NOTICE

All drawings located at the end of the document.

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Addendum to Site-Specific Health and Safety Plan

Implementation of Phase II RFI/RI
Rocky Flats Plant, Operable Unit No. 7

Draft

April 25, 1994

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

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1. INTRODUCTION

The S M Stoller Corporation (Stoller) has prepared this health and safety plan (HASP) as an addendum to the EG&G-approved Site-Specific Health and Safety Plan Implementation of Phase I RFI/RI Work Plan, Operable Unit 7 (SSHSP-OU 7), dated October 26, 1992 (EG&G 1992) The site-specific health and safety procedures and policies from SSHSP-OU 7 are adopted for this plan

1.1 Purpose and Policy

This plan outlines the health and safety protocol to be followed during the Phase II Resource Conservation and Recovery Act (RCRA) facility investigation/remedial investigation (RFI/RI) carried out at Operable Unit (OU) No 7 The Phase II RFI/RI activities will further characterize groundwater in the vicinity of OU 7 and surface soils around the East Landfill Pond, and evaluate the design of the landfill cap Activities to be performed during the Phase II RFI/RI are similar to activities performed during the Phase I RFI/RI and include collection of soil samples, borehole drilling, well installation, and groundwater sampling One significant difference between Phase I and Phase II activities is that no borehole drilling will be performed within the Individual Hazardous Substance Site (IHSS) 114 (the Present Landfill) or other IHSSs during the Phase II RFI/RI

This HASP establishes personnel protection standards and mandatory safety practices and procedures for the work proposed within the project area This HASP also provides for alternate procedures o address changing situations that may arise during drilling and other field operations This HASP applies to all personnel working on this project Stoller personnel and other site participants will adhere to this HASP, the SSHSP-OU 7, and any other applicable EG&G health and safety requirements or policies

1.2 General Site Information

- PROJECT NAME Phase II RFI/RI of OU 7
- SITE NAME Rocky Flats Site
- SITE LOCATION Golden, CO

- DURATION OF PHASE II PROJECT Approximately 4 months
- OVERALL HAZARD High____ Medium _X_ Low____

1.3 Summary of Field Activities

The OU 7 Phase II RFI/RI will entail soil sampling, borehole drilling, monitoring well installation, drawdown recovery tests at monitoring wells, and groundwater sampling Soil samples will be collected from two distinct depth intervals, 0 to 2 inches and 0 to 10 inches The samples will be collected from locations around the East Landfill Pond Soil samples will also be collected from the 0 to 2 inch interval within IHSS 114 Boreholes will be drilled at eight locations in the vicinity of the East Landfill Pond and along No Name Gulch east of OU 7 to provide information for the design of monitoring wells at these locations Eight additional holes will be drilled, one at each location, for the installation of monitoring wells The monitoring wells will be used for drawdown-recovery tests and sampling groundwater

Additional details for Phase II field activities are presented in the Sampling and Analysis Plan in the draft Technical Memorandum Revised Work Plan, Operable Unit No 7—Present Landfill (IHSS 114) and Inactive Hazardous Waste Storage Area (IHSS 203) (DOE 1994)

2. PROJECT ORGANIZATION

The OU 7 Phase II RFI/RI is being conducted by Stoller for EG&G Rocky Flats, Inc Stoller is responsible for implementing the Revised Work Plan for OU 7 (DOE 1994) in coordination with EG&G project managers, contract administrators, and on-site personnel

2.1 EG&G Site Contacts

The following personnel are critical to the planned activities of the Phase II RFI/RI at OU 7

Contact	Phone Number	Job Title
Tim O'Rourke (EG&G)	966-8577	Contract Technical Representative (CTR)
Tom Brady (EG&G)	966-6984	Subcontract Administrator (SA)
Peter Martin (EG&G)	966-8695	Assistant CTR
Keith Anderson (EG&G)	966-6979	Environmental Restoration Health and Safety Officer
Lisa Nelowet (EG&G)	966-5471	Health and Safety Liaison Officer
Larry Erwin (Ogden)	843-6210	Health and Safety Specialist (HSS)

2.2 Stoller Personnel

Project Title	Name
Program Director	Allen Crockett
Project Manager	Greg Davis
Assistant Technical Project Manager	Myra Vaag
Health and Safety Manager	Virgil Palencia
Site Supervisor	Steve Lynn

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3. ROCKY FLATS SITE BACKGROUND

This section briefly discusses the history of Rocky Flats site and describes OU 7 Additional background information is provided in the draft Technical Memorandum Revised Work Plan, Operable Unit No 7—Present Landfill (IHSS 114) and Inactive Hazardous Waste Storage Area (IHSS 203) (DOE 1994)

3.1 Site History

The Rocky Flats site is a government-owned contractor-operated facility EG&G is the primary operating contractor Until January 1992, Rocky Flats was operated as a nuclear weapons research, development, and production plant Nuclear weapon components were fabricated from plutonium, uranium, beryllium, and stainless steel Parts made at the plant were shipped elsewhere for assembly Support activities conducted at the plant included chemical recovery and purification of recyclable transuranic radionuclides and research and development in metallurgy, machining, nondestructive testing, coatings, remote engineering, chemistry, and physics (Rockwell International 1987) Wastes resulting from plant activities include hazardous wastes, low-level (LL) and transuranic (TRU) radioactive wastes, and mixed wastes Historically, these wastes were either disposed onsite, stored in containers onsite, or disposed offsite

