

U.S. Department of Energy

Portsmouth Annual Environmental Data for 2009



Ambient air monitoring station A24

Air, soil, and vegetation samples are collected at ambient air monitoring stations around the area

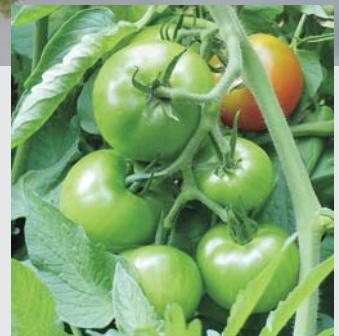
Environmental monitoring at the Portsmouth Gaseous Diffusion Plant measures the facility's effect on the environment

Water and sediment samples are collected from local streams and the Scioto River



Scioto River near PORTS

Samples of crops and dairy products (milk and eggs) are collected from local communities



**U.S. Department of Energy
Portsmouth Annual Environmental Data
for 2009
Piketon, Ohio**

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LATA/PARALLAX PORTSMOUTH, LLC
managing the
Environmental Remediation Activities at the
Portsmouth Gaseous Diffusion Plant
under contract DE-AC24-05OH20192
for the
U.S. DEPARTMENT OF ENERGY

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ACRONYMS

°C	degrees Celsius
CFR	Code of Federal Regulations
Ci	curie
cm	centimeter
DCG	derived concentration guide
DOE	U.S. Department of Energy
DOE PORTS	facilities operated by the DOE (not leased to USEC) at the Portsmouth Gaseous Diffusion Plant
EPA	Environmental Protection Agency
°F	degrees Fahrenheit
g	gram
GPD	gallons per day
GWTF	groundwater treatment facility
kg	kilogram
km	kilometer
L	liter
LPP	LATA/Parallax Portsmouth, LLC
m	meter
m ³	cubic meter
µg	microgram
mg	milligram
MGD	million gallons per day
mrem	millirem
na	not analyzed
ND	not detected
ng	nanogram
NPDES	National Pollutant Discharge Elimination System
OVEC	Ohio Valley Electric Corporation
PCB	polychlorinated biphenyl
pCi	picocurie
PK	Peter Kiewit
PORTS	Portsmouth Gaseous Diffusion Plant
SU	standard unit
TUa	acute toxicity unit
UDS	Uranium Disposition Services, LLC
USEC	United States Enrichment Corporation
VOC	volatile organic compound

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1. INTRODUCTION

Environmental monitoring at the Portsmouth Gaseous Diffusion Plant (PORTS) is conducted throughout the year. Monitoring demonstrates that the site is a safe place to work, that plant operations do not adversely affect neighboring communities, and that activities comply with federal and state regulations.

This document is a compilation of the environmental monitoring data for calendar year 2009 and is intended as a tool for analysts in environmental monitoring, environmental restoration, and other related disciplines. The data in this document form the basis for the summary information in the *Portsmouth Annual Environmental Report for 2009* (DOE/PPPO/03-0159&D1).

Radiological monitoring data presented in this Data Report and discussed in the *Annual Environmental Report for 2009* indicate that the maximum dose a member of the public could receive from radionuclides released by PORTS in 2009 or detected by environmental monitoring programs in 2009 is 0.94 millirem (mrem). This dose is significantly less than the 100 mrem limit set by the U.S. Department of Energy (DOE).

Other non-radiological chemicals such as polychlorinated biphenyls (PCBs), metals, and volatile organic compounds (VOCs) are also monitored. Discharges of metals and other chemicals to surface water are controlled by National Pollutant Discharge Elimination System (NPDES) permits. The *Annual Environmental Report for 2009* provides more information about non-radiological chemicals released from PORTS or detected by PORTS monitoring programs during 2009.

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2. ENVIRONMENTAL MONITORING

This section provides environmental monitoring data collected by DOE contractors, LATA/Parallax Portsmouth, LLC (LPP) and Uranium Disposition Services, LLC (UDS), as well as the United States Enrichment Corporation (USEC) at or nearby PORTS.

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**Table 2.1. Radionuclide concentrations in LPP and USEC
NPDES outfall water samples – 2009**

NPDES outfall ^a	Parameter ^b	Number of samples ^c	Minimum ^d	Maximum ^d	Average ^e	DCG ^f
<i>LPP Outfalls</i>						
015	americium-241	4(4)	0	< 0.009889		30
	neptunium-237	4(4)	0	< 0.000007251		30
	plutonium-238	4(4)	0	< 0.01517		40
	plutonium-239/240	4(4)	0	< 0.02421		30
	technetium-99	12(12)	0	< 4.68		100,000
	uranium	12(0)	0.2448	2.466	1.076	
	uranium-233/234	12(1)	< 0.1071	2.586	1.043	500
	uranium-235	12(6)	< 0.000009131	0.09299		600
	uranium-236	12(12)	0	< 0.025		500
	uranium-238	12(0)	0.0822	0.82	0.358	600
608	americium-241	4(4)	0	< 0.02397		
	neptunium-237	4(4)	0	< 0.01346		
	plutonium-238	4(4)	< 0.0000083	< 0.03701		
	plutonium-239/240	4(4)	< 0.0000166	< 0.0074		
	technetium-99	12(1)	< 3.29	926	425	
	uranium	12(0)	0.5118	1.304	0.859	
	uranium-233/234	12(0)	0.4047	0.7501	0.544	
	uranium-235	12(10)	< 0.00000908	0.0701		
	uranium-236	12(12)	0	< 0.01478		
	uranium-238	12(0)	0.171	0.4367	0.286	
610	americium-241	4(4)	0	< 0.02267		
	neptunium-237	4(4)	0	< 0.02339		
	plutonium-238	4(4)	0	< 0.05445		
	plutonium-239/240	4(4)	0	< 0.01556		
	technetium-99	12(10)	0	14		
	uranium	12(0)	1.04	50.33	25.66	
	uranium-233/234	12(0)	1.11	79.69	39.84	
	uranium-235	12(1)	< 0.02567	3.881	1.82	
	uranium-236	12(2)	< 0.000007675	0.3796		
	uranium-238	12(0)	0.3461	16.56	8.46	
611	americium-241	4(4)	0	< 0.02639		
	neptunium-237	4(4)	0	< 0.03018		
	plutonium-238	4(4)	0.007716	< 0.03087		
	plutonium-239/240	4(4)	0	< 0.00752		
	technetium-99	12(0)	126	1370	874	
	uranium	12(0)	4.18	6.595	5.023	
	uranium-233/234	12(0)	4.106	9.275	5.967	
	uranium-235	12(0)	0.1349	0.5201	0.263	
	uranium-236	12(7)	< 0.008274	0.06855		
	uranium-238	12(0)	1.384	2.169	1.664	

**Table 2.1. Radionuclide concentrations in LPP and USEC
NPDES outfall water samples – 2009 (continued)**

NPDES outfall ^a	Parameter ^b	Number of samples ^c	Minimum ^d	Maximum ^d	Average ^e	DCG ^f
<i>USEC Outfalls</i>						
001	americium-241	4(4)	< 0.019	< 0.099		30
	neptunium-237	4(4)	< 0.019	< 0.134		30
	plutonium-238	4(4)	< 0.019	< 0.09		40
	plutonium-239/240	4(4)	< 0.024	< 0.097		30
	technetium-99	52(34)	< 8.3	59.1		
	uranium	52(0)	0.28	4.84	1.28	
002	americium-241	4(4)	< 0.022	< 0.082		30
	neptunium-237	4(4)	< 0.02	< 0.108		30
	plutonium-238	4(4)	< 0.019	< 0.066		40
	plutonium-239/240	4(4)	< 0.019	< 0.074		30
	technetium-99	50(50)	< 8.24	< 9.6		100,000
	uranium	50(0)	0.37	1.16	0.65	
003	americium-241	4(4)	< 0.078	< 0.13		30
	neptunium-237	4(4)	< 0.023	< 0.125		30
	plutonium-238	4(4)	< 0.023	< 0.062		40
	plutonium-239/240	4(4)	< 0.024	< 0.078		30
	technetium-99	52(0)	75	279	139	100,000
	uranium	52(0)	2	15.5	7.05	
004	americium-241	4(4)	< 0.022	< 0.146		30
	neptunium-237	4(4)	< 0.02	< 0.079		30
	plutonium-238	4(4)	< 0.018	< 0.09		40
	plutonium-239/240	4(4)	< 0.018	< 0.082		30
	technetium-99	49(49)	< 8.22	< 9.46		100,000
	uranium	49(0)	0.121	11.6	1.26	
009	americium-241	4(4)	< 0.023	< 0.146		30
	neptunium-237	4(4)	< 0.02	< 0.055		30
	plutonium-238	4(4)	< 0.02	< 0.053		40
	plutonium-239/240	4(4)	< 0.02	< 0.055		30
	technetium-99	52(52)	< 8.22	< 9.59		100,000
	uranium	52(0)	2.68	8.23	4.88	
010	americium-241	4(4)	< 0.082	< 0.102		30
	neptunium-237	4(4)	< 0.017	< 0.087		30
	plutonium-238	4(4)	< 0.017	< 0.093		40
	plutonium-239/240	4(4)	< 0.017	< 0.081		30
	technetium-99	52(52)	< 8.22	< 9.58		100,000
	uranium	52(0)	0.75	3.88	2.10	

**Table 2.1. Radionuclide concentrations in LPP and USEC
NPDES outfall water samples – 2009 (continued)**

NPDES outfall ^a	Parameter ^b	Number of samples ^c	Minimum ^d	Maximum ^d	Average ^e	DCG ^f
<i>USEC Outfalls</i>						
011	americium-241	4(4)	< 0.025	< 0.106		30
	neptunium-237	4(4)	< 0.018	< 0.094		30
	plutonium-238	4(4)	< 0.015	< 0.071		40
	plutonium-239/240	4(4)	< 0.042	< 0.071		30
	technetium-99	52(52)	< 8.22	< 9.58		100,000
	uranium	52(0)	0.56	3.63	1.14	
012	americium-241	4(4)	< 0.025	< 0.15		30
	neptunium-237	4(4)	< 0.052	< 0.095		30
	plutonium-238	4(4)	< 0.022	< 0.065		40
	plutonium-239/240	4(4)	< 0.019	< 0.053		30
	technetium-99	52(52)	< 8.55	< 9.67		100,000
	uranium	52(0)	0.33	2.16	1.34	
013	americium-241	4(4)	< 0.032	< 0.111		30
	neptunium-237	4(4)	< 0.019	< 0.104		30
	plutonium-238	4(4)	< 0.02	< 0.098		40
	plutonium-239/240	4(4)	< 0.019	< 0.085		30
	technetium-99	52(52)	< 8.35	< 9.41		100,000
	uranium	52(0)	0.27	2.34	1.30	

^aLPP internal NPDES Outfalls 608, 610, and 611 discharge to USEC NPDES Outfall 003 (X-6619 Sewage Treatment Plant).

^bUranium is reported in µg/L; all other radionuclides are reported in pCi/L.

^cNumber in parentheses is the number of samples that were below the detection limit.

^dMinimum values reported as “0” may actually be negative results. Because of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out. These negative value results are reported as “0” in the table for simplicity.

^eAverages were not calculated for outfalls that had greater than 15% of the results below the detection limit. For outfalls with less than 15% of the results below the detection limit, any result below the detection limit was assigned a value at the detection limit to calculate the average for the parameter.

^fDerived Concentration Guide (DCG)(pCi/L). DCGs are not provided for LPP internal outfalls (Outfalls 608, 610, and 611) because water from these outfalls flows through another outfall prior to discharge from the site. A DCG is not available for uranium.

Table 2.2. LPP and UDS NPDES permit summaries – 2009

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Units	Measurement frequency	Sampling type	Concentration	
				Monthly	Daily
<i>LPP Outfall 015 (X-624 Groundwater Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hour total		
pH	SU	1/2 weeks	Grab		6.5–9.0
Trichloroethene	µg/L	1/2 weeks	Grab	10	10
PCBs	µg/L	1/quarter	Grab	<i>a</i>	<i>a</i>
<i>LPP Outfall 608 (X-622 Groundwater Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hour total		
pH	SU	1/2 weeks	Grab		
Trichloroethene	µg/L	1/2 weeks	Grab		10
1,2-trans-dichloroethene	µg/L	1/2 weeks	Grab	25	66
<i>LPP Outfall 610 (X-623 Groundwater Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hour total		
pH	SU	1/2 weeks	Grab		
Trichloroethene	µg/L	1/2 weeks	Grab	10	10
1,2-trans-dichloroethene	µg/L	1/2 weeks	Grab	25	66
<i>LPP Outfall 611 (X-627 Groundwater Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hour total		
pH	SU	1/2 weeks	Grab		
Trichloroethene	µg/L	1/2 weeks	Grab	10	10
<i>UDS Outfall 001</i>					
Water temperature	°F	Daily	Maximum	<i>b</i>	<i>b</i>
Flow rate	GPD	Daily	24-hour total		
Biochemical oxygen demand, 5-day	mg/L	1/week	24-hour composite		
pH	SU	1/day	Grab		6.5–9.0
Total suspended solids	mg/L	1/week	24-hour composite	30	45
Total suspended solids, loading	kg/day	1/week	-	0.9	1.4
Oil and grease, total	mg/L	1/month	Grab		
Nitrogen, ammonia	mg/L	1/week	24-hour composite		
Phosphorus, total	mg/L	1/week	24-hour composite		
Chlorine, total residual	mg/L	1/day	Grab		0.05
Dissolved solids, sum of	mg/L	1/week	24-hour composite		1500

^aNo detectable PCBs.

^bMaximum daily and monthly average limits vary according to month.

Table 2.3. LPP NPDES discharge and compliance rates – 2009

Parameter	NPDES compliance rate (%)	Number of measurements ^a	Concentration			Units
			Minimum	Maximum	Average ^b	
<i>Outfall 015 (X-624 Groundwater Treatment Facility)</i>						
Flow rate	c	365	0.0009	0.0375	0.00872	MGD
pH	100	26	6.83	8.22	7.54	SU
Trichloroethene	100	26(11)	< 0.16	7.95		µg/L
monthly average ^d	100	12	0	4.0	1.1	µg/L
PCBs	e	4(4)	< 0.092	< 1		µg/L
<i>Outfall 608 (X-622 Groundwater Treatment Facility)</i>						
Flow rate	c	365	0.0053	0.0746	0.0554	MGD
pH	f	26	7.37	8.63	7.91	SU
Trichloroethene	100	26(10)	< 0.16	4.1		µg/L
1,2-trans-dichloroethene	100	26(26)	< 0.15	< 0.5		µg/L
monthly average ^d	100	12	0	0	0	µg/L
<i>Outfall 610 (X-623 Groundwater Treatment Facility)</i>						
Flow rate	c	365	0	0.0592	0.00619	MGD
pH	f	26	7.26	8.35	7.72	SU
Trichloroethene	100	26(20)	< 0.16	< 1		µg/L
monthly average ^g	100	12	0	0.28	0.06	µg/L
1,2-trans-dichloroethene	100	26(26)	< 0.15	< 0.5		µg/L
monthly average ^d	100	12	0	0	0	µg/L
<i>Outfall 611 (X-627 Groundwater Treatment Facility)</i>						
Flow rate	c	365	0.013	0.029	0.0213	MGD
pH	f	26	7.67	8.32	8.08	SU
Trichloroethene	100	26(2)	0.17	1.6	0.69	µg/L
monthly average ^d	100	12	0	1.6	0.62	µg/L

^aNumber in parentheses is the number of samples that were below the detection limit.

^bAverages were not calculated for outfalls that had greater than 15% of the results below the detection limit. For outfalls with less than 15% of the results below the detection limit, any result below the detection limit was assigned a value at the detection limit for calculating an average for the parameter.

^cFlow rate does not have a numerical limit; therefore, no compliance rates are generated.

^dTo compute the monthly average, parameters that are undetected are assumed to be zero.

^eThe permit specifies no detectable PCBs in the effluent without setting a numerical limit of detection.

^fMonitoring only required; therefore, no compliance rates are generated.

Table 2.4. UDS NPDES discharge and compliance rates – 2009

Parameter	NPDES compliance rate (%)	Number of measurements ^a	Concentration			Units
			Minimum	Maximum	Average ^b	
<i>Outfall 001</i>						
Biochemical oxygen demand	<i>d</i>	17(0)	0	30.3	6.08	mg/L
Chlorine, total residual	100	18(0)	0	0.0375	0.02	mg/L
Dissolved solids	89	18(0)	16.1	4450	688	mg/L
Flow rate	<i>c</i>	18	2500	20000	8638	GPD
Nitrogen-ammonia	<i>d</i>	18(0)	0	0.207	0.090	mg/L
Oil and grease	<i>d</i>	11(0)	1.8	6.3	3.1	mg/L
pH	100	18	7.01	7.83	7.38	SU
Phosphorus, total	<i>d</i>	18(0)	0	0.42	0.067	mg/L
Suspended solids, total monthly average	67 50	18(0) 10	4.7 4.7	91.5 71.1	37.7 32.9	mg/L
Temperature monthly average	100 90	18 10	36.68 36.7	74 72	59 59.6	°F

^aNumber in parentheses is the number of samples that were below the detection limit.^bAverages were not calculated for outfalls that had greater than 15% of the results below the detection limit. For outfalls with less than 15% of the results below the detection limit, any result below the detection limit was assigned a value at the detection limit for calculating an average for the parameter.^cFlow rate does not have a numerical limit; therefore, no compliance rates are generated.^dMonitoring only required; therefore, no compliance rates are generated.

Table 2.5. USEC NPDES discharge monitoring results – 2009

Parameter	Number of samples ^a	Concentration			Units
		Minimum	Maximum	Average ^b	
<i>Outfall 001 (X-230J7 East Holding Pond)</i>					
Cadmium, total recoverable	12(12)	< 0.21	< 6		µg/L
Chlorine, total residual	48(47)	< 0.02	0.02		mg/L
Dissolved solids	48(0)	112	298	212	mg/L
Flow rate	365	0.599	5.460	1.346	MGD
Fluoride, total	13(4)	< 0.1	0.2		mg/L
Oil and grease, total	49(49)	< 5	< 5		mg/L
pH	51	6.90	8.60	7.59	SU
Silver, total recoverable	12(11)	< 1.58	< 7.38		µg/L
Suspended solids	48(38)	< 2	16		mg/L
Zinc, total recoverable	12(1)	< 4.19	34.1	16.7	µg/L
<i>Outfall 002 (X-230K South Holding Pond)</i>					
Cadmium, total recoverable	14(14)	< 1	< 1		µg/L
Flow rate	365	0	1.343	0.470	MGD
Fluoride, total	13(4)	< 0.1	0.2		mg/L
Mercury, total	12(0)	0.7	3.0	1.8	ng/L
Oil and grease, total	46(46)	< 5	< 5		mg/L
pH	46	6.88	8.24	7.61	SU
Silver, total recoverable	46(46)	< 1	< 1		µg/L
Suspended solids	46(1)	< 2	16.8		mg/L
Thallium, total recoverable	46(46)	< 1	< 1		µg/L
<i>Outfall 003 (X-6619 Sewage Treatment Plant)</i>					
Acute toxicity, <i>Ceriodaphnia dubia</i>	6(6)	< 1	< 1		Tua
Acute toxicity, <i>Pimephales promelas</i>	6(6)	< 1	< 1		Tua
Ammonia, nitrogen	25(15)	< 0.1	4.5		mg/L
Biochemical oxygen demand	49(47)	< 5	6.3		mg/L
Chlorine, total residual	126(126)	< 0.02	< 0.02		mg/L
Copper, total recoverable	18(10)	< 3.14	11.9		µg/L
Fecal coliform	24(0)	5	1114	69	#/100 mL
Flow rate	365	0.108	0.571	0.305	MGD
Mercury, total	12(0)	2.6	92.1	30.1	ng/L
Nitrite + nitrate	12(0)	5.7	9.0	7.4	mg/L
Oil and grease, total	4(3)	< 5	6		mg/L
pH	249	6.87	8.20	7.31	SU
Silver, total recoverable	17(15)	< 1.58	< 7.38		µg/L
Suspended solids	49(12)	< 2	12.6		mg/L
Zinc, total recoverable	18(0)	14.8	58.3	35.4	µg/L
<i>Outfall 004 (Cooling Tower Blowdown)</i>					
Acute toxicity, <i>Ceriodaphnia dubia</i>	6(6)	< 1	< 1		Tua
Acute toxicity, <i>Pimephales promelas</i>	6(6)	< 1	< 1		Tua

Table 2.5. USEC NPDES discharge monitoring results – 2009 (continued)

Parameter	Number of samples ^a	Concentration			Units
		Minimum	Maximum	Average ^b	
<i>Outfall 004 (Cooling Tower Blowdown) (continued)</i>					
Chlorine, total residual	45(44)	< 0.02	0.5		mg/L
Copper, total recoverable	16(0)	9.0	24.6	16.5	µg/L
Dissolved solids	13(0)	171	436	298	mg/L
Flow rate	365	0	0.792	0.332	MGD
Mercury, total	12(0)	2.2	7.8	4.0	ng/L
Oil and grease, total	13(13)	< 5	< 5		mg/L
pH	12	7.09	7.78	7.50	SU
Suspended solids	13(11)	< 2	7.2		mg/L
Zinc, total recoverable	16(1)	< 4.19	52.8	32.9	µg/L
<i>Outfall 005 (X-611B Lime Sludge Lagoon)^c</i>					
Flow rate	0				MGD
pH	0				SU
Suspended solids	0				mg/L
<i>Outfall 009 (X-230L North Holding Pond)</i>					
Cadmium, total recoverable	15(15)	< 0.21	< 6		µg/L
Flow rate	364	0.121	2.823	0.412	MGD
Fluoride, total	12(1)	< 0.1	0.2		mg/L
Oil and grease, total	12(12)	< 5	< 5		mg/L
pH	50	7.34	8.41	7.83	SU
Suspended solids	48(4)	< 2	29.6	7.0	mg/L
Zinc, total recoverable	15(2)	< 4.19	59.6	17.2	µg/L
<i>Outfall 010 (X-230J5 Northwest Holding Pond)</i>					
Cadmium, total recoverable	16(16)	< 0.21	< 6		µg/L
Flow rate	364	0.018	0.847	0.364	MGD
Mercury, Total	12(2)	< 0.5	6.7		ng/L
Oil and grease, total	14(14)	< 5	< 5		mg/L
pH	29	7.43	8.23	7.73	SU
Suspended solids	24(10)	< 2	10		mg/L
Zinc, total recoverable	16(3)	< 4.19	< 57.7		µg/L
<i>Outfall 011 (X-230J6 Northeast Holding Pond)</i>					
Cadmium, total recoverable	14(14)	< 0.21	< 6		µg/L
Chlorine, total residual	24(24)	< 0.02	< 0.02		mg/L
Copper, total recoverable	14(9)	3.77	9		µg/L
Flow rate	365	0	0.187	0.014	MGD
Fluoride, total	12(1)	< 0.1	0.3		mg/L
Oil and grease, total	24(24)	< 5	< 5		mg/L
pH	24	7.13	8.32	7.73	SU
Suspended solids	24(20)	< 2	4.4		mg/L
Zinc, total recoverable	14(2)	4.19	42.6	21.4	µg/L
<i>Outfall 012 (X-230M Southwest Holding Pond)</i>					
Chlorine	24(24)	< 0.02	< 0.02		mg/L
Flow rate	361	0.006	1.790	0.201	mg/L
Iron	24(0)	114	1670	487	MGD
Oil and grease	24(24)	< 5	< 5		mg/L
PCBs, total	4(4)	< 0.5	< 0.5		µg/L
pH	24	6.98	8.40	7.87	SU
Suspended solids	24(5)	< 2	21.4		mg/L
Trichloroethene	24(24)	< 1	< 1		µg/L

Table 2.5. USEC NPDES discharge monitoring results – 2009 (continued)

Parameter	Number of samples ^a	Concentration			Units
		Minimum	Maximum	Average ^b	
<i>Outfall 013 (X-230N West Holding Pond)</i>					
Chlorine	24(24)	< 0.02	< 0.02		mg/L
Flow rate	361	0.017	1.294	0.212	MGD
Oil and grease	30(30)	< 5	< 5		mg/L
PCBs, total	4(4)	< 0.5	< 0.5		µg/L
pH	24	7.38	8.41	7.96	SU
Suspended solids	24(11)	< 2	14		mg/L
<i>Outfall 602 (X-621 Coal Pile Runoff Treatment Facility)</i>					
Flow rate	365	0	0.170	0.030	MGD
Iron, total	23(0)	52	3860	621	µg/L
Manganese, total	23(0)	5.7	172	52.2	µg/L
pH	23	7.08	9.49	8.29	SU
Suspended solids	23(4)	< 2	30.8		mg/L
<i>Outfall 604 (X-700 Biodenitrification Facility)</i>					
Copper, total	9(2)	< 3.14	25.1		µg/L
Flow rate	304	0	0.023	0.005	MGD
Iron, total	9(0)	69.7	439	182	µg/L
Nickel, total	9(7)	< 7.09	< 11.5		µg/L
Nitrate, nitrogen	9(2)	< 0.1	57.9		mg/L
pH	9	6.90	7.83	7.41	SU
Zinc, total	9(0)	2.7	26	10	µg/L
<i>Outfall 605 (X-705 Decontamination Microfiltration System)</i>					
Ammonia, nitrogen	12(7)	< 0.1	1.9		mg/L
Chromium, hexavalent	12(6)	< 1.05	7.14		mg/L
Chromium, total	12(12)	< 0.01	< 0.01		µg/L
Copper, total	12(4)	< 3.14	22.8		µg/L
Flow rate	365	0	0.085	0.004	MGD
Iron, total	12(1)	4.4	139	26.2	µg/L
Kjeldahl nitrogen	12(0)	0.6	3	1.4	mg/L
Nickel, total	12(8)	< 1.6	13.6		µg/L
Nitrogen, nitrate	12(0)	0.3	153	57.6	mg/L
Nitrogen, nitrite	12(10)	< 0.1	0.84		mg/L
Oil and grease, total	12(11)	< 5	5.4		mg/L
pH	12	6.95	9.02	7.87	SU
Sulfate	12(0)	50	80.2	64.8	mg/L
Suspended solids	12(12)	< 2	< 2		mg/L
Trichloroethene	12(12)	< 1	< 5		µg/L
Zinc, total	12(2)	1.48	15.5		µg/L
<i>Outfall 613 (X-6002 Particulate Separator)</i>					
Chlorine	13(12)	< 0.02	0.07		mg/L
Flow rate	242	0	0.012	0.00039	MGD
Suspended solids	13(10)	< 2	4.4		mg/L

Table 2.5. USEC NPDES discharge monitoring results – 2009 (continued)

Parameter	Number of samples ^a	Concentration			Units
		Minimum	Maximum	Average ^b	
<i>Station Number 801 (Scioto River control sample, upstream of Outfalls 003 and 004)</i>					
48-hr. acute toxicity, <i>Ceriodaphnia dubia</i>	6	0	0		% affected
96-hr. acute toxicity, <i>Pimephales promelas</i>	6	0	0		% affected
<i>Station Number 902 (downstream of Outfall 001)</i>					
Water temperature	98	2	30	17	°C
<i>Station Number 903 (downstream of Outfall 002)</i>					
Water temperature	96	1	28	15	°C

^aNumber in parentheses is the number of samples that were below the detection limit.

^bAverages were not calculated for outfalls that had greater than 15% of the results below the detection limit. For outfalls with less than 15% of the results below the detection limit, any result below the detection limit was assigned a value at the detection limit for calculating an average for the parameter.

^cOutfall 005 did not discharge in 2009.

Table 2.6. Radionuclides in surface water runoff samples from UDS depleted uranium cylinder storage yards – 2009

Sample location	Parameter	Units	Number of samples ^a	Minimum ^b	Maximum ^b	Average ^c
X745-C1	alpha activity	pCi/L	12(7)	< 0.851	9.24	
	beta activity	pCi/L	12(0)	2.63	10.2	5.9
	uranium	µg/L	12(0)	1.39	15.9	4.9
X745-C2	alpha activity	pCi/L	12(1)	< 1.55	13	7.9
	beta activity	pCi/L	12(0)	4.58	11.7	7.6
	uranium	µg/L	12(0)	2.33	15.4	12.2
X745-C3	alpha activity	pCi/L	12(7)	< 0.323	5.42	
	beta activity	pCi/L	12(3)	< 2.16	10.1	
	uranium	µg/L	12(0)	0.536	6.13	2.5
X745-C4	alpha activity	pCi/L	12(1)	0	17.5	7.6
	beta activity	pCi/L	12(1)	< 2.62	22.7	8.9
	uranium	µg/L	12(0)	1.16	13.2	8.8
X745-E1	alpha activity	pCi/L	12(6)	< 0.0784	7.22	
	beta activity	pCi/L	12(0)	4.28	15.7	9.4
	uranium	µg/L	12(0)	0.968	2.63	1.7
X745-G1A ^d	alpha activity	pCi/L	10(4)	< 1.09	8.2	
	beta activity	pCi/L	10(0)	3.65	16.3	8.5
	uranium	µg/L	10(0)	0.661	10.5	3.7
X745-G2	alpha activity	pCi/L	12(7)	0	15.1	
	beta activity	pCi/L	12(3)	< 1.5	16.1	
	uranium	µg/L	12(0)	1.6	3.53	2.5

^aNumber in parentheses is the number of samples that were below the detection limit.

^bMinimum values reported as “0” may actually be negative results. Because of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out. These negative value results are reported as “0” in the table for simplicity.

^cAverages were not calculated for locations that had greater than 15% of the results below the detection limit. For locations with less than 15% of the results below the detection limit, any result below the detection limit was assigned a value at the detection limit to calculate the average for the parameter.

^dSampling location X745-G1A was dry in September and November; no samples could be collected.

Table 2.7. Drainage basin monitoring of surface water and sediment for UDS depleted uranium cylinder storage yards – 2009

Location	Parameter ^a	First quarter ^b			Second quarter ^b		
		SW-F	SW-UF	Sed	SW-F	SW-UF	Sed
UDS X01	PCB-1242	0.105U	0.104U	24.6U	0.104U	0.104U	26.2U
	PCB-1248	0.105U	0.104U	24.6U	0.104U	0.104U	26.2U
	PCB-1254	0.105U	0.104U	24.6U	0.104U	0.104U	19.4JP
	PCB-1260	0.105U	0.104U	49.1	0.104U	0.104U	35.1
	PCB-1262	0.105U	0.104U	24.6U	0.104U	0.104U	26.2U
	PCB-1268	0.105U	0.104U	24.6U	0.104U	0.104U	26.2U
	Total PCB	0.105U	0.104U	49.1	0.104U	0.104U	54.5
RM-8	PCB-1242	0.105U	0.114U	24.5U	0.105U	0.108U	22U
	PCB-1248	0.105U	0.114U	24.5U	0.105U	0.108U	22U
	PCB-1254	0.22P	0.114U	24.5U	0.105U	0.108U	36.4P
	PCB-1260	0.105U	0.114U	117	0.105U	0.108U	71.9
	PCB-1262	0.105U	0.114U	24.5U	0.105U	0.108U	22U
	PCB-1268	0.105U	0.114U	24.5U	0.105U	0.108U	22U
	Total PCB	0.22JP	0.114U	117	0.105U	0.108U	108
UDS X02	PCB-1242	0.106U	0.112U	22.8U	0.111U	0.108U	26.2U
	PCB-1248	0.106U	0.112U	22.8U	0.111U	0.108U	26.2U
	PCB-1254	0.106U	0.112U	22.8U	0.111U	0.108U	58.8P
	PCB-1260	0.106U	0.112U	161	0.111U	0.108U	139
	PCB-1262	0.106U	0.112U	22.8U	0.111U	0.108U	26.2U
	PCB-1268	0.106U	0.112U	22.8U	0.111U	0.108U	26.2U
	Total PCB	0.106U	0.112U	161	0.111U	0.108U	198
RM-10	PCB-1242	0.106U	0.108U	23.2U	0.118U	0.103U	4.27U
	PCB-1248	0.106U	0.108U	23.2U	0.118U	0.103U	4.27U
	PCB-1254	0.106U	0.108U	23.2U	0.118U	0.103U	4.27U
	PCB-1260	0.106U	0.108U	24.7	0.118U	0.103U	5.6
	PCB-1262	0.106U	0.108U	23.2U	0.118U	0.103U	4.27U
	PCB-1268	0.106U	0.108U	23.2U	0.118U	0.103U	4.27U
	Total PCB	0.106U	0.108U	24.7	0.118U	0.103U	5.6J

Table 2.7. Drainage basin monitoring of surface water and sediment for UDS depleted uranium cylinder storage yards – 2009 (continued)

Location	Parameter ^a	Third quarter ^b			Fourth quarter ^b		
		SW-F	SW-UF	Sed	SW-F	SW-UF	Sed
UDS X01	PCB-1242	0.104U	0.104U	186	0.113U	0.11U	23.3U
	PCB-1248	0.104U	0.104U	26.1U	0.113U	0.11U	23.3U
	PCB-1254	0.104U	0.104U	321	0.113U	0.11U	23.3U
	PCB-1260	0.104U	0.104U	101	0.113U	0.11U	24.9
	PCB-1262	0.104U	0.104U	26.1U	0.113U	0.11U	23.3U
	PCB-1268	0.104U	0.104U	26.1U	0.113U	0.11U	23.3U
	Total PCB	0.104U	0.104U	608	0.113U	0.11U	24.9
RM-8	PCB-1242	0.11U	0.104U	4.26U	0.105U	0.104U	4.3U
	PCB-1248	0.11U	0.104U	4.26U	0.105U	0.104U	4.3U
	PCB-1254	0.11U	0.104U	14.9P	0.105U	0.104U	26.8P
	PCB-1260	0.11U	0.104U	29.3	0.105U	0.104U	44.8
	PCB-1262	0.11U	0.104U	4.26U	0.105U	0.104U	4.3U
	PCB-1268	0.11U	0.104U	4.26U	0.105U	0.104U	4.3U
	Total PCB	0.11U	0.104U	44.2	0.105U	0.104U	71.6
UDS X02	PCB-1242	0.105U	0.104U	5.4U	0.112U	0.105U	24.5U
	PCB-1248	0.105U	0.104U	5.4U	0.112U	0.105U	24.5U
	PCB-1254	0.105U	0.104U	42P	0.112U	0.105U	24.5U
	PCB-1260	0.105U	0.104U	148	0.112U	0.105U	136P
	PCB-1262	0.105U	0.104U	5.4U	0.112U	0.105U	24.5U
	PCB-1268	0.105U	0.104U	5.4U	0.112U	0.105U	24.5U
	Total PCB	0.105U	0.104U	190	0.112U	0.105U	136P
RM-10	PCB-1242	0.104U	0.104U	4.51U	0.104U	0.109U	4.24U
	PCB-1248	0.104U	0.104U	4.51U	0.104U	0.109U	4.24U
	PCB-1254	0.104U	0.104U	6.3	0.104U	0.109U	4.24U
	PCB-1260	0.104U	0.104U	21.6	0.104U	0.109U	4.24U
	PCB-1262	0.104U	0.104U	4.51U	0.104U	0.109U	4.24U
	PCB-1268	0.104U	0.104U	4.51U	0.104U	0.109U	4.24U
	Total PCB	0.104U	0.104U	27.9	0.104U	0.109U	4.24U

^aResults for surface water (SW) are reported in µg/L; results for sediment (Sed) are reported in µg/kg.

