0										
CADMIUM	5	1.37E 2 / 5.00E 0										
CALCIUM	5000	0.00E 0 / 13573.30E 0										
CHROMIUM	10	9.39E 2 / 24.80E 0										
COBALT	50	1.65E 4 / 24.80E 0										
COPPER	25	1.10E 4 / 27.30E 0										
IRON	100	0.00E 0 / 28160.40E 0										
LEAD	3	0.00E 0 / 61.40E 0										
MAGNESIUM	5000	0.00E 0 / 7011.50E 0										
MANGANESE	15	1.36E 3 / 2253.50E 0										
NICKEL	40	5.49E 3 / 26.90E 0										
POTASSIUM	5000	0.00E 0 / 5256.80E 0										
VANADIUM	50	1.92E 3 / 55.60E 0										
ZINC	20	8.23E 4 / 86.60E 0										
Test Group: TRADS Units: pCi/g												
AMERICIUM-241	0	2.37E 0 / 6.34E-2	.016(01) J.Y	.02(009) J.Y	13(2.8) J.Y	19(3.9) J.Y	15(3.4) J.Y	13(3.7) J.Y	19(4.4) J.Y	22(02.4) J.Y	28(03) J.Y	22(02.4) J.Y
GROSS ALPHA	0	0.00E 0 / 44.56E 0	13(2.8) J.Y	8.9(2.4) J.Y	32(3.5) J.Y	34(3.6) J.Y	31(3.5) J.Y	30(4.2) J.Y	30(4.2) J.Y	20(4.4) J.Y	22(4.3) J.Y	14(3.5) J.Y
GROSS BETA	0	0.00E 0 / 55.35E 0	27(3.3) J.Y	26(3.3) J.Y	0.04(003) J.Y	0.03(007) J.Y	0.11(009) J.Y	0.12(02) J.Y	0.29(036) J.Y	1.5(061) J.Y	1.3(056) J.Y	35(3.8) J.Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	.098(016) J.Y	.081(017) J.Y	.67(23) J.Y	5(16) J.Y	1.1(23) J.Y	1.2(23) J.Y	1.1(21) J.Y	.79(15) J.Y	.76(13) J.Y	.89(19) J.Y
URANIUM-233-234	0	4.47E 1 / 17.69E-1	.64(2) J.Y	.56(19) J.Y	19(12E-1) J.Y	1.4(26) J.Y	1.1(23) J.Y	1.1(21) J.Y	1.3(24) J.Y	.94(15) J.Y	.89(14) J.Y	.95(16) J.Y
URANIUM-235	0	1.73E-1 / 19.83E-2										
URANIUM-238	0	8.00E-1 / 19.12E-1										
Test Group: VOACLP Units: µg/kg												
2-BUTANONE	0	1.65E 8 / 0.00E 0										
ACETONE	10	2.74E 7 / 0.00E 0										
METHYLENE	5	8.54E 4 / 0.00E 0										

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Notes:

- A = Validation Qualifier, laboratory qualifier considered acceptable
- B = Laboratory Qualifier, detected in blank
- BKND = Background concentration (DOE 1994e)
- BNACL = EPA - CLP Semivolatile Organic Compounds
- E = Laboratory Qualifier, concentration exceeds calibration range of instrument-organic
- G = Native analyte greater than four times spike added - Inorganics
- HERB150 = EPA Chlorinated Herbicides
- J = Laboratory Qualifier, estimated value
- MDL = Method Detection Limit
- METADO = Additional Metals
- mg/kg = milligram per kilogram
- NA = Not Analyzed
- PESTCLP = EPA Pesticide/PCB
- PRG = Preliminary Remediation Goal
- SMETCLP = EPA - CLP Metals
- TRAOS = Total radionuclides
- U = Undetected
- V = Validation Qualifier, valid data
- VOACL = EPA - CLP Volatile Organic Compounds
- Y = Validation Qualifier, in the process of being validated
- µg/g = microgram per gram
- µg/kg = microgram per kilogram
- # = Indicates compound exceeds background
- ** = Indicates compound exceeds PRG
- ** = Based on March 17, 1995, data extraction from RFEDS
- .. = Indicates PRG for that compound does not exist

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKND	SSG2439JE 29-Sep-94	SS454594 SSG2440JE 19-Oct-94
Test Group:BNACL Units:%REC	0	0.00E 0 / 0.00E 0		
2,4,6-TRIBROMOPHENOL	0	0.00E 0 / 0.00E 0		
2-FLUOROBIPHENYL	330	8.23E 7 / 0.00E 0		
ANTHRACENE	330	8.77E 2 / 0.00E 0		
BENZO(a)ANTHRACENE	330	8.77E 1 / 0.00E 0		
BENZO(b)PYRENE	330	8.77E 2 / 0.00E 0		
BENZO(k)FLUORANTHENE	330	0.00E 0 / 0.00E 0		
BENZO(a)PERYLENE	330	8.77E 3 / 0.00E 0		
BENZO(b)FLUORANTHENE	330	4.57E 4 / 0.00E 0		
BIS(2-ETHYLHEXYL)PHTHALATE	330	5.49E 7 / 0.00E 0		
BUTYL BENZYL PHTHALATE	330	8.77E 4 / 0.00E 0		
CHRYSENE	330	8.77E 1 / 0.00E 0		
DIBENZO(a,h)ANTHRACENE	330	1.10E 7 / 0.00E 0		
FLUORANTHENE	330	8.77E 2 / 0.00E 0		
INDENOL(1,2,3-cd)PYRENE	0	0.00E 0 / 0.00E 0		
NITROBENZENE-D5	330	0.00E 0 / 0.00E 0		
PHENANTHRENE	330	0.00E 0 / 0.00E 0		
PHENOL-D5	330	8.23E 6 / 0.00E 0		
PYRENE	0	0.00E 0 / 0.00E 0		
TERPENTYL-D14	0	0.00E 0 / 0.00E 0		
o-FLUOROPHENOL	0	0.00E 0 / 0.00E 0		
Test Group:HERB150 Units: µg/kg				
DICAMBA	0	E 0 / E 0		
DICHLORPROP	0	E 0 / E 0		
MCPA	0	E 0 / E 0		
Test Group:METADO Units: mg/kg				
CESIUM	1000	0.00E 0 / 630.80E 0		
LITHIUM	100	5.49E 3 / 20.00E 0		
STRONTIUM	200	1.65E 5 / 80.10E 0		
Test Group:PESTCLP Units:%REC	0	E 0 / E 0		
DI-BUTYLCHLOROPHTHALATE				
Test Group:SMETCLP Units: mg/kg				
ALUMINIUM	200	7.96E 5 / 21915.40E 0		
ARSENIC	10	3.68E-1 / 12.90E 0		
BARIUM	200	1.91E 4 / 528.00E 0		
BERYLLIUM	5	1.49E-1 / 5.20E 0		
CADMIUM	5	1.37E 2 / 5.00E 0		
CALCIUM	5000	0.00E 0 / 13573.30E 0		
CHROMIUM	10	9.39E 2 / 24.80E 0		
COBALT	50	1.65E 4 / 24.80E 0		
COPPER	25	1.10E 4 / 27.30E 0		
IRON	100	0.00E 0 / 28160.40E 0		
LEAD	3	0.00E 0 / 61.40E 0		
MAGNESIUM	5000	0.00E 0 / 7011.50E 0		
MANGANESE	15	1.36E 3 / 2253.50E 0		
NICKEL	40	5.49E 3 / 26.90E 0		
POTASSIUM	5000	0.00E 0 / 5256.80E 0		
VANADIUM	50	1.92E 3 / 55.60E 0		
ZINC	20	8.23E 4 / 88.60E 0		
Test Group:TRAOS Units: pCi/g				
AMERICIUM-241	0	2.37E 0 / 6.34E-2	0.96(02) .Y#	
GROSS ALPHA	0	0.00E 0 / 44.56E 0	13(3.2) .Y	18(3.6) .Y
GROSS BETA	0	0.00E 0 / 55.35E 0	37(3.6) .Y	31(3.6) .Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	46(029) .Y#	035(0.1) .Y
URANIUM-233-234	0	4.47E 1 / 17.69E-1	56(15) .Y	63(16) .Y
URANIUM-235	0	1.73E-1 / 19.83E-2		
URANIUM-238	0	8.00E-1 / 19.12E-1	64(15) .Y	61(16) .Y
Test Group:VOACL Units: µg/g				
2-BUTANONE	0	1.65E 8 / 0.00E 0		
ACETONE	10	2.74E 7 / 0.00E 0		
METHYLENE CHLORIDE	5	8.54E 4 / 0.00E 0		

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TABLE 3-13
Surface Soil Detectable Concentration Data Summary***
OU14 - IHSS 162

	MDL	SQL Minimum Value	SQL Minimum Location *	SQL Maximum Value	SQL Maximum Location *	Minimum Concentration	Minimum Concentration Location *
Test Group:BNACLP Units: µg/kg							
2,4,6-TRIBROMOPHENOL	0	**	**	**	**	61 :Y	SS453094 (1)
2-FLUOROBIPHENYL	0	**	**	**	**	63 :Y	SS453094 (1)
ANTHRACENE	330	460	SS452994 (1)	460	SS452994 (1)	39 J:Y	SS453094 (1)
BENZO(a)ANTHRACENE	330	**	**	**	**	74 J:Y	SS452994 (1)
BENZO(a)PYRENE	330	**	**	**	**	110 J:Y	SS452994 (1)
BENZO(b)FLUORANTHENE	330	**	**	**	**	140 J:Y	SS452994 (1)
BENZO(ghi)PERYLENE	330	**	**	**	**	74 J:Y	SS452994 (1)
BENZO(k)FLUORANTHENE	330	**	**	**	**	58 J:Y	SS452994 (1)
BIS(2-ETHYLHEXYL)PHTHALATE	330	**	**	**	**	64 J:Y	SS452994 (1)
BUTYL BENZYL PHTHALATE	330	**	**	**	**	59 J:Y	SS452994 (1)
CHRYSENE	330	**	**	**	**	100 J:Y	SS452994 (1)
DIBENZO(a,h)ANTHRACENE	330	460	SS452994 (1)	460	SS452994 (1)	50 J:Y	SS453094 (1)
FLUORANTHENE	330	**	**	**	**	180 J:Y	SS452994 (1)
INDENO(1,2,3-cd)PYRENE	330	**	**	**	**	65 J:Y	SS452994 (1)
NITROBENZENE-D5	0	**	**	**	**	61 :Y	SS452994 (1)
PHENANTHRENE	330	**	**	**	**	72 J:Y	SS452994 (1)
PHENOL-D5	0	**	**	**	**	58 :Y	SS453094 (1)
PYRENE	330	**	**	**	**	160 J:Y	SS452994 (1)
TERPHENYL-D14	0	**	**	**	**	54 :Y	SS452994 (1)
o-FLUOROPHENOL	0	**	**	**	**	57 :Y	SS453094 (1)
Test Group:HERB8150 Units: µg/kg							
DICAMBA	100	100	SS452994 (1)	100	SS452994 (1)	150 :Y	SS453094 (1)
DICHLORPROP	100	100	SS453094 (1)	100	SS453094 (1)	10 J:Y	SS452994 (1)
MCPA	*****	100000	SS452994 (1)	100000	SS452994 (1)	1100 J:Y	SS453094 (1)
Test Group:METADD Units: mg/kg							
CESIUM	1000	**	**	**	**	4.3 B:V	SS453094 (1)
LITHIUM	100	**	**	**	**	4.6 B:V	SS452994 (1)
STRONTIUM	200	**	**	**	**	17.4 B:V	SS452994 (1)
Test Group:PESTCLP Units: µg/kg							
DI-BUTYLCHLORENDATE	0	**	**	**	**	89 :Y	SS452994 (1)
Test Group:SMETCLP Units: mg/kg							
ALUMINIUM	200	**	**	**	**	4540 :V	SS452994 (1)
ARSENIC	10	**	**	**	**	4.4 :V	SS452994 (2)
BARIUM	200	**	**	**	**	49.3 :V	SS452994 (1)
BERYLLIUM	5	**	**	**	**	.37 B:V	SS452994 (1)
CADMIUM	5	0.29	SS452994 (1)	0.29	SS452994 (1)	2.8 :J	SS453094 (1)
CALCIUM	5000	**	**	**	**	4030 :V	SS452994 (1)
CHROMIUM	10	**	**	**	**	8.2 :V	SS452994 (1)
COBALT	50	**	**	**	**	3.3 B:V	SS452994 (1)
COPPER	25	**	**	**	**	15.9 :V	SS452994 (1)
IRON	100	**	**	**	**	7630 :V	SS452994 (1)

TABLE 3-13
Surface Soil Detectable Concentration Data Summary**
OU14 - IHSS 162

	MDL	Maximum Concentration	Maximum Concentration Location *	Number of Detects	Total Number of Samples	Average Concentration
Test Group:BNACL P Units: µg/kg						
2,4,6-TRIBROMOPHENOL	0	64 :Y	SS452994 (1)	2	2	62.5
2-FLUOROBIPHENYL	0	64 :Y	SS452994 (1)	2	2	63.5
ANTHRACENE	330	39 J:Y	SS453094 (1)	1	2	134.5
BENZO(a)ANTHRACENE	330	300 J:Y	SS453094 (1)	2	2	187
BENZO(a)PYRENE	330	410 :Y	SS453094 (1)	2	2	260
BENZO(b)FLUORANTHENE	330	680 :Y	SS453094 (1)	2	2	410
BENZO(ghi)PERYLENE	330	180 J:Y	SS453094 (1)	2	2	127
BENZO(k)FLUORANTHENE	330	230 J:Y	SS453094 (1)	2	2	144
BIS(2-ETHYLHEXYL)PHTHALATE	330	100 J:Y	SS453094 (1)	2	2	82
BUTYL BENZYL PHTHALATE	330	160 J:Y	SS453094 (1)	2	2	109.5
CHRYSENE	330	440 :Y	SS453094 (1)	2	2	270
DIBENZO(a,h)ANTHRACENE	330	50 J:Y	SS453094 (1)	1	2	140
FLUORANTHENE	330	860 :Y	SS453094 (1)	2	2	520
INDENO(1,2,3-cd)PYRENE	330	210 J:Y	SS453094 (1)	2	2	137.5
NITROBENZENE-D5	0	62 :Y	SS453094 (1)	2	2	81.5
PHENANTHRENE	330	360 :Y	SS453094 (1)	2	2	216
PHENOL-D5	0	64 :Y	SS452994 (1)	2	2	61
PYRENE	330	680 :Y	SS453094 (1)	2	2	420
TERPHENYL-D14	0	56 :Y	SS453094 (1)	2	2	55
o-FLUOROPHENOL	0	59 :Y	SS452994 (1)	2	2	58
Test Group:HERB8150 Units: µg/kg						
DICAMBA	100	150 :Y	SS453094 (1)	1	2	100
DICHLORPROP	100	10 J:Y	SS452994 (1)	1	2	30
MCPA	*****	1100 J:Y	SS453094 (1)	1	2	25550
Test Group:METADD Units: mg/kg						
CESIUM	1000	6.1 B:V	SS452994 (1)	2	2	5.2
LITHIUM	100	8.3 B:V	SS453094 (1)	2	2	6.45
STRONTIUM	200	26.3 B:V	SS453094 (1)	2	2	21.85
Test Group:PESTCLP Units: µg/kg						
DI-BUTYLCHLORENDATE	0	98 :Y	SS453094 (1)	2	2	93.5
Test Group:SMETCLP Units: mg/kg						
ALUMINUM	200	10900 :V	SS453094 (1)	2	2	7720
ARSENIC	10	4.4 :V	SS452994 (2)	2	2	4.4
BARIUM	200	94.7 :V	SS453094 (1)	2	2	72
BERYLLIUM	5	1 :VV	SS453094 (1)	2	2	0.685
CADMIUM	5	2.8 :J	SS453094 (1)	1	2	1.4725
CALCIUM	5000	9290 :V	SS453094 (1)	2	2	6660
CHROMIUM	10	13.5 :V	SS453094 (1)	2	2	10.85
COBALT	50	6.3 B:V	SS453094 (1)	2	2	4.8
COP	25	27.4 :V	SS453094 (1)	2	2	21.65
IRON	100	13100 :V	SS 4 (1)	2	2	10365

TABLE 3-13
Surface Soil Detectable Concentration Data Summary***
OU14 - IHSS 162

	MDL	SQL Minimum Value	SQL Minimum Location *	SQL Maximum Value	SQL Maximum Location *	Minimum Concentration	Minimum Concentration Location *
LEAD	3	**	**	**	**	10.4 :V	SS452994 (1)
MAGNESIUM	5000	**	**	**	**	1190 :V	SS452994 (1)
MANGANESE	15	**	**	**	**	96.5 :V	SS452994 (1)
NICKEL	40	**	**	**	**	5.8 B:V	SS452994 (1)
POTASSIUM	5000	**	**	**	**	982 B:V	SS452994 (1)
VANADIUM	50	**	**	**	**	17 :V	SS452994 (1)
ZINC	20	**	**	**	**	41.6 I:J	SS452994 (1)
Test Group: TRADS Units: pCi/g							
AMERICIUM-241	0.007	**	**	**	**	.001(.005) U:Y	SS452394 (1)
GROSS ALPHA	3	**	**	**	**	8.9(2.4) :Y	SS453394 (1)
GROSS BETA	5	**	**	**	**	17(3.4) :Y	SS452694 (1)
PLUTONIUM-239/240	0.006	**	**	**	**	-.002(.005) U:Y	SS452394 (1)
URANIUM-233, -234	0.1	**	**	**	**	.49(.21) :Y	SS453194 (1)
URANIUM-235	0.08	**	**	**	**	-.006(.026) U:Y	SS454194 (1)
URANIUM-238	0.08	**	**	**	**	.52(.21) :Y	SS453194 (1)
Test Group: VOACL P Units: µg/kg							
2-BUTANONE	10	11	SS453094 (1)	11	SS453094 (1)	5 J:Y	SS452994 (1)
ACETONE	10	**	**	**	**	74 B:Y	SS453094 (1)
METHYLENE CHLORIDE	5	**	**	**	**	31 B:Y	SS453094 (1)
Test Group: WQPL Units: pH							
pH	0.01	**	**	**	**	8.15 :V	SS453094 (1)

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TABLE 3-13
Surface Soil Detectable Concentration Data Summary***
OU14 - IHSS 162