The Rocky Flats site was proposed for inclusion on the Superfund National Priority List (NPL) in 1984 and was included on the NPL in the October 4, 1989 *Federal Register* Cleanup is being conducted under RCRA and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) The U S Environmental Protection Agency (EPA), the U S Department of Energy (DOE), and the Colorado Department of Health (CDH) are involved in assessment and cleanup roles at the plant A draft Interagency Agreement among EPA, CDH, and DOE was released for public comment in December 1989 and was produced to clarify the roles and responsibilities of each agency Rocky Flats is currently in a "mission transition" phase to an environmental restoration (ER) site

3.2 Site Description

Rocky Flats site covers approximately 6,550 acres in Jefferson County, Colorado, Sections 1 through 4 and 9 through 15 of R70W, T2S (Figure 1) The facility is

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centered at 105 degrees 11' 30" west longitude, 39 degrees 53' 30" north latitude This location is 16 miles northwest of Denver and 9 to 12 miles from the communities of Boulder, Broomfield, Golden, and Arvada It is approximately bounded on the north by State Highway 128, on the west by State Highway 93, on the south by State Highway 72, and on the east by Jefferson County Highway 17 (Indiana Street)

Major plant structures, including all production buildings, are located within a 384-acre security-fenced area The site is divided into several areas constituting separate operational complexes The major production and associated complexes are in the 300, 400, 600, 700, 800, and 900 areas

3.3 Operable Unit Site Description

OU 7 comprises the Present Landfill (IHSS 114), the Inactive Hazardous Waste Storage Area (IHSS 203), and the East Landfill Pond and adjacent spray evaporation areas OU 7, which is located north of the plant complex on the western end of No Name Gulch, encompasses approximately 44 acres The Present Landfill is operational until the proposed date of closure in 1997 IHSS 203 is located at the southwest corner of the Present Landfill This area was formerly a storage area for drummed liquid and solid wastes The spray evaporation of water from the East Landfill Pond covered the north and south embankments of the pond

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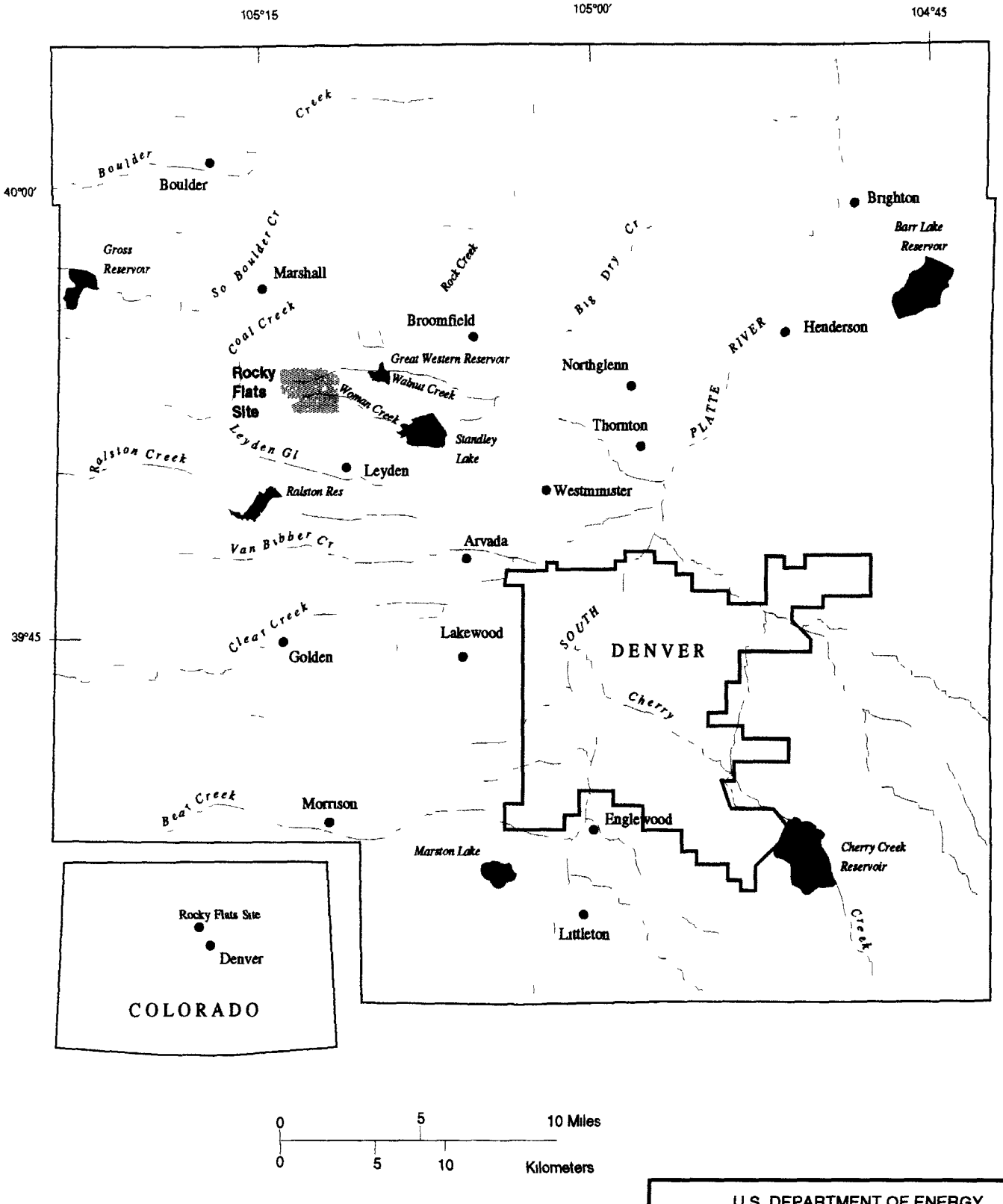