^bAbbreviations and data qualifiers are as follows: SW-F – filtered surface water; SW-UF – unfiltered surface water; Sed – sediment; J – the reported value is an estimated concentration greater than the method detection limit but less than the practical quantitation limit; P – there is a greater than 25% difference for detected concentrations between two gas chromatograph columns. U – undetected.

Table 2.8. Ambient air monitoring program summary for radionuclides and fluoride – 2009

Sampling Location	Parameter ^a	No. of measurements ^b	Minimum ^{c, d}	Maximum ^c	Average ^{c, e}
<i>On-site air samplers</i>					
A8	americium-241	4(4)	0	6.5E-06	
	fluoride	46(27)	2.1E-02	6.8E-02	
	neptunium-237	4(4)	0	2.9E-09	
	plutonium-238	4(4)	1.9E-09	6.4E-06	
	plutonium-239/240	4(4)	0	6.2E-06	
	technetium-99	12(12)	0	1.3E-03	
	uranium	12(0)	4.3E-04	1.3E-03	9.0E-04
	uranium-233/234	12(0)	2.3E-04	7.4E-04	4.3E-04
	uranium-235	12(8)	5.9E-09	4.1E-05	
	uranium-236	12(12)	0	1.1E-05	
	uranium-238	12(0)	1.4E-04	4.5E-04	3.0E-04
A10	americium-241	4(4)	1.9E-06	6.1E-06	
	fluoride	47(28)	8.3E-03	4.1E-02	
	neptunium-237	4(4)	0	4.0E-06	
	plutonium-238	4(4)	3.8E-09	7.9E-06	
	plutonium-239/240	4(4)	0	5.1E-06	
	technetium-99	12(12)	0	9.8E-04	
	uranium	12(0)	4.6E-04	1.2E-03	9.2E-04
	uranium-233/234	12(0)	2.6E-04	7.0E-04	4.5E-04
	uranium-235	12(3)	3.1E-06	3.8E-05	
	uranium-236	12(10)	0	1.9E-05	
	uranium-238	12(0)	1.5E-04	4.0E-04	3.1E-04
A29	americium-241	4(4)	2.3E-09	9.8E-06	
	fluoride	47(27)	1.7E-02	7.7E-02	
	neptunium-237	4(4)	0	1.9E-06	
	plutonium-238	4(4)	0	3.5E-06	
	plutonium-239/240	4(4)	0	3.9E-09	
	technetium-99	12(12)	0	7.8E-04	
	uranium	12(0)	4.2E-04	1.5E-02	2.1E-03
	uranium-233/234	12(0)	2.2E-04	4.9E-03	8.3E-04
	uranium-235	12(4)	4.6E-06	2.0E-04	
	uranium-236	12(11)	0	3.2E-05	
	uranium-238	12(0)	1.4E-04	5.1E-03	7.1E-04
A36	americium-241	4(4)	0	6.4E-06	
	fluoride	47(13)	2.3E-02	7.8E-02	
	neptunium-237	4(4)	0	2.8E-06	
	plutonium-238	4(4)	0	1.1E-05	
	plutonium-239/240	4(4)	0	6.4E-06	
	technetium-99	12(12)	0	1.5E-03	
	uranium	12(0)	4.1E-04	2.8E-03	1.1E-03
	uranium-233/234	12(0)	1.9E-04	1.3E-03	6.5E-04
	uranium-235	12(7)	5.1E-06	6.1E-05	
	uranium-236	12(12)	0	8.9E-06	
	uranium-238	12(0)	1.4E-04	9.2E-04	3.8E-04
A40	fluoride	47(4)	2.2E-02	1.7E-01	7.2E-02

Table 2.8. Ambient air monitoring program summary for radionuclides and fluoride – 2009 (continued)

Sampling Location	Parameter ^a	No. of measurements ^b	Minimum ^{c, d}	Maximum ^c	Average ^{c, e}
<i>On-site air samplers</i>					
T7	americium-241	4(4)	0	9.6E-06	
	neptunium-237	4(4)	0	1.9E-06	
	plutonium-238	4(4)	1.9E-06	8.5E-06	
	plutonium-239/240	4(4)	0	3.9E-06	
	technetium-99	12(12)	0	1.4E-03	
	uranium	12(0)	3.6E-04	1.6E-03	8.7E-04
	uranium-233/234	12(0)	1.7E-04	8.7E-04	3.9E-04
	uranium-235	12(3)	5.2E-06	4.0E-05	
	uranium-236	12(12)	0	7.2E-06	
	uranium-238	12(0)	1.2E-04	5.2E-04	2.9E-04
<i>Off-site air samplers</i>					
A3	americium-241	4(4)	0	6.8E-06	
	fluoride	47(19)	1.8E-02	4.3E-01	
	neptunium-237	4(4)	0	5.9E-06	
	plutonium-238	4(4)	2.2E-06	1.2E-05	
	plutonium-239/240	4(4)	0	8.8E-06	
	technetium-99	12(12)	0	1.3E-03	
	uranium	12(0)	4.8E-04	3.0E-03	1.1E-03
	uranium-233/234	12(0)	1.7E-04	1.3E-03	5.3E-04
	uranium-235	12(9)	0	4.7E-05	
	uranium-236	12(12)	0	1.6E-05	
	uranium-238	12(0)	1.6E-04	9.9E-04	3.6E-04
A6	americium-241	4(4)	3.5E-09	1.3E-05	
	fluoride	47(38)	2.6E-02	5.0E-02	
	neptunium-237	4(4)	0	3.7E-06	
	plutonium-238	4(4)	0	5.5E-06	
	plutonium-239/240	4(4)	0	7.4E-06	
	technetium-99	12(12)	0	5.1E-04	
	uranium	12(0)	4.5E-04	1.1E-03	8.6E-04
	uranium-233/234	12(0)	1.4E-04	6.7E-04	3.7E-04
	uranium-235	12(8)	0	3.7E-05	
	uranium-236	12(12)	0	4.2E-06	
	uranium-238	12(0)	1.5E-04	3.8E-04	2.9E-04
A9	americium-241	4(4)	2.1E-06	9.5E-06	
	fluoride	47(43)	1.8E-02	2.0E-01	
	neptunium-237	4(4)	0	1.8E-06	
	plutonium-238	4(4)	2.9E-06	7.3E-06	
	plutonium-239/240	4(4)	0	8.0E-06	
	technetium-99	12(12)	0	1.0E-03	
	uranium	12(0)	3.2E-04	1.6E-03	9.2E-04
	uranium-233/234	12(0)	1.4E-04	1.1E-03	4.5E-04
	uranium-235	12(9)	2.0E-06	7.6E-05	
	uranium-236	12(12)	0	9.7E-06	
	uranium-238	12(0)	1.1E-04	5.3E-04	3.1E-04

Table 2.8. Ambient air monitoring program summary for radionuclides and fluoride – 2009 (continued)

Sampling Location	Parameter ^a	No. of measurements ^b	Minimum ^{c, d}	Maximum ^c	Average ^{c, e}
A12	americium-241	4(4)	4.2E-09	1.2E-05	
	fluoride	47(22)	1.4E-02	6.6E-02	
	neptunium-237	4(4)	0	2.8E-06	
	plutonium-238	4(4)	2.1E-06	8.4E-06	
	plutonium-239/240	4(4)	0	8.4E-06	
	technetium-99	12(12)	0	1.2E-03	
	uranium	12(0)	4.3E-04	1.5E-03	9.7E-04
	uranium-233/234	12(0)	2.0E-04	7.7E-04	5.0E-04
	uranium-235	12(6)	5.7E-06	3.0E-05	
	uranium-236	12(12)	0	1.1E-05	
	uranium-238	12(0)	1.4E-04	5.0E-04	3.2E-04
A15	americium-241	4(4)	0	6.7E-06	
	fluoride	47(31)	1.6E-02	3.3E-01	
	neptunium-237	4(4)	0	5.6E-06	
	plutonium-238	4(4)	0	4.9E-06	
	plutonium-239/240	4(4)	0	4.9E-06	
	technetium-99	12(12)	0	1.1E-03	
	uranium	12(0)	4.6E-04	1.3E-03	8.7E-04
	uranium-233/234	12(0)	1.9E-04	7.5E-04	4.2E-04
	uranium-235	12(8)	0	3.1E-05	
	uranium-236	12(12)	0	7.6E-06	
	uranium-238	12(0)	1.6E-04	4.4E-04	2.9E-04
A23	americium-241	4(4)	0	2.1E-06	
	fluoride	47(28)	1.6E-02	7.0E-02	
	neptunium-237	4(4)	0	2.0E-06	
	plutonium-238	4(4)	3.9E-06	1.2E-05	
	plutonium-239/240	4(4)	2.0E-09	5.9E-06	
	technetium-99	12(11)	0	2.8E-03	
	uranium	12(0)	4.8E-04	1.7E-03	1.0E-03
	uranium-233/234	12(0)	2.1E-04	9.7E-04	5.5E-04
	uranium-235	12(4)	9.0E-06	4.9E-05	
	uranium-236	12(10)	0	2.3E-05	
	uranium-238	12(0)	1.6E-04	5.6E-04	3.3E-04
A24	americium-241	4(4)	2.5E-06	1.4E-05	
	fluoride	47(29)	1.7E-02	5.6E-02	
	neptunium-237	4(4)	0	0	
	plutonium-238	4(4)	0	9.0E-06	
	plutonium-239/240	4(4)	0	2.9E-06	
	technetium-99	12(11)	0	3.1E-03	
	uranium	12(0)	3.0E-04	1.6E-03	8.8E-04
	uranium-233/234	12(0)	2.0E-04	8.4E-04	4.6E-04
	uranium-235	12(5)	2.2E-06	4.0E-05	
	uranium-236	12(12)	0	2.1E-05	
	uranium-238	12(0)	9.9E-05	5.4E-04	2.9E-04

Table 2.8. Ambient air monitoring program summary for radionuclides and fluoride – 2008 (continued)

Sampling Location	Parameter ^a	No. of measurements ^b	Minimum ^{c, d}	Maximum ^c	Average ^{c, e}
A28	americium-241	4(4)	0	1.3E-05	
	fluoride	47(27)	2.0E-02	5.6E-02	
	neptunium-237	4(4)	0	6.2E-06	
	plutonium-238	4(4)	0	6.2E-06	
	plutonium-239/240	4(4)	0	2.1E-09	
	technetium-99	12(12)	0	8.7E-04	
	uranium	12(0)	5.2E-04	1.6E-02	2.2E-03
	uranium-233/234	12(0)	2.1E-04	5.1E-03	7.6E-04
	uranium-235	12(8)	3.7E-06	2.8E-04	
	uranium-236	12(11)	0	3.1E-05	
	uranium-238	12(0)	1.7E-04	5.4E-03	7.3E-04
A37 (background)	americium-241	4(4)	2.1E-06	1.4E-05	
	fluoride	47(24)	2.2E-02	9.8E-02	
	neptunium-237	4(4)	0	3.1E-06	
	plutonium-238	4(4)	0	9.4E-06	
	plutonium-239/240	4(4)	0	3.8E-06	
	technetium-99	12(12)	0	6.0E-04	
	uranium	12(0)	5.1E-04	1.2E-03	8.2E-04
	uranium-233/234	12(0)	1.6E-04	5.6E-04	3.5E-04
	uranium-235	12(7)	2.5E-06	3.6E-05	
	uranium-236	12(12)	0	7.8E-06	
	uranium-238	12(0)	1.7E-04	3.9E-04	2.7E-04
A41	americium-241	4(4)	5.7E-06	1.2E-05	
	fluoride	47(31)	7.5E-03	5.1E-02	
	neptunium-237	4(4)	0	4.2E-06	
	plutonium-238	4(4)	2.1E-09	6.9E-06	
	plutonium-239/240	4(4)	0	6.2E-06	
	technetium-99	12(12)	0	1.0E-03	
	uranium	12(0)	5.1E-04	1.3E-03	8.6E-04
	uranium-233/234	12(0)	2.4E-04	5.4E-04	3.7E-04
	uranium-235	12(10)	9.3E-09	4.5E-05	
	uranium-236	12(12)	0	4.1E-06	
	uranium-238	12(0)	1.7E-04	4.2E-04	2.9E-04

^aAll parameters are measured in pCi/m³ with the exception of uranium and fluoride which are measured in µg/m³.

^bRadiological samples for technetium-99, uranium, and uranium isotopes are analyzed monthly, samples for americium-241, neptunium-237, plutonium-238, and plutonium-239/240 are analyzed one month per quarter, and samples for fluoride are analyzed weekly. Number in parentheses is the number of samples that were below the detection limit. If the analytical result for a sample was below the detection limit, the ambient air concentration was calculated based on the detection limit for the sample.

^cResults are provided in scientific notation. The number and sign (+ or -) to the right of the “E” indicate the number of places to the right or left of the decimal point. For example, 3.4E-04 is 0.00034 (the decimal point moves four places to the left); 2.1E+02 is 210 (the decimal point moves two places to the right).

^dValues reported as “0” may actually be negative results. Because of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out. These negative value results are reported as “0” in the table for simplicity.

^eAverages are not calculated for locations that had greater than 15% of the results below the detection limit.

Table 2.9. DOE environmental radiation monitoring program (mrem) – 2009

Location	First quarter	Second quarter	Third quarter	Fourth quarter	Cumulative annual whole body dose ^a
#1404A	17	18	23	20	78
#518	17	19	23	18	77
#862	28	32	36	28	124
#874	144	198	192	153	687
#906	16	17	21	18	72
#933	38	40	50	45	173
A12	16	19	25	19	79
A15	16	19	26	21	82
A23	19	20	23	20	82
A24	18	21	26	20	85
A28	16	19	23	19	77
A29	19	20	25	21	85
A3	16	19	20	18	73
A36	18	18	23	18	77
A40	13	14	17	17	61
A6	16	17	24	18	75
A8	22	22	28	23	95
A9	17	19	25	21	82
X-230J2	17	21	24	20	82
Control ^b	16	18	23	17	74
Trip blank ^b	20	19	24	23	86

^aThe annual occupational whole body dose limit set by 10 CFR Part 20 is 5000 mrem.

^bThe control dosimeter is sent from the laboratory at the beginning of the quarter, remains at PORTS throughout the quarter in a low background location, and is returned to the laboratory with the other dosimeters at the end of the quarter. The trip blank dosimeter is sent from the laboratory at the beginning of the quarter, accompanies the sample team to the field locations at the beginning and end of each quarter and is returned to the laboratory with the other dosimeters at the end of the quarter. The control and trip blank measurements are an indication of background radiation.

Table 2.10. Environmental radiation monitoring (mrem) at locations near UDS depleted uranium cylinder storage yards – 2009

Location	First quarter			Second quarter		
	Deep ^{a,b}		Shallow ^c	Deep ^{a,b}		Shallow ^c
	X+G	N		X+G	N	
#41	52	ND	52	65	ND	65
#868	323	ND	323	419	ND	419
#874	143	ND	143	197	ND	197
#882	203	ND	203	261	ND	261
#890	45	ND	45	53	ND	53
Trip blank	19	ND	19	20	ND	20

	Third quarter		Fourth quarter		Annual (total)		
	Deep ^{a,b}		Shallow ^c		Deep ^{a,b}		Shallow ^c
	X+G	N	X+G	N	X+G	N	
#41	72	ND	72	60	ND	60	249
#868	473	ND	473	334	ND	334	1549
#874	198	ND	198	150	ND	150	688
#882	254	ND	254	219	ND	219	937
#890	63	ND	63	50	ND	50	211
Trip blank	24	ND	24	23	ND	23	86

^aND – not detected above the minimum reportable dose.

^bDeep dose (dose equivalent at a tissue depth of 1 cm) applies to external whole body exposure and consists of x-ray and gamma radiation (X+G) and neutron radiation (N).

^cShallow dose (dose equivalent at a tissue depth of 0.007 cm) applies to exposure of the skin or an extremity.

Table 2.11. Local surface water monitoring program results – 2009

Location	Parameter ^{a,b}	Second quarter ^{c,d}	Fourth quarter ^{c,d}
Scioto River RW-1 (downstream)	americium-241	0.000008861U	0.0123U
	neptunium-237	0.01483U	-0.007379U
	plutonium-238	0U	0.02949U
	plutonium-239/240	0.02218U	0.000007367U
	technetium-99	-2.94U	-2.06U
	uranium	0.1756	1.67
	uranium-233/234	0.0444	0.4383
	uranium-235	0U	0.05499
	uranium-236	-0.01638U	0U
	uranium-238	0.05908	0.5561
	americium-241	0.03637U	-0.01528U
	neptunium-237	0U	-0.01455U
	plutonium-238	0.007113U	0.000007263U
	plutonium-239/240	0.007099U	0.007277U
Scioto River RW-6 (upstream)	technetium-99	-4.92U	-0.758U
	uranium	1.633	1.27
	uranium-233/234	0.5567	0.4624
	uranium-235	0.009672U	0.01783U
	uranium-236	0U	-0.01599U
	uranium-238	0.5477	0.4254
	americium-241	0.02084U	0.008646U
	neptunium-237	0.02335U	0.000008344U
	plutonium-238	0.007767U	0.04166U
	plutonium-239/240	0.01552U	0.00000832U
	technetium-99	5.99U	4.82U
	uranium	1.299	1.62
	uranium-233/234	1.549	2.266
	uranium-235	0.04383	0.05554
Little Beaver Creek RW-7 (downstream)	uranium-236	0.007871U	0.02493U
	uranium-238	0.4326	0.5392
	americium-241	0U	0.01012U
	neptunium-237	0U	0.008106U
	plutonium-238	0.02495U	0.01614U
	plutonium-239/240	0.000008309U	-0.008035U
	technetium-99	-5.19U	-0.619U
	uranium	5.204	6.21
	uranium-233/234	1.843	2.691
	uranium-235	0.05362	0.1132
	uranium-236	0.009629U	0.008468U
	uranium-238	1.744	2.075
	americium-241	-0.008312U	0.02279U
	neptunium-237	0U	-0.00762U
RW-8 (downstream)	plutonium-238	0.007243U	-0.007606U
	plutonium-239/240	0.01449U	0.007613U
	technetium-99	-5.86U	-5.28U
	uranium	0.06985U	0.0956U
	uranium-233/234	0.02359U	0.008086U
	uranium-235	0U	0U
	uranium-236	-0.008682U	0U
	uranium-238	0.02352U	0.03212U

Table 2.11. Local surface water monitoring program results – 2009 (continued)

Location	Parameter ^{a,b}	Second quarter ^{c,d}	Fourth quarter ^{c,d}
Big Beaver Creek RW-13 (downstream)	americium-241	0U	0.009509U
	neptunium-237	0.007084U	0.00001478U
	plutonium-238	0U	0.007381U
	plutonium-239/240	0.01413U	0.007381U
	technetium-99	3.34U	-1.52U
	uranium	0.9827	1.61
	uranium-233/234	1.228	2.196
	uranium-235	0.04794	0.06341
	uranium-236	0.01722U	0.03253U
	uranium-238	0.3258	0.535
RW-5 (upstream)	americium-241	0.008051U	0.03605U
	neptunium-237	0.01698U	0U
	plutonium-238	0U	0.007853U
	plutonium-239/240	0U	0.0314U
	technetium-99	-3.85U	-3.16U
	uranium	0.04925U	0.355
	uranium-233/234	0.007878U	0.03741U
	uranium-235	0.009689U	0U
	uranium-236	0U	0U
	uranium-238	0.01568U	0.1194
Big Run Creek	americium-241	0.008579U	0.0363U
RW-2 (downstream)	neptunium-237	0.01347U	0U
	plutonium-238	0.02015U	-0.01724U
	plutonium-239/240	0.00000671U	0U
	technetium-99	-1.59U	-3.75U
	uranium	0.1611	0.288
	uranium-233/234	0.1447	0.3058
	uranium-235	0.009392U	0.05659
	uranium-236	0.01687U	0U
	uranium-238	0.05319	0.09157
	americium-241	0.01668U	-0.03951U
RW-3 (downstream)	neptunium-237	0U	-0.007324U
	plutonium-238	-0.007983U	0.00001461U
	plutonium-239/240	0.01598U	0.007311U
	technetium-99	-4.76U	-0.305U
	uranium	1.149	0.541
	uranium-233/234	1.197	0.7573
	uranium-235	0.03381U	0.02889U
	uranium-236	0.01012U	0.01729U
	uranium-238	0.383	0.1792

Table 2.11. Local surface water monitoring program results – 2009 (continued)

Location	Parameter ^{a,b}	Second quarter ^{c,d}	Fourth quarter ^{c,d}
Big Run Creek (continued)	americium-241	0.05033U	-0.008744U
RW-33 (upstream)	neptunium-237	0.008324U	0U
	plutonium-238	0.02489U	0.00668U
	plutonium-239/240	0.008292U	0U
	technetium-99	-2.64U	-0.0787U
	uranium	0.1146	0.0648U
	uranium-233/234	0.02312U	0.007286U
	uranium-235	0U	0U
	uranium-236	0.008535U	0U
	uranium-238	0.03845	0.02177U
Background creeks	americium-241	0.009217U	0.01938U
RW-10N	neptunium-237	-0.008028U	-0.0144U
	plutonium-238	0.008022U	0.007208U
	plutonium-239/240	0.008014U	0.02162U
	technetium-99	-5.13U	-3.51U
	uranium	0.3858	0.3
	uranium-233/234	0.1126	0.1084
	uranium-235	0U	0U
	uranium-236	0U	0U
	uranium-238	0.1296	0.1009
RW-10S	americium-241	-0.008732U	0.000009803U
	neptunium-237	0.000008308U	0.00002302U
	plutonium-238	0.000008285U	0.007674U
	plutonium-239/240	0.01658U	0.01533U
	technetium-99	-1.44U	-5.53U
	uranium	0.1917	0.408
	uranium-233/234	0.05649U	0.1221
	uranium-235	0U	0.000009407U
	uranium-236	0U	-0.008437U
	uranium-238	0.0644	0.1371
RW-10E	americium-241	0.01241U	0.01128U
	neptunium-237	0U	-0.01439U
	plutonium-238	0.01622U	-0.007181U
	plutonium-239/240	0.008104U	0.007188U
	technetium-99	-4.6U	-1.04U
	uranium	0.07761U	0.069U
	uranium-233/234	0.04355	0.03729U
	uranium-235	0U	0.009195U
	uranium-236	0U	0.008256U
	uranium-238	0.02608U	0.02232U

Table 2.11. Local surface water monitoring program results – 2009 (continued)

Location	Parameter ^{a,b}	Second quarter ^{c,d}	Fourth quarter ^{c,d}
Background creeks	americium-241	0.02317U	-0.009298U
RW-10W	neptunium-237	-0.007417U	-0.008491U
	plutonium-238	0.01482U	0.01699U
	plutonium-239/240	0.007412U	-0.01695U
	technetium-99	-4.06U	-3.96U
	uranium	0.05052U	0.0668U
	uranium-233/234	0.08037	0.02998U
	uranium-235	0.009915U	0U
	uranium-236	0.008903U	0U
	uranium-238	0.01604U	0.02243U

^aResults are reported in µg/L (uranium) and pCi/L (all other parameters).

^bThe derived concentration guide (DCG) for each radionuclide is as follows: americium-241, 30 pCi/L; neptunium-237, 30 pCi/L; plutonium-238, 40 pCi/L; plutonium-239/240, 30 pCi/L; technetium-99, 100,000 pCi/L; uranium-233/234, 500 pCi/L; uranium-235, 600 pCi/L; uranium-236, 500 pCi/L; uranium-238, 600 pCi/L. All results are well below these DOE standards. A DCG is not available for total uranium.

^cAbbreviations and data qualifiers are as follows: U – undetected.

^dBecause of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out.

Table 2.12. Sediment monitoring program results – 2009

Parameter	Unit	Location/results ^{a,b}				
		<i>Scioto River and outfalls that discharge to the Scioto River</i>				
		<i>RM-6 Upstream @ Piketon</i>	<i>RM-1 Downstream @ Lucasville</i>	<i>RM-9 Outfall 012</i>	<i>RM-10 Outfall 010/Outfall 013</i>	
Aluminum	mg/kg	3810	4260	3770	3080	
Americium-241	pCi/g	0.01003U	0.009543	0.000001751U	0.001625U	
Antimony	mg/kg	0.49U	0.459U	0.952U	0.536	
Arsenic	mg/kg	5.98	6.39	9.8	10.6	
Barium	mg/kg	42.1	50.4	56.9	25.3	
Beryllium	mg/kg	0.266	0.277	0.449	0.328	
Cadmium	mg/kg	0.227	0.314	0.677	0.0946J	
Calcium	mg/kg	17600	16500	4340	955	
Chromium	mg/kg	6.25	6.54	6.86	9.44	
Copper	mg/kg	8.51	11	9.2	7.97	
Iron	mg/kg	10200	10500	26100	23400	
Lead	mg/kg	7.33	8.79	5.3	8.67	
Magnesium	mg/kg	7680	7140	1370	1060	
Manganese	mg/kg	283	338	4860	314	
Mercury	mg/kg	0.0236	0.0239J	0.029U	0.029U	
Neptunium-237	pCi/g	-0.001482U	0.001605U	0.001191U	0.001238U	
Nickel	mg/kg	10.3	11.4	30	11.9	
PCB, total	µg/kg	18J	27.7J	40U	17.3J	
PCB-1016	µg/kg	12.7J	14.3	13.3U	13.3U	
PCB-1221	µg/kg	13.3U	13.3U	13.3U	13.3U	
PCB-1232	µg/kg	13.3U	13.3U	13.3U	13.3U	
PCB-1242	µg/kg	13.3U	13.3U	13.3U	13.3U	
PCB-1248	µg/kg	13.3U	13.3U	13.3U	13.3U	
PCB-1254	µg/kg	5.33J	8.67J	13.3U	13.3U	
PCB-1260	µg/kg	13.3U	4.67J	3.67J	17.3	
PCB-1268	µg/kg	13.3U	13.3U	13.3U	13.3U	
Plutonium-238	pCi/g	0.00445U	0.001602U	-0.001187U	0.003705U	
Plutonium-239/240	pCi/g	0.00445U	0U	0U	0.001236U	
Selenium	mg/kg	0.49U	0.184J	0.952U	0.267J	
Silicon	mg/kg	489	624	1050	745	
Silver	mg/kg	0.49U	0.459U	0.952U	0.472U	
Technetium-99	pCi/g	0.0108U	-0.0294U	-0.0139U	0.393	
Thallium	mg/kg	0.17J	0.219J	0.286J	0.136J	
Uranium	µg/g	0.6863	0.7573	1.417	1.169	
Uranium-233/234	pCi/g	0.2223	0.237	0.5615	0.4376	
Uranium-235	pCi/g	0.01143	0.009616	0.02129	0.02243	
Uranium-236	pCi/g	0.00513U	0.001727U	-0.001469U	0.002685U	
Uranium-238	pCi/g	0.2296	0.2536	0.4743	0.3907	
Zinc	mg/kg	45.8	56.8	97	78.1	

Table 2.12. Sediment monitoring program results – 2009 (continued)

Parameter	Unit	Location/results ^{a,b}			
		<i>Little Beaver Creek</i>			
		<i>RM-12 Upstream</i>	<i>RM-11 X-230J7 Discharge</i>	<i>RM-8 Downstream @ Outfall 009 Discharge</i>	<i>RM-7 Downstream @ Confluence</i>
Aluminum	mg/kg	4440	3240	4140	4090
Americium-241	pCi/g	0.00583U	0.008877	0.001605U	0.02173
Antimony	mg/kg	0.374J	0.447	0.147J	0.495U
Arsenic	mg/kg	15.7	16.6	8.61	8.02
Barium	mg/kg	47.3	97.9	40.7	59.4
Beryllium	mg/kg	0.561	0.393	0.406	0.419
Cadmium	mg/kg	0.118U	0.26	0.0956J	0.667
Calcium	mg/kg	996	16200	2700	1900
Chromium	mg/kg	11	12.7	12.6	17
Copper	mg/kg	7.61	20.3	8.53	14.8
Iron	mg/kg	21400	21800	14400	12700
Lead	mg/kg	13.6	18.6	9.38	11.3
Magnesium	mg/kg	905	9710	1640	1350
Manganese	mg/kg	717	1250	323	233
Mercury	mg/kg	0.0175J	0.0356	0.0234J	0.133
Neptunium-237	pCi/g	-0.002402U	0.000002789U	0U	0.08866
Nickel	mg/kg	10.8	13.8	14	34.9
PCB, total	µg/kg	40U	120	75.7	187
PCB-1016	µg/kg	13.3U	13.3U	13.3U	13.3U
PCB-1221	µg/kg	13.3U	13.3U	13.3U	13.3U
PCB-1232	µg/kg	13.3U	13.3U	13.3U	13.3U
PCB-1242	µg/kg	13.3U	13.3U	13.3U	13.3U
PCB-1248	µg/kg	13.3U	13.3U	13.3U	13.3U
PCB-1254	µg/kg	13.3U	41.7	12.7J	49.3
PCB-1260	µg/kg	13.3U	78.3	63	137
PCB-1268	µg/kg	13.3U	13.3U	13.3U	13.3U
Plutonium-238	pCi/g	0.003597U	0.001392U	0.001369U	0.01444
Plutonium-239/240	pCi/g	0.003599U	0.0181	0.00684	0.06676
Selenium	mg/kg	0.227J	0.506	0.256J	0.322J
Silicon	mg/kg	856	834	841	383
Silver	mg/kg	0.472U	0.446U	0.417U	0.495U
Technetium-99	pCi/g	-0.0729U	7.41	1.1	57.4
Thallium	mg/kg	0.472U	0.161J	0.417U	0.129J
Uranium	µg/g	0.6464	1.962	2.04	1.668
Uranium-233/234	pCi/g	0.2822	3.554	1.011	2.01
Uranium-235	pCi/g	0.01597	0.1436	0.02831	0.07306
Uranium-236	pCi/g	0U	0.00741	0.008971	0.003748U
Uranium-238	pCi/g	0.2158	0.6463	0.683	0.5539
Zinc	mg/kg	35.9	192	68.5	102

Table 2.12. Sediment monitoring program results – 2009 (continued)

Parameter	Unit	Location/results ^{a,b}	
		<i>Big Beaver Creek</i>	
		<i>RM-5</i>	<i>RM-13</i>
		<i>Upstream</i>	<i>Downstream</i>
Aluminum	mg/kg	4390	2400
Americium-241	pCi/g	0.001714U	0.003298U
Antimony	mg/kg	0.427U	0.138J
Arsenic	mg/kg	6.5	9.95
Barium	mg/kg	45	23.3
Beryllium	mg/kg	0.37	0.333
Cadmium	mg/kg	0.23	0.272
Calcium	mg/kg	2220	3170
Chromium	mg/kg	6.47	15.7
Copper	mg/kg	8.1	7.42
Iron	mg/kg	11000	13200
Lead	mg/kg	10.5	6.67
Magnesium	mg/kg	1790	1840
Manganese	mg/kg	453	299
Mercury	mg/kg	0.0155J	0.0124J
Neptunium-237	pCi/g	0.000001731U	0.008824U
Nickel	mg/kg	13	14.7
PCB, total	µg/kg	40U	27.7J
PCB-1016	µg/kg	13.3U	13.3U
PCB-1221	µg/kg	13.3U	13.3U
PCB-1232	µg/kg	13.3U	13.3U
PCB-1242	µg/kg	13.3U	13.3U
PCB-1248	µg/kg	13.3U	13.3U
PCB-1254	µg/kg	13.3U	10J
PCB-1260	µg/kg	13.3U	17.7
PCB-1268	µg/kg	13.3U	13.3U
Plutonium-238	pCi/g	0.001728U	-0.001256U
Plutonium-239/240	pCi/g	0.008639	0.006284
Selenium	mg/kg	0.427U	0.223J
Silicon	mg/kg	428	467
Silver	mg/kg	0.427U	0.446U
Technetium-99	pCi/g	0.397U	6.99
Thallium	mg/kg	0.131J	0.143J
Uranium	µg/g	0.6084	1.32
Uranium-233/234	pCi/g	0.2656	1.323
Uranium-235	pCi/g	0.01533	0.05389
Uranium-236	pCi/g	0.00172U	0.005692U
Uranium-238	pCi/g	0.2031	0.4385
Zinc	mg/kg	39.6	49.5

Table 2.12. Sediment monitoring program results – 2009 (continued)

