

**ENVIRONMENTAL RESTORATION
RFCA STANDARD OPERATING PROTOCOL
FOR ROUTINE SOIL REMEDIATION
FY02 NOTIFICATION #02-07
IHSS GROUP 600-2**

July 2002

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Approval received from the Colorado Department of Public Health and Environment
July 9, 2002
Approval letter is contained in the Administrative Record

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ACRONYMS

| | |
|---------|---|
| AL | action level |
| ALARA | as low as reasonably achievable |
| 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 |
| FY | Fiscal Year |
| IA | Industrial Area |
| IASAP | Industrial Area Sampling and Analysis Plan |
| IHSS | Individual Hazardous Substance Site |
| mg/kg | milligram per kilogram |
| PAC | Potential Area of Concern |
| PCB | polychlorinated biphenyl |
| pCi/g | picocuries per gram |
| PCOC | potential contaminant of concern |
| POC | Point of Compliance |
| POE | Point of Evaluation |
| RCRA | Resource Conservation and Recovery Act |
| RFCA | Rocky Flats Cleanup Agreement |
| RFETS | Rocky Flats Environmental Technology Site |
| RISS | Remediation, Industrial D&D, and Site Services |
| RSOP | RFCA Standard Operating Protocol |
| SVOC | semivolatile organic compound |
| UBC | Under Building Contamination |
| VOC | volatile organic compound |

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1.0 INTRODUCTION

This Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2002) 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 600-2. Activities specified in the ER RSOP are not reiterated here, however, deviations from the ER RSOP are noted where appropriate.

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 as low as reasonably achievable (ALARA) considerations (Sections 5.4 and 5.5 of the ER RSOP [DOE 2002]).

Proposed remediation sites covered under ER RSOP Notification #02-07 are listed in Table 1 and the locations are shown on Figure 1.

**Table 1
FY02 Potential Remediation Areas for IHSS Group 600-2**

| IHSS Group | IHSS/PAC/UBC Site | PCOCs | Media | Estimated Remediation Volume |
|------------|--|--|-----------------------------|---------------------------------|
| 600-2 | PAC 400-802 – Storage Shed South of Building 334 | Radionuclides Metals SVOCs PCBs VOCs | Surface and Subsurface Soil | Approximately 1 cubic yard (cy) |

SVOC – semivolatile organic compound

PCB – polychlorinated biphenyl

VOC – volatile organic compound

2.0 IHSS GROUP 600-2

IHSS Group 600-2 includes PAC 400-802 – Storage Shed South of Building 334 and its location is shown on Figure 2.

2.1 Potential Contaminants of Concern

Potential contaminants of concern (PCOCs) at IHSS Group 600-2 were determined based on process knowledge and data collected during previous studies (DOE 1992-2001, DOE 2001a, DOE 2000).

2.2 Project Conditions

The following conditions are present at this site

- Two concrete slabs,
- The concrete slab that was beneath T452F is contaminated with radionuclides, and
- Four trailers that are being removed by Remediation, Industrial Decontamination and Decommissioning (D&D), and Site Services (RISS) Facility D&D staff

2.3 Remediation Plan

This RSOP Notification remediation plan for IHSS Group 600-2 includes the following objectives

- Remove the concrete slabs (if not removed by RISS Facility D&D) and recycle in accordance with the RSOP for Recycling Concrete (DOE 1999), or dispose of,
- Remove sanitary sewer drains (if not removed by RISS Facility D&D),
- Remove structures and piping within 3 feet of current grade (if not removed by RISS Facility D&D),
- Remove soil contaminated above RFCA Tier I ALs (Figure 2),
- Remove contaminated soil to below RFCA Tier I ALs if indicated through the stewardship evaluation (Section 2.4), and
- Collect confirmation samples in accordance with the Industrial Area Sampling and Analysis Plan (IASAP) (DOE 2001)

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.

