from Boring 400-145. The deepest soil samples contained concentrations of these metals that were below background levels, which can be used to delineate the vertical extent of the impacted soil.

Beryllium was reported above background levels in 14 soil samples. The highest concentration was 1.05 mg/kg from 4 to 8 ft bgs in Boring 400-204 (Fig. 4.17). Most of the beryllium detections were from less than 15 ft bgs in samples collected along the railroad tracks on the southwest corner of the building.

Radionuclides

Nine isotopes were detected above background levels in the soil sampled from 15 borings that were analyzed for radionuclides. While radioisotope activity in three of the four surface samples only slightly exceeded background values, the surface sample from Boring 400-036 (Fig. 4.18) exhibited higher activities for ^{234}U (10.9 pCi/g, or 4.4 times background), ^{238}U (16.7 pCi/g, or 14 times background), and ^{99}Tc (33 pCi/g, or 13.2 times background). A subsurface sample analyzed from the same boring at 14 ft bgs contained only traces of ^{237}Np (0.2 pCi/g).

Most subsurface samples contained radionuclides only at low activities (less than 2 pCi/g). However, the shallow subsurface soil sample collected from 4 ft bgs at Boring 400-141 exhibited 7.3 pCi/g of ^{99}Tc, 2.7 pCi/g of ^{234}U, and 4.6 pCi/g of ^{238}U, while the sample from 20 ft bgs at 400-192 contained 3.1 pCi/g of ^{99}Tc.

4.2.6 Sector 6 [Technetium Storage Tank (SWMU 47)]

4.2.6.1 Site History

Location and Physical Description

The Technetium Storage Tank (SWMU 47) was located within a bermed area on a concrete pad outside of the C-400 Building, on the west side of the building. The tank was removed in 1986, but the concrete pad and berms are still present. Approximately 600 gal of residual waste was in the tank at the time of its removal. The waste was composed of approximately 200 gal of solution and 400 gal of sludge. Analytical results of samples collected during the tank removal show that Tc, Cr, U, Np, Pu, and Th were in the tank.

Practice and Release Description

The 4000-gal storage tank was used in the early 1960s to store a waste solution containing ^{99}Tc and chromium. No spills are known to have occurred from the Technetium Storage Tank.

Location and Results of Previous Sampling

The Technetium Storage Tank (SWMU 47) area was investigated during the Phase II SI conducted in 1991 and 1992. Field activities completed during the Phase II SI include the installation of two groundwater monitoring wells (MW-175 and MW-176) and one shallow soil boring. All sampling locations from the Phase II SI were located approximately 50 to 75 ft south of the former tank location, limiting the applicability of the results for source characterization.

Eight composite soil samples were collected during the drilling of the borehole for MW-175 at depths ranging from 0 to 80 ft bgs. Soil samples were analyzed for TCL VOA, SVOA, pesticides/PCBs, TAL metals, cyanide, dioxins and furans, and selected radioisotopes, including ^{235}U, ^{238}U, ^{99}Tc, ^{239}Pu, and ^{230}Th. Chromium concentrations ranged from 3.3 µg/kg at the surface to 52 µg/kg in the 15- to 20-ft-bgs interval. In addition to chromium, ^{99}Tc and ^{234}U were detected in the sample from 0 to 5 ft bgs at concentrations of 8.2 pCi/g and 2 pCi/g, respectively. The only other contaminant detected in the samples from the MW-175 boring was TCE at a concentration of 0.009 µg/kg at a depth of 5 to 10 ft bgs. No soil samples were collected from the MW-176 borehole.

One shallow soil boring was drilled within Sector 6 during the Phase II SI to collect information about the soil's radionuclide contamination. Two soil samples were collected at the 0- to 1-ft-bgs and 4- to 6-ft-bgs intervals. These samples were analyzed for selected radionuclides, including ^{99}Tc, ^{237}Np, ^{230}Th, ^{239}Pu, ^{235}U, and ^{238}U. The maximum radionuclide activities for soil samples collected during the SI field activities were reported from this shallow soil boring.

In December 1986, 13 concrete samples were collected from the concrete pad, and 16 soil samples were collected from the area surrounding the tank pad. The samples were collected over a uniform grid covering an area of 14 ft by 14 ft. Samples were analyzed for total chromium, uranium, and ^{99}Tc. Results of the analyses showed maximum concentrations of 0.5 pCi/g ^{99}Tc in the soil and 0.08 pCi/g ^{99}Tc in the concrete. Total chromium detected was 10.1 µg/kg in the soil and 17.2 µg/kg in the concrete. Uranium was detected at 165 µg/kg in the soil and at 28 µg/kg in the concrete.

4.2.6.2 Nature and Extent of Contaminants

In order to assess the nature and extent of the contaminants' impact in Sector 6, 10 surface soil samples (including one duplicate) were analyzed for SVOAs, four for PCBs, 10 (including one duplicate) for metals, and 10 for radionuclides. In addition, 11 subsurface soil samples were collected and analyzed for VOAs and SVOAs, metals, and radionuclides. Eight subsurface samples were screened for PCBs.

Most of the soil samples were collected between the C-400 Building and the C-400 Building perimeter fence (see Fig. 4.19). Results of the analyses are presented in Tables 4.28 through 4.31. Table 4.32 (frequency of detection) summarizes additional information concerning the analytical results.

Summary of Findings

The focus of soil sampling at Sector 6 was to evaluate the potential impact of the Technetium Storage Tank (SWMU 47) on surface and subsurface soils. Samples were also collected to assess the utility corridors and to assess whether previously unknown spills or releases associated with processes inside the C-400 Building may have impacted the soils in Sector 6. One area of contamination was defined from surface and subsurface soil samples collected near the bermed area around the former location of the Technetium Storage Tank (Fig. 4.19).

A small area of surface soil located immediately below the end of a pipe that protrudes from the C-400 Building toward the berm where the Technetium Storage Tank (SWMU 47) previously stood was found to be impacted with high concentrations of several PAH compounds and radionuclides. The pipe that protrudes from the building is a drain line from the dissolution process inside the C-400 Building.

In Boring 047-002 that was drilled into the deep UCRS on the west side of the berm immediately beyond the southwest corner of the Technetium Storage Tank (SWMU 47), the surface soil also contained elevated levels of PAHs and radionuclides. Shallow surface soil samples collected at 4.5 ft bgs in this boring contained the highest concentration of many of the identified radionuclides, but no PAHs. The radioactivity of the soil decreased substantially below 4.5 ft bgs.

TCE was reported at high levels between 4.5 and 29.5 ft bgs (the deepest sample collected). The level of TCE in the subsurface soils remained relatively constant from near surface to the total depth.

Other borings drilled and sampled within Sector 6 to assess the utility corridors and C-400 Area perimeter contained no constituents of concern, or exhibited only isolated occurrences of contaminant concentrations.