Parameter	Unit	Location/results ^{a,b}			
		<i>Big Run Creek</i>		<i>RM-2 Downstream @ Wakefield</i>	
		<i>RM-33 Upstream</i>	<i>RM-3 Downstream</i>		
Aluminum	mg/kg	3380	4470	5220	
Americium-241	pCi/g	0.007868	0.003632U	0.001728U	
Antimony	mg/kg	0.276J	0.307J	0.431U	
Arsenic	mg/kg	11.4	18	10.1	
Barium	mg/kg	34.9	45.5	48.6	
Beryllium	mg/kg	0.539	0.578	0.529	
Cadmium	mg/kg	0.122	0.114	0.138	
Calcium	mg/kg	623	1950	633	
Chromium	mg/kg	6.8	10.6	7.5	
Copper	mg/kg	6.8	8.42	7.96	
Iron	mg/kg	31800	19700	14700	
Lead	mg/kg	9.49	13.2	10	
Magnesium	mg/kg	636	1360	975	
Manganese	mg/kg	405	696	497	
Mercury	mg/kg	0.0107J	0.0176J	0.0151J	
Neptunium-237	pCi/g	0U	-0.001212U	0.002751U	
Nickel	mg/kg	10.6	14	13	
PCB, total	µg/kg	40U	58.3	40U	
PCB-1016	µg/kg	13.3U	13.3U	13.3U	
PCB-1221	µg/kg	13.3U	13.3U	13.3U	
PCB-1232	µg/kg	13.3U	13.3U	13.3U	
PCB-1242	µg/kg	13.3U	13.3U	13.3U	
PCB-1248	µg/kg	13.3U	13.3U	13.3U	
PCB-1254	µg/kg	13.3U	24	13.3U	
PCB-1260	µg/kg	13.3U	34.3	13.3U	
PCB-1268	µg/kg	13.3U	13.3U	13.3U	
Plutonium-238	pCi/g	0.002429U	0.00242U	0.001371U	
Plutonium-239/240	pCi/g	0.004855U	0.000001209U	0.001371U	
Selenium	mg/kg	0.14J	0.428J	0.431U	
Silicon	mg/kg	254	847	232	
Silver	mg/kg	0.439U	0.439U	0.431U	
Technetium-99	pCi/g	-0.0221U	0.399	-0.0183U	
Thallium	mg/kg	0.215J	0.231J	0.17J	
Uranium	µg/g	0.8592	1.536	0.9017	
Uranium-233/234	pCi/g	0.3241	0.8848	0.3544	
Uranium-235	pCi/g	0.01029	0.04414	0.008607	
Uranium-236	pCi/g	0U	0.006097U	0.004637U	
Uranium-238	pCi/g	0.2878	0.5123	0.3022	
Zinc	mg/kg	34	58.6	37.8	

Table 2.12. Sediment monitoring program results – 2009 (continued)

Parameter	Unit	Location/results ^{a,b}			
		Background creeks			
		RM-10N North background	RM-10S South background	RM-10E East background	RM-10W West background
Aluminum	mg/kg	2350	3710	466	4640
Americium-241	pCi/g	0.000001477U	0.007405U	0.003009U	0.000006246U
Antimony	mg/kg	0.467U	0.157J	0.485U	0.433J
Arsenic	mg/kg	3.91	8.73	0.914	21.7
Barium	mg/kg	25.7	72.5	5.24	30.8
Beryllium	mg/kg	0.237	0.396	0.064J	0.676
Cadmium	mg/kg	0.331	0.0269J	0.121U	0.55
Calcium	mg/kg	4030	1170	65.2	414
Chromium	mg/kg	3.78	6.86	1.64	11
Copper	mg/kg	5.41	4.85	0.334J	12.7
Iron	mg/kg	7050	14200	1780	21000
Lead	mg/kg	5.66	11.1	1.71	11.8
Magnesium	mg/kg	2250	820	41.7	678
Manganese	mg/kg	248	760	38.1	165
Mercury	mg/kg	0.0097J	0.0257U	0.0273U	0.0153J
Neptunium-237	pCi/g	0U	0.003259U	-0.001165U	0U
Nickel	mg/kg	11.6	7.1	0.938J	19
PCB, total	µg/kg	40U	40U	40U	40U
PCB-1016	µg/kg	13.3U	13.3U	13.3U	13.3U
PCB-1221	µg/kg	13.3U	13.3U	13.3U	13.3U
PCB-1232	µg/kg	13.3U	13.3U	13.3U	13.3U
PCB-1242	µg/kg	13.3U	13.3U	13.3U	13.3U
PCB-1248	µg/kg	13.3U	13.3U	13.3U	13.3U
PCB-1254	µg/kg	13.3U	13.3U	13.3U	13.3U
PCB-1260	µg/kg	13.3U	13.3U	13.3U	13.3U
PCB-1268	µg/kg	13.3U	13.3U	13.3U	13.3U
Plutonium-238	pCi/g	0.001155U	0.003249U	-0.00116U	0U
Plutonium-239/240	pCi/g	0U	0.008124	0.002326U	0.006337U
Selenium	mg/kg	0.467U	0.455U	0.162J	0.9
Silicon	mg/kg	342	347	319	297
Silver	mg/kg	0.467U	0.455U	0.485U	0.459U
Technetium-99	pCi/g	0.0697U	0.0833U	0.135U	0.251U
Thallium	mg/kg	0.467U	0.128J	0.485U	0.271J
Uranium	µg/g	0.4765	0.5943	0.1066	2.882
Uranium-233/234	pCi/g	0.1772	0.2101J	0.04022J	0.9973
Uranium-235	pCi/g	0.01487	0.0096	0.004378U	0.05886
Uranium-236	pCi/g	0U	0.003448U	0.00131U	0.001705U
Uranium-238	pCi/g	0.1588	0.1988	0.03542	0.963
Zinc	mg/kg	35.3	27.4	3.81	73.4

^aAbbreviations and data qualifiers are as follows: J (metals) – the reported value is an estimated concentration greater than the method detection limit but less than the practical quantitation limit; J (radionuclides) – the reported value is estimated; U – undetected.

^bBecause of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out.

Table 2.13. Soil and vegetation monitoring at ambient air monitoring stations – 2009

Parameter ^a	Location/results ^{b,c}			
	<i>A8 – On site at northwest boundary</i>		<i>T7 – On site near X-230L North Holding Pond</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	-0.003057U	-0.0026U	-0.005596U	0.004995U
Neptunium-237	-0.02681U	0.000002144U	-0.002407U	-0.002959U
Plutonium-238	-0.002547U	0.00214U	0.002404U	0.002955U
Plutonium-239/240	0.002552U	0.00428U	0.002404U	0.003944U
Technetium-99	0.00734U	0.00449U	-0.0116U	0.0118U
Uranium	0.02365	3.409	0.003583U	2.789
Uranium-233/234	0.002281U	1.147	0.007277U	0.9219
Uranium-235	0U	0.05813	0U	0.04354
Uranium-236	-0.00126U	0.004349U	-0.001341U	0.009772U
Uranium-238	0.007955	1.14	0.001211U	0.9333
	<i>A10 – On site on northwest segment of Perimeter Road</i>		<i>A29 – On site at OVEC</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.004103U	0.000001715U	-0.003042U	0.005607U
Neptunium-237	-0.00719U	0.001748U	-0.00123U	-0.00199U
Plutonium-238	0.002876U	-0.0008699U	0.001241U	0U
Plutonium-239/240	0.000004306U	0.003487U	0.002478U	0.004972U
Technetium-99	-0.0229U	-0.0645U	-0.00415U	-0.0629U
Uranium	0.02966	2.299	0.01833U	2.779
Uranium-233/234	0.01872	0.8489	0.001554U	0.91
Uranium-235	0U	0.04884	0U	0.04765
Uranium-236	0U	0.004872U	-0.00171U	0.004754U
Uranium-238	0.009967	0.7682	0.006168U	0.9296
	<i>A36 – On site at X-611 Water Treatment Plant</i>		<i>A6 – North of PORTS in Piketon</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.001745U	-0.002062U	0.003855U	0.006263U
Neptunium-237	0.00283U	0.002003U	0.0012U	0.001116U
Plutonium-238	0.002821U	0.0000009976U	0.004773U	0.002223U
Plutonium-239/240	0.001412U	0.001998U	0U	0.001111U
Technetium-99	0.141	-0.0592U	-0.015U	0.00302U
Uranium	-0.006868U	2.671	0.003966U	3.254
Uranium-233/234	0.01387U	0.8473	0.006679U	1.05
Uranium-235	0U	0.03045U	0U	0.05005
Uranium-236	-0.002555U	0U	0U	0.004993U
Uranium-238	-0.002295U	0.8948	0.001333U	1.089

Table 2.13. Soil and vegetation monitoring at ambient air monitoring stations – 2009 (continued)

Parameter ^a	Location/results ^{b,c}			
	<i>A24 – North of PORTS at Schuster Road</i>		<i>A41 - North of PORTS at Zahns Corner</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	-0.004231U	-0.001833U	-0.001627U	0U
Neptunium-237	-0.00618U	0.002885U	-0.02496U	-0.005037U
Plutonium-238	0.003704U	0.000001915U	0.008304U	0.000003014U
Plutonium-239/240	0.000003699U	0.0009601U	-0.002074U	0.004025U
Technetium-99	0.0411U	-0.0156U	0.00556U	-0.00431U
Uranium	1.369	2.828	0.01561U	2.692
Uranium-233/234	0.4415	0.8317	0.001314U	0.8916
Uranium-235	0.02318	0.04178	0U	0.03422
Uranium-236	0.001487U	0.004168U	0.001454U	0U
Uranium-238	0.4581	0.9464	0.005239U	0.9017
<i>A23 – Northeastern PORTS boundary</i>		<i>A12 – Eastern PORTS boundary</i>		
	Vegetation	Soil	Vegetation	Soil
Americium-241	0U	0.001885U	0.001433U	0.007721U
Neptunium-237	-0.002182U	-0.0009629U	-0.003554U	0.0000009982U
Plutonium-238	0.000002179U	0.001925U	0.001776U	0.001993U
Plutonium-239/240	0.004364U	0.003851U	-0.001773U	0.002989U
Technetium-99	0.361	-0.0511U	-0.0121U	-0.0399U
Uranium	0.01034U	2.571	0.03881	3.229
Uranium-233/234	0.00001274U	0.858	0.0147U	1.049
Uranium-235	0U	0.04033	0U	0.03263
Uranium-236	0U	0U	0U	0U
Uranium-238	0.003473U	0.8603	0.01304	1.082
<i>A15 – Southeast of PORTS on Loop Road</i>		<i>A3 – Southern PORTS boundary</i>		
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.001311U	0.003836U	0.001312U	0.003755U
Neptunium-237	-0.005101U	-0.003251U	0.001371U	-0.005239U
Plutonium-238	0.002549U	0.002164U	0.002723U	0.002094U
Plutonium-239/240	-0.002545U	0.001082U	0.005446U	0.002095U
Technetium-99	0.0628U	-0.0272U	0.0294U	0.0131U
Uranium	0.01165U	2.759	0.03443	1.634
Uranium-233/234	0.01046	0.7387	0.001266U	0.7321
Uranium-235	0U	0.03666	0.003102U	0.04592
Uranium-236	0U	0U	0.000001391U	-0.004577U
Uranium-238	0.003915U	0.9237	0.01129	0.5449

Table 2.13. Soil and vegetation monitoring at ambient air monitoring stations – 2009 (continued)

Parameter ^a	Location/results ^{b,c}			
	<i>A9 – South of PORTS</i>		<i>A28 – Southwest of PORTS on Camp Creek Road</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	0.003849U	0.005472U	-0.001426U	0.000002005U
Neptunium-237	0.000001045U	-0.001132U	-0.001569U	-0.002048U
Plutonium-238	0.001043U	0.00227U	0.00471U	0.001022U
Plutonium-239/240	0.000002085U	0.01021U	0.000001568U	0.000002042U
Technetium-99	-0.0151U	0.00714U	0.019U	-0.0513U
Uranium	0.04304	1.247	0.01133U	2.618
Uranium-233/234	0.006638U	0.3714	0.01017	0.922
Uranium-235	0.001364U	-0.005029U	0U	0.06176
Uranium-236	-0.001224U	0U	0U	0U
Uranium-238	0.01435	0.4195	0.003806U	0.8743
<i>A37 – Background station near Otway</i>				
	Vegetation	Soil		
Americium-241	0.001367U	0.004365U		
Neptunium-237	-0.008386U	0.000001869U		
Plutonium-238	-0.001672U	-0.0009309U		
Plutonium-239/240	-0.001673U	0.0028U		
Technetium-99	-0.00792U	0.0446U		
Uranium	0.02317	2.682		
Uranium-233/234	-0.008922U	0.8033		
Uranium-235	0.001575U	0.05591		
Uranium-236	0.000001413U	0.004563U		
Uranium-238	0.007646	0.8962		

^aAll parameters are measured in pCi/g with the exception of uranium which is measured in µg/g.

^bAbbreviations and data qualifiers are as follows: U – undetected.

^cBecause of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out.

Table 2.14. Biota (fish) monitoring program results – 2009

Parameter	Unit	Location/fish/results ^{a,b}		
		<i>Scioto River (RW-1) freshwater drum & catfish</i>	<i>Scioto River (RW-6) freshwater drum</i>	<i>Big Beaver Creek (RW-15) sunfish & large mouth bass</i>
Americium-241	pCi/g	0.0021U	0.001488U	0.001418U
Neptunium-237	pCi/g	-0.0009689U	-0.001207U	-0.001219U
PCB, total	µg/kg	769U	714U	1180U
PCB-1248	µg/kg	256U	238U	391U
PCB-1254	µg/kg	66.7J	238U	391U
PCB-1260	µg/kg	256U	238U	391U
PCB-1268	µg/kg	256U	238U	391U
Plutonium-238	pCi/g	0.002907U	-0.001206U	0.0006086U
Plutonium-239/240	pCi/g	0.0009691U	0.001207U	-0.001823U
Technetium-99	pCi/g	0.0696U	-0.00714U	-0.0237U
Uranium	µg/g	0.007748U	0.005277U	0.003563U
Uranium-233/234	pCi/g	0.006086U	0.0006111U	-0.001726U
Uranium-235	pCi/g	0U	0.0007509U	-0.0007096U
Uranium-236	pCi/g	0U	0U	0U
Uranium-238	pCi/g	0.002603U	0.001823U	0.00115U
		<i>Little Beaver Creek (RW-8) large mouth bass</i>	<i>Little Beaver Creek (RW-8) sunfish</i>	
Americium-241	pCi/g	-0.002209U	0.001337U	
Neptunium-237	pCi/g	-0.001212U	0.001807U	
PCB, total	µg/kg	968U	678J	
PCB-1248	µg/kg	322U	332U	
PCB-1254	µg/kg	322U	120J	
PCB-1260	µg/kg	225J	558	
PCB-1268	µg/kg	322U	332U	
Plutonium-238	pCi/g	0U	0.001198U	
Plutonium-239/240	pCi/g	0.0006084U	0.001199U	
Technetium-99	pCi/g	-0.0156U	-0.0293U	
Uranium	µg/g	0.003798U	-0.001794U	
Uranium-233/234	pCi/g	0.006143U	0.002424U	
Uranium-235	pCi/g	-0.0007568U	0U	
Uranium-236	pCi/g	0U	0U	
Uranium-238	pCi/g	0.001226U	-0.000603U	

^aAbbreviations and data qualifiers are as follows: J – the reported value is an estimated concentration greater than the method detection limit but less than the practical quantitation limit; U – undetected.

^bBecause of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out.

Table 2.15. Biota (crops) monitoring program results – 2009

Type	Location	Tc-99 ^{a,b,c}	U	U-233/234	U-235	U-238
Cucumber	Off-site #1	0U	0.003352U	-0.002172U	-0.0006701U	0.001085U
Green pepper	Off-site #1	0.0146U	0.002594U	-0.004387U	0U	0.000877U
Pumpkin	Off-site #1	-0.00604U	0.004154U	0.00623U	0.0005909U	0.001435U
Tomatoes	Off-site #1	-0.00118U	-0.001812U	0.0006138U	0U	-0.0006089U
Watermelon	Off-site #1	0.0113U	0.004757U	0.002312U	-0.0009481U	0.001536U
Zucchini	Off-site #1	0.00384U	-0.00427U	0.001435U	0U	-0.001427U
Corn	Off-site #2	0.0115U	-0.003823U	-0.000643U	0U	-0.001289U
Tomatoes	Off-site #2	0.0336U	-0.01375U	-0.002966U	-0.001832U	-0.004447U
Tomatoes	Off-site #3	-0.0295U	-0.004787U	-0.001186U	0.0004882U	-0.001578U
Blackberries	Off-site #4	-0.000751U	-0.005378U	0.000009595U	0.001186U	-0.001913U
Melon	Off-site #4	-0.0164U	-0.002749U	0.02682	0.00000114U	-0.00092U
Pumpkins	Off-site #4	-0.0357U	-0.0004446U	-0.002597U	-0.001603U	0.000001297U
Red raspberries	Off-site #4	-0.0311U	-0.0000006043U	-0.003775U	0U	0U
Tomatoes	Off-site #4	-0.018U	-0.008076U	-0.01223U	0U	-0.002713U
Yellow squash	Off-site #4	-0.00203U	-0.00002171U	-0.001246U	0U	0U
Squash	Off-site #5	-0.00249U	0.002827U	-0.001888U	0U	0.0009446U
Tomatoes	Off-site #5	-0.0137U	0.00001754U	0.000003788U	0U	0.000001512U

^aResults are reported in µg/g (uranium) and pCi/g (all other parameters). Abbreviations are as follows: Tc-99 – technetium-99, U – uranium, U-233/234 – uranium-233/234, U-235 – uranium-235, U-238 – uranium-238. Data qualifiers are as follows: U – undetected.

^bBecause of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out.

^cSamples were also analyzed for transuranic radionuclides (americium-241, neptunium-237, plutonium-238, and plutonium-239/240) and uranium-236. None of these radionuclides were detected in the samples.

Table 2.16 Biota (deer) monitoring program results – 2009

Parameter	Units	April 2009 ^{a,b}	November 2009 ^{a,b}
<i>kidney</i>			
Americium-241	pCi/g	0.002584U	0.000001355U
Neptunium-237	pCi/g	0.000000698U	-0.002775U
Plutonium-238	pCi/g	0.002091U	0.0006938U
Plutonium-239/240	pCi/g	0.000000696U	-0.0006904U
Technetium-99	pCi/g	0.0543U	-0.00548U
Uranium	µg/g	-0.003798U	0.00185U
Uranium-233/234	pCi/g	0.004486U	0.004037U
Uranium-235	pCi/g	0U	0.0008299U
Uranium-236	pCi/g	0U	0.0007451U
Uranium-238	pCi/g	-0.001277U	0.000672U
<i>liver</i>			
Americium-241	pCi/g	0.001842U	0.001396U
Neptunium-237	pCi/g	-0.005082U	-0.006547U
Plutonium-238	pCi/g	0.001902U	-0.0006531U
Plutonium-239/240	pCi/g	-0.0006334U	0.0000006531U
Technetium-99	pCi/g	0.00598U	-0.00606U
Uranium	µg/g	-0.00212U	-0.0000111U
Uranium-233/234	pCi/g	-0.0006473U	-0.0006345U
Uranium-235	pCi/g	0.0008075U	-0.0007851U
Uranium-236	pCi/g	-0.001449U	-0.0007057U
Uranium-238	pCi/g	-0.0006513U	0U
<i>muscle</i>			
Americium-241	pCi/g	0.000677U	-0.0007006U
Neptunium-237	pCi/g	-0.005145U	-0.002036U
Plutonium-238	pCi/g	0.002568U	0.0000006779U
Plutonium-239/240	pCi/g	0U	0.0006792U
Technetium-99	pCi/g	0.0153U	-0.0132U
Uranium	µg/g	-0.00000994U	-0.00174U
Uranium-233/234	pCi/g	0.004337U	-0.00236U
Uranium-235	pCi/g	0U	0U
Uranium-236	pCi/g	-0.0006855U	0.000654U
Uranium-238	pCi/g	0.000000617U	-0.000589U

^aAbbreviations and data qualifiers are as follows: U – undetected.

^bBecause of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out.

Table 2.17 Off-site dairy monitoring – 2009

Parameter	Units	Milk ^{a,b}	Eggs ^{a,b}
<i>Regular sample</i>			
Americium-241	pCi/g	0.0008766U	0.003347U
Neptunium-237	pCi/g	0.002178U	0.001522U
Plutonium-238	pCi/g	0.001449U	0.002276U
Plutonium-239/240	pCi/g	0U	0.002275U
Technetium-99	pCi/g	0.0433U	0.0557U
Uranium	µg/g	0.000977U	0.00685U
Uranium-233/234	pCi/g	0.001711U	0.009984
Uranium-235	pCi/g	0.00211U	0U
Uranium-236	pCi/g	0U	0U
Uranium-238	pCi/g	0.0000008526U	0.0023U
<i>Duplicate sample</i>			
Americium-241	pCi/g	0U	0.002486U
Neptunium-237	pCi/g	-0.0008283U	0.002291U
Plutonium-238	pCi/g	-0.0008244U	0.0000007606U
Plutonium-239/240	pCi/g	0.0008269U	-0.001521U
Technetium-99	pCi/g	0.0526U	0.101U
Uranium	µg/g	0.00245U	0.00922U
Uranium-233/234	pCi/g	0.0000008276U	0.006986
Uranium-235	pCi/g	0U	0U
Uranium-236	pCi/g	-0.0009166U	0U
Uranium-238	pCi/g	0.0008267U	0.003099U

^aAbbreviations and data qualifiers are as follows: U – undetected.

^bBecause of the statistical nature of radiation detection, results for samples that have no radioactivity are often negative values because background radioactivity is subtracted out.

3. DOSE

This section provides summary tables for dose calculations completed for the PORTS site. Information is provided for the dose calculation required by the National Emission Standards for Hazardous Air Pollutants for airborne radionuclide emissions. The following tables are provided in this section:

- Table 3.1. Emissions (Ci/year) from DOE PORTS air emission sources – 2009
- Table 3.2. Predicted radiation doses from airborne releases at PORTS – 2009
- Table 3.3. Dose calculations for ambient air monitoring stations – 2009

Table 3.1. Emissions (Ci/year) from DOE PORTS air emission sources – 2009

Radionuclide	X-622 ^{a,b}	X-623 ^{a,b}	X-624 ^{a,b}	X-627 ^{a,b}
Americium-241	4.7E-07	3.5E-08	3.8E-08	1.9E-06
Neptunium-237	2.6E-07	1.7E-08	2.2E-11	9.8E-06
Plutonium-238	1.1E-07	8.2E-12	7.1E-08	2.8E-09
Plutonium-239/240 ^a	2.2E-07	1.8E-08	0	2.4E-06
Technetium-99	3.8E-02	3.6E-03	1.4E-05	1.2E-02
Uranium-233/234 ^a	8.2E-06	2.2E-05	5.9E-06	2.4E-04
Uranium-235	1.1E-06	9.7E-07	4.4E-07	1.2E-05
Uranium-236	1.0E-07	7.1E-08	2.3E-08	1.1E-06
Uranium-238	8.0E-06	4.4E-06	1.5E-06	7.2E-05
Total	3.8E-02	3.7E-03	2.2E-05	1.2E-02

^aMeasurements are provided in scientific notation. The number and sign (+ or -) to the right of the “E” indicate the number of places to the right or left of the decimal point. For example, 3.4E-04 is 0.00034 (the decimal point moves four places to the left); 2.1E+02 is 210 (the decimal point moves two places to the right).

^bEmissions are calculated based on quarterly influent and effluent sampling at each facility and quarterly throughput.

Table 3.2. Predicted radiation doses from airborne releases at PORTS – 2009

Effective dose equivalent to:	DOE releases	All PORTS releases (DOE and USEC)
Maximally exposed individual (mrem/year)	0.019	0.024
Population ^a (person-rem/year)	0.17	0.31

^aPopulation within 50 miles (80 km) of plant site.

Table 3.3. Dose calculations for ambient air monitoring stations – 2009

Station	Parameter ^a	Dose ^b (mrem/year)	Total dose for station ^c	Net dose for station ^d
A3	Americium-241	2.7E-09		
	Neptunium-237	4.3E-09		
	Plutonium-238	4.2E-09		
	Plutonium-239/240	2.9E-09		
	Technetium-99	5.8E-05		
	Uranium-233/234	1.2E-05		
	Uranium-235	4.8E-07		
	Uranium-236	7.8E-08	(0.000081)	(0.000045)
	Uranium-238	1.1E-05	8.1E-05	4.5E-05
A6	Americium-241	5.0E-09		
	Neptunium-237	2.7E-09		
	Plutonium-238	2.0E-09		
	Plutonium-239/240	2.4E-09		
	Technetium-99	2.2E-05		
	Uranium-233/234	6.1E-06		
	Uranium-235	3.8E-07		
	Uranium-236	2.1E-08	(0.000033)	
	Uranium-238	4.2E-06	3.3E-05	0
A8	Americium-241	2.6E-09		
	Neptunium-237	2.1E-12		
	Plutonium-238	2.3E-09		
	Plutonium-239/240	2.1E-09		
	Technetium-99	5.8E-05		
	Uranium-233/234	6.8E-06		
	Uranium-235	4.3E-07		
	Uranium-236	5.3E-08	(0.000070)	(0.000034)
	Uranium-238	5.0E-06	7.0E-05	3.4E-05

Table 3.3. Dose calculations for ambient air monitoring stations – 2009 (continued)

Station	Parameter ^a	Dose ^b (mrem/year)	Total dose for station ^c	Net dose for station ^d
A9	Americium-241	3.8E-09		
	Neptunium-237	1.3E-09		
	Plutonium-238	2.6E-09		
	Plutonium-239/240	2.7E-09		
	Technetium-99	4.3E-05		
	Uranium-233/234	9.7E-06		
	Uranium-235	7.8E-07		
	Uranium-236	4.8E-08	(0.000060)	(0.000024)
	Uranium-238	5.9E-06	6.0E-05	2.4E-05
A10	Americium-241	2.4E-09		
	Neptunium-237	2.9E-09		
	Plutonium-238	2.8E-09		
	Plutonium-239/240	1.7E-09		
	Technetium-99	4.2E-05		
	Uranium-233/234	6.4E-06		
	Uranium-235	3.9E-07		
	Uranium-236	1.9E-07	(0.000054)	(0.000018)
	Uranium-238	4.4E-06	5.4E-05	1.8E-05
A12	Americium-241	4.6E-09		
	Neptunium-237	2.0E-09		
	Plutonium-238	3.0E-09		
	Plutonium-239/240	2.8E-09		
	Technetium-99	5.0E-05		
	Uranium-233/234	7.1E-06		
	Uranium-235	3.1E-07		
	Uranium-236	5.4E-08	(0.000060)	(0.000024)
	Uranium-238	5.5E-06	6.0E-05	2.4E-05
A15	Americium-241	2.7E-09		
	Neptunium-237	4.0E-09		
	Plutonium-238	1.8E-09		
	Plutonium-239/240	1.6E-09		
	Technetium-99	4.8E-05		
	Uranium-233/234	6.9E-06		
	Uranium-235	3.2E-07		
	Uranium-236	3.8E-08	(0.000061)	(0.000025)
	Uranium-238	4.8E-06	6.1E-05	2.5E-05
A23	Americium-241	8.2E-10		
	Neptunium-237	1.4E-09		
	Plutonium-238	4.2E-09		
	Plutonium-239/240	2.0E-09		
	Technetium-99	2.4E-04		
	Uranium-233/234	8.9E-06		
	Uranium-235	5.1E-07		
	Uranium-236	2.3E-07	(0.00026)	(0.00022)
	Uranium-238	6.3E-06	2.6E-04	2.2E-04

Table 3.3. Dose calculations for ambient air monitoring stations – 2009 (continued)

Station	Parameter ^a	Dose ^b (mrem/year)	Total dose for station ^c	Net dose for station ^d
A24	Americium-241	5.7E-09		
	Neptunium-237	0.0E+00		
	Plutonium-238	3.2E-09		
	Plutonium-239/240	9.5E-10		
	Technetium-99	2.7E-04		
	Uranium-233/234	7.7E-06		
	Uranium-235	4.1E-07		
	Uranium-236	1.0E-07	(0.00028)	(0.00024)
	Uranium-238	6.0E-06	2.8E-04	2.4E-04
A28	Americium-241	5.2E-09		
	Neptunium-237	4.5E-09		
	Plutonium-238	2.2E-09		
	Plutonium-239/240	6.9E-13		
	Technetium-99	3.7E-05		
	Uranium-233/234	4.7E-05		
	Uranium-235	2.9E-06		
	Uranium-236	3.1E-07	(0.00015)	(0.00011)
	Uranium-238	6.1E-05	1.5E-04	1.1E-04
A29	Americium-241	3.9E-09		
	Neptunium-237	1.4E-09		
	Plutonium-238	1.2E-09		
	Plutonium-239/240	1.3E-12		
	Technetium-99	3.4E-05		
	Uranium-233/234	4.5E-05		
	Uranium-235	2.1E-06		
	Uranium-236	3.2E-07	(0.00014)	(0.00010)
	Uranium-238	5.7E-05	1.4E-04	1.0E-04
A36	Americium-241	2.5E-09		
	Neptunium-237	2.0E-09		
	Plutonium-238	4.0E-09		
	Plutonium-239/240	2.1E-09		
	Technetium-99	6.4E-05		
	Uranium-233/234	1.2E-05		
	Uranium-235	6.3E-07		
	Uranium-236	4.5E-08	(0.000087)	(0.000051)
	Uranium-238	1.0E-05	8.7E-05	5.1E-05
A37	Americium-241	5.4E-09		
	Neptunium-237	2.3E-09		
	Plutonium-238	3.4E-09		
	Plutonium-239/240	1.3E-09		
	Technetium-99	2.6E-05		
	Uranium-233/234	5.1E-06		
	Uranium-235	3.7E-07		
	Uranium-236	3.9E-08	(0.000036)	
	Uranium-238	4.3E-06	3.6E-05	-

Table 3.3. Dose calculations for ambient air monitoring stations – 2009 (continued)

Station	Parameter ^a	Dose ^b (mrem/year)	Total dose for station ^c	Net dose for station ^d
A41	Americium-241	4.8E-09		
	Neptunium-237	3.0E-09		
	Plutonium-238	2.5E-09		
	Plutonium-239/240	2.1E-09		
	Technetium-99	4.3E-05		
	Uranium-233/234	5.0E-06		
	Uranium-235	4.7E-07		
	Uranium-236	2.1E-08	(0.000053)	(0.000017)
	Uranium-238	4.6E-06	5.3E-05	1.7E-05
T7	Americium-241	3.8E-09		
	Neptunium-237	1.4E-09		
	Plutonium-238	3.0E-09		
	Plutonium-239/240	1.3E-09		
	Technetium-99	6.1E-05		
	Uranium-233/234	8.0E-06		
	Uranium-235	4.2E-07		
	Uranium-236	3.6E-08	(0.000075)	(0.000039)
	Uranium-238	5.8E-06	7.5E-05	3.9E-05

^aParameters listed in **bold** type were detected at least once in the samples collected in 2009 (see Table 2.8).

^bThe dose calculation is based on the maximum detection of each parameter at each station. For parameters that were not detected, half of the highest undetected result for the parameter was used to calculate the activity of each parameter in ambient air that is the basis for the dose. Measurements are provided in scientific notation. The number and sign (+ or -) to the right of the “E” indicate the number of places to the right or left of the decimal point. For example, 3.4E-04 is 0.00034 (the decimal point moves four places to the left); 2.1E+02 is 210 (the decimal point moves two places to the right).

^cThe total dose is provided in scientific notation and standard numeric format (in parentheses).

^dThe net dose is calculated by subtracting the total dose at Station A37 (background) from the total dose calculated for each station (the net dose is recorded as zero for stations with a gross dose less than the background station). The net dose is provided in scientific notation and standard numeric format (in parentheses).

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4. GROUNDWATER

This section summarizes analytical results for routine groundwater monitoring at PORTS in 2009 at the following locations:

- X-749/X-120/Peter Kiewit (PK) Landfill
- Quadrant I Groundwater Investigative Area/X-749A Classified Materials Disposal Facility
- Quadrant II Groundwater Investigative Area
- X-701B Holding Pond
- X-633 Pumphouse/Cooling Towers Area
- X-616 Chromium Sludge Surface Impoundments
- X-740 Waste Oil Handling Facility
- X-611A Former Lime Sludge Lagoons
- X-735 Landfills
- X-734 Landfills
- X-533 Switchyard Area
- Surface water monitoring locations
- Exit pathway monitoring locations

Results for radiological parameters and VOCs are reported in this section. Only those VOCs that were detected in at least one sampling event are listed in this section. All results are included for radiological parameters, even if a specific constituent was not detected at a specific well or location during any sampling event in 2009. Samples collected in 2009 at the X-740 Waste Oil Handling Facility were not analyzed for radionuclides.

Results for chromium at the X-616 Chromium Sludge Surface Impoundments are also included in this section because chromium is a primary contaminant in this area. Results are provided for metals at the X-633 Pumphouse/Cooling Towers Area, X-611A Former Lime Sludge Lagoons, and X-533 Switchyard Area because these metals are the only analytical parameters for these areas.

Two VOCs, acetone and methylene chloride, were frequently detected in both environmental and blank samples (field and trip blanks) collected in 2009. Acetone and methylene chloride are common laboratory contaminants that are not typically detected in the PORTS groundwater plumes. Detections of acetone and methylene chloride are often qualified by the laboratory with a "B", which indicates that the analyte was also detected in the laboratory blank associated with the environmental sample and may be present due to laboratory contamination.

Other VOCs, including trichloroethene, 2-butanone (methyl ethyl ketone), carbon disulfide, chloroform, and toluene were detected in trip and/or field blanks during 2009. These detections indicate that samples (both environmental samples and blank samples) may become contaminated with low concentrations of VOCs during other portions of the sampling process, although contamination can still occur in the laboratory. Other sources of contamination may include storage areas for sampling equipment (such as bottles and blank water), areas in which samples are collected or prepared, sample containers, and storage areas after samples are collected (such as refrigerators or sample shipping containers).

The primary purpose of the groundwater data, as stated in the *Quality Assurance Project Plan*, is to determine the nature and extent of contamination in groundwater and associated surface water at PORTS. Data collected in 2009 meet this purpose.

Complete groundwater monitoring results for sampling completed as required by the *Integrated Groundwater Monitoring Plan* are provided in the *2009 Groundwater Monitoring Report for the Portsmouth Gaseous Diffusion Plant*.

