

NOTICE

All drawings located at the end of the document.

**ENVIRONMENTAL RESTORATION
RFCA STANDARD OPERATING PROTOCOL
FOR ROUTINE SOIL REMEDIATION
FY02 NOTIFICATION #02-08
IHSS GROUP 000-1
SOLAR EVAPORATION POND
AREA OF CONCERN**

August 2002



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Approval received from the Colorado Department of Public Health and Environment

July 30, 2002

Approval letter contained in the Administrative Record

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ACRONYMS

AL	action level
AOC	area of concern
CCR	Code of Colorado Regulations
CDD	Closure Description Document
D&D	Decontamination and Decommissioning
cy	cubic yard
EDDIE	Environmental Data Dynamic Information Exchange
ER	Environmental Restoration
ER RSOP	Environmental Restoration RSOP for Routine Soil Remediation
ft ³	cubic foot
FY	Fiscal Year
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
IMP	Integrated Monitoring Program
ITS	Interceptor Trench System
LLMW	low level mixed waste
LLW	low level waste
MST	Modular Storage Tanks
NPWL	New Process Waste Lines
OPWL	Original Process Waste Lines
PAC	Potential Area of Concern
PAM	Proposed Action Memorandum
PCOC	potential contaminant of concern
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RSOP	RFCA Standard Operating Protocol
SCO	surface contaminated object
SEP	Solar Evaporation Pond
SPP	Solar Pond Plume
SVOC	semivolatile organic compound
UBC	Under Building Contamination

1.0 INTRODUCTION

This Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2002a) Fiscal Year (FY)02 Notification includes the notification to remediate Individual Hazardous Substance Sites (IHSSs), Potential Areas of Concern (PACs), and Under Building Contamination (UBC) Sites at the Rocky Flats Environmental Technology Site (RFETS) Industrial Area (IA) during FY02. The purpose of this Notification is to invoke the ER RSOP for IHSS Group 000-1 Solar Evaporation Ponds (SEPs) Area of Concern (AOC). Activities specified in the ER RSOP are not reiterated here; however deviations from the ER RSOP are noted where appropriate.

The remediation decision for the SEPs AOC will be described in a Proposed Action Memorandum (PAM). The PAM decision document will also serve as the Resource Conservation and Recovery Act (RCRA) Closure Plan for the SEPs. The PAM will propose that no further action is necessary to protect human health and the environment, based on alternative closure requirements of 6 Colorado Code of Regulations (CCR) 1007-3, §265.110 (d), the actions described in this ER RSOP Notification and the results of a risk assessment.

RCRA Units 21 (the Permacon) and 48 (the Clarifier and the 308A Pumphouse) are RCRA stable and will be closed by removal without onsite treatment in accordance with Section 6.5.3 of the ER RSOP and this Notification which is in lieu of a RCRA Closure Description Document (CDD). Partial closure of RCRA Unit 374.3 (the transfer line from Building 910 to Building 374 [Box 5 at Building 910 to the UBC 779 fence]) will be conducted in accordance with Section 6.5.3 of the ER RSOP and this Notification which is in lieu of a RCRA Closure Description Document (CDD).

Soil with contaminant concentrations greater than RFCA Tier I Action Levels (ALs) and associated debris will be removed in accordance with RFCA and the ER RSOP. Soil with contaminant concentrations less than RFCA Tier I ALs will be evaluated for additional removal through the consultative process using stewardship and ALARA considerations (Section 5.4 and 5.5 of the ER RSOP).

The location of IHSS Group 000-1 is shown Figure 1. Proposed remediation sites covered under ER RSOP Notification #02-08 are listed in Table 1.

2.0 IHSS GROUP 000-1

IHSS Group 000-1 SEPs AOC includes PAC 900-1310 – Interceptor Trench System (ITS) Water Spill, portions of the OPWL (IHSS 121) and five valve pits, RCRA Unit 21 and 48 (Building 788 Permacon, Clarifer, B308A concrete slabs), leak detection drains, collection sumps, the above-ground pipeline from Building 910 to Building 374 (a portion of the New Process Waste Lines [NPWL], RCRA Unit 374.3 [Box 5 at Building 910 to the UBC 779 fence]), and the Modular Storage Tanks (MST) return line. The locations of these components within the SEPs AOC are shown on Figure 2.