	MDL	Maximum Concentration	Maximum Concentration Location *	Number of Detects	Total Number of Samples	Average Concentration
LEAD	3	20.5 :V	SS453094 (1)	2	2	15.45
MAGNESIUM	5000	2420 :V	SS453094 (1)	2	2	1805
MANGANESE	15	193 :V	SS453094 (1)	2	2	144.75
NICKEL	40	12.1 :V	SS453094 (1)	2	2	8.95
POTASSIUM	5000	1700 :V	SS453094 (1)	2	2	1341
VANADIUM	50	27.6 :V	SS453094 (1)	2	2	22.3
ZINC	20	163 I:J	SS453094 (1)	2	2	102.3
Test Group:TRADS						
AMERICIUM-241	0.007	.26(.03) :Y	SS454194 (1)	24	24	0.0373
GROSS ALPHA	3	23(3.8) :Y	SS452784 (1)	24	24	15.75
GROSS BETA	5	35(3.7) :Y	SS454194 (2)	24	24	30.125
PLUTONIUM-239/240	0.006	1.5(.061) :Y	SS454194 (1)	24	24	0.1957
URANIUM-233,-234	0.1	1.3(.26) :Y	SS453694 (1)	24	24	0.8696
URANIUM-235	0.08	.11(.059) J:Y	SS452294 (1)	24	24	0.0387
URANIUM-238	0.08	1.4(.26) :Y	SS453694 (1)	24	24	0.8958
Test Group:VOACL						
2-BUTANONE	10	5 J:Y	SS452994 (1)	1	2	5.25
ACETONE	10	100 B:Y	SS452994 (1)	2	2	87
METHYLENE CHLORIDE	5	45 B:Y	SS452994 (1)	2	2	38
Test Group:WQPL						
pH	0.01	8.82 :V	SS452994 (1)	2	2	8.485

Notes:

- A = Validation Qualifier; laboratory qualifier considered acceptable
- B = Laboratory Qualifier; detected in blank
- BNACL = EPA - CLP Semivolatile Organic Compounds
- E = Laboratory Qualifier; concentration exceeds calibration range of instrument-organic
- HERB8150 = EPA Chlorinated Herbicides
- J = Laboratory Qualifier; estimated value
- MDL = Method Detection Limit
- METADD = Additional Metals
- mg/kg = milligram per kilogram
- PESTCLP = EPA Pesticide/PCB
- SMETCLP = EPA - CLP Metals

- SQL = Sample Quantitation Limit
- TRADS = Total radionuclides
- U = Undetected
- V = Validation Qualifier; valid data
- VOACL = EPA - CLP Volatile Organic Compounds
- Y = Validation Qualifier; in the process of being validated
- µg/g = microgram per gram
- µg/kg = microgram per kilogram
- * = The number of sample locations at that value is shown in parenthesis
- ** = All samples reported with positive results; no nondetects reported
- *** = Based on March 17, 1995, data extraction from REEDS

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TABLE 3-14
Surface Soil Detectable Concentrations**
OU14 - IHSS 164.1

Sample Location Sample Identification Number Date Sampled	MDL	PRG / BKOND	Units: µCi/g	SS454684 SSG2441JE 31-Oct-94	SS454684 SSG2442JE 31-Oct-94	SS454684 SSG2443JE 31-Oct-94	SS454684 SSG2444JE 7-Nov-94	SS455094 SSG2445JE 31-Oct-94	SS455194 SSG2446JE 31-Oct-94	SS455294 SSG2447JE 3-Nov-94	SS455394 SSG2448JE 3-Nov-94	SS455494 SSG2449JE 31-Oct-94	SS455594 SSG2450JE 7-Nov-94	SS455694 SSG2451JE 7-Nov-94	88453794 SSG2452JE 7-Nov-94	89454884 SSG2453JE 27-Oct-94	89454984 SSG2454JE 27-Oct-94	89455084 SSG2455JE 27-Oct-94	
Test Group: TRADS																			
AMERICIUM-241	0	2.37E-01	4.34E-2																
GROSS ALPHA	0	0.00E-01	44.54E-0																
GROSS BETA	0	0.00E-01	58.35E-0																
PLUTONIUM-239/240	0	3.47E-07	13.21E-2																
URANIUM-235	0	4.47E-11	17.69E-1																
URANIUM-238	0	8.00E-11	18.17E-1																

Note:

- A = Validation Qualifier; laboratory qualifier considered acceptable
- B = Laboratory Qualifier; detected in blank
- BKOND = Background concentration (DOE 1994a)
- BUACLP = EPA - CLP Semi-volatile Organic Compounds
- E = Laboratory Qualifier; concentration exceeds calibration range of instrument-organic
- HER88150 = EPA Chlorinated-Herbicides
- J = Laboratory Qualifier; estimated value
- MDL = Method Detection Limit
- METADD = Additional Metals
- mg/kg = milligram per kilogram
- NA = Not Analyzed
- PESTCLP = EPA Pesticides/PCB
- PRG = Preliminary Remediation Goal
- SMETCLP = EPA - CLP Metals
- TRADS = Total radionuclides
- U = Undetected
- V = Validation Qualifier; valid data
- VOACLP = EPA - CLP Volatile Organic Compounds
- Y = Validation Qualifier; in the process of being validated
- µg/g = microgram per gram
- ppb = microgram per kilogram
- # = Indicates compound exceeds background
- ** = Indicates compound exceeds PRG
- ** = Based on March 17, 1995, data extraction from RFEDS
- ** = Indicates PRG for that compound does not exist

TABLE 3-15
Surface Soil Detectable Concentration Data Summary**
OU14 - IHSS 164.1

Test Group: TRADS	Units: pCi/g	MDL	SQL Minimum Value	SQL Minimum Location *	SQL Maximum Value	SQL Maximum Location *	Minimum Concentration	Minimum Concentration Location *	Maximum Concentration	Maximum Concentration Location *	Number of Defects	Total Number of Samples	Average Concentration
AMERICIUM-241		0.01	**	**	**	**	.005(.017) U:Y	SS454994 (1)	.016(.011) J:Y	SS455294 (1)	15	15	0.0043
GROSS ALPHA		3	**	**	**	**	11(2.6):Y	SS455894 (1)	36(4.7):Y	SS455894 (1)	15	15	16.0667
GROSS BETA		4	**	**	**	**	20(3.1):Y	SS455394 (1)	35(3.6):Y	SS454894 (1)	15	15	28.1333
PLUTONIUM-239/240		0.009	**	**	**	**	.001(.004) U:Y	SS454994 (1)	.076(.018):Y	SS455294 (1)	15	15	0.0197
URANIUM-235-234		0.1	**	**	**	**	.54(.12):Y	SS454994 (1)	1.2(.24):Y	SS455094 (1)	15	15	0.812
URANIUM-235		0.08	**	**	**	**	(.039) U:Y:Y	SS455294 (1)	.085(.073) U:Y	SS455094 (1)	15	15	0.0424
URANIUM-238		0.07	**	**	**	**	.51(.17):Y	SS455894 (1)	1.1(.24):Y	SS455094 (2)	15	15	0.812

Notes:

- A = Validation Qualifier; laboratory qualifier considered acceptable
- B = Laboratory Qualifier; detected in blank
- BNACLP = EPA - CLP Semivolatile Organic Compounds
- E = Laboratory Qualifier; concentration exceeds calibration range of instrument-organic
- G = Native analyte greater than four times spike added - Inorganics
- HERB150 = EPA Chlorinated Herbicides
- J = Laboratory Qualifier; estimated value
- MDL = Method Detection Limit
- METADD = Additional Metals
- mg/kg = milligram per kilogram
- PESTCLP = EPA Pesticide/PCB
- SMETCLP = EPA - CLP Metals
- SQL = Sample Quantitation Limit
- TRADS = Total radionuclides
- U = Undetected
- V = Validation Qualifier; valid data
- VOACLP = EPA - CLP Volatile Organic Compounds
- Y = Validation Qualifier; in the process of being validated
- µg/g = microgram per gram
- µg/kg = microgram per kilogram
- ** = The number of sample locations at that value is shown in parenthesis
- ** = All samples reported with positive results; no nondetects reported
- *** = Based on March 17, 1995, data extraction from RFEDS

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS456194 SSG2456JE 25-Oct-94	SS456394 SSG2458JE 19-Oct-94	SS456494 SSG2459JE 19-Oct-94	SS456594 SSG2460JE 18-Oct-94	SS456694 SSG2461JE 18-Oct-94	SS456794 SSG2462JE 18-Oct-94	SS456894 SSG2463JE 18-Oct-94	SS456994 SSG2464JE 12-Oct-94	SS457094 SSG2465JE 25-Oct-94	SS457194 SSG2466JE 10-Oct-94
Test Group:BNACLIP Units: µg/kg												
ACENAPHTHENE	330	1.65E 7 / 0.00E 0				110 J.Y						
ANTHRACENE	330	6.23E 7 / 0.00E 0				210 J.Y						
BENZO[ANTHRACENE]	330	8.77E 2 / 0.00E 0				50 J.Y				57 J.A		
BENZO[OPYRENE]	330	8.77E 1 / 0.00E 0				250 J.Y*				81 J.Y		
BENZO[FLUORANTHENE]	330	8.77E 2 / 0.00E 0				330 J.Y				110 J.Y		
BENZO[PERYLENE]	330	0.00E 0 / 0.00E 0				97 J.Y				41 J.Y		
BENZO[FLUORANTHENE]	330	8.77E 3 / 0.00E 0				120 J.Y				50 J.Y		
BIS(2-ETHYLHEXYL)PHTHALATE	330	4.57E 4 / 0.00E 0				77 J.Y				190 J.Y		
BUTYL BENZYL PHTHALATE	330	5.49E 7 / 0.00E 0				86 J.Y				64 J.A		
CARBAZOLE	0	E 0 / E 0				280 J.Y				61 J.Y		
CHRYSENE	330	8.77E 4 / 0.00E 0				65 J.Y				93 J.Y		
DI-n-BUTYL PHTHALATE	330	2.74E 7 / 0.00E 0								63 J.Y		
DI-n-OCTYL PHTHALATE	330	4.57E 4 / 0.00E 0										
DIBENZOFURAN	330	0.00E 0 / 0.00E 0				41 J.Y						
FLUORANTHENE	330	1.10E 7 / 0.00E 0				740 J.Y				150 J.Y		
FLUORENE	330	1.10E 7 / 0.00E 0				100 J.Y				200 J.Y		
INDENOL(1,2-cd)PYRENE	330	8.77E 2 / 0.00E 0				37 J.Y				62 J.Y		
PENTACHLOROPHENOL	1600	5.34E 3 / 0.00E 0				78 J.Y				110 J.Y		
PHENANTHRENE	330	0.00E 0 / 0.00E 0				81 J.Y				150 J.Y		
PYRENE	330	8.23E 6 / 0.00E 0				510 J.Y				120 J.Y		
Test Group:METADD Units: mg/kg												
LITHIUM	100	5.49E 3 / 20.00E 0				7.7 BV				5.2 BV		6.3 BV
STRONTIUM	200	1.65E 5 / 90.10E 0				94.9 V#				25.3 BV		14.6 BV
TIN	200	0.00E 0 / 75.90E 0				157 V#						
Test Group:SMIETCLP Units: mg/kg												
ALUMINIUM	200	7.96E 5 / 21915.40E 0				6520 V				4790 V		6320 V
ARSENIC	10	3.68E-1 / 12.90E 0				4.4 V*				1.6 BV*		2.7 V*
BARIUM	200	1.91E 4 / 528.00E 0				130 V				43.7 V		64.8 V
BERYLLIUM	5	1.49E-1 / 5.20E 0				43.8 V*				26.8 V*		27 BV*
CADMIUM	5000	0.00E 0 / 13573.30E 0				31 BV				15500 V#		4490 V
CALCIUM	10	9.39E 2 / 24.80E 0				62900 V#				65 V		8.2 V
CHROMIUM	50	1.65E 4 / 24.80E 0				8.2 V				3.4 BV		10.9 V
COBALT	25	1.10E 4 / 27.30E 0				3.6 BV				17.2 V		21.3 V
COPPER	100	0.00E 0 / 61.40E 0				11.9 JA				32.3 V#		13.5 V
LEAD	3	0.00E 0 / 61.40E 0				8560 V				16500 V		9660 V
MAGNESIUM	5000	0.00E 0 / 7011.50E 0				11000 V				10900 V		10100 V
MANGANESE	15	1.36E 3 / 2253.50E 0				14.2 V				8.2 V		6.4 V
MERCURY	0.2	8.23E 1 / 0.20E 0				161 JA				6040 V		2380 V
NICKEL	40	5.49E 3 / 26.90E 0				3170 V				5560 V		2110 V
POTASSIUM	5000	0.00E 0 / 5256.80E 0				181 JA				284 JA		178 V
SILVER	5	1.37E 3 / 1.40E 0				48.8 JA#				3.6 BV		7.3 BV
SODIUM	5000	0.00E 0 / 1108.00E 0				8.5 BV				1880 V		1890 V
VANADIUM	50	1.92E 3 / 55.60E 0				1590 V				2460 V		1320 V
ZINC	20	8.23E 4 / 86.60E 0				75 B:JA				1.3 B:JA		87 B:JA
Test Group:TRADS Units: µg/g												
AMERICIUM-241	0	2.37E 0 / 6.34E-2				0.19(008) J.Y				0.17(006) J.Y		24(4.1) Y
GROSS ALPHA	0	0.00E 0 / 44.56E 0				0.21(007) J.Y				15(3.6) Y		10(3.1) Y
GROSS BETA	0	0.00E 0 / 55.35E 0				13(3.6) Y				17(3.4) Y		27(3.8) Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2				27(3.5) Y				25(4.4) Y		36(3.9) Y
URANIUM-233,234	0	4.47E 1 / 17.69E-1				0.22(006) J.Y				0.27(008) J.Y		0.17(007) J.Y
URANIUM-235	0	1.73E-1 / 19.83E-2				0.22(006) J.Y				0.27(008) J.Y		0.17(007) J.Y
URANIUM-238	0	8.00E-1 / 19.12E-1				0.22(006) J.Y				0.27(008) J.Y		0.17(007) J.Y
Test Group:VOACLIP Units: µg/kg												
1,2-DICHLOROETHENE	5	2.47E 6 / 0.00E 0										
METHYLENE CHLORIDE	5	8.54E 4 / 0.00E 0										
TETRACHLOROETHENE	5	1.23E 4 / 0.00E 0										
TRICHLOROETHENE	0	5.82E 4 / 0.00E 0										

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS457294 SSG2467JE 10-Oct-94	SS457294 SSG2639JE 19-Oct-94	SS457394 SSG2468JE 11-Oct-94	SS457494 SSG2469JE 18-Oct-94	SS457594 SSG2470JE 18-Oct-94	SS457694 SSG2471JE 18-Oct-94	SS457794 SSG2472JE 12-Oct-94	SS457894 SSG2473JE 24-Oct-94	SS457894 SSG2644JE 24-Oct-94	SS457994 SSG2474JE 19-Oct-94	SS458094 SSG2475JE 12-Oct-94	SS458194 SSG2476JE 24-Oct-94
Test Group:BNACL P Units: µg/kg														
ACENAPHTHENE	330	1.65E 7 / 0.00E 0												
ANTHRACENE	330	8.23E 7 / 0.00E 0												
BENZO(a)ANTHRACENE	330	8.77E 7 / 0.00E 0												
BENZO(a)PYRENE	330	8.77E 7 / 0.00E 0												
BENZO(b)FLUORANTHENE	330	8.77E 7 / 0.00E 0												
BENZO(k)FLUORANTHENE	330	0.00E 0 / 0.00E 0												
BENZO(g)PERYLENE	330	8.77E 3 / 0.00E 0												
BENZO(k)FLUORANTHENE	330	4.57E 4 / 0.00E 0												
BIS(2-ETHYLHEXYL)PHTHALATE	330	5.49E 7 / 0.00E 0												
BUTYL BENZYL PHTHALATE	0	E 0 / E 0												
CARBAZOLE	330	8.77E 4 / 0.00E 0												
CHRYSENE	330	2.74E 7 / 0.00E 0												
Di-n-BUTYL PHTHALATE	330	4.57E 4 / 0.00E 0												
Di-n-OCTYL PHTHALATE	330	1.10E 7 / 0.00E 0												
DIBENZOFURAN	330	1.10E 7 / 0.00E 0												
FLUORANTHENE	330	1.10E 7 / 0.00E 0												
FLUORENE	330	8.77E 2 / 0.00E 0												
INDENOL(1,2,3-c)PYRENE	1600	5.34E 3 / 0.00E 0												
PENTACHLOROPHENOL	330	0.00E 0 / 0.00E 0												
PHENANTHRENE	330	8.23E 6 / 0.00E 0												
PYRENE	330	5.49E 3 / 20.00E 0												
Test Group:METADD Units: mg/kg														
LITHIUM	200	1.65E 5 / 90.10E 0												
STRONTIUM	200	0.00E 0 / 75.90E 0												
TIN	200	7.96E 5 / 219.15.40E 0												
Test Group:SMETCLP Units: mg/kg														
ALUMINUM	10	3.66E-1 / 12.80E 0												
ARSENIC	200	1.91E 4 / 528.00E 0												
BARIUM	5	1.49E-1 / 5.20E 0												
BERYLLIUM	5	1.37E 2 / 5.00E 0												
CADMIUM	5000	0.00E 0 / 13573.30E 0												
CALCIUM	10	9.39E 2 / 24.80E 0												
CHROMIUM	50	1.65E 4 / 24.80E 0												
COBALT	25	1.10E 4 / 27.30E 0												
COPPER	100	0.00E 0 / 28160.40E 0												
IRON	3	0.00E 0 / 61.40E 0												
LEAD	5000	0.00E 0 / 7011.50E 0												
MAGNESIUM	15	1.36E 3 / 2253.50E 0												
MANGANESE	0.2	8.23E 1 / 0.20E 0												
MERCURY	40	5.49E 3 / 26.90E 0												
NICKEL	5000	0.00E 0 / 5256.80E 0												
POTASSIUM	5	1.37E 3 / 1.40E 0												
SELENIUM	10	1.37E 3 / 10.00E 0												
SILVER	5000	0.00E 0 / 1108.00E 0												
SODIUM	50	1.92E 3 / 55.60E 0												
VANADIUM	20	8.23E 4 / 86.60E 0												
ZINC	0	2.37E 0 / 6.34E-2												
Test Group:TRADS Units: pCi/g														
AMERICIUM-241	0	0.00E 0 / 44.56E 0												
GROSS ALPHA	0	0.00E 0 / 55.35E 0												
GROSS BETA	0	3.42E 0 / 13.21E-2												
PLUTONIUM-239/240	0	4.47E 1 / 17.69E-1												
URANIUM-233-234	0	1.73E-1 / 19.83E-2												
URANIUM-235	0	8.00E-1 / 19.12E-1												
URANIUM-238	0	2.47E 6 / 0.00E 0												
Test Group:VOACL P Units: µg/kg														
1,2-DICHLOROETHENE	5	8.54E 4 / 0.00E 0												
METHYLENE CHLORIDE	5	1.23E 4 / 0.00E 0												
TETRACHLOROETHENE	0	5.82E 4 / 0.00E 0												
TRICHLOROET	0													