2.4 Stewardship Evaluation

Based on the PCOCs (Table 1 and Section 2.1) and the ER RSOP (DOE 2002), it is anticipated that all contamination above RFCA Tier I ALs will be remediated. Figure 2 shows the potential remediation area. Additional remediation to below Tier I ALs is not required by RFCA but will be evaluated using the consultative process.

Because the full extent of excavation and remediation is not known at this time, an additional stewardship evaluation will be conducted during remediation using the

consultative process. A new map of residual contamination will be generated after remediation. The following sections present the stewardship evaluation.

2.4.1 Proximity to Other Contaminant Sources

IHSS Group 600-2 is in the RFETS IA. Nearby potential contaminant sources, PCOCs, media of interest, and the proximity and relationship to IHSS Group 600-2 are listed in Table 2 and shown on Figure 2.

**Table 2
 Other Potential Contaminant Sources for IHSS Group 600-2**

| IHSS Group | PCOCs | Media | Distance from IHSS Group 600-2 |
|---|--|-----------------------------|--------------------------------|
| 000-3 – IHSS 190 – Central Avenue Caustic Leak | Sodium Hydroxide | Surface Soil | Overlapping on the north |
| 400-7 – IHSS 157 1 – Radioactive Site North Area | Radionuclides Metals SVOCs VOCs | Surface and Subsurface Soil | Overlapping on the north |
| 400-7 – IHSS 400-187 – Sulfuric Acid Spill Building 443 | Radionuclides pH | Surface Soil | Overlapping on the southeast |

IHSS Group 400-7 has PCOCs similar to, and in the same media as, IHSS Group 600-2. It is anticipated that after remediation of these IHSS Groups, they will have residual contamination in subsurface soil similar to the residual contamination anticipated at IHSS Group 600-2. The only PCOC at IHSS 190 is sodium hydroxide, which does not affect stewardship considerations at IHSS Group 600-2.

2.4.2 Surface Water Protection

Surface water protection includes the following considerations:

Is there a pathway to surface water from potential erosion to streams or drainages?

This site is in a flat-lying area not prone to erosion. However, a drainage ditch is located north and east of the site.

Do characterization data indicate there are contaminants in surface soil?

There are no surface soil sampling locations near IHSS Group 600-2. There are two sediment sampling locations within this PAC. All radionuclide activities are less than background plus two standard deviations. Several semivolatile organic compounds (SVOCs), along with molybdenum and tin, are present at concentrations greater than method detection limits but well below RFCA Tier II ALs. There are no RFETS background values for molybdenum or tin. Benzo(a)pyrene is the only analyte with results greater than RFCA Tier II ALs.

Do monitoring results from Points of Evaluation (POEs) or Points of Compliance (POCs) indicate there are surface water impacts from the area under consideration?

There are no POEs or POCs in the immediate vicinity of IHSS Group 600-2. One surface water sample was collected in this PAC in 1991, however there is no current evidence of surface water at the location. Results indicated that aluminum, iron, lead, and zinc were present in concentrations greater than ALs.

Is the IHSS Group in an area with high erosion potential, based on the 100-Year Average Erosion Map?

Not applicable. The 100-Year Average Erosion Map does not include areas in the IA.

2.4.3 Monitoring

Monitoring includes the following considerations:

Do monitoring results from POEs or POCs indicate there are groundwater impacts from the area under consideration?

There are no POEs or POCs near IHSS Group 600-2.

Can the impact be traced to a specific IHSS Group?

Groundwater monitoring results from wells P414189 and 40399 do not indicate concentrations of analytes above RFCA ALs. Results from a recent well, 85202, indicate that cis-1,2-dichloroethene, tetrachloroethene, vinyl chloride and trichloroethene are greater than RFCA Tier II ALs and may be related to IHSS Group 600-2.

Are additional monitoring stations needed?

Not applicable.

Can existing monitoring locations be deleted if additional remediation is conducted?

