NOTICE

All drawings located at the end of the document.

Draft Industrial Area Sampling and Analysis Plan Addendum #IA-04-05 IHSS Group 600-3 IHSS 600-120.1 Fiberglass Area North of Building 664

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Approval received from the Colorado Department of Public Health and Environment
( )
Approval letter contained in the Administrative Record

November 2003

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ACRONYMS

AL	Action Level
BM+2SD	Background Means + 2 Standard Deviations
COC	Contaminant Of Concern
D&D	Decontamination and Decommissioning
DOE	Department of Energy
ECO	Ecological Receptor
ER	Environmental Restoration
ER RSOP	Environmental Restoration RFCA Standard Operating Protocol
FY	Fiscal Year
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
nCi/g	nanoCuries per gram (nano = 10^{-9})
PAC	Potential Area of Concern
PCOC	Potential Contaminant of Concern
pCi/g	picoCuries per gram (pico = 10^{-12})
POC	Point of Compliance
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RSOP	RFCA Standard Operating Protocol
SWD	Soil-Water Database
UBC	Under Building Contamination
VOC	Volatile Organic Compound
WRW	Wildlife Refuge Worker

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1.0 INTRODUCTION

This Industrial Area (IA) Sampling and Analysis Plan (SAP) (IASAP) Addendum #IA-04-05 includes Individual Hazardous Substance Site (IHSS) Group-specific information, sampling locations, and potential contaminants of concern (PCOCs) for IHSS Group 600-3 which is proposed for characterization during Fiscal Year (FY) 04. This IASAP Addendum is a supplement to the IASAP (DOE 2001) and includes data and proposed sampling locations for IHSS 600-120.1. This is the only IHSS in IHSS Group 600-3. The location of IHSS Group 600-3 is shown on Figure 1.

2.0 EXISTING UBC, IHSS, AND PAC INFORMATION

Existing information and data for the IHSS is available in Appendix C of the IASAP (DOE 2001), the Industrial Area Data Summary Report (DOE 2000), the Historical Release Reports for the Rocky Flats Plant (DOE 1992-2003), and ER RSOP Notification #04-01 (DOE 2003). Existing concentrations greater than the background means plus two standard deviations, or method detection limits (MDLs), are presented in Figure 2. Table 1 presents PCOCs for IHSS 600-3.

Table 1
Potential Contaminants of Concern

IHSS Group	IHSS/PAC/UBC Site	PCOCs	Media	Sources	Sampling Type
600-3	IHSS 600-120.1	Radionuclides Metals VOCs SVOCs	Surface and Subsurface Soil	HRR (DOE 1992-2003), Process Knowledge, Existing Sampling Data	Statistical and Biased

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3.0 SAMPLING

The proposed sampling and analysis specifications for IHSS Group 600-3 IHSS site are summarized in Table 2 and listed, by sample location, in Table 3. The proposed sampling locations are shown in Figure 3. Statistical grid surface and subsurface soil samples will be collected from IHSS Group 600-3 at four locations. At three locations, bias surface and subsurface samples will be collected. After characterization starts, the number and type of samples may change based on field conditions and/or sampling results. Changes to sampling specifications will be considered in consultation with the regulatory agencies.

Three types of sampling strategies are used to determine sampling locations: statistical, biased, and geostatistical. Statistical grids have computer-generated random start points and orientations. The standard statistical grid size used here (i.e., the length between grid points) is 36 feet. Geostatistical samples supplement the statistical grid locations but will not be used at IHSS Group 600-3.

Samples will be analyzed in accordance with the IASAP (DOE 2001). The on site laboratory will be used to analyze for radionuclides and metals.

Table 2
IHSS Group 600-3 Sampling Analysis Summary

Category	Total
Number of Sampling Locations	7
Number of Samples	50
Number of Radionuclide Analyses	14
Number of Metal Analyses	14
Number of VOC Analyses	8
Number of SVOC Analyses	14

