

**Characterization Data Summary
IHSS Group 900-4&5**

November 2002

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ACRONYMS AND ABBREVIATIONS

AL	action level
AR	Administrative Record
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	U.S. Department of Energy
DQA	Data Quality Assessment
DQO	Data Quality Objective
EPA	U.S. Environmental Protection Agency
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
K-H	Kaiser-Hill Company L.L.C.
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDL	method detection limit
mg/kg	milligram per kilogram
NA	not applicable
ND	not detected
NFAA	No Further Accelerated Action
PAC	Potential Area of Concern
PARCCS	precision, accuracy, representativeness, completeness, comparability, and sensitivity
pCi/g	picocurie per gram
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RIN	report identification number
RL	reporting limit
SAP	Sampling and Analysis Plan
SD	standard deviation
SOR	sum of ratio
SVOC	semi-volatile organic compound
µg/kg	microgram per kilogram
VOC	volatile organic compound
V&V	verification and validation
WRW	Wildlife Refuge Worker

1.0 INTRODUCTION

This data summary report summarizes characterization activities conducted at Individual Hazardous Substance Site (IHSS) Group 900-4&5 at the Rocky Flats Environmental Technology Site (RFETS) in Golden, Colorado. Characterization activities were planned and executed in accordance with the Industrial Area Sampling and Analysis Plan (IASAP) (DOE 2001) and IASAP Addendum #IA-02-02 (DOE 2002a).

IHSS Group 900-4&5 consists of Potential Area of Concern (PAC) 900-175, S&W Building 980 Contractor Storage Facility and PAC-1308, Gasoline Spill Outside of Building 980. PAC-1308 received a No Further Action (NFA) determination on February 14, 2002 and is consequently not included in this report. The location of PAC 900-175 is shown on Figure 1.

2.0 SITE CHARACTERIZATION

IHSS Group 900-4&5 information consists of historical knowledge (DOE 1992-2001), previous sampling data from nine sampling locations (DOE 2002a), and six additional sampling locations with specifications as described in IASAP Addendum #IA-02-02 (DOE 2002a). The sampling specifications for the most recent characterization samples collected are listed in Table 1. The location of these samples and analytical results greater than background mean plus two standard deviations or detection/reporting limits are presented in Figure 2 and Table 2. A summary of the analytical results is presented in Table 3. Deviations from planned sampling specifications are presented in Table 4. A summary of validated analytical records is presented in Table 5. The raw data are presented as Appendix A.

Analytical results from the previous and the most recent sampling events indicate that all contaminant concentrations are less than RFCA Tier II action levels (ALs) and the RFCA Wildlife Refuge Worker (WRW) ALs. A comparison of the most recent analytical results to the RFCA WRW ALs is presented in Appendix B.

All analytical results indicate that No Further Accelerated Action (NFAA) for IHSS Group 900-4&5 is warranted for the following reasons:

- All contaminant concentrations are less than WRW ALs.
- All contaminant concentrations are less than Site Ecological Receptor ALs.
- There is no identified potential to exceed surface water standards at a POC from this IHSS Group.

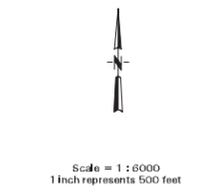
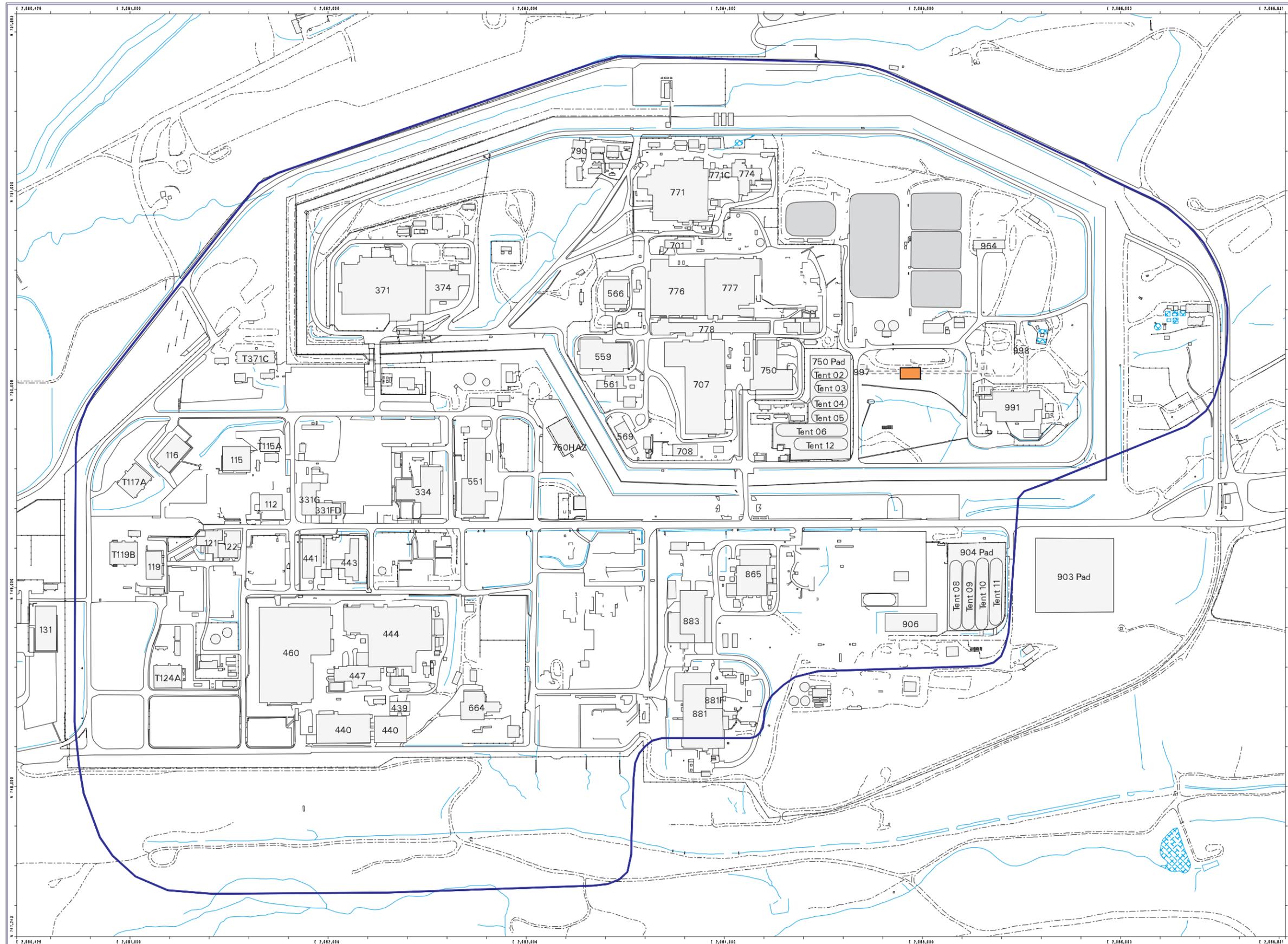
Approval of this Data Summary Report constitutes regulatory agency concurrence of this IHSS Group as an NFAA. This information and NFAA determination will be documented in the FY03 Historical Release Report (HRR).