U S DEPARTMENT OF ENERGY
Rocky Flats Site, Golden, Colorado

Location of Rocky Flats Site

Revised Work Plan | Operable Unit No 7

Date April 1994 | Figure 1

MES\RFP & Vicinity Map.ill\4-22-94

4. HAZARD ASSESSMENT

Potentially hazardous materials may be encountered during intrusive activities, however, potential worker exposures to these materials are expected to be minimal This conclusion is drawn from previous air sampling results obtained during the OU 7 Phase I RFI/RI Air samples were collected during drilling and soil sampling operations for chemical and radiological inhalation hazards The laboratory results showed insignificant concentrations of any of the target analytes (EG&G 1993)

Workers shall employ dust control measures during the RFI/RI, and chemical and radiological monitoring shall be used to recognize hazardous materials and potential existence of explosive atmospheres Appropriate personal protective equipment (PPE) shall be used to prevent contact with materials and equipment that may have surface contaminants

Safety risks encountered during drilling activities include the potential for trips and falls, and injuries associated with the use of drilling equipment General Occupational Safety and Health Act (OSHA) drilling safety practices shall be followed during all phases of work on this project to protect the workers from these hazards

4.1 Hazardous Materials Summary

The potential for encountering chemical and radiological hazards is dependent on site-specific activities The following section offers a summary of potential hazards of concern during the Phase II RFI/RI at OU 7

Material Type(s)

Liquid	X
Solid	X (soils, vegetation, animal tissue)
Sludge	
Gas	X
Other	

Characteristics

Corrosive	
Ignitable	X
Radioactive	X
Volatile	X

Toxic X
Reactive ____
Unknown X (site not completely characterized)

Hazards of Concern

Organic chemicals X
Inorganic chemicals X
LL waste X
TRU waste X
Biologic X
Slip, trip, fall X
Drowning ____
Weather X
Plant operations ____
Power lines ____
Radiological X
Heavy equipment X

Other

Potential bites and scratches ____

4.2 Physical Hazards

Workers within OU 7 may be also subjected to physical stresses, including cold and heat stress Investigative activities may take place during a wide range of weather conditions, leading to possible cold or heat stress conditions

4 2 1 Cold Stress

When working outdoors in temperatures below freezing, workers are susceptible to frostbite Exposure to extreme cold can cause severe injury to the body surface or can result in profound generalized cooling, causing death In cold weather, precautions such as wearing insulated garments and taking warm-up breaks in temperature-controlled areas (when necessary) should be taken to prevent cold exposure Symptoms of cold exposure include the following

- Incipient frostbite, characterized by sudden blanching or whitening of the skin
- Superficial frostbite, which causes the skin to become waxy or white and superficially firm, but resilient beneath

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- Deep frostbite, characterized by cold, pale, solid skin tissues
- Hypothermia, caused by rapid cooling of the body temperature to less than 95°F Symptoms include shivering, apathy, listlessness, sleepiness, unconsciousness, glassy stare, slow pulse and respiratory rate, and freezing of the extremities

4 2 2 Heat Stress

A worker's risk for developing heat stress is greatly increased when wearing impermeable PPE, which limits the body's normal heat exchange mechanisms and increases energy expenditure A program to recognize potential heat stress situations, prevent episodes, and control hazards will be implemented where necessary The program will include heat stress monitoring, adequate rest breaks, fluid replacement, acclimatization, and personal cooling systems Heat stress can cause health effects that range from heat fatigue to serious illness or death Signs and symptoms of heat stress include the following

- Heat rash, which may result from continuous exposure to heat or humid air
- Heat cramps, caused by heavy sweating with inadequate electrolyte replacement Signs and symptoms include muscle spasms or pain in hands, feet, or abdomen
- Heat exhaustion, which results from increased stress on various body organs or systems, including inadequate blood circulation due to cardiovascular system inefficiency or dehydration Signs and symptoms include pale, cool, moist skin, heavy sweating, dizziness, nausea, or fainting
- Heat stroke, the most serious form of heat stress, which occurs when the body's temperature regulation system fails and the body temperature rises to critical levels Immediate action must be taken to cool the body before serious injury or death occur Signs and symptoms of heat stroke are red, hot, usually dry skin, reduced or lack of perspiration, nausea, dizziness and confusion, strong, rapid pulse, or coma The body temperature often exceeds 102°F

Note Personnel exhibiting symptoms of heat exhaustion will be immediately removed from fieldwork PPE will be removed, and vital signs will be monitored If body temperature exceeds 101°F (oral temperature), the individual will be transported to the medical facility for evaluation If signs of heat stroke are detected, the individual will

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be transported immediately to the medical facility for evaluation and/or treatment First aid will be administered as appropriate

4.3 Potential Contaminants of Concern

The goal of this health and safety plan is to protect workers from the adverse health effects resulting from overexposures to chemical and radiological hazards and to minimize hazard during drilling activities

Potential contaminants of concern (PCOCs) identified during the Phase I RFI/RI are present in media in areas where drilling and soil sampling activities are planned These PCOCs include metals, radionuclides, volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls, and total dissolved solids Table 1 lists PCOCs at OU 7 (DOE 1994) Workers may encounter toxic vapors and organic contaminants in soils and groundwater during drilling operations