Analytical Results–Surface and Subsurface Soils

Organics

VOAs. Five VOAs were detected in the subsurface soil samples collected between 1 and 29.5 ft bgs for Sector 6. Toluene, although the most commonly detected VOA, was not reported at concentrations above the SQL.

In soil samples from Boring 047-002, which was drilled on the former Technetium Storage Tank site, four VOAs were detected between 12 and 29.5 ft bgs, including TCE (up to 1700 µg/kg), cis-1, 2-DCE (82 µg/kg), trans-1,2-DCE (up to 2500 µg/kg), and 2-propanol (up to 220 µg/kg). None of the subsurface samples collected at 15 ft bgs from any of the five borings that were drilled along the utility corridors within Sector 6 (400-108, 400-083, 400-148, 400-076, and 400-084) contained measurable quantities of VOAs.

SVOAs. Numerous SVOAs were reported from the soil samples submitted for analysis from Sector 6. Of the SVOAs detected above the SQL (15 PAHs and one phenol), all are closely related spatially with the bermed area around the former Technetium Storage Tank site (Fig. 4.20). Sample 400-003, the sample collected immediately below the termination of the pipeline that connected the Technetium Storage Tank to the C-400 Building, had the highest concentrations of all of the 16 SVOAs found within Sector 6. Many of the individual SVOAs were reported at some of the highest concentrations in WAG 6, including pyrene at 110,585 µg/kg and fluoranthene at 96,773 µg/kg. Samples from Borings 047-002, 047-007, and 047-010 also were impacted by several PAHs, including chrysene, fluoranthene, phenanthrene, and pyrene. SVOAs were detected only in the subsurface from one soil sample collected from Boring 047-002 at 4.5 ft bgs. Deeper soil samples, to 29.5 ft bgs, collected at this location contained no SVOAs. Detection of SVOAs in an area that had previously been paved with asphalt is not unexpected.

PCBs. Surface soil samples collected from Borings 047-002 and 047-007 exhibited PCBs above the SQL at 77 µg/kg and 960 µg/kg PCB-1254, respectively (Fig. 4.21). No PCBs were detected in the subsurface soil samples.

Inorganics

Numerous metals were detected at concentrations above the PGDP background screening levels. Most of the metal concentrations were only slightly above background levels. However, one surface soil sample from Boring 047-002 contained cadmium at 4.25 mg/kg, which is approximately 20 times the PGDP background level. Beryllium was found at concentrations slightly above background in four surface and shallow subsurface samples (Fig. 4.22), all of which were collected outside the bermed area.

Radionuclides

Nine radionuclides, ^{241}Am, ^{137}Cs, ^{230}Th, ^{237}Np, ^{239}Pu, ^{99}Tc, ^{234}U, ^{235}U, and ^{238}U, exceeded PGDP background screening levels. The maximum activities of seven of the nine isotopes were found in the surface soil sample from Boring 047-002, adjacent to the bermed area. These included 53 pCi/g of ^{99}Tc, 31.1 pCi/g of ^{234}U, 1.9 pCi/g of ^{235}U, and 39.5 pCi/g of ^{238}U. All other surface soils collected around the berm also exhibited elevated activities for various combinations of the radionuclides. Technetium and the three uranium radioisotopes were detected at activities that exceeded background in a soil sample collected from 4.5 ft. bgs at Boring 047-002. Only two isolated soil samples below 4.5 ft bgs in Sector 6 contained radionuclide isotopes with activities above background values. Uranium-238 was detected in all seven of the surface soil samples collected from the bermed area (Fig. 4.23).

4.2.7 Sector 7 [Waste Discard Sump (SWMU 203)]

4.2.7.1 Site History

Location and Physical Description

The Waste Discard Sump located at the northwest corner of the building is a convergence point for effluent from the C-400 Cleaning Facility (primarily from the west side). The unit is a 6-ft-wide × 11-ft-long × 6-ft-deep concrete pit that includes a 4-ft-diameter × 4-1/2-ft-deep sump in the floor. The concrete walls of the sump are lined with acid-proof brick. Influent to the system is discharged directly into the sump, which empties into the North-South Diversion Ditch.

Practice and Release Description

A pump discharged wastewater through the C-401 Transfer Line (SWMU 26) prior to 1957. Beginning in 1957, a drain in the sump was opened to allow gravity-fed discharge through a storm sewer line to the North-South Diversion Ditch. In the 1950s, the Waste Discard Sump handled discharges from a variety of processes in the C-400 Building. Many of these discharges were discontinued after 1957. The sump continues to collect effluent from a high-pressure water-jet system in the C-400 Spray Booth and a vacuum pump on the C-400 Lime Precipitation Unit. No contaminants are expected from the current waste streams.