2.4.4 Stewardship Actions and Recommendations

The current stewardship actions and recommendations for IHSS Group 600-2 are as follows:

- Implement near-term institutional controls until final closure and stewardship decisions are implemented, including the following:
 - Signs and barriers,
 - Restrictions on soil excavation, and
 - Soil excavations controlled through the Site Soil Disturbance Permit process
- Implement long-term stewardship actions, including the following:
 - Federal ownership, and

- Land use restrictions to prevent soil excavation Specific land use restrictions will be discussed in the Site Long-Term Stewardship Plan

These recommendations may change based on in-process remediation activities and other future RFETS remediation decisions

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 600-2 include the following

- Remove the concrete slabs (if not removed by RISS Facility D&D) and recycle in accordance with the RSOP for Recycling Concrete (DOE 1999), or dispose at an appropriate facility, pending waste characterization,
- Remove structures and piping within 3 feet of current grade (if not removed by RISS Facility D&D),
- Remove sanitary sewer drains (if not removed by RISS Facility D&D),
- Remove soil with contaminant concentrations greater than RFCA Tier I ALs, and
- Remove soil contaminated below Tier I ALs if indicated through the stewardship evaluation or ALARA evaluations (the consultative process)

2.6 Treatment

Not applicable

2.7 Project-Specific Monitoring

High-volume air samplers may be used at the remediation area consistent with work controls to determine airborne radioactivity concentrations Approximate locations of air samplers are shown on Figure 2

2.8 Resource Conservation and Recovery Act (RCRA) Units and Intended Waste Disposition

Not applicable

2.9 Administrative Record Documents

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

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

2.10 Projected Schedule

Remediation of IHSS Group 600-2 will begin in the fourth quarter of FY02

3.0 PUBLIC PARTICIPATION

ER RSOP Notification #02-07 activities were discussed at the June 2002 ER/D&D Status meeting. This Notification is available at the Rocky Flats Reading Rooms and on the Environmental Data Dynamic Information Exchange (EDDIE) website at www.rfets.gov

4.0 REFERENCES

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

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

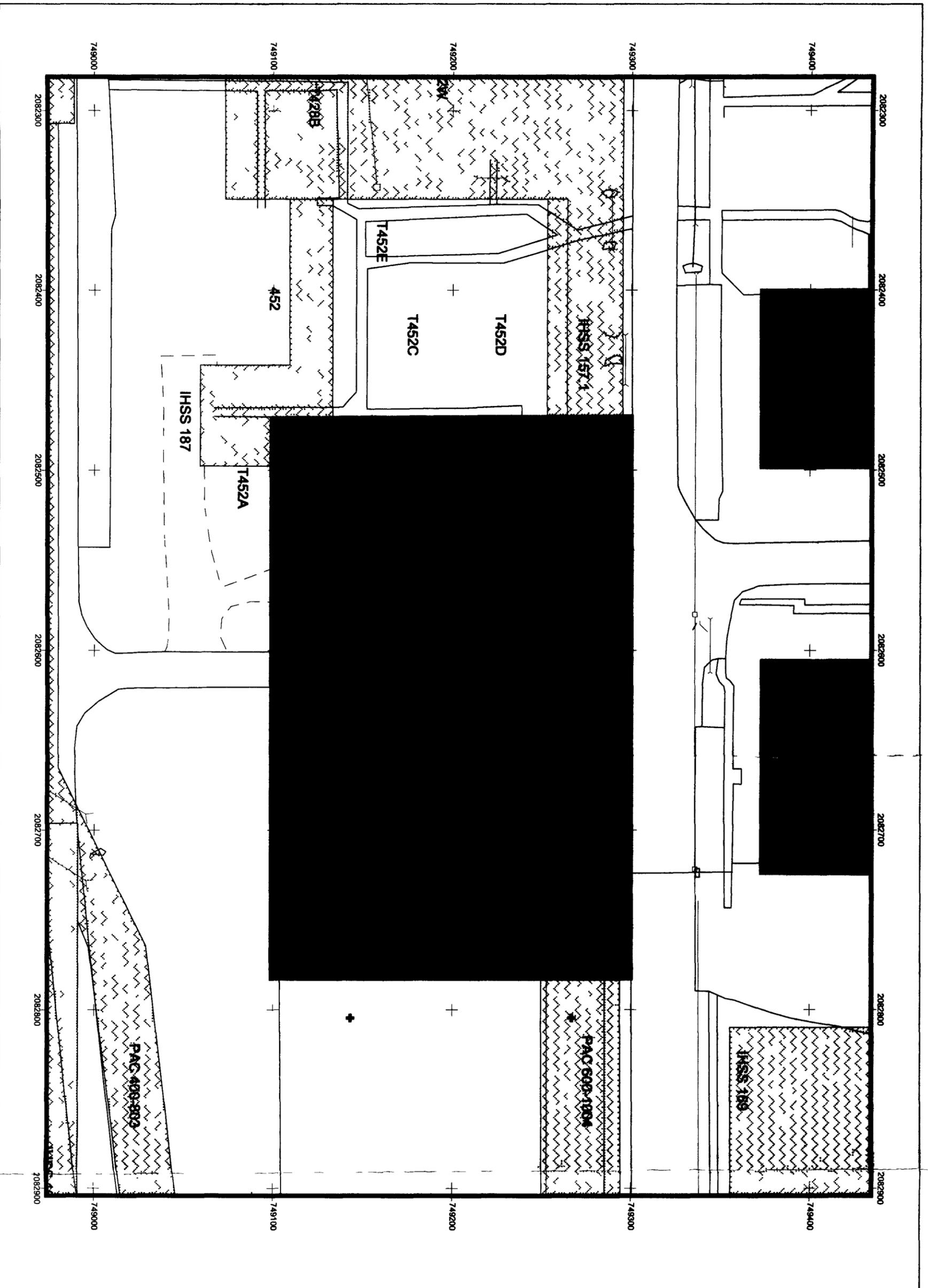
DOE, 2000, Industrial Area Data Summary Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September