Analyte	Surface Soil[1]	Subsurface Geologic Materials[2]	Sediments	Surface Water[3]	Groundwater[4]
Cadmium					X
Calcium	X	X	X	X	X
Chromium		X	X		X
Cobalt	X	X			X
Copper	X	X	X		X
Iron			X	X	X
Lead	X	X	X		X
Lithium				X	X
Magnesium	X		X	X	X
Manganese		X		X	X
Mercury					X
Molybdenum				X	X
Nickel		X	X	X	X
Potassium			X	X	X
Selenium	X	X	X	X	X
Silicon				X	X
Silver					X
Sodium	X	X	X	X	X
Strontium	X	X	X	X	X
Thallium				X	
Tin				X	X
Vanadium	X		X		X
Zinc	X	X	X	X	X
Radionuclides					
Americium-241	X	X		X	X
Cesium-137		X	X		X
Gross Beta	X	X		X	
Gross Alpha				X	
Radium-226	X	X			X
Radium-228		X			
Strontium-89,90	X	X		X	X
Tritium		X		X	X
Uranium-235	X	X		X	X
Uranium-238		X		X	
Volatile Organic Compounds					
1,1-Dichloroethane				X	X
1,1-Dichloroethene					X
1,1,1-Trichloroethane		X			X
1,1,2-Trichloroethane					X
1,2-Dichloroethane -D4					X
1,2-Dichloroethene					X
1,2-Dichloropropane					X
1,4-Dichlorobenzene					X
2-Butanone			X	X	X
2-Hexanone				X	X
4-Methyl-2-pentanone		X		X	X
Acetone				X	X

Analyte	Surface Soil[1]	Subsurface Geologic Materials[2]	Sediments	Surface Water[3]	Groundwater[4]
Benzene				X	X
Bromodichloromethane					X
Bromofluorobenzene					X
Bromoform					X
Carbon Disulfide				X	X
Carbon Tetrachloride					X
Chlorobenzene					X
Chloroethane				X	X
Chloroform					X
Chloromethane				X	
Ethylbenzene				X	X
Methylene Chloride		X		X	X
o-Xylene				X	
Tetrachloroethene				X	X
Toluene -D8					X
Toluene		X	X	X	X
Total Xylenes		X		X	X
Trichloroethene				X	X
Vinyl Acetate				X	
Vinyl Chloride				X	X
Semivolatile Organic Compounds					
2-Chloronaphthalene					X
2-Methylnaphthalene	X			X	
2-Methylphenol					X
2,4-Dimethylphenol				X	X
2,4,5-Trichlorophenol					X
4-Methylphenol				X	X
4-Nitrophenol					X
Acenaphthene	X		X	X	X
Acenaphthylene	X		X		
Anthracene	X		X		
Benzo(a)anthracene	X	X	X		
Benzo(b)fluoranthene	X		X		
Benzo(k)fluoranthene	X		X		
Benzo(ghi)perylene	X		X		
Benzo(a)pyrene	X		X		
Benzoic Acid	X		X		X
Bis(2-chloroisopropyl)ether			X		
Bis(2-ethylhexyl)phthalate	X	X	X	X	X
Butyl Benzyl Phthalate	X	X			
Chrysene		X	X		
Di-n-Butyl Phthalate				X	X
Di-n-Octyl Phthalate	X	X			
Dibenz(a,h)anthracene	X				
Dibenzofuran	X			X	
Diethyl Phthalate				X	X
Fluoranthene	X	X	X		

Analyte	Surface Soil[1]	Subsurface Geologic Materials[2]	Sediments	Surface Water[3]	Groundwater[4]
Fluorene	X		X	X	X
Ideno(1,2,3-cd)pyrene			X		
Naphthalene	X			X	X
Pentachlorophenol					X
Phenanthrene	X	X	X	X	X
Phenol					X
Pyrene	X	X	X		
Polychlorinated Biphenyls					
Aroclor-1254	X				
Aroclor-1260	X				
Water-Quality Parameters					
Chloride					X
Cyanide					X
Fluoride					X
Nitrate/Nitrite	X	X			X
Nitrite				X	X
Sulfate					X
Total Dissolved Solids					X

[1] combined PCOCs for IHSS 203 and East Landfill Pond soils

[2] combined PCOCs for surficial deposits and bedrock materials

[3] combined PCOCs for seep, East Landfill Pond, and groundwater intercept system discharge

[4] combined PCOCs for UHSU and LHSU groundwater

Definitions

LHSU lower hydrostratigraphic unit
PCOCs potential contaminants of concern
UHSU upper hydrostratigraphic unit
X denotes that analyte was identified as a PCOC

5. PERSONAL PROTECTION

Based on an evaluation of the potential hazards from the Phase I RFI/RI, the level of personal protection defined for the intrusive activities on the project shall be the modified level D ensemble, described in Table 2 (EG&G 1993) This level of protection is intended to minimize exposure through dermal contact and ingestion of contaminated soils Modified level D will be maintained until airborne levels of identified contaminants or radiological limits are detected at the action limits This guidance is described in more detail in the air monitoring section of the SSHSP-OU 7 (EG&G 1992) Table 3 provides a site activity risk analysis to determine appropriate PPE and monitoring requirements per site activity