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGDND	SS458294 SSG2477JE 19-Oct-94	SS458394 SSG2478JE 12-Oct-94	SS458494 SSG2479JE 24-Oct-94	SS458594 SSG2480JE 19-Oct-94	SS458694 SSG2481JE 19-Oct-94	SS458794 SSG2482JE 24-Oct-94	SS458894 SSG2483JE 19-Oct-94	SS458994 SSG2484JE 12-Oct-94	SS459094 SSG2485JE 12-Oct-94	SS459194 SSG2486JE 12-Oct-94	SS459294 SSG2487JE 11-Oct-94	SS459394 SSG2488JE 11-Oct-94	SS459494 SSG2489JE 11-Oct-94	
Test Group:BNACLPL Units: µg/kg																
ACENAPHTHENE	330	1.65E 7 / 0.00E 0														
ANTHRACENE	330	8.23E 7 / 0.00E 0	52 J.Y													
BENZOPANTHRACENE	330	8.77E 2 / 0.00E 0	120 J.Y	50 J.A					70 J.Y	120 J.A	39 J.A	40 J.A				
BENZOPYRENE	330	8.77E 1 / 0.00E 0	140 J.Y*						88 J.Y*	66 J.A						
BENZOFURANTHENE	330	8.77E 2 / 0.00E 0	170 J.Y	75 J.A					110 J.Y	200 J.A	57 J.A	53 J.A				
BENZOPERYLENE	330	0.00E 0 / 0.00E 0	57 J.Y*						44 J.Y	82 J.A						
BENZOFURANTHENE	330	8.77E 3 / 0.00E 0	73 J.Y	900 B.V					84 J.Y							
BIS(2-ETHYLHEXYL)PHTHALATE	330	4.57E 4 / 0.00E 0	150 J.Y													
BUTYL BENZYL PHTHALATE	0	5.49E 7 / 0.00E 0														
CARBAZOLE	0	E 0 / E 0														
CHRYSENE	330	8.77E 4 / 0.00E 0	150 J.Y	55 J.A					79 J.Y	140 J.A	44 J.A	40 J.A				
Dih-n-BUTYL PHTHALATE	330	2.74E 7 / 0.00E 0	72 J.A								38 J.A	59 J.A	71 J.A			
Dih-n-OCTYL PHTHALATE	330	4.57E 4 / 0.00E 0	43 J.A								97 J.A					
DIBENZOFURAN	330	0.00E 0 / 0.00E 0							190 J.Y	350 J.V	120 J.A	110 J.A				
FLUORANTHENE	330	1.10E 7 / 0.00E 0	330 J.Y	130 J.A												
FLUORENE	330	1.10E 7 / 0.00E 0								57 J.A						
INDENO(1,2,3-cd)PYRENE	330	8.77E 2 / 0.00E 0														
INDENO(1,2,3-cd)PYRENE	1600	5.34E 3 / 0.00E 0							40 J.Y*	210 J.A*	65 J.A*	72 J.A*				
PENTACHLOROPHENOL	330	0.00E 0 / 0.00E 0	240 J.Y*						150 J.Y	170 J.A	35 J.A					
PHENANTHRENE	330	8.23E 6 / 0.00E 0	280 J.Y	63 J.A												
PYRENE	330	8.23E 6 / 0.00E 0														
Test Group:METADD Units: mg/kg																
LITHIUM	100	5.49E 3 / 20.00E 0	9.8 B.V	7.7 B.V	8.1 B.V	8.1 B.V	8.1 B.V	7.4 B.V	10 B.V	9.3 B.V	12 B.V	10 B.V	10.5 B.V	11.2 B.V	10 B.V	10 B.V
LITHIUM	200	1.65E 5 / 80.10E 0	77.3 V	33.2 B.V	9.9 B.V	9.9 B.V	9.9 B.V	9.4 B.V	95.5 V	12.8 B.V	80.5 V	138 V	86.8 V	85.2 V	85.2 V	81 V
STRONTIUM	200	0.00E 0 / 75.90E 0														
TIN	200	7.86E 5 / 21915.40E 0	8980 V	6650 V	5080 V	5080 V	8280 V	5310 V	9580 V	7460 V	12600 V	9280 V	10500 V	11600 V	11600 V	11000 V
Test Group:SMETCLP Units: mg/kg																
ALUMINUM	10	3.66E 1 / 12.80E 0	5.4 V*	2 J.A*	1.8 B.V*	1.8 B.V*	5.9 V*	1.5 B.V*	5 V*	3.4 V*	3.9 V*	4.8 V*	5.7 V*	8.8 V*	7.2 V*	7.2 V*
ARSENIC	200	1.91E 4 / 528.00E 0	108 V	123 V	50.8 V	50.8 V	115 V	55.8 V	112 V	71 V	74.8 V	135 V	121 V	138 V	144 V	144 V
BARIIUM	5	1.48E 1 / 5.20E 0	52 B.V*	38 B.V	38 B.V	38 B.V	66 B.V*	66 B.V*	5 B.V*	34 B.V*	53 B.V*	53 B.V*	59 B.V*	64 B.V*	67 B.V*	67 B.V*
BERYLLIUM	5	1.37E 2 / 5.00E 0														
CADMIUM	5000	0.00E 0 / 13573.30E 0	49400 V#	16300 V#	1350 V	1350 V	71800 V#	1430 V	69200 V#	5050 V	20100 V#	103000 V#	61100 V#	49400 V#	52400 V#	52400 V#
CALCIUM	10	9.39E 2 / 24.80E 0	11.9 V	10.5 J.A	8.5 V	8.5 V	9.8 J.A	8.1 V	10.5 J.A	11.7 J.A	12.3 J.A	12.8 J.A	13 J.A	14.6 J.A	11.7 J.A	11.7 J.A
CHROMIUM	50	1.65E 4 / 24.80E 0	5 B.V	5.8 B.V	5.4 B.V	5.4 B.V	4.9 B.V	11.5 V	6 B.V	4.4 B.V	9.9 V	5.2 B.V	5.9 B.V	6.9 B.V	6.9 B.V	6.9 B.V
COBALT	25	1.10E 4 / 27.30E 0	14.1 V	21.2 V	12.9 J.A	12.9 J.A	11.7 J.A	18.4 V	23.6 V	14.5 V	48.8 V#	13.6 V	23.2 V	18.4 V	15 V	15 V
COPPER	100	0.00E 0 / 28160.40E 0	11100 V	13200 V	9060 V	9060 V	9170 V	12100 V	12100 V	10500 V	20000 V	11700 V	12400 V	11800 V	11800 V	11800 V
IRON	3	0.00E 0 / 61.40E 0	31.4 V	27.9 J.A	6.7 V	6.7 V	20.4 J.A	6.5 V	18.2 J.A	26.8 J.A	14.2 J.A	14.7 J.A	30.5 J.A	20.4 J.A	24.6 J.A	24.6 J.A
LEAD	5000	0.00E 0 / 7011.50E 0	2790 V	4310 V	2140 V	2140 V	2570 V	2200 V	3890 V	2370 V	11500 V#	3420 V	3010 V	3070 V	2680 V	2680 V
MAGNESIUM	15	1.36E 3 / 2253.50E 0	285 J.A	317 V	144 V	144 V	171 J.A	142 V	222 J.A	174 V	520 V	189 V	238 V	219 V	241 V	241 V
MANGANESE	0.2	8.23E 1 / 0.20E 0	06 B.V										093 B.V			
MERCURY	40	5.49E 3 / 26.90E 0	10.3 V	6 B.V	6.5 B.V	6.5 B.V	9.8 V	6.1 B.V	11.2 V	8.3 V	22.8 V	11.4 V	13.4 V	12.1 V	11.9 V	11.9 V
NICKEL	5000	0.00E 0 / 5256.80E 0	2020 V	2470 V	1580 V	1580 V	1670 V	1710 V	1840 V	2120 V	2100 V	1750 V	1890 V	2200 V	2300 V	2300 V
POTASSIUM	5	1.37E 3 / 1.40E 0														
SELENIUM	10	1.37E 3 / 10.00E 0														
SILVER	5000	0.00E 0 / 1108.00E 0	121 B.V	181 B.V	68.1 B.V	68.1 B.V	255 B.J.A	75.3 B.V	278 B.V	58.3 B.V	1670 V#	86.8 B.J.A				
SOORIUM	50	1.82E 3 / 55.60E 0	24.5 V	13.7 V	13.7 V	25.6 V	25.6 V	14.3 V	27.9 V	19.7 V	37.9 V	25.7 V	28.3 V	31.3 V	32.7 V	32.7 V
VANADIUM	20	8.23E 4 / 86.60E 0	54.1 J.A	124 V#	26.9 V	26.9 V	59.7 J.A	26.1 V	80.8 J.A#	62.7 V	48.7 V	67 V	334 V#	102 V#	84.5 V	84.5 V
ZINC	0	2.37E 0 / 6.34E-2	0.46(0.11) Y	0.56(0.15) Y	0.43(0.11) Y	0.43(0.11) Y	18(0.32) Y#	0.44(0.13) Y	0.33(0.11) Y	0.33(0.11) Y	0.33(0.11) Y	0.33(0.11) Y	0.4(0.12) Y	0.48(0.13) Y	0.56(0.11) Y	0.56(0.11) Y
AMERICIUM-241	0	0.00E 0 / 44.56E 0	20(3.7) Y	16(3.6) Y	16(3.6) Y	16(3.6) Y	33(4.4) Y	19(4.6) Y	15(3.6) Y	15(3.6) Y	13(3.2) Y	5(2.2) Y	5(2.2) Y			
GROSS ALPHA	0	0.00E 0 / 55.35E 0	24(3.4) Y	25(3.3) Y	25(3.3) Y	25(3.3) Y	40(3.9) Y	29(3.5) Y	23(3.3) Y	23(3.3) Y	20(3.9) Y	4(6.2) J.Y	4(6.2) J.Y			
GROSS BETA	0	3.42E 0 / 13.21E-2	16(0.28) Y#	13(0.18) Y	13(0.25) Y	13(0.25) Y	82(0.49) Y#	17(0.21) Y#	0.82(0.16) Y	0.82(0.16) Y	12(0.2) Y	12(0.2) Y	12(0.18) Y	14(0.19) Y#	2(0.2) Y#	2(0.2) Y#
PLUTONIUM-239/240	0	4.47E 1 / 17.69E-1	96(15) Y	78(16) Y	78(14) Y	78(14) Y	1.1(2.3) Y	1.1(2.3) Y	1.1(2.3) Y	1.1(2.3) Y	0.9(0.68) J.Y	0.9(0.68) J.Y				
URANIUM-233-234	0	1.73E-1 / 19.83E-2	94(15) Y*	64(14) Y	64(14) Y	64(14) Y	1.1(2.3) Y	1.1(2.3) Y	1.1(2.3) Y	1.1(2.3) Y	0.9(0.68) J.Y	0.9(0.68) J.Y				
URANIUM-235	0	8.00E-1 / 19.12E-1	94(15) Y*	64(14) Y	64(14) Y	64(14) Y	1.1(2.3) Y	1.1(2.3) Y	1.1(2.3) Y	1.1(2.3) Y	0.9(0.68) J.Y	0.9(0.68) J.Y				
URANIUM-238	0	2.47E 6 / 0.00E 0														
Test Group:YOACLPL Units: µg/kg																
1,2-DICHLOROETHENE	5	8.54E 4 / 0.00E 0	6 V													
METHYLENE CHLORIDE	5	1.23E 4 / 0.00E 0														
TETRACHLOROETHENE	5	5.82E 4 / 0.00E 0														
TRICHLOROETHENE	0															

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Surface Soil Detectable Concentrations
OU14 - IHSS 164.2

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGND	SS459594 SSG2490JE 25-Oct-94	SS459694 SSG2491JE 19-Oct-94	SS459694 SSG2640JE 19-Oct-94	SS459794 SSG2492JE 11-Oct-94	SS459894 SSG2493JE 11-Oct-94	SS459994 SSG2494JE 11-Oct-94	SS460094 SSG2495JE 11-Oct-94	SS460194 SSG2496JE 11-Oct-94	SS460294 SSG2497JE 25-Oct-94	SS460394 SSG2498JE 10-Oct-94	SS460494 SSG2499JE 10-Oct-94
Test Group:BNACLP Units: µg/kg													
ACENAPHTHENE	330	1.65E 7 / 0.00E 0											
ANTHRACENE	330	8.23E 7 / 0.00E 0											
BENZO(a)ANTHRACENE	330	8.77E 7 / 0.00E 0											
BENZO(a)PYRENE	330	8.77E 7 / 0.00E 0											
BENZO(b)FLUORANTHENE	330	0.00E 0 / 0.00E 0											
BENZO(k)FLUORANTHENE	330	8.77E 3 / 0.00E 0											
BENZO(m)FLUORANTHENE	330	4.57E 4 / 0.00E 0											
BIS(2-ETHYLHEXYL)PHTHALATE	330	5.49E 7 / 0.00E 0											
CARBAZOLE	0	E 0 / E 0											
CHRYSENE	330	8.77E 4 / 0.00E 0											
Di-n-BUTYL PHTHALATE	330	2.74E 7 / 0.00E 0											
Di-n-OCYL PHTHALATE	330	4.57E 4 / 0.00E 0											
DIBENZOFURAN	330	0.00E 0 / 0.00E 0											
FLUORANTHENE	330	1.10E 7 / 0.00E 0											
FLUORENE	330	1.10E 7 / 0.00E 0											
INDENO(1,2,3-cd)PYRENE	330	8.77E 2 / 0.00E 0											
PENTACHLOROPHENOL	1600	5.34E 3 / 0.00E 0											
PHENANTHRENE	330	0.00E 0 / 0.00E 0											
PYRENE	330	8.23E 6 / 0.00E 0											
Test Group:METADD Units: mg/kg													
LITHIUM	100	5.49E 3 / 20.00E 0											
STRONTIUM	200	1.65E 5 / 80.10E 0											
TIN	200	0.00E 0 / 75.90E 0											
Test Group:SMETCLP Units: mg/kg													
ALUMINUM	200	7.96E 5 / 2.1915.40E 0											
ARSENIC	10	3.66E-1 / 12.90E 0											
BARIUM	200	1.91E 4 / 528.00E 0											
BERYLLIUM	5	1.49E-1 / 5.20E 0											
CADMIUM	5	1.37E 2 / 5.00E 0											
CALCIUM	5000	0.00E 0 / 13573.30E 0											
CHROMIUM	10	9.39E 2 / 24.80E 0											
COBALT	50	1.65E 4 / 24.80E 0											
COPPER	25	1.10E 4 / 27.30E 0											
IRON	100	0.00E 0 / 28160.40E 0											
LEAD	3	0.00E 0 / 61.40E 0											
MAGNESIUM	5000	0.00E 0 / 7011.50E 0											
MANGANESE	15	1.36E 3 / 2253.50E 0											
MERCURY	0.2	8.23E 1 / 0.20E 0											
NICKEL	40	5.49E 3 / 26.90E 0											
POTASSIUM	5000	0.00E 0 / 5256.80E 0											
SELENIUM	5	1.37E 3 / 1.40E 0											
SILVER	10	1.37E 3 / 10.00E 0											
SODIUM	5000	0.00E 0 / 1108.00E 0											
VANADIUM	50	1.82E 3 / 55.60E 0											
ZINC	20	8.23E 4 / 86.60E 0											
Test Group:TRADS Units: µg/kg													
AMERICIUM-241	0	2.37E 0 / 6.34E-2											
GROSS ALPHA	0	0.00E 0 / 44.55E 0											
GROSS BETA	0	0.00E 0 / 55.35E 0											
PLUTONIUM-239/240	0	3.47E 0 / 13.21E-2											
URANIUM-233-234	0	4.47E 1 / 17.69E-1											
URANIUM-235	0	1.73E-1 / 19.83E-2											
URANIUM-238	0	8.00E-1 / 19.12E-1											
Test Group:VOACLP Units: µg/kg													
1,2-DICHLOROETHENE	5	2.47E 6 / 0.00E 0											
METHYLENE CHLORIDE	5	8.54E 4 / 0.00E 0											
TETRACHLOROETHENE	5	1.23E 4 / 0.00E 0											
TRICHLOROETHENE	0	5.82E 4 / 0.00E 0											

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGD	SSA60494 SSG2623JE 10-Oct-94	SSA60594 SSG2500JE 10-Oct-94	SSA60694 SSG2501JE 10-Oct-94	SSA60794 SSG2502JE 10-Oct-94	SSA60894 SSG2503JE 10-Oct-94	SSA60994 SSG2504JE 10-Oct-94	SSA61094 SSG2505JE 10-Oct-94	SSA61094 SSG2621JE 10-Oct-94	SSA61194 SSG2506JE 25-Oct-94	SSA61294 SSG2507JE 28-Sep-94	SS461394 SSG2508JE 28-Sep-94
Test Group:BNACL ACENAPHTHENE Units: µg/kg	330	1.65E 7 / 0.00E 0											
ANTHRACENE	330	8.23E 7 / 0.00E 0											
BENZOFANTHRACENE	330	8.77E 2 / 0.00E 0											
BENZO[APYRENE	330	8.77E 1 / 0.00E 0											
BENZO[FLUORANTHENE	330	8.77E 2 / 0.00E 0											
BENZO[PERYLENE	330	0.00E 0 / 0.00E 0											
BENZO[FLUORANTHENE	330	8.77E 3 / 0.00E 0											
BIS(2-ETHYLHEXYL)PHTHALATE	330	4.57E 4 / 0.00E 0											
BUTYL BENZYL PHTHALATE	330	5.49E 7 / 0.00E 0											
CARBAZOLE	0	E 0 / E 0											
CHRYSENE	330	8.77E 4 / 0.00E 0											
Di-n-BUTYL PHTHALATE	330	2.74E 7 / 0.00E 0											
Di-n-OCTYL PHTHALATE	330	4.57E 4 / 0.00E 0											
DIBENZOFURAN	330	0.00E 0 / 0.00E 0											
FLUORANTHENE	330	1.10E 7 / 0.00E 0											
FLUORENE	330	1.10E 7 / 0.00E 0											
INDENOX[1,2-c]PYRENE	330	8.77E 2 / 0.00E 0											
PENTACHLOROPHENOL	1600	5.34E 3 / 0.00E 0											
PHENANTHRENE	330	0.00E 0 / 0.00E 0											
PYRENE	330	8.23E 6 / 0.00E 0											
Test Group:METADD Units: mg/kg													
LITHIUM	100	5.49E 3 / 20.00E 0											
STRONTIUM	200	1.65E 5 / 90.10E 0											
TIN	200	0.00E 0 / 75.90E 0											
Test Group:SMETCLP Units: mg/kg													
ALUMINIUM	200	7.96E 5 / 21915.40E 0											
ARSENIC	10	3.68E-1 / 12.80E 0											
BARIUM	200	1.91E 4 / 528.00E 0											
BERYLLIUM	5	1.49E-1 / 5.20E 0											
CADMIUM	5	1.37E-2 / 5.00E 0											
CALCIUM	5000	0.00E 0 / 13573.30E 0											
CHROMIUM	10	9.39E 2 / 24.80E 0											
COBALT	50	1.65E 4 / 24.80E 0											
COPPER	23	1.10E 4 / 27.30E 0											
IRON	100	0.00E 0 / 28160.40E 0											
LEAD	3	0.00E 0 / 61.40E 0											
MAGNESIUM	5000	0.00E 0 / 7011.50E 0											
MANGANESE	15	1.36E 3 / 2253.50E 0											
MERCURY	0.2	8.23E-1 / 0.20E 0											
NICKEL	40	5.49E 3 / 26.90E 0											
POTASSIUM	5000	0.00E 0 / 5256.80E 0											
SELENIUM	5	1.37E 3 / 1.40E 0											
SILVER	10	1.37E 3 / 10.00E 0											
SODIUM	5000	0.00E 0 / 1108.00E 0											
VANADIUM	50	1.82E 3 / 55.60E 0											
ZINC	20	8.23E 4 / 86.60E 0											
Test Group:TRADS Units: pCi/g													
AMERICIUM-241	0	2.97E 0 / 6.34E-2	.038(0.14):Y	.053(0.14):Y	.05(0.14):Y	.065(0.13):Y	.023(0.11):Y	.024(0.1):Y	.09(0.15):Y	.11(0.17):Y	.01(0.1):Y	.081(0.16):Y	.048(0.11):Y
GROSS ALPHA	0	0.00E 0 / 44.50E 0	22(3.9):Y	19(3.6):Y	20(3.5):Y	17(3.5):Y	11(2.5):Y	20(3.8):Y	23(3.8):Y	28(4.3):Y	28(4.3):Y	10(2.9):Y	20(3.9):Y
GROSS BETA	0	0.00E 0 / 55.35E 0	27(3.4):Y	25(3.5):Y	26(3.5):Y	24(3.7):Y	16(3.2):Y	30(3.8):Y	25(3.3):Y	32(3.7):Y	33(3.6):Y	14(3.1):Y	24(3.5):Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	.12(0.19):Y	.16(0.2):Y	.1(0.19):Y	.29(0.26):Y	.11(0.17):Y	.018(0.1):Y	.24(0.24):Y	.51(0.4):Y	.022(0.1):Y	.27(0.24):Y	.16(0.19):Y
URANIUM-233-234	0	4.47E 1 / 17.69E-1	1.1(2.4):Y	.68(2.4):Y	.84(2.4):Y	.78(2):Y	1.1(2.5):Y	.59(1.6):Y	.78(2):Y	.73(1.6):Y	.9(1.9):Y	.35(0.63):Y	.78(0.66):Y
URANIUM-235	0	1.73E-1 / 19.83E-2	1(2.4):Y	.92(2.4):Y	.91(2.4):Y	.99(2.4):Y	.65(1.9):Y	.7(1.8):Y	.85(2.1):Y	.82(1.8):Y	1.1(2.4):Y	.4(0.84):Y	.15(0.63):Y
URANIUM-238	0	8.00E-1 / 19.12E-1	1(2.4):Y	.92(2.4):Y	.91(2.4):Y	.99(2.4):Y	.65(1.9):Y	.7(1.8):Y	.85(2.1):Y	.82(1.8):Y	1.1(2.4):Y	.4(0.84):Y	.15(0.63):Y
Test Group:VOACL Units: µg/kg													
1,2-DICHLOROETHENE	5	2.47E 6 / 0.00E 0											
METHYLENE CHLORIDE	5	8.54E 4 / 0.00E 0											
TETRACHLOROETHENE	5	1.23E 4 / 0.00E 0											
TRICHLOROETHENE	0	5.82E 4 / 0.00E 0											