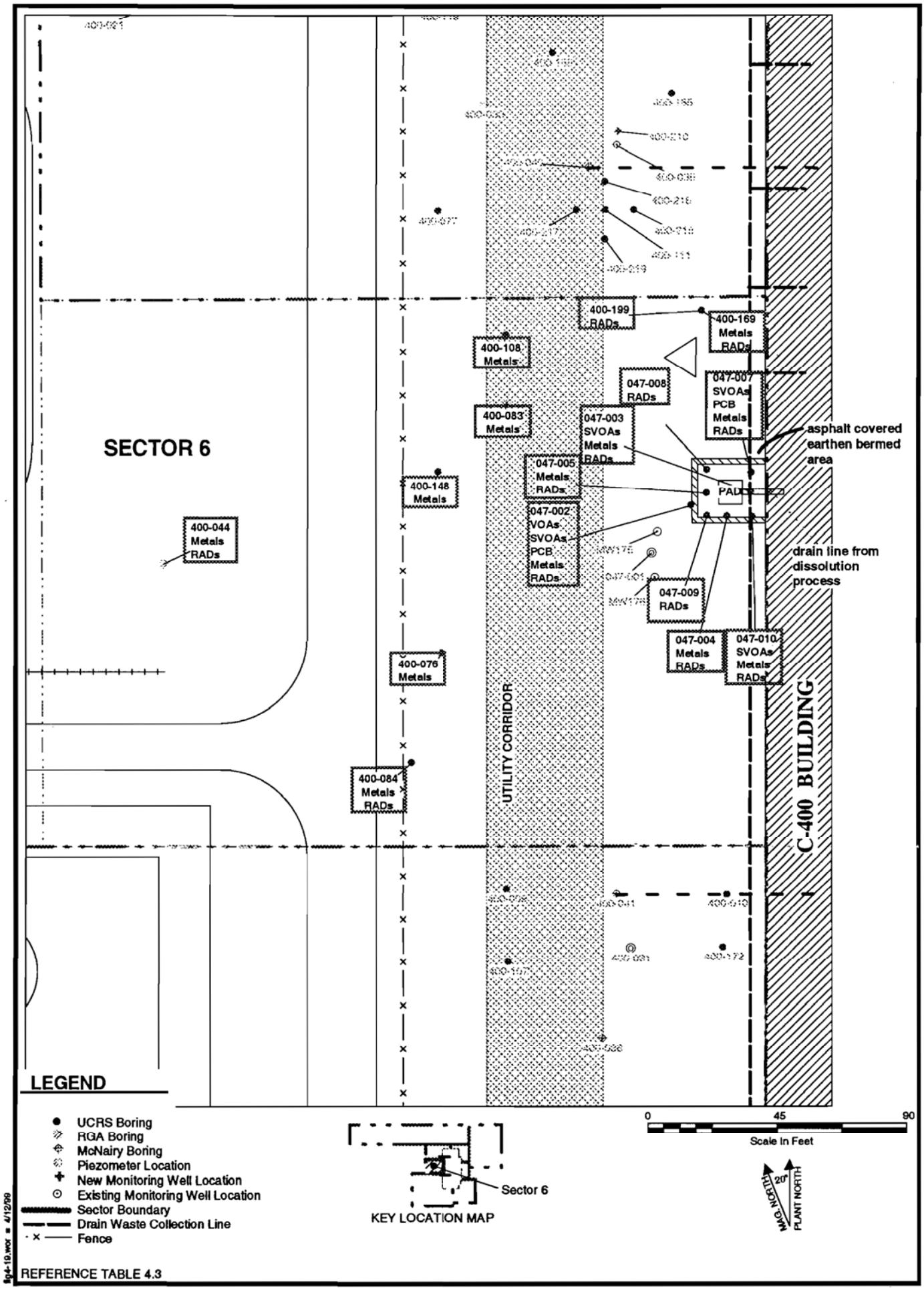

Fig. 4.19. Sector 6 site map showing contaminant groups detected in UCRS soil above SQL at each sample location.

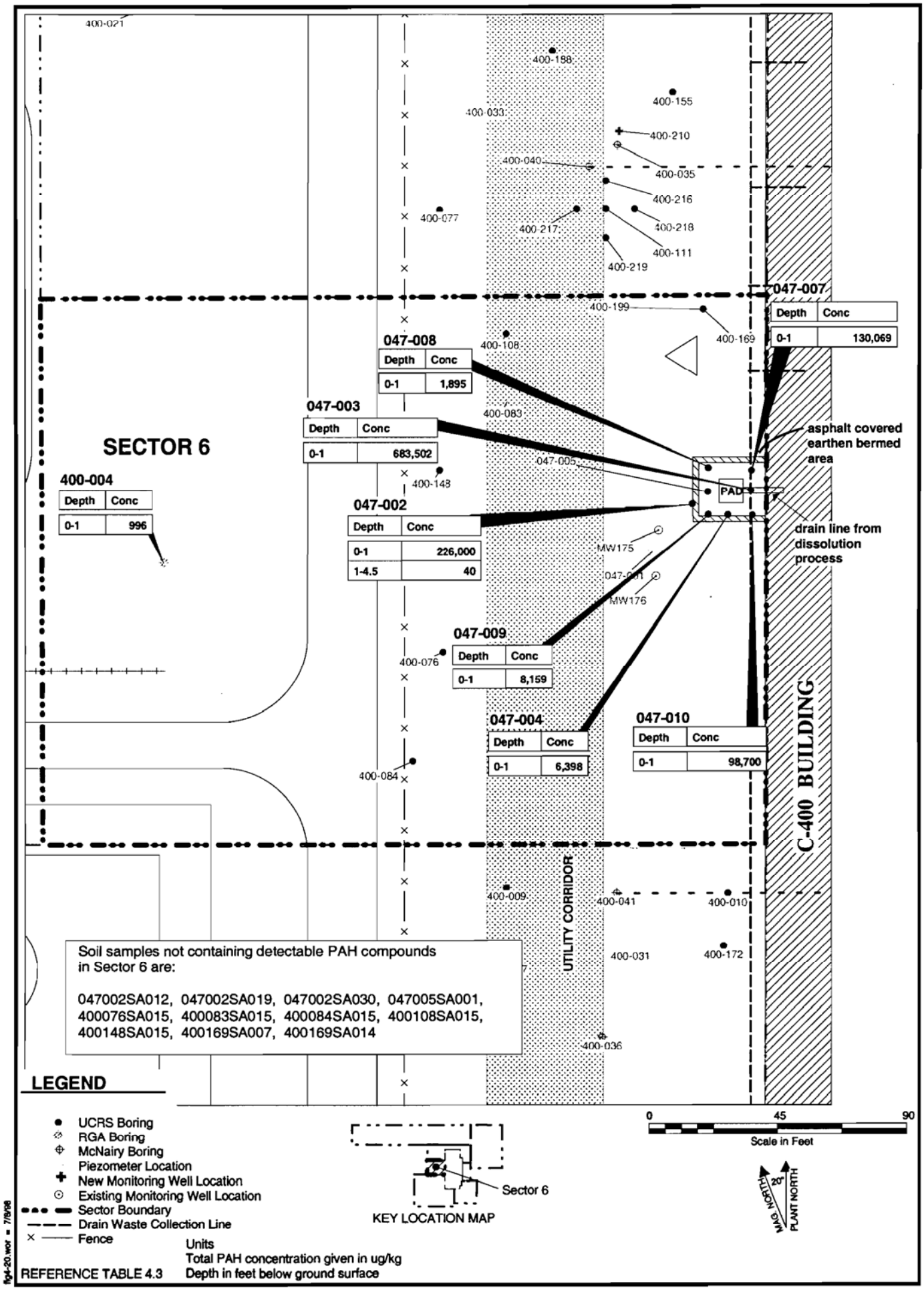

Fig. 4.20. Map showing distribution and total concentration of PAHs detected in sector 6 UCRS soil.