Sampling personnel will not conduct work activities alone at OU 7 The "buddy" system, as specified in 29 Code of Federal Regulations (CFR) 1910 120 (d)(3), will be implemented at the site The buddy teams working at the site will maintain visual and audible contact so that they can provide emergency assistance to each other, if needed

The potential exists for workers to be exposed to contaminants through inadvertent ingestion Therefore, no eating, drinking, or smoking will be allowed in the area of OU 7 Also, personnel will wash their hands and faces at breaks

Table 1
Summary of PCOCs by Media

Analyte	Surface Soil[1]	Subsurface Geologic Materials[2]	Sediments	Surface Water[3]	Groundwater[4]
Dissolved Analytes (in water)					
Metals					
Aluminum					X
Antimony				X	X
Arsenic				X	X
Barium				X	X
Beryllium					X
Cadmium				X	X
Calcium				X	X
Chromium					X
Cobalt					X
Copper					X
Iron				X	X
Lead				X	X
Lithium				X	X
Magnesium				X	X
Manganese				X	X
Mercury					X
Molybdenum				X	X
Nickel				X	X
Potassium				X	X
Selenium				X	X
Silver					X
Sodium				X	X
Strontium				X	X
Thallium					X
Tin				X	X
Vanadium				X	
Zinc				X	X
Radionuclides					
Americium-241				X	
Gross Alpha				X	X
Gross Beta				X	X
Radium-226					X
Strontium-89,90				X	X
Uranium-235				X	X
Uranium-238				X	X
Total Analytes					
Metals					
Aluminum		X	X		X
Antimony				X	X
Arsenic	X	X	X	X	X
Barium	X	X	X	X	X
Beryllium			X		X

Table 2
Specific Requirements for Each Level of Protection

Level of Protection	Equipment	Protection Provided	Should Be Used When	Limiting Criteria
Modified D	Required All requirements of level D plus • CP suit - either Tyvek or polyethylene-coated Tyvek • Inner and outer gloves Optional, as Required • Splash shield • Hearing protection • Eye protection	Increased skin and splash protection, but no respiratory protection	Working in dusty areas or in areas with splash potential where low inhalation hazard is presented	• May be worn in the exclusion zone if the area has been demonstrated to be free of air contaminants above the action levels • The atmosphere must contain at least 19 5 percent oxygen
D	Required • Steel-toed boots or shoes • Long legged pants • Hard hat Optional, as Required • Work gloves • Coveralls • Hearing protection • Safety glasses or chemical splash goggles	No respiratory protection Minimal skin protection	• The atmosphere contains no known hazard • Work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals	• May be worn in support or the CRZ • This level should not be worn in the EZ • The atmosphere must contain at least 19 5 percent oxygen
Modified D	REQUIRED All requirements of level D plus • CP suit - either Tyvek or polyethylene-coated Tyvek • Inner and outer gloves Optional, as Required • Splash shield • Hearing protection • Eye protection	Increased skin and splash protection, but no respiratory protection	Working in dusty areas or in areas with splash potential where low inhalation hazard is presented	• May be worn in the exclusion zone if the area has been demonstrated to be free of air contaminants above the action levels • The atmosphere must contain at least 19 5 percent oxygen
C	Required • Full-facepiece, air-purifying respirator equipped with both organic vapor and HEPA filter cartridges • CP clothing dependent on the specific area working - Tyvek full body suit for dry areas, or, - Polyethylene-coated Tyvek for situations in which splash hazards exist • Inner latex glove and outer nitrile gloves (taped to suit)	Respiratory protection up to 50 times the permissible exposure level of selected contaminants (particulates and some organic compounds), and skin and splash protection from contaminated dust and water	• The atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect any exposed skin • The types of air contaminants have been identified, concentrations measured, and a canister is available that can remove the contaminant	• Atmospheric concentration of chemicals must not exceed IDLH levels • The atmosphere must contain at least 19 5 percent oxygen

Level of Protection	Equipment	Protection Provided	Should Be Used When	Limiting Criteria
C (Continued)	• Chemical-resistant safety boots/shoes or steel-toed work boots with latex overshoes (taped to suit) • Hard hat • Two-way radio communications Optional, as Required • Coveralls under CP suit • Face shield for splash protection • Long cotton underwear		• All criteria for the use of air-purifying respirators are met	

Definitions

CP	chemically protective
CRZ	contamination reduction zone
EZ	exclusion zone
HEPA	high efficiency particulate air
IDLH	immediately dangerous to life and health

Table 3
Site Activity Risk Analysis

Field Location	Site Activities	Known or Suspected Hazards	Monitoring Requirements	Initial Level of Protection	Comments
General (Common Hazards)	All These hazards are presumed present at all hazardous substance sites even when activities are not present Site activities may increase the magnitude or number of hazards	Heat Stress Cold Stress	Core Temperature, WBGT when ambient temperature is above 80° F, and, Pulse	Wear adequate thermal clothing in cold temperatures	Adjust work/rest cycles and fluid intake to maintain normal body temperature
		Fugitive dusts which may be contaminated with heavy metals, radionuclides, or chemical contaminants	Particulate Dust Monitoring (miniram)	Level D	Work upwind of dusty area if possible
				Combination HEPA/organic vapor cartridges when dust concentration exceeds 5 mg/m^3	Suppress dust to less than 2 5 mg/m^3 with water whenever the water will not interfere with analysis
		Ticks	Visual Inspection	Wear long-legged pants and work boots	Wear coveralls with wrists and ankles taped to gloves/boots
					Use tick repellent containing over 30 percent DEET on exposed skin areas and hair
		Prairie Rattlesnake	Visual Inspection	Wear long-legged pants and work boots	Make noise and probe areas with long stick before stepping
		Black Widow Spider	Visual Inspection	None	Wear Gloves