The following tables are included in this section:

- Table 4.1. Volatile organic compounds detected at the X-749/X-120/PK Landfill – 2009
- Table 4.2. Results for radionuclides at the X-749/X-120/PK Landfill – 2009
- Table 4.3. Volatile organic compounds detected at the Quadrant I Groundwater Investigative Area – 2009
- Table 4.4. Results for radionuclides at the Quadrant I Groundwater Investigative Area – 2009
- Table 4.5. Volatile organic compounds detected at the Quadrant II Groundwater Investigative Area – 2009
- Table 4.6. Results for radionuclides at the Quadrant II Groundwater Investigative Area – 2009
- Table 4.7. Volatile organic compounds detected at the X-701B Holding Pond – 2009
- Table 4.8. Results for radionuclides at the X-701B Holding Pond – 2009
- Table 4.9. Results for chromium at the X-633 Pumphouse/Cooling Towers Area – 2009
- Table 4.10. Volatile organic compounds detected at the X-616 Chromium Sludge Surface Impoundments – 2009
- Table 4.11. Results for chromium at the X-616 Chromium Sludge Surface Impoundments – 2009
- Table 4.12. Results for radionuclides at the X-616 Chromium Sludge Surface Impoundments – 2009
- Table 4.13. Volatile organic compounds detected at the X-740 Waste Oil Handling Facility – 2009
- Table 4.14. Results for beryllium and chromium at the X-611A Former Lime Sludge Lagoons – 2009
- Table 4.15. Volatile organic compounds detected at the X-735 Landfills – 2009
- Table 4.16. Results for radionuclides at the X-735 Landfills – 2009
- Table 4.17. Volatile organic compounds detected at the X-734 Landfills – 2009
- Table 4.18. Results for radionuclides at the X-734 Landfills – 2009

- Table 4.19. Results for cadmium, cobalt, and nickel at the X-533 Switchyard Area – 2009
- Table 4.20. Volatile organic compounds detected at surface water monitoring locations – 2009
- Table 4.21. Results for radionuclides at surface water monitoring locations – 2009
- Table 4.22. Results for radionuclides at exit pathway monitoring locations – 2009

The following laboratory data qualifiers are used in the tables in this section:

Data qualifier	Meaning
B	Inorganics (metals): the result was less than the practical quantitation limit but greater than or equal to the instrument detection limit. Organics (VOCs): the analyte was detected in the laboratory blank sample.
E	Organics (VOCs): the reported value is estimated because it exceeded the calibration range.
J	Organics (VOCs): the reported value is an estimated concentration greater than the method detection limit but less than the practical quantitation limit.
U	Undetected

Some results for radionuclides are reported in exponential notation. The number and sign (+ or -) to the right of the “E” indicate the number of places to the right or left of the decimal point. For example, 3.4E-04 is 0.00034 (the decimal point moves four places to the left); 2.1E+02 is 210 (the decimal point moves two places to the right). Data qualifiers, if any, are to the right of the result (for example, 5.66E-07 U, where U is the data qualifier that indicates the parameter was undetected).

Table 4.1. Volatile organic compounds detected at the X-749/X-120/PK Landfill – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
F-27G	1,1-Dichloroethane	µg/L		1.2 J		
	cis-1,2-Dichloroethene	µg/L		0.51 J		
	Trichloroethene	µg/L		0.23 J		
MH GW-4	1,1-Dichloroethane	µg/L		0.4 J		
	Chlorobenzene	µg/L		0.31 J		
	cis-1,2-Dichloroethene	µg/L		1.6 J		
	Vinyl chloride	µg/L		0.6 J		
MH GW-5	1,1-Dichloroethane	µg/L		0.71 J		
	Chlorobenzene	µg/L		0.18 J		
	cis-1,2-Dichloroethene	µg/L		3		
PK-09G	1,2-Dichlorobenzene	µg/L			0.16 J	
	Acetone	µg/L			1.9 J	
	Chloroform	µg/L			0.39 J	
	cis-1,2-Dichloroethene	µg/L			1.4 J	
	Trichloroethene	µg/L			62	
PK-10G	Acetone	µg/L		29		1.9 U
PK-11G	Acetone	µg/L		17		1.9 U
PK-14G	Acetone	µg/L	10 U	10 U	2 J	1.9 U
	Methylene chloride	µg/L	0.4 BJ	5 U	0.32 U	0.32 U
	Trichloroethene	µg/L	2 U	2 U	0.87 J	0.16 U
PK-15B	cis-1,2-Dichloroethene	µg/L		0.41 J		0.56 J
PK-16G	Acetone	µg/L	10 U	4.6 J	1.9 U	1.9 U
	cis-1,2-Dichloroethene	µg/L	2 U	2 U	1.4 J	0.3 J
	Methylene chloride	µg/L	0.39 BJ	0.4 BJ	0.32 U	0.32 U
	Trichloroethene	µg/L	2 U	2 U	0.16 J	0.16 U
PK-17B	1,1-Dichloroethane	µg/L	2.7	1.5 J	3.2	2.1
	1,1-Dichloroethene	µg/L	0.32 J	0.32 J	0.33 J	0.26 J
	Acetone	µg/L	10 U	10 U	2.8 J	3.5 J
	Benzene	µg/L	2 U	2 U	0.24 J	0.16 U
	Chlorobenzene	µg/L	1.5 J	1.2 J	1.3 J	1.4 J
	cis-1,2-Dichloroethene	µg/L	39	22	47	30
	trans-1,2-Dichloroethene	µg/L	1.3	0.72 J	1.5	1
	Trichloroethene	µg/L	1.2 J	0.4 J	1.4 J	1.3 J
	Vinyl chloride	µg/L	16	10	18	8.9
PK-18B	Acetone	µg/L		10 U		2.1 J
	Trichloroethene	µg/L		2 U		0.37 J
PK-19B	Acetone	µg/L		3.1 J		1.9 U
	Chloroethane	µg/L		1.1 J		0.9 J
PK-21B	1,1-Dichloroethane	µg/L	150	140	140	160
	1,1-Dichloroethene	µg/L	1.7 J	1.9 J	1.5 J	1.9 J
	1,2-Dichloroethane	µg/L	0.76 J	0.69 J	0.13 U	0.85 J
	Benzene	µg/L	2 U	0.63 J	0.67 J	0.75 J
	cis-1,2-Dichloroethene	µg/L	12	11	11	13
	Trichloroethene	µg/L	0.49 J	0.37 J	0.44 J	0.49 J
	Vinyl chloride	µg/L	17	17	17	18
	1,1,1-Trichloroethane	µg/L	3.6	6.5	3.4	3.2
PK-PL6	1,1-Dichloroethane	µg/L	6.9	6.2	8.8	6.8
	1,1-Dichloroethene	µg/L	2.7	4	3.2	2.7

Table 4.1. Volatile organic compounds detected at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
PK-PL6	cis-1,2-Dichloroethene	µg/L	1.6 J	1.9 J	2.3	1.9 J
	Trichloroethene	µg/L	1.9 J	2.8	3	2.3
	Vinyl chloride	µg/L	1 U	1 U	0.81 J	0.4 U
PK-PL6A	1,1,1-Trichloroethane	µg/L	4.3	14	6.8	4.3
	1,1-Dichloroethane	µg/L	8.2	11	17	8.6
	1,1-Dichloroethene	µg/L	3.3	8.5	6.5	3.7
	Chloroform	µg/L	2 U	2 U	0.2 J	0.16 U
	cis-1,2-Dichloroethene	µg/L	1.5 J	2	3.2	2.1
	Trichloroethene	µg/L	2.2	5.8	3.5	3.1
	Vinyl chloride	µg/L	1 U	1 U	1.8	0.65 J
STSW-101G	1,1,1-Trichloroethane	µg/L		34		32
	1,1,2-Trichloroethane	µg/L		1.7 J		0.32 U
	1,1-Dichloroethane	µg/L		53		54
	1,1-Dichloroethene	µg/L		100		52
	1,2-Dichloroethane	µg/L		12		12
	Acetone	µg/L		10 U		15
	Chloroethane	µg/L		2		1.5 J
	Chloroform	µg/L		4.3		4.3
	cis-1,2-Dichloroethene	µg/L		31		32
	Methylene chloride	µg/L		0.53 BJ		0.32 U
	Tetrachloroethene	µg/L		1.5 J		1.6 J
	Trichloroethene	µg/L		120		110
	1,1,1-Trichloroethane	µg/L		46		50
	1,1,2-Trichloroethane	µg/L		1.5 J		1 J
STSW-102G	1,1-Dichloroethane	µg/L		230		250
	1,1-Dichloroethene	µg/L		140		140
	1,2-Dichloroethane	µg/L		72		84
	Acetone	µg/L		22 J		11 J
	Benzene	µg/L		0.6 J		0.57 J
	Chloroethane	µg/L		1.5 J		4.1
	Chloroform	µg/L		7.7		8.4
	cis-1,2-Dichloroethene	µg/L		59		79
	Methylene chloride	µg/L		1.3 BJ		1.1 J
	Tetrachloroethene	µg/L		5.3 U		0.6 J
	trans-1,2-Dichloroethene	µg/L		0.51 J		0.56 J
	Trichloroethene	µg/L		620		560
	1,2-Dichloroethane	µg/L	2 U	2 U	0.14 J	0.13 U
	Acetone	µg/L	10 U	1.9 BJ	3.1 J	4.2 BJ
WP-01G	Methylene chloride	µg/L	5 U	5 U	0.93 BJ	0.93 BJ
	Acetone	µg/L		2.2 BJ		1.9 U
WP-02G	Methylene chloride	µg/L		1.2 BJ		0.32 U
	Acetone	µg/L				
WP-03G	1,1-Dichloroethane	µg/L	0.7 J	0.57 J	0.53 J	0.43 J
	1,1-Dichloroethene	µg/L	0.3 J	0.28 J	0.21 J	0.14 U
	Acetone	µg/L	10 U	10 U	1.9 U	3.2 BJ
	Methylene chloride	µg/L	5 U	5 U	0.32 U	1.2 BJ
	Trichloroethene	µg/L	1 J	0.77 J	0.74 J	0.56 J
WP-04G	Acetone	µg/L		10 U		3.4 BJ
	Methylene chloride	µg/L		5 U		1.1 BJ

Table 4.1. Volatile organic compounds detected at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
WP-05G	Acetone	µg/L	5.6 BJ	10 U		1.9 U
	Methylene chloride	µg/L	0.37 J	5 U		0.32 U
WP-06G	Acetone	µg/L	2.8 BJ	2.2 J		1.9 U
	Methylene chloride	µg/L	0.33 J	0.35 BJ		0.32 U
WP-07G	1,1-Dichloroethane	µg/L	0.23 J	2 U	0.16 U	0.16 U
	Acetone	µg/L	6.3 BJ	10 U	3.3 BJ	2.2 BJ
	Methylene chloride	µg/L	5 U	5 U	0.64 J	1.1 BJ
X120-03G	Trichloroethene	µg/L	0.19 J	2 U	0.16 U	0.16 U
	Chloroform	µg/L			0.55 J	
	Trichloroethene	µg/L			1 J	
X120-05G	Trichloroethene	µg/L			6.4	
X120-08G	1,1,1-Trichloroethane	µg/L		1.7 J		
	1,1-Dichloroethane	µg/L		1.5 J		
	1,1-Dichloroethene	µg/L		5.7		
	Chloroform	µg/L		0.25 J		
	Trichloroethene	µg/L		6.9		
	1,1,1-Trichloroethane	µg/L		18		
	1,1,2-Trichloroethane	µg/L		1.1 J		
	1,1-Dichloroethane	µg/L		15		
X120-09G	1,1-Dichloroethene	µg/L		54		
	1,2-Dichloroethane	µg/L		1.5 J		
	Chloroform	µg/L		1.7 J		
	cis-1,2-Dichloroethene	µg/L		0.81 J		
	Tetrachloroethene	µg/L		0.39 J		
	Trichloroethene	µg/L		35		
	1,1,1-Trichloroethane	µg/L			8.2	
	1,1,2-Trichloroethane	µg/L			0.75 J	
X120-10G	1,1-Dichloroethane	µg/L			8.2	
	1,1-Dichloroethene	µg/L			40	
	1,2-Dichloroethane	µg/L			0.77 J	
	Chloroform	µg/L			1.1 J	
	cis-1,2-Dichloroethene	µg/L			0.21 J	
	Methylene chloride	µg/L			0.35 BJ	
	Trichloroethene	µg/L			6.7	
	1,1-Dichloroethene	µg/L	0.55 J			
X120-11G	cis-1,2-Dichloroethene	µg/L	7.2			
	trans-1,2-Dichloroethene	µg/L	0.15 J			
	Trichloroethene	µg/L	380			
	Carbon tetrachloride	µg/L			0.2 J	
X749-04G	Chloroform	µg/L			0.69 J	
	cis-1,2-Dichloroethene	µg/L			0.71 J	
	Tetrachloroethene	µg/L			23	
	Trichloroethene	µg/L			820	
	1,1-Dichloroethane	µg/L			0.37 J	
X749-05G	1,1-Dichloroethene	µg/L			0.24 J	
	Carbon tetrachloride	µg/L			0.28 J	
	Chloroform	µg/L			1.5 J	
	cis-1,2-Dichloroethene	µg/L			0.99 J	

Table 4.1. Volatile organic compounds detected at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-05G	Tetrachloroethene	µg/L			4.9	
	Toluene	µg/L			0.19 J	
	Trichloroethene	µg/L			70	
X749-06G	1,1,1-Trichloroethane	µg/L		240		140
	1,1,2-Trichloroethane	µg/L		15		11
	1,1-Dichloroethane	µg/L		700		530
	1,1-Dichloroethene	µg/L		780		510
	1,2-Dichloroethane	µg/L		16		10
	Carbon tetrachloride	µg/L		13 U		18
	Chloroform	µg/L		49		32
	cis-1,2-Dichloroethene	µg/L		120		94
	Methylene chloride	µg/L		4.1 J		9.4 J
	Tetrachloroethene	µg/L		43		42
	trans-1,2-Dichloroethene	µg/L		6.7 U		0.64 J
	Trichloroethene	µg/L		1900		1400
	Vinyl chloride	µg/L		5.9 J		1.6 U
X749-07G	1,1,1,2-Tetrachloroethane	µg/L		1.5		
	1,1,1-Trichloroethane	µg/L		54		45
	1,1,2-Trichloroethane	µg/L		1.1		0.69 J
	1,1-Dichloroethane	µg/L		230		86
	1,1-Dichloroethene	µg/L		98		58
	1,2-Dichlorobenzene	µg/L		0.52 BJ		0.13 U
	1,2-Dichloroethane	µg/L		94		32
	Carbon disulfide	µg/L		2 U		0.88 BJ
	Chloroethane	µg/L		1.2 J		0.88 J
	Chloroform	µg/L		6.4		3.9
	cis-1,2-Dichloroethene	µg/L		31		14
	Dichlorodifluoromethane	µg/L		0.83 J		
	Methylene chloride	µg/L		5 U		0.65 J
	Tetrachloroethene	µg/L		1.8		1.8 J
	trans-1,2-Dichloroethene	µg/L		0.15 J		0.15 U
	trans-1,4-Dichloro-2-butene	µg/L		2.7 J		
	Trichloroethene	µg/L		300		180
	Vinyl chloride	µg/L		1.4		0.7 J
X749-08G	1,1,1-Trichloroethane	µg/L		48		38
	1,1,2-Trichloroethane	µg/L		0.57 J		0.32 U
	1,1-Dichloroethane	µg/L		26		18
	1,1-Dichloroethene	µg/L		77		62
	1,2-Dichlorobenzene	µg/L		0.59 BJ		0.13 U
	1,2-Dichloroethane	µg/L		5.8		3.6
	Carbon disulfide	µg/L		2 U		0.82 BJ
	Chloroethane	µg/L		0.84 J		0.43 J
	Chloroform	µg/L		1.5		1.1 J
	cis-1,2-Dichloroethene	µg/L		26		17
	Methylene chloride	µg/L		5 U		0.65 J
	trans-1,2-Dichloroethene	µg/L		0.21 J		0.18 J
	Trichloroethene	µg/L		110		86
	Vinyl chloride	µg/L		1.3		0.75 J

Table 4.1. Volatile organic compounds detected at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-09GA	1,1,1-Trichloroethane	µg/L		20		39
	1,1-Dichloroethane	µg/L		6.8		17
	1,1-Dichloroethene	µg/L		18		50
	1,2-Dichloroethane	µg/L		1.1 J		2.8
	Acetone	µg/L		2.9 BJ		1.9 U
	Chloroform	µg/L		0.47 J		1.1 J
	cis-1,2-Dichloroethene	µg/L		5.2		12
	trans-1,2-Dichloroethene	µg/L		1 U		0.3 J
	Trichloroethene	µg/L		22		32
	1,1-Dichloroethane	µg/L		7.4		7.8
X749-10GA	1,1-Dichloroethene	µg/L		17		19
	1,2-Dichlorobenzene	µg/L		0.59 BJ		0.13 U
	1,2-Dichloroethane	µg/L		0.18 J		0.13 U
	Chloroethane	µg/L		1.1 J		0.83 J
	cis-1,2-Dichloroethene	µg/L		4.1		4.2
	Toluene	µg/L		0.38 J		0.17 U
	Trichloroethene	µg/L		0.67 J		0.56 J
	Vinyl chloride	µg/L		1.1		0.74 J
X749-13G	1,1,1-Trichloroethane	µg/L			36	
	1,1,2-Trichloroethane	µg/L			0.38 J	
	1,1-Dichloroethane	µg/L			10	
	1,1-Dichloroethene	µg/L			72	
	1,2-Dichloroethane	µg/L			1.7 J	
	Chloroethane	µg/L			0.43 J	
	Chloroform	µg/L			1.5 J	
	cis-1,2-Dichloroethene	µg/L			10	
	Methylene chloride	µg/L			0.51 BJ	
	Trichloroethene	µg/L			64	
X749-14B	Vinyl chloride	µg/L			0.49 J	
	Acetone	µg/L	28 B			
X749-20G	1,1,1-Trichloroethane	µg/L			5.9	
	1,1-Dichloroethane	µg/L			8.7	
	1,1-Dichloroethene	µg/L			11	
	1,2-Dichloroethane	µg/L			2.3	
	Acetone	µg/L			3.6 J	
	Chloroform	µg/L			0.83 J	
	cis-1,2-Dichloroethene	µg/L			5	
	Methylene chloride	µg/L			0.45 BJ	
	Trichloroethene	µg/L			65	
	Vinyl chloride	µg/L			0.44 J	
	1,1,1-Trichloroethane	µg/L		0.98 J		1.4 J
X749-21G	1,1-Dichloroethane	µg/L		0.24 J		0.4 J
	1,1-Dichloroethene	µg/L		0.6 J		0.8 J
	Carbon disulfide	µg/L		2 U		0.73 BJ
	cis-1,2-Dichloroethene	µg/L		2 U		0.19 J
	Methylene chloride	µg/L		5 U		0.54 J
	Trichloroethene	µg/L		6.2		2.2
	1,1-Dichloroethane	µg/L				0.54 J
X749-22G						

Table 4.1. Volatile organic compounds detected at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-22G	1,1-Dichloroethene	µg/L				0.47 J
X749-26G	1,1,1-Trichloroethane	µg/L				10
	1,1-Dichloroethane	µg/L				21
	1,1-Dichloroethene	µg/L				27
	1,2-Dichloroethane	µg/L				9.6
	Chloroform	µg/L				1.3 J
	cis-1,2-Dichloroethene	µg/L				3.2
	Tetrachloroethene	µg/L				0.22 J
	Trichloroethene	µg/L				39
X749-27G	1,1,1-Trichloroethane	µg/L	52			22
	1,1,2-Trichloroethane	µg/L	1.7 J			0.89 J
	1,1-Dichloroethane	µg/L	66			22
	1,1-Dichloroethene	µg/L	160			60
	1,2-Dichloroethane	µg/L	26			4.2
	Chloroethane	µg/L	3.6			0.41 U
	Chloroform	µg/L	8.1			2.7
	cis-1,2-Dichloroethene	µg/L	39			6.8
	Methylene chloride	µg/L	0.73 J			0.32 U
	Tetrachloroethene	µg/L	2.7			1.8 J
	trans-1,2-Dichloroethene	µg/L	0.21 J			0.15 U
	Trichloroethene	µg/L	220 E			85
	Vinyl chloride	µg/L	0.54 J			0.4 U
X749-28G	1,1,1-Trichloroethane	µg/L			4.2	
	1,1-Dichloroethane	µg/L			1.8 J	
	1,1-Dichloroethene	µg/L			6.4	
	1,2-Dichloroethane	µg/L			0.16 J	
	Chloroform	µg/L			0.66 J	
	cis-1,2-Dichloroethene	µg/L			0.43 J	
	Tetrachloroethene	µg/L			0.39 J	
	Trichloroethene	µg/L			44	
X749-29G	Chloroform	µg/L			0.2 J	
	Methylene chloride	µg/L			0.35 BJ	
	Trichloroethene	µg/L			6.9	
X749-30G	1,1-Dichloroethene	µg/L			1 J	
	Chloroform	µg/L			0.29 J	
	cis-1,2-Dichloroethene	µg/L			0.42 J	
	Methylene chloride	µg/L			0.4 BJ	
	Trichloroethene	µg/L			21	
X749-35G	1,1,1-Trichloroethane	µg/L			94	
	1,1,2-Trichloroethane	µg/L			0.55 J	
	1,1-Dichloroethane	µg/L			9.2	
	1,1-Dichloroethene	µg/L			54	
	1,2-Dichloroethane	µg/L			0.25 J	
	Chloroform	µg/L			0.56 J	
	cis-1,2-Dichloroethene	µg/L			7.5	
	Methylene chloride	µg/L			0.38 BJ	
	Tetrachloroethene	µg/L			0.36 J	
	Trichloroethene	µg/L			110	

Table 4.1. Volatile organic compounds detected at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-35G	Vinyl chloride	µg/L			0.86 J	
X749-36G	1,1,1-Trichloroethane	µg/L			3	
	1,1-Dichloroethane	µg/L			2.6	
	1,1-Dichloroethene	µg/L			9.7	
	1,2-Dichloroethane	µg/L			0.31 J	
	Chloroform	µg/L			0.31 J	
	cis-1,2-Dichloroethene	µg/L			0.23 J	
	Trichloroethene	µg/L			6	
X749-37G	1,1,1-Trichloroethane	µg/L		31		27
	1,1,2-Trichloroethane	µg/L		1.2 J		1.3 J
	1,1-Dichloroethane	µg/L		30		27
	1,1-Dichloroethene	µg/L		73		80
	1,2-Dichloroethane	µg/L		2.6		2.1
	Chloroethane	µg/L		0.6 J		0.41 U
	Chloroform	µg/L		2.9		2.4
	cis-1,2-Dichloroethene	µg/L		9		7.4
	Tetrachloroethene	µg/L		1.5 J		2
	trans-1,2-Dichloroethene	µg/L		1 U		0.17 J
	Trichloroethene	µg/L		64		77
X749-38G	1,1,1-Trichloroethane	µg/L		41		48
	1,1,2-Trichloroethane	µg/L		2.3		2.8
	1,1-Dichloroethane	µg/L		57		60
	1,1-Dichloroethene	µg/L		170		170
	1,2-Dichloroethane	µg/L		8.6		7.8
	Acetone	µg/L		23		1.9 U
	Chloroethane	µg/L		1.5 J		1.2 J
	Chloroform	µg/L		5.6		6.2
	cis-1,2-Dichloroethene	µg/L		40		37
	Methylene chloride	µg/L		0.67 J		0.35 J
	Tetrachloroethene	µg/L		2.1		3.6
	trans-1,2-Dichloroethene	µg/L		1.2		0.15 U
	Trichloroethene	µg/L		150		170
X749-40G	Chloroform	µg/L			0.31 J	
	Trichloroethene	µg/L			0.16 J	
X749-41G	1,1-Dichloroethene	µg/L		0.18 J		
	Chloroform	µg/L		0.21 J		
	cis-1,2-Dichloroethene	µg/L		1.5 J		
	trans-1,2-Dichloroethene	µg/L		0.43 J		
	Trichloroethene	µg/L		240		
X749-42G	Trichloroethene	µg/L				12
X749-43G	1,1,1-Trichloroethane	µg/L			0.19 J	
	1,1-Dichloroethene	µg/L			0.23 J	
X749-44G	1,1,1-Trichloroethane	µg/L	1.2 J	0.82 J	0.57 J	0.58 J
	1,1-Dichloroethane	µg/L	6.9	5.3	3.7	3.5
	1,1-Dichloroethene	µg/L	3.9	2.9	1.7 J	1.8 J
	1,2-Dichloroethane	µg/L	2	1.5 J	1.1 J	0.84 J
	Carbon disulfide	µg/L	2 U	2 U	2 U	0.78 BJ
	Chloroform	µg/L	0.41 J	0.26 J	0.17 J	0.21 J

Table 4.1. Volatile organic compounds detected at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-44G	cis-1,2-Dichloroethene	µg/L	0.88 J	0.63 J	0.41 J	0.36 J
	Methylene chloride	µg/L	5 U	5 U	5 U	0.58 J
	Trichloroethene	µg/L	12	8.4	5.8	5.4
X749-45G	1,1-Dichloroethane	µg/L	1.3 J	1.1 J	0.7 J	0.59 J
	1,1-Dichloroethene	µg/L	0.78 J	0.55 J	0.36 J	0.28 J
	1,2-Dichloroethane	µg/L	0.32 J	0.26 J	0.19 J	0.18 J
	cis-1,2-Dichloroethene	µg/L	0.77 J	0.64 J	0.38 J	0.32 J
	Trichloroethene	µg/L	2.7	2.2	1.7 J	1.4 J
X749-50B	1,1-Dichloroethane	µg/L			5.5	
	1,1-Dichloroethene	µg/L			0.17 J	
	1,2-Dichloroethane	µg/L			3.2	
	Chloroethane	µg/L			0.78 J	
	cis-1,2-Dichloroethene	µg/L			1.1 J	
	Methylene chloride	µg/L			0.4 BJ	
	Trichloroethene	µg/L			0.38 J	
X749-51B	Methylene chloride	µg/L			0.43 BJ	
X749-54B	1,1-Dichloroethane	µg/L		1.8 J		1.3 J
	Trichloroethene	µg/L		2.4		25
	Vinyl chloride	µg/L		0.5 J		0.4 U
X749-64B	Trichloroethene	µg/L			1.1 J	
X749-67G	1,1,1-Trichloroethane	µg/L	34	28	29	28
	1,1,2-Trichloroethane	µg/L	1 J	1.1 J	1.3 J	1 J
	1,1-Dichloroethane	µg/L	250	180	190	180
	1,1-Dichloroethene	µg/L	190	150	130	140
	1,2-Dichloroethane	µg/L	74	56	69	56
	Acetone	µg/L	9.4 J	10 U	10 U	1.9 U
	Benzene	µg/L	0.58 J	0.67 J	2 U	0.16 U
	Chloroethane	µg/L	3.9 J	5.4	3.9	2.7
	Chloroform	µg/L	9	8.2	9.2	7.8
	cis-1,2-Dichloroethene	µg/L	94	100	110	
	Methylene chloride	µg/L	1.3 J	0.54 J	5 U	0.71 J
	Tetrachloroethene	µg/L	4 U	0.55 J	0.48 J	0.5 J
	trans-1,2-Dichloroethene	µg/L	0.97 J	0.75 J	0.65 J	0.57 J
	Trichloroethene	µg/L	540	520	530	510
	Vinyl chloride	µg/L	1 J	1.4	0.99 J	0.4 U
X749-68G	Trichloroethene	µg/L			0.24 J	
X749-96G	Acetone	µg/L	2.4 J	10 U	10 U	1.9 U
X749-97G	1,1-Dichloroethane	µg/L	0.44 J	0.3 J	0.18 J	0.16 U
	1,1-Dichloroethene	µg/L	0.2 J	2 U	0.14 U	0.14 U
	Trichloroethene	µg/L	1.1 J	0.75 J	0.62 J	0.42 J
X749-100M	Acetone	µg/L			3.1 J	
X749-102G	1,1-Dichloroethane	µg/L	1 J	1 J	0.54 J	0.43 J
	1,1-Dichloroethene	µg/L	0.48 J	0.52 J	0.24 J	0.17 J
	1,2-Dichloroethane	µg/L	2 U	0.22 J	2 U	0.13 U
	Trichloroethene	µg/L	1.5 J	1.6 J	0.81 J	0.73 J
X749-103G	Acetone	µg/L	10 U	3.2 BJ	10 U	1.9 U
X749-106G	1,1,1-Trichloroethane	µg/L		54		54
	1,1,2-Trichloroethane	µg/L		3.4		3.3

Table 4.1. Volatile organic compounds detected at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-106G	1,1-Dichloroethane	µg/L		51		50
	1,1-Dichloroethene	µg/L		2 U		200
	1,2-Dichloroethane	µg/L		5.2		4.6
	Acetone	µg/L		10 U		5.9 J
	Chloroform	µg/L		5.5		5.3
	cis-1,2-Dichloroethene	µg/L		3.8		3.6
	Methylene chloride	µg/L		5 U		0.37 J
	Tetrachloroethene	µg/L		1.5 J		1.4 J
	Trichloroethene	µg/L		100		110
X749-107G	1,1,1-Trichloroethane	µg/L		60		64
	1,1,2-Trichloroethane	µg/L		4.1		4.3
	1,1-Dichloroethane	µg/L		58		63
	1,1-Dichloroethene	µg/L		280		250
	1,2-Dichloroethane	µg/L		5.6		6
	Acetone	µg/L		10 U		5.9 J
	Chloroform	µg/L		6.7		7.1
	cis-1,2-Dichloroethene	µg/L		4.9		5.3
	Methylene chloride	µg/L		0.46 J		0.41 J
	Tetrachloroethene	µg/L		1.4 J		1.5 J
	Trichloroethene	µg/L		140		140
X749-108G	1,1,1-Trichloroethane	µg/L		76		75
	1,1,2-Trichloroethane	µg/L		4		4.1
	1,1-Dichloroethane	µg/L		63		66
	1,1-Dichloroethene	µg/L		270		220
	1,2-Dichloroethane	µg/L		5.5		6.1
	Acetone	µg/L		10 U		5.3 J
	Chloroform	µg/L		8		8.1
	cis-1,2-Dichloroethene	µg/L		4.7		5.1
	Methylene chloride	µg/L		0.73 J		0.72 J
	Tetrachloroethene	µg/L		1.6 J		1.6 J
	Trichloroethene	µg/L		180		170
	Vinyl chloride	µg/L		0.41 J		0.4 U
X749-109G	1,1,1-Trichloroethane	µg/L		13		2.5
	1,1,2-Trichloroethane	µg/L		0.59 J		0.32 U
	1,1-Dichloroethane	µg/L		21		6.5
	1,1-Dichloroethene	µg/L		45		7.5
	1,2-Dichloroethane	µg/L		4.8		1.5 J
	Acetone	µg/L		10 U		2.7 J
	Chloroform	µg/L		2.1		0.47 J
	cis-1,2-Dichloroethene	µg/L		3.3		0.66 J
	Trichloroethene	µg/L		36		11
X749-110G	1,1,1-Trichloroethane	µg/L		26		30
	1,1,2-Trichloroethane	µg/L		0.87 J		0.64 U
	1,1-Dichloroethane	µg/L		100		88
	1,1-Dichloroethene	µg/L		130		110
	1,2-Dichloroethane	µg/L		30		26
	Acetone	µg/L		10 U		16 J
	Benzene	µg/L		0.48 J		0.32 U

Table 4.1. Volatile organic compounds detected at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-110G	Chloroethane	µg/L		4.8		5.7
	Chloroform	µg/L		5.6		4.6
	cis-1,2-Dichloroethene	µg/L		100		81
	Methylene chloride	µg/L		0.37 J		0.64 U
	Tetrachloroethene	µg/L		0.22 J		0.4 U
	trans-1,2-Dichloroethene	µg/L		0.77 J		0.38 J
	Trichloroethene	µg/L		280		240
	Vinyl chloride	µg/L		3.8		2.8
X749-112G	Acetone	µg/L		17 B		
X749-113G	1,1,1-Trichloroethane	µg/L		36		34
	1,1,2-Trichloroethane	µg/L		0.65 J		0.71 J
	1,1-Dichloroethane	µg/L		40		39
	1,1-Dichloroethene	µg/L		29		64
	1,2-Dichloroethane	µg/L		20		17
	Chloroform	µg/L		3.6		3.4
	cis-1,2-Dichloroethene	µg/L		4.3		4.8
	Tetrachloroethene	µg/L		1 J		1.3 J
X749-114G	Trichloroethene	µg/L		63		94
	1,1,1-Trichloroethane	µg/L			0.38 J	
	1,1-Dichloroethane	µg/L			0.59 J	
	1,1-Dichloroethene	µg/L			0.2 J	
	Acetone	µg/L			2.6 BJ	
	Benzene	µg/L			0.4 J	
	cis-1,2-Dichloroethene	µg/L			0.52 J	
X749-115G	Trichloroethene	µg/L			0.17 J	
	Chloroform	µg/L		0.62 J		1.1 J
	cis-1,2-Dichloroethene	µg/L		2.3		3.4
X749-117G	Trichloroethene	µg/L		120		190
	1,1-Dichloroethane	µg/L		2 U		0.22 J
	Chloroform	µg/L		1.5 J		1.1 J
	cis-1,2-Dichloroethene	µg/L		2 U		0.29 J
	Tetrachloroethene	µg/L		0.32 J		3.1
X749-118G	Trichloroethene	µg/L		15		39
	1,1-Dichloroethane	µg/L		1 J		1.4 J
	1,1-Dichloroethene	µg/L		2 U		0.23 J
	Carbon tetrachloride	µg/L		2 U		0.32 J
	Chloroform	µg/L		2 U		1.2 J
	cis-1,2-Dichloroethene	µg/L		0.62 J		1.2 J
	Tetrachloroethene	µg/L		8.2		5.2
X749-119G	Trichloroethene	µg/L		88		100
	1,1-Dichloroethane	µg/L		2 U		0.18 J
	Chloroform	µg/L		0.78 J		0.98 J
	cis-1,2-Dichloroethene	µg/L		0.53 J		0.72 J
	Tetrachloroethene	µg/L		2 U		0.22 J
X749-120G	Trichloroethene	µg/L		7.3		8.4
	1,1,1-Trichloroethane	µg/L		730		1200
	1,1,2-Trichloroethane	µg/L		46 J		83 J
	1,1-Dichloroethane	µg/L		4100		5200