E 3-16
Surface Soil Detectable Concentrations**
OU14 - IHSS 164.2

Sample Location: Sample Identification Number: Date Sampled:	MDL	PRG / BKGD	SS461494 SSG2509JE 28-Sep-94	SS461594 SSG2510JE 28-Sep-94	SS461694 SSG2511JE 28-Sep-94	SS461794 SSG2512JE 28-Sep-94	SS461894 SSG2513JE 28-Sep-94	SS461994 SSG2514JE 28-Sep-94
Test Group: BNACLP Units: µg/kg								
ACENAPHTHENE	330	1.65E 7 / 0.00E 0						
ANTHRACENE	330	8.23E 7 / 0.00E 0						
BENZO(a)ANTHRACENE	330	8.77E 2 / 0.00E 0						
BENZO(a)PYRENE	330	8.77E 1 / 0.00E 0						
BENZO(b)FLUORANTHENE	330	8.77E 2 / 0.00E 0						
BENZO(k)PERYLENE	330	0.00E 0 / 0.00E 0						
BENZO(k)FLUORANTHENE	330	8.77E 3 / 0.00E 0						
BIS(2-ETHYLHEXYL)PHTHALATE	330	4.57E 4 / 0.00E 0						
BUTYL BENZYL PHTHALATE	330	5.49E 7 / 0.00E 0						
CARBAZOLE	0	E 0 / E 0						
CHRYSENE	330	8.77E 4 / 0.00E 0						
DIBUTYL PHTHALATE	330	2.74E 7 / 0.00E 0						
DIBENZO(a,h)ANTHRACENE	330	4.57E 4 / 0.00E 0						
DIBENZO(a,h)ANTHRACENE	330	0.00E 0 / 0.00E 0						
DIBENZO(a,h)ANTHRACENE	330	1.10E 7 / 0.00E 0						
FLUORANTHENE	330	1.10E 7 / 0.00E 0						
FLUORENE	330	8.77E 2 / 0.00E 0						
INDENO(1,2,3-cd)PYRENE	1600	5.34E 3 / 0.00E 0						
PENTACHLOROPHENOL	330	0.00E 0 / 0.00E 0						
PHENANTHRENE	330	8.23E 6 / 0.00E 0						
PYRENE	330	8.23E 6 / 0.00E 0						
Test Group: METADD Units: mg/kg								
LITHIUM	100	5.49E 3 / 20.00E 0						
STRONTIUM	200	1.65E 5 / 90.10E 0						
TIN	200	0.00E 0 / 75.90E 0						
Test Group: SMETCLP Units: mg/kg								
ALUMINUM	200	7.86E 5 / 21915.40E 0						
ARSENIC	10	3.66E-1 / 12.90E 0						
BARIUM	200	1.91E 4 / 528.00E 0						
BERYLLIUM	5	1.49E-1 / 5.20E 0						
CADMIUM	5	1.37E 2 / 5.00E 0						
CALCIUM	5000	0.00E 0 / 13573.30E 0						
CHROMIUM	10	9.39E 2 / 24.80E 0						
COBALT	50	1.65E 4 / 24.80E 0						
COPPER	25	1.10E 4 / 21.30E 0						
IRON	100	0.00E 0 / 28160.40E 0						
LEAD	3	0.00E 0 / 61.40E 0						
MAGNESIUM	5000	0.00E 0 / 7011.50E 0						
MANGANESE	15	1.36E 3 / 2253.50E 0						
MERCURY	0.2	8.23E 1 / 0.20E 0						
NICKEL	40	5.49E 3 / 26.90E 0						
POTASSIUM	5000	0.00E 0 / 5256.80E 0						
SELENIUM	5	1.37E 3 / 1.40E 0						
SILVER	10	1.37E 3 / 10.00E 0						
SODIUM	5000	0.00E 0 / 1108.00E 0						
VANADIUM	50	1.92E 3 / 55.60E 0						
ZINC	20	8.23E 4 / 86.60E 0						
Test Group: TRADS Units: µg/kg								
AMERICIUM-241	0	2.37E 0 / 6.34E-2	0.58(0.13) : Y	12(0.21) : Y	11(0.2) : Y	1(0.17) : Y	15(0.21) : Y	13(0.2) : Y
GROSS ALPHA	0	0.00E 0 / 44.58E 0	7.9(2.6) : Y	31(5.6) : Y	13(2.5) : Y	22(4) : Y	32(4.7) : Y	20(3.5) : Y
GROSS BETA	0	0.00E 0 / 55.35E 0	15(2.6) : Y	31(3.6) : Y	29(3.6) : Y	30(3.7) : Y	31(3.5) : Y	29(3.5) : Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2	23(0.21) : Y	45(0.31) : Y	51(0.45) : Y	37(0.27) : Y	74(0.42) : Y	58(0.43) : Y
URANIUM-233-234	0	4.47E 1 / 17.69E-1	39(0.61) : Y	82(0.69) : Y	86(1) : Y	89(1) : Y	86(1) : Y	81(1.2) : Y
URANIUM-235	0	1.73E 1 / 19.83E-2	0.25(0.16) : Y	0.5(0.25) : Y	0.52(0.26) : Y	0.34(0.23) : Y	0.49(0.22) : Y	1(0.49) : Y
URANIUM-238	0	8.00E-1 / 19.12E-1	42(0.68) : Y	75(0.84) : Y	85(0.98) : Y	88(0.98) : Y	89(1) : Y	82(1.1) : Y
Test Group: VOACL P Units: µg/kg								
1,2-DICHLOROETHENE	5	2.47E 6 / 0.00E 0						
METHYLENE CHLORIDE	5	8.54E 4 / 0.00E 0						
TETRACHLOROETHENE	5	1.23E 4 / 0.00E 0						
TRICHLORO	0	5.82E 4 / 0.00E 0						

Notes:

- A = Validation Qualifier; laboratory qualifier considered acceptable
- B = Laboratory Qualifier; detected in blank
- BNACLP = EPA - CLP Semivolatile Organic Compounds
- E = Laboratory Qualifier; concentration exceeds calibration range of instrument-organic
- HERB8150 = EPA Chlorinated Herbicides
- J = Laboratory Qualifier; estimated value
- MDL = Method Detection Limit
- METADD = Additional Metals
- mg/kg = milligram per kilogram
- NA = Not Analyzed
- PESTCLP = EPA Pesticides/PCB
- PRG = Preliminary Remediation Goals
- SMETCLP = EPA - CLP Metals
- TRADS = Total radionuclides
- U = Undetected
- VOACL P = EPA - CLP Volatile Organic Compounds
- Y = Validation Qualifier; in the process of being validated
- µg/g = microgram per gram
- µg/kg = microgram per kilogram
- # = Indicates compound exceeds background
- * = Indicates compound exceeds PRG
- ** = Based on March 17, 1995, data extraction from RFEDS
- = Indicates PRG for that compound does not exist

TABLE 3-17
Surface Soil Detectable Concentration Data Summary***
OU14 - IHSS 164.2

Test Group:BNACL P Units: µg/kg	MDL	SQL Minimum Value	SQL Minimum Location *	SQL Maximum Value	SQL Maximum Location *	Minimum Concentration	Minimum Concentration Location *	Maximum Concentration
ACENAPHTHENE	330	330	SS458394 (1)	380	SS457994 (5)	110 J.Y	SS456594 (1)	110 J.Y
ANTHRACENE	330	330	SS458394 (1)	380	SS457994 (4)	52 J.Y	SS458294 (1)	210 J.Y
BENZO(a)ANTHRACENE	330	340	SS458194 (1)	380	SS458594 (2)	39 J.A	SS459094 (1)	270 J.Y
BENZO(b)PYRENE	330	330	SS458394 (1)	380	SS458594 (2)	42 J.A	SS458094 (1)	250 J.Y
BENZO(b)FLUORANTHENE	330	340	SS458194 (1)	380	SS458594 (2)	52 J.A	SS459094 (1)	330 J.Y
BENZO(g)PERYLENE	330	330	SS458394 (1)	380	SS457994 (4)	41 J.Y	SS456894 (1)	87 J.Y
BENZO(k)FLUORANTHENE	330	330	SS458394 (1)	380	SS458594 (1)	37 J.A	SS456994 (1)	120 J.Y
BIS(2-ETHYLHEXYL)PHTHALATE	330	340	SS456994 (4)	380	SS458594 (1)	68 J.Y	SS457594 (1)	900 B.V
BUTYL BENZYL PHTHALATE	330	330	SS458394 (1)	380	SS457994 (5)	40 B.J.Y	SS456194 (1)	120 J.Y
CARBAZOLE	0	**	**	**	**	86 J.Y	SS456594 (1)	86 J.Y
CHRYSENE	330	340	SS458194 (1)	380	SS458594 (2)	40 J.A	SS459194 (1)	280 J.Y
DI-n-BUTYL PHTHALATE	330	340	SS456994 (4)	380	SS457994 (4)	38 J.A	SS459094 (1)	72 J.A
DI-n-OCTYL PHTHALATE	330	340	SS458994 (4)	380	SS457994 (5)	43 J.A	SS458394 (1)	97 J.A
DIBENZOFURAN	330	330	SS458394 (1)	380	SS457994 (5)	41 J.Y	SS456594 (1)	41 J.Y
FLUORANTHENE	330	340	SS458194 (1)	380	SS459294 (1)	58 J.Y	SS457294 (2)	740 .Y
FLUORENE	330	330	SS458394 (1)	380	SS457994 (5)	100 J.Y	SS456594 (1)	100 J.Y
INDENO(1,2,3-cd)PYRENE	330	330	SS458394 (1)	380	SS457994 (5)	37 J.Y	SS456694 (1)	110 J.Y
PENTACHLOROPHENOL	1600	1600	SS458994 (3)	1900	SS458294 (3)	210 J.Y	SS456394 (1)	210 J.Y
PHENANTHRENE	330	340	SS458194 (1)	380	SS459294 (1)	40 J.Y	SS458594 (1)	650 .Y
PYRENE	330	340	SS458194 (1)	380	SS459294 (1)	35 J.A	SS459094 (1)	510 .Y
Test Group:METADD Units: mg/kg								
LITHIUM	100	**	**	**	**	4.7 B.V	SS456894 (1)	14.3 B.V
STRONTIUM	200	**	**	**	**	9.4 B.V	SS458794 (1)	157 .V
TIN	200	1.9	SS458094 (3)	2.3	SS456594 (4)	7.3 B.V	SS457494 (1)	7.3 B.V
Test Group:SMETCLP Units: mg/kg								
ALUMINUM	200	**	**	**	**	4220 .V	SS456894 (1)	12600 .V
ARSENIC	10	**	**	**	**	1.5 B.V	SS458794 (1)	8.8 .V
BARIUM	200	**	**	**	**	43.8 .V	SS456894 (1)	144 .V
BERYLLIUM	5	0.18	SS457894 (1)	0.3	SS456194 (2)	24 B.V	SS457494 (1)	67 B.V
CADMIUM	5	0.27	SS458994 (2)	0.33	SS458594 (1)	31 B.V	SS456394 (1)	85 B.V
CALCIUM	5000	**	**	**	**	1350 .V	SS458494 (1)	103000 .V
CHROMIUM	10	**	**	**	**	6.1 .V	SS457694 (1)	14.6 .J
COBALT	50	**	**	**	**	3.4 B.V	SS456894 (1)	12.5 .V
COPPER	25	**	**	**	**	11.7 .J	SS458594 (1)	50.5 .V
IRON	100	**	**	**	**	8560 .V	SS456494 (1)	20000 .V
LEAD	3	**	**	**	**	6.4 .V	SS457094 (1)	31.4 .V
MAGNESIUM	5000	**	**	**	**	2030 .V	SS457894 (1)	11500 .V
MANGANESE	15	**	**	**	**	142 .V	SS458784 (1)	633 .J
MERCURY	0.2	0.04	SS458094 (1)	0.08	SS457494 (1)	.06 .V	SS457994 (2)	.48 B.J
NICKEL	40	**	**	**	**	3.6 B.V	SS456894 (1)	22.8 .V
POTASSIUM	5000	**	**	**	**	1320 .V	SS457094 (1)	3100 .V
SELENIUM	5	0.47	SS459094 (1)	0.58	SS458594 (2)	.87 B.V	SS459494 (1)	.87 B.V
SILVER	10	0.46	SS458994 (1)	1.7	SS457094 (1)	.72 B.J	SS458394 (1)	1.7 B.J
SODIUM	5000	90.8	SS459294 (1)	91	SS459394 (1)	58.3 B.V	SS458994 (1)	1670 .V
VANADIUM	50	**	**	**	**	13.7 .V	SS458494 (1)	37.9 .V

TABLE 3-17
Surface Soil Detectable Concentration Data Summary***
OU14 - IHSS 164.2

	MDL	SQL Minimum Value	SQL Minimum Location *	SQL Maximum Value	SQL Maximum Location *	Minimum Concentration	Minimum Concentration Location *	Maximum Concentration
ZINC	20	**	**	**	**	24.5 :V	SS457894 (1)	368 :J
Test Group:TRADES								
Units: pCi/g								
AMERICIUM-241	0.007	**	**	**	**	(.006) U:Y:Y	SS457094 (1)	.18(.032) :Y
GROSS ALPHA	2	**	**	**	**	1.9(1.8) U:Y	SS459494 (1)	45(5.6) :Y
GROSS BETA	4	**	**	**	**	-1.3(2.3) U:Y	SS459494 (1)	41(3.9) :Y
PLUTONIUM-239/240	0.006	**	**	**	**	-.001(.002) U:Y	SS457094 (1)	.82(.049) :Y
URANIUM-233,-234	0.04	**	**	**	**	.35(.063) :Y	SS461294 (1)	1.4(.27) :Y
URANIUM-235	0.03	**	**	**	**	(.028) U:Y:Y	SS456894 (3)	.15(.078) J:Y
URANIUM-238	0.03	**	**	**	**	.4(.064) :Y	SS461294 (1)	1.3(.25) :Y
Test Group:VOACL P								
Units: µg/kg								
1,2-DICHLOROETHENE	5	5	SS456194 (21)	6	SS456394 (10)	16 :V	SS457394 (1)	16 :V
METHYLENE CHLORIDE	5	5	SS456194 (12)	8	SS459294 (1)	2 J:A	SS456894 (1)	20 :V
TETRACHLOROETHENE	5	5	SS456194 (21)	6	SS456394 (10)	1 J:A	SS457394 (1)	1 J:A
TRICHLOROETHENE	5	5	SS456694 (19)	6	SS456394 (10)	2 J:A	SS456194 (2)	34 :V

TABLE 3-17
Surface Soil Detectable Concentration Data Summary***
OU14 - IHSS 164.2