Table 1
FY02 Potential Remediation Areas

IHSS Group	IHSS/PAC/UBC Site	PCOCs	Media	Estimated Remediation Volume
000-1	Solar Evaporation Ponds – Area of Concern (Soil removed under the consultative process based on a risk assessment. The specific site locations and number will be agreed upon by all parties)	Radionuclides Metals SVOCs	Surface and Subsurface Soil	<10 (cy)
	PAC 900-1310 – ITS Water Spill	Radionuclides Metals Nitrates	Surface Soil	<1 cy (No remediation is anticipated)
	Valve Pits – Five are identified 1) West of 207A Pond approximately midway (4'x4'x5' deep) 2) Southwestern corner of 207A Pond (Never confirmed but identified on drawings) 3) Southwestern corner of 207B Pond (Never confirmed but identified on drawings) 4) Two valves located in each berm separating the 207B North/Center Ponds and 207B Center/South Ponds	Radionuclides Metals Nitrates	Subsurface Soil Concrete SCO Material	30 cy LLMW
	Portions of the OPWL (IHSS 121) less than 3' below anticipated grade removal 1) 207C Pond (Southwestern corner P-35, northeastern corner P-49 and Southeastern corner P-47 are to be removed) 2) 207A Pond (Center of west side P-36, northeastern corner P-50) 3) 207B Ponds (Northwestern corner 207B North P-50) (Equalizer lines remaining between the B ponds but will be grouted)	Radionuclides Metals Nitrates	Subsurface Soil Pipeline	<1 cy LLMW
	RCRA Unit 21 and 48 - B788 concrete slab, 788A slab, Clarifier slab, and other ancillary equipment foundations, B308A slab. Unit 21 is the Permacon area located on 788A slab. Unit 48 is the Clarifier slab and 308A Pumphouse slab.	Radionuclides Metals	Concrete Surface Soil	80 cy LLMW (Permacon slab/Clarifier slab) 350 cy LLW (Remaining 788/788A slabs) 10 cy concrete (LLW) (Miscellaneous slabs and ramps between 207A/207B ponds) <1 cy (Potential soil removal beneath slab)
	Three Collection Sumps - located on the north slope of the ponds. Two sumps are 55-gallon drums, one is suspected to be concrete with a 164-gallon capacity. Sumps were from the original trenches before the ITS system was installed	Radionuclides Metals Nitrates	SCO debris	<1 cy LLMW
	Pond 207B and 207C Leak Detection Drains – The drain under 207C pond runs eight inches underneath the liner and discharged to the north hillside. The drain at 207B ponds is located east of the berm and runs north to the existing sump. Locate these lines, cut and plug the lines	Radionuclides Metals Nitrates	SCO debris	<1 cy LLMW
	Above-Ground Pipeline from Building 910 to Building 374 (a portion of RCRA Unit 374.3 - NPWL) Partial closure – Expect to remove this from Box 5 at Building 910 to the UBC 779 fenceline. Remainder of pipeline will be removed at a later date	Radionuclides Metals Nitrates	Pipeline	50 ft ³ Waste profile is contingent on recent water analysis from purging activity
	MST Return Line to 910 Facility – Locate this line, cut and plug both sides. Location of cut will be adjacent to the PAC 900-1310	Radionuclides Metals Nitrates	Pipeline	<1 cy

Table 1 Acronyms:

cy	cubic yards	LLW	low level waste
ft ³	cubic feet	SCO	surface contaminated object
LLMW	low level mixed waste	SVOC	semivolatile organic compound

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2.1 Potential Contaminants of Concern

Potential contaminants of concern (PCOCs) at IHSS Group 000-1 were determined based on process knowledge and data collected during previous studies (DOE 1992-2001, DOE 1995a, DOE 1995b, DOE 1999a, DOE 1999b, DOE 2000, DOE 2001a). PCOCs are listed in Table 1.