Table 4.1. Volatile organic compounds detected at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-120G	1,1-Dichloroethene	µg/L		1600		2900
	1,2-Dichloroethane	µg/L		21 J		70 J
	Acetone	µg/L		320 J		190 U
	Chloroform	µg/L		440		280
	cis-1,2-Dichloroethene	µg/L		1500		2000
	Methylene chloride	µg/L		64 J		120 J
	Tetrachloroethene	µg/L		260		620
	Trichloroethene	µg/L		21000		22000
X749-121G	1,1,1-Trichloroethane	µg/L		100		110
	1,1,2-Trichloroethane	µg/L		0.83 J		1.4 J
	1,1-Dichloroethane	µg/L		59		53
	1,1-Dichloroethene	µg/L		320		410
	1,2-Dichloroethane	µg/L		0.87 J		1.6 J
	Acetone	µg/L		4.4 J		1.9 U
	Carbon tetrachloride	µg/L		4 U		0.23 J
	Chloroethane	µg/L		15		18
	Chloroform	µg/L		0.65 J		1.3 J
	cis-1,2-Dichloroethene	µg/L		17		19
	Methylene chloride	µg/L		10 U		0.51 J
	Tetrachloroethene	µg/L		4 U		0.76 J
	Trichloroethene	µg/L		92		110
	Vinyl chloride	µg/L		1.8 J		2
X749-122G	1,1,1-Trichloroethane	µg/L		250		400
	1,1,2-Trichloroethane	µg/L		1.7 J		3.3 J
	1,1-Dichloroethane	µg/L		55		89
	1,1-Dichloroethene	µg/L		270		370
	1,2-Dichloroethane	µg/L		3.5 J		5.5
	Acetone	µg/L		20 U		12 BJ
	Benzene	µg/L		4 U		0.79 J
	Chloroethane	µg/L		1.1 J		2.2 J
	Chloroform	µg/L		2.6 J		4.4
	cis-1,2-Dichloroethene	µg/L		38		61
	Methylene chloride	µg/L		10 U		2.1 J
	trans-1,2-Dichloroethene	µg/L		0.39 J		0.86 J
	Trichloroethene	µg/L		450		680
	Vinyl chloride	µg/L		2.2		4
X749-BG9G	1,1,1-Trichloroethane	µg/L		2 U		0.18 J
	1,1-Dichloroethane	µg/L		0.39 J		0.46 J
	1,1-Dichloroethene	µg/L		2 U		0.21 J
	Trichloroethene	µg/L		0.39 J		0.59 J
X749-PZ02G	1,1,1-Trichloroethane	µg/L		0.23 J		0.26 J
	1,1-Dichloroethane	µg/L		0.28 J		0.31 J
	1,1-Dichloroethene	µg/L		0.69 J		0.81 J
	cis-1,2-Dichloroethene	µg/L		0.18 J		0.18 J
	Trichloroethene	µg/L		1.5 J		1.6 J
X749-PZ03G	Methylene chloride	µg/L	5 U	5 U	0.38 J	0.32 U
X749-PZ04G	1,1,1-Trichloroethane	µg/L	0.65 J	0.54 J	0.27 J	0.23 J
	1,1-Dichloroethane	µg/L	7	5.2	2.8	2.5

Table 4.1. Volatile organic compounds detected at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-PZ04G	1,1-Dichloroethene	µg/L	3.5	2.5	0.88 J	1.2 J
	1,2-Dichloroethane	µg/L	2	1.5 J	0.88 J	0.7 J
	Acetone	µg/L	10 U	2.1 J	10 U	1.9 U
	Chloroform	µg/L	0.2 J	0.17 J	2 U	0.16 U
	cis-1,2-Dichloroethene	µg/L	3.3	2.5	1.4 J	1.1 J
	Trichloroethene	µg/L	16	12	6.4	5.9
X749-PZ06G	1,1,1-Trichloroethane	µg/L				17
	1,1,2-Trichloroethane	µg/L				1.2 J
	1,1-Dichloroethane	µg/L				22
	1,1-Dichloroethene	µg/L				75
	1,2-Dichloroethane	µg/L				2
	Chloroform	µg/L				2.5
	cis-1,2-Dichloroethene	µg/L				1.3 J
	Methylene chloride	µg/L				0.34 BJ
	Trichloroethene	µg/L				31
X749-PZ07G	1,1,1-Trichloroethane	µg/L		1.3 J		
	1,1-Dichloroethane	µg/L		1.1 J		
	1,1-Dichloroethene	µg/L		3.7		
	Chloroform	µg/L		0.2 J		
	cis-1,2-Dichloroethene	µg/L		0.27 J		
	Trichloroethene	µg/L		8		
X749-PZ08G	1,1-Dichloroethane	µg/L		0.28 J		
	cis-1,2-Dichloroethene	µg/L		0.47 J		
	Trichloroethene	µg/L		1.1 J		
X749-PZ09G	1,1,1-Trichloroethane	µg/L			1.7 J	
	1,1-Dichloroethane	µg/L			2.4	
	1,1-Dichloroethene	µg/L			6.1	
	Chloroform	µg/L			0.69 J	
	cis-1,2-Dichloroethene	µg/L			11	
	Methylene chloride	µg/L			0.75 J	
	Tetrachloroethene	µg/L			0.25 J	
	Trichloroethene	µg/L			120	
	Vinyl chloride	µg/L			1.6	
X749-PZ10G	1,1,1-Trichloroethane	µg/L		22		24
	1,1,2-Trichloroethane	µg/L		0.59 J		0.64 U
	1,1-Dichloroethane	µg/L		0.81 J		0.85 J
	1,1-Dichloroethene	µg/L		130		150
	1,2-Dichloroethane	µg/L		2 U		0.62 J
	Acetone	µg/L		10 U		85
	Carbon disulfide	µg/L		2 U		1.6 BJ
	Chloroform	µg/L		33		36
	cis-1,2-Dichloroethene	µg/L		0.67 J		0.7 J
	Methylene chloride	µg/L		5 U		1.6 J
	Toluene	µg/L		0.66 J		0.34 U
	Trichloroethene	µg/L		660		790
X749-PZ11G	1,1,1-Trichloroethane	µg/L			47	
	1,1-Dichloroethane	µg/L			16	
	1,1-Dichloroethene	µg/L			20	

Table 4.1. Volatile organic compounds detected at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-PZ11G	Benzene	µg/L			0.46 J	
	Chloroform	µg/L			0.41 J	
	cis-1,2-Dichloroethene	µg/L			19	
	trans-1,2-Dichloroethene	µg/L			0.68 J	
	Trichloroethene	µg/L			120	
	Vinyl chloride	µg/L			4.3	
X749-PZ12G	1,1,1-Trichloroethane	µg/L			11	
	1,1-Dichloroethane	µg/L			55	
	1,1-Dichloroethene	µg/L			51	
	Benzene	µg/L			3.5	
	Chloroethane	µg/L			3.2	
	cis-1,2-Dichloroethene	µg/L			12	
X749-PZ13G	trans-1,2-Dichloroethene	µg/L			0.57 J	
	Trichloroethene	µg/L			14	
	Vinyl chloride	µg/L			3.8	
	1,1,1-Trichloroethane	µg/L			70	
	1,1,2-Trichloroethane	µg/L			0.72 J	
	1,1-Dichloroethane	µg/L			64	
X749-WPW	1,1-Dichloroethene	µg/L			130	
	Benzene	µg/L			1.8 J	
	Chloroethane	µg/L			3.9	
	Chloroform	µg/L			1.5 J	
	cis-1,2-Dichloroethene	µg/L			30	
	Methylene chloride	µg/L			0.4 J	
X749-WPW	trans-1,2-Dichloroethene	µg/L			0.66 J	
	Trichloroethene	µg/L			120	
	Vinyl chloride	µg/L			2.8	
	1,1,1-Trichloroethane	µg/L	140			120
	1,1,2-Trichloroethane	µg/L	2.3 J			1.8 J
	1,1-Dichloroethane	µg/L	130			110
X749-WPW	1,1-Dichloroethene	µg/L	260			260
	1,2-Dichloroethane	µg/L	51			26
	Benzene	µg/L	1.6 J			0.64 U
	Chloroethane	µg/L	2 J			1.6 U
	Chloroform	µg/L	21			23
	cis-1,2-Dichloroethene	µg/L	42			40
X749-WPW	Tetrachloroethene	µg/L	4.3			3.8 J
	trans-1,2-Dichloroethene	µg/L	0.6 J			0.6 U
	Trichloroethene	µg/L	840			810
	Vinyl chloride	µg/L	13			12

Table 4.2. Results for radionuclides at the X-749/X-120/PK Landfill – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
STSW-101G	Americium-241	pCi/L	2.4E-05 U			
	Neptunium-237	pCi/L	0.01419 U			
	Plutonium-238	pCi/L	0.02826 U			
	Plutonium-239/240	pCi/L	7.1E-06 U			
	Technetium-99	pCi/L	16.4			
	Uranium	µg/L	0.1399			
	Uranium-233/234	pCi/L	0.06729			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.04701			
STSW-102G	Americium-241	pCi/L	0 U			
	Neptunium-237	pCi/L	-0.0499 U			
	Plutonium-238	pCi/L	-0.0071 U			
	Plutonium-239/240	pCi/L	7.1E-06 U			
	Technetium-99	pCi/L	113			
	Uranium	µg/L	0.1823 U			
	Uranium-233/234	pCi/L	0.06218 U			
	Uranium-235	pCi/L	-0.0085 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.06203			
WP-01G	Americium-241	pCi/L	0.036 U			
	Neptunium-237	pCi/L	-0.0080 U			
	Plutonium-238	pCi/L	0.02408 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	-3.06 U			
	Uranium	µg/L	0.1595 U			
	Uranium-233/234	pCi/L	0.06143			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	-0.0085 U			
	Uranium-238	pCi/L	0.05365 U			
WP-02G	Americium-241	pCi/L	9.2E-06 U			
	Neptunium-237	pCi/L	0.00841 U			
	Plutonium-238	pCi/L	0.02515 U			
	Plutonium-239/240	pCi/L	0.00838 U			
	Technetium-99	pCi/L	2.04 U			
	Uranium	µg/L	0.04989 U			
	Uranium-233/234	pCi/L	0.07558			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.01676 U			
WP-03G	Americium-241	pCi/L	0.03207 U			
	Neptunium-237	pCi/L	0.00858 U			
	Plutonium-238	pCi/L	0.01712 U			
	Plutonium-239/240	pCi/L	0.02567 U			
	Technetium-99	pCi/L	-3.38 U			
	Uranium	µg/L	0.1044 U			
	Uranium-233/234	pCi/L	0.0341 U			
	Uranium-235	pCi/L	0.01052 U			

Table 4.2. Results for radionuclides at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
WP-03G	Uranium-236	pCi/L	0.01889 U			
	Uranium-238	pCi/L	0.03403 U			
WP-04G	Americium-241	pCi/L	0.00932 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	7.4E-06 U			
	Plutonium-239/240	pCi/L	-0.0074 U			
	Technetium-99	pCi/L	-4.52 U			
	Uranium	µg/L	0.06508 U			
	Uranium-233/234	pCi/L	0.04375 U			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0.00808 U			
	Uranium-238	pCi/L	0.02183 U			
WP-05G	Americium-241	pCi/L		0.0288 U		
	Neptunium-237	pCi/L		0 U		
	Plutonium-238	pCi/L		-0.0086 U		
	Plutonium-239/240	pCi/L		0.02585 U		
	Technetium-99	pCi/L		-3.55 U		
	Uranium	µg/L		0.575		
	Uranium-233/234	pCi/L		0.3306		
	Uranium-235	pCi/L		0.008496 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.1925		
WP-06G	Americium-241	pCi/L		-0.0103 U		
	Neptunium-237	pCi/L		0.01716 U		
	Plutonium-238	pCi/L		-0.00854 U		
	Plutonium-239/240	pCi/L		0.01712 U		
	Technetium-99	pCi/L		-4.22 U		
	Uranium	µg/L		3.31		
	Uranium-233/234	pCi/L		1.072		
	Uranium-235	pCi/L		0.08151		
	Uranium-236	pCi/L		-0.00812 U		
	Uranium-238	pCi/L		1.106		
WP-07G	Americium-241	pCi/L		-0.01648 U		
	Neptunium-237	pCi/L		-0.06396 U		
	Plutonium-238	pCi/L		0.01825 U		
	Plutonium-239/240	pCi/L		-0.009094 U		
	Technetium-99	pCi/L		-4.66 U		
	Uranium	µg/L		0.04216 U		
	Uranium-233/234	pCi/L		0.07797		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.01416 U		
X120-08G	Americium-241	pCi/L	0.00728 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	0.00664 U			
	Plutonium-239/240	pCi/L	0.00663 U			
	Technetium-99	pCi/L	-0.999 U			
	Uranium	µg/L	0.1285			

Table 4.2. Results for radionuclides at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X120-08G	Uranium-233/234	pCi/L		0.1588		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		-0.008 U		
	Uranium-238	pCi/L		0.04321		
X749-06G	Americium-241	pCi/L		0.01447 U		
	Neptunium-237	pCi/L		0.0076 U		
	Plutonium-238	pCi/L		0.01516 U		
	Plutonium-239/240	pCi/L		0.00758 U		
	Technetium-99	pCi/L		35.4		
	Uranium	µg/L		0.1813		
	Uranium-233/234	pCi/L		0.09038		
	Uranium-235	pCi/L		0.00929 U		
	Uranium-236	pCi/L		-0.0083 U		
	Uranium-238	pCi/L		0.06013		
X749-07G	Americium-241	pCi/L		0 U		
	Neptunium-237	pCi/L		0.00759 U		
	Plutonium-238	pCi/L		0.02268 U		
	Plutonium-239/240	pCi/L		0.00757 U		
	Technetium-99	pCi/L		128		
	Uranium	µg/L		0.2392		
	Uranium-233/234	pCi/L		0.1538		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.08038		
X749-08G	Americium-241	pCi/L		-0.0111 U		
	Neptunium-237	pCi/L		0.00728 U		
	Plutonium-238	pCi/L		0.01449 U		
	Plutonium-239/240	pCi/L		1.4E-05 U		
	Technetium-99	pCi/L		11.6		
	Uranium	µg/L		0.1505		
	Uranium-233/234	pCi/L		0.08687		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.05057		
X749-14B	Americium-241	pCi/L		0.01019 U		
	Neptunium-237	pCi/L		-0.0143 U		
	Plutonium-238	pCi/L		-0.0142 U		
	Plutonium-239/240	pCi/L		0.01424 U		
	Technetium-99	pCi/L		1.27 U		
	Uranium	µg/L		0.1577		
	Uranium-233/234	pCi/L		0.08216		
	Uranium-235	pCi/L		0.00921 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.05218		
X749-20G	Americium-241	pCi/L			1.821E-05 U	
	Neptunium-237	pCi/L			0 U	
	Plutonium-238	pCi/L			0 U	
	Plutonium-239/240	pCi/L			0 U	

Table 4.2. Results for radionuclides at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-20G	Technetium-99	pCi/L		294		
	Uranium	µg/L		0.5742		
	Uranium-233/234	pCi/L		0.2543		
	Uranium-235	pCi/L		0.02941 U		
	Uranium-236	pCi/L		1.759E-05 U		
	Uranium-238	pCi/L		0.1903		
X749-26G	Americium-241	pCi/L			0.02783 U	
	Neptunium-237	pCi/L			-0.01577 U	
	Plutonium-238	pCi/L			0.02363 U	
	Plutonium-239/240	pCi/L			-0.01573 U	
	Technetium-99	pCi/L			4.52 U	
	Uranium	µg/L			0.0415 U	
	Uranium-233/234	pCi/L			0.0622	
	Uranium-235	pCi/L			0 U	
	Uranium-236	pCi/L			0.03062 U	
	Uranium-238	pCi/L			0.0138 U	
X749-27G	Americium-241	pCi/L	0.00894 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	-0.0365 U			
	Plutonium-239/240	pCi/L	0.00733 U			
	Technetium-99	pCi/L	37.7			
	Uranium	µg/L	0.2126			
	Uranium-233/234	pCi/L	0.1002			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0.00792 U			
	Uranium-238	pCi/L	0.0714			
X749-44G	Americium-241	pCi/L	-0.0107 U			
	Neptunium-237	pCi/L	-0.0221 U			
	Plutonium-238	pCi/L	0.02206 U			
	Plutonium-239/240	pCi/L	-0.0073 U			
	Technetium-99	pCi/L	-2.82 U			
	Uranium	µg/L	0.2406			
	Uranium-233/234	pCi/L	0.1229			
	Uranium-235	pCi/L	-0.0101 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.08173			
X749-45G	Americium-241	pCi/L	0.02463 U			
	Neptunium-237	pCi/L	-0.0718 U			
	Plutonium-238	pCi/L	0.00718 U			
	Plutonium-239/240	pCi/L	7.2E-06 U			
	Technetium-99	pCi/L	-1.57 U			
	Uranium	µg/L	0.06873 U			
	Uranium-233/234	pCi/L	0.06264			
	Uranium-235	pCi/L	0.02575 U			
	Uranium-236	pCi/L	-0.0077 U			
	Uranium-238	pCi/L	0.02083 U			
X749-54B	Americium-241	pCi/L	0.00808 U			
	Neptunium-237	pCi/L	6.3E-06 U			

Table 4.2. Results for radionuclides at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-54B	Plutonium-238	pCi/L		0.00628 U		
	Plutonium-239/240	pCi/L		0.01255 U		
	Technetium-99	pCi/L		-0.675 U		
	Uranium	µg/L		0.06925 U		
	Uranium-233/234	pCi/L		0.04499 U		
	Uranium-235	pCi/L		0.00925 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.02244 U		
X749-64B	Americium-241	pCi/L			0.02158 U	
	Neptunium-237	pCi/L			-0.01718 U	
	Plutonium-238	pCi/L			0 U	
	Plutonium-239/240	pCi/L			-0.02574 U	
	Technetium-99	pCi/L			-3.97 U	
	Uranium	µg/L			1.699	
	Uranium-233/234	pCi/L			2.747	
	Uranium-235	pCi/L			0.01024 U	
	Uranium-236	pCi/L			0.009164 U	
	Uranium-238	pCi/L			0.5697	
X749-68G	Americium-241	pCi/L			0.007977 U	
	Neptunium-237	pCi/L			0.00751 U	
	Plutonium-238	pCi/L			0.02244 U	
	Plutonium-239/240	pCi/L			7.475E-06 U	
	Technetium-99	pCi/L			-1.61 U	
	Uranium	µg/L			-0.02092 U	
	Uranium-233/234	pCi/L			0.02126 U	
	Uranium-235	pCi/L			0 U	
	Uranium-236	pCi/L			0 U	
	Uranium-238	pCi/L			-0.007031 U	
X749-96G	Americium-241	pCi/L		0.04273 U		
	Neptunium-237	pCi/L		-0.0172 U		
	Plutonium-238	pCi/L		0.01718 U		
	Plutonium-239/240	pCi/L		1.7E-05 U		
	Technetium-99	pCi/L		-2.88 U		
	Uranium	µg/L		0.2099		
	Uranium-233/234	pCi/L		0.1838		
	Uranium-235	pCi/L		0.0189 U		
	Uranium-236	pCi/L		0.00848 U		
	Uranium-238	pCi/L		0.0688		
X749-97G	Americium-241	pCi/L		4.6E-05 U		
	Neptunium-237	pCi/L		2.4E-05 U		
	Plutonium-238	pCi/L		-0.0081 U		
	Plutonium-239/240	pCi/L		0.00811 U		
	Technetium-99	pCi/L		-1.4 U		
	Uranium	µg/L		0.1927		
	Uranium-233/234	pCi/L		0.1069		
	Uranium-235	pCi/L		-0.0101 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.06566		

Table 4.2. Results for radionuclides at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-98G	Americium-241	pCi/L	-0.0087 U			
	Neptunium-237	pCi/L	-0.0263 U			
	Plutonium-238	pCi/L	0.01968 U			
	Plutonium-239/240	pCi/L	-0.0262 U			
	Technetium-99	pCi/L	-1.98 U			
	Uranium	µg/L	0.1618			
	Uranium-233/234	pCi/L	0.02727 U			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.05437			
X749-106G	Americium-241	pCi/L	0.01944 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	7.5E-06 U			
	Plutonium-239/240	pCi/L	0.01496 U			
	Technetium-99	pCi/L	5.22 U			
	Uranium	µg/L	0.1733 U			
	Uranium-233/234	pCi/L	0.07194			
	Uranium-235	pCi/L	0.00887 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.05745 U			
X749-108G	Americium-241	pCi/L	0.00815 U			
	Neptunium-237	pCi/L	-0.0075 U			
	Plutonium-238	pCi/L	0.0226 U			
	Plutonium-239/240	pCi/L	0.00753 U			
	Technetium-99	pCi/L	7.89 U			
	Uranium	µg/L	0.08737 U			
	Uranium-233/234	pCi/L	0.06618			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.02936 U			
X749-109G	Americium-241	pCi/L	0.00768 U			
	Neptunium-237	pCi/L	0.01477 U			
	Plutonium-238	pCi/L	7.3E-06 U			
	Plutonium-239/240	pCi/L	0.01471 U			
	Technetium-99	pCi/L	4.09 U			
	Uranium	µg/L	0.09116 U			
	Uranium-233/234	pCi/L	0.05694 U			
	Uranium-235	pCi/L	-0.0200 U			
	Uranium-236	pCi/L	-0.009 U			
	Uranium-238	pCi/L	0.03246 U			
X749-110G	Americium-241	pCi/L	9E-06 U			
	Neptunium-237	pCi/L	3.3E-05 U			
	Plutonium-238	pCi/L	0.02666 U			
	Plutonium-239/240	pCi/L	-0.0333 U			
	Technetium-99	pCi/L	10.3			
	Uranium	µg/L	0.313			
	Uranium-233/234	pCi/L	0.1302			
	Uranium-235	pCi/L	7.6E-06 U			

Table 4.2. Results for radionuclides at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-110G	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.1052		
X749-113G	Americium-241	pCi/L		-0.0321 U		
	Neptunium-237	pCi/L		-0.0143 U		
	Plutonium-238	pCi/L		1.4E-05 U		
	Plutonium-239/240	pCi/L		1.4E-05 U		
	Technetium-99	pCi/L		85.4		
	Uranium	µg/L		0.1878		
	Uranium-233/234	pCi/L		0.06325 U		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		8.7E-06 U		
	Uranium-238	pCi/L		0.06311		
X749-115G	Technetium-99	pCi/L		1.37 U		-0.461 U
X749-117G	Technetium-99	pCi/L		-0.524 U		-3.19 U
X749-118G	Technetium-99	pCi/L		-0.443 U		-1.71 U
X749-119G	Technetium-99	pCi/L		13.1		1.59 U
X749-120G	Technetium-99	pCi/L		1150		1160
X749-121G	Technetium-99	pCi/L		915		847
X749-122G	Technetium-99	pCi/L		6.09 U		-2.69 U
X749-PZ02G	Americium-241	pCi/L		0.02329 U		
	Neptunium-237	pCi/L		-0.0212 U		
	Plutonium-238	pCi/L		0.00707 U		
	Plutonium-239/240	pCi/L		7.1E-06 U		
	Technetium-99	pCi/L		0.219 U		
	Uranium	µg/L		0.08242 U		
	Uranium-233/234	pCi/L		0.09019		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.02769 U		
X749-PZ04G	Americium-241	pCi/L			0.007779 U	
	Neptunium-237	pCi/L			-0.04171 U	
	Plutonium-238	pCi/L			0.02498 U	
	Plutonium-239/240	pCi/L			-0.03327 U	
	Technetium-99	pCi/L			-6.66 U	
	Uranium	µg/L			-0.02522 U	
	Uranium-233/234	pCi/L			0.02315 U	
	Uranium-235	pCi/L			-0.009493 U	
	Uranium-236	pCi/L			0.008532 U	
	Uranium-238	pCi/L			-0.007672 U	
X749-PZ09G	Americium-241	pCi/L			-0.03382 U	
	Neptunium-237	pCi/L			-0.01607 U	
	Plutonium-238	pCi/L			0.008033 U	
	Plutonium-239/240	pCi/L			0.008041 U	
	Technetium-99	pCi/L			2540	
	Uranium	µg/L			0.8174	
	Uranium-233/234	pCi/L			0.1981	
	Uranium-235	pCi/L			0.00941 U	
	Uranium-236	pCi/L			0.008441 U	

Table 4.2. Results for radionuclides at the X-749/X-120/PK Landfill – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-PZ09G	Uranium-238	pCi/L			0.2738	
X749-PZ11G	Americium-241	pCi/L			-0.01639 U	
	Neptunium-237	pCi/L			-0.007426 U	
	Plutonium-238	pCi/L			-0.01481 U	
	Plutonium-239/240	pCi/L			0.00742 U	
	Technetium-99	pCi/L			-2.64 U	
	Uranium	µg/L			0.9116	
	Uranium-233/234	pCi/L			0.2354	
	Uranium-235	pCi/L			0.009681 U	
	Uranium-236	pCi/L			0 U	
	Uranium-238	pCi/L			0.3055	
X749-PZ12G	Americium-241	pCi/L			0.03755 U	
	Neptunium-237	pCi/L			0.03585 U	
	Plutonium-238	pCi/L			0.0000357 U	
	Plutonium-239/240	pCi/L			0.008943 U	
	Technetium-99	pCi/L			-4.19 U	
	Uranium	µg/L			0.7687	
	Uranium-233/234	pCi/L			0.2641	
	Uranium-235	pCi/L			0.02874 U	
	Uranium-236	pCi/L			-0.008594 U	
	Uranium-238	pCi/L			0.2558	
X749-PZ13G	Americium-241	pCi/L			0.01036 U	
	Neptunium-237	pCi/L			0.02601 U	
	Plutonium-238	pCi/L			-0.00862 U	
	Plutonium-239/240	pCi/L			0.008654 U	
	Technetium-99	pCi/L			0.274 U	
	Uranium	µg/L			2.191	
	Uranium-233/234	pCi/L			0.7664	
	Uranium-235	pCi/L			0.05083 U	
	Uranium-236	pCi/L			-0.0547 U	
	Uranium-238	pCi/L			0.7318	
X749-WPW	Americium-241	pCi/L				0.01421 U
	Neptunium-237	pCi/L				-0.04821 U
	Plutonium-238	pCi/L				-0.01601 U
	Plutonium-239/240	pCi/L				-0.08817 U
	Technetium-99	pCi/L				4250
	Uranium	µg/L				0.592
	Uranium-233/234	pCi/L				0.2458
	Uranium-235	pCi/L				0 U
	Uranium-236	pCi/L				0.01472 U
	Uranium-238	pCi/L				0.1989

Table 4.3. Volatile organic compounds detected at the Quadrant I Groundwater Investigative Area – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X230K-14G	Chloromethane	µg/L			1 BJ	
	cis-1,2-Dichloroethene	µg/L			0.23 J	
	Trichloroethene	µg/L			4.4	
X230K-15G	cis-1,2-Dichloroethene	µg/L			0.2 J	
	Trichloroethene	µg/L			2.6	
X231A-01G	1,1-Dichloroethane	µg/L	15			
	1,1-Dichloroethene	µg/L	0.86 J			
	1,2-Dimethylbenzene	µg/L	0.39 J			
	Acetone	µg/L	3.8 J			
	Benzene	µg/L	0.47 J			
	Chloroethane	µg/L	2			
	Chloroform	µg/L	0.17 J			
	cis-1,2-Dichloroethene	µg/L	1.1 J			
	Trichloroethene	µg/L	11			
X231A-04G	1,1,1-Trichloroethane	µg/L			0.21 J	
	1,1-Dichloroethene	µg/L			1.2 J	
	Chloroform	µg/L			0.39 J	
	cis-1,2-Dichloroethene	µg/L			0.97 J	
	Methylene chloride	µg/L			0.72 J	
	Trichloroethene	µg/L	16			
X231B-02G	1,1-Dichloroethene	µg/L			0.33 J	
	Chloroform	µg/L			9.7	
	cis-1,2-Dichloroethene	µg/L			44	
	Methylene chloride	µg/L			1.2 BJ	
	Tetrachloroethene	µg/L			0.4 J	
	trans-1,2-Dichloroethene	µg/L			1.4 J	
X231B-03G	Trichloroethene	µg/L			760	
	1,1,1-Trichloroethane	µg/L			2.3	
	1,1-Dichloroethane	µg/L			2.1	
	1,1-Dichloroethene	µg/L			26	
	1,2-Dichlorobenzene	µg/L			0.45 J	
	Chloroform	µg/L			0.67 J	
	cis-1,2-Dichloroethene	µg/L			22	
	Methylene chloride	µg/L			0.59 J	
	Tetrachloroethene	µg/L			0.32 J	
X231B-06G	trans-1,2-Dichloroethene	µg/L			0.4 J	
	Trichloroethene	µg/L			230	
	1,1,1-Trichloroethane	µg/L			53	
	1,1,2-Trichloroethane	µg/L			2.2	
	1,1-Dichloroethane	µg/L			60	
	1,1-Dichloroethene	µg/L			170	
	1,2-Dichloroethane	µg/L			2.1	
	Benzene	µg/L			0.31 J	
	Chloroform	µg/L			0.83 J	
X231B-06G	cis-1,2-Dichloroethene	µg/L			8.1	
	Methylene chloride	µg/L			0.56 BJ	
	Tetrachloroethene	µg/L			3	
	trans-1,2-Dichloroethene	µg/L			0.28 J	

**Table 4.3. Volatile organic compounds detected at the Quadrant I Groundwater Investigative Area – 2009
(continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X231B-06G	Trichloroethene	µg/L		290		
	Vinyl chloride	µg/L		0.92 J		
X231B-07G	1,1-Dichloroethene	µg/L		0.18 J		
	Bromodichloromethane	µg/L		0.47 J		
	Carbon tetrachloride	µg/L		0.94 J		
	Chloroform	µg/L		60		
	cis-1,2-Dichloroethene	µg/L		8.8		
	Methylene chloride	µg/L		0.59 BJ		
	Tetrachloroethene	µg/L		0.49 J		
	trans-1,2-Dichloroethene	µg/L		0.22 J		
	Trichloroethene	µg/L		90		
	1,1-Dichloroethane	µg/L		0.2 J		
X231B-11G	1,1-Dichloroethene	µg/L		6		
	cis-1,2-Dichloroethene	µg/L		0.28 J		
	Methylene chloride	µg/L		0.34 J		
	Trichloroethene	µg/L		2		
	1,1,1-Trichloroethane	µg/L		1.4 J		
X231B-12G	1,1-Dichloroethane	µg/L		0.18 J		
	1,1-Dichloroethene	µg/L		5		
	cis-1,2-Dichloroethene	µg/L		0.26 J		
	Methylene chloride	µg/L		0.39 BJ		
	Trichloroethene	µg/L		4.4		
	1,1,1-Trichloroethane	µg/L		4.1		
X231B-14G	1,1-Dichloroethane	µg/L		1.7 J		
	1,1-Dichloroethene	µg/L		43		
	Chloroform	µg/L		1.5 J		
	cis-1,2-Dichloroethene	µg/L		9.6		
	Methylene chloride	µg/L		0.51 BJ		
	Trichloroethene	µg/L		180		
	cis-1,2-Dichloroethene	µg/L	0.82 J		0.75 J	
X231B-15G	Methylene chloride	µg/L	5 U		0.39 BJ	
	trans-1,2-Dichloroethene	µg/L	0.17 J		0.18 J	
	Trichloroethene	µg/L	1.4 J		2	
	1,1-Dichloroethane	µg/L			0.24 J	
X231B-16G	1,1-Dichloroethene	µg/L			4.6	
	Chloroform	µg/L			1.1 J	
	Methylene chloride	µg/L			0.36 J	
	Trichloroethene	µg/L			0.41 J	
	1,1-Dichloroethane	µg/L			6.8	
X231B-20G	1,1-Dichloroethene	µg/L			0.93 J	
	Chloroform	µg/L			0.58 J	
	cis-1,2-Dichloroethene	µg/L			0.45 BJ	
	Methylene chloride	µg/L			64	
	Trichloroethene	µg/L			0.66 J	
X231B-23G	1,1,1-Trichloroethane	µg/L			0.23 J	
	1,1-Dichloroethane	µg/L			3.4	
	1,1-Dichloroethene	µg/L			0.43 J	
	Chloroform	µg/L			0.18 J	
	cis-1,2-Dichloroethene	µg/L				

**Table 4.3. Volatile organic compounds detected at the Quadrant I Groundwater Investigative Area – 2009
(continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X231B-23G	Trichloroethene	µg/L			1.3 J	
X231B-24B	Methylene chloride	µg/L			0.36 J	
	Trichloroethene	µg/L			0.39 J	
X231B-29G	Chloroform	µg/L			0.27 J	
	cis-1,2-Dichloroethene	µg/L			0.8 J	
	Tetrachloroethene	µg/L			0.5 J	
	Trichloroethene	µg/L			19	
X231B-32B	Trichloroethene	µg/L			0.27 J	
X231B-36G	1,1-Dichloroethene	µg/L			0.24 J	
	Chloroform	µg/L			0.68 J	
	cis-1,2-Dichloroethene	µg/L			1.5 J	
	Methylene chloride	µg/L			0.44 BJ	
	Trichloroethene	µg/L			79	
X231B-37G	1,1-Dichloroethane	µg/L			2.7	
	1,1-Dichloroethene	µg/L			2.8	
	cis-1,2-Dichloroethene	µg/L			4.9	
	trans-1,2-Dichloroethene	µg/L			0.91 J	
	Trichloroethene	µg/L			19	
X326-09G	1,1,1-Trichloroethane	µg/L	3.1		8 U	
	1,1,2-Trichloroethane	µg/L	3.6		16 U	
	1,1-Dichloroethane	µg/L	0.81 J		8 U	
	1,1-Dichloroethene	µg/L	160 J		93 J	
	1,2-Dimethylbenzene	µg/L	0.39 J		9.5 U	
	Benzene	µg/L	0.68 J		8 U	
	Bromodichloromethane	µg/L	15		15 J	
	Bromoform	µg/L	0.72 J		9.5 U	
	Carbon tetrachloride	µg/L	3.2		9.5 U	
	Chloroform	µg/L	470 J		400	
	cis-1,2-Dichloroethene	µg/L	58		62 J	
	Dibromochloromethane	µg/L	2.8		8.5 U	
	Methylene chloride	µg/L	1.5 J		16 U	
	Tetrachloroethene	µg/L	1 J		10 U	
	trans-1,2-Dichloroethene	µg/L	0.82 J		7.5 U	
	Trichloroethene	µg/L	11000		15000	
	Vinyl chloride	µg/L	2.1		20 U	
X326-10G	cis-1,2-Dichloroethene	µg/L	1.5 J		1.4 J	
	Methylene chloride	µg/L	5 U		0.41 BJ	
	Trichloroethene	µg/L	8.8		12	
X626-07G	1,1,1-Trichloroethane	µg/L			6	
	1,1,2-Trichloroethane	µg/L			1.7 J	
	1,1-Dichloroethane	µg/L			1.3 J	
	1,1-Dichloroethene	µg/L			240	
	1,2-Dichloroethane	µg/L			0.71 J	
	1,4-Dichlorobenzene	µg/L			0.17 J	
	Benzene	µg/L			0.85 J	
	Chloroform	µg/L			1.3 J	
	cis-1,2-Dichloroethene	µg/L			0.45 J	
	Trichloroethene	µg/L			190	