Test Group:BNACLCP Units: µg/kg	MDL	Maximum Concentration Location *	Number of Detects	Total Number of Samples	Average Concentration
ACENAPHTHENE	330	SS456594 (1)	1	32	177.3438
ANTHRACENE	330	SS456594 (1)	2	32	176.1563
BENZO(a)ANTHRACENE	330	SS456594 (1)	19	32	118.0313
BENZO(b)PYRENE	330	SS456594 (1)	14	32	140.7188
BENZO(d)FLUORANTHENE	330	SS456594 (1)	19	32	146.4063
BENZO(ghi)PERYLENE	330	SS456594 (1)	6	32	156.75
BENZO(k)FLUORANTHENE	330	SS456594 (2)	15	32	124.75
BIS(2-ETHYLHEXYL)PHTHALATE	330	SS458394 (1)	17	32	181.2188
BUTYL BENZYL PHTHALATE	330	SS457494 (1)	2	32	173.2813
CARBAZOLE	0	SS456594 (1)	1	1	86
CHRYSENE	330	SS456594 (1)	19	32	127.2813
DI-n-BUTYL PHTHALATE	330	SS458394 (1)	6	32	156.5938
DI-n-OCTYL PHTHALATE	330	SS459094 (1)	4	32	165.75
DIBENZOFURAN	330	SS456594 (1)	1	32	175.1875
FLUORANTHENE	330	SS456594 (1)	21	32	190.3438
FLUORENE	330	SS456594 (1)	1	32	177.0313
INDENO(1,2,3-cd)PYRENE	330	SS456594 (1)	7	32	153.6875
PENTACHLOROPHENOL	1600	SS456394 (1)	1	32	848.75
PHENANTHRENE	330	SS456594 (1)	21	32	145.6563
PYRENE	330	SS456594 (1)	21	33	157.8485
Test Group:METADD Units: mg/kg					
LITHIUM	100	SS456594 (1)	32	32	8.1812
STRONTIUM	200	SS456594 (1)	32	32	54.225
TIN	200	SS457494 (1)	1	32	1.2453
Test Group:SMETCLP Units: mg/kg					
ALUMINUM	200	SS459094 (1)	32	32	6944.063
ARSENIC	10	SS459394 (1)	32	32	3.5719
BARIUM	200	SS459494 (1)	32	32	82.8625
BERYLLIUM	5	SS459494 (1)	25	32	0.3564
CADMIUM	5	SS459294 (1)	5	32	0.2003
CALCIUM	5000	SS459194 (1)	32	32	30453.13
CHROMIUM	10	SS459394 (1)	32	32	9.7406
COBALT	50	SS457894 (1)	32	32	6.1312
COPPER	25	SS456794 (1)	32	32	21.225
IRON	100	SS459094 (1)	32	32	11705
LEAD	3	SS458294 (1)	32	32	15.1344
MAGNESIUM	5000	SS459094 (1)	32	32	3664.688
MANGANESE	15	SS456794 (1)	32	32	259.4375
MERCURY	0.2	SS456594 (1)	5	32	0.0473
NICKEL	40	SS459094 (1)	32	32	8.2438
POTASSIUM	5000	SS458094 (1)	32	32	1955.313
SELENIUM	5	SS459494 (1)	1	32	0.2836
SILVER	10	SS456794 (1)	12	32	0.6436
SODIUM	5000	SS459094 (1)	30	32	199.3875
VANADIUM	50	SS459094 (1)	32	32	21.3531

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TABLE 3-17
Surface Soil Detectable Concentration Data Summary***
OU14 - IHSS 164.2

	MDL	Maximum Concentration Location *	Number of Defects	Total Number of Samples	Average Concentration
ZINC	20	SS456494 (1)	32	32	85.4844
Test Group: TRADS					
Units: pCi/g					
AMERICIUM-241	0.007	SS458994 (1)	58	58	0.0434
GROSS ALPHA	2	SS459594 (1)	58	58	17.3483
GROSS BETA	4	SS459594 (1)	58	58	25.214
PLUTONIUM-239/240	0.006	SS458994 (1)	58	58	0.1567
URANIUM-233, 234	0.04	SS459594 (1)	58	58	0.835
URANIUM-235	0.03	SS456194 (1)	58	58	0.0474
URANIUM-238	0.03	SS459594 (1)	58	58	0.7909
Test Group: VOACL P					
Units: µg/kg					
1,2-DICHLOROETHENE	5	SS457394 (1)	1	32	3.0781
METHYLENE CHLORIDE	5	SS457094 (1)	13	32	4.5313
TETRACHLOROETHENE	5	SS457394 (1)	1	32	2.6094
TRICHLOROETHENE	5	SS457394 (1)	3	32	3.6094

Notes:

- A = Validation Qualifier; laboratory qualifier considered acceptable
- B = Laboratory Qualifier; detected in blank
- BNACL P = EPA - CLP Semivolatile Organic Compounds
- E = Laboratory Qualifier; concentration exceeds calibration range of instrument-organic
- G = Native analyte greater than four times spike added - inorganics
- HERB8150 = EPA Chlorinated Herbicides
- J = Laboratory Qualifier; estimated value
- MDL = Method Detection Limit
- METADD = Additional Metals
- mg/kg = milligram per kilogram
- PESTCLP = EPA Pesticide/PCB
- SMETCLP = EPA - CLP Metals
- SQL = Sample Quantitation Limit
- TRADS = Total radionuclides
- U = Undetected
- V = Validation Qualifier; valid data
- VOACL P = EPA - CLP Volatile Organic Compounds
- Y = Validation Qualifier; in the process of being validated
- µg/g = microgram per gram
- µg/kg = microgram per kilogram
- * = The number of sample locations at that value is shown in parenthesis
- ** = All samples reported with positive results; no nondetects reported
- *** = Based on March 17, 1995 data extraction from RFEDS

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TABLE 3-18
Surface Soil Detectable Concentrations**
OU14 - IHSS 164.3

Sample Location:	Sample Identification Number:	MDL	PRG / BKGND	SS462094 SSG2515JE 28-Sep-94	SS462194 SSG2516JE 28-Sep-94	SS462294 SSG2517JE 30-Sep-94	SS462394 SSG2518JE 30-Sep-94	SS462494 SSG2519JE 30-Sep-94	SS462594 SSG2520JE 30-Sep-94	SS462694 SSG2521JE 30-Sep-94	SS462794 SSG2522JE 30-Sep-94	SS462894 SSG2523JE 27-Sep-94
Test Group: TRADS	Units: pCi/g											
AMERICIUM-241	0	2.37E 0 / 6.34E-2		.012(.004) J.Y	18(3.7) :Y	14(3.2) :Y	.038(.013) :Y	0.45(.016) :Y	.048(.016) :Y	0.42(.012) :Y	.024(.01) :Y	.058(.016) :Y
GROSS ALPHA	0	0.00E 0 / 44.56E 0		11(2.9) :Y	26(3.4) :Y	24(3.3) :Y	23(3.3) :Y	18(3.7) :Y	25(4.3) :Y	17(3.6) :Y	19(3.6) :Y	18(3.8) :Y
GROSS BETA	0	0.00E 0 / 55.35E 0		24(3.3) :Y	1(0.17) :Y	0.82(.012) :Y	12(.016) :Y	25(4.8) :Y	27(4.7) :Y	28(4.1) :Y	21(4.5) :Y	28(3.6) :Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2		.035(.009) :Y	.62(.12) :Y	.66(.13) :Y	.85(.2) :Y	.11(.014) :Y	.13(.015) :Y	.069(.011) :Y	.12(.014) :Y	.12(.016) :Y
URANIUM-233-234	0	4.47E 1 / 17.69E-1		.58(.086) :Y				.78(.14) :Y	.85(.14) :Y	.64(.13) :Y	.67(.14) :Y	.73(.12) :Y
URANIUM-235	0	1.73E-1 / 19.83E-2		.043(.026) J.Y	.055(.033) J.Y					.067(.04) J.Y	.052(.039) J.Y	.059(.032) J.Y
URANIUM-238	0	8.00E-1 / 19.12E-1		.68(.093) :Y	.69(.12) :Y	.65(.12) :Y	.78(.2) :Y	.69(.13) :Y	.95(.15) :Y	.73(.14) :Y	.94(.15) :Y	.98(.15) :Y

Sample Location:	Sample Identification Number:	MDL	PRG / BKGND	SS463194 SSG2526JE 29-Sep-94	SS463294 SSG2527JE 4-Oct-94	SS463394 SSG2528JE 4-Oct-94	SS463494 SSG2529JE 4-Oct-94	SS463494 SSG2814JE 4-Oct-94	SS463594 SSG2530JE 4-Oct-94	SS463694 SSG2531JE 30-Sep-94
Test Group: TRADS	Units: pCi/g									
AMERICIUM-241	0	2.37E 0 / 6.34E-2		.017(.008) J.Y	.024(.009) :Y	.007(.005) J.Y	.011(.005) J.Y	.017(.011) J.Y	.014(.007) J.Y	.047(.014) :Y
GROSS ALPHA	0	0.00E 0 / 44.56E 0		13(3.5) :Y	12(2.7) :Y	24(3.8) :Y	30(4.1) :Y	14(3.1) :Y	12(3.2) :Y	15(3.2) :Y
GROSS BETA	0	0.00E 0 / 55.35E 0		30(3.5) :Y	23(3.2) :Y	33(3.8) :Y	24(4.4) :Y	21(3.3) :Y	17(3.5) :Y	28(3.5) :Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2		.052(.01) :Y	.064(.012) :Y	.028(.008) J.Y	.02(.007) J.Y	.026(.007) J.Y	.054(.011) :Y	.17(.017) :Y#
URANIUM-233-234	0	4.47E 1 / 17.69E-1		.81(.11) :Y	.55(.15) :Y	1.4(.24) :Y	2.4(.33) :Y#	.71(.14) :Y	.79(.17) :Y	.92(.14) :Y
URANIUM-235	0	1.73E-1 / 19.83E-2		.042(.03) J.Y		.18(.076) J.Y	.14(.073) J.Y			.057(.042) J.Y
URANIUM-238	0	8.00E-1 / 19.12E-1		.84(.11) :Y	.64(.16) :Y	4.7(.54) :Y#	5.1(.56) :Y#	.85(.16) :Y	1(.19) :Y	1.2(.16) :Y

Sample Location:	Sample Identification Number:	MDL	PRG / BKGND	SS463794 SSG2532JE 30-Sep-94	SS463894 SSG2533JE 27-Sep-94	SS464094 SSG2535JE 28-Sep-94	SS464194 SSG2536JE 4-Oct-94	SS464294 SSG2537JE 19-Oct-94	SS464394 SSG2538JE 19-Oct-94	SS464494 SSG2539JE 10-Oct-94
Test Group: TRADS	Units: pCi/g									
AMERICIUM-241	0	2.37E 0 / 6.34E-2		.09(.021) :Y#	.11(.009) :Y#	.011(.003) J.Y	.082(.015) :Y#	.29(.033) :Y#		.015(.01) J.Y
GROSS ALPHA	0	0.00E 0 / 44.56E 0		26(4.1) :Y	21(4.1) :Y	13(3.1) :Y	18(3.4) :Y	22(3.8) :Y	16(3.3) :Y	13(3.2) :Y
GROSS BETA	0	0.00E 0 / 55.35E 0		42(4) :Y	48(4.2) :Y	23(3.4) :Y	25(3.3) :Y	27(3.6) :Y	26(3.4) :Y	30(3.4) :Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2		.4(.028) :Y#	.32(.03) :Y#	.017(.007) J.Y	.31(.029) :Y#	1.1(.056) :Y#	21(3.2) :A	
URANIUM-233-234	0	4.47E 1 / 17.69E-1		1.7(.27) :Y	3.9(.31) :Y#	.68(.096) :Y	.67(.17) :Y	3.2(.41) :Y#	.48(.11) :Y	.75(.16) :Y
URANIUM-235	0	1.73E-1 / 19.83E-2		.21(.093) J.Y#	.4(.085) :Y#	.036(.029) J.Y		.18(.076) J.Y		
URANIUM-238	0	8.00E-1 / 19.12E-1		11(1) :Y#	14(.88) :Y#	.61(.09) :Y	.78(.17) :Y	3.6(.44) :Y#	.54(.11) :Y	1.1(.2) :Y

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TABLE 3-18
Surface Soil Detectable Concentrations**
OU14 - IHSS 164.3

Sample Location: Sample Identification Number: Date Sampled: Test Group: TRADS	Units: pCi/g	MDL	PRG / BKGND	SS464594 SSG2540JE 27-Sep-94	SS464694 SSG2541JE 27-Sep-94	SS464794 SSG2542JE 28-Sep-94	SS464794 SSG2599JE 28-Sep-94	SS464894 SSG2543JE 29-Sep-94	SS464994 BFG0131JE 5-Oct-94	SS464994 SSG2544JE 5-Oct-94	SS465094 SSG2545JE 5-Oct-94	SS465194 BFG0132JE 6-Oct-94
AMERICIUM-241	0	2.37E 0 / 6.34E-2		.052(.015) :Y	.046(.015) :Y	.004(.002) J:Y	.006(.002) J:Y	.019(.006) J:Y	.012(.01) J:Y			
GROSS ALPHA	0	0.00E 0 / 44.56E 0		21(3.8) :Y	12(3.1) :Y	7.4(2.5) :Y	9(2.7) :Y	17(3.9) :Y	14(3) :Y			29(5.1) :A
GROSS BETA	0	0.00E 0 / 55.35E 0		28(3.7) :Y	26(3.5) :Y	29(3.6) :Y	30(3.5) :Y	36(3.9) :Y	38(4.1) :A			37(3.8) :A
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2		.22(.025) :Y#	.12(.02) :Y	.011(.005) J:Y	.016(.008) J:Y	.067(.015) :Y	.047(.012) :Y			.008(.005) J:Y
URANIUM-233-234	0	4.47E 1 / 17.69E-1		1.9(.19) :Y#	.81(.12) :Y	.8(1.3) :Y	.71(.12) :Y	1.1(.29) :Y	.65(.16) :Y			1(.24) :Y
URANIUM-235	0	1.73E-1 / 19.83E-2		.16(.05) J:Y			.084(.064) J:Y					
URANIUM-238	0	8.00E-1 / 19.12E-1		3.2(.27) :Y#	1.1(.14) :Y*	.72(.12) :Y	.81(.13) :Y*	1(.21) :Y*	.78(.17) :Y			.65(.2) :Y*

Sample Location: Sample Identification Number: Date Sampled: Test Group: TRADS	Units: pCi/g	MDL	PRG / BKGND	SS465194 SSG2546JE 6-Oct-94	SS465294 SSG2547JE 6-Oct-94	SS465394 SSG2548JE 6-Oct-94	SS465494 SSG2549JE 6-Oct-94	SS465594 SSG2550JE 6-Oct-94	SS465694 SSG2551JE 6-Oct-94	SS465794 SSG2552JE 28-Sep-94	SS465894 SSG2553JE 29-Sep-94	SS465994 SSG2554JE 4-Oct-94
AMERICIUM-241	0	2.37E 0 / 6.34E-2		.019(.009) J:Y	.16(.024) :Y#	.084(.018) :Y#						
GROSS ALPHA	0	0.00E 0 / 44.56E 0		14(3.2) :Y	20(3.8) :Y	14(3.8) :Y	47(6.5) :Y#	24(4.4) :Y	28(4.5) :Y			24(4.1) :Y
GROSS BETA	0	0.00E 0 / 55.35E 0		22(3.2) :Y	25(3.5) :Y	23(3.5) :Y	48(4.1) :Y	34(3.7) :Y	33(3.8) :Y			28(3.4) :Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2		.089(.014) :Y	.75(.045) :Y#	.4(.032) :Y#		.88(.21) :Y	.63(.16) :Y			1.4(.054) :Y#
URANIUM-233-234	0	4.47E 1 / 17.69E-1		.71(.17) :Y	1.3(.25) :Y	1(.21) :Y	1.1(.21) :Y					.74(.19) :Y
URANIUM-235	0	1.73E-1 / 19.83E-2					.082(.062) J:Y					
URANIUM-238	0	8.00E-1 / 19.12E-1		.75(.17) :Y	.91(.2) :Y*	.93(.19) :Y*	1.1(.22) :Y*	.92(.21) :Y*	.82(.19) :Y*			.69(.17) :Y

Sample Location: Sample Identification Number: Date Sampled: Test Group: TRADS	Units: pCi/g	MDL	PRG / BKGND	SS466094 SSG2555JE 4-Oct-94	SS466194 SSG2556JE 10-Oct-94	SS466294 SSG2557JE 10-Oct-94	SS466594 SSG2560JE 4-Oct-94
AMERICIUM-241	0	2.37E 0 / 6.34E-2		.36(.031) :Y#		.034(.015) :Y	
GROSS ALPHA	0	0.00E 0 / 44.56E 0		18(3.2) :Y	19(3.7) :Y	15(3.2) :Y	11(3.5) :Y
GROSS BETA	0	0.00E 0 / 55.35E 0		29(3.5) :Y	41(4) :Y	23(3.4) :Y	23(3.2) :Y
PLUTONIUM-239/240	0	3.42E 0 / 13.21E-2		2.2(.083) :Y#	.011(.008) J:Y	.13(.019) :Y	.13(.018) :Y
URANIUM-233-234	0	4.47E 1 / 17.69E-1		.47(.14) :Y	.51(.13) :Y	.75(.16) :Y	.83(.2) :Y
URANIUM-235	0	1.73E-1 / 19.83E-2		.64(.16) :Y	.54(.13) :Y	.68(.15) :Y	.71(.18) :Y
URANIUM-238	0	8.00E-1 / 19.12E-1					

Notes:

A = Validation Qualifier; laboratory qualifier considered acceptable

B = Laboratory Qualifier; detected in blank

BKGND = Background concentration (DOE 1994a)

BNACL P = EPA - CLP Semivolatile Organic Compounds

E = Laboratory Qualifier; concentration exceeds calibration range of instrument-organic

HERB8150 = EPA Chlorinated Herbicides

J = Laboratory Qualifier; estimated value

MDL = Method Detection Limit

METADD = Additional Metals

mg/kg = milligram per kilogram

NA = Not Analyzed

PESTCLP = EPA Pesticide/PCB

PRG = Preliminary Remediation Goal

SMETCLP = EPA - CLP Metals

TRADS = Total radionuclides

U = Undetected

V = Validation Qualifier; valid data

VOACL P = EPA - CLP Volatile Organic Compounds

Y = Validation Qualifier; in the process of being validated

µg/g = microgram per gram

µg/kg = microgram per kilogram

= Indicates compound exceeds background

* = Indicates compound exceeds PRG

** = Based on March 17, 1995, data extraction from RFEDS

- = Indicates PRG for that compound does not exist

TABLE 3-19
Surface Soil Detectable Concentration Data Summary
OU14 - IHSS 164.3

Test Group: TRADS	Units: $\mu\text{Ci/g}$	MDL	SOL Minimum Value	SOL Minimum Location *	SOL Maximum Value	SOL Maximum Location *	Minimum Concentration	Minimum Concentration Location *	Maximum Concentration	Maximum Concentration Location *	Number of Defects	Total Number of Samples	Average Concentration
AMERICIUM-241		0.03					.004(.008) U:Y	SS465094 (1)	.36(.031) :Y	SS466094 (1)	52	52	0.0424
GROSS ALPHA		4					7.4(2.5) :Y	SS464794 (1)	47(6.5) :Y	SS465494 (1)	50	50	18.4
GROSS BETA		4					16(4.2) :Y	SS464994 (1)	48(4.2) :Y	SS463894 (2)	52	52	28.4231
PLUTONIUM-239/240		0.005					.001(.002) U:Y	SS465594 (1)	2.2(.083) :Y	SS466094 (1)	52	52	0.1945
URANIUM-233, 234		0.07					.47(.14) :Y	SS466094 (1)	3.9(.31) :Y	SS463894 (1)	52	52	1.0083
URANIUM-235		0.09					(.019) U:V:Y	SS464994 (2)	.4(.085) :Y	SS463894 (1)	52	52	0.0567
URANIUM-238		0.07					.54(.11) :V	SS464394 (3)	14(.88) :Y	SS463894 (1)	52	52	1.5187

Notes:

- A = Validation Qualifier, laboratory qualifier considered acceptable
- B = Laboratory Qualifier, detected in blank
- BNACLP = EPA - CLP Semi-volatile Organic Compounds
- E = Laboratory Qualifier, concentration exceeds calibration range of instrument-organic
- G = Native analyte greater than four times spike added - Inorganics
- HERB150 = EPA Chlorinated Herbicides
- J = Laboratory Qualifier, estimated value
- MDL = Method Detection Limit
- METADD = Additional Metals
- mg/kg = milligram per kilogram
- PESTCLP = EPA Pesticide/PCB
- SMETCLP = EPA - CLP Metals
- SOL = Sample Quantitation Limit
- TRADS = Total radionuclides
- U = Undetected
- V = Validation Qualifier, valid data
- VOACLP = EPA - CLP Volatile Organic Compounds
- Y = Validation Qualifier, in the process of being validated
- $\mu\text{g/g}$ = microgram per gram
- $\mu\text{Ci/g}$ = microgram per kilogram
- * = The number of sample locations at that value is shown in parenthesis
- ** = All samples reported with positive results; no nondetects reported
- *** = Based on March 17, 1995, data extraction from RFEDS

TABLE 4-1
Statistical Summary of Surface-Soil Data for IHSS 131

Semivolatiles (µg/kg)	Mean	Standard Deviation	Coefficient of Variation	Coefficient of Skewness	N	n(0.5, 2)	n(1, 2)	n(0.5, 3)	n(1, 3)	n(1, 5)	n(2, 5)
Acenaphthene	453	1070	2.38	4.12	18	339	377	238	168	61	37
Anthracene	467	1067	2.35	4.04	18	531	374	256	167	61	37
Benzo(a)anthracene	835	2051	2.46	3.69	18	561	408	254	162	68	40
Benzo(b)pyrene	427	477	1.12	1.69	18	121	85	54	38	14	9
Benzo(k)fluoranthene	982	2055	2.09	3.62	18	422	297	198	132	48	28
Benzo(e)fluoranthene	423	775	1.83	3.72	18	324	228	144	102	37	23
Bis(2-ethylhexyl)phthalate	147	106	0.72	1.64	18	50	36	23	16	6	4
Butyl benzyl phthalate	190	119	0.63	0.87	18	38	27	17	12	5	3
Chrysene	700	1457	2.08	3.73	18	418	283	185	131	47	28
Fluoranthene	1987	2830	2.03	3.45	18	395	278	176	124	45	27
Fluorene	394	906	2.30	4.15	18	508	358	227	160	58	35
Indeno(1,2,3-cd)pyrene	283	318	1.12	3.69	18	122	86	54	38	14	9
Phenanthrene	1341	3048	2.27	3.98	18	496	348	221	156	56	34
Pyrene	1460	2914	2.00	3.13	18	383	270	170	120	44	27
Volatiles (µg/kg)											
Acetone	40.28	17.75	0.44	0.61	19	19	14	9	6	3	2
Cyclohexane	10.80	4.15	0.38	1.92	5	15	10	7	5	2	1
Methylene chloride	5.34	1.93	0.36	0.59	19	13	9	6	4	2	1
Tetrachloroethene	17.16	34.28	2.00	3.05	19	383	270	171	120	44	27
n-Heptane	15.50	9.81	0.63	0.00	4	39	28	18	13	5	3
Metals (mg/kg)											
Cesium	4.05	1.25	0.31	0.42	16	10	7	5	3	2	1
Lithium	6.42	2.02	0.32	-0.78	16	10	7	5	3	2	1
Strontium	16.04	4.16	0.26	-0.08	16	7	5	3	3	1	1
Aluminum	5837	3319	0.57	1.66	16	32	22	14	10	4	3
Arsenic	3.76	2.24	0.60	1.16	16	35	24	16	11	4	3
Barium	58.63	28.24	0.46	2.33	16	21	15	10	7	3	2
Beryllium	0.408	0.309	0.76	1.63	16	58	36	25	18	7	4
Calcium	2698	1080	0.40	0.44	16	16	11	7	5	2	2
Chromium	10.27	5.02	0.49	2.19	16	28	17	11	8	3	2
Cobalt	6.50	2.48	0.38	-0.43	16	14	10	7	5	2	1
Copper	20.63	16.92	0.82	3.54	16	95	46	29	21	8	5
Iron	9748	3375	0.35	0.60	16	12	9	6	4	2	1
Lead	11.99	4.95	0.42	0.12	16	18	13	8	6	2	2
Magnesium	1842	475	0.26	-1.82	16	7	5	3	2	1	1
Manganese	157.99	53.00	0.34	-0.48	16	11	8	5	4	2	1
Nickel	7.988	3.538	0.44	1.15	16	19	14	9	6	3	2
Potassium	1219	217	0.18	-2.59	16	4	3	2	1	1	1
Silver	0.860	0.413	0.48	-0.05	16	23	16	10	7	3	2
Sodium	92.60	45.29	0.49	0.28	16	23	17	11	8	3	2
Vanadium	17.06	6.83	0.40	1.76	16	16	11	7	5	2	2
Zinc	137.7	224.9	1.63	2.49	16	257	181	114	81	29	18
Radionuclides (pCi/g)											
Americium-241	0.0616	0.1021	1.25	1.91	13	151	106	67	48	17	11
Gross Alpha	21.23	5.45	0.26	-0.03	13	7	5	3	2	1	1
Gross Beta	29.85	5.21	0.17	-0.89	13	3	3	2	2	1	1
Plutonium-239/240	0.552	0.738	1.34	2.14	13	172	122	77	54	20	12
Uranium-233/234	0.784	0.188	0.24	-0.49	13	6	4	3	2	1	1
Uranium-235	0.0423	0.0217	0.51	0.38	13	26	18	12	6	3	2
Uranium-238	0.795	0.128	0.25	-0.44	13	7	5	3	2	1	1

Notes:
 N = number of Phase I, Stage 1 samples
 n(c, d) = number of samples required for a probability α that the relative error in the estimate of the mean is ≥ d.
 = n(c, d) > N
 µg/kg = milligrams per kilogram
 µg/g = micrograms per kilogram
 pCi/g = picocuries per gram

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TABLE 4-2
Statistical Summary of Surface-Soil Data for IHSS 156.1

Radionuclides (pCi/g)	Mean	Standard Deviation	Coefficient of Variation	Coefficient of Skewness	N	n(.05, .2)	n(.1, .2)	n(.05, .3)	n(.1, .3)	n(.1, .5)	n(.2, .5)
Americium-241	0.00516	0.00675	1.31	2.78	62	165	115	73	52	19	12
Gross Alpha	15.70	5.07	0.32	0.40	65	10	8	5	4	2	1
Gross Beta	29.06	5.74	0.20	-0.54	65	4	3	2	2	1	1
Plutonium-239/240	0.0184	0.0333	1.81	2.86	65	315	222	140	99	36	22
Uranium-233/234	0.8489	0.2062	0.24	0.52	65	6	4	3	2	1	1
Uranium-235	0.0509	0.0284	0.56	0.43	65	30	22	14	10	4	3
Uranium-238	0.8491	0.2160	0.25	0.28	65	7	5	3	2	1	1

Notes:

N = number of Phase I, Stage 1 samples

n(α, d) = number of samples required for a probability α that the relative error in the estimate of the mean is ≥ d.

••••• = n(α, d) > N

pCi/g = picocuries per gram

TABLE 4-3
Statistical Summary of Surface-Soil Data for IHSS 160

Metals (mg/kg)	Mean	Standard Deviation	Coefficient of Variation	Coefficient of Skewness	N	n(.05, .2)	n(.1, .2)	n(.05, .3)	n(.1, .3)	n(.1, .5)	n(.2, .5)
Lithium	6.62	3.41	0.51	1.37	45	26	18	12	8	3	2
Srtrontium	16.29	8.40	0.52	4.45	45	26	18	12	8	3	2
Aluminum	6211	3004	0.48	0.98	45	23	16	10	8	3	2
Arsenic	3.49	1.51	0.43	1.52	45	18	13	8	6	3	2
Barium	68.257778	29.81124	0.44	1.12	45	19	13	9	6	3	2
Beryllium	0.447	0.320	0.71	2.62	45	50	35	22	16	6	4
Calcium	3733	3205	0.86	2.61	45	71	50	32	23	8	5
Chromium	14.14	19.04	1.35	3.78	45	174	123	78	55	20	12
Cobalt	5.93	2.83	0.48	1.29	45	22	16	10	7	3	2
Copper	20.96	10.23	0.49	1.32	45	23	17	11	8	3	2
Iron	12128	6496	0.54	1.18	45	28	20	13	9	4	2
Lead	33.24	63.34	1.91	5.72	45	349	246	156	110	40	24
Magnesium	2482	1653	0.67	1.57	45	43	31	19	14	5	3
Manganese	256	160	0.62	1.28	45	38	27	17	12	5	3
Nickel	6.36	2.39	0.38	1.06	45	14	10	7	5	2	1
Potassium	1729	977	0.57	1.16	45	31	22	14	10	4	3
Silver	1.24	1.24	1.00	3.33	45	96	68	43	30	11	7
Sodium	156.5	236.3	1.51	4.75	45	220	155	98	69	25	15
Vanadium	20.81	9.93	0.48	0.86	45	22	16	10	7	3	2
Zinc	74.18	52.57	0.71	2.39	45	49	34	22	16	6	4
Radionuclides (pCi/g)											
Gross Alpha	16.75	13.12	0.78	7.12	94	59	42	27	19	7	5
Gross Beta	30.59	5.66	0.19	1.55	94	4	3	2	2	1	1
Plutonium-239/240	3.51	16.29	4.64	8.21	93	2064	1454	918	646	233	142
Uranium, total	2.86	2.78	0.97	5.68	86	91	65	41	29	11	7

Notes:

- N = number of Phase 1, Stage 1 samples
- n(α, d) = number of samples required for a probability α that the relative error in the estimate of the mean is ≥ d.
- = n(α, d) > N
- mg/kg = milligrams per kilogram
- pCi/g = picocuries per gram

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TABLE 4-4
Statistical Summary of Surface-Soil Data for IHSS 161

Radionuclides (pCi/gm)	Mean	Standard Deviation	Coefficient of Variation	Coefficient of Skewness	N	n(.05, .2)	n(.1, .2)	n(.05, .3)	n(.1, .3)	n(.1, .5)	n(.2, .5)
Gross Alpha	17.07	8.67	0.51	1.44	28	25	18	12	8	3	2
Gross Beta	32.32	7.83	0.24	1.95	28	6	4	3	2	1	1
Plutonium-239/240	0.0430	0.0709	1.65	3.06	28	262	185	117	82	30	16
Uranium, total	2.442	0.442	0.18	0.22	24	4	3	2	1	1	1

Notes:

N = number of Phase I, Stage 1 samples

n(α, d) = number of samples required for a probability α that the relative error in the estimate of the mean is ≥ d.

..... = n(α, d) > N

pCi/g = picocuries per gram

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TABLE 4-5
Statistical Summary of Surface-Soil Data for IHSS 162

Radionuclides (pCi/gm)	Mean	Standard Deviation	Coefficient of Variation	Coefficient of Skewness	N	n(.05, .2)	n(.1, .2)	n(.05, .3)	n(.1, .3)	n(.1, .5)	n(.2, .5)
Americium-241	0.0319	0.0574	1.80	3.50	21	312	220	139	98	38	22
Gross Alpha	15.90	3.91	0.25	0.13	21	6	5	3	2	1	1
Gross Beta	30.67	3.40	0.11	-1.16	21	2	1	1	1	1	1
Plutonium-239/240	0.161	0.328	2.04	3.76	21	400	282	178	125	45	28
Uranium-233/234	0.872	0.249	0.29	0.12	21	8	6	4	3	1	1
Uranium-235	0.0430	0.0250	0.58	0.80	21	33	23	15	11	4	3
Uranium-238	0.894	0.259	0.29	0.14	21	9	6	4	3	1	1

Notes:

N = number of Phase I, Stage 1 samples

n(α, d) = number of samples required for a probability α that the relative error in the estimate of the mean is ≥ d.

█ = n(α, d) > N

pCi/g = picocuries per gram

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TABLE 4-6
Statistical Summary of Surface-Soil Data for IHSS 164.1

Radionuclides (pCi/gm)	Mean	Standard Deviation	Coefficient of Variation	Coefficient of Skewness	N	n(.05, .2)	n(.1, .2)	n(.05, .3)	n(.1, .3)	n(.1, .5)	n(.2, .5)
Americium-241	0.00427	0.00547	1.28	0.62	15	158	112	71	50	18	11
Gross Alpha	16.07	6.10	0.38	2.75	15	14	10	7	5	2	1
Gross Beta	28.13	4.67	0.17	-0.07	15	3	2	2	1	1	1
Plutonium-239/240	0.0197	0.0211	1.07	1.40	15	111	78	49	35	13	8
Uranium-233/234	0.812	0.189	0.23	0.53	15	6	4	3	2	1	1
Uranium-235	0.0424	0.0217	0.51	0.40	15	26	18	12	8	3	2
Uranium-238	0.812	0.191	0.24	0.11	15	6	4	3	2	1	1

Notes:

- N = number of Phase I, Stage 1 samples
- n(α, d) = number of samples required for a probability α that the relative error in the estimate of the mean is ≥ d.
- n(α, d) > N
- pCi/g = picocuries per gram

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TABLE 4-7
Statistical Summary of Surface-Soil Data for IHSS 164.2

Semivolatiles (µg/kg)	Mean	Standard Deviation	Coefficient of Variation	Coefficient of Skewness	N	n(.05, .2)	n(.1, .2)	n(.05, .3)	n(.1, .3)	n(.1, .5)	n(.2, .5)
Benzo(a)anthracene	119.3	65.0	0.54	0.33	32	29	21	13	9	4	2
Benzo(a)pyrene	141.7	54.8	0.39	-0.36	32	15	11	7	5	2	1
Benzo(b)fluoranthene	146.4	55.7	0.38	0.74	32	14	10	7	5	2	1
Benzo(k)fluoranthene	124.8	59.7	0.48	-0.36	32	22	16	10	7	3	2
Bis(2-ethylhexyl)phthalate	181.2	142.6	0.79	4.35	32	60	42	27	19	7	5
Chrysene	127.3	60.3	0.47	0.33	32	22	16	10	7	3	2
Fluoranthene	190.3	116.4	0.61	3.64	32	36	26	16	12	5	3
Phenanthrene	145.7	107.1	0.74	3.47	32	52	37	24	17	6	4
Pyrene	155.9	82.7	0.53	2.45	32	28	20	13	9	4	2
Volatiles (µg/kg)											
Methylene chloride	4.53	3.61		0.80	32	62	44	28	20	7	5
Metals (mg/kg)											
Lithium	8.18	2.05	0.25	0.97	32	7	5	3	2	1	1
Srortium	54.23	39.92	0.74	0.77	32	83	37	24	17	6	4
Aluminum	69.44	2250	0.32	1.02	32	11	8	5	4	2	1
Arsenic	3.57	1.76	0.49	1.13	32	24	17	11	8	3	2
Barium	82.86	31.26	0.38	0.60	32	14	10	7	5	2	1
Beryllium	0.356	0.175	0.49	0.06	32	24	17	11	8	3	2
Calcium	30453	26610	0.87	0.89	32	74	52	33	23	9	6
Chromium	9.74	2.02	0.21	0.34	32	5	3	2	2	1	1
Cobalt	6.13	2.23	0.36	1.54	32	13	9	6	4	2	1
Copper	21.23	9.87	0.47	1.77	32	21	15	10	7	3	2
Iron	11705	3082,365	0.26	1.32	32	7	5	3	3	1	1
Lead	15.13	7.74	0.51	0.61	32	26	18	12	8	3	2
Magnesium	3665	1984	0.54	2.32	32	29	20	13	9	4	2
Manganese	259	138	0.53	1.46	32	28	20	13	9	4	2
Nickel	8.24	3.71	0.45	2.00	32	20	14	9	7	3	2
Potassium	1955	427	0.22	0.87	32	5	4	3	2	1	1
Silver	0.845	0.438	0.68	0.80	32	45	32	20	14	5	4
Sodium	199	283	1.42	4.83	32	194	137	88	61	22	14
Vanadium	21.35	5.76	0.27	1.01	32	7	5	4	3	1	1
Zinc	85.48	80.54	0.94	2.54	32	86	61	38	27	10	6
Radionuclides (pCi/g)											
Americium-241	0.0441	0.0397	0.90	1.49	54	76	55	35	25	9	6
Gross Alpha	17.24	7.88	0.46	0.99	54	21	15	9	7	3	2
Gross Beta	25.16	8.64	0.34	-1.23	54	12	8	6	4	2	1
Plutonium-239/240	0.161	0.192	1.19	2.09	54	137	97	61	43	16	10
Uranium-233/234	0.840	0.182	0.22	0.12	54	5	4	3	2	1	1
Uranium-235	0.0474	0.0315	0.66	1.05	54	43	30	19	14	5	3
Uranium-238	0.792	0.172	0.22	0.24	54	5	4	3	2	1	1

Notes:
 N = number of Phase I, Stage 1 samples
 n(α, d) = number of samples required for a probability α that the relative error in the estimate of the mean is ≥ d.
 = n(α, d) > N
 mg/kg = milligrams per kilogram
 µg/kg = micrograms per kilogram
 pCi/g = picocuries per gram

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TABLE 4-8
Statistical Summary of Surface-Soil Data for IHSS 164.3

Radionuclides (pCi/gm)	Mean	Standard Deviation	Coefficient of Variation	Coefficient of Skewness	N	n(.05, .2)	n(.1, .2)	n(.05, .3)	n(.1, .3)	n(.1, .5)	n(.2, .5)
Americium-241	0.0495	0.0761	1.54	2.82	44	227	180	101	71	26	16
Gross Alpha	18.60	7.53	0.40	1.48	44	16	12	7	5	2	2
Gross Beta	28.98	6.80	0.23	1.19	44	6	4	3	2	1	1
Plutonium-239/240	0.217	0.413	1.91	3.52	44	350	248	156	110	40	24
Uranium-233/234	1.067	0.798	0.75	2.60	44	54	38	24	17	7	4
Uranium-235	0.0661	0.0694	1.05	3.13	44	106	75	48	34	12	8
Uranium-238	1.67	2.61	1.57	3.74	44	237	167	106	75	27	17

Notes:

N = number of Phase I, Stage 1 samples

n(α , d) = number of samples required for a probability α that the relative error in the estimate of the mean is $\geq d$