Figure 1
IA Location Map

EXPLANATION
IHSS Groupings

- IHSS 900-175
- Standard Map Features**
- Buildings and other structures
 - Lakes and ponds
 - Streams, ditches, or other drainage features
 - Fences and other barriers
 - Paved roads
 - Dirt roads
 - Solar Evaporation Ponds (SEPs)
 - Industrial Area Operable Unit Boundary

DATA SOURCE BASE FEATURES:
 PACs
 Historical Release Report (HRR)
 2nd Annual Update
 Sept. 30, 1997
 Individual Hazardous Substance Sites (IHSS)
 DOE, 1992, HRR Report and Subsequent Updates.
 Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by EGIS RS1, Las Vegas.
 Digitized from the orthophotographs, 1/95



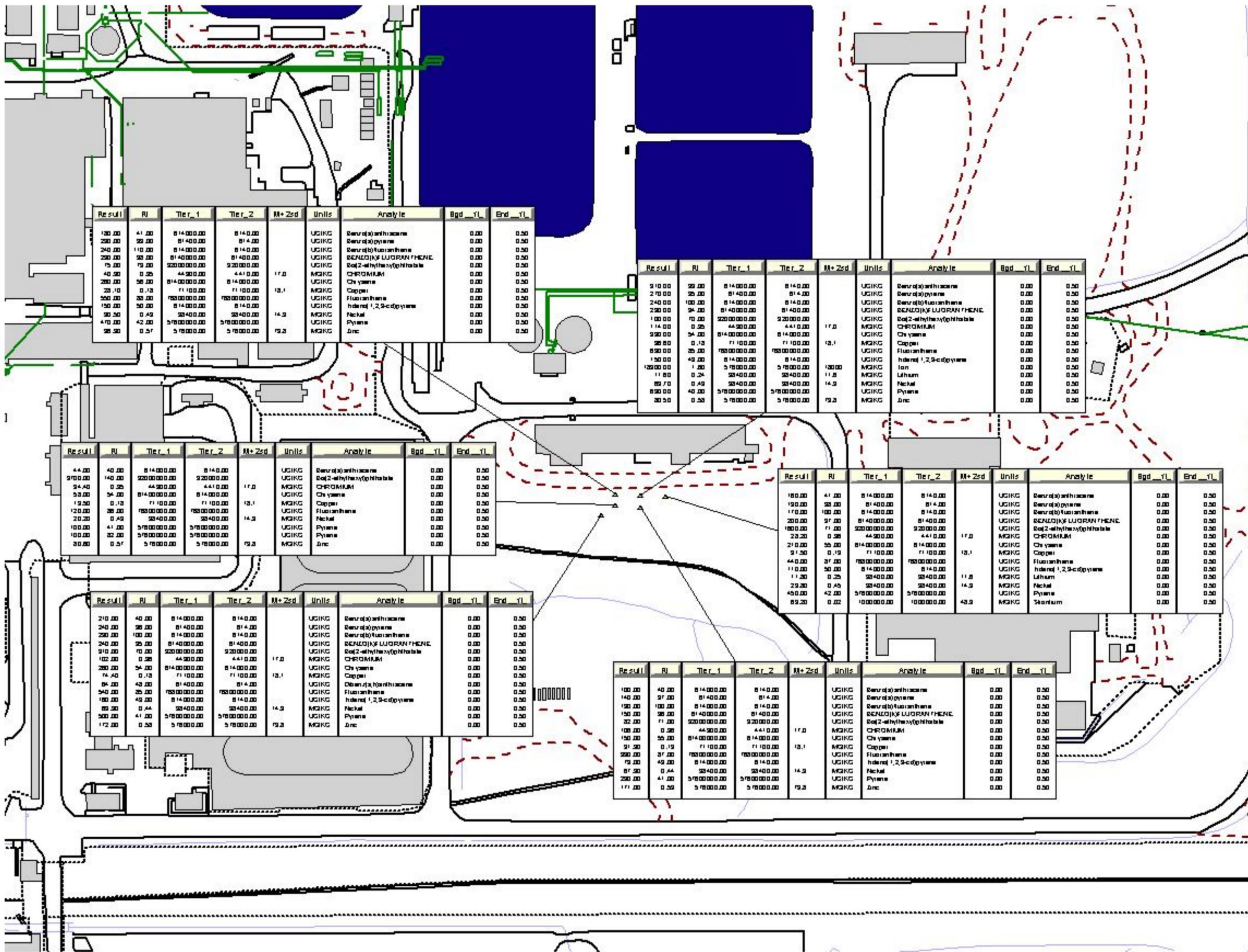
State Plane Coordinate Projection
 Colorado Central Zone
 Datum: NAD27

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

Prepared by: **DynCorp** THE ART OF TECHNOLOGY
 GIS Dept. 303-966-7707

Prepared for: **KAISER HILL COMPANY**
 November 15, 2002

Figure 2
900-175 Surface Soil Results
Greater than Background Mean
Plus Two Standard Deviations
or Method Detection Limit



KEY

- Surface Soil Locations
- Process Lines
- Ponds
- Dirt Roads
- Fence
- Paved Area
- IHSS
- Building
- Streams

Result	RI	Tier_1	Tier_2	M+2sd	Units	Analyte	Bgd_ft	End_ft
130.00	41.00	8140000.00	8140.00		UGIKG	Benzo(a)anthracene	0.00	0.50
230.00	35.00	8140000.00	814.00		UGIKG	Benzo(a)pyrene	0.00	0.50
240.00	110.00	8140000.00	8140.00		UGIKG	Benzo(b)fluoranthene	0.00	0.50
230.00	35.00	8140000.00	8140.00		UGIKG	BENZO(K)FLUORANTHENE	0.00	0.50
75.00	75.00	52000000.00	5200000.00		UGIKG	Benzo(e)anthracene	0.00	0.50
40.00	0.25	4430000.00	443.00	17.0	MGKGC	CHROMIUM	0.00	0.50
280.00	35.00	8140000.00	8140.00		UGIKG	Chrysene	0.00	0.50
23.10	0.13	7110000.00	711000.00	13.1	MGKGC	Copper	0.00	0.50
550.00	35.00	783000000.00	78300000.00		UGIKG	Fluoranthene	0.00	0.50
150.00	30.00	8140000.00	8140.00		UGIKG	Indeno(1,2,3-cd)pyrene	0.00	0.50
30.50	0.49	3840000.00	384000.00	14.9	MGKGC	Nickel	0.00	0.50
470.00	42.00	578000000.00	57800000.00		UGIKG	Pyrene	0.00	0.50
38.50	0.57	5780000.00	578000.00	79.3	MGKGC	Zinc	0.00	0.50

Result	RI	Tier_1	Tier_2	M+2sd	Units	Analyte	Bgd_ft	End_ft
910.00	35.00	8140000.00	8140.00		UGIKG	Benzo(a)anthracene	0.00	0.50
270.00	35.00	8140000.00	814.00		UGIKG	Benzo(a)pyrene	0.00	0.50
240.00	100.00	8140000.00	8140.00		UGIKG	Benzo(b)fluoranthene	0.00	0.50
230.00	34.00	8140000.00	8140.00		UGIKG	BENZO(K)FLUORANTHENE	0.00	0.50
100.00	70.00	52000000.00	5200000.00		UGIKG	Benzo(e)anthracene	0.00	0.50
114.00	0.25	4430000.00	443.00	17.0	MGKGC	CHROMIUM	0.00	0.50
930.00	34.00	8140000.00	8140000.00		UGIKG	Chrysene	0.00	0.50
28.00	0.13	7110000.00	711000.00	13.1	MGKGC	Copper	0.00	0.50
780.00	35.00	783000000.00	78300000.00		UGIKG	Fluoranthene	0.00	0.50
150.00	49.00	8140000.00	8140.00		UGIKG	Indeno(1,2,3-cd)pyrene	0.00	0.50
120.00	1.00	5780000.00	578000.00	130.00	MGKGC	Iron	0.00	0.50
11.00	0.24	3840000.00	384000.00	11.8	MGKGC	Lithium	0.00	0.50
89.70	0.49	3840000.00	384000.00	14.9	MGKGC	Nickel	0.00	0.50
830.00	40.00	578000000.00	57800000.00		UGIKG	Pyrene	0.00	0.50
30.50	0.53	5780000.00	578000.00	79.3	MGKGC	Zinc	0.00	0.50

Result	RI	Tier_1	Tier_2	M+2sd	Units	Analyte	Bgd_ft	End_ft
44.00	40.00	8140000.00	8140.00		UGIKG	Benzo(a)anthracene	0.00	0.50
970.00	140.00	52000000.00	5200000.00		UGIKG	Benzo(e)anthracene	0.00	0.50
94.40	0.25	4430000.00	443.00	17.0	MGKGC	CHROMIUM	0.00	0.50
53.00	54.00	8140000.00	8140000.00		UGIKG	Chrysene	0.00	0.50
19.50	0.13	7110000.00	711000.00	13.1	MGKGC	Copper	0.00	0.50
120.00	35.00	783000000.00	78300000.00		UGIKG	Fluoranthene	0.00	0.50
20.20	0.49	3840000.00	384000.00	14.9	MGKGC	Nickel	0.00	0.50
100.00	41.00	578000000.00	57800000.00		UGIKG	Pyrene	0.00	0.50
100.00	32.00	578000000.00	57800000.00		UGIKG	Pyrene	0.00	0.50
30.00	0.57	5780000.00	578000.00	79.3	MGKGC	Zinc	0.00	0.50