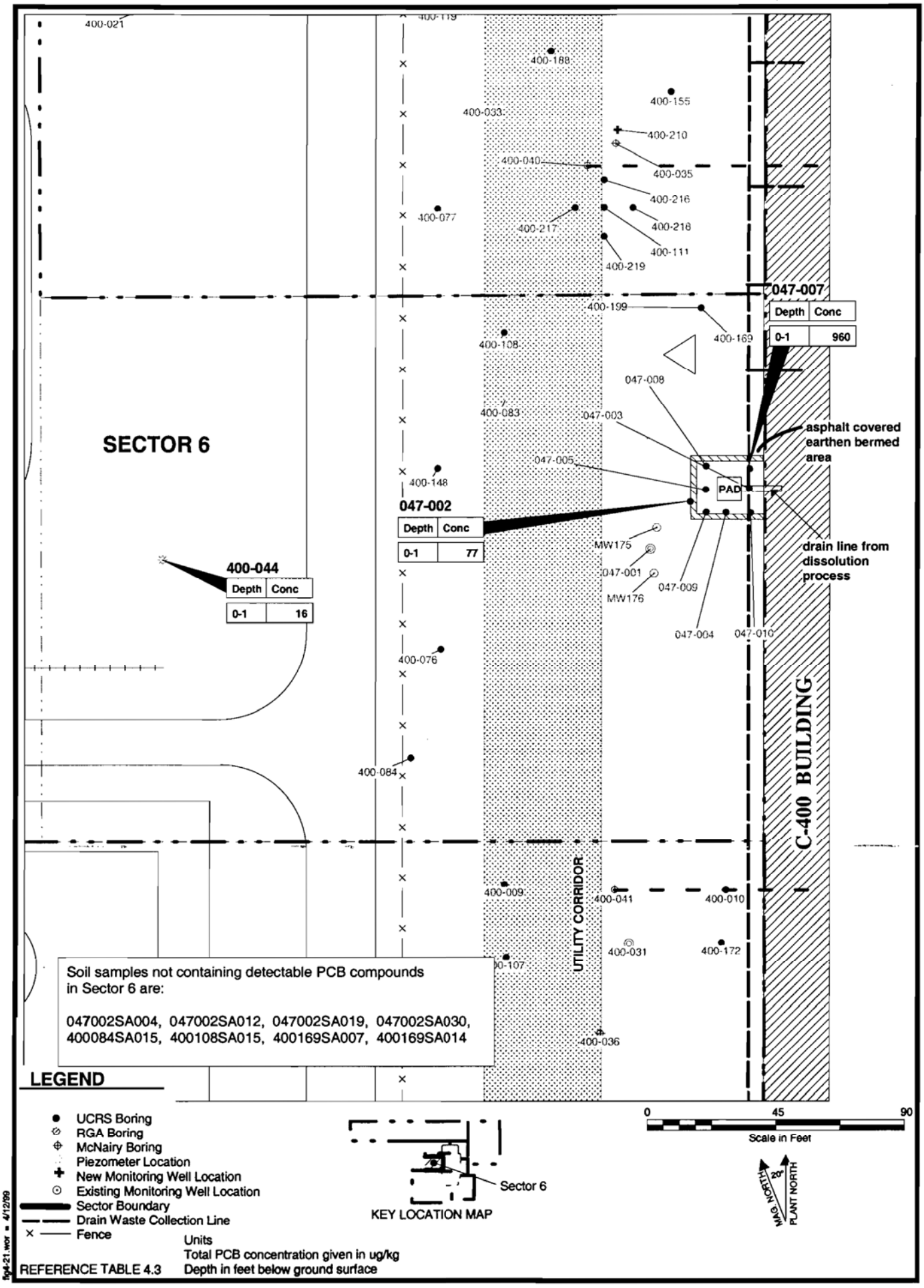

Fig. 4.21. Map showing distribution and total Concentration of PCBs detected in sector 6 UCRS soil.

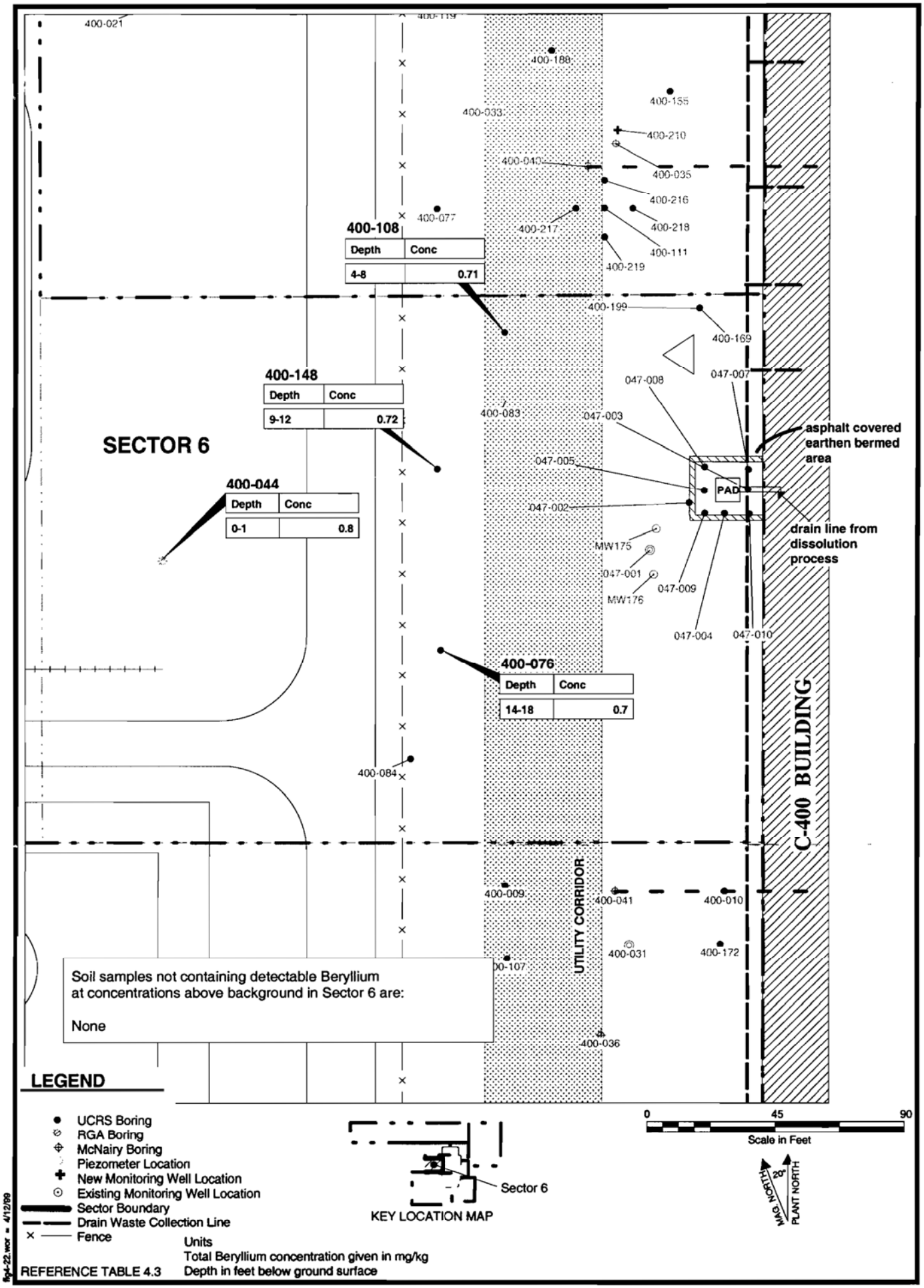

Fig. 4.22. Map showing distribution and total concentration of Beryllium detected in sector 6 UCRS soil.