8

Table 3
Sampling Specifications for IHSS Group 600-3

IHSS Group	IHSS/PAC/UBC	Location	Easting	Northing	Media	Depth Interval	Analyte	On-Site Laboratory Method	Off-Site Laboratory Method	Comments
600-3	IHSS 600-120.1	CA36-031	2082741.389	748609.248	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical
		CA36-031	2082741.389	748609.248	Surface Soil	0-0.5'	Metals	6200	6010	Statistical
		CA36-031	2082741.389	748609.248	Surface Soil	0-0.5'	SVOCs	N/A	8270	Statistical
		CA36-031	2082741.389	748609.248	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical
		CA36-031	2082741.389	748609.248	Subsurface Soil	0.5-2.5'	Metals	6200	6010	Statistical
		CA36-031	2082741.389	748609.248	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical
		CA36-031	2082741.389	748609.248	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270	Statistical
		BZ36-027	2082728.872	748575.494	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical
		BZ36-027	2082728.872	748575.494	Surface Soil	0-0.5'	Metals	6200	6010	Statistical
		BZ36-027	2082728.872	748575.494	Surface Soil	0-0.5'	VOCs	8260	8260	Statistical
		BZ36-027	2082728.872	748575.494	Surface Soil	0-0.5'	SVOCs	N/A	8270	Statistical
		BZ36-027	2082728.872	748575.494	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical
		BZ36-027	2082728.872	748575.494	Subsurface Soil	0.5-2.5'	Metals	6200	6010	Statistical
		BZ36-027	2082728.872	748575.494	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical
		BZ36-027	2082728.872	748575.494	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270	Statistical
		BZ36-028	2082733.467	748587.376	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Bias
		BZ36-028	2082733.467	748587.376	Surface Soil	0-0.5'	Metals	6200	6010	Bias
		BZ36-028	2082733.467	748587.376	Surface Soil	0-0.5'	SVOCs	N/A	8270	Bias

IHSS Group	IHSS/PAC/UBC	Location	Easting	Northing	Media	Depth Interval	Analyte	On-Site Laboratory Method	Off-Site Laboratory Method	Comments
600-3	IHSS 600-120.1	BZ36-028	2082733.467	748587.376	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Bias
		BZ36-028	2082733.467	748587.376	Subsurface Soil	0.5-2.5'	Metals	6200	6010	Bias
		BZ36-028	2082733.467	748587.376	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Bias
		BZ36-028	2082733.467	748587.376	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270	Bias
		BZ35-012	2082716.355	748541.74	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical
		BZ35-012	2082716.355	748541.74	Surface Soil	0-0.5'	Metals	6200	6010	Statistical
		BZ35-012	2082716.355	748541.74	Surface Soil	0-0.5'	SVOCs	N/A	8270	Statistical
		BZ35-012	2082716.355	748541.74	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical
		BZ35-012	2082716.355	748541.74	Subsurface Soil	0.5-2.5'	Metals	6200	6010	Statistical
		BZ35-012	2082716.355	748541.74	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical
		BZ35-012	2082716.355	748541.74	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270	Statistical
		CA35-007	2082751.845	748547.777	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical
		CA35-007	2082751.845	748547.777	Surface Soil	0-0.5'	Metals	6200	6010	Statistical
		CA35-007	2082751.845	748547.777	Surface Soil	0-0.5'	SVOCs	N/A	8270	Statistical
		CA35-007	2082751.845	748547.777	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical
		CA35-007	2082751.845	748547.777	Subsurface Soil	0.5-2.5'	Metals	6200	6010	Statistical
		CA35-007	2082751.845	748547.777	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical
		CA35-007	2082751.845	748547.777	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270	Statistical
		BZ35-013	2082714.978	748558.861	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Bias
		BZ35-013	2082714.978	748558.861	Surface Soil	0-0.5'	Metals	6200	6010	Bias

IHSS Group	IHSS/PAC/UBC	Location	Easting	Northing	Media	Depth Interval	Analyte	On-Site Laboratory Method	Off-Site Laboratory Method	Comments
600-3	IHSS 600-120.1	BZ35-013	2082714.978	748558.861	Surface Soil	0-0.5'	SVOCs	N/A	8270	Bias
		BZ35-013	2082714.978	748558.861	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Bias
		BZ35-013	2082714.978	748558.861	Subsurface Soil	0.5-2.5'	Metals	6200	6010	Bias
		BZ35-013	2082714.978	748558.861	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Bias
		BZ35-013	2082714.978	748558.861	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270	Bias
		BZ35-014	2082734.249	748528.783	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Bias
		BZ35-014	2082734.249	748528.783	Surface Soil	0-0.5'	Metals	6200	6010	Bias
		BZ35-014	2082734.249	748528.783	Surface Soil	0-0.5'	SVOCs	N/A	8270	Bias
		BZ35-014	2082734.249	748528.783	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Bias
		BZ35-014	2082734.249	748528.783	Subsurface Soil	0.5-2.5'	Metals	6200	6010	Bias
		BZ35-014	2082734.249	748528.783	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Bias
		BZ35-014	2082734.249	748528.783	Subsurface Soil	0.5-2.5'	SVOCs	N/A	8270	Bias

4.0 REFERENCES

DOE, 1992-2003, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado.