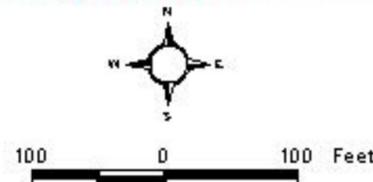
Result	RI	Tier_1	Tier_2	M+2sd	Units	Analyte	Bgd_ft	End_ft
180.00	41.00	8140000.00	8140.00		UGIKG	Benzo(a)anthracene	0.00	0.50
190.00	35.00	8140000.00	814.00		UGIKG	Benzo(a)pyrene	0.00	0.50
170.00	100.00	8140000.00	8140.00		UGIKG	Benzo(b)fluoranthene	0.00	0.50
300.00	97.00	8140000.00	8140000.00		UGIKG	BENZO(K)FLUORANTHENE	0.00	0.50
180.00	71.00	52000000.00	5200000.00		UGIKG	Benzo(e)anthracene	0.00	0.50
23.20	0.25	4430000.00	443.00	17.0	MGKGC	CHROMIUM	0.00	0.50
210.00	35.00	8140000.00	8140000.00		UGIKG	Chrysene	0.00	0.50
91.50	0.19	7110000.00	711000.00	13.1	MGKGC	Copper	0.00	0.50
44.00	37.00	783000000.00	78300000.00		UGIKG	Fluoranthene	0.00	0.50
110.00	50.00	8140000.00	8140.00		UGIKG	Indeno(1,2,3-cd)pyrene	0.00	0.50
11.20	0.25	3840000.00	384000.00	11.8	MGKGC	Lithium	0.00	0.50
29.20	0.45	3840000.00	384000.00	14.9	MGKGC	Nickel	0.00	0.50
490.00	42.00	578000000.00	57800000.00		UGIKG	Pyrene	0.00	0.50
89.20	0.02	1000000.00	100000.00	43.9	MGKGC	Selenium	0.00	0.50

Result	RI	Tier_1	Tier_2	M+2sd	Units	Analyte	Bgd_ft	End_ft
210.00	40.00	8140000.00	8140.00		UGIKG	Benzo(a)anthracene	0.00	0.50
240.00	35.00	8140000.00	814.00		UGIKG	Benzo(a)pyrene	0.00	0.50
230.00	100.00	8140000.00	8140.00		UGIKG	Benzo(b)fluoranthene	0.00	0.50
240.00	35.00	8140000.00	8140.00		UGIKG	BENZO(K)FLUORANTHENE	0.00	0.50
910.00	70.00	52000000.00	5200000.00		UGIKG	Benzo(e)anthracene	0.00	0.50
102.00	0.25	4430000.00	443.00	17.0	MGKGC	CHROMIUM	0.00	0.50
280.00	34.00	8140000.00	8140000.00		UGIKG	Chrysene	0.00	0.50
74.40	0.13	7110000.00	711000.00	13.1	MGKGC	Copper	0.00	0.50
84.00	43.00	8140000.00	814.00		UGIKG	Benzo(a)anthracene	0.00	0.50
540.00	35.00	783000000.00	78300000.00		UGIKG	Fluoranthene	0.00	0.50
180.00	49.00	8140000.00	8140.00		UGIKG	Indeno(1,2,3-cd)pyrene	0.00	0.50
89.30	0.44	3840000.00	384000.00	14.9	MGKGC	Nickel	0.00	0.50
500.00	41.00	578000000.00	57800000.00		UGIKG	Pyrene	0.00	0.50
172.00	0.53	5780000.00	578000.00	79.3	MGKGC	Zinc	0.00	0.50

Result	RI	Tier_1	Tier_2	M+2sd	Units	Analyte	Bgd_ft	End_ft
100.00	40.00	8140000.00	8140.00		UGIKG	Benzo(a)anthracene	0.00	0.50
140.00	97.00	8140000.00	814.00		UGIKG	Benzo(a)pyrene	0.00	0.50
150.00	100.00	8140000.00	8140.00		UGIKG	Benzo(b)fluoranthene	0.00	0.50
32.00	71.00	52000000.00	5200000.00		UGIKG	BENZO(K)FLUORANTHENE	0.00	0.50
100.00	0.25	4430000.00	443.00	17.0	MGKGC	CHROMIUM	0.00	0.50
150.00	35.00	8140000.00	8140000.00		UGIKG	Chrysene	0.00	0.50
91.50	0.19	7110000.00	711000.00	13.1	MGKGC	Copper	0.00	0.50
520.00	37.00	783000000.00	78300000.00		UGIKG	Fluoranthene	0.00	0.50
75.00	49.00	8140000.00	8140.00		UGIKG	Indeno(1,2,3-cd)pyrene	0.00	0.50
87.30	0.44	3840000.00	384000.00	14.9	MGKGC	Nickel	0.00	0.50
280.00	41.00	578000000.00	57800000.00		UGIKG	Pyrene	0.00	0.50
171.00	0.53	5780000.00	578000.00	79.3	MGKGC	Zinc	0.00	0.50

Bgd_ft = Soil Begin Depth Feet
 End_ft = Soil End Depth Feet
 RI = Reported Method Detection Limit

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 its use would not infringe privately owned rights.



Scale = 1:1800
 State Plane Coordinate Projection
 Colorado Central Zone
 Datum: NAD 27

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

Prepared by:

 Prepared for:

Table 1
PAC 900-175 –Characterization Sampling Specifications

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Laboratory Method
900-4&5	PAC 900-175, S&W Building 980 Contractor Storage Facility	CL43-0002	2084965.91	750060.59	surface soil	A	metals radionuclides SVOCs nitrite/nitrate	6010 HPGe 8270 9056
		CK43-0002	2084929.95	750062.37	surface soil	A	metals radionuclides SVOCs nitrite/nitrate	6010 HPGe 8270 9056
		CK43-0001	2084894	750064.16	surface soil	A	metals radionuclides SVOCs nitrite/nitrate	6010 HPGe 8270 9056
		CL43-0001	2084985.43	750090.83	surface soil	A	metals radionuclides SVOCs nitrite/nitrate	6010 HPGe 8270 9056
		CL43-0000	2084949.48	750092.62	surface soil	A	metals radionuclides SVOCs nitrite/nitrate	6010 HPGe 8270 9056
		CK43-0000	2084913.52	750094.40	surface soil	A	metals radionuclides SVOCs nitrite/nitrate	6010 HPGe 8270 9056

Table 2

PAC 900-175 – Surface Soil Greater than Background Mean Plus Two Standard Deviations or Reporting Limits