2.2 Project Conditions

The following conditions are present at this site:

- SEPs with liners, berms, and underlying potentially contaminated soil;
- RCRA Units 21 and 48 concrete slabs;
- Portions of the OPWL (IHSS 121) and five valve pits;
- PAC 900-1310;
- Ponds 207B and 207C leak detection drains;
- Collection sumps;
- The above-ground pipeline from Building 910 to Building 374 (Box 5 at Building 910 to the UBC 779 fence), a portion of RCRA Unit 374.3, NPWL;
- MST return line via 308A Pumphouse to B910;
- Solar Pond Plume (SPP) and SPP collection and treatment system; and
- ITS.

2.3 Remediation Plan

This RSOP Notification remediation plan for IHSS Group 000-1 SEPs AOC includes the following objectives:

- Remove the RCRA Units 21 and 48 concrete slabs and dispose of offsite;
- Remove soil with contaminant concentrations greater than RFCA Tier I ALs associated with RCRA Units 21 and 48;
- Remove the OPWL (IHSS 121) valve pits and associated soil with contaminant concentrations greater than RFCA Tier I ALs;
- Remove soil with contaminant concentrations greater than RFCA Tier I ALs at PAC 900-1310 (Figure 2);

- Remove soil hot spots as agreed to through the consultative process;
- Remove OPWL (IHSS 121) at the edges of the SEPs berms and disrupt potential pathways by cutting or shearing the pipeline and plugging the remaining pipeline ends;
- Disrupt MST return line;
- Disrupt 207B and 207C Ponds leak detection drains;
- Remove collection sumps;
- Remove above-ground pipeline from Building 910 to Building 374, a portion of RCRA Unit 374.3 (Box 5 at Building 910 to the UBC 779 fence); and
- Collect confirmation samples in accordance with the Industrial Area Sampling and Analysis Plan (IASAP) (DOE 2001a).

Because the ponds managed characteristic wastes (D004-D011) and listed wastes (F001, F002, F003, F005, F006, F007 and F009), waste generated from these units will be characterized and managed appropriately based on waste codes. Analysis of hazardous constituents will be conducted. It is anticipated that the majority of the concrete will be handled as LLW or LLMW. The Permacon and Clarifier units will be handled as LLMW, because these two areas failed RCRA closure requirements. The remaining concrete at Building 788 will be handled as LLW. Other small slabs between 207B and 207A, which supported the heater units, are expected to be recycled, pending survey results. The concrete from the valve pits is also expected to be LLMW.

Portions of the OPWL (IHSS 121) less than 3 feet below the re-contoured ground surface will be removed (refer to Figure 2). Remaining OPWL (IHSS 121) portions will either be grouted or foamed in place. Lines will be tapped and drained prior to removal. Any water encountered within lines will be managed in accordance with the ER RSOP and project Field Implementation Plan Addendum. End points will be surveyed and documented in the Closeout Report.

Potential “hot spots” will be identified based on the results of the risk assessment being conducted to close the SEPs. For purposes of managing risk, these areas may be removed to lower the overall risk of contaminants remaining within this area and as agreed to through the consultative process. A map delineating these “hot spots”, as well as volume expected to be removed, will be prepared and submitted to the agencies for review and approval once the risk assessment is complete.

It is anticipated that after remediation there will be areas with concentrations of metals, radionuclides, and organics greater than background plus two standard deviations or method detection limits, but below RFCA Tier II ALs, at this site. Additionally, it is anticipated that there will be very few areas with concentrations above RFCA Tier II ALs.

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2.4 Stewardship Evaluation

The remediation decision for the SEPs AOC will be described in a PAM. The PAM decision document will also serve as the RCRA Closure Plan for the SEPs. The PAM will propose that no further action is necessary to protect human health and the environment, based on alternative closure requirements of 6 CCR 1007-3, §265.110 (d), the actions described in this ER RSOP and the results of a risk assessment.

Because this notification only includes several small discrete sites within the SEPs AOC, the stewardship considerations for these sites cannot be separated from the larger SEPs AOC stewardship considerations. It is unlikely that additional remediation of these small sites will impact the overall stewardship considerations for the SEPs AOC. Therefore, consistent with the methodology described in the ER RSOP (Section 5.4), the stewardship evaluation for these sites will be conducted as part of the PAM.