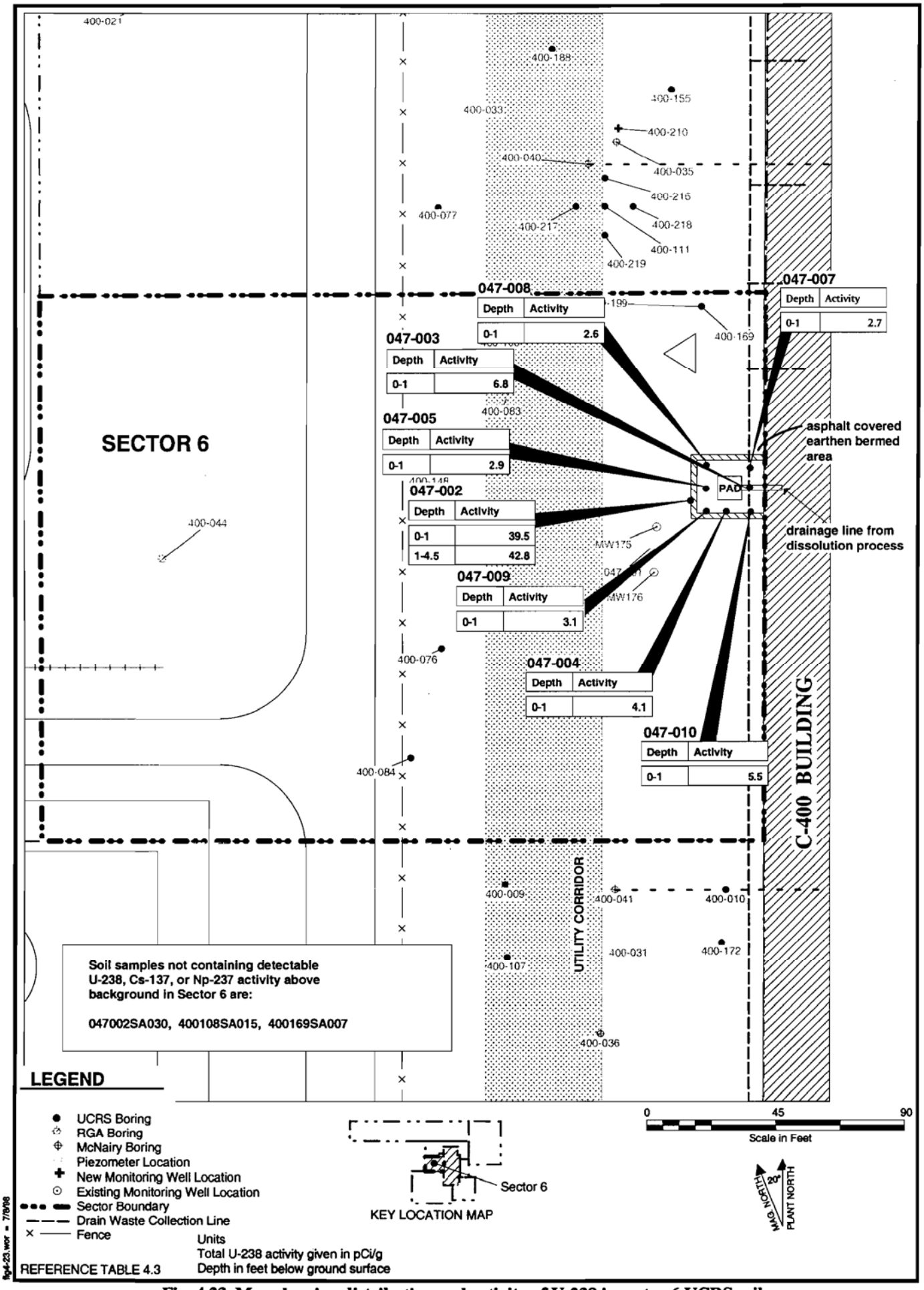

Fig. 4.23. Map showing distribution and activity of U-238 in sector 6 UCRS soil.

Table 4.28. VOA compounds detected in Sector 6
UCRS soil

Sample Type	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results ug/kg	Lab Qualifier	Validation Qualifier	Data Assessment
		Top	Bottom					
Soil	047002SA004	1	4.5	Toluene	2	J	?	
	047002SA012	8.5	12	cis-1,2-Dichloroethene	82		?	
		8.5	12	Toluene	5.6	J	?	
		8.5	12	trans-1,2-Dichloroethene	2500		?	
		8.5	12	Trichloroethene	1400		?	
	047002SA019	15.5	19	2-Propanol	220		?	
		15.5	19	cis-1,2-Dichloroethene	2.9	J	?	
		15.5	19	Toluene	1.5	J	?	
		15.5	19	trans-1,2-Dichloroethene	2300		?	
		15.5	19	Trichloroethene	1700		?	
	047002SA030	26	29.5	2-Propanol	170		?	
		26	29.5	Trichloroethene	1500		?	

Note: Soil boring samples not containing any detectable VOA compounds in Sector 6 are:
400076SA015, 400083SA015, 400084SA015, 400108SA015, 400148SA015, 400169SA007, 400169SA014

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Table 4.29. SVOA and PCB compounds detected in Sector 6 UCRS soil

Sample Type	Analytical Group	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results ug/kg	Lab Qualifier	Validation Qualifier	Data Assessment
			Top	Bottom					
Soil	SVOA	047002SA001	0	1	Acenaphthene	3700	J	?	
			0	1	Anthracene	7300		?	
			0	1	Benz(a)anthracene	18000		?	
			0	1	Benzo(a)pyrene	16000		?	
			0	1	Benzo(b)fluoranthene	17000		?	
			0	1	Benzo(ghi)perylene	5500	J	?	
			0	1	Benzo(k)fluoranthene	11000		?	
			0	1	Chrysene	19000		?	
			0	1	Dibenz(a,h)anthracene	3200	J	?	
			0	1	Dibenzofuran	1500	J	?	
			0	1	Fluoranthene	48000		?	
			0	1	Fluorene	2700	J	?	
			0	1	Indeno(1,2,3-cd)pyrene	5800	J	?	
			0	1	Naphthalene	800	J	?	
			0	1	Phenanthrene	34000		?	
			0	1	Pyrene	34000		?	
		047002SA004	1	4.5	Fluoranthene	40	J	?	
		047003SA001	0	1	2-Methylnaphthalene	900	J	?	
			0	1	Acenaphthene	7074	J	?	
			0	1	Anthracene	84314		?	
			0	1	Benz(a)anthracene	39198		?	