**Table 4.3. Volatile organic compounds detected at the Quadrant I Groundwater Investigative Area – 2009
(continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X710-01G	cis-1,2-Dichloroethene	µg/L			1 J	
	Trichloroethene	µg/L			41	
X749A-01G	Trichloroethene	µg/L		0.32 J		
X749A-02G	Acetone	µg/L		3.9 J		
	Methylene chloride	µg/L		0.43 BJ		
X749A-03G	Methylene chloride	µg/L		0.37 BJ		
X749A-04G	Methylene chloride	µg/L		1.4 J		
X749A-05G	Acetone	µg/L		4.5 BJ		
X749A-07G	Acetone	µg/L		19		
	Methylene chloride	µg/L		0.34 J		
X749A-11G	cis-1,2-Dichloroethene	µg/L		0.2 J		
	Trichloroethene	µg/L		9.8		
X749A-12G	cis-1,2-Dichloroethene	µg/L		1.4		
	Dichlorodifluoromethane	µg/L		0.45 J		
	Trichloroethene	µg/L		0.44 J		
X749A-13GA	Acetone	µg/L		2.6 J		
X749A-14G	Methylene chloride	µg/L		0.64 J		
X749A-15G	Acetone	µg/L		2.1 J		
	Methylene chloride	µg/L		0.41 BJ		
X749A-17G	Methylene chloride	µg/L		0.57 J		
X749A-18G	cis-1,2-Dichloroethene	µg/L		0.16 J		
	Methylene chloride	µg/L		0.69 J		
	Trichloroethene	µg/L		2.9		
X749A-19G	cis-1,2-Dichloroethene	µg/L		5.8		
	Dichlorodifluoromethane	µg/L		2.6		
	Methylene chloride	µg/L		0.57 J		
	Trichloroethene	µg/L		24		
X760-02G	Acetone	µg/L			17	
	Trichloroethene	µg/L			0.6 J	
X760-03G	1,1-Dichloroethene	µg/L			0.54 J	
	Acetone	µg/L			4.7 J	
	Chloroform	µg/L			0.22 J	
	cis-1,2-Dichloroethene	µg/L			6.8	
	Trichloroethene	µg/L			410	
X760-07G	1,1-Dichloroethene	µg/L			0.71 J	
	Acetone	µg/L			12 J	
	Chloroform	µg/L			0.76 J	
	cis-1,2-Dichloroethene	µg/L			7.9	
	Trichloroethene	µg/L			580	
X770-MW17G	Acetone	µg/L			160 J	
	cis-1,2-Dichloroethene	µg/L			350	
	Trichloroethene	µg/L			5600	

Table 4.4. Results for radionuclides at the Quadrant I Groundwater Investigative Area – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X231A-01G	Americium-241	pCi/L	0.06318 U			
	Neptunium-237	pCi/L	0.01496 U			
	Plutonium-238	pCi/L	0.04478 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	36.8			
	Uranium	µg/L	20.15			
	Uranium-233/234	pCi/L	6.811			
	Uranium-235	pCi/L	0.4277			
	Uranium-236	pCi/L	0.024 U			
	Uranium-238	pCi/L	6.732			
X231B-06G	Americium-241	pCi/L		0.02908 U		
	Neptunium-237	pCi/L		0.006958 U		
	Plutonium-238	pCi/L		0.006932 U		
	Plutonium-239/240	pCi/L		6.926E-06 U		
	Technetium-99	pCi/L		24.1		
	Uranium	µg/L		1.2		
	Uranium-233/234	pCi/L		1.066		
	Uranium-235	pCi/L		0.03603 U		
	Uranium-236	pCi/L		0.008088 U		
	Uranium-238	pCi/L		0.4008		
X231B-36G	Americium-241	pCi/L		0.01975 U		
	Neptunium-237	pCi/L		0 U		
	Plutonium-238	pCi/L		0.03421 U		
	Plutonium-239/240	pCi/L		8.545E-06 U		
	Technetium-99	pCi/L		0.221 U		
	Uranium	µg/L		0.954		
	Uranium-233/234	pCi/L		0.3211		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0.007568 U		
	Uranium-238	pCi/L		0.3205		
X231B-37G	Americium-241	pCi/L		0.007741 U		
	Neptunium-237	pCi/L		0.01447 U		
	Plutonium-238	pCi/L		0.01444 U		
	Plutonium-239/240	pCi/L		-0.00721 U		
	Technetium-99	pCi/L		-1.08 U		
	Uranium	µg/L		0.257		
	Uranium-233/234	pCi/L		0.1216		
	Uranium-235	pCi/L		0.00882 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.08563		
X326-09G	Americium-241	pCi/L		1.188E-05 U		
	Neptunium-237	pCi/L		7.172E-06 U		
	Plutonium-238	pCi/L		0.02147 U		
	Plutonium-239/240	pCi/L		0.02147 U		
	Technetium-99	pCi/L		-0.132 U		
	Uranium	µg/L		0.0213 U		
	Uranium-233/234	pCi/L		0.006447 U		
	Uranium-235	pCi/L		0.007954 U		

Table 4.4. Results for radionuclides at the Quadrant I Groundwater Investigative Area – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X326-09G	Uranium-236	pCi/L			0 U	
	Uranium-238	pCi/L			0.006434 U	
X626-07G	Americium-241	pCi/L			0.02037 U	
	Neptunium-237	pCi/L			0.007709 U	
	Plutonium-238	pCi/L			1.535E-05 U	
	Plutonium-239/240	pCi/L			1.535E-05 U	
	Technetium-99	pCi/L			0.946 U	
	Uranium	µg/L			0.25	
	Uranium-233/234	pCi/L			0.09639	
	Uranium-235	pCi/L			0.01699 U	
	Uranium-236	pCi/L			0 U	
	Uranium-238	pCi/L			0.08246	
X749A-01G	Americium-241	pCi/L	0.02039 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	-0.0076 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	-1.25 U			
	Uranium	µg/L	0.6676			
	Uranium-233/234	pCi/L	0.1846			
	Uranium-235	pCi/L	0.01897 U			
	Uranium-236	pCi/L	0.00852 U			
	Uranium-238	pCi/L	0.2226			
X749A-02G	Americium-241	pCi/L	0.02684 U			
	Neptunium-237	pCi/L	0.03081 U			
	Plutonium-238	pCi/L	0.03073 U			
	Plutonium-239/240	pCi/L	-0.0077 U			
	Technetium-99	pCi/L	-0.465 U			
	Uranium	µg/L	0.6991			
	Uranium-233/234	pCi/L	0.3663			
	Uranium-235	pCi/L	0.04912			
	Uranium-236	pCi/L	0.00882 U			
	Uranium-238	pCi/L	0.2305			
X749A-03G	Americium-241	pCi/L	0.03349 U			
	Neptunium-237	pCi/L	-0.0074 U			
	Plutonium-238	pCi/L	0.00737 U			
	Plutonium-239/240	pCi/L	-0.0074 U			
	Technetium-99	pCi/L	0.387 U			
	Uranium	µg/L	1.059			
	Uranium-233/234	pCi/L	0.409			
	Uranium-235	pCi/L	0.01905 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.3543			
X749A-04G	Americium-241	pCi/L	-0.0119 U			
	Neptunium-237	pCi/L	2.4E-05 U			
	Plutonium-238	pCi/L	0.00799 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	-2.64 U			
	Uranium	µg/L	0.1082			

Table 4.4. Results for radionuclides at the Quadrant I Groundwater Investigative Area – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749A-04G	Uranium-233/234	pCi/L	0.06413			
	Uranium-235	pCi/L	0.00879 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.03556			
	Americium-241	pCi/L	0.01109 U			
	Neptunium-237	pCi/L	0.01645 U			
	Plutonium-238	pCi/L	-0.0164 U			
	Plutonium-239/240	pCi/L	0.02461 U			
	Technetium-99	pCi/L	-6.39 U			
	Uranium	µg/L	0.06375 U			
X749A-05G	Uranium-233/234	pCi/L	0.1001			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.02142 U			
	Americium-241	pCi/L	0.0118 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	0.02429 U			
	Plutonium-239/240	pCi/L	0.0081 U			
	Technetium-99	pCi/L	-4.3 U			
	Uranium	µg/L	10.49			
X749A-07G	Uranium-233/234	pCi/L	3.795			
	Uranium-235	pCi/L	0.2171			
	Uranium-236	pCi/L	0.05085			
	Uranium-238	pCi/L	3.505			
	Americium-241	pCi/L	0.02914 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	0.03114 U			
	Plutonium-239/240	pCi/L	0.01557 U			
	Technetium-99	pCi/L	-3.98 U			
	Uranium	µg/L	3.166			
X749A-11G	Uranium-233/234	pCi/L	1.261			
	Uranium-235	pCi/L	0.03052 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	1.061			
	Americium-241	pCi/L	1.1E-05 U			
	Neptunium-237	pCi/L	0.00838 U			
	Plutonium-238	pCi/L	0.00837 U			
	Plutonium-239/240	pCi/L	8.3E-06 U			
	Technetium-99	pCi/L	0.853 U			
	Uranium	µg/L	0.06072 U			
X749A-12G	Uranium-233/234	pCi/L	0.04942			
	Uranium-235	pCi/L	-0.0087 U			
	Uranium-236	pCi/L	0.00782 U			
	Uranium-238	pCi/L	0.02114 U			
	Americium-241	pCi/L	-0.0086 U			
	Neptunium-237	pCi/L	0.00749 U			
	Plutonium-238	pCi/L	0.01492 U			
	Plutonium-239/240	pCi/L	1.5E-05 U			

Table 4.4. Results for radionuclides at the Quadrant I Groundwater Investigative Area – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749A-14G	Technetium-99	pCi/L		-1.43 U		
	Uranium	µg/L		0.2183		
	Uranium-233/234	pCi/L		0.05692		
	Uranium-235	pCi/L		0.02633 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.071		
X749A-15G	Americium-241	pCi/L		0.00997 U		
	Neptunium-237	pCi/L		-0.0082 U		
	Plutonium-238	pCi/L		0 U		
	Plutonium-239/240	pCi/L		0 U		
	Technetium-99	pCi/L		-2.68 U		
	Uranium	µg/L		0.1812		
	Uranium-233/234	pCi/L		0.01527 U		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		8.4E-06 U		
	Uranium-238	pCi/L		0.06088		
X749A-16G	Americium-241	pCi/L		0.00919 U		
	Neptunium-237	pCi/L		0 U		
	Plutonium-238	pCi/L		0.00928 U		
	Plutonium-239/240	pCi/L		0.01856 U		
	Technetium-99	pCi/L		4.32 U		
	Uranium	µg/L		0.1372		
	Uranium-233/234	pCi/L		0.07235		
	Uranium-235	pCi/L		0.01115 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.04512		
X749A-17G	Americium-241	pCi/L		9.8E-06 U		
	Neptunium-237	pCi/L		-0.0213 U		
	Plutonium-238	pCi/L		0.02834 U		
	Plutonium-239/240	pCi/L		0.0071 U		
	Technetium-99	pCi/L		-1.81 U		
	Uranium	µg/L		0.1795		
	Uranium-233/234	pCi/L		0.04476 U		
	Uranium-235	pCi/L		0.00920 U		
	Uranium-236	pCi/L		-0.0083 U		
	Uranium-238	pCi/L		0.05955		
X749A-18G	Americium-241	pCi/L		0.02904 U		
	Neptunium-237	pCi/L		-0.0081 U		
	Plutonium-238	pCi/L		0 U		
	Plutonium-239/240	pCi/L		-0.0242 U		
	Technetium-99	pCi/L		-4.53 U		
	Uranium	µg/L		0.355		
	Uranium-233/234	pCi/L		0.1502		
	Uranium-235	pCi/L		0.00975 U		
	Uranium-236	pCi/L		0.00877 U		
	Uranium-238	pCi/L		0.1184		
X749A-19G	Americium-241	pCi/L		2.9E-05 U		
	Neptunium-237	pCi/L		0.00695 U		

Table 4.4. Results for radionuclides at the Quadrant I Groundwater Investigative Area – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749A-19G	Plutonium-238	pCi/L		0 U		
	Plutonium-239/240	pCi/L		0.00693 U		
	Technetium-99	pCi/L		-2.81 U		
	Uranium	µg/L		0.1682		
	Uranium-233/234	pCi/L		0.04856 U		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.05653		

Table 4.5. Volatile organic compounds detected at the Quadrant II Groundwater Investigative Area – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X700-02G	1,1,1-Trichloroethane	µg/L	19 J			
	1,1-Dichloroethane	µg/L	16 J			
	1,1-Dichloroethene	µg/L	160			
	Acetone	µg/L	300 J			
	cis-1,2-Dichloroethene	µg/L	63 J			
	Trichloroethene	µg/L	8400			
X701-26G	1,1-Dichloroethene	µg/L	8.8			
	Chloroform	µg/L	0.82 J			
	Tetrachloroethene	µg/L	8.9			
	Trichloroethene	µg/L	1 J			
X701-28GA	Trichlorofluoromethane	µg/L	5.8			
	cis-1,2-Dichloroethene	µg/L	0.24 J			
X701-45G	Trichloroethene	µg/L	0.48 J			
	1,1-Dichloroethane	µg/L	0.21 J			
	1,1-Dichloroethene	µg/L	0.47 J			
X701-68G	Trichloroethene	µg/L	1.2 J			
	1,1,1-Trichloroethane	µg/L	0.28 J			
	1,1-Dichloroethane	µg/L	0.35 J			
	1,1-Dichloroethene	µg/L	2.8			
	Chloroform	µg/L	0.24 J			
	cis-1,2-Dichloroethene	µg/L	1.6 J			
X701-69G	Trichloroethene	µg/L	71			
	1,1-Dichloroethene	µg/L	2.4 J			
	Acetone	µg/L	28 J			
	cis-1,2-Dichloroethene	µg/L	470			
	trans-1,2-Dichloroethene	µg/L	19			
X701-70G	Trichloroethene	µg/L	2500			
	1,1,1-Trichloroethane	µg/L	0.2 J			
	1,1-Dichloroethene	µg/L	0.98 J			
	cis-1,2-Dichloroethene	µg/L	0.49 J			
	Tetrachloroethene	µg/L	0.4 J			
X701-117GA	Trichloroethene	µg/L	450			
	1,1,1-Trichloroethane	µg/L	0.26 J			
	1,1-Dichloroethane	µg/L	0.18 J			
	1,1-Dichloroethene	µg/L	1.7			
	1,2-Dichlorobenzene	µg/L	0.57 BJ			
	Chloroform	µg/L	0.26 J			
X705-01GA	Trichloroethene	µg/L	260			
	1,1-Dichloroethene	µg/L	0.89 J			
	Bromodichloromethane	µg/L	0.23 J			
	Carbon tetrachloride	µg/L	0.98 J			
	Chloroform	µg/L	19			
	cis-1,2-Dichloroethene	µg/L	0.46 J			
X705-02G	Tetrachloroethene	µg/L	0.47 J			
	Trichloroethene	µg/L	160			
	1,1-Dichloroethane	µg/L	0.17 J			
	1,1-Dichloroethene	µg/L	1.8 J			
	cis-1,2-Dichloroethene	µg/L	0.97 J			

**Table 4.5. Volatile organic compounds detected at the Quadrant II Groundwater Investigative Area – 2009
(continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X705-02G	Trichloroethene	µg/L	69			
X705-03G	1,1-Dichloroethane	µg/L	1.2 J			
	1,1-Dichloroethene	µg/L	1.5 J			
	cis-1,2-Dichloroethene	µg/L	6			
	Tetrachloroethene	µg/L	0.33 J			
	trans-1,2-Dichloroethene	µg/L	0.37 J			
	Trichloroethene	µg/L	45			
X705-04G	1,1-Dichloroethane	µg/L	0.2 J			
	1,1-Dichloroethene	µg/L	1.5 J			
	Bromodichloromethane	µg/L	0.98 J			
	Carbon tetrachloride	µg/L	13			
	Chloroform	µg/L	300			
	Tetrachloroethene	µg/L	1.4 J			
	Trichloroethene	µg/L	74			
X705-06G	1,1-Dichloroethane	µg/L	0.33 J			
	1,1-Dichloroethene	µg/L	3.5			
	Chloroform	µg/L	1.9 J			
	cis-1,2-Dichloroethene	µg/L	3.2			
	Tetrachloroethene	µg/L	4.5			
	Trichloroethene	µg/L	53			
X705-07G	1,1-Dichloroethene	µg/L	0.17 J			
	Chloroform	µg/L	0.59 J			
	cis-1,2-Dichloroethene	µg/L	0.96 J			
	Trichloroethene	µg/L	11			
X705-08G	1,1-Dichloroethene	µg/L	26			
X720-01G	1,1,1-Trichloroethane	µg/L	410			
	1,1-Dichloroethene	µg/L	420			
	cis-1,2-Dichloroethene	µg/L	28 J			
	Trichloroethene	µg/L	40000			
X720-08G	1,1-Dichloroethene	µg/L	100			
	Chloroform	µg/L	4.6 J			
	cis-1,2-Dichloroethene	µg/L	8.7 J			
	Trichloroethene	µg/L	6000			

Table 4.6. Results for radionuclides at the Quadrant II Groundwater Investigative Area – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-26G	Americium-241	pCi/L	0.0466 U			
	Neptunium-237	pCi/L	7E-06 U			
	Plutonium-238	pCi/L	-0.014 U			
	Plutonium-239/240	pCi/L	0.0143 U			
	Technetium-99	pCi/L	21.3			
	Uranium	µg/L	5.245			
	Uranium-233/234	pCi/L	2.981			
	Uranium-235	pCi/L	0.0606			
	Uranium-236	pCi/L	0.0155 U			
	Uranium-238	pCi/L	1.757			
X701-28GA	Americium-241	pCi/L	0.0093 U			
	Neptunium-237	pCi/L	7E-06 U			
	Plutonium-238	pCi/L	0 U			
	Plutonium-239/240	pCi/L	0.0146 U			
	Technetium-99	pCi/L	0.397 U			
	Uranium	µg/L	0.9045			
	Uranium-233/234	pCi/L	0.6349			
	Uranium-235	pCi/L	0.0310 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.3011			
X705-01GA	Americium-241	pCi/L	0.0082 U			
	Neptunium-237	pCi/L	-0.008 U			
	Plutonium-238	pCi/L	0.0160 U			
	Plutonium-239/240	pCi/L	0.0240 U			
	Technetium-99	pCi/L	508			
	Uranium	µg/L	1.143			
	Uranium-233/234	pCi/L	0.362			
	Uranium-235	pCi/L	0.0325 U			
	Uranium-236	pCi/L	0.0146 U			
	Uranium-238	pCi/L	0.3809			
X705-02G	Americium-241	pCi/L	0.0390 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	0.0341 U			
	Plutonium-239/240	pCi/L	7E-06 U			
	Technetium-99	pCi/L	0.971 U			
	Uranium	µg/L	4.882			
	Uranium-233/234	pCi/L	1.884			
	Uranium-235	pCi/L	0.0833			
	Uranium-236	pCi/L	0.0166 U			
	Uranium-238	pCi/L	1.633			
X705-07G	Americium-241	pCi/L	0.0301 U			
	Neptunium-237	pCi/L	0.0084 U			
	Plutonium-238	pCi/L	-0.05 U			
	Plutonium-239/240	pCi/L	0.0083 U			
	Technetium-99	pCi/L	203			
	Uranium	µg/L	1.647			
	Uranium-233/234	pCi/L	0.5906			
	Uranium-235	pCi/L	0.0091 U			

Table 4.6. Results for radionuclides at the Quadrant II Groundwater Investigative Area – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X705-07G	Uranium-236	pCi/L	0.0164 U			
	Uranium-238	pCi/L	0.5525			
X720-01G	Americium-241	pCi/L	0 U			
	Neptunium-237	pCi/L	0.0082 U			
	Plutonium-238	pCi/L	-0.008 U			
	Plutonium-239/240	pCi/L	-0.016 U			
	Technetium-99	pCi/L	15.6			
	Uranium	µg/L	17.7			
	Uranium-233/234	pCi/L	5.477			
	Uranium-235	pCi/L	0.3669			
	Uranium-236	pCi/L	0.0077 U			
	Uranium-238	pCi/L	5.915			
	Americium-241	pCi/L	-0.012 U			
	Neptunium-237	pCi/L	2E-05 U			
	Plutonium-238	pCi/L	-0.015 U			
X720-08G	Plutonium-239/240	pCi/L	-0.008 U			
	Technetium-99	pCi/L	213			
	Uranium	µg/L	2.571			
	Uranium-233/234	pCi/L	1.316			
	Uranium-235	pCi/L	0.0266 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.8614			

Table 4.7. Volatile organic compounds detected at the X-701B Holding Pond – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X230J7-01GA	1,1-Dichloroethene	µg/L	0.23 J		0.31 J	
	cis-1,2-Dichloroethene	µg/L	0.78 J		0.87 J	
	Trichloroethene	µg/L	270		290	
X230J7-02GA	1,2-Dichlorobenzene	µg/L	5 U		0.4 J	
	Acetone	µg/L	7.4 BJ		3.8 U	
	Chloroform	µg/L	5 U		0.32 J	
	cis-1,2-Dichloroethene	µg/L	2.2 J		2 J	
	Methylene chloride	µg/L	1.2 J		0.77 J	
	Tetrachloroethene	µg/L	0.59 J		0.49 J	
	Trichloroethene	µg/L	630		680	
X230J7-03GA	Acetone	µg/L	26 BJ		30 J	
	cis-1,2-Dichloroethene	µg/L	450		380	
	Methylene chloride	µg/L	3.8 J		4.2 J	
	Tetrachloroethene	µg/L	13 U		2.4 J	
	trans-1,2-Dichloroethene	µg/L	15		14	
	Trichloroethene	µg/L	1600		2800	
	Vinyl chloride	µg/L	14		13	
X700-03G	Acetone	µg/L	10 U		8.9 BJ	
	cis-1,2-Dichloroethene	µg/L	0.23 J		0.15 U	
	Methylene chloride	µg/L	5 U		0.59 J	
X701-01G	1,1-Dichloroethene	µg/L	0.24 J		0.61 J	
	Acetone	µg/L	10 U		9.8 BJ	
	cis-1,2-Dichloroethene	µg/L	2.4		9.8	
	Methylene chloride	µg/L	5 U		0.46 J	
	trans-1,2-Dichloroethene	µg/L	1 U		0.26 J	
	Trichloroethene	µg/L	21		56	
	cis-1,2-Dichloroethene	µg/L	3.5			
X701-02G	Trichloroethene	µg/L	7.4			
	1,1-Dichloroethane	µg/L	0.31 J			
	1,1-Dichloroethene	µg/L	3.2			
	cis-1,2-Dichloroethene	µg/L	7.5			
X701-05G	Trichloroethene	µg/L	84			
	1,1-Dichloroethane	µg/L	0.16 J			
	1,1-Dichloroethene	µg/L	0.77 J			
	Acetone	µg/L	3.7 BJ			
	Chloroform	µg/L	0.2 J			
	cis-1,2-Dichloroethene	µg/L	52			
	trans-1,2-Dichloroethene	µg/L	1.3			
X701-06G	Trichloroethene	µg/L	47			
	Acetone	µg/L	1600 J			
	cis-1,2-Dichloroethene	µg/L	2700			
	Tetrachloroethene	µg/L	300 J			
	Trichloroethene	µg/L	170000			
	1,1,2-Trichloroethane	µg/L	1.8 J			
	1,1-Dichloroethene	µg/L	0.81 J			
X701-10G	cis-1,2-Dichloroethene	µg/L	14			
	Methylene chloride	µg/L	1.7 BJ			
	Trichloroethene	µg/L	1200			

Table 4.7. Volatile organic compounds detected at the X-701B Holding Pond – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-12G	1,1-Dichloroethene	µg/L	0.26 J			
	1,2-Dichlorobenzene	µg/L	0.17 J			
	Chloroform	µg/L	0.27 J			
	cis-1,2-Dichloroethene	µg/L	49			
	Tetrachloroethene	µg/L	0.39 J			
	Trichloroethene	µg/L	40			
	Vinyl chloride	µg/L	3			
X701-13G	1,1-Dichloroethene	µg/L	1.7 J			
	Chloroform	µg/L	5 J			
	cis-1,2-Dichloroethene	µg/L	79			
	Tetrachloroethene	µg/L	5.4 J			
X701-14G	Trichloroethene	µg/L	2500			
	1,1,1-Trichloroethane	µg/L	9.9 J			
	1,1-Dichloroethene	µg/L	9.2 J			
	Acetone	µg/L	150 BJ			
	cis-1,2-Dichloroethene	µg/L	310			
	Methylene chloride	µg/L	14 J			
	Tetrachloroethene	µg/L	19 J			
X701-15G	trans-1,2-Dichloroethene	µg/L	6.1 J			
	Trichloroethene	µg/L	10000			
	cis-1,2-Dichloroethene	µg/L	1.3 J		130	
	trans-1,2-Dichloroethene	µg/L	1 U		1.6	
	Trichloroethene	µg/L	2.7		6	
X701-19G	Acetone	µg/L	2.8 BJ		1.9 U	
X701-20G	1,1,2-Trichloroethane	µg/L	1000 U		120 J	
	1,1-Dichloroethene	µg/L	1000 U		39 J	
	cis-1,2-Dichloroethene	µg/L	2500		2700	
	Tetrachloroethene	µg/L	1000 U		85 J	
	Trichloroethene	µg/L	120000		100000	
X701-21G	1,2-Dichlorobenzene	µg/L	0.2 J		0.32 J	
	Chloroform	µg/L	0.3 J		0.26 J	
	cis-1,2-Dichloroethene	µg/L	1.1 J		1.7 J	
	Trichloroethene	µg/L	13		16	
X701-23G	Trichloroethene	µg/L			0.7 J	
X701-24G	1,1,2-Trichloroethane	µg/L	19 J		13 U	
	1,1-Dichloroethene	µg/L	7.8 J		5.6 U	
	cis-1,2-Dichloroethene	µg/L	990		750	
	trans-1,2-Dichloroethene	µg/L	24 J		13 J	
	Trichloroethene	µg/L	14000		9300	
X701-30G	Vinyl chloride	µg/L	58		36 J	
	Acetone	µg/L	5.1 J		1.9 U	
	cis-1,2-Dichloroethene	µg/L	0.31 J		0.19 J	
	Methylene chloride	µg/L	5 U		0.62 J	
	Trichloroethene	µg/L	5.4		5	
X701-31G	Trichlorofluoromethane	µg/L	2 U		1.2 J	
	Methylene chloride	µg/L			0.43 BJ	
X701-48G	Trichloroethene	µg/L			0.27 J	
	Methylene chloride	µg/L			0.34 J	

Table 4.7. Volatile organic compounds detected at the X-701B Holding Pond – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-58B	Trichloroethene	µg/L			1.2 J	
X701-61B	1,2-Dimethylbenzene	µg/L			0.3 J	
	Ethylbenzene	µg/L			0.17 J	
	M + P Xylene	µg/L			3.3	
	Trichloroethene	µg/L			0.26 J	
X701-127G	1,1,2-Trichloroethane	µg/L	68 J		80 J	
	Acetone	µg/L	410 J		380 U	
	cis-1,2-Dichloroethene	µg/L	1100		1200	
	Trichloroethene	µg/L	65000		48000	
X701-128G	1,1-Dichloroethene	µg/L	200 U		9.3 J	
	Acetone	µg/L	570 J		95 U	
	cis-1,2-Dichloroethene	µg/L	130 J		150	
	Tetrachloroethene	µg/L	200 U		15 J	
	Trichloroethene	µg/L	26000		21000	
X701-BW2G	1,1-Dichloroethane	µg/L	1.1 J			
	1,1-Dichloroethene	µg/L	9.8			
	Acetone	µg/L	15 BJ			
	cis-1,2-Dichloroethene	µg/L	9.6			
	Methylene chloride	µg/L	1.4 J			
	trans-1,2-Dichloroethene	µg/L	2.7 J			
	Trichloroethene	µg/L	1100			
X701-BW4G	cis-1,2-Dichloroethene	µg/L	2.3			
	Trichloroethene	µg/L	1.4 J			
X744G-01G	Acetone	µg/L	11		1.9 U	
	Methylene chloride	µg/L	5 U		0.42 BJ	
X744G-02G	cis-1,2-Dichloroethene	µg/L	1.3 J		1.4 J	
	Trichloroethene	µg/L	18		23	
	Trichlorofluoromethane	µg/L	2 U		3.5	
X744G-03G	Acetone	µg/L	2.7 J		5 BJ	
	cis-1,2-Dichloroethene	µg/L	0.32 J		0.36 J	
	Methylene chloride	µg/L	5 U		0.61 J	
	Trichloroethene	µg/L	3.8		4.7	

Table 4.8. Results for radionuclides at the X-701B Holding Pond – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X230J7-01GA	Americium-241	pCi/L	0.0078 U			
	Neptunium-237	pCi/L	0.0159 U			
	Plutonium-238	pCi/L	0.0237 U			
	Plutonium-239/240	pCi/L	0.0158 U			
	Technetium-99	pCi/L	-2.46 U			
	Uranium	µg/L	0.1336			
	Uranium-233/234	pCi/L	0.0795			
	Uranium-235	pCi/L	0.0178 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.0433			
X230J7-02GA	Americium-241	pCi/L	0 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	0.0160 U			
	Plutonium-239/240	pCi/L	0.0080 U			
	Technetium-99	pCi/L	35.3			
	Uranium	µg/L	0.1021 U			
	Uranium-233/234	pCi/L	0.0724			
	Uranium-235	pCi/L	0.0162 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.0329 U			
X230J7-03GA	Americium-241	pCi/L	0 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	0.0157 U			
	Plutonium-239/240	pCi/L	0.0235 U			
	Technetium-99	pCi/L	18.2			
	Uranium	µg/L	0.2672			
	Uranium-233/234	pCi/L	0.0692			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0.0077 U			
	Uranium-238	pCi/L	0.0898			
X230J7-04GA	Technetium-99	pCi/L		-2.69 U		
	Uranium	µg/L		0.04579 U		
	Uranium-233/234	pCi/L		0.02594 U		
	Uranium-235	pCi/L		-0.02128 U		
	Uranium-236	pCi/L		0.009564 U		
	Uranium-238	pCi/L		0.01723 U		
X700-03G	Americium-241	pCi/L	4E-05 U			
	Neptunium-237	pCi/L	3E-05 U			
	Plutonium-238	pCi/L	0.028 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	-2.48 U		3.74 U	
	Uranium	µg/L	0.372		0.375	
	Uranium-233/234	pCi/L	0.2372		0.1646	
	Uranium-235	pCi/L	0 U		0.009672 U	
	Uranium-236	pCi/L	0.0073 U		0 U	
	Uranium-238	pCi/L	0.125		0.1252	
X701-01G	Americium-241	pCi/L	0.0204 U			
	Neptunium-237	pCi/L	-0.011 U			

Table 4.8. Results for radionuclides at the X-701B Holding Pond – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-01G	Plutonium-238	pCi/L	0.0107 U			
	Plutonium-239/240	pCi/L	-0.011 U			
	Technetium-99	pCi/L	-4.62 U			
	Uranium	µg/L	1.185			
	Uranium-233/234	pCi/L	0.5839			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.3983			
	Americium-241	pCi/L	0.016 U			
	Neptunium-237	pCi/L	0.0237 U			
X701-02G	Plutonium-238	pCi/L	0.0158 U			
	Plutonium-239/240	pCi/L	0.0237 U			
	Technetium-99	pCi/L	5.84 U			
	Uranium	µg/L	0.553			
	Uranium-233/234	pCi/L	0.4221			
	Uranium-235	pCi/L	0.0079 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.1851			
	Americium-241	pCi/L	0.0303 U			
	Neptunium-237	pCi/L	0.0314 U			
X701-05G	Plutonium-238	pCi/L	0 U			
	Plutonium-239/240	pCi/L	-0.008 U			
	Technetium-99	pCi/L	456			
	Uranium	µg/L	40.52			
	Uranium-233/234	pCi/L	77.74			
	Uranium-235	pCi/L	3.745			
	Uranium-236	pCi/L	0.4793			
	Uranium-238	pCi/L	13.27			
	Americium-241	pCi/L	0.0223 U			
	Neptunium-237	pCi/L	0.0083 U			
X701-06G	Plutonium-238	pCi/L	0.0083 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	28.4			
	Uranium	µg/L	0.6983			
	Uranium-233/234	pCi/L	0.5076			
	Uranium-235	pCi/L	-0.009 U			
	Uranium-236	pCi/L	-0.008 U			
	Uranium-238	pCi/L	0.2355			
	Americium-241	pCi/L	0.0075 U			
	Neptunium-237	pCi/L	0.0076 U			
X701-09G	Plutonium-238	pCi/L	8E-06 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	174			
	Uranium	µg/L	1.617			
	Uranium-233/234	pCi/L	0.6454			
	Uranium-235	pCi/L	0.0342 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.5402			