2.5 Accelerated Action Remediation Goals

ER RSOP remedial action objectives include the following:

1. Provide a remedy consistent with the RFETS goal of protection of human health and the environment;
2. Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls; and
3. Minimize the spread of contaminants during implementation of accelerated actions.

The accelerated action remediation goals for IHSS Group 000-1 SEPs AOC include the following:

- Conduct actions that are consistent with the proposed future site use as a wildlife refuge;
- Remove the RCRA Units 21 and 48 concrete slabs and dispose of offsite;
- Remove soil with contaminant concentrations greater than RFCA Tier I ALs associated with RCRA Units 21 and 48;
- Remove the OPWL (IHSS 121) valve pits and associated soil with contaminant concentrations greater than RFCA Tier I ALs;
- Remove soil with contaminant concentrations greater than RFCA Tier I ALs at PAC 900-1310;
- Remove soil hot spots as agreed to through the consultative process;
- Remove OPWL (IHSS 121) at the edges of the SEPs berms and disrupt potential pathways;

- Disrupt MST return line;
- Disrupt 207B and 207C Ponds leak detection drains;
- Remove collection sumps; and
- Remove above-ground pipeline from Building 910 to Building 374, a portion of RCRA Unit 374.3 (Box 5 at Building 910 to the UBC 779 fence).

2.6 Treatment

Not applicable.

2.7 Project-Specific Monitoring

Environmental monitoring, including downstream surface water and downgradient groundwater monitoring, will be conducted as part of the Integrated Monitoring Program (IMP) to ensure that contaminant concentrations are not increasing and that water quality standards are being met (DOE 2001b). Performance monitoring of SEPs closure activities and conditions will be accomplished using a network of eight monitoring wells (four existing wells and four new wells [DOE 2002c]). Unneeded groundwater monitoring wells (i.e., P209089, P209489, 41693, 43893, 43993, 23795, 26095, 2786, 3887, 05093, 05193, and 05393) will be abandoned in accordance with applicable regulations under the Site's well abandonment program. Lysimeters in the area also will be removed. If contaminant concentrations increase, the Site will identify the source(s) and implement actions in accordance with RFCA.

Project-specific surface water, groundwater, and air monitoring during remediation was planned through the IMP process. Additional air monitoring will be conducted in accordance with Work Controls in order to document the absence of airborne activity. Three site air monitors are also positioned downgradient from the solar ponds along the north perimeter road.

2.8 Resource Conservation and Recovery Act Units and Intended Waste Disposition

RCRA Unit 21 (Permacon) was a permitted storage unit located in the former Building 788. RCRA Unit 48 was an interim status unit consisting of pondcrete solidification process equipment, including the Clarifier and the pump transfer station at Building 308A. A portion of RCRA Unit 374.3 is present in the SEPs AOC, the above-ground pipeline from Building 910 to Building 374 a portion of RCRA Unit 374.3 (Box 5 at Building 910 to the UBC 779 fence).

Partial closure was declared for all of Building 788 (Unit 21) concrete slab except for the area of the former Permacon. A majority of Building 788 slab was determined to be clean closed (4,530 ft²) with an approximate 470 ft² representing the Permacon area rendered RCRA stable by decontamination using chemical cleaning and high pressure spray methods prior to collection of water samples.

Partial closure for the pondcrete processing system - RCRA Unit 48, (Figure 2) was declared for all the former components of the unit except for the 207 Clarifier slab (900 ft²) and the 308A Pumphouse slab (120 ft²). The 207 Clarifier slab was rendered RCRA stable by the application of an acrylic latex spray-on fixative. The B308A Pumphouse slab was rendered RCRA stable by chemical cleaning and high-pressure spray methods employed for decontamination prior to collection of water samples (DOE 1999a).

NPWL (RCRA Unit 374.3) will be partially closed under this action. As shown in Figure 2, part of the above-ground line from Building 910 to Building 374, a portion of RCRA Unit 374.3 (Box 5 at Building 910 to the UBC 779 fence) will be cut and removed. Incidental waters encountered during removal will be managed as described in Section 2.3. The end of the remaining line will be surveyed and capped off.

It is anticipated that most of the waste from these units will be classified as low level mixed waste (refer to Section 2.3)

Closure of the SEPs will be addressed in the PAM.