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, Final Annual RFCA Groundwater Monitoring Report, 02-RF-01873, November.

DOE, 2003, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, FY04 Notification #04-01, IHSS Group 600-3, IHSS 600-120.1, November.

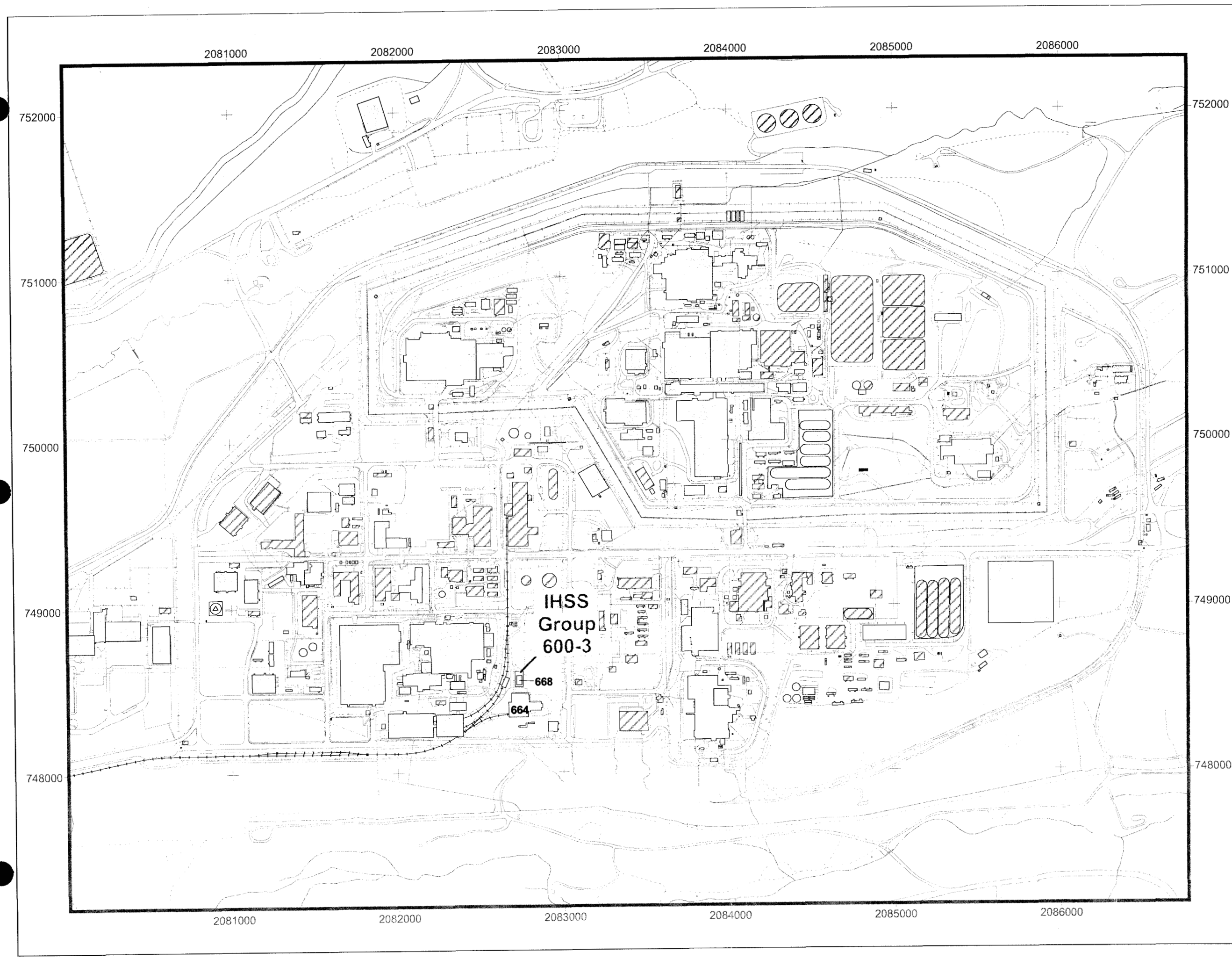

Figure 1

IHSS Group 600-3 General Location

KEY

- IHSS Group 600-3

Buildings

- Demolished
- Standing
- Paved Roads
- Dirt Roads
- Trails
- Railroads
- Fences
- Sewers
- Surface Water Routes