Table 4.8. Results for radionuclides at the X-701B Holding Pond – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-10G	Americium-241	pCi/L	0.0171 U			
	Neptunium-237	pCi/L	0.0074 U			
	Plutonium-238	pCi/L	0.0074 U			
	Plutonium-239/240	pCi/L	7E-06 U			
	Technetium-99	pCi/L	7.59 U			
	Uranium	µg/L	0.062 U			
	Uranium-233/234	pCi/L	0.007 U			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0.0077 U			
	Uranium-238	pCi/L	0.0208 U			
X701-12G	Americium-241	pCi/L	0.0374 U			
	Neptunium-237	pCi/L	-0.007 U			
	Plutonium-238	pCi/L	0.0140 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	225			
	Uranium	µg/L	0.1729			
	Uranium-233/234	pCi/L	0.0383			
	Uranium-235	pCi/L	0.0079 U			
	Uranium-236	pCi/L	0.0071 U			
	Uranium-238	pCi/L	0.0573			
X701-13G	Americium-241	pCi/L	0.0277 U			
	Neptunium-237	pCi/L	-0.007 U			
	Plutonium-238	pCi/L	-0.014 U			
	Plutonium-239/240	pCi/L	0.0138 U			
	Technetium-99	pCi/L	206			
	Uranium	µg/L	0.2744			
	Uranium-233/234	pCi/L	0.0763			
	Uranium-235	pCi/L	0.0257 U			
	Uranium-236	pCi/L	-0.015 U			
	Uranium-238	pCi/L	0.09			
X701-14G	Americium-241	pCi/L	0.016 U			
	Neptunium-237	pCi/L	8E-06 U			
	Plutonium-238	pCi/L	2E-05 U			
	Plutonium-239/240	pCi/L	0.0316 U			
	Technetium-99	pCi/L	628			
	Uranium	µg/L	0.099			
	Uranium-233/234	pCi/L	0.0067 U			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	-0.007 U			
	Uranium-238	pCi/L	0.0333			
X701-15G	Americium-241	pCi/L	0.018 U			
	Neptunium-237	pCi/L	7E-05 U			
	Plutonium-238	pCi/L	0.0292 U			
	Plutonium-239/240	pCi/L	-0.007 U			
	Technetium-99	pCi/L	-3.78 U			
	Uranium	µg/L	1.32			
	Uranium-233/234	pCi/L	0.3285			
	Uranium-235	pCi/L	0.0176 U			

Table 4.8. Results for radionuclides at the X-701B Holding Pond – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-15G	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.4419			
X701-16G	Americium-241	pCi/L	0 U			
	Neptunium-237	pCi/L	-0.014 U			
	Plutonium-238	pCi/L	0.0352 U			
	Plutonium-239/240	pCi/L	0.0282 U			
	Technetium-99	pCi/L	1.05 U			
	Uranium	µg/L	0.1239 U			
	Uranium-233/234	pCi/L	0.0487 U			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	-0.008 U			
	Uranium-238	pCi/L	0.0417 U			
X701-18G	Technetium-99	pCi/L		3.12 U		
	Uranium	µg/L		0.06619 U		
	Uranium-233/234	pCi/L		4.302E-05 U		
	Uranium-235	pCi/L		0.008854 U		
	Uranium-236	pCi/L		-0.007942 U		
	Uranium-238	pCi/L		0.0215 U		
X701-19G	Americium-241	pCi/L	1E-05 U			
	Neptunium-237	pCi/L	-0.035 U			
	Plutonium-238	pCi/L	-0.007 U			
	Plutonium-239/240	pCi/L	0.0213 U			
	Technetium-99	pCi/L	-0.093 U			
	Uranium	µg/L	0.0232 U			
	Uranium-233/234	pCi/L	0.0491 U			
	Uranium-235	pCi/L	0.0086 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.0070 U			
X701-20G	Americium-241	pCi/L	-0.007 U		0.009567 U	
	Neptunium-237	pCi/L	0.007 U		3.344E-05 U	
	Plutonium-238	pCi/L	1E-05 U		0 U	
	Plutonium-239/240	pCi/L	-0.007 U		-0.01663 U	
	Technetium-99	pCi/L	103		100	
	Uranium	µg/L	0.0687 U		0.3041	
	Uranium-233/234	pCi/L	0.0615		0.09581 U	
	Uranium-235	pCi/L	0 U		-0.00908 U	
	Uranium-236	pCi/L	0.0085 U		0.008161 U	
	Uranium-238	pCi/L	0.0230 U		0.1029	
X701-21G	Americium-241	pCi/L	0 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	0.0221 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	153		285	
	Uranium	µg/L	0.1999		0.1669 U	
	Uranium-233/234	pCi/L	0.0734		0.05373 U	
	Uranium-235	pCi/L	0 U		0.02839 U	
	Uranium-236	pCi/L	0 U		-0.008488 U	
	Uranium-238	pCi/L	0.0672		0.05361 U	

Table 4.8. Results for radionuclides at the X-701B Holding Pond – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-23G	Technetium-99	pCi/L			6.61 U	
	Uranium	µg/L			0.07353 U	
	Uranium-233/234	pCi/L			0.01648 U	
	Uranium-235	pCi/L			2.027E-05 U	
	Uranium-236	pCi/L			0.01822 U	
	Uranium-238	pCi/L			0.02461 U	
X701-24G	Americium-241	pCi/L	0.0315 U			
	Neptunium-237	pCi/L	0.0148 U			
	Plutonium-238	pCi/L	1E-05 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	6.14 U			
	Uranium	µg/L	0.4217			
	Uranium-233/234	pCi/L	0.1868			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0.0083 U			
	Uranium-238	pCi/L	0.1417			
	Americium-241	pCi/L	0.0191 U			
	Neptunium-237	pCi/L	-0.056 U			
X701-25G	Plutonium-238	pCi/L	-0.008 U			
	Plutonium-239/240	pCi/L	-0.016 U			
	Technetium-99	pCi/L	-4.73 U			
	Uranium	µg/L	-0.1 U			
	Uranium-233/234	pCi/L	0.0202 U			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	-0.033 U			
	Americium-241	pCi/L	2E-05 U			
	Neptunium-237	pCi/L	8E-06 U			
	Plutonium-238	pCi/L	0.0238 U			
	Plutonium-239/240	pCi/L	8E-06 U			
X701-30G	Technetium-99	pCi/L	0.0613 U			
	Uranium	µg/L	0.2052			
	Uranium-233/234	pCi/L	0.1312			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.0689			
	Technetium-99	pCi/L			-2.56 U	
	Uranium	µg/L			0.000131 U	
	Uranium-233/234	pCi/L			0.0222 U	
	Uranium-235	pCi/L			0 U	
	Uranium-236	pCi/L			0.008195 U	
	Uranium-238	pCi/L			0 U	
X701-31G	Americium-241	pCi/L			4.696E-05 U	
	Neptunium-237	pCi/L			-0.039 U	
	Plutonium-238	pCi/L			7.779E-06 U	
	Plutonium-239/240	pCi/L			0.007786 U	
	Technetium-99	pCi/L			-5.56 U	
	Uranium	µg/L			0.03943 U	

Table 4.8. Results for radionuclides at the X-701B Holding Pond – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-48G	Uranium-233/234	pCi/L		0.006651 U		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.01325 U		
X701-58B	Technetium-99	pCi/L		1.08 U		
	Uranium	µg/L		0.1884		
	Uranium-233/234	pCi/L		0.2116		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		-0.007804 U		
X701-61B	Uranium-238	pCi/L		0.06335		
	Technetium-99	pCi/L		-1.64 U		
	Uranium	µg/L		0.3775		
	Uranium-233/234	pCi/L		0.2051		
	Uranium-235	pCi/L		0.00973 U		
X701-127G	Uranium-236	pCi/L		0.008736 U		
	Uranium-238	pCi/L		0.1259		
	Americium-241	pCi/L	0.016 U		0.02339 U	
	Neptunium-237	pCi/L	7E-06 U		-0.008025 U	
	Plutonium-238	pCi/L	0.0144 U		0.008019 U	
X701-128G	Plutonium-239/240	pCi/L	0.0072 U		0.008035 U	
	Technetium-99	pCi/L	14.4		25.8	
	Uranium	µg/L	0.1484		0.4335	
	Uranium-233/234	pCi/L	0.0571		0.1289	
	Uranium-235	pCi/L	0 U		0.009942 U	
X701-BW2G	Uranium-236	pCi/L	0 U		0 U	
	Uranium-238	pCi/L	0.0499		0.1448	
	Americium-241	pCi/L	-0.008 U			
	Neptunium-237	pCi/L	0.0073 U			
	Plutonium-238	pCi/L	0.0073 U			
X701-BW4G	Plutonium-239/240	pCi/L	0.0073 U			
	Technetium-99	pCi/L	6.14 U			
	Uranium	µg/L	0.6906			
	Uranium-233/234	pCi/L	0.2375			
	Uranium-235	pCi/L	0.0275 U			
X701-BW4G	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.2296			
	Americium-241	pCi/L	0.0243 U			
	Neptunium-237	pCi/L	0.0079 U			
	Plutonium-238	pCi/L	2E-05 U			

Table 4.8. Results for radionuclides at the X-701B Holding Pond – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-BW4G	Plutonium-238	pCi/L	0.028 U			
	Plutonium-239/240	pCi/L	0.021 U			
	Technetium-99	pCi/L	374			
	Uranium	$\mu\text{g}/\text{L}$	0.0211 U			
	Uranium-233/234	pCi/L	0.0353 U			
	Uranium-235	pCi/L	9E-06 U			
	Uranium-236	pCi/L	0.0078 U			
	Uranium-238	pCi/L	0.0071 U			

Table 4.9. Results for chromium at the X-633 Pumphouse/Cooling Towers Area – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X633-07G	Chromium	µg/L		310		560
X633-PZ04G	Chromium	µg/L		11		24

Table 4.10. Volatile organic compounds detected at the X-616 Chromium Sludge Surface Impoundments – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X616-02G	1,1-Dichloroethene	µg/L	0.25 J			
X616-09G	1,1,1-Trichloroethane	µg/L	3.5			
	1,1-Dichloroethane	µg/L	1.5 J			
	1,1-Dichloroethene	µg/L	18			
	cis-1,2-Dichloroethene	µg/L	2			
	Trichloroethene	µg/L	13			
X616-13G	1,1,1-Trichloroethane	µg/L	0.78 J			
	1,1-Dichloroethane	µg/L	0.29 J			
	1,1-Dichloroethene	µg/L	3.1			
	Trichloroethene	µg/L	0.82 J			
	Trichlorofluoromethane	µg/L	0.35 J			
X616-14G	1,1,1-Trichloroethane	µg/L	0.87 J			
	1,1-Dichloroethane	µg/L	0.18 J			
	1,1-Dichloroethene	µg/L	3.1			
	Trichloroethene	µg/L	0.46 J			
	Trichlorofluoromethane	µg/L	0.71 J			
X616-16G	1,1-Dichloroethene	µg/L	0.27 J			
	cis-1,2-Dichloroethene	µg/L	2.4			
	Trichloroethene	µg/L	2.3			
X616-17G	1,1-Dichloroethene	µg/L	0.18 J			
X616-19B	Acetone	µg/L	7.7 J			
X616-20B	1,1,1-Trichloroethane	µg/L	0.21 J			
	1,1-Dichloroethane	µg/L	0.62 J			
	1,1-Dichloroethene	µg/L	0.91 J			
	Acetone	µg/L	6 J			
	cis-1,2-Dichloroethene	µg/L	0.4 J			
	Trichloroethene	µg/L	15			
X616-25G	cis-1,2-Dichloroethene	µg/L	0.61 J			
	Trichloroethene	µg/L	1.1 J			
X616-28B	1,1,1-Trichloroethane	µg/L	0.67 J			
	1,1-Dichloroethene	µg/L	0.58 J			

Table 4.11. Results for chromium at the X-616 Chromium Sludge Surface Impoundments – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X616-02G	Chromium	µg/L	2 U			
X616-05G	Chromium	µg/L	500			
X616-09G	Chromium	µg/L	31			
X616-10G	Chromium	µg/L	0.97 B			
X616-13G	Chromium	µg/L	1.5 B			
X616-14G	Chromium	µg/L	3			
X616-16G	Chromium	µg/L	0.52 B			
X616-17G	Chromium	µg/L	21			
X616-19B	Chromium	µg/L	19			
X616-20B	Chromium	µg/L	1.9 B			
X616-21G	Chromium	µg/L	30			
X616-22G	Chromium	µg/L	0.6 B			
X616-24B	Chromium	µg/L	0.83 B			
X616-25G	Chromium	µg/L	4.3			
X616-26G	Chromium	µg/L	12			
X616-28B	Chromium	µg/L	1.5 B			

Table 4.12. Results for radionuclides at the X-616 Chromium Sludge Surface Impoundments – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X616-02G	Americium-241	pCi/L	-0.011 U			
	Neptunium-237	pCi/L	-0.008 U			
	Plutonium-238	pCi/L	2E-05 U			
	Plutonium-239/240	pCi/L	0.0236 U			
	Technetium-99	pCi/L	-2.68 U			
	Uranium	µg/L	2.341			
	Uranium-233/234	pCi/L	1.082			
	Uranium-235	pCi/L	0.0448 U			
	Uranium-236	pCi/L	0.0161 U			
	Uranium-238	pCi/L	0.7826			
X616-05G	Americium-241	pCi/L	0.0362 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	0.0077 U			
	Plutonium-239/240	pCi/L	0.0155 U			
	Technetium-99	pCi/L	-1.33 U			
	Uranium	µg/L	0.1767			
	Uranium-233/234	pCi/L	0.2115			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.0594			
X616-09G	Americium-241	pCi/L	0.0148 U			
	Neptunium-237	pCi/L	-0.008 U			
	Plutonium-238	pCi/L	0 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	-3.98 U			
	Uranium	µg/L	2.316			
	Uranium-233/234	pCi/L	1.003			
	Uranium-235	pCi/L	0.0173 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.7767			
X616-10G	Americium-241	pCi/L	0.0188 U			
	Neptunium-237	pCi/L	0.0214 U			
	Plutonium-238	pCi/L	0.0213 U			
	Plutonium-239/240	pCi/L	0.0071 U			
	Technetium-99	pCi/L	-2.92 U			
	Uranium	µg/L	1.106			
	Uranium-233/234	pCi/L	0.3066			
	Uranium-235	pCi/L	0.0081 U			
	Uranium-236	pCi/L	-0.007 U			
	Uranium-238	pCi/L	0.371			
X616-13G	Americium-241	pCi/L	0.0377 U			
	Neptunium-237	pCi/L	-0.011 U			
	Plutonium-238	pCi/L	0.0115 U			
	Plutonium-239/240	pCi/L	1E-05 U			
	Technetium-99	pCi/L	-6.85 U			
	Uranium	µg/L	1.105			
	Uranium-233/234	pCi/L	0.279			
	Uranium-235	pCi/L	0 U			

**Table 4.12. Results for radionuclides at the X-616 Chromium Sludge Surface Impoundments – 2009
(continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X616-13G	Uranium-236	pCi/L	0.0086 U			
	Uranium-238	pCi/L	0.3712			
X616-14G	Americium-241	pCi/L	0.0273 U			
	Neptunium-237	pCi/L	-0.028 U			
	Plutonium-238	pCi/L	2E-05 U			
	Plutonium-239/240	pCi/L	-0.028 U			
	Technetium-99	pCi/L	-3.55 U			
	Uranium	µg/L	2.425			
	Uranium-233/234	pCi/L	0.8123			
	Uranium-235	pCi/L	0.0477			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.8107			
X616-16G	Americium-241	pCi/L	0.0252 U			
	Neptunium-237	pCi/L	-0.023 U			
	Plutonium-238	pCi/L	0.0155 U			
	Plutonium-239/240	pCi/L	-0.008 U			
	Technetium-99	pCi/L	-3.14 U			
	Uranium	µg/L	0.4345			
	Uranium-233/234	pCi/L	0.2275			
	Uranium-235	pCi/L	0.0170 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.1445			
X616-17G	Americium-241	pCi/L	-0.031 U			
	Neptunium-237	pCi/L	8E-06 U			
	Plutonium-238	pCi/L	0.0078 U			
	Plutonium-239/240	pCi/L	0.0078 U			
	Technetium-99	pCi/L	-2.35 U			
	Uranium	µg/L	0.6908			
	Uranium-233/234	pCi/L	0.3694			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.2321			
X616-19B	Americium-241	pCi/L	-0.015 U			
	Neptunium-237	pCi/L	0.0073 U			
	Plutonium-238	pCi/L	0.0145 U			
	Plutonium-239/240	pCi/L	0.0145 U			
	Technetium-99	pCi/L	-3.55 U			
	Uranium	µg/L	0.522			
	Uranium-233/234	pCi/L	0.3177			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0.0075 U			
	Uranium-238	pCi/L	0.1754			
X616-20B	Americium-241	pCi/L	0.0364 U			
	Neptunium-237	pCi/L	-0.008 U			
	Plutonium-238	pCi/L	0.0085 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	-0.833 U			
	Uranium	µg/L	0.4253			

**Table 4.12. Results for radionuclides at the X-616 Chromium Sludge Surface Impoundments – 2009
(continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X616-20B	Uranium-233/234	pCi/L	0.3134			
	Uranium-235	pCi/L	0.0088 U			
	Uranium-236	pCi/L	-0.016 U			
	Uranium-238	pCi/L	0.1422			
X616-21G	Americium-241	pCi/L	9E-06 U			
	Neptunium-237	pCi/L	-0.023 U			
	Plutonium-238	pCi/L	0.0077 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	6.66 U			
	Uranium	µg/L	0.579			
	Uranium-233/234	pCi/L	0.1582			
	Uranium-235	pCi/L	0.0089 U			
	Uranium-236	pCi/L	0 U			
X616-22G	Uranium-238	pCi/L	0.1938			
	Americium-241	pCi/L	0.0437 U			
	Neptunium-237	pCi/L	-0.016 U			
	Plutonium-238	pCi/L	0.0236 U			
	Plutonium-239/240	pCi/L	0.0157 U			
	Technetium-99	pCi/L	-5.07 U			
	Uranium	µg/L	0.8539			
	Uranium-233/234	pCi/L	0.3584			
	Uranium-235	pCi/L	0.0088 U			
X616-24B	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.2861			
	Americium-241	pCi/L	1E-05 U			
	Neptunium-237	pCi/L	-0.007 U			
	Plutonium-238	pCi/L	7E-06 U			
	Plutonium-239/240	pCi/L	0.0070 U			
	Technetium-99	pCi/L	-5.72 U			
	Uranium	µg/L	0.2048			
	Uranium-233/234	pCi/L	0.3308			
X616-25G	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.0688			
	Americium-241	pCi/L	0.0087 U			
	Neptunium-237	pCi/L	-0.04 U			
	Plutonium-238	pCi/L	0.0317 U			
	Plutonium-239/240	pCi/L	-0.016 U			
	Technetium-99	pCi/L	-5.26 U			
	Uranium	µg/L	1.212			
X616-26G	Uranium-233/234	pCi/L	0.4437			
	Uranium-235	pCi/L	0.009 U			
	Uranium-236	pCi/L	0.0081 U			
	Uranium-238	pCi/L	0.4065			
	Americium-241	pCi/L	3E-05 U			
	Neptunium-237	pCi/L	0.0097 U			
	Plutonium-238	pCi/L	0.0097 U			
	Plutonium-239/240	pCi/L	-0.01 U			

**Table 4.12. Results for radionuclides at the X-616 Chromium Sludge Surface Impoundments – 2009
(continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X616-26G	Technetium-99	pCi/L	-3.35 U			
	Uranium	µg/L	2.983			
	Uranium-233/234	pCi/L	0.7911			
	Uranium-235	pCi/L	0.0345 U			
	Uranium-236	pCi/L	0.0155 U			
	Uranium-238	pCi/L	0.9991			
X616-28B	Americium-241	pCi/L	4E-05 U			
	Neptunium-237	pCi/L	-0.198 U			
	Plutonium-238	pCi/L	0.018 U			
	Plutonium-239/240	pCi/L	2E-05 U			
	Technetium-99	pCi/L	-2.41 U			
	Uranium	µg/L	1.333			
	Uranium-233/234	pCi/L	0.8373			
	Uranium-235	pCi/L	0.0091 U			
	Uranium-236	pCi/L	0.0081 U			
	Uranium-238	pCi/L	0.4471			

Table 4.13. Volatile organic compounds detected at the X-740 Waste Oil Handling Facility – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X740-01G	Acetone	µg/L		8.3 J		
X740-02G	1,1,1-Trichloroethane	µg/L		7.3		
	1,1-Dichloroethane	µg/L		4.3		
	1,1-Dichloroethene	µg/L		6.6		
	Trichloroethene	µg/L		7.6		
X740-03G	1,1,1-Trichloroethane	µg/L	76			
	1,1-Dichloroethane	µg/L	25			
	1,1-Dichloroethene	µg/L	650			
	1,2-Dichloroethane	µg/L	100			
	Chloroform	µg/L		8 J		
	cis-1,2-Dichloroethene	µg/L		8.9 J		
	Methylene chloride	µg/L		9 BJ		
	Tetrachloroethene	µg/L		96		
	Trichloroethene	µg/L		3400		
X740-04G	1,1,1-Trichloroethane	µg/L	0.74 J			
	1,1-Dichloroethane	µg/L	0.26 J			
	1,1-Dichloroethene	µg/L	0.98 J			
	1,2-Dichloroethane	µg/L	0.34 J			
	Acetone	µg/L		6 J		
	Trichloroethene	µg/L		6.4		
X740-06G	Acetone	µg/L		1.9 J		
X740-07B	Acetone	µg/L		2.7 J		
X740-08G	1,1,1-Trichloroethane	µg/L		1.5 J		
	1,1-Dichloroethane	µg/L		14		
	1,1-Dichloroethene	µg/L		1.6 J		
	cis-1,2-Dichloroethene	µg/L		23		
	trans-1,2-Dichloroethene	µg/L		6.6		
	Trichloroethene	µg/L		14		
X740-09B	1,1,1-Trichloroethane	µg/L		30		
	1,1-Dichloroethane	µg/L		8.8		
	1,1-Dichloroethene	µg/L		190		
	1,2-Dichloroethane	µg/L		48		
	Chloroform	µg/L		4 J		
	cis-1,2-Dichloroethene	µg/L		2 J		
	Tetrachloroethene	µg/L		27		
	Trichloroethene	µg/L		960		
	Trichlorofluoromethane	µg/L		1.2 J		
X740-10G	1,1,1-Trichloroethane	µg/L		5.4		
	1,1-Dichloroethane	µg/L		3.2		
	1,1-Dichloroethene	µg/L		23		
	1,2-Dichloroethane	µg/L		6.2		
	Acetone	µg/L		6.1 J		
	Chloroform	µg/L		0.5 J		
	cis-1,2-Dichloroethene	µg/L		1.1 J		
	Tetrachloroethene	µg/L		2.2		
	Trichloroethene	µg/L		160		
X740-11G	1,1,1-Trichloroethane	µg/L		0.39 J		
	1,1-Dichloroethane	µg/L		0.27 J		

**Table 4.13. Volatile organic compounds detected at the X-740 Waste Oil Handling Facility – 2009
(continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X740-11G	1,1-Dichloroethene	µg/L		3.1		
	1,2-Dichloroethane	µg/L		1.2 J		
	Acetone	µg/L		8.3 J		
	Trichloroethene	µg/L		11		
X740-12B	Acetone	µg/L		6.7 J		
X740-13G	Acetone	µg/L		16		
X740-14B	1,1-Dichloroethane	µg/L		0.31 J		
	1,1-Dichloroethene	µg/L		2.1		
	1,2-Dichloroethane	µg/L		0.52 J		
	Acetone	µg/L		5.1 J		
X740-PZ10G	Trichloroethene	µg/L		3.8		
	1,1,1-Trichloroethane	µg/L		1.8 J		
	1,1-Dichloroethane	µg/L		0.34 J		
	1,1-Dichloroethene	µg/L		2.2		
	1,2-Dichloroethane	µg/L		1 J		
	Acetone	µg/L		13		
	Bromodichloromethane	µg/L		0.21 J		
	Chloroform	µg/L		0.7 J		
X740-PZ12G	Tetrachloroethene	µg/L		0.58 J		
	Trichloroethene	µg/L		22		
	1,1,1-Trichloroethane	µg/L		3.7		
	1,1-Dichloroethane	µg/L		0.92 J		
	1,1-Dichloroethene	µg/L		22		
	1,2-Dichloroethane	µg/L		6.2		
	Acetone	µg/L		2 J		
	Chloroform	µg/L		0.56 J		
X740-PZ14G	Tetrachloroethene	µg/L		1.1 J		
	Trichloroethene	µg/L		110		
	1,1,1-Trichloroethane	µg/L		4.8		
	1,1-Dichloroethane	µg/L		1.5 J		
	1,1-Dichloroethene	µg/L		47		
	1,2-Dichloroethane	µg/L		10		
	Acetone	µg/L		11		
	Chloroform	µg/L		0.9 J		
X740-PZ17G	cis-1,2-Dichloroethene	µg/L		0.26 J		
	Tetrachloroethene	µg/L		0.82 J		
	Trichloroethene	µg/L		180		
	1,1,1-Trichloroethane	µg/L		0.35 J		
	1,1-Dichloroethene	µg/L		1.3 J		
	1,2-Dichloroethane	µg/L		0.5 J		
X740-PZ14G	Acetone	µg/L		2.3 J		
	Trichloroethene	µg/L		5.7		

Table 4.14. Results for beryllium and chromium at the X-611A Former Lime Sludge Lagoons – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
F-07G	Beryllium	µg/L	3		5	
	Chromium	µg/L	1.6 B		3.4	
F-08B	Beryllium	µg/L	1 U		0.08 U	
	Chromium	µg/L	2 U		0.5 U	
X611-01B	Beryllium	µg/L	1 U		0.19 B	
	Chromium	µg/L	9.5		6.5	
X611-02BA	Beryllium	µg/L	0.092 B		0.08 U	
	Chromium	µg/L	1.2 B		0.62 B	
X611-03G	Beryllium	µg/L	1 U		0.08 U	
	Chromium	µg/L	2 U		0.5 U	
X611-04BA	Beryllium	µg/L	0.72 B		0.54 B	
	Chromium	µg/L	1.3 B		0.5 U	

Table 4.15. Volatile organic compounds detected at the X-735 Landfills – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X735-01G	1,1-Dichloroethane	µg/L		0.41 J		
	Acetone	µg/L		4.1 J		
	Trichloroethene	µg/L		0.17 J		
X735-03G	1,1,1-Trichloroethane	µg/L		0.3 J		
	1,1-Dichloroethane	µg/L		0.49 J		
	Acetone	µg/L		19		
	Chloroethane	µg/L		0.76 J		
	Dichlorodifluoromethane	µg/L		0.41 J		
	Trichloroethene	µg/L		0.17 J		
X735-04G	Methylene chloride	µg/L		0.33 J		
X735-13GA	Acetone	µg/L		27		
X735-17B	Methylene chloride	µg/L		0.33 J		
X735-19G	Methylene chloride	µg/L		0.33 J		
X735-21G	Acetone	µg/L		6.4 J		
X737-09G	Methylene chloride	µg/L		0.37 J		

Table 4.16. Results for radionuclides at the X-735 Landfills – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X735-01G	Americium-241	pCi/L	-0.0146 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	0.00726 U			
	Plutonium-239/240	pCi/L	0.00724 U			
	Technetium-99	pCi/L	-3.16 U			
	Uranium	µg/L	-0.0226 U			
	Uranium-233/234	pCi/L	0.03819 U			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	-0.0076 U			
X735-01GA	Americium-241	pCi/L	0.02907 U			
	Neptunium-237	pCi/L	0.00649 U			
	Plutonium-238	pCi/L	0.00649 U			
	Plutonium-239/240	pCi/L	-0.0258 U			
	Technetium-99	pCi/L	-1.93 U			
	Uranium	µg/L	0.02606 U			
	Uranium-233/234	pCi/L	0.09334			
	Uranium-235	pCi/L	0.01772 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.00717 U			
X735-02GA	Americium-241	pCi/L	0.00832 U			
	Neptunium-237	pCi/L	-0.0139 U			
	Plutonium-238	pCi/L	0.01391 U			
	Plutonium-239/240	pCi/L	0.00695 U			
	Technetium-99	pCi/L	-2.03 U			
	Uranium	µg/L	0.02618 U			
	Uranium-233/234	pCi/L	0.03159 U			
	Uranium-235	pCi/L	0.00974 U			
	Uranium-236	pCi/L	0.00875 U			
	Uranium-238	pCi/L	0.00788 U			
X735-03G	Americium-241	pCi/L	0.0519 U			
	Neptunium-237	pCi/L	0.0073 U			
	Plutonium-238	pCi/L	1.5E-05 U			
	Plutonium-239/240	pCi/L	7.3E-06 U			
	Technetium-99	pCi/L	-4.64 U			
	Uranium	µg/L	0.3601			
	Uranium-233/234	pCi/L	0.2155			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0.00746 U			
	Uranium-238	pCi/L	0.121			
X735-03GA	Americium-241	pCi/L	0.01017 U			
	Neptunium-237	pCi/L	0.00767 U			
	Plutonium-238	pCi/L	0.00768 U			
	Plutonium-239/240	pCi/L	0.02296 U			
	Technetium-99	pCi/L	0.16 U			
	Uranium	µg/L	0.00022 U			
	Uranium-233/234	pCi/L	0.07959 U			
	Uranium-235	pCi/L	0 U			

Table 4.16. Results for radionuclides at the X-735 Landfills – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X735-03GA	Uranium-236	pCi/L	0.00881 U			
	Uranium-238	pCi/L	2.4E-05 U			
X735-04G	Americium-241	pCi/L	0.02062 U			
	Neptunium-237	pCi/L	-0.029 U			
	Plutonium-238	pCi/L	0.00725 U			
	Plutonium-239/240	pCi/L	0.01447 U			
	Technetium-99	pCi/L	2.11 U			
	Uranium	µg/L	0.134 U			
	Uranium-233/234	pCi/L	0.0902			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.04502 U			
X735-04GA	Americium-241	pCi/L	-0.0085 U			
	Neptunium-237	pCi/L	-0.0216 U			
	Plutonium-238	pCi/L	0 U			
	Plutonium-239/240	pCi/L	7.2E-06 U			
	Technetium-99	pCi/L	-2 U			
	Uranium	µg/L	0.101 U			
	Uranium-233/234	pCi/L	0.0875			
	Uranium-235	pCi/L	0.01349 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.03275 U			
X735-05G	Americium-241	pCi/L	0.01929 U			
	Neptunium-237	pCi/L	-0.0356 U			
	Plutonium-238	pCi/L	0.00711 U			
	Plutonium-239/240	pCi/L	0.00711 U			
	Technetium-99	pCi/L	-0.715 U			
	Uranium	µg/L	0.1342			
	Uranium-233/234	pCi/L	0.0973			
	Uranium-235	pCi/L	0.01091 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.04413			
X735-05GA	Americium-241	pCi/L	0.00818 U			
	Neptunium-237	pCi/L	0 U			
	Plutonium-238	pCi/L	-0.014 U			
	Plutonium-239/240	pCi/L	0.01397 U			
	Technetium-99	pCi/L	0.415 U			
	Uranium	µg/L	0.08529 U			
	Uranium-233/234	pCi/L	0.06459			
	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.02866 U			
X735-06GAA	Americium-241	pCi/L	0.0116 U			
	Neptunium-237	pCi/L	-0.0077 U			
	Plutonium-238	pCi/L	0.03085 U			
	Plutonium-239/240	pCi/L	7.7E-06 U			
	Technetium-99	pCi/L	-4.06 U			
	Uranium	µg/L	0.1369			

Table 4.16. Results for radionuclides at the X-735 Landfills – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X735-06GAA	Uranium-233/234	pCi/L	0.06145			
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.046		
X735-12G	Americium-241	pCi/L		0 U		
	Neptunium-237	pCi/L		-0.0299 U		
	Plutonium-238	pCi/L		0.02988 U		
	Plutonium-239/240	pCi/L		0.00747 U		
	Technetium-99	pCi/L		-0.015 U		
	Uranium	µg/L		0.3638		
	Uranium-233/234	pCi/L		0.1512		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0.00798 U		
X735-13GA	Uranium-238	pCi/L		0.1222		
	Americium-241	pCi/L		0.00863 U		
	Neptunium-237	pCi/L		1.5E-05 U		
	Plutonium-238	pCi/L		0.00739 U		
	Plutonium-239/240	pCi/L		0.00738 U		
	Technetium-99	pCi/L		-5.8 U		
	Uranium	µg/L		0.1064		
	Uranium-233/234	pCi/L		0.04907 U		
	Uranium-235	pCi/L		0.00865 U		
X735-16B	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.03497		
	Americium-241	pCi/L		0.01602 U		
	Neptunium-237	pCi/L		-0.0070 U		
	Plutonium-238	pCi/L		0.01404 U		
	Plutonium-239/240	pCi/L		-0.0140 U		
	Technetium-99	pCi/L		4.26 U		
	Uranium	µg/L		0.1641		
	Uranium-233/234	pCi/L		0.04603		
X735-17B	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.05513		
	Americium-241	pCi/L		0.01306 U		
	Neptunium-237	pCi/L		-0.0074 U		
	Plutonium-238	pCi/L		0.00738 U		
	Plutonium-239/240	pCi/L		0 U		
	Technetium-99	pCi/L		0.932 U		
	Uranium	µg/L		0.4481		
X735-18B	Uranium-233/234	pCi/L		0.1887		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		-0.0104 U		
	Uranium-238	pCi/L		0.1506		
	Americium-241	pCi/L		0.03666 U		
	Neptunium-237	pCi/L		0.00693 U		
	Plutonium-238	pCi/L		0.01381 U		
	Plutonium-239/240	pCi/L		0 U		