Table 4.29. SVOA and PCB compounds detected in Sector 6 UCRS soil

Sample Type	Analytical Group	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results ug/kg	Lab Qualifier	Validation Qualifier	Data Assessment
			Top	Bottom					
Soil	SVOA	047003SA001	0	1	Benzo(a)pyrene	37686	J	?	
			0	1	Benzo(b)fluoranthene	62446	J	?	
			0	1	Benzo(ghi)perylene	8838	J	?	
			0	1	Benzo(k)fluoranthene	94149	J	?	
			0	1	Chrysene	43652		?	
			0	1	Dibenz(a,h)anthracene	4268	J	?	
			0	1	Dibenzofuran	3600	J	?	
			0	1	Fluoranthene	96773		?	
			0	1	Fluorene	4539	J	?	
			0	1	Indeno(1,2,3-cd)pyrene	9688	J	?	
			0	1	Naphthalene	1900	J	?	
			0	1	Phenanthrene	77492		?	
			0	1	Pyrene	110585		?	
		047004SA001	0	1	Anthracene	771	J	?	
			0	1	Benz(a)anthracene	497	J	?	
			0	1	Benzo(a)pyrene	504	J	?	
			0	1	Benzo(b)fluoranthene	819	J	?	
			0	1	Chrysene	554	J	?	
			0	1	Fluoranthene	1109	J	?	
			0	1	Phenanthrene	709	J	?	
			0	1	Pyrene	1435	J	?	

Table 4.29. SVOA and PCB compounds detected in Sector 6 UCRS soil

Sample Type	Analytical Group	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results ug/kg	Lab Qualifier	Validation Qualifier	Data Assessment
			Top	Bottom					
Soil	SVOA	047007SA001	0	1	Acenaphthene	1900	J	?	
			0	1	Anthracene	3769		?	
			0	1	Benz(a)anthracene	9900		?	
			0	1	Benzo(a)pyrene	8900		?	
			0	1	Benzo(b)fluoranthene	9500		?	
			0	1	Benzo(ghi)perylene	4600	J	?	
			0	1	Benzo(k)fluoranthene	7600	J	?	
			0	1	Chrysene	11000		?	
			0	1	Dibenzofuran	1100	J	?	
			0	1	Fluoranthene	27000		?	
			0	1	Fluorene	1000	J	?	
			0	1	Indeno(1,2,3-cd)pyrene	4400	J	?	
			0	1	Naphthalene	500	J	?	
			0	1	Phenanthrene	20000		?	
			0	1	Pyrene	20000		?	
		047007SD001	0	1	Benz(a)anthracene	140	J	?	
			0	1	Benzo(a)pyrene	130	J	?	
			0	1	Benzo(b)fluoranthene	110	J	?	
			0	1	Benzo(ghi)perylene	91	J	?	
			0	1	Benzo(k)fluoranthene	130	J	?	
			0	1	Chrysene	160	J	?	

Table 4.29. SVOA and PCB compounds detected in Sector 6
UCRS soil

Sample Type	Analytical Group	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results ug/kg	Lab Qualifier	Validation Qualifier	Data Assessment
			Top	Bottom					
Soil	SVOA	047007SD001	0	1	Fluoranthene	350	J	?	
			0	1	Indeno(1,2,3-cd)pyrene	81	J	?	
			0	1	Phenanthrene	230	J	?	
			0	1	Pyrene	290	J	?	
		047008SA001	0	1	Benzo(k)fluoranthene	195	J	?	
			0	1	Fluoranthene	700	J	?	
			0	1	Phenanthrene	400	J	?	
			0	1	Pyrene	600	J	?	
		047009SA001	0	1	Anthracene	359	J	?	
			0	1	Benz(a)anthracene	700	J	?	
			0	1	Benzo(a)pyrene	600	J	?	
			0	1	Benzo(b)fluoranthene	700	J	?	
			0	1	Benzo(k)fluoranthene	700	J	?	
			0	1	Chrysene	800	J	?	
			0	1	Fluoranthene	1600	J	?	
			0	1	Phenanthrene	1200	J	?	
			0	1	Pyrene	1500	J	?	
		047010SA001	0	1	Acenaphthene	1800	J	?	
			0	1	Anthracene	2800	J	?	
			0	1	Benz(a)anthracene	7700	J	?	
			0	1	Benzo(a)pyrene	6600	J	?	

Table 4.29. SVOA and PCB compounds detected in Sector 6 UCRS soil

Sample Type	Analytical Group	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results ug/kg	Lab Qualifier	Validation Qualifier	Data Assessment
			Top	Bottom					
Soil	SVOA	047010SA001	0	1	Benzo(b)fluoranthene	7300	J	?	
			0	1	Benzo(ghi)perylene	2400	J	?	
			0	1	Benzo(k)fluoranthene	6800	J	?	
			0	1	Chrysene	8200		?	
			0	1	Dibenzofuran	1200	J	?	
			0	1	Fluoranthene	20000		?	
			0	1	Fluorene	900	J	?	
			0	1	Indeno(1,2,3-cd)pyrene	2600	J	?	
			0	1	Naphthalene	600	J	?	
			0	1	Phenanthrene	16000		?	
			0	1	Pyrene	15000		?	
		400044SA001	0	1	2-Methylnaphthalene	44	J	=	
			0	1	Benz(a)anthracene	80	J	=	
			0	1	Benzo(a)pyrene	90	J	=	
			0	1	Benzo(b)fluoranthene	90	J	=	
			0	1	Benzo(ghi)perylene	62	J	=	
			0	1	Benzo(k)fluoranthene	70	J	=	
			0	1	Chrysene	90	J	=	
			0	1	Fluoranthene	170	J	=	
			0	1	Indeno(1,2,3-cd)pyrene	60	J	=	
			0	1	Phenanthrene	110	J	=	

Table 4.29. SVOA and PCB compounds detected in Sector 6
UCRS soil

Sample Type	Analytical Group	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results ug/kg	Lab Qualifier	Validation Qualifier	Data Assessment
			Top	Bottom					
Soil	SVOA	400044SA001	0	1	Pyrene	130	J	=	
	PPCB	047002SA001	0	1	PCB-1254	77		?	
		047007SA001	0	1	PCB-1254	960		?	
		047007SD001	0	1	PCB-1254	120		?	
		400044SA001	0	1	PCB-1260	16	J	=	

Note: Soil boring samples not containing any detectable SVOA compounds in Sector 6 are:

047002SA012, 047002SA019, 047002SA030, 047005SA001, 400076SA015, 400083SA015, 400084SA015, 400108SA015, 400148SA015, 400169SA007, 400169SA014

Soil boring samples not containing any detectable PCB compounds in Sector 6 are:

047002SA004, 047002SA012, 047002SA019, 047002SA030, 400084SA015, 400108SA015, 400169SA007, 400169SA014

Table 4.30. Metals detected in Sector 6
UCRS soil

Sample Type	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results mg/kg	Lab Qualifier	Validation Qualifier	Data Assessment	Background mg/kg
		Top	Bottom						
Soil	047002SA001	0	1	Antimony	0.7	B	?		0.21
		0	1	Arsenic	45.2		?		12
		0	1	Cadmium	4.25		?		0.21
		0	1	Nickel	25.5		?		21
	047002SA004	1	4.5	Antimony	0.9	B	?		0.21
		1	4.5	Calcium	7490		?		6100
	047002SA012	8.5	12	Antimony	0.7	B	?		0.21
		8.5	12	Arsenic	8.35		?		7.9
		8.5	12	Magnesium	2220		?		2100
		8.5	12	Sodium	449		?		340
	047002SA019	15.5	19	Sodium	374		?		340
	047002SA030	26	29.5	Antimony	0.6	B	?		0.21
	047003SA001	0	1	Chromium	45.8		?		16
		0	1	Copper	27.9		?		19
		0	1	Sodium	491		?		320
		0	1	Zinc	75.7		?		65
	047004SA001	0	1	Antimony	0.9	B	?		0.21
		0	1	Cadmium	0.23	B	?		0.21
		0	1	Chromium	17.1		?		16
		0	1	Sodium	516		?		320
	047005SA001	0	1	Aluminum	14900		?		13000

Table 4.30. Metals detected in Sector 6
UCRS soil

Sample Type	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results mg/kg	Lab Qualifier	Validation Qualifier	Data Assessment	Background mg/kg
		Top	Bottom						
Soil	047005SA001	0	1	Arsenic	22.2		?		12
		0	1	Chromium	18.3		?		16
		0	1	Sodium	592		?		320
	047007SA001	0	1	Chromium	17.9		?		16
		0	1	Copper	24.4		?		19
		0	1	Sodium	664		?		320
		0	1	Zinc	66.2		?		65
	047007SD001	0	1	Aluminum	15000		?		13000
		0	1	Chromium	19.8		?		16
		0	1	Cobalt	14.3		?		14
		0	1	Copper	20.2		?		19
		0	1	Sodium	681		?		320
	047008SA001	0	1	Antimony	0.8	B	?		0.21
		0	1	Cadmium	0.22	B	?		0.21
		0	1	Sodium	431		?		320
	047009SA001	0	1	Sodium	535		?		320
	047010SA001	0	1	Arsenic	32.2		?		12
		0	1	Cadmium	0.22	B	?		0.21
		0	1	Chromium	17.6		?		16
		0	1	Sodium	529		?		320
	400044SA001	0	1	Aluminum	17700		=		13000

Table 4.30. Metals detected in Sector 6
UCRS soil

Sample Type	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results mg/kg	Lab Qualifier	Validation Qualifier	Data Assessment	Background mg/kg
		Top	Bottom						
Soil	400044SA001	0	1	Antimony	1.3	B	=		0.21
		0	1	Beryllium	0.8		=		0.67
		0	1	Cadmium	0.47	B	=		0.21
		0	1	Chromium	22.5		=		16
		0	1	Sodium	348		=		320
	400076SA015	14	18	Aluminum	12800		?		12000
		14	18	Beryllium	0.7		?		0.69
		14	18	Chromium	49.3		?		43
		14	18	Sodium	758		?		340
		14	18	Vanadium	53.5		?		37
	400083SA015	4.5	8.5	Aluminum	14500		?		12000
		4.5	8.5	Cadmium	0.26	B	?		0.21
		4.5	8.5	Sodium	399		?		340
	400084SA015	10	14	Aluminum	14100		=		12000
		10	14	Sodium	371		=		340
	400108SA015	4	8	Aluminum	23400		?		12000
		4	8	Barium	235		?		170
		4	8	Beryllium	0.71		?		0.69
		4	8	Magnesium	2290		?		2100
		4	8	Sodium	489		?		340
	400148SA015	9	12	Aluminum	15700		?		12000

Table 4.30. Metals detected in Sector 6
UCRS soil

Sample Type	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results mg/kg	Lab Qualifier	Validation Qualifier	Data Assessment	Background mg/kg
		Top	Bottom						
Soil	400148SA015	9	12	Beryllium	0.72		?		0.69
		9	12	Vanadium	39.1		?		37
	400169SA007	3	7	Aluminum	12300		=		12000
	400169SA014	10	14	Aluminum	14000		=		12000
		10	14	Magnesium	2170		=		2100
		10	14	Sodium	495		=		340

Note: Soil boring samples not containing any detectable metals at concentrations above background in Sector 6 are:

None

Table 4.31. Radioactive isotopes detected in Sector 6 UCRS soil

Sample Type	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results pCi/g	Lab Qualifier	Validation Qualifier	Data Assessment	Background pCi/g
		Top	Bottom						
Soil	047002SA001	0	1	Americium-241	0.2		?		0
		0	1	Cesium-137	1.5		?		0.49
		0	1	Neptunium-237	1		?		0.1
		0	1	Plutonium-239	0.8		?		0.025
		0	1	Technetium-99	53		?		2.5
		0	1	Thorium-230	6.4		?		1.5
		0	1	Uranium-234	31.1		?		2.5
		0	1	Uranium-235	1.9		?		0.14
		0	1	Uranium-238	39.5		?		1.2
	047002SA004	1	4.5	Technetium-99	8.1		?		2.8
		1	4.5	Uranium-234	41.7		?		2.4
		1	4.5	Uranium-235	2.2		?		0.14
		1	4.5	Uranium-238	42.8		?		1.2
	047002SA012	8.5	12	Neptunium-237	0.2		?		0
	047002SA019	15.5	19	Neptunium-237	0.2		?		0
	047003SA001	0	1	Americium-241	0.2		?		0
		0	1	Cesium-137	0.5		?		0.49
		0	1	Neptunium-237	3		?		0.1
		0	1	Plutonium-239	1.7		?		0.025
		0	1	Technetium-99	37		?		2.5
		0	1	Thorium-230	10.9		?		1.5

Table 4.31. Radioactive isotopes detected in Sector 6 UCRS soil

Sample Type	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results pCi/g	Lab Qualifier	Validation Qualifier	Data Assessment	Background pCi/g
		Top	Bottom						
Soil	047003SA001	0	1	Uranium-234	6.1		?		2.5
		0	1	Uranium-235	0.5		?		0.14
		0	1	Uranium-238	6.8		?		1.2
	047004SA001	0	1	Neptunium-237	0.7		?		0.1
		0	1	Technetium-99	5.9		?		2.5
		0	1	Thorium-230	2.1		?		1.5
		0	1	Uranium-234	3		?		2.5
		0	1	Uranium-238	4.1		?		1.2
	047005SA001	0	1	Neptunium-237	0.3		?		0.1
		0	1	Technetium-99	4.7		?		2.5
		0	1	Thorium-230	1.6		?		1.5
		0	1	Uranium-234	2.6		?		2.5
		0	1	Uranium-235	0.2		?		0.14
		0	1	Uranium-238	2.9		?		1.2
	047007SA001	0	1	Neptunium-237	0.4		?		0.1
		0	1	Technetium-99	14.9		?		2.5
		0	1	Thorium-230	2.2		?		1.5
		0	1	Uranium-238	2.7		?		1.2
	047007SD001	0	1	Neptunium-237	0.7		?		0.1
		0	1	Plutonium-239	0.2		?		0.025
		0	1	Technetium-99	22.2		?		2.5