N W E S

200 0 200 400 600 800 Feet

Scale = 1:6500

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared for: KAISER•HILL COMPANY

Prepared by: RADMS

Date: 10/21/03

File:W://Projects/Fy2004/600-3/group 600-3.apr

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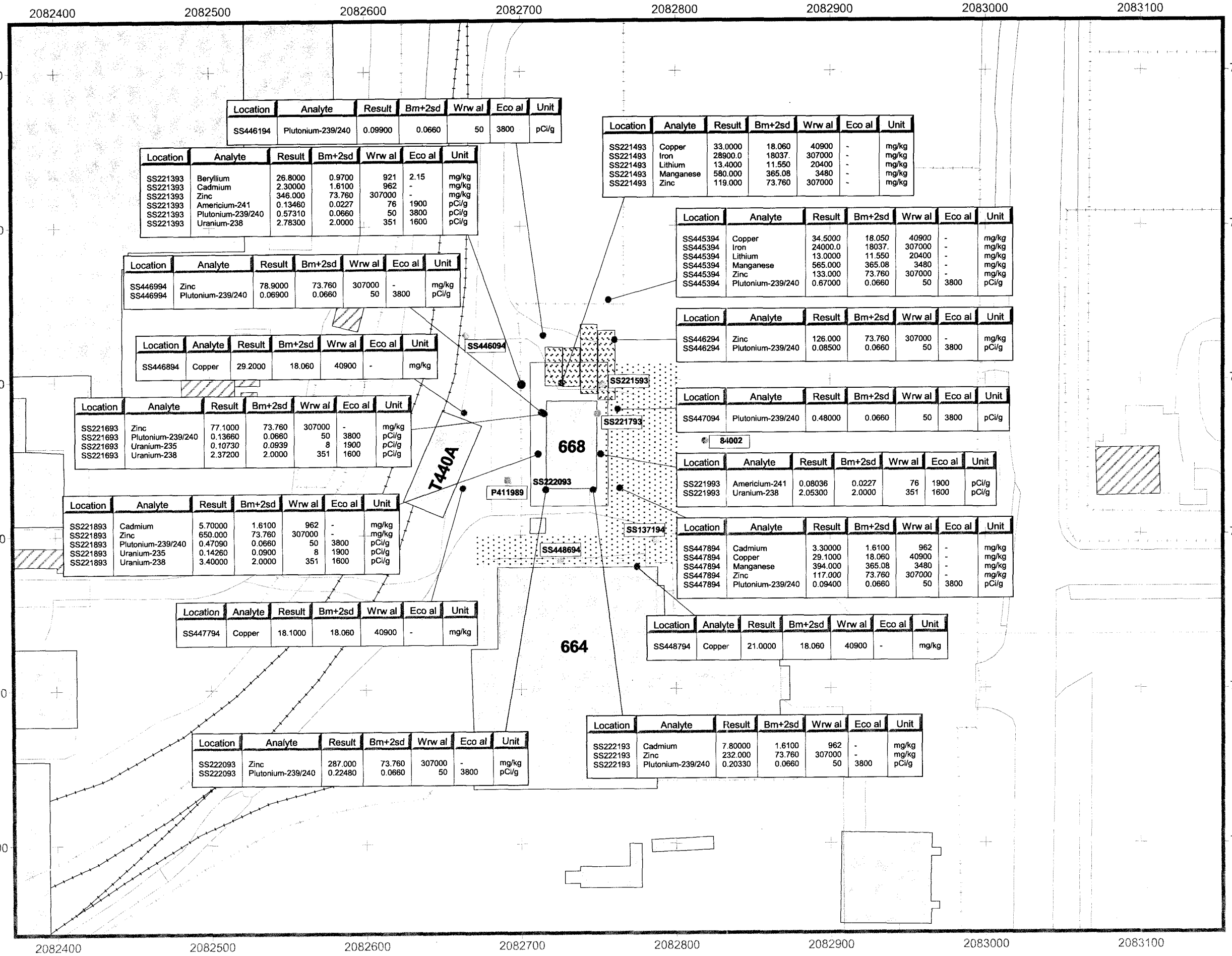
Figure 2

IHSS Group 600-3 Existing Sample Data



Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS446194	Plutonium-239/240	0.09900	0.0660	50	3800	pCi/g