Table 4.16. Results for radionuclides at the X-735 Landfills – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X735-18B	Technetium-99	pCi/L		-5.06 U		
	Uranium	µg/L		0.1602		
	Uranium-233/234	pCi/L		0.1527		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0.00995 U		
	Uranium-238	pCi/L		0.05379		
X735-19G	Americium-241	pCi/L		0.02101 U		
	Neptunium-237	pCi/L		-0.0066 U		
	Plutonium-238	pCi/L		0.01974 U		
	Plutonium-239/240	pCi/L		0.00658 U		
	Technetium-99	pCi/L		-3.17 U		
	Uranium	µg/L		0.02269 U		
	Uranium-233/234	pCi/L		0.06794		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0.01672 U		
	Uranium-238	pCi/L		0.00753 U		
X735-20B	Americium-241	pCi/L		0 U		
	Neptunium-237	pCi/L		1.3E-05 U		
	Plutonium-238	pCi/L		0 U		
	Plutonium-239/240	pCi/L		0.01912 U		
	Technetium-99	pCi/L		-1.89 U		
	Uranium	µg/L		0.2233		
	Uranium-233/234	pCi/L		0.2946		
	Uranium-235	pCi/L		-0.0135 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.07623		
X735-21G	Americium-241	pCi/L		-0.0348 U		
	Neptunium-237	pCi/L		-0.0168 U		
	Plutonium-238	pCi/L		0.01674 U		
	Plutonium-239/240	pCi/L		0.01674 U		
	Technetium-99	pCi/L		1.01 U		
	Uranium	µg/L		0.5097		
	Uranium-233/234	pCi/L		0.2752		
	Uranium-235	pCi/L		0.03772 U		
	Uranium-236	pCi/L		0.00847 U		
	Uranium-238	pCi/L		0.1679		
X737-05B	Americium-241	pCi/L		0.03445 U		
	Neptunium-237	pCi/L		0.00779 U		
	Plutonium-238	pCi/L		0.01554 U		
	Plutonium-239/240	pCi/L		-0.0155 U		
	Technetium-99	pCi/L		-0.0479 U		
	Uranium	µg/L		0.02319 U		
	Uranium-233/234	pCi/L		0.06244		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.00779 U		
X737-06G	Americium-241	pCi/L		-0.0128 U		
	Neptunium-237	pCi/L		7.3E-06 U		

Table 4.16. Results for radionuclides at the X-735 Landfills – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X737-06G	Plutonium-238	pCi/L		0.00727 U		
	Plutonium-239/240	pCi/L		7.3E-06 U		
	Technetium-99	pCi/L		-0.585 U		
	Uranium	µg/L		0.05128 U		
	Uranium-233/234	pCi/L		0.05972		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0.0378 U		
	Uranium-238	pCi/L		0.01703 U		
	Americium-241	pCi/L		0.01172 U		
	Neptunium-237	pCi/L		-0.0069 U		
X737-07B	Plutonium-238	pCi/L		-0.0069 U		
	Plutonium-239/240	pCi/L		0.00694 U		
	Technetium-99	pCi/L		-0.103 U		
	Uranium	µg/L		-0.0455 U		
	Uranium-233/234	pCi/L		-0.0153 U		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		-0.0085 U		
	Uranium-238	pCi/L		-0.0152 U		
	Americium-241	pCi/L		0.01672 U		
	Neptunium-237	pCi/L		2.1E-05 U		
X737-08B	Plutonium-238	pCi/L		0.02132 U		
	Plutonium-239/240	pCi/L		7.1E-06 U		
	Technetium-99	pCi/L		-3.49 U		
	Uranium	µg/L		0.2618		
	Uranium-233/234	pCi/L		0.3709		
	Uranium-235	pCi/L		-0.0091 U		
	Uranium-236	pCi/L		-0.0082 U		
	Uranium-238	pCi/L		0.08883		
	Americium-241	pCi/L		0.04282 U		
	Neptunium-237	pCi/L		0.00702 U		
X737-09G	Plutonium-238	pCi/L		0.01395 U		
	Plutonium-239/240	pCi/L		0.02091 U		
	Technetium-99	pCi/L		0.0477 U		
	Uranium	µg/L		0.236		
	Uranium-233/234	pCi/L		0.1429		
	Uranium-235	pCi/L		0.01603 U		
	Uranium-236	pCi/L		0.01439 U		
	Uranium-238	pCi/L		0.07779		

Table 4.17. Volatile organic compounds detected at the X-734 Landfills – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
RSY-02B	Acetone	µg/L		10 U		2.1 BJ
X734-02B	Acetone	µg/L		10 U		2.6 BJ
X734-03G	1,1,2-Trichloroethane	µg/L		2 U		2
	1,1-Dichloroethane	µg/L		0.25 J		0.16 U
	1,2-Dimethylbenzene	µg/L		2 U		0.19 J
	Acetone	µg/L		10 U		12 B
	Benzene	µg/L		2 U		2.6
	Ethylbenzene	µg/L		2 U		0.3 J
	Toluene	µg/L		2 U		0.81 J
X734-04G	Trichloroethene	µg/L		0.4 J		0.16 U
X734-05B	1,1,2-Trichloroethane	µg/L		2 U		2
	1,2-Dimethylbenzene	µg/L		0.81 J		0.19 J
	Acetone	µg/L		20		12 B
	Benzene	µg/L		1.8 J		2.6
	Ethylbenzene	µg/L		1 J		0.3 J
	M + P Xylene	µg/L		0.4 J		0.34 U
	Toluene	µg/L		0.42 J		0.81 J
X734-06G	Acetone	µg/L		10 U		2.7 BJ
X734-10G	Acetone	µg/L		10 U		2.8 BJ
	Methylene chloride	µg/L		5 U		1.1 BJ
X734-14G	Acetone	µg/L		4.8 J		1.9 U
X734-15G	1,1-Dichloroethane	µg/L		0.24 J		0.24 J
X734-20G	Acetone	µg/L		10 U		2.8 BJ
X734-22G	Acetone	µg/L		10 U		2.5 BJ
	Methylene chloride	µg/L		5 U		1 BJ
X734-23G	cis-1,2-Dichloroethene	µg/L		7.7		8.9
	trans-1,2-Dichloroethene	µg/L		0.39 J		0.49 J
	Vinyl chloride	µg/L		3		1.8

Table 4.18. Results for radionuclides at the X-734 Landfills – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
RSY-02B	Americium-241	pCi/L	0.01082 U			
	Neptunium-237	pCi/L	-0.0672 U			
	Plutonium-238	pCi/L	-0.0067 U			
	Plutonium-239/240	pCi/L	-0.0134 U			
	Technetium-99	pCi/L	-0.877 U			
	Uranium	µg/L	0.02264 U			
	Uranium-233/234	pCi/L	0.06893			
	Uranium-235	pCi/L	0.00850 U			
	Uranium-236	pCi/L	-0.0076 U			
	Uranium-238	pCi/L	0.00689 U			
X734-01G	Americium-241	pCi/L	-0.0156 U			
	Neptunium-237	pCi/L	-0.0218 U			
	Plutonium-238	pCi/L	0.01452 U			
	Plutonium-239/240	pCi/L	0.00726 U			
	Technetium-99	pCi/L	0.582 U			
	Uranium	µg/L	0.1256			
	Uranium-233/234	pCi/L	0.09863			
	Uranium-235	pCi/L	8.7E-06 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.04218			
X734-02B	Americium-241	pCi/L	0.0146 U			
	Neptunium-237	pCi/L	1.5E-05 U			
	Plutonium-238	pCi/L	1.5E-05 U			
	Plutonium-239/240	pCi/L	0.00773 U			
	Technetium-99	pCi/L	-1.2 U			
	Uranium	µg/L	0.07398 U			
	Uranium-233/234	pCi/L	0.08003 U			
	Uranium-235	pCi/L	0.00988 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.02397 U			
X734-03G	Americium-241	pCi/L	0.01532 U			
	Neptunium-237	pCi/L	1.4E-05 U			
	Plutonium-238	pCi/L	0.0208 U			
	Plutonium-239/240	pCi/L	6.9E-06 U			
	Technetium-99	pCi/L	-3.03 U			
	Uranium	µg/L	0.9706			
	Uranium-233/234	pCi/L	0.735			
	Uranium-235	pCi/L	0.05181			
	Uranium-236	pCi/L	0.02326 U			
	Uranium-238	pCi/L	0.3214			
X734-04G	Americium-241	pCi/L	0.05927 U			
	Neptunium-237	pCi/L	7.4E-06 U			
	Plutonium-238	pCi/L	0.01471 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	-1.3 U			
	Uranium	µg/L	2.874			
	Uranium-233/234	pCi/L	0.8886			
	Uranium-235	pCi/L	0.05481			

Table 4.18. Results for radionuclides at the X-734 Landfills – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X734-04G	Uranium-236	pCi/L	0.00820 U			
	Uranium-238	pCi/L	0.9607			
X734-05B	Americium-241	pCi/L	0.01031 U			
	Neptunium-237	pCi/L	-0.0406 U			
	Plutonium-238	pCi/L	0.00813 U			
	Plutonium-239/240	pCi/L	0.01621 U			
	Technetium-99	pCi/L	1.29 U			
	Uranium	µg/L	0.619			
	Uranium-233/234	pCi/L	0.3721			
	Uranium-235	pCi/L	9.2E-06 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.208			
X734-06G	Americium-241	pCi/L	0.01403 U			
	Neptunium-237	pCi/L	-0.0078 U			
	Plutonium-238	pCi/L	0.00784 U			
	Plutonium-239/240	pCi/L	0.00783 U			
	Technetium-99	pCi/L	1.79 U			
	Uranium	µg/L	0.09241			
	Uranium-233/234	pCi/L	0.09841			
	Uranium-235	pCi/L	0.00934 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.03021 U			
X734-10G	Americium-241	pCi/L	0.02155 U			
	Neptunium-237	pCi/L	-0.0474 U			
	Plutonium-238	pCi/L	0.01353 U			
	Plutonium-239/240	pCi/L	0.00677 U			
	Technetium-99	pCi/L	-1.44 U			
	Uranium	µg/L	0.2484			
	Uranium-233/234	pCi/L	0.1381			
	Uranium-235	pCi/L	0.00852 U			
	Uranium-236	pCi/L	0.00765 U			
	Uranium-238	pCi/L	0.08268			
X734-14G	Americium-241	pCi/L	0.06239 U			
	Neptunium-237	pCi/L	-0.0270 U			
	Plutonium-238	pCi/L	0.01354 U			
	Plutonium-239/240	pCi/L	2.0E-05 U			
	Technetium-99	pCi/L	-2.32 U			
	Uranium	µg/L	0.7018			
	Uranium-233/234	pCi/L	0.4481			
	Uranium-235	pCi/L	0.00937 U			
	Uranium-236	pCi/L	-0.0084 U			
	Uranium-238	pCi/L	0.235			
X734-15G	Americium-241	pCi/L	2.2E-05 U			
	Neptunium-237	pCi/L	-0.0499 U			
	Plutonium-238	pCi/L	0.00712 U			
	Plutonium-239/240	pCi/L	0 U			
	Technetium-99	pCi/L	-4.36 U			
	Uranium	µg/L	0.2093 U			

Table 4.18. Results for radionuclides at the X-734 Landfills – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X734-15G	Uranium-233/234	pCi/L	0.1394			
	Uranium-235	pCi/L	0.0086 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.06957 U			
X734-16G	Americium-241	pCi/L	0.0274 U			
	Neptunium-237	pCi/L	-0.027 U			
	Plutonium-238	pCi/L	0.02696 U			
	Plutonium-239/240	pCi/L	0.02022 U			
	Technetium-99	pCi/L	-1.03 U			
	Uranium	µg/L	2.229			
	Uranium-233/234	pCi/L	0.858			
	Uranium-235	pCi/L	0.0168 U			
	Uranium-236	pCi/L	0 U			
X734-18G	Uranium-238	pCi/L	0.7475			
	Americium-241	pCi/L	1.0E-05 U			
	Neptunium-237	pCi/L	-0.0207 U			
	Plutonium-238	pCi/L	-0.0069 U			
	Plutonium-239/240	pCi/L	-0.0069 U			
	Technetium-99	pCi/L	-0.976 U			
	Uranium	µg/L	1.68			
	Uranium-233/234	pCi/L	1.143			
	Uranium-235	pCi/L	0.01855 U			
X734-20G	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.5627			
	Americium-241	pCi/L	1.6E-05 U			
	Neptunium-237	pCi/L	0.00676 U			
	Plutonium-238	pCi/L	0.01348 U			
	Plutonium-239/240	pCi/L	0.01348 U			
	Technetium-99	pCi/L	-0.979 U			
	Uranium	µg/L	0.08701 U			
	Uranium-233/234	pCi/L	0.1098			
X734-22G	Uranium-235	pCi/L	0 U			
	Uranium-236	pCi/L	0 U			
	Uranium-238	pCi/L	0.02923 U			
	Americium-241	pCi/L	0.01371 U			
	Neptunium-237	pCi/L	0.02692 U			
	Plutonium-238	pCi/L	0.01342 U			
	Plutonium-239/240	pCi/L	1.3E-05 U			
	Technetium-99	pCi/L	1.1 U			
	Uranium	µg/L	0.7734			
X734-23G	Uranium-233/234	pCi/L	0.5173			
	Uranium-235	pCi/L	0.01878 U			
	Uranium-236	pCi/L	0.00843 U			
	Uranium-238	pCi/L	0.2581			
	Americium-241	pCi/L	0.02041 U			
	Neptunium-237	pCi/L	-0.0071 U			
	Plutonium-238	pCi/L	-0.0141 U			
	Plutonium-239/240	pCi/L	-0.0071 U			

Table 4.18. Results for radionuclides at the X-734 Landfills – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X734-23G	Technetium-99	pCi/L		-3.02 U		
	Uranium	µg/L		0.04205 U		
	Uranium-233/234	pCi/L		0.03541 U		
	Uranium-235	pCi/L		0 U		
	Uranium-236	pCi/L		0 U		
	Uranium-238	pCi/L		0.01413 U		

Table 4.19. Results for cadmium, cobalt, and nickel at the X-533 Switchyard Area – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
F-03G	Cadmium	µg/L		48		40
	Cobalt	µg/L		82		72
	Nickel	µg/L		530		460
TCP-01G	Cadmium	µg/L		17		14
	Cobalt	µg/L		48		42
	Nickel	µg/L		200		170
X533-03G	Cadmium	µg/L		11		18
	Cobalt	µg/L		32		50
	Nickel	µg/L		180		270

Table 4.20. Volatile organic compounds detected at surface water monitoring locations – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
BRC-SW01	Acetone	µg/L	4.4 J	10 U	10 U	4.3 BJ
	Bromodichloromethane	µg/L	0.17 U	1.7 J	1.1 J	3.1
	Bromoform	µg/L	0.19 U	0.34 J	0.34 J	1.5 J
	Chloroform	µg/L	0.16 U	3.3	1.8 J	4.2
	cis-1,2-Dichloroethene	µg/L	0.15 U	2 U	0.51 J	0.15 U
	Dibromochloromethane	µg/L	0.17 U	1.7 J	1.1 J	3.6
	Methylene chloride	µg/L	0.32 U	5 U	5 U	0.66 BJ
	Tetrachloroethene	µg/L	0.2 U	2 U	0.24 J	0.2 U
	Trichloroethene	µg/L	0.16 U	2 U	0.49 J	0.16 U
BRC-SW02	Acetone	µg/L	4.1 J	4.6 J	3.2 J	2.9 BJ
	Bromodichloromethane	µg/L	2	2 U	2 U	0.17 U
	Bromoform	µg/L	0.94 J	2 U	2 U	0.19 U
	Chloroform	µg/L	2	2 U	2 U	0.16 U
	cis-1,2-Dichloroethene	µg/L	0.23 J	2 U	2 U	0.15 U
	Dibromochloromethane	µg/L	2.3	2 U	2 U	0.17 U
	Methylene chloride	µg/L	0.32 U	5 U	5 U	0.7 BJ
EDD-SW01	Acetone	µg/L	3.3 J	9.9 J	2.9 J	2.5 BJ
	Bromodichloromethane	µg/L	2.1	3.5	2.4	3.4
	Bromoform	µg/L	1.6 J	0.49 J	0.74 J	2.3
	Chloroform	µg/L	2	7.7	2.6	3.5
	cis-1,2-Dichloroethene	µg/L	0.37 J	0.21 J	0.3 J	0.26 J
	Dibromochloromethane	µg/L	3.3	3	2.4	5
	Methylene chloride	µg/L	0.32 U	5 U	5 U	0.73 BJ
	Toluene	µg/L	0.17 U	0.61 J	2 U	0.17 U
	Trichloroethene	µg/L	0.87 J	0.6 J	0.44 J	0.51 J
LBC-SW01	Acetone	µg/L	2 J	9.1 J	3 J	2.3 BJ
	Bromodichloromethane	µg/L	1.6 J	1.4 J	0.82 J	2.4
	Bromoform	µg/L	1.1 J	2 U	0.25 J	1.5 J
	Chloroform	µg/L	1.4 J	3.1	0.83 J	2.5
	cis-1,2-Dichloroethene	µg/L	0.39 J	0.17 J	0.17 J	0.2 J
	Dibromochloromethane	µg/L	2.3	1.2 J	0.79 J	3.2
	Methylene chloride	µg/L	0.32 U	5 U	5 U	0.6 BJ
	Toluene	µg/L	0.17 U	0.21 J	2 U	0.17 U
	Trichloroethene	µg/L	0.77 J	0.32 J	0.18 J	0.35 J
LBC-SW02	Acetone	µg/L	2.6 J	2.5 J	2.3 J	2.8 BJ
	Bromodichloromethane	µg/L	0.41 J	0.84 J	0.91 J	1.2 J
	Bromoform	µg/L	2 U	2 U	0.28 J	1.1 J
	Chloroform	µg/L	0.43 J	1.9 J	0.87 J	1.2 J
	cis-1,2-Dichloroethene	µg/L	0.18 J	2 U	2 U	0.15 U
	Dibromochloromethane	µg/L	0.52 J	0.84 J	0.91 J	1.9 J
	Methylene chloride	µg/L	5 U	5 U	5 U	0.71 BJ
	Trichloroethene	µg/L	2 U	0.19 J	2 U	0.16 U
	Acetone	µg/L	10 U	2 J	2.1 J	1.9 U
LBC-SW03	Bromodichloromethane	µg/L	2 U	0.28 J	0.74 J	0.19 J
	Bromoform	µg/L	2 U	2 U	0.38 J	0.38 J
	Chloroform	µg/L	2 U	0.55 J	0.58 J	0.16 U
	Dibromochloromethane	µg/L	0.23 J	0.29 J	0.91 J	0.42 J
	Methylene chloride	µg/L	5 U	5 U	5 U	0.73 BJ

Table 4.20. Volatile organic compounds detected at surface water monitoring locations – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
LBC-SW04	Acetone	µg/L	10 U	1.9 J	10 U	1.9 U
	Methylene chloride	µg/L	5 U	5 U	5 U	0.74 BJ
NHP-SW01	Acetone	µg/L	10 U	20	2.1 J	2.8 BJ
	Chloroform	µg/L	2 U	0.33 J	2 U	0.16 U
UND-SW01	Methylene chloride	µg/L	5 U	5 U	5 U	0.72 BJ
	1,1-Dichloroethane	µg/L	2 U	2 U	2 U	0.21 J
UND-SW01	1,1-Dichloroethene	µg/L	2 U	0.28 J	2 U	0.23 J
	2-Butanone	µg/L	6 U	6 U	7.6	1.8 U
UND-SW02	Acetone	µg/L	10 U	10 U	5.3 J	2.6 BJ
	cis-1,2-Dichloroethene	µg/L	2 U	2 U	2 U	0.38 J
UND-SW02	Trichloroethene	µg/L	0.76 J	2.7	0.25 J	5.7
	2-Butanone	µg/L	6 U	7.7	6 U	1.8 U
WDD-SW01	Acetone	µg/L	10 U	7.2 J	10 U	3.3 BJ
	Bromodichloromethane	µg/L	0.39 J	0.49 J	0.2 J	0.65 J
WDD-SW02	Bromoform	µg/L	2 U	2 U	2 U	1.4 J
	Chloroform	µg/L	0.35 J	0.71 J	0.25 J	0.33 J
WDD-SW02	Dibromochloromethane	µg/L	0.44 J	0.53 J	0.2 J	1.5 J
	Methylene chloride	µg/L	5 U	5 U	5 U	0.8 BJ
WDD-SW03	Acetone	µg/L	10 U	5.2 J	3.7 J	2.2 BJ
	Bromodichloromethane	µg/L	0.37 J	2 U	2 U	0.17 U
WDD-SW03	Bromoform	µg/L	0.3 J	2 U	2 U	0.19 U
	Chloroform	µg/L	0.34 J	2 U	2 U	0.16 U
WDD-SW03	Dibromochloromethane	µg/L	0.47 J	2 U	2 U	0.17 U
	Methylene chloride	µg/L	5 U	5 U	5 U	0.79 BJ
WDD-SW03	Acetone	µg/L	10 U	11	10 U	2.7 BJ
	Bromodichloromethane	µg/L	2 U	0.22 J	2 U	0.17 U
WDD-SW03	Bromoform	µg/L	2 U	2 U	2 U	0.23 J
	Chloroform	µg/L	0.19 J	0.41 J	2 U	0.16 U
WDD-SW03	Dibromochloromethane	µg/L	2 U	0.19 J	2 U	0.2 J
	Methylene chloride	µg/L	5 U	5 U	5 U	0.78 BJ

Table 4.21. Results for radionuclides at surface water monitoring locations – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
BRC-SW01	Americium-241	pCi/L	0.0094 U	2.8E-05 U		0.02708 U
	Neptunium-237	pCi/L	0.0081 U	-0.0075 U		-0.02352 U
	Plutonium-238	pCi/L	0.0161 U	0.01497 U		0.02349 U
	Plutonium-239/240	pCi/L	0 U	0 U		-0.03909 U
	Technetium-99	pCi/L	-1 U	-0.331 U	8.42 U	18
	Uranium	µg/L	0.5706	1.565	20.9	0.562
	Uranium-233/234	pCi/L	0.6915	0.8039	6.27	0.2669
	Uranium-235	pCi/L	0.0464	0.00927 U	0.3192	0.009682 U
	Uranium-236	pCi/L	0.0083 U	0.00832 U	0.02529 U	0.008693 U
	Uranium-238	pCi/L	0.1875	0.5249	6.994	0.188
BRC-SW02	Americium-241	pCi/L	0.0163 U	1.1E-05 U		0 U
	Neptunium-237	pCi/L	-0.007 U	6.9E-06 U		-0.00811 U
	Plutonium-238	pCi/L	0.0143 U	0.00687 U		0.0162 U
	Plutonium-239/240	pCi/L	0.0287 U	-0.0069 U		0.0162 U
	Technetium-99	pCi/L	-1.25 U	-4.88 U	-0.0619 U	-3.86 U
	Uranium	µg/L	2.08	0.8493	0.5728	0.582
	Uranium-233/234	pCi/L	1.131	0.8913	0.3966	0.873
	Uranium-235	pCi/L	0.0810	0.06207	-0.01844 U	0.01046 U
	Uranium-236	pCi/L	0 U	0.00796 U	-0.008279 U	0 U
	Uranium-238	pCi/L	0.6917	0.2798	0.1941	0.1945
EDD-SW01	Americium-241	pCi/L	2E-05 U	9.6E-06 U		0.008816 U
	Neptunium-237	pCi/L	-0.015 U	0.00695 U		-0.02404 U
	Plutonium-238	pCi/L	0.0373 U	0 U		0.007999 U
	Plutonium-239/240	pCi/L	0.0149 U	0.01387 U		0.007999 U
	Technetium-99	pCi/L	15.9	1.85 U	2.62 U	-2.73 U
	Uranium	µg/L	1.02	2.161	1.13	0.272
	Uranium-233/234	pCi/L	1.686	3.291	1.906	0.5692
	Uranium-235	pCi/L	0.1306	0.137	0.07098	0.02538 U
	Uranium-236	pCi/L	0.0234 U	0.01538 U	0.007967 U	0.01519 U
	Uranium-238	pCi/L	0.3309	0.7137	0.3733	0.08898
LBC-SW01	Americium-241	pCi/L	0.0083 U	-0.0108 U		-0.00844 U
	Neptunium-237	pCi/L	0.0073 U	0 U		8.27E-06 U
	Plutonium-238	pCi/L	0.029 U	7.4E-06 U		0.008254 U
	Plutonium-239/240	pCi/L	0.0073 U	0.00738 U		0.008254 U
	Technetium-99	pCi/L	14	3.13 U	0.378 U	0.406 U
	Uranium	µg/L	0.6528	1.175	0.5313	0.345
	Uranium-233/234	pCi/L	1.357	1.466	0.7688	0.5954
	Uranium-235	pCi/L	0.0090 U	0.07981	0.009982 U	0.01884 U
	Uranium-236	pCi/L	0.0081 U	0.02389 U	-0.01791 U	-0.01688 U
	Uranium-238	pCi/L	0.2184	0.3874	0.1777	0.1143
LBC-SW02	Americium-241	pCi/L	0.0168 U	1.4E-05 U		-0.00919 U
	Neptunium-237	pCi/L	0.0220 U	0 U		7.87E-06 U
	Plutonium-238	pCi/L	0.0147 U	1.5E-05 U		0.03141 U
	Plutonium-239/240	pCi/L	7E-06 U	0 U		0.01571 U
	Technetium-99	pCi/L	12.6	3.47 U	0.149 U	1.03 U
	Uranium	µg/L	0.9554	0.959	0.4626	0.343
	Uranium-233/234	pCi/L	1.543	1.604	0.9162	0.6755
	Uranium-235	pCi/L	0.1135	0.05599	0.008311 U	0.01755 U

Table 4.21. Results for radionuclides at surface water monitoring locations – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
LBC-SW02	Uranium-236	pCi/L	0.0079 U	0.01676 U	0 U	0.01575 U
	Uranium-238	pCi/L	0.3108	0.3171	0.1547	0.1135
LBC-SW03	Americium-241	pCi/L	0.0092 U	0.01735 U		0.009022 U
	Neptunium-237	pCi/L	8E-06 U	-0.0070 U		9.31E-06 U
	Plutonium-238	pCi/L	0.0078 U	-0.007 U		0.03717 U
	Plutonium-239/240	pCi/L	0.0078 U	7E-06 U		-0.06499 U
	Technetium-99	pCi/L	8.95 U	3.94 U	-0.765 U	0.587 U
	Uranium	µg/L	0.982	1.093	1.018	0.271
	Uranium-233/234	pCi/L	1.434	1.41	1.702	0.6777
	Uranium-235	pCi/L	0.0438	0.0527	0.07706	0.009299 U
	Uranium-236	pCi/L	0.0079 U	0 U	0 U	0 U
	Uranium-238	pCi/L	0.326	0.3624	0.3351	0.0902
LBC-SW04	Americium-241	pCi/L	2E-05 U	0.00669 U		0.01804 U
	Neptunium-237	pCi/L	0.0227 U	0.01345 U		8.32E-06 U
	Plutonium-238	pCi/L	0.0075 U	0.01341 U		-0.0083 U
	Plutonium-239/240	pCi/L	-0.008 U	0.01341 U		0 U
	Technetium-99	pCi/L	7.27 U	3.22 U	3.02 U	-0.0938 U
	Uranium	µg/L	1.158	1.155	1.811	0.65
	Uranium-233/234	pCi/L	1.181	1.221	1.775	0.8573
	Uranium-235	pCi/L	0.0353 U	0.0162 U	0.07929	0.02759 U
	Uranium-236	pCi/L	0.0159 U	0.01455 U	0 U	0.03303 U
	Uranium-238	pCi/L	0.3857	0.3866	0.6013	0.2158
NHP-SW01	Americium-241	pCi/L	-0.02 U	0.02042 U		0.01136 U
	Neptunium-237	pCi/L	0 U	7.2E-06 U		0 U
	Plutonium-238	pCi/L	0.0352 U	0.00718 U		0.01539 U
	Plutonium-239/240	pCi/L	-0.009 U	0.01436 U		0.03076 U
	Technetium-99	pCi/L	2.79 U	-1.21 U	-0.352 U	2.85 U
	Uranium	µg/L	5.073	4.917	4.795	5.71
	Uranium-233/234	pCi/L	2.128	2.415	1.757	2.4
	Uranium-235	pCi/L	0.1381	0.07955	0.04775	0.09803
	Uranium-236	pCi/L	0.0177 U	0.04762	0 U	0 U
	Uranium-238	pCi/L	1.692	1.645	1.607	1.911
UND-SW01	Americium-241	pCi/L	0.0366 U	0.02247 U		0.03949 U
	Neptunium-237	pCi/L	0 U	0.00839 U		-0.00814 U
	Plutonium-238	pCi/L	0.0166 U	0 U		0.008125 U
	Plutonium-239/240	pCi/L	0.0331 U	0.01674 U		-0.01623 U
	Technetium-99	pCi/L	1.79 U	0.522 U	2.33 U	0.456 U
	Uranium	µg/L	2.202	2.695	0.7261	2.23
	Uranium-233/234	pCi/L	0.7518	1.334	0.3831	1.018
	Uranium-235	pCi/L	0.0574	0.06543	0 U	0.08432
	Uranium-236	pCi/L	-0.017 U	0 U	-0.009019 U	0 U
	Uranium-238	pCi/L	0.7348	0.8999	0.244	0.7428
UND-SW02	Americium-241	pCi/L	0.0081 U	0 U		0 U
	Neptunium-237	pCi/L	0.0072 U	0.00704 U		0 U
	Plutonium-238	pCi/L	0.0144 U	-0.0210 U		0.007652 U
	Plutonium-239/240	pCi/L	0.0072 U	0.01405 U		0 U
	Technetium-99	pCi/L	-2.63 U	2.17 U	-3.99 U	-0.893 U
	Uranium	µg/L	1.01	2.031	1.253	1.43

Table 4.21. Results for radionuclides at surface water monitoring locations – 2009 (continued)

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
UND-SW02	Uranium-233/234	pCi/L	0.4522	0.7997	0.5928	0.7141
	Uranium-235	pCi/L	-0.009 U	0.02573 U	0.0515	0.05339
	Uranium-236	pCi/L	-0.008 U	0 U	-0.009238 U	-0.00798 U
	Uranium-238	pCi/L	0.3402	0.6801	0.4166	0.4751
WDD-SW01	Americium-241	pCi/L	0.0115 U	-0.018 U		0.01917 U
	Neptunium-237	pCi/L	3E-05 U	0.01375 U		-0.00754 U
	Plutonium-238	pCi/L	0 U	-0.0137 U		3.01E-05 U
	Plutonium-239/240	pCi/L	0.0185 U	0 U		0.01507 U
	Technetium-99	pCi/L	-4.58 U	1.27 U	-2.36 U	4.81 U
	Uranium	µg/L	3.967	4.054	0.9153	1.86
	Uranium-233/234	pCi/L	2.561	2.097	0.8544	0.7025
	Uranium-235	pCi/L	0.1327	0.1168	0.009245 U	0.04166
	Uranium-236	pCi/L	0.0238 U	0.00807 U	0.008301 U	0.01496 U
	Uranium-238	pCi/L	1.321	1.352	0.3067	0.6202
WDD-SW02	Americium-241	pCi/L	0.0296 U	1.3E-05 U		0 U
	Neptunium-237	pCi/L	-0.008 U	0.00814 U		0.007827 U
	Plutonium-238	pCi/L	-0.008 U	0.00811 U		0.01561 U
	Plutonium-239/240	pCi/L	0.0079 U	-0.0081 U		0.02342 U
	Technetium-99	pCi/L	-0.442 U	-3.6 U	-2.68 U	-2.92 U
	Uranium	µg/L	1.748	2.142	0.7486	3.68
	Uranium-233/234	pCi/L	0.9964	1.431	0.3352	1.349
	Uranium-235	pCi/L	0.0509	0.06119	0.02885 U	0.0603
	Uranium-236	pCi/L	0.0076 U	0.0157 U	0 U	0 U
	Uranium-238	pCi/L	0.5829	0.7142	0.249	1.229
WDD-SW03	Americium-241	pCi/L	0.0285 U	0.02786 U		-0.01948 U
	Neptunium-237	pCi/L	-0.013 U	6.9E-06 U		0.007875 U
	Plutonium-238	pCi/L	0.0201 U	6.9E-06 U		-0.00783 U
	Plutonium-239/240	pCi/L	0.0067 U	0.02762 U		-0.01569 U
	Technetium-99	pCi/L	-3.98 U	2.82 U	-3.08 U	-3.21 U
	Uranium	µg/L	2.293	3.648	0.9601	3.08
	Uranium-233/234	pCi/L	1.429	1.754	0.6795	1.48
	Uranium-235	pCi/L	0.0643 U	0.07094	0.02826 U	0.05102 U
	Uranium-236	pCi/L	-0.016 U	0 U	0.008457 U	0 U
	Uranium-238	pCi/L	0.7649	1.22	0.32	1.032

Table 4.22. Results for radionuclides at exit pathway monitoring locations – 2009

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
F-29B	Americium-241	pCi/L			0.01757 U	
	Neptunium-237	pCi/L			-0.01349 U	
	Plutonium-238	pCi/L			0.01348 U	
	Plutonium-239/240	pCi/L			-0.006734 U	
	Technetium-99	pCi/L			2.94 U	
	Uranium	µg/L			-0.0205 U	
	Uranium-233/234	pCi/L			-0.01381 U	
	Uranium-235	pCi/L			0 U	
	Uranium-236	pCi/L			0 U	
	Uranium-238	pCi/L			-0.006896 U	

A table is not provided for VOCs at exit pathway monitoring locations because none were detected in well F-29B. Results for other exit pathway monitoring locations sampled during 2009 are included in the tables for their respective monitoring areas as follows:

- Tables 4.1 and 4.2. VOCs and radionuclides detected at the X-749/X-120/PK Landfill wells X749-44G, X749-45G, X749-64B, X749-68G, X749-96G, X749-97G, and X749-98G
- Tables 4.7 and 4.8. VOCs and radionuclides detected at the X-701B Holding Pond well X701-48G
- Tables 4.20 and 4.21. VOCs and radionuclides detected at surface water monitoring locations BRC-SW02, LBC-SW04, UND-SW02, and WDD-SW03

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