2.9 Administrative Record Documents

DOE, 1992–2001, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado.

DOE, 1995, OU 4 Solar Evaporation Ponds Interim Measure / Interim Remedial Action Environmental Assessment Decision Document, Parts I through V, Rocky Flats Environmental Technology Site, Golden, Colorado, February.

DOE, 1995, Solar Evaporation Pond 207 C Characterization Report for the Rocky Flats Environmental Technology Site, Golden, Colorado, December.

DOE, 1999 Final Closeout Report Building 788 & Clarifier Tank RCRA Closure Decommissioning Project, Rocky Flats Environmental Technology Site, Golden, Colorado, October.

DOE, 1999, Final Solar Ponds Plume Decision Document, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, 1999, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2000, Industrial Area Data Summary Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, 2001, Rocky Flats Environmental Technology Site, Integrated Monitoring Plan, Golden, Colorado.

DOE, 2002, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, Colorado, January.

DOE, 2002, Draft Solar Ponds Plume Decision Document Modification, Rocky Flats Environmental Technology Site, Golden, Colorado, April.

DOE, 2002, Well Abandonment and Replacement Program, Work Plan Addendum for the Solar Evaporation Ponds, Draft, WARP-02.2-WPA, June

2.10 Projected Schedule

Remediation of IHSS Group 000-1 SEPs AOC will begin in the fourth quarter of FY02.

3.0 PUBLIC PARTICIPATION

ER RSOP Notification #02-08 activities were discussed at the June 2002 ER/Decontamination and Decommissioning (D&D) Status meeting. This Notification is available at the Rocky Flats Reading Rooms.

4.0 REFERENCES

DOE, 1992 - 2001, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado.

DOE, 1995a, OU 4 Solar Evaporation Ponds Interim Measure / Interim Remedial Action Environmental Assessment Decision Document, Parts I through V, Rocky Flats Environmental Technology Site, Golden, Colorado, February.

DOE, 1995b, Solar Evaporation Pond 207 C Characterization Report for the Rocky Flats Environmental Technology Site, Golden, Colorado, December.

DOE, 1999a, Final Closeout Report Building 788 & Clarifier Tank RCRA Closure Decommissioning Project, Rocky Flats Environmental Technology Site, Golden, Colorado, October.

DOE, 1999b, Final Solar Ponds Plume Decision Document, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, 1999c, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2000, Industrial Area Data Summary Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2001a, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, 2001b, Rocky Flats Environmental Technology Site, Integrated Monitoring Plan, Golden, Colorado.

DOE, 2002a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, Colorado, January.

DOE, 2002b, Draft Solar Ponds Plume Decision Document Modification, Rocky Flats Environmental Technology Site, Golden, Colorado, April.

DOE, 2002c, Well Abandonment and Replacement Program, Work Plan Addendum for
the Solar Evaporation Ponds, Draft, WARP-02.2-WPA, June

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Figure 1
IA Groups Location Map

- EXPLANATION**
-  Solar Evaporation Pond Area of Concern
- Standard Map Features**
-  Buildings and other structures
 -  Solar Evaporation Ponds (SEPs)
 -  Lakes and ponds
 -  Streams, ditches, or other drainage features
 -  Fences and other barriers
 -  Topographic Contour (20-Foot)
 -  Paved roads
 -  Dirt roads

DATA SOURCE BASE FEATURES:
Buildings, fences, hydrography, roads and other structures were derived from aerial photography and GIS data.
Topographic contours were derived from digital elevation data.
Topographic contours were derived from digital elevation data.
The DEM was processed using the following parameters:
Input: 1/4" ASCE 100' x 100' grid
Output: 1/4" ASCE 100' x 100' grid
Vertical datum: NAVD83
Horizontal datum: NAD83
Projection: UTM
Zone: 12N
Units: Meters
Resolution: 10 meters



Scale = 1 : 7580
1 inch represents approximately 632 feet



State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: **DynCorp**
THE ART OF TECHNOLOGY