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS221393	Beryllium	26.8000	0.9700	921	2.15	mg/kg
SS221393	Cadmium	2.30000	1.6100	962	-	mg/kg
SS221393	Zinc	346.000	73.760	307000	-	mg/kg
SS221393	Americium-241	0.13460	0.0227	76	1900	pCi/g
SS221393	Plutonium-239/240	0.57310	0.0660	50	3800	pCi/g
SS221393	Uranium-238	2.78300	2.0000	351	1600	pCi/g

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS446994	Zinc	78.9000	73.760	307000	-	mg/kg
SS446994	Plutonium-239/240	0.06900	0.0660	50	3800	pCi/g

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS446894	Copper	29.2000	18.060	40900	-	mg/kg

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS221693	Zinc	77.1000	73.760	307000	-	mg/kg
SS221693	Plutonium-239/240	0.13660	0.0660	50	3800	pCi/g
SS221693	Uranium-235	0.10730	0.0939	8	1900	pCi/g
SS221693	Uranium-238	2.37200	2.0000	351	1600	pCi/g

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS221893	Cadmium	5.70000	1.6100	962	-	mg/kg
SS221893	Zinc	650.000	73.760	307000	-	mg/kg
SS221893	Plutonium-239/240	0.47090	0.0660	50	3800	pCi/g
SS221893	Uranium-235	0.14260	0.0900	8	1900	pCi/g
SS221893	Uranium-238	3.40000	2.0000	351	1600	pCi/g

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS447794	Copper	18.1000	18.060	40900	-	mg/kg

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS222093	Zinc	287.000	73.760	307000	-	mg/kg
SS222093	Plutonium-239/240	0.22480	0.0660	50	3800	pCi/g

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS221493	Copper	33.0000	18.060	40900	-	mg/kg
SS221493	Iron	28900.0	18037.	307000	-	mg/kg
SS221493	Lithium	13.4000	11.550	20400	-	mg/kg
SS221493	Manganese	580.000	365.08	3480	-	mg/kg
SS221493	Zinc	119.000	73.760	307000	-	mg/kg

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS445394	Copper	34.5000	18.050	40900	-	mg/kg
SS445394	Iron	24000.0	18037.	307000	-	mg/kg
SS445394	Lithium	13.0000	11.550	20400	-	mg/kg
SS445394	Manganese	565.000	365.08	3480	-	mg/kg
SS445394	Zinc	133.000	73.760	307000	-	mg/kg
SS445394	Plutonium-239/240	0.67000	0.0660	50	3800	pCi/g

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS446294	Zinc	126.000	73.760	307000	-	mg/kg
SS446294	Plutonium-239/240	0.08500	0.0660	50	3800	pCi/g

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS447094	Plutonium-239/240	0.48000	0.0660	50	3800	pCi/g

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS221993	Americium-241	0.08036	0.0227	76	1900	pCi/g
SS221993	Uranium-238	2.05300	2.0000	351	1600	pCi/g

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS447894	Cadmium	3.30000	1.6100	962	-	mg/kg
SS447894	Copper	29.1000	18.060	40900	-	mg/kg
SS447894	Manganese	394.000	365.08	3480	-	mg/kg
SS447894	Zinc	117.000	73.760	307000	-	mg/kg
SS447894	Plutonium-239/240	0.09400	0.0660	50	3800	pCi/g

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS448794	Copper	21.0000	18.060	40900	-	mg/kg

Location	Analyte	Result	Bm+2sd	Wrw al	Eco al	Unit
SS222193	Cadmium	7.80000	1.6100	962	-	mg/kg
SS222193	Zinc	232.000	73.760	307000	-	mg/kg
SS222193	Plutonium-239/240	0.20330	0.0660	50	3800	pCi/g

KEY

- Surface Soil Sample Locations Less Than Background
- Subsurface Soil Sample Location Less Than Background
- Surface Soil Sample Location Greater Than Background and LessThan ALs
- Surface Soil Sample Location Greater Than Ecological Receptor AL, but Less than Wildlife Refuge Worker AL
- IHSS Group 600-3
- Paved Roads
- Dirt Roads
- Fences
- Railroads
- Sewers
- Streams

Buildings

- Demolished
- Asphalt
- Standing
- Conex

N W E S

20 0 20 40 60 80 100 Feet

Scale = 1:750

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared for KAISER+HILL COMPANY