= n(α , d) > N

pCi/g = picocuries per gram

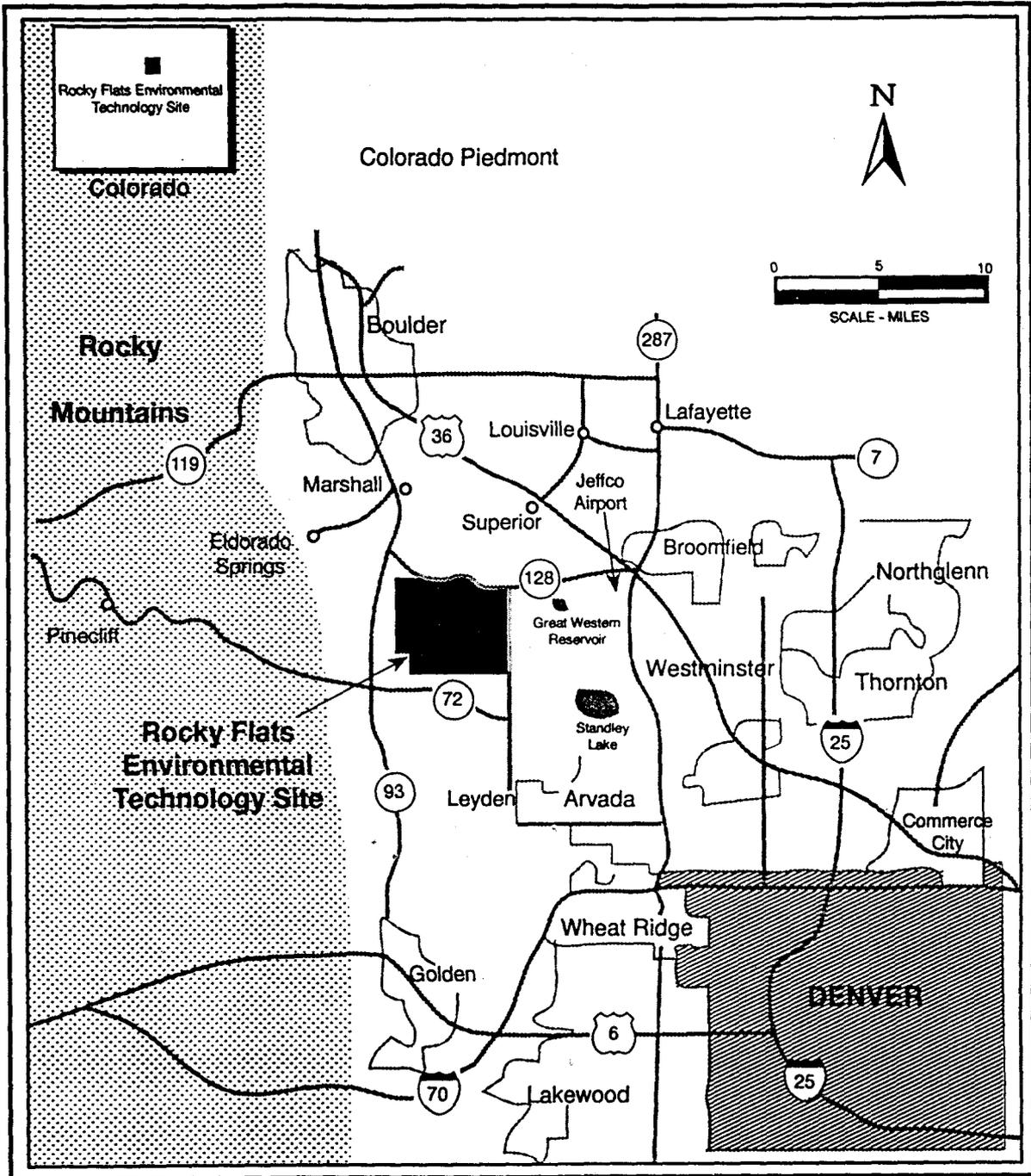


Figure 1-1 Location Map of Rocky Flats Environmental Technology Site

179

THIS TARGET SHEET REPRESENTS AN
OVER-SIZED MAP / PLATE FOR THIS DOCUMENT:
(Ref: 95-DMR-ERM-01665)

Draft Data Summary 1
Operable Unit No. 14
Radioactive Sites
Volume 1 - Text

June 1995

Plate 1:

Americium Specific Activity Map

Map ID: ou-13

June 26, 1995

CERCLA Administrative Record Document, SW-A-004929

U.S. DEPARTMENT OF ENERGY
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

GOLDEN, COLORADO

193

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OVER-SIZED MAP / PLATE FOR THIS DOCUMENT:
(Ref: 95-DMR-ERM-01665)

**Draft Data Summary 1
Operable Unit No. 14
Radioactive Sites
Volume 1 - Text**

June 1995

Plate 2:

**Analytical Results for Surface-Soil
Samples**

Map ID: ou-14

June 27, 1995

CERCLA Administrative Record Document, SW-A-004929

U.S. DEPARTMENT OF ENERGY
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

GOLDEN, COLORADO

194

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(Ref: 95-DMR-ERM-01665)

Draft Data Summary 1
Operable Unit No. 14
Radioactive Sites
Volume 1 - Text

June 1995

Plate 3:

IHSS 156.1
Analytical Results
for Surface-Soil Samples

Map ID: ou-14

June 02, 1995

CERCLA Administrative Record Document, SW-A-004929

U.S. DEPARTMENT OF ENERGY
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

GOLDEN, COLORADO

195

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(Ref: 95-DMR-ERM-01665)

**Draft Data Summary 1
Operable Unit No. 14
Radioactive Sites
Volume 1 - Text**

June 1995

Plate 4:

**IHSS 160
Analytical Results
for Surface-Soil Samples**

Map ID: ou-14

June 02, 1995

CERCLA Administrative Record Document, SW-A-004929

U.S. DEPARTMENT OF ENERGY
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

GOLDEN, COLORADO

196

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Draft Data Summary 1
Operable Unit No. 14
Radioactive Sites
Volume 1 - Text

June 1995

Plate 5:

IHSS 160
Analytical Results
for Soil Gas Samples

Map ID: ou-14

June 08, 1995

CERCLA Administrative Record Document, SW-A-004929

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THIS TARGET SHEET REPRESENTS AN
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(Ref: 95-DMR-ERM-01665)

Draft Data Summary 1
Operable Unit No. 14
Radioactive Sites
Volume 1 - Text

June 1995

Plate 6:

IHSS 161
Analytical Results
for Surface-Soil Samples and for Soil-
Gas Samples

Map ID: ou-14

June 08, 1995

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198

THIS TARGET SHEET REPRESENTS AN
OVER-SIZED MAP / PLATE FOR THIS DOCUMENT:
(Ref: 95-DMR-ERM-01665)

**Draft Data Summary 1
Operable Unit No. 14
Radioactive Sites
Volume 1 - Text**

June 1995

Plate 7:

**IHSS 162
Analytical Results
for Surface-Soil Samples**

Map ID: ou-14

June 02, 1995

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199

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(Ref: 95-DMR-ERM-01665)

Draft Data Summary 1
Operable Unit No. 14
Radioactive Sites
Volume 1 - Text

June 1995

Plate 8:

IHSS 164.1
Analytical Results
for Surface-Soil Samples

Map ID: ou-14

June 02, 1995

CERCLA Administrative Record Document, SW-A-004929

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

GOLDEN, COLORADO

200

THIS TARGET SHEET REPRESENTS AN
OVER-SIZED MAP / PLATE FOR THIS DOCUMENT:
(Ref: 95-DMR-ERM-01665)

Draft Data Summary 1
Operable Unit No. 14
Radioactive Sites
Volume 1 - Text

June 1995

Plate 9:

IHSS 164.2
Analytical Results
for Surface-Soil Samples

Map ID: ou-14

June 02, 1995

CERCLA Administrative Record Document, SW-A-004929

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

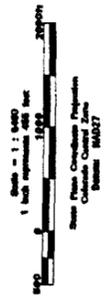
GOLDEN, COLORADO

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/ 201

FIGURE 1-2
ROCKY FLATS
ENVIRONMENTAL TECHNOLOGY SITE

EXPLANATION

- █ Buildings or other structures
- █ Lakes and ponds
- Streams, ditches, or other drainage features
- Building footprint (where overlaps HSSS)
- Fence
- Contours (20' intervals)
- - - Rocky Flats boundary
- Paved roads
- - - Dirt roads



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 Rocky Flats Environmental Technology Site

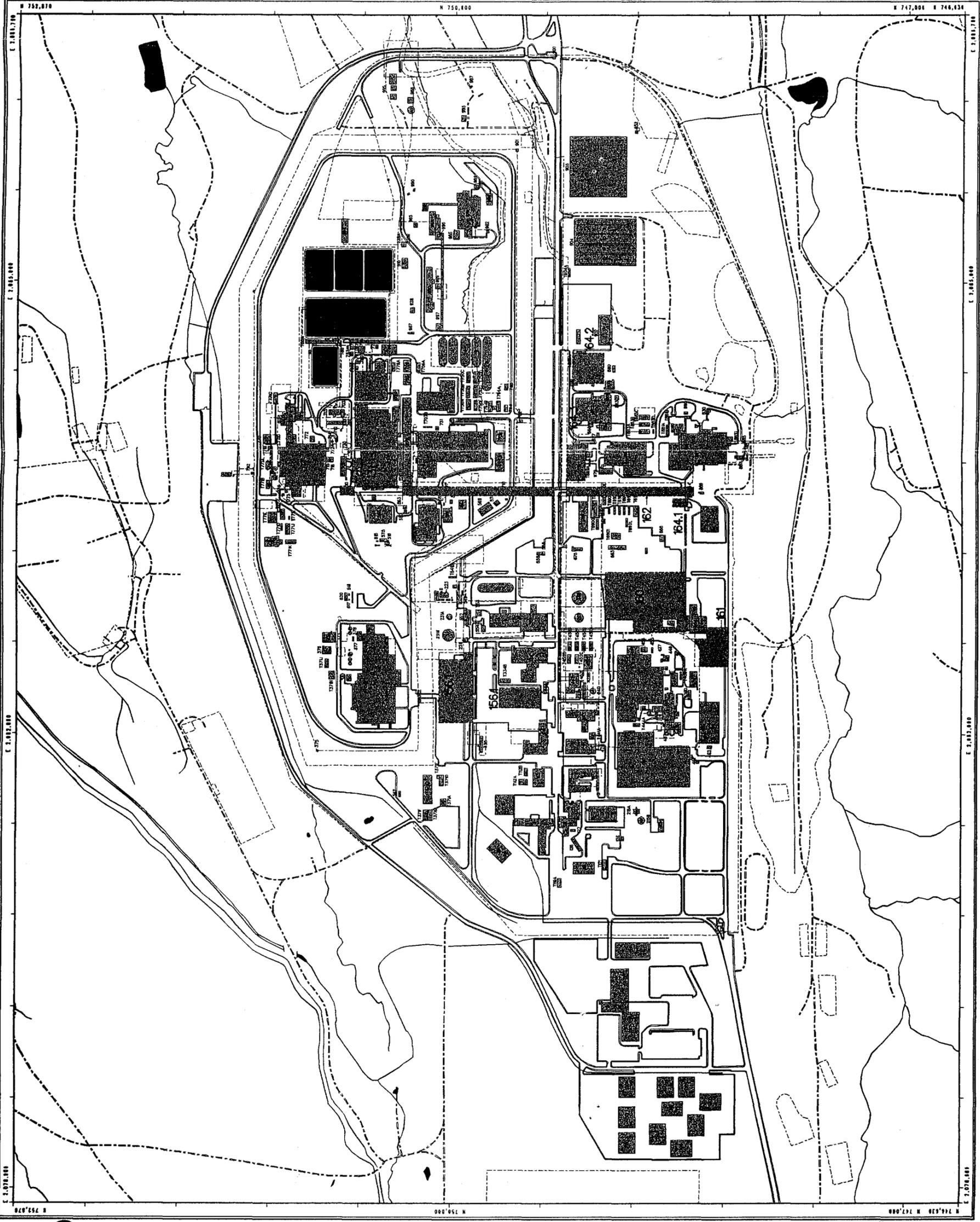
Prepared by:
EG&G ROCKY FLATS
 EG&G Rocky Flats
 P.O. Box 464
 Golden, Colorado 80402-0464

MAP ID: Location
 June 12, 1988



FIGURE 1-3
Operable Unit 14
Individual Hazardous Substance Sites

- | EXPLANATION | |
|---|--|
|  | OU 14 IHSS |
|  | Buildings or other structures |
|  | Lakes and ponds |
|  | Streams, ditches, or other drainage features |
|  | Building footprint (where overlaps IHSS) |
|  | Fences |
|  | Paved roads |
|  | Dirt roads |



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EG&G ROCKY FLATS
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 P.O. Box 484
 Golden, Colorado 80402-0484

MAP ID: OU14
 June 12, 1985

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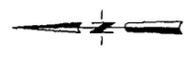
FIGURE 3-4

OU14-IHSS 160

SOIL-GAS SAMPLE LOCATIONS

EXPLANATION

- Soil-Gas Sample Location
- OU14 IHSS
- Buildings or other structures
- Lakes and ponds
- Building footprint (where overlaps IHSS)
- Fences
- Paved roads
- Dirt roads

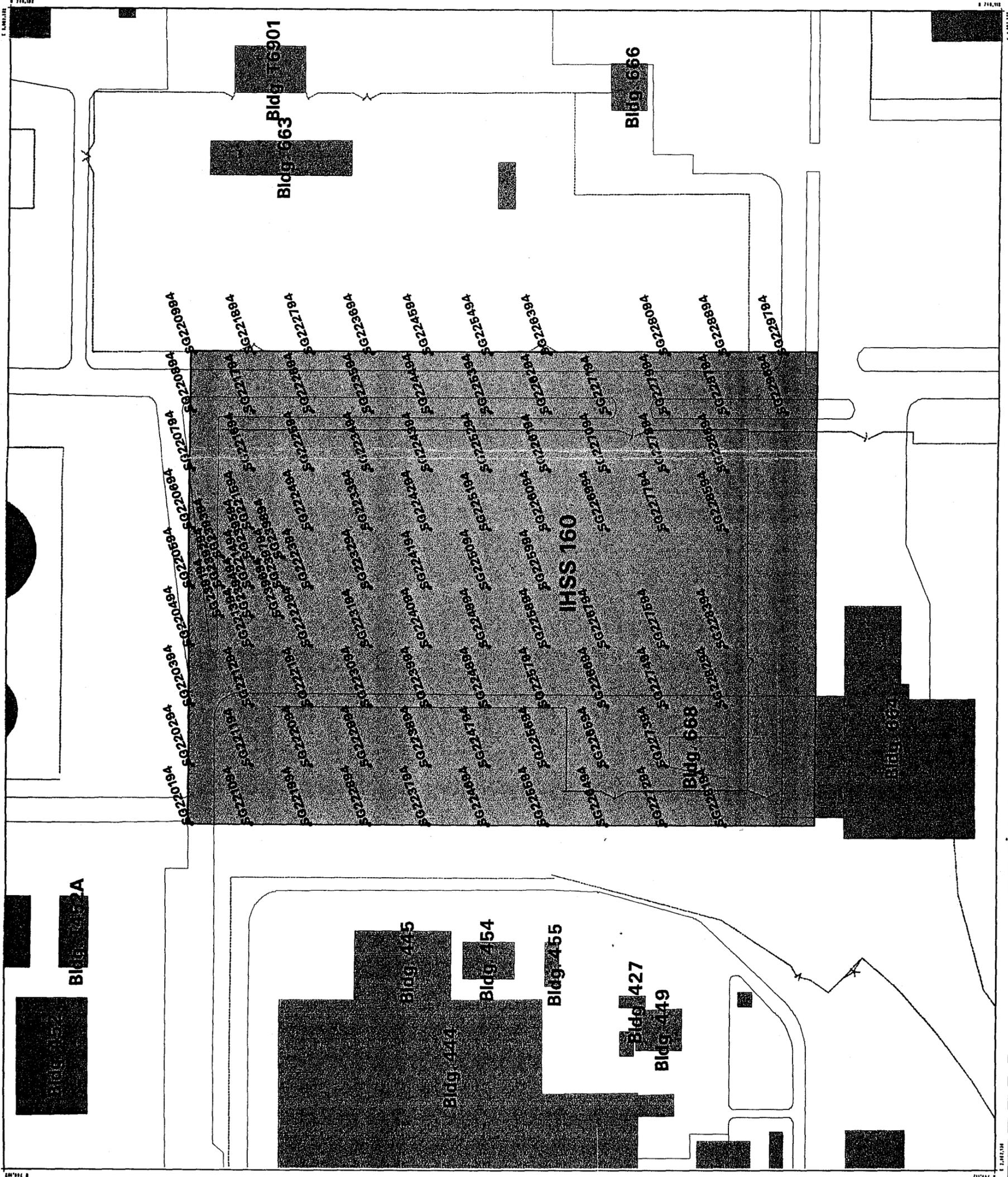


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EG&G Rocky Flats
P.O. Box 464
Golden, Colorado 80402-0464

MAP ID: ou-14

June 08, 1995



1:100,000

1:100,000

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FIGURE 3-5
OU14-IHSS 161
SURFACE-SOIL SAMPLE LOCATIONS

EXPLANATION

- Surface-Soil Sample Location
- OU14 IHSS
- Buildings or other structures
- Lakes and ponds
- Building footprint (where overlaps IHSS)
- Fences
- Paved roads
- Dirt roads



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 P.O. Box 484
 Golden, Colorado 80402-0484

MAP ID: ou-14 May 12, 1995

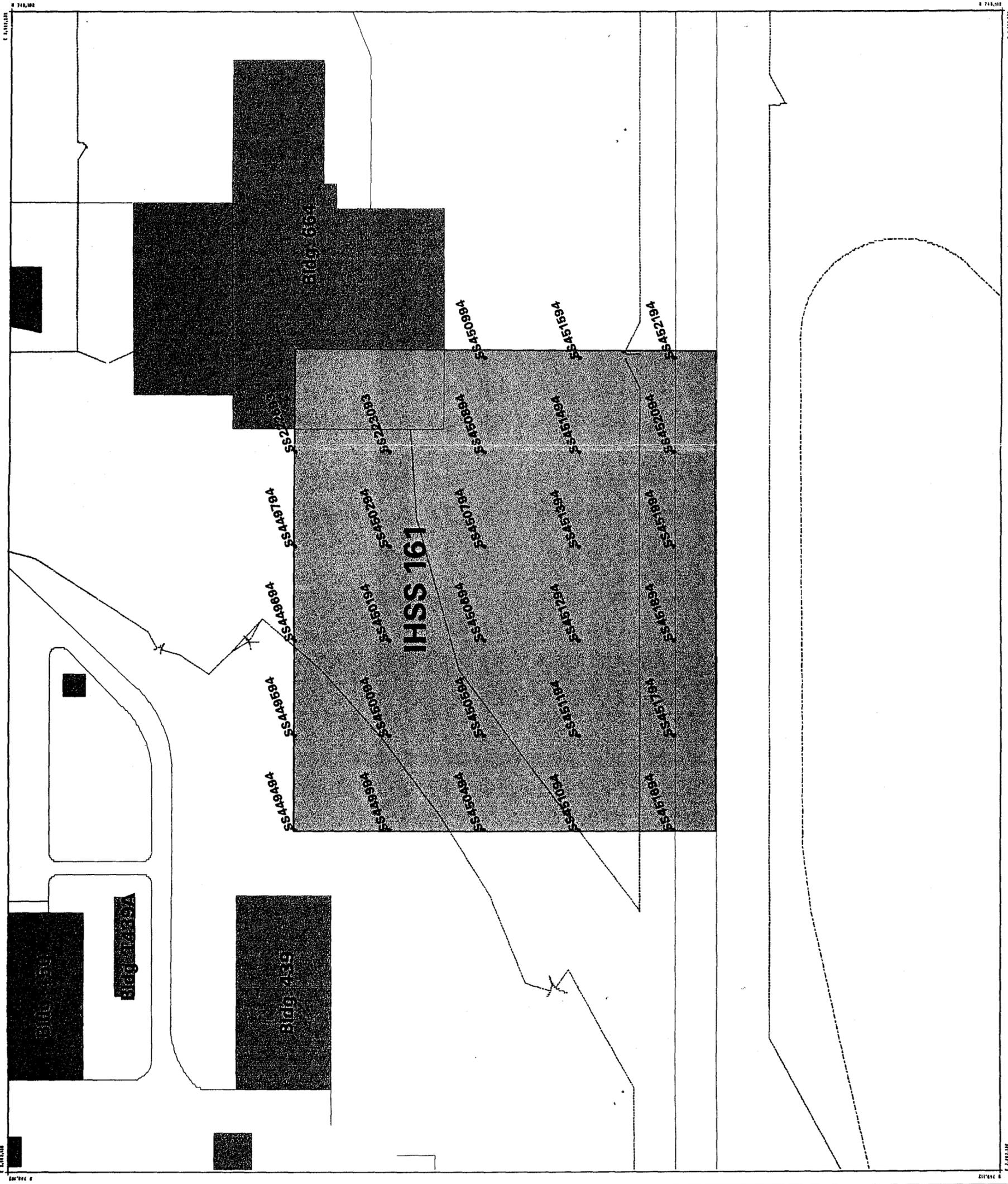
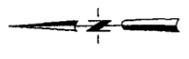