Field Location	Site Activities	Known or Suspected Hazards	Monitoring Requirements	Initial Level of Protection	Comments
IHSS 114, IHSS 203, East Landfill Pond, surrounding areas of OU 7	Non-intrusive activities such as radiological and geographical surveys	Common hazards listed above	Particulate Dust Monitoring	Level D	None
		Radionuclides	Alpha monitoring Ludlum Model 12 with 43-5 probe Beta/gamma monitoring Ludlum Model 12 with 44-9 probe	Level D	None
	Intrusive activities such as borings and monitoring well installations	Buried Drums Drums and other containerized wastes will be presumed to be present	HNu (PID), CGI	Wear Modified Level D until direct reading instrument action levels are exceeded, then Level C	Avoid metal mass Offset boreholes/wells by at least 10 feet
		Underground utilities	Check with plant or public utility locate		Offset boreholes/wells by at least 10 feet
		Overhead hazards	Visual inspection		De-energize high voltage lines in accordance with lock-out/tag-out regulations or maintain safe distances as specified by OSHA

Field Location	Site Activities	Known or Suspected Hazards	Monitoring Requirements	Initial Level of Protection	Comments
IHSS 114, IHSS 203, East Landfill Pond, and surrounding areas of OU 7	Intrusive activities such as borings and monitoring well installations	Volatile chemicals	PID	Wear Modified Level D until direct reading instrument action levels are exceeded, then Level C	None
		Site general hazards and potential for elevated concentrations of radionuclides	Thermoluminescent Dosimeter Alpha Monitoring Bicron Frisk-Tech A-100 or comparable Rocky Flats-approved instrument Beta/gamma monitoring Bicron Frisk-Tech B-50 or comparable Rocky Flats-approved instrument	Wear Modified Level D until direct reading instrument action levels are exceeded, then Level C	Dust suppression using water spray

Field Location	Site Activities	Known or Suspected Hazards	Monitoring Requirements	Initial Level of Protection	Comments
IHSS 114, IHSS 203, East Landfill Pond, and surrounding areas of OU 7	Intrusive activities such as borings and monitoring well installations	Fugitive dusts which may be contaminated with heavy metals, radionuclides or chemical contaminants	Particulate Dust Monitoring	Wear Modified Level D until direct reading instrument action levels are exceeded, then Level C	Dust suppression using water spray
		Methane (explosive atmosphere)	CGI	If > 20 percent LEL, withdraw and allow methane to dissipate	No drilling within the Present Landfill (IHSS 114) will be performed during the Phase II RFI/RI
	Surface Sampling including East Landfill Pond water and sediment sampling	Radionuclides	Radiation monitoring with Bicron Frisk-Tech A-100 and B-50 or comparable alpha/beta/gamma direct reading instruments	Wear Modified Level D until direct reading instrument action levels are exceeded, then Level C	Sampling of East Landfill Pond water and sediments will not be performed during the Phase II RFI/RI

Definitions

CGI	combustible gas indicator
HEPA	high efficiency particulate air
IHSS	individual hazardous substance site
LEL	lower explosive limit
mg/m^3	milligrams per cubic meter
OSHA	Occupational Safety and Health Act
OU	operable unit
PID	photoionization detector
WBGT	wet bulb globe temperature

6. AIR MONITORING

Direct reading or real-time monitoring instruments provide instantaneous data on the concentration or identity of airborne contaminants present on the site This data will be used to determine the appropriate levels of protection for workers in the immediate vicinity of the monitors, identify physical hazards such as explosive gas mixtures, and to identify situations that are unsafe for personnel in any level of protection These monitors may also be utilized to determine the effectiveness of decontamination procedures on personnel and equipment Table 4 identifies some of the action limits for the direct-reading instruments

Monitoring of personnel and equipment for radiological contamination will be performed in the following situations

- Whenever leaving a radiologically controlled area
- Whenever exiting a contaminated area
- During and after work where the potential exists for release of radioactive material
- Whenever passing through a radiologically controlled area
- Following personnel decontamination
- When required by EG&G standard operating procedures (SOPs)
- When required by a radiation work permit

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Table 4
Direct Reading Action Limits

Instrument	Monitoring Guidelines	Instrument Reading	Mandatory Action
HNu PID with 11 7 eV probe	Monitor regularly during all intrusive activities Survey each area prior to work Monitor in the worker's BZs	0 - 5 ppm in BZ	No specific action No respiratory protection required for organic vapors
		5 - 10 ppm in BZ	Upgrade respiratory protection to Level C with HEPA and organic vapor cartridges
		> 10 ppm in BZ	Evacuate immediate area and contact HSS Wait for vapors to dissipate and retest the air
CGI	Monitor regularly during drilling and sampling in the landfill area	0 - 10 percent LEL	No special precaution
		10 - 20 percent LEL	Limit access to area Use non-sparking equipment Monitor continuously No smoking in area Remove ignition sources
		> 20 percent LEL	Evacuate immediate area Turn off all ignition sources Wait for vapors to dissipate and retest Do not continue work in area until readings are lower
PDM-3 Dust Monitor	Monitor whenever visible dust is generated on the site Monitor drilling soil sampling, and equipment moving	0 - 5 mg/m^3	No special precautions
		5 - 50 mg/m^3	Upgrade respiratory protection to Level C with HEPA and organic vapor cartridges and implement dust suppression actions
		> 50 mg/m^3	Evacuate immediate area Use dust suppression (if possible) Wait for dust generation to cease or dissipate
Ludlum Model 12-1A with air proportional probe	Monitor for personnel contamination	0 - 500 dpm/100 cm^3	No special precautions
		> 500 dpm/100 cm^3	PPE considered contaminated
Ludlum Model 31 with pancake probe	Monitor for personnel contamination	0 - 100 CPM	No special precautions
		> 100 CPM above background	PPE considered contaminated