August 05, 2002

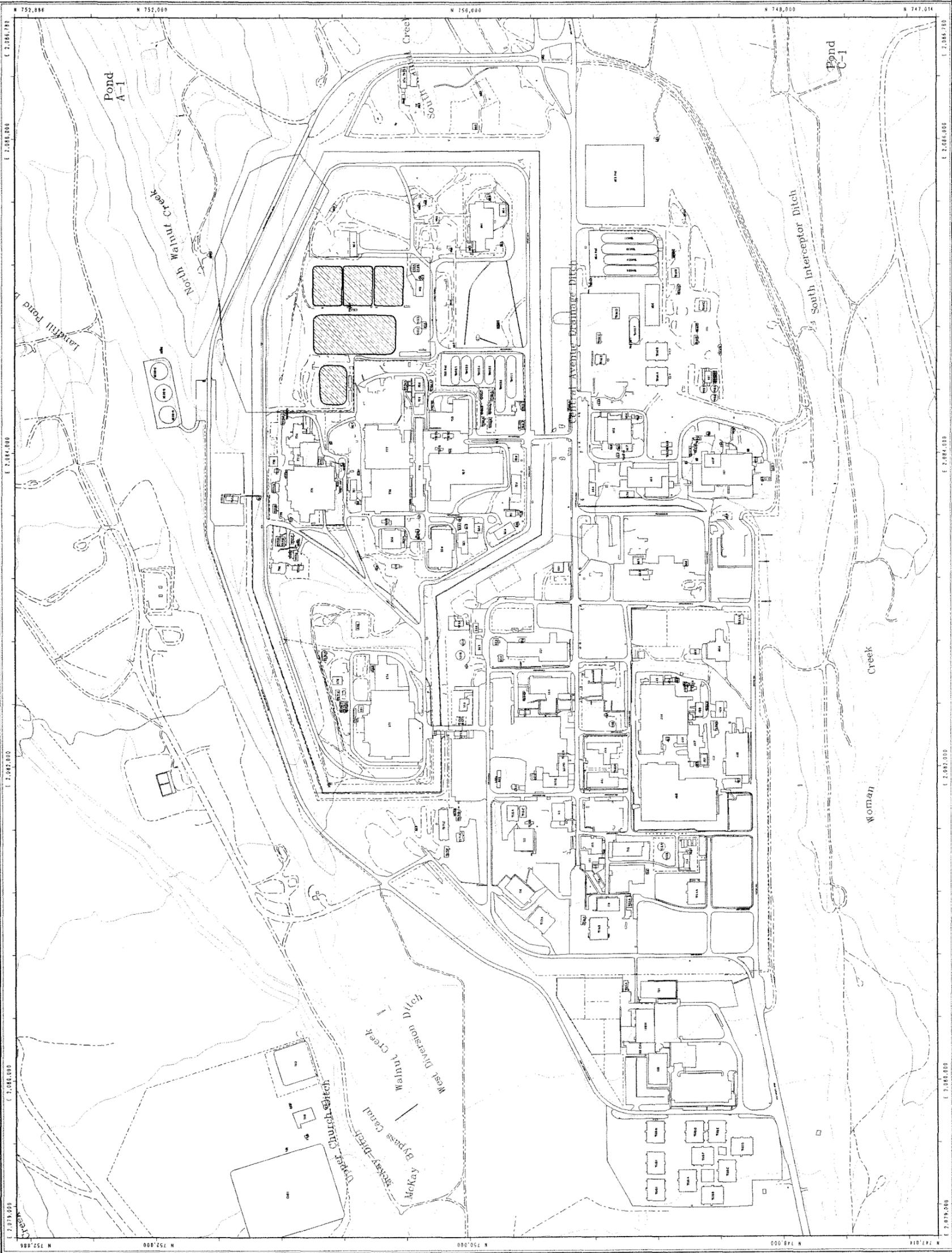


Figure 2
Solar Evaporation Ponds
Area of Concern

KEY

	OU4 AOC
	SEP
	IHSS
	PAC
	Building or other structure
	OPWL Outside AOC
	OPWL
	NPWL
	Storm drain
	Leak Detection Drain
	MST Return Line
	Stream, ditch, or other drainage
	Paved area
	Fence
	Dirt Road

Scale = 1:1,700




State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:



KAISER-HILL
COMPANY

sepaocnotification.apr June 2002