IHSS/PAC/UBC Site	Location Code	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background Mean +2SD	Unit
900-175	CK43-000	2084949.95	750075.39	Benzo(a)anthracene	0	0.5	100	40	614000	6140	NA	ug/kg
900-175	CK43-000	2084949.95	750075.39	Benzo(a)pyrene	0	0.5	140	97	61400	614	NA	ug/kg
900-175	CK43-000	2084949.95	750075.39	Benzo(b)fluoranthene	0	0.5	130	100	614000	6140	NA	ug/kg
900-175	CK43-000	2084949.95	750075.39	Benzo(k)Fluoranthene	0	0.5	150	96	6140000	61400	NA	ug/kg
900-175	CK43-000	2084949.95	750075.39	Bis(2-ethylhexyl)phthalate	0	0.5	82	71	32000000	320000	NA	ug/kg
900-175	CK43-000	2084949.95	750075.39	Chromium	0	0.5	106	0.36	44300	4410	16.99	mg/kg
900-175	CK43-000	2084949.95	750075.39	Chrysene	0	0.5	150	55	61400000	614000	NA	ug/kg
900-175	CK43-000	2084949.95	750075.39	Copper	0	0.5	31.9	0.19	71100	71100	18.06	mg/kg
900-175	CK43-000	2084949.95	750075.39	Fluoranthene	0	0.5	330	87	76800000	76800000	NA	ug/kg
900-175	CK43-000	2084949.95	750075.39	Indeno(1,2,3-cd)pyrene	0	0.5	73	49	614000	6140	NA	ug/kg
900-175	CK43-000	2084949.95	750075.39	Nickel	0	0.5	67.9	0.44	38400	38400	14.91	mg/kg
900-175	CK43-000	2084949.95	750075.39	Pyrene	0	0.5	290	41	57600000	57600000	NA	ug/kg
900-175	CK43-000	2084949.95	750075.39	Zinc	0	0.5	171	0.59	576000	576000	73.76	mg/kg
900-175	CK43-001	2084913.40	750094.41	Benzo(a)anthracene	0	0.5	180	41	614000	6140	NA	ug/kg
900-175	CK43-001	2084913.40	750094.41	Benzo(a)pyrene	0	0.5	230	99	61400	614	NA	ug/kg
900-175	CK43-001	2084913.40	750094.41	Benzo(b)fluoranthene	0	0.5	240	110	614000	6140	NA	ug/kg
900-175	CK43-001	2084913.40	750094.41	Benzo(k)Fluoranthene	0	0.5	230	98	6140000	61400	NA	ug/kg
900-175	CK43-001	2084913.40	750094.41	Bis(2-ethylhexyl)phthalate	0	0.5	75	73	32000000	320000	NA	ug/kg
900-175	CK43-001	2084913.40	750094.41	Chromium	0	0.5	40.3	0.35	44300	4410	16.99	mg/kg
900-175	CK43-001	2084913.40	750094.41	Chrysene	0	0.5	260	56	61400000	614000	NA	ug/kg
900-175	CK43-001	2084913.40	750094.41	Copper	0	0.5	28.1	0.18	71100	71100	18.06	mg/kg
900-175	CK43-001	2084913.40	750094.41	Dimethyl phthalate	0	0.5	110	89	1000000000	1000000000	NA	ug/kg
900-175	CK43-001	2084913.40	750094.41	Fluoranthene	0	0.5	550	88	76800000	76800000	NA	ug/kg
900-175	CK43-001	2084913.40	750094.41	Indeno(1,2,3-cd)pyrene	0	0.5	150	50	614000	6140	NA	ug/kg
900-175	CK43-001	2084913.40	750094.41	Nickel	0	0.5	30.5	0.43	38400	38400	14.91	mg/kg
900-175	CK43-001	2084913.40	750094.41	Pyrene	0	0.5	470	42	57600000	57600000	NA	ug/kg

Characterization Data Summary IHSS Group 900-4&5

IHSS/PAC/UBC Site	Location Code	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background Mean +2SD	Unit
900-175	CK43-001	2084913.40	750094.41	Zinc	0	0.5	96.9	0.57	576000	576000	73.76	mg/kg
900-175	CK43-002	2084894.08	750064.21	Benzo(a)anthracene	0	0.5	210	40	614000	6140	NA	ug/kg
900-175	CK43-002	2084894.08	750064.21	Benzo(a)pyrene	0	0.5	240	96	61400	614	NA	ug/kg
900-175	CK43-002	2084894.08	750064.21	Benzo(b)fluoranthene	0	0.5	230	100	614000	6140	NA	ug/kg
900-175	CK43-002	2084894.08	750064.21	Benzo (K) Fluoranthene	0	0.5	240	95	6140000	61400	NA	ug/kg
900-175	CK43-002	2084894.08	750064.21	Bis(2-ethylhexyl)phthalate	0	0.5	310	70	32000000	320000	NA	ug/kg
900-175	CK43-002	2084894.08	750064.21	Chromium	0	0.5	102	0.36	44300	4410	16.99	mg/kg
900-175	CK43-002	2084894.08	750064.21	Chrysene	0	0.5	260	54	61400000	614000	NA	ug/kg
900-175	CK43-002	2084894.08	750064.21	Copper	0	0.5	74.4	0.18	71100	71100	18.06	mg/kg
900-175	CK43-002	2084894.08	750064.21	Dibenz(a,h)anthracene	0	0.5	64	48	61400	614	NA	ug/kg
900-175	CK43-002	2084894.08	750064.21	Dimethyl phthalate	0	0.5	320	86	1000000000	1000000000	NA	ug/kg
900-175	CK43-002	2084894.08	750064.21	Fluoranthene	0	0.5	540	85	76800000	76800000	NA	ug/kg
900-175	CK43-002	2084894.08	750064.21	Indeno(1,2,3-cd)pyrene	0	0.5	160	49	614000	6140	NA	ug/kg
900-175	CK43-002	2084894.08	750064.21	Nickel	0	0.5	69.3	0.44	38400	38400	14.91	mg/kg
900-175	CK43-002	2084894.078	750064.21	Pyrene	0	0.5	500	41	57600000	57600000	NA	ug/kg
900-175	CK43-002	2084894.078	750064.21	Zinc	0	0.5	172	0.58	576000	576000	73.76	mg/kg
900-175	CL43-000	2084913.25	750078.42	Benzo(a)anthracene	0	0.5	44	40	614000	6140	NA	ug/kg
900-175	CL43-000	2084913.25	750078.42	Bis(2-ethylhexyl)phthalate	0	0.5	9700	140	32000000	320000	NA	ug/kg
900-175	CL43-000	2084913.25	750078.42	Chromium	0	0.5	34.4	0.35	44300	4410	16.99	mg/kg
900-175	CL43-000	2084913.25	750078.42	Chrysene	0	0.5	58	54	61400000	614000	NA	ug/kg
900-175	CL43-000	2084913.25	750078.42	Copper	0	0.5	19.5	0.18	71100	71100	18.06	mg/kg
900-175	CL43-000	2084913.25	750078.42	Fluoranthene	0	0.5	120	86	76800000	76800000	NA	ug/kg
900-175	CL43-000	2084913.25	750078.42	Nickel	0	0.5	20.2	0.43	38400	38400	14.91	mg/kg
900-175	CL43-000	2084913.25	750078.42	Pyrene	0	0.5	100	41	57600000	57600000	NA	ug/kg
900-175	CL43-000	2084913.25	750078.42	Pyrene	0	0.5	100	82	57600000	57600000	NA	ug/kg
900-175	CL43-000	2084913.25	750078.42	Zinc	0	0.5	80.6	0.57	576000	576000	73.76	mg/kg
900-175	CL43-001	2084949.49	750092.67	Benzo(a)anthracene	0	0.5	310	39	614000	6140	NA	ug/kg
900-175	CL43-001	2084949.49	750092.67	Benzo(a)pyrene	0	0.5	270	95	61400	614	NA	ug/kg
900-175	CL43-001	2084949.49	750092.67	Benzo(b)fluoranthene	0	0.5	240	100	614000	6140	NA	ug/kg
900-175	CL43-001	2084949.49	750092.67	Benzo (K) Fluoranthene	0	0.5	290	94	6140000	61400	NA	ug/kg

Characterization Data Summary IHSS Group 900-4&5

IHSS/PAC/UBC Site	Location Code	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background Mean +2SD	Unit
900-175	CL43-001	2084949.48	750092.62	Bis(2-ethylhexyl)phthalate	0	0.5	100	70	32000000	320000	NA	ug/kg
900-175	CL43-001	2084949.48	750092.62	Chromium	0	0.5	114	0.35	44300	4410	16.99	mg/kg
900-175	CL43-001	2084949.48	750092.62	Chrysene	0	0.5	390	54	61400000	614000	NA	ug/kg
900-175	CL43-001	2084949.48	750092.62	Copper	0	0.5	36.6	0.18	71100	71100	18.06	mg/kg
900-175	CL43-001	2084949.48	750092.62	Fluoranthene	0	0.5	690	85	76800000	76800000	NA	ug/kg
900-175	CL43-001	2084949.48	750092.62	Indeno(1,2,3-cd)pyrene	0	0.5	150	49	614000	6140	NA	ug/kg
900-175	CL43-001	2084949.48	750092.62	Iron	0	0.5	18900	1.6	576000	576000	18037	mg/kg
900-175	CL43-001	2084949.48	750092.62	Lithium	0	0.5	11.6	0.24	38400	38400	11.55	mg/kg
900-175	CL43-001	2084949.48	750092.62	Nickel	0	0.5	69.7	0.43	38400	38400	14.91	mg/kg
900-175	CL43-001	2084949.48	750092.62	Pyrene	0	0.5	690	40	57600000	57600000	NA	ug/kg
900-175	CL43-001	2084949.48	750092.62	Zinc	0	0.5	80.5	0.58	576000	576000	73.76	mg/kg
900-175	CL43-002	2084985.46	750090.89	Benzo(a)anthracene	0	0.5	160	41	614000	6140	NA	ug/kg
900-175	CL43-002	2084985.46	750090.89	Benzo(a)pyrene	0	0.5	190	98	61400	614	NA	ug/kg
900-175	CL43-002	2084985.46	750090.89	Benzo(b)fluoranthene	0	0.5	170	100	614000	6140	NA	ug/kg
900-175	CL43-002	2084985.46	750090.89	Benzo (K) Fluoranthene	0	0.5	200	97	6140000	61400	NA	ug/kg
900-175	CL43-002	2084985.46	750090.89	Bis(2-ethylhexyl)phthalate	0	0.5	1600	71	32000000	320000	NA	ug/kg
900-175	CL43-002	2084985.46	750090.89	Chromium	0	0.5	28.2	0.36	44300	4410	16.99	mg/kg
900-175	CL43-002	2084985.46	750090.89	Chrysene	0	0.5	210	55	61400000	614000	NA	ug/kg
900-175	CL43-002	2084985.46	750090.89	Copper	0	0.5	31.5	0.19	71100	71100	18.06	mg/kg
900-175	CL43-002	2084985.46	750090.89	Fluoranthene	0	0.5	440	87	76800000	76800000	NA	ug/kg
900-175	CL43-002	2084985.46	750090.89	Indeno(1,2,3-cd)pyrene	0	0.5	110	50	614000	6140	NA	ug/kg
900-175	CL43-002	2084985.46	750090.89	Lithium	0	0.5	11.8	0.25	38400	38400	11.55	mg/kg
900-175	CL43-002	2084985.46	750090.89	Nickel	0	0.5	23.8	0.45	38400	38400	14.91	mg/kg
900-175	CL43-002	2084985.46	750090.89	Pyrene	0	0.5	450	42	57600000	57600000	NA	ug/kg
900-175	CL43-002	2084985.46	750090.89	Strontium	0	0.5	63.2	0.016	1000000	1000000	48.94	mg/kg