FIGURE 3-6
OUI4-IHSS 161
SOIL-GAS SAMPLE LOCATIONS

- EXPLANATION**
- Soil-Gas Sample Location
 -  OUI4 IHSS
 -  Buildings or other structures
 -  Lakes and ponds
 -  Building footprint (where overlaps IHSS)
 -  Fences
 -  Paved roads
 -  Dirt roads



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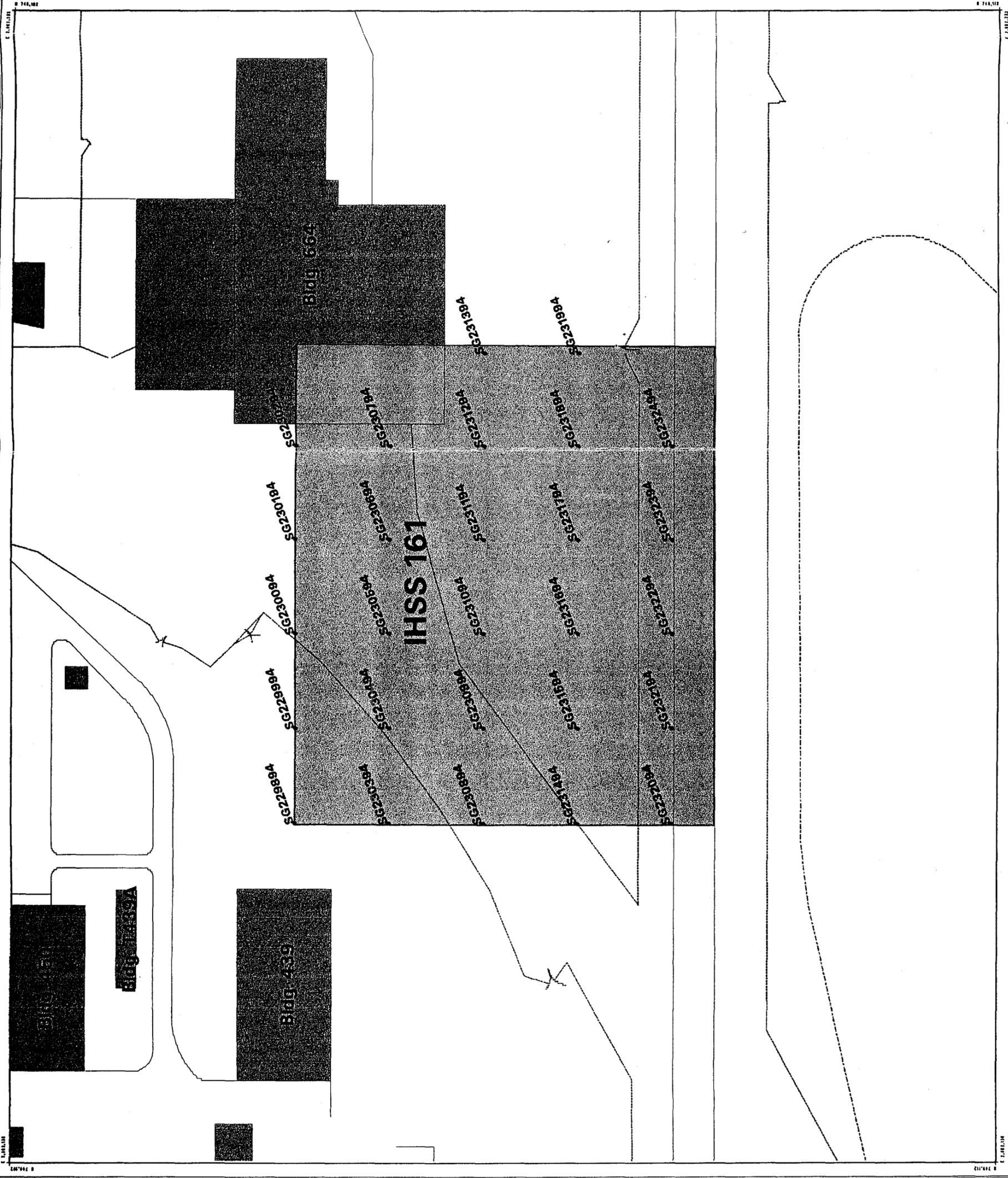
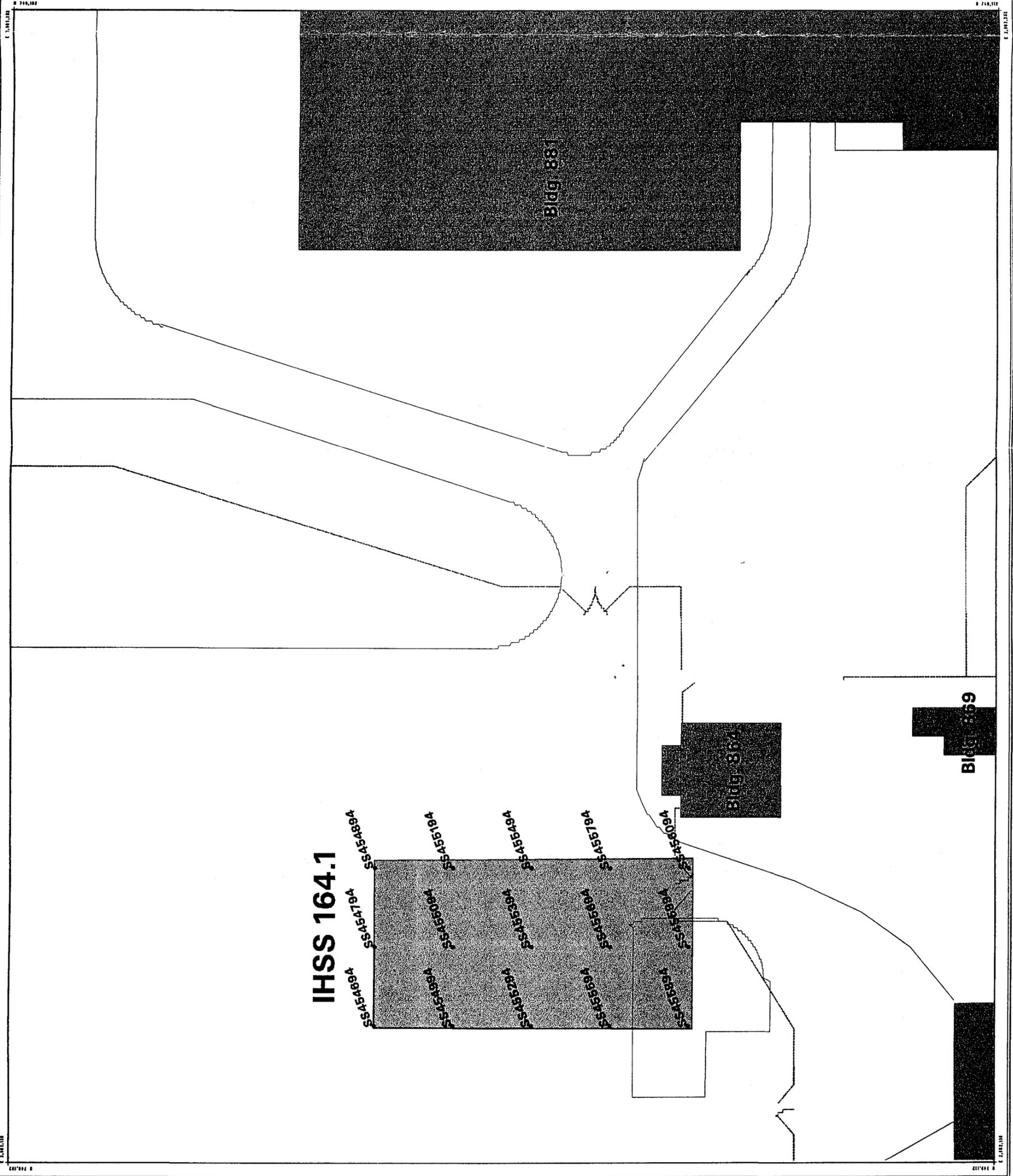


FIGURE 3-8
OU14-IHSS 164.1
SURFACE-SOIL SAMPLE LOCATIONS

- EXPLANATION**
- Surface-Soil Sample Location
 - OU14 IHSS
 - Buildings or other structures
 - Lakes and ponds
 - Building footprint (where overlaps IHSS)
 - Fences
 - Paved roads
 - Dirt roads



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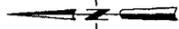
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 Golden, Colorado 80402-0464

MAP ID: ou-14
 May 12, 1995

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FIGURE 3-9
OUI4-IHSS 164.2
SURFACE-SOIL SAMPLE LOCATIONS

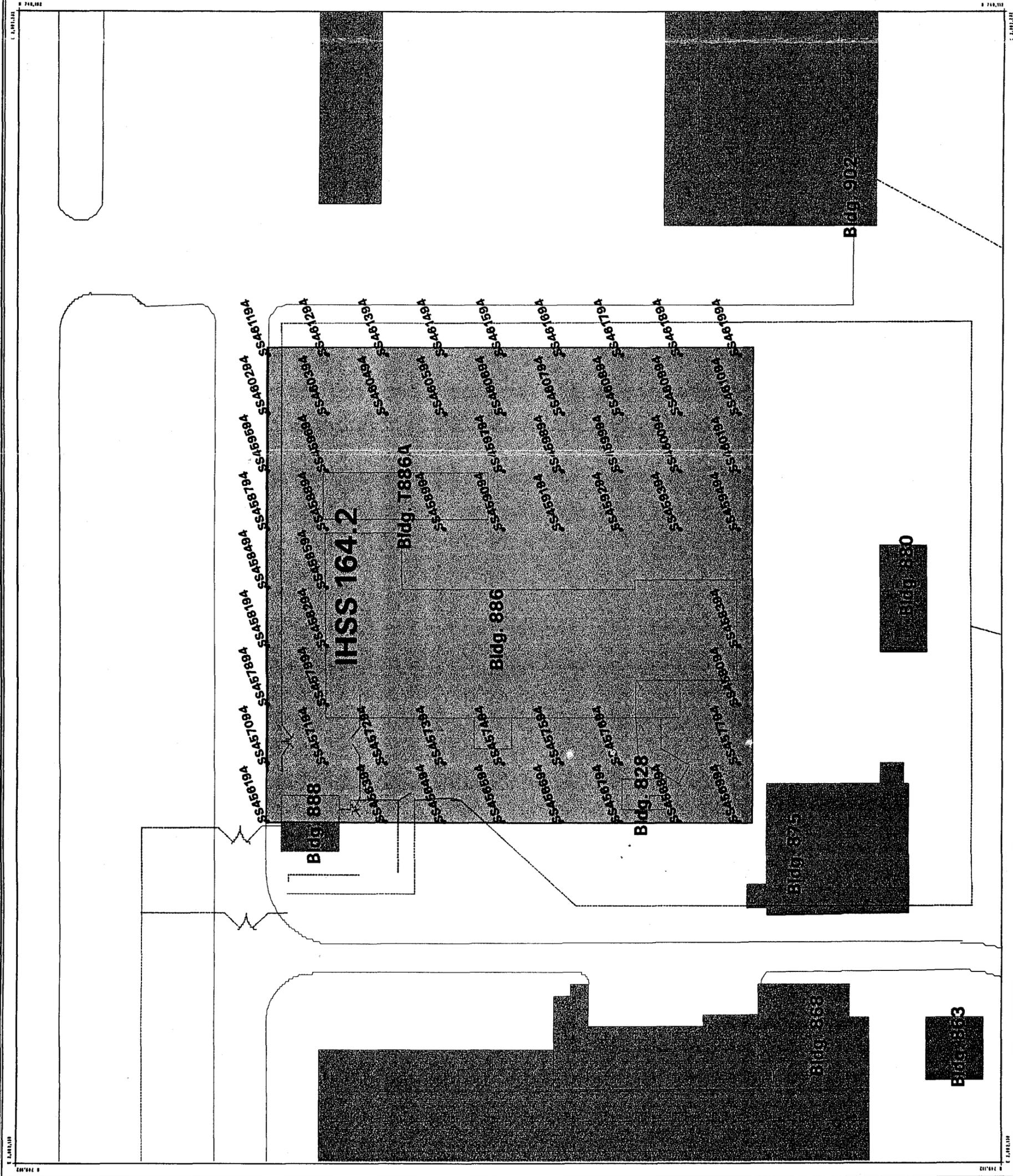
- EXPLANATION**
- Surface-Soil Sample Location
 - OU14 IHSS
 - Buildings or other structures
 - Lakes and ponds
 - Building footprint (where overlaps IHSS)
 - Fences
 - Paved roads
 - Dirt roads



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Radionuclides (pCi/g)

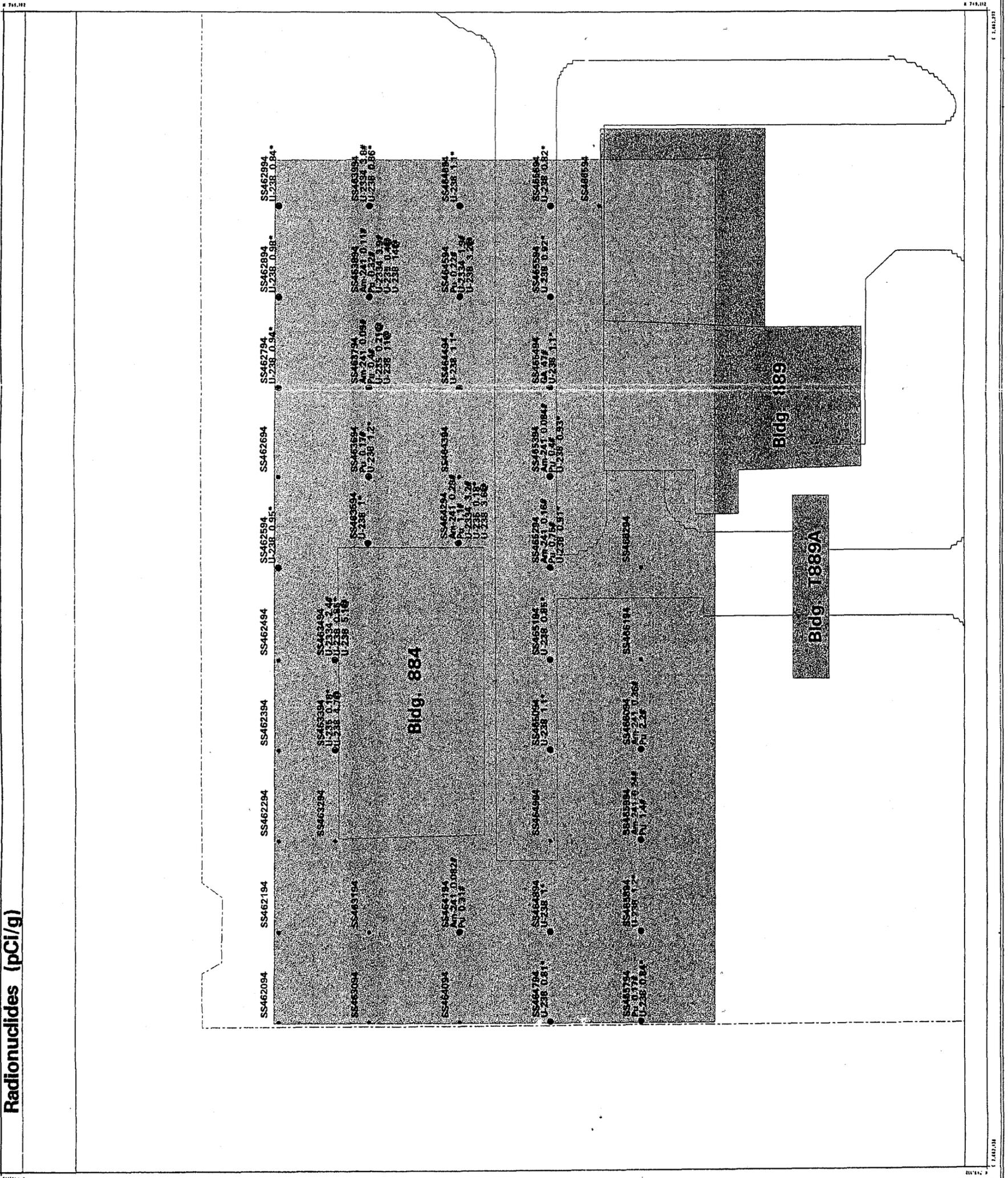


FIGURE 3-11
OUI4-IHSS 1643

ANALYTICAL RESULTS FOR SURFACE-SOIL SAMPLES

- EXPLANATION**
- Sample Location
 - Analyte elevated above background
 - OUI4 IHSS
 - Buildings or other structures
 - Lakes and ponds
 - OUI4 IHSS boundary
 - Building footprint (where overlaps IHSS)
 - Fences
 - Paved roads
 - Dirt roads

Radionuclides:

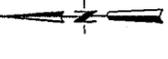
- Am-241 = Americium-241
- GA = Gross Alpha
- Pu = Plutonium-239/240
- U-2334 = Uranium-233,234
- U-235 = Uranium-235
- U-238 = Uranium-238

Analytical results are indicated by the chemical symbol, result, and threshold flag.

Flags are:

- ⊙ Positive detection above PRG
- # Positive detection above background
- @ Positive detection above PRG and background
- BFG Base fill grab

Estimated or "J" qualified values are reported as positive detections. See associated data tables for full data presentation.



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