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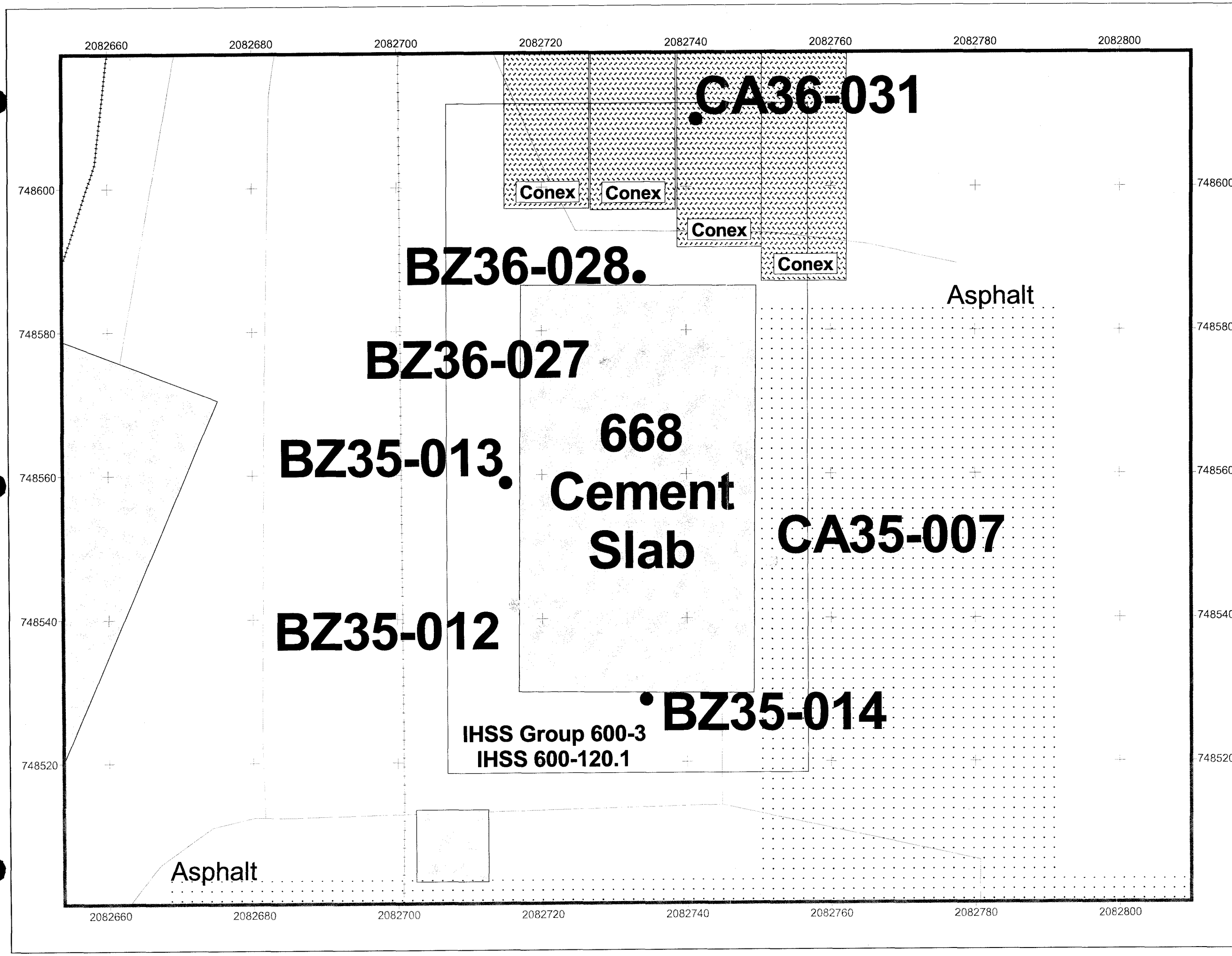

Figure 3

Proposed Sampling Locations for IHSS Group 600-3

KEY

- Statistical Sample Locations
- BiasedSample Location
- IHSS 600-120.1

Buildings

- Demolished
- Standing
- Paved Roads
- Dirt Roads
- Fences
- Railroads
- Sewers
- Surface Water Routes
- Asphalt

N W E S

5 0 5 10 15 20 Feet

Scale = 1:150

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared for: KAISER•HILL COMPANY

Prepared by: RADMS

Date: 11/5/03

File:W://Projects/Fy2004/600-3/group 600-3.apr

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