NA = not applicable

SD = standard deviation

Table 3
PAC 900-175 - Summary of Analytical Results

Analyte	Total Number Samples Analyzed	Detection Frequency	Maximum Concentration	Average Concentration	Tier I Action Level	Tier II Action Level	Background Mean +2SD	Unit
1,2,4-Trichlorobenzene	8	0.00%	190.625	335	19200000	19200000	NA	ug/kg
1,2-Dichlorobutane	8	0.00%	190.625	335	173000000	173000000	NA	ug/kg
1,3-Dichlorobenzene	8	0.00%	190.625	335	NA	NA	NA	ug/kg
1,4-Dichlorobutane	8	0.00%	190.625	335	18700000	187000	NA	ug/kg
2,4,5-Trichlorophenol	8	0.00%	190.625	335	192000000	192000000	NA	ug/kg
2,4,6-Trichlorophenol	8	0.00%	190.625	335	159000000	407000	NA	ug/kg
2,4-Dichlorophenol	8	0.00%	190.625	335	5760000	5760000	NA	ug/kg
2,4-Dimethylphenol	8	0.00%	190.625	335	38400000	38400000	NA	ug/kg
2,4-Dinitrophenol	8	0.00%	925	1650	384000000	3840000	NA	ug/kg
2,4-Dinitrotoluene	8	0.00%	190.625	335	659000	6590	NA	ug/kg
2,6-Dinitrotoluene	8	0.00%	190.625	335	659000	6590	NA	ug/kg
2-Chloronaphthalene	8	0.00%	190.625	335	154000000	154000000	NA	ug/kg
2-Chlorophenol	8	0.00%	190.625	335	9610000	9610000	NA	ug/kg
2-Methylnaphthalene	8	0.00%	190.625	335	76800000	76800000	NA	ug/kg
2-Methylphenol	8	0.00%	190.625	335	96100000	96100000	NA	ug/kg
2-Nitroaniline	8	0.00%	925	1650	115000	115000	NA	ug/kg
2-Nitrophenol	8	0.00%	190.625	335	NA	NA	NA	ug/kg
3,3'-Dichlorobenzidine	8	0.00%	743.75	1300	996000	9960	NA	ug/kg
3-Nitroaniline	8	0.00%	925	1650	NA	NA	NA	ug/kg
4,6-Dinitro-2-Methylphenol	8	0.00%	925	1650	192000	192000	NA	ug/kg
4-Chloro-3-Methylphenol	8	0.00%	190.625	335	NA	NA	NA	ug/kg
4-Chloroaniline	8	0.00%	190.625	335	7680000	7680000	NA	ug/kg
4-Chlorophenyl Phenyl Ether	8	0.00%	190.625	335	NA	NA	NA	ug/kg
4-Methylphenol	8	0.00%	190.625	335	9610000	9610000	NA	ug/kg
4-Nitroaniline	8	0.00%	925	1650	NA	NA	NA	ug/kg
4-Nitrophenol	8	0.00%	925	1650	15400000	15400000	NA	ug/kg

Characterization Data Summary IHSS Group 900-4&5

Analyte	Total Number Samples Analyzed	Detection Frequency	Maximum Concentration	Average Concentration	Tier I Action Level	Tier II Action Level	Background Mean +2SD	Unit
Actinium-228	6	100.00%	1.586	2.28	NA	NA	NA	pCi/g
Acenaphthylene	8	0.00%	190.625	335	NA	NA	NA	ug/kg
Acenaphthene	8	0.00%	190.625	335	115000000	115000000	NA	ug/kg
Aluminum	7	100.00%	11807.1429	14900	1000000	1000000	16902	mg/kg
Americium-241	6	0.00%	4.43	4.43	215	38	0.02	pCi/g
Anthracene	8	0.00%	190.625	335	576000000	576000000	NA	ug/kg
Antimony	7	57.14%	1.28071429	3.9	768	768	16.97	mg/kg
Arsenic	7	100.00%	3.88571429	5	NA	NA	10.09	mg/kg
Barium	7	100.00%	85.4714286	101	133000	133000	141.26	mg/kg
Benzo(A)Anthracene	8	87.50%	181.125	335	614000	6140	NA	ug/kg
Benzo(A)Pyrene	8	75.00%	215.625	335	61400	614	NA	ug/kg
Benzo(B)Fluoranthene	8	75.00%	206.875	335	614000	6140	NA	ug/kg
Benzo(Ghi)Perylene	8	75.00%	168.875	335	NA	NA	NA	ug/kg
Benzo(K)Fluoranthene	8	75.00%	218.125	335	6140000	61400	NA	ug/kg
Benzoic Acid	8	0.00%	925	1650	1000000000	1000000000	NA	ug/kg
Benzyl Alcohol	8	0.00%	190.625	335	576000000	576000000	NA	ug/kg
Beryllium	7	100.00%	0.39714286	0.52	104	1.03999996	0.97	mg/kg
Bismuth-212	6	100.00%	1.59	2.31	NA	NA	NA	pCi/g
Bismuth-214	6	100.00%	0.69233333	1	NA	NA	NA	pCi/g
Bis(2-Chlorethyl)Ether	8	0.00%	190.625	335	407000	4070.00024	NA	ug/kg
Bis(2-Chloroethoxy)Methane	8	0.00%	190.625	335	NA	NA	NA	ug/kg
Bis(2-Chloroisopropyl)Ether	8	0.00%	190.625	335	NA	NA	NA	ug/kg
Bis(2-Ethylhexyl)Phthalate	8	100.00%	2429.625	9700	32000000	320000	NA	ug/kg
Boron	7	85.71%	2.50642857	4.6	NA	NA	NA	mg/kg
Butyl Benzylphthalate	8	0.00%	190.625	335	384000000	384000000	NA	ug/kg
Cadmium	28	85.71%	0.25392857	0.85	1920	1920	1.61	mg/kg
Calcium	7	100.00%	24244.2857	55900	NA	NA	NA	mg/kg
Cesium-134	6	100.00%	0.03663333	0.0987	NA	NA	0.31	pCi/g