Definitions

BZ	breathing zone
CGI	combustible gas indicator
CPM	counts per minute
dpm/100 cm^3	disintegrations per minute per 100 cubic centimeters
eV	electron volt
HEPA	high efficiency particulate air
HSS	health and safety specialist
LEL	lower explosive limit
mg/m^3	milligrams per cubic meters
PID	photoionization detector
PPE	personal protective equipment
PPM	parts per million

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7. GENERAL SAFETY PROCEDURES

1 All drilling operations shall be monitored for the presence of toxic air contaminants This air monitoring shall be conducted by the HSS or a designated Health and Safety Specialist-in-Training (HSST)

The HNu Photoionization Detector (PID) and a combustible gas indicator (CGI) are required for monitoring during drilling operations

2 Fire extinguishers shall be installed in all vehicles and heavy equipment Fire extinguishers, electrical equipment and wiring shall conform to the applicable requirements of 29 CFR 1926

3 Smoking shall not be permitted within the OU 7 area

4 Personnel shall avoid the area immediately downwind of any drilling unless the drilling is monitored and declared safe

5 Employees shall be issued and utilize appropriate health and safety equipment as determined by this HASP and SSHSP-OU 7

Personnel work limitations

1 Work will be stopped if sustained winds exceed 15 miles per hour for two consecutive 15-minute intervals, if gusts create dusty conditions, or if onsite wind monitor alarms activate

2 If air temperature is below 40°F, precautions will be implemented to prevent cold stress effects

3 Safety meetings will be held weekly Personnel are required to attend and sign a roster (attendance sheet) that will be maintained by the HSS Meeting minutes will be documented and attached to the roster

8. TRAINING AND MEDICAL MONITORING REQUIREMENTS

All persons must have completed 40/8-hour OSHA training and have passed a medical exam to be eligible for fieldwork at OU 7

Additional site-specific training for onsite personnel includes

- General Employee Training (GET) for Subcontractors
- Radiation Worker—Level II
- RCRA Supervisor Checklist
- RCRA (computer-based training[CBT])
- Hazard Communication (CBT)
- Respiratory Indoctrination
- Respiratory Fit Test

All personnel training and medical certifications will be maintained onsite

9. EMERGENCY INFORMATION

9.1 Site Resources

Emergency resources available at Rocky Flats site include

- Medical clinic Extension 2911
- HAZMAT team Extension 2911
- Fire department Extension 2911
- Emergency medical response Extension 2911
- Police/security Extension 2911

Note First aid should be administered by onsite medical personnel if possible First response to medical emergencies should be performed by personnel trained in use of first-aid methods that protect against exposure to bloodborne pathogens Field personnel involved in routine duty are not included under the OSHA Bloodborne Pathogens Rule (29 CFR 1910 1030) However, Stoller field personnel have now or will have training in the use of methods to control exposure to bloodborne pathogens First-aid kits will contain the appropriate PPE and the required engineering controls will be in place during field operations

9.2 Emergency Telephone Numbers

Ambulance	Extension 2911
Medical	Extension 2911
Fire	Extension 2911
Police	Extension 2911
Poison control center	Extension 2911

Telephone will be located at the Stoller field trailer in the T891 area (trailer to be assigned)

The project manager is responsible for ensuring complete and appropriate implementation of the HASP day-to-day operations

9.3 Contingency Plans

Spill or accidental release	Extension 2911
Fire or explosion	Extension 2911 or use fire alarm or fire phone
Personal injury	Extension 2911

- All first aid is to be administered by onsite medical personnel only Unless specifically identified in duty description, no Stoller personnel are to administer first aid
- Evacuate area if in immediate danger and call 2911

NEAREST HOSPITAL Onsite medical facility—Building 122, see Figure 2 for location and most direct route

EVACUATION PROCEDURES Follow instructions given over public address system, otherwise evacuate upwind

10. DECONTAMINATION PROCEDURES

All equipment decontamination fluids and disposable PPE will be appropriately disposed of following use Decontamination of equipment will be performed according to SOP 1 3, General Equipment Decontamination and requirements specified in the SSHSP-OU 7

11. PLAN APPROVAL

Plan Prepared By Virgil M Palencia, The S M Stoller Corporation

Health & Safety Manager Virgil M Palencia, The S M Stoller Corporation

Project Manager Greg Davis, The S M Stoller Corporation

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12. RECORD OF HEALTH AND SAFETY PLAN REVIEW

The undersigned have reviewed the contents of this HASP and the Site-Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan, Operable Unit No 7 (SSHSP-OU 7) (EG&G 1992) They understand the provisions and objectives of the work plan and are fully aware of the risks and hazards involved in completing these objectives They additionally agree to comply with the requirements and protocols set forth in this document and SSHSP-OU 7