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

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

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Figure 2
Potential Remediation Area
IHSS Group 600-2



- KEY**
- PAC
 - Nearby IHSSs
 - Nearby PACs
 - Building or other structure
 - Paved areas
 - Stream ditch or other drainage
 - Dirt road
 - Potential Air Sampling Location



Scale = 1 650



State Plane Coordinate Projection
 Colorado Central Zone
 Datum: NAD 27

U S Department of Energy
 Rocky Flats Environmental Technology Site

Prepared by



400-600characterization.apr

May 2002

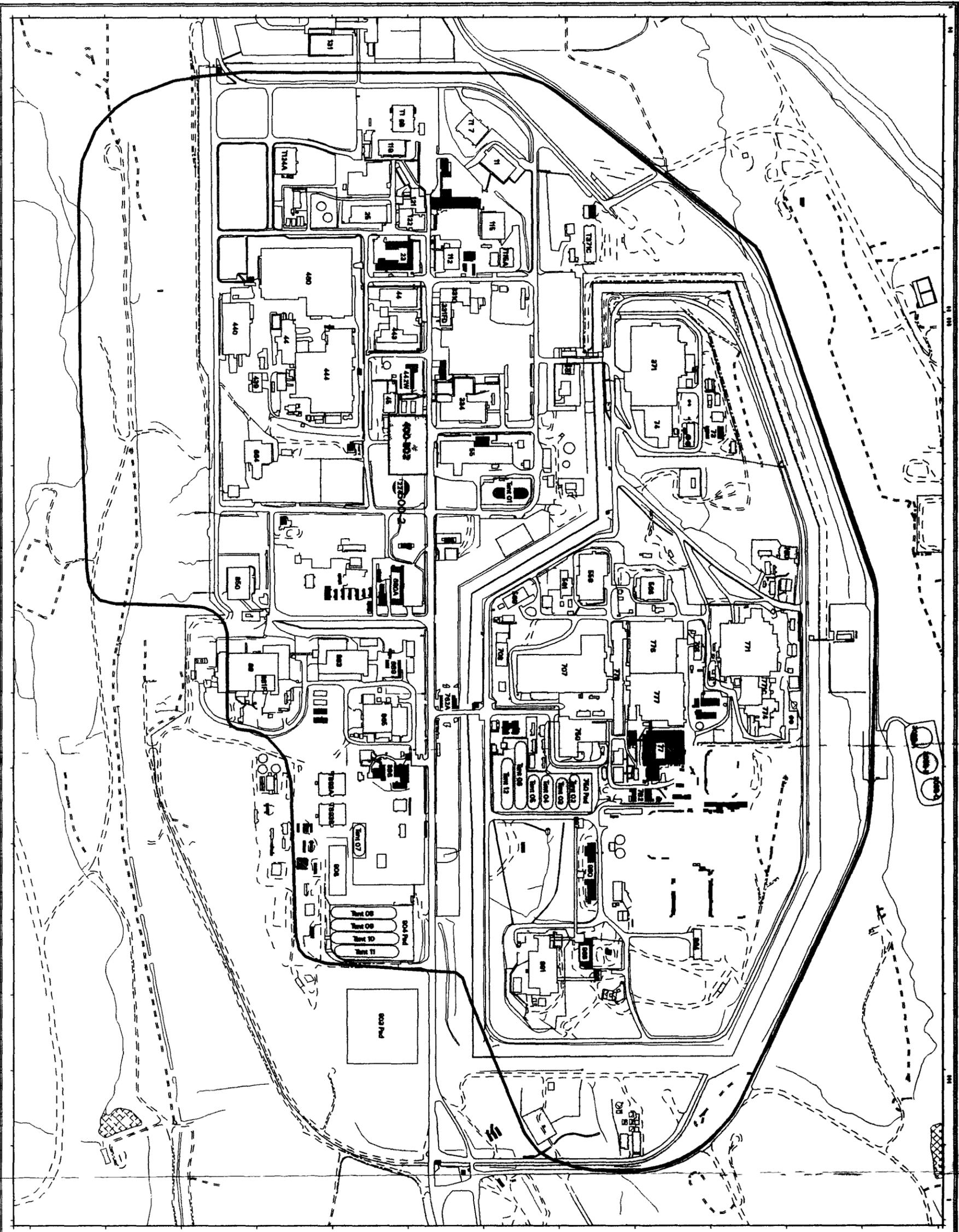


Figure 1
IA Groups Location Map

EXPLANATION
 ■ HHS Groupings
 ■ 600-2

- Standard Map Features**
- Buildings and other structures
 - Demolished buildings
 - ▨ Solar Evaporation Ponds (SEP)
 - Lakes and ponds
 - Streams ditches or other drainage features
 - - - Fences and other barriers
 - Paved roads
 - - - Dirt roads
 - N Industrial Area Operable Unit Boundary

NOTE: SOLAR EVAPORATION PONDS (SEP) ARE NOT TO BE CONSIDERED AS A SOURCE OF CONTAMINATION. THE LOCATION OF SEPs IS BASED ON THE 1992 AERIAL PHOTOGRAPHY AND THE 1992 AERIAL PHOTOGRAPHY IS THE SOURCE OF THE DATA FOR THE SEPs. THE LOCATION OF SEPs IS BASED ON THE 1992 AERIAL PHOTOGRAPHY AND THE 1992 AERIAL PHOTOGRAPHY IS THE SOURCE OF THE DATA FOR THE SEPs. THE LOCATION OF SEPs IS BASED ON THE 1992 AERIAL PHOTOGRAPHY AND THE 1992 AERIAL PHOTOGRAPHY IS THE SOURCE OF THE DATA FOR THE SEPs.

Scale 1:6330
 1 inch represents approximately 528 feet

State Plane Coordinate Projection
 Colorado Central Zone
 Datum: NAD27

U S Department of Energy
 Rocky Flats Environmental Technology Site

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