Characterization Data Summary IHSS Group 900-4&5

Analyte	Total Number Samples Analyzed	Detection Frequency	Maximum Concentration	Average Concentration	Tier I Action Level	Tier II Action Level	Background Mean +2SD	Unit
Chromium	7	100.00%	64.1571429	114	44300	4410	16.99	mg/kg
Chrysene	8	87.50%	226.625	390	61400000	614000	NA	ug/kg
Cobalt	7	100.00%	4.6	5.8	115000	115000	10.91	mg/kg
Copper	7	100.00%	34.4571429	74.4	71100	71100	18.1	mg/kg
Di-N-Butyl Phthalate	8	12.50%	185.625	335	NA	NA	NA	ug/kg
Di-N-Octylphthalate	8	0.00%	190.625	335	1000000000	38400000	NA	ug/kg
Dibenz(A,H)Anthracene	8	12.50%	177.375	335	61400	614	NA	ug/kg
Dibenzofuran	8	0.00%	190.625	335	7680000	7680000	NA	ug/kg
Diethyl Phthalate	8	0.00%	378.125	650	1000000000	1000000000	NA	ug/kg
Dimethyl Phthalate	8	25.00%	201.25	335	1000000000	1000000000	NA	ug/kg
Fluoranthene	8	87.50%	416.875	690	76800000	76800000	NA	ug/kg
Fluorene	8	0.00%	190.625	335	76800000	76800000	NA	ug/kg
Hexachlorobenzene	8	0.00%	190.625	335	280000	2800	NA	ug/kg
Hexachlorobutadiene	8	0.00%	190.625	335	5750000	57500	NA	ug/kg
Hexachlorocyclopentadiene	8	0.00%	378.125	650	13300000	13300000	NA	ug/kg
Hexachloroethane	8	0.00%	190.625	335	125000000	320000	NA	ug/kg
Indeno(1,2,3-Cd)Pyrene	8	75.00%	154.75	335	614000	6140	NA	ug/kg
Iron	7	100.00%	15242.8571	18900	576000	576000	18037	mg/kg
Isophorone	8	0.00%	190.625	335	1000000000	4720000	NA	ug/kg
Potassium-40	6	100.00%	21.25	29	NA	NA	NA	pCi/g
Lead	7	100.00%	27.1857143	40.2	1000	1000	54.62	mg/kg
Lithium	7	100.00%	10.4428571	11.8	38400	38400	11.55	mg/kg
Magnesium	7	100.00%	2645.71429	3280	NA	NA	2849.30	mg/kg
Manganese	7	100.00%	182.571429	269	83600	83600	365.08	mg/kg
Mercury	7	100.00%	0.01965714	0.036	576	576	0.13	mg/kg
Molybdenum	7	100.00%	1.42714286	2.4	9610	9610	MA	mg/kg
N-Nitrosodi-N-Propylamine	8	0.00%	190.625	335	64000	640	NA	ug/kg
N-Nitrosodiphenylamine	8	0.00%	190.625	335	365000000	915000	NA	ug/kg

Characterization Data Summary IHSS Group 900-4&5

Analyte	Total Number Samples Analyzed	Detection Frequency	Maximum Concentration	Average Concentration	Tier I Action Level	Tier II Action Level	Background Mean +2SD	Unit
Naphthalene	8	0.00%	190.625	335	76800000	76800000	NA	ug/kg
Nickel	7	100.00%	43.4857143	69.7	38400	38400	14.9	mg/kg
Nitrate	7	100.00%	3.48571429	11.1	1000000	1000000	NA	mg/kg
Nitrite	7	85.71%	1.57857143	2.55	192000	192000	NA	mg/kg
Nitrobenzene	8	0.00%	190.625	335	961000	961000	NA	ug/kg
P-Bromodiphenyl Ether	8	0.00%	190.625	335	NA	NA	NA	ug/kg
Protactinium-234	6	100.00%	0	0	NA	NA	NA	pCi/g
Protactinium-234m	6	100.00%	0.61333333	3.68	NA	NA	NA	pCi/g
Lead-212	6	100.00%	1.505	2.03	NA	NA	NA	pCi/g
Lead-214	6	100.00%	0.7315	0.896	NA	NA	NA	pCi/g
Pentachlorophenol	8	0.00%	925	1650	14900000	37400	NA	ug/kg
Phenanthrene	8	87.50%	205.625	335	NA	NA	NA	ug/kg
Phenanthrene, 1-Methyl-	1	100.00%	550	550	NA	NA	NA	ug/kg
Phenol	8	0.00%	190.625	335	1000000000	1000000000	NA	ug/kg
Polonium-210	6	100.00%	0	0	NA	NA	NA	pCi/g
Potassium	7	100.00%	2505.71429	2920	NA	NA	2967.20	mg/kg
Pyrene	8	100.00%	363.75	690	57600000	57600000	NA	ug/kg
Radium-226	6	100.00%	2.68666667	3.64	NA	NA	NA	pCi/g
Selenium	7	28.57%	0.30857143	0.66	9610	9610	1.22	mg/kg
Silica	7	100.00%	416.142857	478	NA	NA	NA	mg/kg
Silver	7	0.00%	0.03307143	0.0335	9610	9610	NA	mg/kg
Sodium	7	0.00%	76.5	78	NA	NA	91.84	mg/kg
Strontium	7	100.00%	34.8428571	63.2	1000000	1000000	48.94	mg/kg
Thorium-231	6	100.00%	0.07583333	0.455	NA	NA	NA	pCi/g
Thallium	7	57.14%	0.56142857	0.93	NA	NA	NA	mg/kg
Thorium-230	6	100.00%	0	0	NA	NA	NA	pCi/g
Tin	7	100.00%	1.62857143	2.3	1000000	1000000	NA	mg/kg
Titanium	7	100.00%	225.928571	342	NA	NA	NA	mg/kg

Characterization Data Summary IHSS Group 900-4&5

Analyte	Total Number Samples Analyzed	Detection Frequency	Maximum Concentration	Average Concentration	Tier I Action Level	Tier II Action Level	Background Mean +2SD	Unit
Thallium-208	6	100.00%	0.52266667	0.704	NA	NA	NA	pCi/g
Uranium (total)	7	0.00%	2.85714286	2.9	NA	NA	NA	mg/kg
Uranium-235	6	0.00%	0	0	135	24	0.09	pCi/g
Uranium-238	6	0.00%	1.52933333	2.9	586	103	2	pCi/g
Vanadium	7	100.00%	27.1428571	30.4	13400	13400	45.59	mg/kg
Zinc	7	100.00%	104.8	172	576000	576000	73.76	mg/kg

SD = standard deviation

NA = not applicable

3.0 DEVIATIONS FROM PLANNED SAMPLING SPECIFICATIONS

Deviations from the planned sampling specifications described in IASAP Addendum #IA-02-02 (DOE 2002a) are presented in the following table.

**Table 4
PAC 900-175 - Deviations from Planned Sampling Specifications**

Sampling Location Code	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Comments
CL43-0002	2084965.91	750060.59	2084985.46	750090.89	All sample location deviations resulted from utilities, structures, or auger refusal.
CK43-0002	2084929.95	750062.37	2084894.08	750064.21	
CL43-0001	2084985.43	750090.83	2084949.48	750092.62	
CL43-0000	2084949.48	750092.62	2084913.24	750078.42	
CK43-0000	2084913.52	750094.40	2084949.95	750075.39	

4.0 DATA QUALITY ASSESSMENT

The Data Quality Objectives (DQOs) for this project, as defined in the IASAP (DOE 2001), were achieved based on the Data Quality Assessment (DQA) provided in the following sections. The DQO/DQA process ensures that the type, quantity, and quality of environmental data used in decision making are defensible, with emphasis on attaining adequate (statistical) confidence in the decisions. The DQO/DQA process is based on the following guidance and requirements:

- EPA QA/G-4, 1994a, Guidance for the Data Quality Objective Process;
- EPA QA/G-9, 1998, Guidance for the Data Quality Assessment Process; Practical Methods for Data Analysis; and
- DOE Order 414.1A, 1999, Quality Assurance.

Verification and validation (V&V) of the data are the primary components of the DQA. The final data are compared with original project DQOs and evaluated with respect to project decisions; uncertainty within the decisions; and quality criteria required for the data, specifically precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS). Validation criteria are consistent with the following RFETS-specific documents and industry guidelines:

- EPA 540/R-94/012, 1994b, USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review;
- EPA 540/R-94/013, 1994c, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review; and
- Kaiser-Hill Company, L.L.C.(K-H) V&V Guidelines:
 - General Guidelines for Data Verification and Validation, DA-GR01-v1, 1997a.
 - V&V Guidelines for Isotopic Determinations by Alpha Spectrometry, DA-RC01-v1, 1998.
 - V&V Guidelines for Volatile Organics, DA-SS01-v1, 1997b.
 - V&V Guidelines for Semivolatile Organics, DA-SS02-v1, 1997c.
 - V&V Guidelines for Metals, DA-SS05-v1, 1997d.
- Lockheed-Martin, 1997, Evaluation of Radiochemical Data Usability, ES/ER/MS-5.