NAME	SIGNATURE	DATE

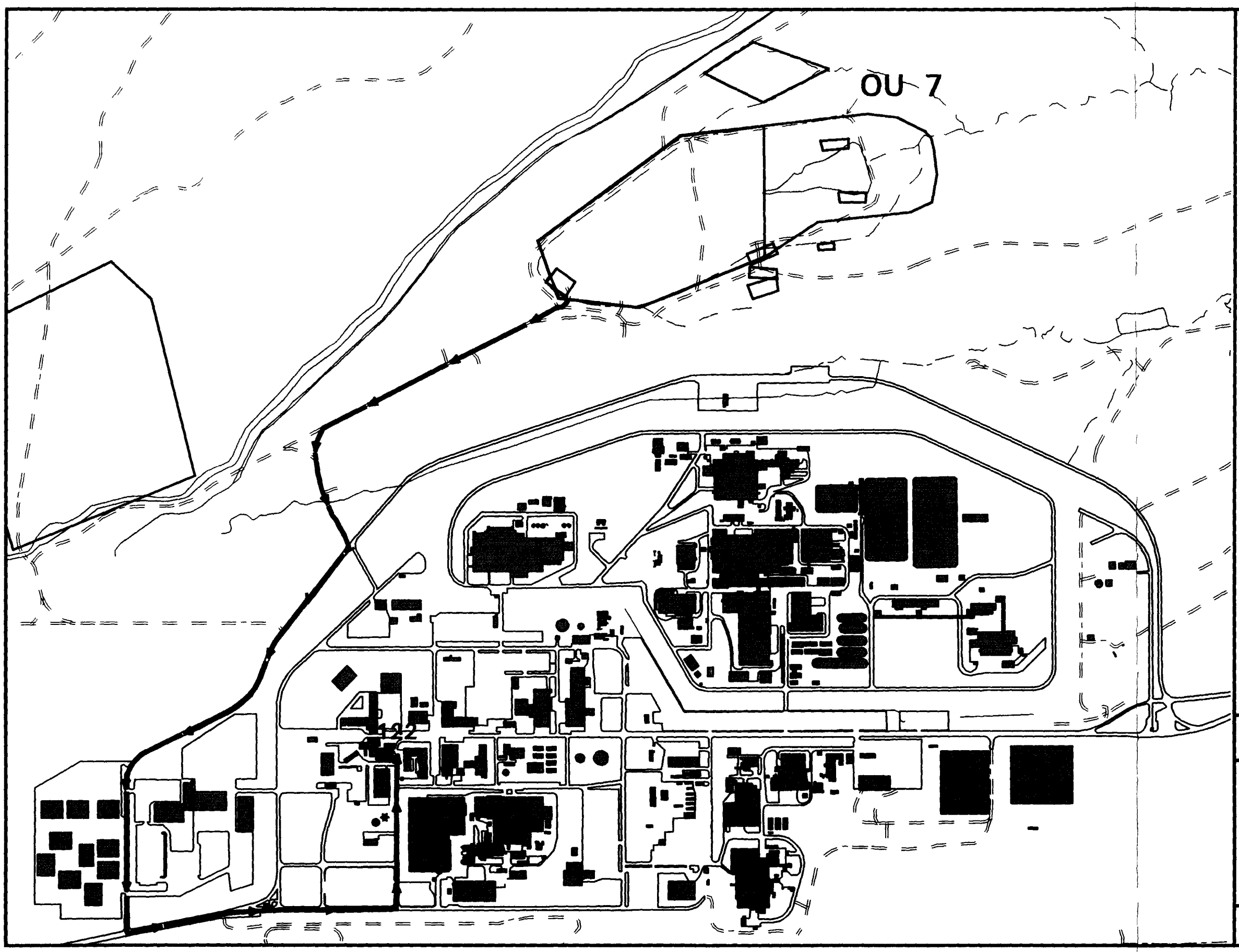
13. REFERENCES

DOE 1994 Technical Memorandum, Revised Work Plan, Operable Unit No 7—Present Landfill (IHS 114) and Inactive Hazardous Waste Storage Area (IHSS 203) Draft Report U S Department of Energy, Rocky Flats Site, Golden, CO April 15

EG&G 1992 Site-Specific Health and Safety Plan Implementation of Phase I RFI/RI Work Plan, Rocky Flats Plant, Present Landfill (IHSS 114) and Inactive Hazardous Waste Storage Area (IHSS 203), Operable Unit No 7 EG&G Rocky Flats, Inc , Golden, CO , October

EG&G 1993 Letter from L A LeLievre (EG&G) to T P O'Rourke (EG&G), Downgrade of Respiratory Protection for Core Drilling and Sampling Operable Unit (OU) 7—LAL028-93 EG&G, Rocky Flats Plant, Inc , Golden, CO , February

Rockwell International 1987 Resource Conservation and Recovery Act Part B—Operating Permit Application for U S DOE Rocky Flats Plant, Hazardous and Radioactive Mixed Wastes, Revision 1 U S Department of Energy



EXPLANATION

- Route from OU 7 to Building 122
- Ditch
- Intermittent Stream
- Dirt Road
- Paved Road
- OU 7 IHSS Boundary
- OU 6 IHSS Boundary
- East Landfill Pond

N

0 feet 650 1300

U.S. DEPARTMENT OF ENERGY
Rocky Flats Site Golden Colorado

Route from OU 7 to Building 122 Rocky Flats Medical Building

Health and Safety Plan Addendum

Operable Unit No. 7

Date: April 1994

Figure 2

04/22/94 OU7SAFETY.MAP