Table 4.31. Radioactive isotopes detected in Sector 6 UCRS soil

Sample Type	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results pCi/g	Lab Qualifier	Validation Qualifier	Data Assessment	Background pCi/g
		Top	Bottom						
Soil	047007SD001	0	1	Thorium-230	5.7		?		1.5
		0	1	Uranium-234	3.4		?		2.5
		0	1	Uranium-235	0.2		?		0.14
		0	1	Uranium-238	4.6		?		1.2
	047008SA001	0	1	Neptunium-237	0.7		?		0.1
		0	1	Technetium-99	4.6		?		2.5
		0	1	Thorium-230	3		?		1.5
		0	1	Uranium-234	2.6		?		2.5
		0	1	Uranium-238	2.6		?		1.2
	047009SA001	0	1	Neptunium-237	0.2		?		0.1
		0	1	Technetium-99	4.5		?		2.5
		0	1	Thorium-230	2.4		?		1.5
		0	1	Uranium-235	0.2		?		0.14
		0	1	Uranium-238	3.1		?		1.2
	047010SA001	0	1	Neptunium-237	0.5		?		0.1
		0	1	Technetium-99	9.1		?		2.5
		0	1	Thorium-230	2.3		?		1.5
		0	1	Uranium-234	3.8		?		2.5
		0	1	Uranium-235	0.2		?		0.14
		0	1	Uranium-238	5.5		?		1.2
	400044SA001	0	1	Uranium-238	3		=		1.2

Table 4.31. Radioactive isotopes detected in Sector 6
UCRS soil

Sample Type	Sample ID	Sample Interval (ft bgs)		Analytical Compound	Results pCi/g	Lab Qualifier	Validation Qualifier	Data Assessment	Background pCi/g
		Top	Bottom						
Soil	400084SA015	10	14	Americium-241	0.4		=		0
	400169SA014	10	14	Thorium-230	3.4		=		1.4

Note: Soil boring samples not containing any detectable radioactive isotopes at concentrations above background in Sector 6 are: 047002SA030, 400108SA015, 400169SA007

Table 4.32. Frequency of detection of organic compounds, metals, and radioactive isotopes in Sector 6 UCRS soil

Analytical Group	Analytical Compound	No. of Detects	No. of Analyses	Maximum Result	Minimum Result	Average Result	Units
VOA	Toluene	3	8	5.60	1.50	3.03	ug/kg
	Trichloroethene	3	11	1700.00	26.00	1304.33	ug/kg
	2-Propanol	2	8	220.00	170.00	195.00	ug/kg
	cis-1,2-Dichloroethene	2	11	82.00	2.90	42.45	ug/kg
	trans-1,2-Dichloroethene	2	11	2500.00	2300.00	2400.00	ug/kg
SVOA	Fluoranthene	10	21	96773.00	40.00	15799.30	ug/kg
	Phenanthrene	9	21	77492.00	110.00	13170.11	ug/kg
	Pyrene	9	21	110585.00	130.00	15725.94	ug/kg
	Benz(a)anthracene	8	21	39198.00	80.00	7613.94	ug/kg
	Benzo(a)pyrene	8	21	37686.00	90.00	7031.88	ug/kg
	Benzo(b)fluoranthene	8	21	62446.00	90.00	10116.00	ug/kg
	Benzo(k)fluoranthene	8	21	94149.00	70.00	9609.38	ug/kg
	Chrysene	8	21	43652.00	90.00	8482.13	ug/kg
	Anthracene	6	21	84314.00	359.00	9995.83	ug/kg
	Benzo(ghi)perylene	6	21	8838.00	62.00	3152.83	ug/kg
	Indeno(1,2,3-cd)pyrene	6	21	9688.00	60.00	3372.25	ug/kg
	Acenaphthene	4	21	7074.00	1800.00	3446.75	ug/kg
	Dibenzofuran	4	21	3600.00	1100.00	1850.00	ug/kg
	Fluorene	4	21	4539.00	900.00	2142.38	ug/kg
	Naphthalene	4	21	1900.00	500.00	950.00	ug/kg
	2-Methylnaphthalene	2	21	900.00	44.00	472.00	ug/kg
	Dibenz(a,h)anthracene	2	21	4268.00	3200.00	3734.00	ug/kg
PCB	PCB-1254	3	12	960.00	77.00	385.67	ug/kg
	PCB-1260	1	12	16.00	16.00	16.00	ug/kg
Metals	Sodium	16	21	758.00	348.00	507.63	mg/kg
	Aluminum	10	21	23400.00	12300.00	15440.00	mg/kg
	Chromium	8	21	49.30	17.10	26.04	mg/kg
	Antimony	7	21	1.30	0.60	0.84	mg/kg
	Cadmium	6	21	4.25	0.22	0.94	mg/kg
	Arsenic	4	21	45.20	8.35	26.99	mg/kg
	Beryllium	4	21	0.80	0.70	0.73	mg/kg
	Copper	3	21	27.90	20.20	24.17	mg/kg

Table 4.32. Frequency of detection of organic compounds, metals, and radioactive isotopes in Sector 6 UCRS soil

Analytical Group	Analytical Compound	No. of Detects	No. of Analyses	Maximum Result	Minimum Result	Average Result	Units
Metals	Magnesium	3	21	2290.00	2170.00	2226.67	mg/kg
	Vanadium	2	21	53.50	39.10	46.30	mg/kg
	Zinc	2	21	75.70	66.20	70.95	mg/kg
	Barium	1	21	235.00	235.00	235.00	mg/kg
	Calcium	1	21	7490.00	7490.00	7490.00	mg/kg
	Cobalt	1	21	14.30	14.30	14.30	mg/kg
	Nickel	1	21	25.50	25.50	25.50	mg/kg
Radioactive isotopes	Neptunium-237	11	18	3.00	0.20	0.72	pCi/g
	Uranium-238	11	18	42.80	2.60	10.69	pCi/g
	Technetium-99	10	18	53.00	4.50	16.40	pCi/g
	Thorium-230	10	18	10.90	1.60	4.00	pCi/g
	Uranium-234	8	18	41.70	2.60	11.79	pCi/g
	Uranium-235	7	18	2.20	0.20	0.77	pCi/g
	Americium-241	3	18	0.40	0.20	0.27	pCi/g
	Plutonium-239	3	18	1.70	0.20	0.90	pCi/g
	Cesium-137	2	18	1.50	0.50	1.00	pCi/g