This report will be submitted to the Comprehensive Environmental, Response, Compensation and Liability Act (CERCLA) Administrative Record (AR) for permanent storage 30 days after being provided to the Colorado Department of Public Health and Environmental (CDPHE) and/or the U.S. Environmental Protection Agency (EPA).

DQO Decisions

Consistent with the original DQO decision rules of the project, a sum-of-ratios (SOR) calculation was performed on sample results. No SOR calculations exceeded 1 relative to RFCA Tier I action levels.

Use of either EPA QA/G-4, lognormal, or nonparametric methods, such as the Sign Test in MARSSIM (Multi-Agency Radiation Survey and Site Investigation Manual) would yield better than a 95% confidence that enough samples were acquired to conclude that each analyte is below its respective RFCA Tier I action level. This decision is also consistent with original DQOs of the project. QC evaluations performed on the current data set for PAC 900-175 are documented within the Microsoft Access database "PlanvsActuals2.mdb".

Verification and Validation of Results

Verification ensures that data produced and used by the project are documented and traceable in accordance with quality requirements. Validation consists of a technical review of all data that directly support the project decisions so that any limitations of the data relative to project goals are delineated and the associated data are qualified accordingly. The V&V process defines the criteria that constitute data quality, namely PARCCS parameters. Data traceability and archival are also addressed. V&V criteria include the following:

- Chain-of-custody;
- Preservation and hold-times;
- Instrument calibrations;
- Preparation blanks;
- Interference check samples (metals);
- Matrix spikes/matrix spike duplicates (MS/MSD);
- Laboratory control samples (LCS);
- Field duplicate measurements;
- Chemical yield (radiochemistry);
- Required quantitation limits/minimum detectable activities (sensitivity of chemical and radiochemical measurements, respectively); and
- Sample analysis and preparation methods.

Evaluation of V&V criteria ensures that PARCCS parameters are satisfactory (i.e., within tolerances acceptable to the project). Satisfactory V&V of laboratory quality controls are captured through application of validation "flags" or qualifiers to individual records. Validation results are summarized in the "Completeness" subsection.

Field sampling was conducted according to the approved IASAP, including related SOPs and addenda. Raw hardcopy data (e.g., individual analytical data packages) are currently filed by RIN and are maintained by Kaiser-Hill Analytical Services Division (K-H ASD); older hardcopies may reside in the Federal Center in Lakewood, Colorado. Electronic data are stored in the RFETS Soil and Water Database (SWD).

Precision

Precision results from the latest field sampling event are adequate based on repeatability of one real/duplicate sample pair, where all concentrations were below applicable RFCAs Tier II action levels. Frequency of duplicate collection was >5%, consistent with DQOs of the project.

Precision and accuracy of laboratory results are adequate based on validation frequencies and results, which are tabulated in the “Completeness” section.

Field blanks collected during the project indicate no false positives in the data set due to equipment cross-contamination.

Representativeness

Samples acquired for the project are representative based on the types, number, and location of samples acquired relative to the site-specific history. Other criteria that corroborate representativeness include:

- Implementation of industry-standard chain-of-custody protocols;
- Compliance with sample preservation and hold times; and
- Compliance with documented and site-approved sampling plans and procedures, including SW-846 analytical methods.

Completeness

Sampling completeness was evaluated through an inventory of the number and types of samples acquired for the 900-2/PAC 900-175 area of interest. Specifically, to determine if enough samples were collected and if valid results were produced to make project decisions. The following number of surface soil samples were evaluated, relative to the analytical suites: metals (15), radionuclides (14), SVOCs (16), PCBs (2), pesticides (2), and anions (14). The following number of subsurface soil samples (>0.5’ feet depth) from legacy data were evaluated relative to the analytical suites: metals (28), VOCs (29), radionuclides (32), SVOCs (26), PCBs (22), pesticides (26), and anions (4).

Satisfactory V&V are indicated by a $\geq 10\%$ validation frequency of all results by method and matrix-type, and <10% rejection of those records validated. Anion action levels are much greater than the concentrations measured in the soils, thus there is no impact on decisions for the project. Any rejected records were disqualified from use. A summary of the validated records is provided in Table 5 and indicates that validation and rejection frequencies were acceptable for the listed analytical suites, except for anions.

Table 5
Summary of Validated Records for PAC 900-175

Validation Qualifier Code	Total Number of Samples	Metals (SW6010)	Pesticides (SW8081A)	PCBs (SW8082)	SVOCs (SW8270B)
1	114	61	6	-	47
J1	38	38	-	-	-
V1	703	131	126	54	392
UJ1	13	9	-	-	4
R1	8	8	-	-	-
Total:	876	247	132	54	443
Percent Validated:	87%	75%	95%	100%	89%
Percent Rejected:	1%	4%	0%	0%	0%

J = estimated (semi-quantitative) value
 J1 = estimated quantity - verification
 V1 = data is valid
 UJ1 = estimated at elevated level - verification
 R = rejected; results not usable

Comparability

All results presented are comparable with CERCLA data and DOE complex-wide environmental data. This comparability is based on:

- Use of standardized engineering units in the reporting of measurement results;
- Consistent sensitivities of measurements (generally $\leq \frac{1}{2}$ corresponding action levels); and
- Use of site-approved procedures, work plans, and quality controls.

Sensitivity

Reporting limits, in units of ug/kg (parts per billion) for organics, mg/kg (parts per million) for metals, and pCi/g for radionuclides, were compared with RFCA Tier I and Tier II action levels on a record-by-record basis. Adequate sensitivities of analytical methods were attained for all results except for those analytes listed below. The number of records is also given with respect to each analyte and sample type. “Adequate” sensitivity is defined as a reporting limit (RL) less than an analyte’s associated action level, typically less than one-half the action level.

Summary

Data quality objectives were attained for the PAC 900-175 data set with the qualifications stated herein, relative to sampling power (number and types of samples), confidence in decisions (>90%), and the various V&V criteria.

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APPENDIX A

PAC 900-175 - RAW DATA

APPENDIX B

IHSS GROUP 900-4&5

WRW ACTION LEVEL COMPARISON TABLE

IHSS Group 900-4&5 Surface Soil Proposed WRW Action Level Comparison

IHSS/PAC/ UBC Site	Location	Analyte	SBD	SED	Result	RL/DL	WRW Action Level	ER Action Level	Background Mean+2SD	Unit
900-175	CK43-000	Benzo(a)anthracene	0	0.5	100	40	34900	NA	NA	ug/kg
900-175	CK43-000	Benzo(a)pyrene	0	0.5	140	97	3490	NA	NA	ug/kg
900-175	CK43-000	Benzo(b)fluoranthene	0	0.5	130	100	34900	NA	NA	ug/kg
900-175	CK43-000	Benzo(k)Fluoranthene	0	0.5	150	96	349000	NA	NA	ug/kg
900-175	CK43-000	Bis(2-ethylhexyl)phthalate	0	0.5	82	71	1970000	NA	NA	ug/kg
900-175	CK43-000	Chromium (total)	0	0.5	106	0.36	NA	NA	16.99	mg/kg
900-175	CK43-000	Chrysene	0	0.5	150	55	3490000	NA	NA	ug/kg
900-175	CK43-000	Copper	0	0.5	31.9	0.19	40900	NA	18.06	mg/kg
900-175	CK43-000	Fluoranthene	0	0.5	330	87	27200000	NA	NA	ug/kg
900-175	CK43-000	Indeno(1,2,3-cd)pyrene	0	0.5	73	49	34900	NA	NA	ug/kg
900-175	CK43-000	Nickel	0	0.5	67.9	0.44	20400	NA	14.91	mg/kg
900-175	CK43-000	Pyrene	0	0.5	290	41	22100000	NA	NA	ug/kg
900-175	CK43-000	Zinc	0	0.5	171	0.59	307000	NA	73.76	mg/kg
900-175	CK43-001	Benzo(a)anthracene	0	0.5	180	41	34900	NA	NA	ug/kg
900-175	CK43-001	Benzo(a)pyrene	0	0.5	230	99	3490	NA	NA	ug/kg
900-175	CK43-001	Benzo(b)fluoranthene	0	0.5	240	110	34900	NA	NA	ug/kg
900-175	CK43-001	Benzo(k)Fluoranthene	0	0.5	230	98	349000	NA	NA	ug/kg
900-175	CK43-001	Bis(2-ethylhexyl)phthalate	0	0.5	75	73	1970000	NA	NA	ug/kg
900-175	CK43-001	Chromium (total)	0	0.5	40.3	0.35	NA	NA	16.99	mg/kg
900-175	CK43-001	Chrysene	0	0.5	260	56	3490000	NA	NA	ug/kg
900-175	CK43-001	Copper	0	0.5	28.1	0.18	40900	NA	18.06	mg/kg
900-175	CK43-001	Dimethyl phthalate	0	0.5	110	89	1000000000	NA	NA	ug/kg
900-175	CK43-001	Fluoranthene	0	0.5	550	88	27200000	NA	NA	ug/kg
900-175	CK43-001	Indeno(1,2,3-cd)pyrene	0	0.5	150	50	34900	NA	NA	ug/kg
900-175	CK43-001	Nickel	0	0.5	30.5	0.43	20400	NA	14.91	mg/kg
900-175	CK43-001	Pyrene	0	0.5	470	42	22100000	NA	NA	ug/kg
900-175	CK43-001	Zinc	0	0.5	96.9	0.57	307000	NA	73.76	mg/kg
900-175	CK43-002	Benzo(a)anthracene	0	0.5	210	40	34900	NA	NA	ug/kg
900-175	CK43-002	Benzo(a)pyrene	0	0.5	240	96	3490	NA	NA	ug/kg

IHSS Group 900-4&5 Surface Soil Proposed WRW Action Level Comparison

IHSS/PAC/ UBC Site	Location	Analyte	SBD	SED	Result	RL/DL	WRW Action Level	ER Action Level	Background Mean+2SD	Unit
900-175	CK43-002	Benzo(b)fluoranthene	0	0.5	230	100	34900	NA	NA	ug/kg
900-175	CK43-002	Benzo (K) Fluoranthene	0	0.5	240	95	349000	NA	NA	ug/kg
900-175	CK43-002	Bis(2-ethylhexyl)phthalate	0	0.5	310	70	1970000	NA	NA	ug/kg
900-175	CK43-002	Chromium (total)	0	0.5	102	0.36	NA	NA	16.99	mg/kg
900-175	CK43-002	Chrysene	0	0.5	260	54	3490000	NA	NA	ug/kg
900-175	CK43-002	Copper	0	0.5	74.4	0.18	40900	NA	18.06	mg/kg
900-175	CK43-002	Dibenz(a,h)anthracene	0	0.5	64	48	3490	NA	NA	ug/kg
900-175	CK43-002	Dimethyl phthalate	0	0.5	320	86	1000000000	NA	NA	ug/kg
900-175	CK43-002	Fluoranthene	0	0.5	540	85	27200000	NA	NA	ug/kg
900-175	CK43-002	Indeno(1,2,3-cd)pyrene	0	0.5	160	49	34900	NA	NA	ug/kg
900-175	CK43-002	Nickel	0	0.5	69.3	0.44	20400	NA	14.91	mg/kg
900-175	CK43-002	Pyrene	0	0.5	500	41	22100000	NA	NA	ug/kg
900-175	CK43-002	Zinc	0	0.5	172	0.58	307000	NA	73.76	mg/kg
900-175	CL43-000	Benzo(a)anthracene	0	0.5	44	40	34900	NA	NA	ug/kg
900-175	CL43-000	Bis(2-ethylhexyl)phthalate	0	0.5	9700	140	1970000	NA	NA	ug/kg
900-175	CL43-000	Chromium (total)	0	0.5	34.4	0.35	NA	NA	16.99	mg/kg
900-175	CL43-000	Chrysene	0	0.5	58	54	3490000	NA	NA	ug/kg
900-175	CL43-000	Copper	0	0.5	19.5	0.18	40900	NA	18.06	mg/kg
900-175	CL43-000	Fluoranthene	0	0.5	120	86	27200000	NA	NA	ug/kg
900-175	CL43-000	Nickel	0	0.5	20.2	0.43	20400	NA	14.91	mg/kg
900-175	CL43-000	Pyrene	0	0.5	100	41	22100000	NA	NA	ug/kg
900-175	CL43-000	Pyrene	0	0.5	100	82	22100000	NA	NA	ug/kg
900-175	CL43-000	Zinc	0	0.5	80.6	0.57	307000	NA	73.76	mg/kg
900-175	CL43-001	Benzo(a)anthracene	0	0.5	310	39	34900	NA	NA	ug/kg
900-175	CL43-001	Benzo(a)pyrene	0	0.5	270	95	3490	NA	NA	ug/kg
900-175	CL43-001	Benzo(b)fluoranthene	0	0.5	240	100	34900	NA	NA	ug/kg
900-175	CL43-001	Benzo (K) Fluoranthene	0	0.5	290	94	349000	NA	NA	ug/kg
900-175	CL43-001	Bis(2-ethylhexyl)phthalate	0	0.5	100	70	1970000	NA	NA	ug/kg
900-175	CL43-001	Chromium (total)	0	0.5	114	0.35	NA	NA	16.99	mg/kg

IHSS Group 900-4&5 Surface Soil Proposed WRW Action Level Comparison

IHSS/PAC/ UBC Site	Location	Analyte	SBD	SED	Result	RL/DL	WRW Action Level	ER Action Level	Background Mean+2SD	Unit
900-175	CL43-001	Chrysene	0	0.5	390	54	3490000	NA	NA	ug/kg
900-175	CL43-001	Copper	0	0.5	36.6	0.18	40900	NA	18.06	mg/kg
900-175	CL43-001	Fluoranthene	0	0.5	690	85	27200000	NA	NA	ug/kg
900-175	CL43-001	Indeno(1,2,3-cd)pyrene	0	0.5	150	49	34900	NA	NA	ug/kg
900-175	CL43-001	Iron	0	0.5	18900	1.6	307000	NA	18037	mg/kg
900-175	CL43-001	Lithium	0	0.5	11.6	0.24	20400	NA	11.55	mg/kg
900-175	CL43-001	Nickel	0	0.5	69.7	0.43	20400	NA	14.91	mg/kg
900-175	CL43-001	Pyrene	0	0.5	690	40	22100000	NA	NA	ug/kg
900-175	CL43-001	Zinc	0	0.5	80.5	0.58	307000	NA	73.76	mg/kg
900-175	CL43-002	Benzo(a)anthracene	0	0.5	160	41	34900	NA	NA	ug/kg
900-175	CL43-002	Benzo(a)pyrene	0	0.5	190	98	3490	NA	NA	ug/kg
900-175	CL43-002	Benzo(b)fluoranthene	0	0.5	170	100	34900	NA	NA	ug/kg
900-175	CL43-002	Benzo (K) Fluoranthene	0	0.5	200	97	349000	NA	NA	ug/kg
900-175	CL43-002	Bis(2-ethylhexyl)phthalate	0	0.5	1600	71	1970000	NA	NA	ug/kg
900-175	CL43-002	Chromium (total)	0	0.5	28.2	0.36	NA	NA	16.99	mg/kg
900-175	CL43-002	Chrysene	0	0.5	210	55	3490000	NA	NA	ug/kg
900-175	CL43-002	Copper	0	0.5	31.5	0.19	40900	NA	18.06	mg/kg
900-175	CL43-002	Fluoranthene	0	0.5	440	87	27200000	NA	NA	ug/kg
900-175	CL43-002	Indeno(1,2,3-cd)pyrene	0	0.5	110	50	34900	NA	NA	ug/kg
900-175	CL43-002	Lithium	0	0.5	11.8	0.25	20400	NA	11.55	mg/kg
900-175	CL43-002	Nickel	0	0.5	23.8	0.45	20400	NA	14.91	mg/kg
900-175	CL43-002	Pyrene	0	0.5	450	42	22100000	NA	NA	ug/kg
900-175	CL43-002	Strontium	0	0.5	63.2	0.016	613000	NA	48.94	mg/kg

SBD – Soil Begin Depth (feet)
 SED – Soil End Depth (feet)
 RL/DL – Reporting/Detection Limit
 SD – Standard Deviation
 WRW – Wildlife Refuge Worker
 ER – Ecological Receptor